

December 2015/\$10

Journal of the Air Force Association

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MAGAZINE

**Ivan Ruiz,
Air Force Cross**



**Russian Roulette in Syria
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B-52 Through the Years
Resilience Is Hard**



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About the cover: Pararescueman MSgt. Ivan Ruiz, during a 2013 deployment in Afghanistan. See "Courage in the Courtyard," p. 22. Photo courtesy of Ruiz.



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AIR FORCE Magazine (ISSN 0730-6784) December 2015 (Vol. 98, No. 12) is published monthly by the Air Force Association, 1501 Lee Highway, Arlington, VA 22209-1198. Phone (703) 247-5800. Periodical postage paid at Arlington, Va., and additional mailing offices. **Membership Rate:** \$45 per year; \$30 e-Membership; \$110 for three-year membership. **Life Membership (nonrefundable):** \$600 single payment, \$630 extended payments. **Subscription Rate:** \$45 per year; \$29 per year additional for postage to foreign addresses (except Canada and Mexico, which are \$10 per year additional). Regular issues \$10 each. USAF Almanac issue \$20 each. **Change of address** requires four weeks' notice. Please include mailing label. **POSTMASTER:** Send changes of address to Air Force Association, 1501 Lee Highway, Arlington, VA 22209-1198. Publisher assumes no responsibility for unsolicited material. Trademark registered by Air Force Association. Copyright 2015 by Air Force Association.



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The ISIS Problem Expands

STRONGER action is needed to eradicate the well-financed terror group that is now exporting death and destruction far beyond Iraq and Syria.

People seem just as confused about how to respond to the group called ISIS, ISIL, the Islamic State, or Daesh as they are about what to call it. Coming to a consensus on a name can wait. International action to destroy ISIS cannot wait.

For more than a year, there were reasonable views for and against the United States attacking ISIS. In fact, this July's editorial argued that the Administration needed to make up its mind and either walk away from ISIS or commit to destroying it.

The US was hardly alone in its ambivalence. ISIS' Middle Eastern neighbors have failed to prepare for the threat they face, while most of Europe acted as if ISIS were someone else's problem. French President François Hollande said ISIS in Syria is "the biggest factory of terrorism the world has ever known, and the international community is still too divided and too incoherent."

ISIS' stronghold is far from the United States, but recent events show that walking away and letting this group operate unhindered is no longer an option. During a two-week span, ISIS terrorists repeatedly brought indiscriminate death to far-flung communities previously unaffected by the group's wanton destruction.

First, on Oct. 31, an ISIS bomb destroyed a Russian airliner over Egypt's Sinai Peninsula. The attack killed 224 and was the deadliest aviation mishap in Russian history.

Then, on Nov. 12, a pair of ISIS suicide bomb attacks struck Beirut, killing 43 and shattering years of relative peace in Lebanon.

That attack was overshadowed by a larger series of coordinated ISIS attacks in Paris the next day, which left more than 120 dead in the French capital.

ISIS is still increasing its reach, but its recent actions may have gone too far. These atrocities may finally snap the world community out of its lethargic response to ISIS.

In the immediate aftermath of the Paris attack, Secretary of State John F. Kerry said, "I even had a member of my

own family email me. ... 'More bombs aren't the solution,' they said. Well, in principle, no. In principle, if you can educate and change people and provide jobs, ... sure. But in this case, that's not what's happening. This is just raw terror to set up a caliphate to expand and expand and spread one notion of how you live and who you have to be," Kerry said. "So this is not a situation where we have a choice."

ISIS promptly threatened additional attacks, including against the United

Threatened nations have fought ISIS with curious apathy. Recent attacks may finally change that.

States, although this should surprise no one. Islamic State propagandists released videos shortly after the Paris and Beirut attacks threatening strikes against New York and Washington, D.C. In one, a spokesman for the group said, "We swear that we will strike America at its center, in Washington."

CIA Director John O. Brennan said shortly after the attacks that ISIS has more attacks in the pipeline. The group has improved its operational security, he said, and has managed to hide operatives among the large number of people travelling between Europe, Syria, and Iraq.

French and Belgian authorities quickly responded to the Paris attacks by conducting hundreds of raids on suspected Islamic militant locations in the two countries.

France soon also began launching air strikes against ISIS targets around Raqqa, Syria, effectively the group's capital. Hollande said of his nation's response, "It's not about containing but about destroying that organization."

Russian aircraft also appeared in the skies over Raqqa. After spending weeks attacking enemies of Syria's Assad regime under the pretense of a counterterrorism operation, propping up Syria's brutal dictator, Russian warplanes and missiles hit ISIS targets in Raqqa the same day the French did. Russian officials said President Vladimir Putin and Hollande agreed to coordinate their anti-ISIS attacks.

President Obama said the current US approach is the correct one, despite ISIS' recent success and reach. The US strategy "focuses on going after targets, limiting wherever possible the capabilities of ISIL on the ground, systematically going after their leadership, their infrastructure, ... and squeezing the space in which they can operate until ultimately we're able to defeat them," Obama said.

This will be an air campaign to its core. "We have the right strategy, and we're going to see it through," he said. Although Obama doubled down on his decision to keep ground troops out of the war against ISIS, the US quickly expanded its air war.

ISIS funds much of its operation through stolen oil revenues, which a DOD spokesman said the US Treasury estimates might total \$1 million a day. After steadfastly avoiding attacks against ISIS fuel trucks for fear of causing civilian casualties, Air Force A-10s and AC-130s destroyed 116 oil trucks in one mid-November night. The attacks on the fuel trucks were preceded by warnings, including a leaflet drop, to prevent innocent bystanders from coming under attack.

The Pentagon dubbed the anti-oil campaign Operation Tidal Wave II. This is an homage to the World War II Air Force bombing missions against Nazi-held Romanian oil fields that were vital to the German war effort.

Obama is rightfully wary of entering into another ground war. After 15 years of land campaigns providing uncertain long-term benefit, the American public has little appetite for more. Ultimately, if there is to be peace and prosperity in the Middle East, the people terrorized by ISIS must drive out the insurgents and establish inclusive, peaceful governments.

But even with all of these qualifiers, the US can do much more to defeat ISIS. The US, France, and Russia have all shown the efficacy of airpower in recent weeks, and the US-led air campaign is still a highly limited affair. USAF operates the preponderance of the strike, surveillance, communications, and refueling aircraft and spacecraft needed to defeat ISIS on the battlefield. Airmen will be at the forefront of any successful effort to destroy the Islamic State. ✪



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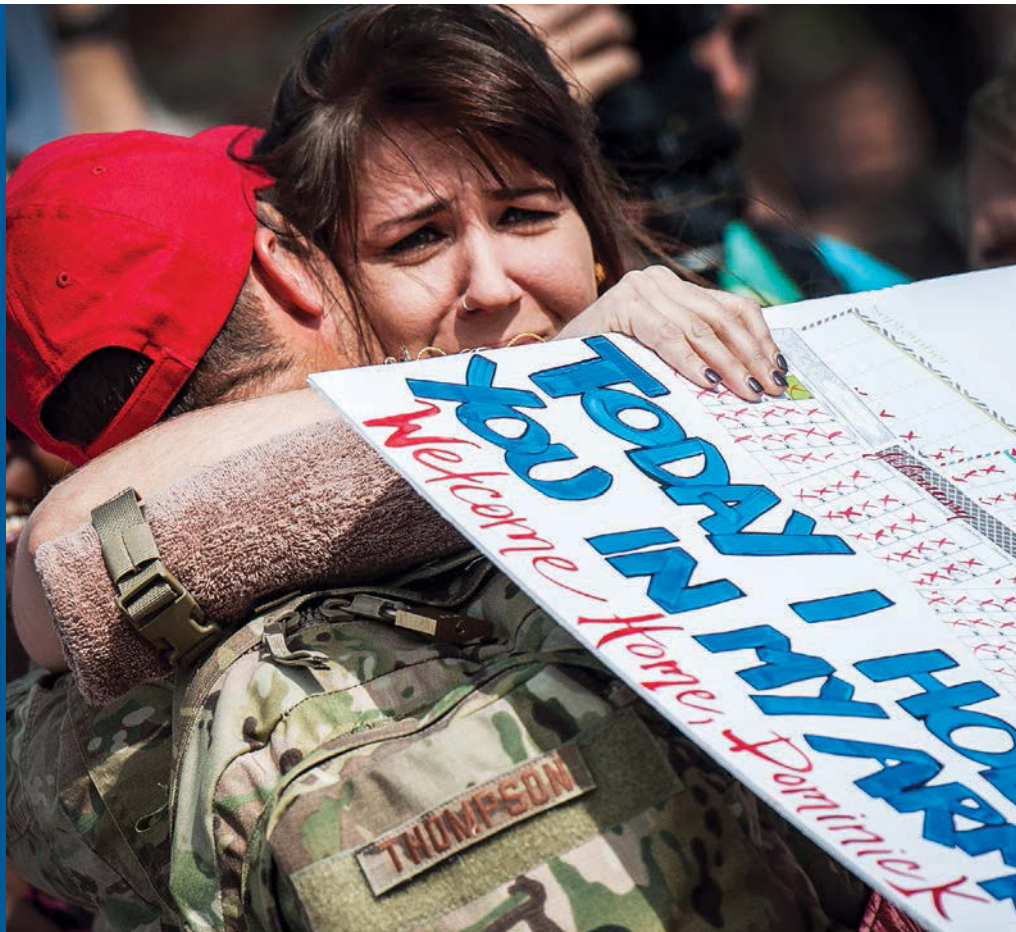
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Magazine

Advertising..... airforcemagsales@afa.org

Editorial Offices..... afmag@afa.org

Letters to Editor Column..... letters@afa.org

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It Was a Nightmare, All Right

With reference to the article "The Nightmare Before Christmas" [p. 56] in the October issue, I have a few comments to add

The SAC staff has taken a lot of flak since December 1972 over the tactics used during the first three days of Linebacker II. I was part of the SAC staff and witnessed the following:

When the SAC Contingency Operations staff was about to brief Maj. Gen. Pete Sianis (SAC deputy chief of staff for operations, DO) on the plan they had developed, I was there. We were in the DO's outer office waiting to go in. I was the SAC DCS/Logistics' representative. The route charts showed several different routes leading to Hanoi. The Andersen Air Force Base aircraft route led from Guam to an air refueling area north of Luzon, and then to Point Juliet in the South China Sea, and then northwest to Hanoi. I do not recall the U Tapao routes, but there was more than one.

General Sianis walked out of his inner office, took a look at the map, and said, "That's not the way we do it!" Then he removed the colored tape showing the Andersen B-52 routing from the map and rerouted that bomber stream to a route over South Vietnam into Laos and forming up with the U Tapao bomber stream. He also changed the post-target exit routing to one requiring all aircraft to make a right turn after dropping bombs and stated, "One way in and one way out!" He then instructed his staff to go make those changes and come back with the briefing. I will never forget how the map looked after General Sianis made changes. The colored tape was hanging loosely and the general made a comment, "You guys probably have a lot of this tape, don't you?"

This was a significant last-minute change resulting in replanning, additional poststrike refueling, and the

now infamous "post-target turn." He essentially took the planning function away from the majors and lieutenant colonels and straitjacketed them with the "one way in, one way out" directive. No one questioned the SAC DCS/Operations. The CINC SAC, Gen. [John C.] Meyer, was a TAC guy. It took three days and some real heroics by people like [Brig. Gen. Glenn R.] Sullivan at U Tapao to effect change to this faulty planning.

Col. Frederick J. Miranda,
USAF (Ret.)
Rio Rancho, N.M.

Treaty Clarity

Your article "The Future of Long-Range Strike" (October, p. 20) had some areas regarding bombers and the New Strategic Arms Reduction Treaty (START) that need some clarification:

NST does not dictate any particular force structure on its signatories. The US and Russia are free to pursue any force structure they determine best fits their national security interests consistent with overall treaty ceilings for delivery vehicles and deployed warheads. The US force structure was announced in April 2014 and for bombers will consist of a total of 66 nuclear-capable aircraft—20 will be B-2s and 46 will be B-52Hs. The remaining 30 B-52Hs of

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the active fleet will be converted under NST provisions to a conventional-only configuration. While some will view the treaty-conversion of 30 bombers as a degradation of the fleet, perhaps the better way to look at conversion is that it fully preserves the full conventional capability of these 30 aircraft. Without the ability to convert aircraft to meet NST ceilings, these aircraft would have had to have been destroyed.

Linda Frost
Deputy Chief, Media Operations
Air Force Global Strike Command

Super Duper

In reference to John Correll's article "The Super" on p. 62 [October]:

At the end he says, "The last atomic bomb in the US inventory, the B57, was removed from service in 1993."

If I am not mistaken the B61 is still in the inventory and being improved through a service life extension program (SLEP) to, among other things, make it compatible with the F-35. Your publication has had this information in it several times.

I am familiar with both the B57 and B61, as part of my responsibility in the F-16 SPO in the early 80s was to manage the process which led to nuclear certification of the F-16.

Col. Alan E. Haberbush,
USAF (Ret.)
Niceville, Fla.

I look forward to each and every copy of your monthly magazine not only because I am a Vietnam-era vet but because I enjoy your historical articles so much. I just finished reading "The Super" about the development of the hydrogen bomb.

While your article by Mr. Correll is excellent, in it he mentions that the Soviets tested their version of the nuclear weapon in August of 1949 and briefly speaks of the Rosenbergs and their spy ring, which compromised our secret atomic project during the war.

I would like to add a couple of resources that have no doubt been little heard of before. One is *From Major Jordan's Diaries*, by George Racey Jordan. It is the record of his experiences as the liaison officer to the Soviets for Lend-Lease at both Newark, N.J., and Great Falls, Mont., during World War II.

One of the incidents he relates is about how he was curious about American C-47 aircraft leaving Great Falls to go into Alaska where they were turned over to the Soviets on their way to Russia. The Soviets stationed armed Russians around these planes, and so Jordan proceeded to investigate by taking an American soldier with him. When he was told not to board the plane, he ordered our soldier to "shoot to kill, ... and that's an order."

Inside the plane, Jordan opened crates containing many different

things, but one crate contained information about "heavy water, uranium, and fission."

The other book is *Secret Messages*, by David Alvarez. It is about code breaking during the war by the Signal Intelligence Service (which became the National Security Agency later on). Soviet diplomatic information was intercepted in the program known as Venona and these messages identified code names for Soviet agents and, to a lesser extent, information about the Manhattan Project.

The point is that now (as told in Mr. Correll's article) we have many foreign powers including North Korea and Iran having the imminent ability to use nuclear weapons. And this, in turn, is due to the Soviet Union giving their stolen information to those nations. Thus, our supposed ally was in fact our enemy even though the public was told otherwise.

Thanks again for a great magazine!
William D. Reid.
Essexville, Mich.

Your article could not have been printed at a more perfect time. To explain: After the decision was made to develop atomic weapons on a large scale for military usage, the Department of Defense opened several bases for the storage and maintenance of those weapons. One of those bases



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was Bossier Base, La., located within the confines of Barksdale Air Force Base. Bossier opened in 1951 under control of the Atomic Energy Commission, later to be reassigned to the Defense Atomic Support Agency, a joint armed services agency. Due to the nature of our mission, Bossier was a very closely guarded secret—so secret that even residents of the surrounding communities were unaware of its existence. Our base was mainly manned by Air Force personnel during its 20-year lifespan. Bossier closed in 1970. A group of individuals who served at Bossier started reunions, for anyone who had served over the lifetime of the base, in the early '80s and continued through 2014. Time and age catches up to everyone, and now most of the group has aged to the point that travel is no longer possible. I am the “kid” of the group at 75. It was decided to disband and erect a memorial sign with the funds left over in our treasury. Monday, Oct. 26, 2015, saw the dedication of that sign to the memory of all who served there.

Your article fully explains the need, at that particular time, for the development of such weapons and should be read by anyone who has a historical interest in this subject matter.

MSgt. Ralph Shufeldt,
USAF (Ret.)
Canton, Mich.

The Guard at Sinjar

I read your article on Sinjar with great interest, as I was the deployed director of operations for the C-130s that executed the airdrops [*“Breaking the Siege on Sinjar,”* October, p. 50]. While the article focused primarily on the CAOC aspect, our execution was critical. As guardsmen, we integrate fully into our chopped command and appear no different than our Active brethren. I’m writing because I want to ensure that our citizen soldiers receive their well-deserved accolades. The humanitarian support we lent was incredibly impressive and the highlight of my military career thus far.

Lt. Col. Robert Manning,
Commander, 133rd OSS
Minnesota Air National Guard

More Than One Way to Serve

Thanks for the “Flashback: The King (Serial No. 19125741)” on Capt. (later Maj.) Clark Gable in the October issue [p. 49]. The perception that Gable “served as a gunner” appears in most biographies of him. Possibly this was abetted by the star himself, who publicly expressed a desire to be a gunner upon enlisting in 1942—overage by about 20 years—soon after the death of his wife, Carole Lombard, in an aircraft crash while returning from a war bond tour. Curious about Gable’s Air Force service—especially the idea

of a 42-year-old officer flying combat as a waist gunner—I interviewed a number of his wartime 351st Bomb Group colleagues back in 1993 for an article I subsequently published (“Clark Gable in the Eighth Air Force”) in the spring/summer 1994 issue of *Air Power History*.

Gable’s wartime comrades and other contemporary sources reveal that although Gable was a member of the 351st BG with Eighth Air Force in England, he actually was assigned to direct the making of a movie intended to serve as an intraservice inducement to recruitment of gunners for heavy bombers. A production crew—writers, cameramen, grips, etc.—assigned for that purpose accompanied him most places in the air and on the ground. At least some of the camera crew were from Gable’s peacetime employer, MGM, which took a proprietary interest in their star during his time in the service. However, Gable’s enlistment presented the publicity-conscious Air Force with an opportunity to both burnish the service’s image, as well as to bolster the morale of the thousands of young draftees being inducted in those months.

While most prominent men brought into the service for specific purposes were directly commissioned and sent through Officer Training (not Candidate) School, Lt. Gen. Henry H. Ar-

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This is one of sixty aircraft artworks from the book.

nold had Gable take the same basic training as everyone else. Men who experienced it with him told me that his presence gave them a boost—they were all going through it together.

Deploying with the 351st BG (H) in May 1943, Gable did take his turn on the guns on five carefully selected missions, but his concentration, in the air and on the ground, was on directing the camera crew in filming those aspects of the air war that would illustrate the life of an aerial gunner. On the ground, he traveled from base to base, filming on and off duty activities, mission preparations, and the aftermath of the air war—the wounded, combat damage. He attracted crowds everywhere he went. The picture taken of him in front of the 303rd BG's famous B-17 *Delta Rebel II* at Molesworth has been reproduced in many works on Eighth Air Force. Vets who served with him or even just ran into him on a ramp told me that just Gable's appearance considerably bucked them up; if Gable could do it, so could they. As the "Flashback" notes, Gable remained in theater until the fall, when it was determined that he had more than enough footage to edit into a coherent movie. He returned to the US to fashion the dozens of reels of film under the auspices of MGM into what eventually appeared in 1944 as "Combat America."

The Air Force had long since solved the gunner recruitment problem by the time the movie was finished. William Wyler's "Memphis Belle," filmed at the same time (at the 91st BG) but released earlier, stole its thunder in any case. "Combat America" does heavily feature 351st BG members, and the group's vets regard it as "their" wartime account. It remains available online and on DVD. Besides the indelible record of the movie, Gable's act of enlisting and going through training in 1942 along with thousands of other men, at a time relatively soon after Pearl Harbor, helped to calm a population still adjusting to the realities of war.

Steven Agoratus
Hamilton, N.J.

CAP and the Total Force

Being a former member of CAP for 27 years, I think it is great and about time that the Air Force starts to give CAP more recognition for the work and capabilities it offers to the Total Force [*"Air Force World: Air Force Adds Civil Air Patrol to Total Force," October, p. 13*]. I served from 1981 through 2008 and was proud to serve my community, state, and country. While serving with CAP we had a saying that "CAP was the best-kept secret the Air Force had." CAP provides services to the country such as search and rescue, counternarcotics, homeland security,

the largest radio network in the country, emergency services, disaster relief, aerospace education, and the cadet program, to name a few of its missions. These services are provided at a minimal cost to the country since members are non-aid volunteers and pay annual dues to participate.

CAP has a rich history that dates back to Dec. 1, 1941, just six days before the attack on Pearl Harbor, when it was established as part of Civil Defense for the looming war threats at the time. In 1942 CAP was transferred to the US Army Air Corps to provide wartime services, from search and rescue, border patrol, transportation of war material, and towing aerial targets, and CAP also flew antisubmarine patrols off the East Coast and in the Gulf of Mexico, with two confirmed German U-boats to its credit. The anti-submarine patrols saved thousands of tons of shipping and hundreds of lives of merchant marine sailors who survived submarine attacks. As with any high-risk endeavor, CAP did suffer losses of members during the war and most of those were air crews on anti-submarine patrol.

After the war and when the Air Force became a separate service in 1947, CAP was transferred to the Air Force in 1948 by Congress as the Official Auxiliary of the United States Air Force. Ever since 1948, CAP has

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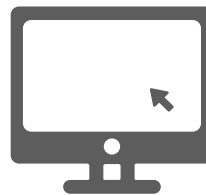
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been serving the country as the fourth branch of the Air Force.

I am proud to have served as a mission pilot flying search and rescue, emergency services, counternarcotics, homeland security, Air Force low-level route missions, and cadet orientation flights. As with any unit in the Air Force, squadron members also serve in various staff positions, including unit commander. CAP offers excellent training for the senior and cadet members, including scholarships for cadets. Seniors are offered some of the best weeklong management training classes in the country, which they pay for.

I enjoyed serving in CAP even when the phone would ring at one or two o'clock in the morning needing a flight crew to launch on a mission. Being a volunteer in CAP has many benefits besides serving the country. I was privileged to experience meeting aviators from the history books, the likes of Maj. Greg "Pappy" Boyington, Ensign George Gay, Col. Paul Tibbets (with three other members of the *Enola Gay*), Capt. Joe Foss, astronaut Wally Schirra, and Robert Hanson and Tony Nastal both of whom served as crew members on the *Memphis Belle*.

I saw my first issue of *Air Force Magazine* at Maryland Wing headquarters, Fort Meade, Md., when I served

on the wing staff in the 1980s. At the time, I was also working in the defense industry and have been a member of the Air Force Association ever since. I agree with retired Lt. Col. C. J. Clemens about [encouraging CAP members to join] AFA [*"Letters: Join Us, CAP," November 2015, p. 7*]. With CAP's 70-plus years of service since Dec. 1, 1941, I am sure *Air Force Magazine* could find much historical information and many stories of service and the continuing service CAP provides for the Air Force and citizens of the United States.

Robert Breakiron
Clermont, Fla.

Talk, Talk, Talk

As an officer for seven years in the Air Force, and 35 years in Air Force acquisition, I must take exception to your editorial in the October *Air Force Magazine* [*"Editorial: Better ... Stronger ... Faster," p. 4*]. From reading the article, one could not be aware that all of Air Force space is not acquired through the Air Force Materiel Command, and as much as I truly respect [Gen. Ellen M.] Pawlikowski (a former SMC commander), I must say that without strong support from both Congress and the President there will be little likelihood of major structural changes in the way DOD and the Air Force acquire their major systems.

The rest, as you noted, is just working around the margins, and all the talk of acquisition reform and better buying power initiatives is just talk.

When General Welsh says that "we are all going to have to accept some risk," it comes from the perspective of someone who has already achieved his rank. However, if you ask today's midgrade officers what they believe, they will tell you that there is no way that they are going to take risks after seeing those who have moved up the ladder be the ones who seem to believe that this is truly a "one-mistake" Air Force. Never in my 30-plus years have I seen such a lack of willingness to take responsibility for their position, but rather a need to coordinate through every possible level even the most benign efforts in the acquisition process (Staff summary sheets are a growth industry.). This does not go unnoticed by junior officers (Do as I do, not as I say.). Leadership by committee is more the norm, and it causes more schedule delay than any technical issues on major programs.

I have to say that the total lack of space-related systems does continue the perception that the Air Force considers space almost an afterthought when considering the priorities of the service's needs.

James Gill
Manhattan Beach, Calif.

AIR FORCE ASSOCIATION'S ANNUAL

AIR WARFARE SYMPOSIUM

AND TECHNOLOGY EXPOSITION



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The New Bomber's Stealthy Constituency

Massive Pentagon contracts enjoy large and powerful constituencies on Capitol Hill, with lawmakers whose districts and states stand to benefit economically from these programs frequently creating a unified front with one goal in mind: to keep the funds flowing.

The hard-fought contracts for the F-35 strike fighter and the KC-46 aerial refueling tanker, for instance, spurred armies of lawmakers whose unwavering support for these programs crosses party lines and transcends ideologies.

Parochialism often trumps partisanship, particularly when thousands of highly skilled and well-paid jobs are at stake. That public, political support is often key to keeping programs off the chopping block, especially as the Pentagon grapples with its priorities in a more frugal spending environment.

For lawmakers who could potentially stand to benefit from the Air Force's next Long-Range Strike Bomber—a program cloaked in secrecy—the situation is quite different. The bomber, a top Air Force procurement priority and the only manned combat aircraft currently in development, comes with a price tag that could top \$100 billion, making it one of the most expensive programs in the Pentagon's weapons portfolio.

When the Air Force announced its decision to pass over defense giants Lockheed Martin and Boeing and instead award Northrop Grumman the coveted and highly lucrative contract to develop and build the military's next fleet of stealth bombers, there was comparatively little reaction on Capitol Hill.

Those lawmakers who commented on the contract award, such as Rep. Joe Courtney of Connecticut, the top Democrat on the House Armed Services Committee's sea power and projection forces panel, focused on the importance of the bomber to the nation's security. Noticeably absent were the usual boasts about local job creation and economic investment.

"As testimony before our subcommittee has shown definitively, our nation's ability to project power and strike from far distances is a cornerstone of our warfighting capabilities—both now and well into the future," Courtney said in a statement. "In the coming months, Congress must do all it can on a bipartisan basis to support this program, while also providing



the necessary oversight to ensure successful execution."

Courtney's home state could stand to benefit from the bomber, particularly if Northrop Grumman's bomber features a Pratt & Whitney engine, but in a rare twist in an industry that strategically selects subcontractors to maximize political advantage, neither Northrop Grumman nor the Air Force are disclosing who is actually working on the program.

"We won't go into any details relative to specific components or subcontractors due to classification and enhanced security," Lt. Gen. Arnold W. Bunch Jr., the military deputy in the Air Force's acquisition office, told reporters Oct. 27.

A fair amount of the work will likely be done in southern California, particularly at the company's Palmdale plant, but other areas that stand to gain an economic boost from the bomber contract remain a question mark.

Lawmakers and congressional staff with the necessary clearances will know where the jobs are, but they won't be able to share the information with their colleagues or the general public.

That, says Todd Harrison of the Center for Strategic and International Studies, could be an issue for the bomber, ultimately handicapping outreach and lobbying efforts against other high-priced programs with a known supplier base.

After all, the bomber will be competing for cash against programs like the F-35, whose supporters eagerly point out that the fighter employs people in nearly every state.

"It makes it harder to defend the program on the Hill if you can't point to constituencies that would be affected," Harrison says.

For now, at least, congressional support for the bomber runs high, with lawmakers in both parties stressing that it remains a strategic priority for the nation. However, that doesn't make it invulnerable to cuts. Lawmakers announced \$5 billion in reductions to the national policy bill on Nov. 3, bringing the defense authorization in line with a two-year budget deal already signed by President Obama. The cuts included a \$230 million reduction to the LRS-B program, due to schedule changes.

Of the four congressional defense committees, only the Senate Appropriations Committee granted the Pentagon its \$1.25 billion request for the program.

Defense officials have repeatedly made it clear that they unequivocally support the bomber, a strategic asset and crucial leg of the military's nuclear triad.

"Building this bomber is a strategic investment in the next 50 years," Defense Secretary Ashton B. Carter said Oct. 27. "It demonstrates our commitment to our allies, and our determination to potential adversaries, making it crystal clear that the United States will continue to retain the ability to project power throughout the globe long into the future." ★

Megan Scully is a reporter for CQ Roll Call.

Competing airpower priorities; Fuzzy Math in Congress; Will LRS-B become a bill payer? Playing games with the budget

CAN THE LRS-B GET THROUGH ... TO CONGRESS?

Now that the Air Force has done the heavy lifting of holding a competition to design and develop the Long-Range Strike Bomber, can it now get Congress to fund building it? Maybe, but USAF will have to do a lot explaining about the program that, so far, it hasn't seemed willing to do.

At an Air Force Association Mitchell Institute for Aerospace Studies seminar on "What's Next for the Long-Range Strike Bomber?" airpower experts said they worry about persuading Congress that the bomber is really needed and that the new jet may not be able to compete successfully against other USAF priorities.

"Congress doesn't perceive it and Congress doesn't believe it" when the Air Force argues that the LRS-B is critical to penetrating modern and future anti-access, area-denial (A2/AD) systems, according to Mackenzie Eaglen of the American Enterprise Institute. She said Congress is used to the Air Force prevailing quickly and decisively in air combat anywhere in the world, and if there is no glaring reason to doubt that will continue, no solution is really needed. Members and their staffs tend to roll their eyes when USAF explains that near-peer adversaries like China and Russia have gone to school on the Air Force's capabilities and prepared countermeasures that will be tough to overcome, she said.

To many members, the fact that USAF faced no air threat in Afghanistan and Iraq over the last 15 years means there's no credible challenge anywhere else, either, Eaglen said. To them, China is still a military backwater and Russia's still suffering from post-Cold War economic paralysis, when in reality both countries—and others, like Iran—have built up modern air defenses and modern fighter aircraft that could hold all current US bombers but the B-2 at bay.

"That question will plague this program," she warned.

Moreover, she said the Air Force has presented the LRS-B poorly so far. Stating a "range" of 80 to 100 LRS-Bs as the required buy is "squishy," she said, suggesting that USAF has not done the required analysis to establish a firm figure. Congress will "automatically" revert to the lower figure of 80, when the actual need is probably closer to 175, she predicted. In addition, USAF has set a cost cap on the program, "tying one hand behind its back." Cost caps invariably are broken—hurting USAF's cred-

ibility—and if the bomber must be given substantial new, unplanned capabilities to keep up with a rapidly evolving threat, the money won't be there.

"The cost cap is going to be a huge problem," she asserted.

The Air Force budget is "not equipped" to handle the LRS-B anyway, Eaglen said, because the service already has more "priority" programs than it has money to buy. The bomber will be competing with the F-35 fighter,



USAF photo by A1C Joel Pfister

How many LRS-Bs does the Air Force need? More than the tiny B-2 fleet.

the KC-46 tanker, and new starts like the T-X trainer, a JSTARS ground radar airplane, and the new Combat Rescue Helicopter.

Given that their purchase periods perfectly overlap, "the bomber will compete with the F-35 forever," she said.

Defense Secretary Ashton B. Carter said at AFA's Air & Space Conference in September that he won't entertain the notion, put forward by USAF Secretary Deborah Lee James, of creating a set-aside account, over and above the regular procurement accounts, to modernize the nuclear triad.

"You don't get money by relabeling it," Carter said, insisting that funds for a new bomber and Air Force ICBM will have to come out of the same pot that funds the many new, needed conventional programs.

A STANDOFFISH ATTITUDE

Retired Lt. Gen. David A. Deptula, dean of the Mitchell Institute for Aerospace Studies, made the point that Congress will also likely revert to fuzzy math in its deliberations about the bomber.

Congress, he said, will look at the cost of stealthy standoff weapons that could be hung on old warhorses like the B-52 and reason that it's cheaper to buy the missiles than a new bomber.

That math holds for a campaign lasting less than a couple of weeks, he said. But in a major theater war—“and who thinks we’re done with those?” he asked rhetorically—cheap direct-attack munitions carried by a stealthy penetrating bomber is a “far more cost-effective” way to go. In 1991’s Gulf War, there were “40,000 to 50,000 aimpoints” that had to be hit, he said. That would be “prohibitive” if conducted with stealth cruise missiles costing \$1 million apiece, versus satellite guided bombs costing \$16,000 each.

Not only that, but the Air Force has failed to explain to Congress that the bomber does more than simply haul bombs. Operating deep behind enemy lines, it will be a “long-range sensor-shooter” that collects vast amounts of information about the enemy, serving as a communications node and dramatically enhancing the capabilities of all the other systems in the fight, providing a degree of interoperability among allies never previously possible, he said.

Deptula argued that the LRS-B and other new systems are “the baseline of the ‘Third Offset’ strategy”—the Pentagon’s shorthand for a rapidly evolving technology base that stays at least one step ahead of the competition.

Without the Air Force explaining that the new aircraft is far more than just a truck, to Congress it will just be “the latest version of the P-47,” Deptula said.

Teal Group analyst Richard L. Aboulafia pointed out that while Congress likes to think of technologies in the lab as technologies deployed, this is false. “Technological superiority,” he said, “really comes down to individual programs, and unless they work out, we really don’t have any.” Failing to build the bomber will mean the US will have to limp along on, at best, the 1980s-era technology of the B-2. The B-52 and B-1 have long since been relegated to standoff or low-threat missions.

Aboulafia also noted that the Air Force’s resolute silence on any details of the program—who Northrop Grumman’s teammates are, where the components will be built, what congressional districts will benefit—hobbles the program and puts it at a distinct disadvantage compared to competing programs like the KC-46 or F-35. Without that information, there will be no advocates, no “champions” for the bomber besides the Air Force, he said. This is a recipe for cancellation or, as Deptula said, “another fiasco” like the B-2, of which only 21 were built.

Aboulafia sketched out four LRS-B outcomes. In the first case, “the budget topline grows,” allowing for more programs like the bomber. In the second, the KC-46, F-35, C-130, and other programs “are stretched out to make more room for the bomber.” In the third, the bomber is identified as “a national budget priority, ... and that’s not going to happen,” Aboulafia asserted, and in the fourth, “the LRS-B becomes a bill payer” for other defense programs. Because it speaks more to future needs—like the ability to strike worldwide while operating from home base—“the only one that makes sense is that the F-35 gets squeezed,” Aboulafia said.

BUDGET BADMINTON

President Obama signed a two-year, bipartisan omnibus budget agreement with Congress Nov. 2, allowing a degree of planning in military spending that the Pentagon hasn’t had since the 2011 Budget Control Act. The separate National Defense Authorization Act, however, turned out to be a game of political badminton, with each side finding reasons to whack the spending plan back over the net.

The overall budget deal “should finally free us from the cycle of shutdown threats and last-minute fixes. It allows us to ... plan for the future,” Obama said before signing

the bill, which averted the danger of a national default. It did so by lifting the debt ceiling, and freed the Pentagon from having to contend with another ruinous imposition of budget sequester for two years.

The budget impasse has effectively been kicked down the road until after the 2016 elections.

Obama vetoed the first version of the NDAA sent to him, however, because he objected to certain provisions. The spending plan—authorizing but not appropriating funding, and more of a policy document—provided the military almost exactly the amount of money proposed by Obama, but by funding a large number of “base budget” items in the Overseas Contingency Operations section. The OCO is supposed to pay for beans-and-bullets needs in operations such as Afghanistan and in the air war against ISIS, not for staples like new equipment and training.

Obama also objected to conditions preventing him from closing the Guantanamo Bay prison camp and a requirement that he provide lethal aid to Ukraine, among other problematic items.

Congress created the BCA in 2011 as a stick to get itself to agree on a budget, a feat that partisanship had made impossible. It held hostage the social programs favored by Democrats and defense programs favored by Republicans, inflicting steep, automatic cuts across the board if no proper budget agreement could be reached. The BCA didn’t work—principally because some Republicans felt they could live with defense cuts if it meant lowering the federal deficit.

The resultant sequester was grossly inefficient, breaking some programs—many that had to be renegotiated at higher cost—and causing maintenance and training backlogs that have still not been worked off. The Air Force had to ground 17 squadrons when sequester hit hard in 2013.

The omnibus deal raised federal budget caps by \$50 billion in 2016 and \$30 billion in FY 2017. Under the NDAA, the Pentagon would see a \$25 billion increase over BCA levels; OCO would have increased by \$38 billion.

Obama called for Congress to get rid of the BCA, calling the work-around of using the OCO “gimmicks.”

“Let’s do this right,” he said. “Let’s have a budget that properly funds our national security as well as economic security. Let’s ... reform our military spending to make it sustainable over the long term.”

In mid-November, as the Senate passed an altered NDAA, informed by the two-year omnibus budget bill, that put less funding in the OCO and trimmed \$5 billion from elsewhere in military accounts.

Sen. Jack Reed (D-R.I.), ranking member on the SASC, said the revised bill “responsibly provides the military with the resources and clarity it needs without an overreliance on OCO.”

Obama had to accept some things he didn’t like, though. The bill prohibited the Air Force from prematurely retiring the A-10 fleet and seven EC-130H Compass Call electronic warfare aircraft. The bill also expressed the sense of Congress that it remains skeptical of the value of base closings—a key request of the Pentagon—and wants more comprehensive studying of the effect of base closings on their surrounding communities. The Air Force, in particular, has pleaded to close bases, saying it has cut force structure by almost half since the early 1990s, but as only been allowed to close 20 percent of its bases over the same period. The money saved by closing the bases could be applied to increasing force structure and making better use of remaining infrastructure, the service says.

The NDAA cut \$230 million from the Air Force’s Long-Range Strike Bomber program, but without prejudice. The Air Force said it agreed with the mark because it was unable to spend that amount on the program in FY 2016. ★

Air Force World

F-16 Finishes Torture Test

An F-16C Block 50 finished 32 rounds of torture tests inflicted over two years in Lockheed Martin's Full Scale Durability Test facility in Fort Worth, Texas. The results will develop data needed to conduct a service life extension program on the type, the company announced Nov. 3.

The aircraft endured 27,713 equivalent flight hours in a stress rig designed to push, pull, and twist its structure to simulate flying the aircraft well past its 8,000 equivalent flight hours design life. After the test was completed, the F-16 was subjected to maximum-load conditions to prove it could still operate within the full flight envelope.

It's now being torn down for inspection of the parts to see which ones held up, which ones fractured, and which ones broke. The data will help the Air Force figure out what kinds of replacement parts and reinforcements it'll need to SLEP 300 F-16s so the aircraft can serve to 12,000 hours.

Boosting European Force Structure

The US needs to build up its presence in Europe because its current force structure is not enough to counter Russian influence in Eastern Europe, said Gen. Philip M. Breedlove, commander of US European Command and NATO Supreme Allied Commander, Europe.

★ screenshot

Air National Guard photo by Lt. Col. Gabe Johnson

Speaking to reporters Oct. 30 at the Pentagon, Breedlove said the US position in Europe “is not adequate to the larger Russian task that we see,” but acknowledged that the permanent force structure probably won’t change.

That’s why the military is working to pre-position equipment forward, including one heavy brigade of materiel, to go along with theater security package deployments of aircraft. The deployment of materiel is needed to rapidly reinforce Europe if called on, Breedlove said.

US Shifting Intel to Russia


Gen. Philip M. Breedlove, commander of US European Com-

mand and NATO Supreme Allied Commander, Europe, said he is asking the Pentagon for more intelligence, surveillance, and reconnaissance support to better keep track of Russia.

The decision comes as the US Intelligence Community reverses a decades-long trend where attention shifted away from Russia toward counterterrorism operations.

“We are gently turning the nose of this ship to get back to what do we need to be looking at,” Breedlove told reporters at the Pentagon on Oct. 30.

For the past 20 years, the US has tried to partner with Russia, but recent actions, such as air strikes supporting Syrian President Bashar al Assad and the incursion into Ukraine, have



11.10.2015

A NATO E-3A Sentry AWACS is refueled by an Arizona ANG KC-135 over northern Germany during a NATO aircrew training mission.

made that difficult. While the US is able to track Russia's broader strategic ambitions, it has not been good at predicting smaller-level activities or tactical moves.

Airman Lost in 1952 Crash Recovered

An airman who was killed when a C-124 Globemaster II crashed in 1952 has been recovered and will be returned to his family.

A3C Loyd L. Matthews was one of 52 people onboard the C-124 when it crashed en route to Elmendorf AFB, Alaska, from McChord AFB, Wash., according to a news release.

Search parties were not able to find or recover any of the service members in November or early December of 1952. However, in June 2012 an Alaska National Guard UH-60 Black Hawk helicopter flying a training mission over the Colony Glacier, near Mount Gannett, saw aircraft wreckage, later determined to be that of the C-124. Crews were able to recover more artifacts in the summer of 2013 and during a short time period each summer since then.

Matthews will be buried with full military honors.

Eleventh GPS IIF Launched

The Air Force on Oct. 31 launched the 11th GPS IIF satellite from Cape Canaveral AFS, Fla., aboard a United Launch Alliance Atlas V launch vehicle, after a leak in ground support equipment pushed the launch window back a day.

Medi-ready: SrA. Edward Checkcinco (l) and Capt. Elyssabeth Casteel (r) transport a "patient" during simulated medical evacuation training at Yokota AB, Japan. The training was completed as part of a readiness inspection being conducted in conjunction with Exercise Vigilant Ace, a US-South Korea combined exercise aimed at enhancing operational and tactical level coordination.

The 10th GPS IIF satellite launched successfully in July and the final GPS IIF satellite, delivered to Cape Canaveral in October, is scheduled to launch in early February.

The satellites help enhance precise GPS for warfighters and civilians, according to an Air Force news release. The GPS constellation is operated by Air Force Space Command's 50th Space Wing at Schriever AFB, Colo.

KC-46 Preferred Reserve Bases Named

Seymour Johnson AFB, N.C., is the Air Force's preferred location to be the first Reserve KC-46 Pegasus tanker base, the service announced on Oct. 29.

The announcement launches the start of an environmental impact analysis process. Given a favorable outcome, it will confirm the choice. The base could receive the aircraft as soon as 2019.

Other "reasonable alternatives" named were Tinker AFB, Okla., Westover ARB, Mass., and Grissom ARB, Ind.

Seymour Johnson was chosen "based on operational analysis, results of site surveys, cost, and military judgment factors," USAF Deputy Assistant Secretary for Installations Jennifer L. Miller said in a news release. The Air Force previously named Altus AFB, Okla., as the KC-46 training base; McConnell AFB, Kan., as the first Active Duty base, and Pease ANGB, N.H., as the first Guard base for the Pegasus tanker.

Guard F-16s Track Wayward Aerostat

Two New Jersey Air National Guard F-16s were scrambled on Oct. 28 to track an Army Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System aerostat that broke free from its mooring station in Maryland and floated into Pennsylvania.

The jets, assigned to the 177th Fighter Wing at Atlantic City Airport, monitored the aerostat and kept local air traffic clear before the blimp came down near Muncy, Pa.

USAF photo by Osakabe Yasuo





Photo by Jimmy May, Bloomsburg Press Enterprise

The JLENS aerostat is about 243 feet long and carries radar and communications payloads. It was stationed at Aberdeen Proving Ground north of Baltimore. Approximately 6,700 feet of the aircraft's metal tether dragged behind the wayward craft, severing power lines and causing power outages in Pennsylvania before it went down near Moreland Township about four hours later.

New Sexual Assault Prevention, Response Strategy

The Air Force on Oct. 28 released a new five-year sexual assault prevention and response strategy intended to “eradicate the crime from our ranks,” said service Secretary Deborah Lee James.

Although the news release says airmen will be familiar with the response portion of the strategy, the document adopts a new “public health approach to prevention,” said Andra Tharp, an Air Force sexual assault prevention expert. The document aims to standardize SAPR education and training throughout an airman's career.

USAF is working with a “contracted prevention training company” to tailor the training program to specific groups and cultures within the service. Focus groups at Little Rock AFB, Ark., and Keesler AFB, Miss., are underway, and the Air Force expects to roll out the new training program in January 2016, states the release.

CV-22 Crew Awarded DFC

A 20th Special Operations Squadron CV-22 Osprey aircrew was awarded the Distinguished Flying Cross and Air Medal with Valor Device for a combat rescue mission last year in the US Central Command area of operations.

Pilots Capt. Jonathan D. Seagle and Capt. John F. Vandenbenden and flight engineers SSgt. Spencer J. Seymore and SSgt. Daniel J. Teel were decorated by Air Force Special Operations Command boss Lt. Gen. Bradley A. Heithold in a ceremony at Cannon AFB, N.M., Oct. 16, according to an Oct. 22 release.

On Dec. 5, 2014, the crew—on a “presidentially directed” nighttime mission—responded to an urgent evacuation request from special operations forces under intense fire. The crew successfully maneuvered the tilt-rotor aircraft into a

Up, Up, and Away: An unmanned US Army surveillance blimp drags a tether line as it floats through the air south of Millville, Pa., on Oct. 28. The huge helium-filled blimp broke from its mooring in Maryland and drifted, tracked by two fighter jets, across rural Pennsylvania for hours, finally coming down near Muncy.

severely restricted landing zone with minimal visibility, during an ongoing firefight in a “dangerous insurgent-held village,” according to two of the citations.

Seymore exited the CV-22 despite enemy fire to assist in loading the critically injured special operations troops. The

KC-46 Tests Boom and Drogue

The first Boeing KC-46A Pegasus tanker fully equipped with refueling gear extended both its boom-type and probe-and-drogue-type equipment in two separate test flights conducted in early October, according to the Air Force.

Drogue hoses and baskets—needed to refuel Navy, Marine Corps, and many types of allied aircraft—were deployed from the centerline and wing pod stations during an Oct. 8 flight, and the flying boom was extended on a flight the next day. The flights were, respectively, the third and fourth for the prototype tanker, which made its first flight Sept. 25.

Air Force tanker Program Executive Officer Brig. Gen. Duke Z. Richardson, in a statement, said the tests signal “real progress” toward the goal of demonstrating in-flight refueling. Such a test, likely with an F-16, is tentatively scheduled for late this month or early next year, a Boeing spokesman said.

The boom is to be capable of passing 1,200 gallons per minute of fuel, whereas the drogue systems on the KC-46 are to be able to pass 400 gallons per minute. The KC-46 is designed to refuel one boom-type aircraft or up to three drogue-type aircraft at a time.



Those Who Gave All: USAF Lt. Gen. Timothy Ray (l) and CMSgt. Kaleth Wright (r) gaze across rows of white cross grave markers after a Veterans Day ceremony at Cambridge American Cemetery, UK, Nov. 11. The remains of 3,812 Americans killed during World War II are interred there.

crew flew low-altitude evasive maneuvers to safely exfiltrate the area and flew the casualties for medical treatment aboard a Navy vessel.

The unplanned landing was the CV-22's first combat ship-board operation, according to Cannon officials.

Whiteman, Malmstrom Tops in Global Strike Challenge

Air Force Global Strike Command named the top bomber and ICBM wings during a ceremony marking the conclusion of the annual Global Strike Challenge at Barksdale AFB, La.

The 509th Bomb Wing from Whiteman AFB, Mo., and the Missouri Air National Guard's 131st Bomb Wing took home the Fairchild Trophy for best bomb wing for the fourth time since the competition began in 2010. The 341st Missile Wing at Malmstrom AFB, Mont., claimed the Blanchard Trophy for the best ICBM wing for the first time as part of the Global Strike Challenge. The wing last won the trophy in 2008 during Air Force Space Command's Guardian Challenge, a wing spokeswoman told *Air Force Magazine*.

Airmen from AFGSC's nine wings participated in the 2015 challenge along with units from Air Combat Command, the Air National Guard, and Air Force Reserve Command.

McCain Slams USAF for OCX Delays

Senate Armed Services Committee Chairman Sen. John McCain (R-Ariz.) slammed the Air Force for the delays and cost growth of its ground-based satellite control system. The

system, known as OCX, is a critical part of the Air Force's next generation Global Positioning System.

In a new report in his "America's Most Wasted: Indefensible" series, McCain said modernizing GPS technology is so critical, "we can't afford to get it wrong." The report notes that because of poor contractor performance and weaknesses in the Pentagon's acquisition and software development practices, OCX will likely be delivered four years late and cost more than twice the price estimated in 2010.

Keeping the A-10 Fight Alive

Ten senators, including Senate Armed Services Committee Chairman John McCain (R-Ariz.), penned a letter to Air Force Secretary Deborah Lee James on Oct. 9 criticizing the Air Force for what they called a "gradual backdoor divestment" of the A-10 fleet, which they said is "inconsistent with congressional intent."

A-10 depot-level maintenance funding has dropped 40 percent from Fiscal 2014 to Fiscal 2015, from \$79.4 million to \$47.5 million, stated the letter.

"This dramatic cut in the Air Force's support for A-10 depot-level maintenance has created an A-10 readiness deficit that endangers the Air Force's ability to provide a sufficient number of deployable A-10s to meet combatant commander requirements," according to the letter.

Rep. Martha McSally (R-Ariz.), a retired Air Force colonel and A-10 pilot, said troops on the ground "will die" if the A-10 is retired.

The War on Terrorism

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

Casualties

By Nov. 16, a total of 15 Americans had died in Operation Freedom's Sentinel in Afghanistan, and a total of 10 Americans had died in Operation Inherent Resolve.

The total includes 25 troops and one Department of Defense civilian. Of these deaths, six were killed in action with the enemy while 19 died in noncombat incidents.

There have been 63 troops wounded in action during OFS and five troops in OIR.

Senators Push for Syria No-Fly Zone

Members of the Senate Armed Services Committee on Oct. 27 expressed their frustration that the US has not enacted a no-fly zone in Syria to stop the regime of President Bashar al-Assad from using barrel bombs and to protect coalition-supported forces from Russian air strikes.

"This is not only harmful to our interests, it is immoral," said Sen. John McCain (R-Ariz.), the committee chairman, at a hearing on Capitol Hill.

Joint Chiefs Chairman Marine Corps Gen. Joseph F. Dunford Jr. said the US is still supporting the troops it previously trained, and that the US has the capability to defend other coalition-supported troops if they are attacked by the Russians.

Defense Secretary Ashton B. Carter said the US does not have "a concept of operations for a no-fly zone at this time," but said there is a "moral obligation" to support the

troops that went through the train and equip program. But McCain said Carter was making "a distinction without a difference." He added, "These are American-supported and coalition-supported men who are going in and being slaughtered."

Sen. Joe Donnelly (D-Ind.) also asked Carter why the US is "unwilling to send a message to Assad that if he continues with barrel bombing, we will stop him and crater his runways." Carter said the US has not "taken that step" to engage with the Syrian military. "Our priority has been to combat [ISIS]," Carter said.

F-16 Hit by Small-Arms Fire in Afghanistan

A US F-16 on Oct. 13 was hit by small-arms fire during a mission in Afghanistan, forcing the pilot to jettison two fuel tanks and three weapons before returning to base, Pentagon spokesman Navy Capt. Jeff Davis said.

The jet was hit in a stabilizer of one of its munitions during a low-level flight, he added. It was flying in the Sayid Karam district of eastern Paktia province, an area largely under Taliban control, reported Agence France-Presse.

Militants posted pictures online posing with the discarded fuel tanks and weapons. Initial reports ruled out any larger weaponry, such as surface-to-air missiles, involved in the incident, Davis said.

A contingent of F-16s from Aviano AB, Italy, are assigned to the 555th Expeditionary Fighter Squadron at Bagram Airfield, Afghanistan.

"It is simply unacceptable that the American taxpayer is now on the hook for an additional \$1.1 billion because the Air Force continues to bungle the development" of OCX, he said.

Matthew Gilligan, vice president of navigation and environmental solutions at Raytheon, said in a statement emailed to *Air Force Magazine* that the OCX program "is on a strong foundation," in spite of past challenges.

US Deploys Troops to Cameroon

The US is deploying up to 300 military personnel to conduct airborne intelligence, surveillance, and reconnaissance in Cameroon to help African troops fight the terrorist group Boko Haram, President Obama said in an Oct. 14 letter to Congress.

The initial group of 90 troops began deploying Oct. 12 to the country following an agreement with the government of Cameroon. "These forces are equipped with weapons for the purpose of providing their own force protection and security, and they will remain in Cameroon until their support is no longer needed," Obama wrote in the letter.

The deployment to an undisclosed "expeditionary contingency support location" will be temporary, Defense Department spokeswoman Army Lt. Col. Michelle L. Baldanza told *Air Force Magazine*. The ISR flights will help African partners secure their borders, and the information collected from the unarmed remotely piloted aircraft will support counter-extremist operations.

Airmen March Honored Fallen Brothers

Twenty special tactics airmen marched a combined 812

miles over the course of 10 days in October in memory of two of their comrades who were killed in an insider attack in Afghanistan.

Capt. Matthew D. Roland and SSgt. Forrest B. Sibley died from injuries sustained in an attack by two men dressed in Afghan security forces uniforms at a forward operating base in Helmand province on Aug. 25.

The continuous relay began Oct. 4 at JBSA-Lackland, Texas, with each two-man team walking about 12.6 miles per leg, carrying a 50-pound rucksack and baton engraved with the name of one of the two fallen airmen, according to a press release.

By the Numbers

50

Tons of small-arms ammunition Air Force C-17s air-dropped to a newly vetted group of moderate Syrian rebels on Oct. 11. The airdrop was the first step in a new approach to training and equipping US-approved fighters in Syria and included 100 bundles of ammunition, such as machine gun rounds, mortars, hand grenades, and rocket-propelled grenades.

The group ended the march together, walking the final mile from Hurlburt Field's front gate with Sibley's and Roland's friends and family. The first memorial march was in 2009, to honor SSgt. Tim Davis, who was killed by an improvised explosive device in Afghanistan.

Scientific Advisory Board Unveils 2016 Studies

The Air Force Scientific Advisory Board on Oct. 9 unveiled its studies for 2016, focusing on directed energy, anti-access, area-denial operations, data analytics to support decision-making, and responding to uncertain and adaptive threats in electronic warfare.

The board, led by former USAF chief scientist Werner J. A. Dahm, will first meet in January and finalize its reports in June. The board's quick-look study on directed energy, determining whether a laser-equipped AC-130J is feasible, will finish in April, Dahm said.

For the long-term studies, the study of data analytics will examine whether the service can use industry's lessons learned on challenges with multisource data and multiple classification levels. The board will examine machine-learning techniques for aircraft to probe, sense, and respond to adaptive electronic threats. The Air Force has had to develop responses to electronic warfare to be uploaded to a platform, but future threats could force aircraft to "change their waveforms on the fly," Dahm said.

Lastly, the study of command and control in an A2/AD environment will focus on ways for the Air Force to map a battlespace from afar using emerging technologies such as over-the-horizon radar and uniting pictures from disparate sources of legacy aircraft.

Preventing Suicide in the Total Force

The service is still working on a comprehensive review of its suicide prevention strategy, the Air Force surgeon general told a congressional panel Oct. 8.

Last year, 62 Active Duty airmen died by suicide, up from 48 in 2013, according to a report released this month by the


Department of Defense. Thirty-one Active Duty airmen had died by suicide as of early October 2015, according to the report. Two Air Force Reservists and 13 members of the Air National Guard committed suicide during that time period.

The comprehensive review launched by Chief of Staff of the Air Force Gen. Mark A. Welsh III in April included a prevention summit. It took place in September and produced recommendations for refreshing strategy and building action plans.

Boeing To Overhaul ICBM Testing

The Air Force awarded Boeing \$110 million for an overhaul of the Minuteman III ICBM flight test system. Under the contract, announced Oct. 2, Boeing will redesign the flight telemetry and termination system for the Minuteman III fleet, with work set to be completed by Aug. 31, 2019.

Work begins with almost \$5 million in research, development, test, and evaluation Fiscal 2015 funding and takes place at Boeing facilities near Hill AFB, Utah, along with sites in California and Ohio.

The Air Force periodically test launches unarmed Minuteman III ICBMs from its range at Vandenberg AFB, Calif., to ensure the fleet stays reliable. 

Senior Staff Changes

RETIREMENTS: Maj. Gen. H. Brent **Baker Sr.**, Maj. Gen. Scott M. **Hanson**, Maj. Gen. Randy A. **Kee**.

CONFIRMATIONS: To be ANG Major General: Stephen E. **Markovich**. **To be ANG Brigadier General:** Michael E. **Flanagan**, Timothy J. **LaBarge**, Howard P. **Purcell**, Philip R. **Sheridan**, David W. **Silva II**, Allan L. **Swartzmiller**, Thomas K. **Wark**.

CHANGE: Maj. Gen. Sandra E. **Finan**, from Spec. Asst. to the Asst. C/S, Strat. Deterrence & Nuclear Integration, USAF, Pentagon, to Dep. Chief. Info. Officer, C4 & Info. Infrastructure Capabilities, DOD, Chief Info. Officer, Pentagon.

COMMAND CHIEF MASTER SERGEANT CHANGE: CMSgt. Anthony W. **Johnson**, from Command Chief, 31st FW, USAFE, Aviano AB, Italy, to Command Chief, 7th AF, PACAF, Osan AB, South Korea.

SENIOR EXECUTIVE SERVICE CHANGES: Paul **Antonik**, to Chief Scientist, Info. Directorate, AFRL, AFMC, Rome, N.Y. ... David H. **Dentino**, to Dir., Instl. Spt., AF Instl. & Mission Spt. Center, AFMC, JBSA-Lackland, Texas ... Gail P. **Forest**, to Dir., Engineering & Tech. Mgmt. Directorate, AFMC, Wright-Patterson AFB, Ohio ... Robert T. **Marlin**, to Tech. Advisor, Mil. Intel. Prgm. Resources, ISR Resources Directorate, DCS, ISR, USAF, Washington, D.C. ... Michael D. **Petersen**, to Asst. Auditor Gen., Acq., Log., & Financial Audits, AF Audit Agency, Office of the Auditor Gen. of the AF, OSAF, Wright-Patterson AFB, Ohio ... Susan J. **Thornton**, to Dir., Info. Dominance Prgms. Directorate, Office of Asst. SECAF, Acq., Washington, D.C.

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Encouraging Competition in Space

The Air Force Space and Missile Systems Center is working with SpaceX and United Launch Alliance to make sure both can bid on the first competitive national security space launch.

Claire Leon, director of the SMC's launch enterprise directorate, told reporters in a conference call that the center is "actively working with SpaceX to add the ... Falcon upgrade to the list of certified products," and is working with ULA to make sure they can bid despite bans on the use of Russian rocket engines.

"It is critical to the Air Force that we get more than one bidder," Leon said, noting that language in the proposed National Defense Authorization Act would allow ULA to use four Russian engines, and if that is not approved, they could pursue a national security waiver.

The Air Force in September released the final request for proposals for GPS III launch services; it is to be the first of nine competitive launch services under the Phase 1A procurement strategy. Leon said the Air Force's priorities, both mandated by law, are maintaining resilience in launch capability and "supporting competition where it credibly exists."

By Robert S. Dudley

Half-Assed

“The [US] strategy [in Syria] has completely fallen apart. Russia, Iran, and Hezbollah are gonna fight for their guy, and we’re not gonna do a damned thing to help the people who want to change Syria for the better by getting rid of the dictator in Damascus. ... You have turned Syria over to Russia and Iran. ... All what I can say is: it is a sad day for America, and the region will pay hell for this. ... This [is] a half-assed strategy, at its best.”—*Sen. Lindsey O. Graham (R-S.C.), to Pentagon chief Ashton B. Carter and Gen. Joseph F. Dunford Jr., Chairman of the Joint Chiefs of Staff, Senate Armed Services Committee, Oct. 28.*

Iron-Assed

“He just became very hard-line and very different from the Dick Cheney I knew and worked with—just iron-ass. [He seemed to be] knuckling under to the real hard-charging guys who want to fight about everything, use force to get our way in the Middle East. ... I’ve concluded that [Cheney’s spouse] Lynne Cheney is a lot of the eminence grise here—iron-ass, tough as nails, driving.”—*President George H. W. Bush, from his new book, quoted in the New York Times, Nov. 5. Dick Cheney was Defense Secretary under Bush 41.*

Kick-Assed and Iron-Assed

“I think he [Former Secretary of Defense Donald H. Rumsfeld] served the President badly. I don’t like what he did, and I think it hurt the President having his iron-ass view of everything. I’ve never been that close to him anyway. There’s a lack of humility, a lack of seeing what the other guy thinks. He’s more kick-ass and take names.”—*George H. W. Bush, same source.*

Bomber Backer

“We’re 150 percent behind the bomber. It’s strategically important to the country. It’s incredibly important that we move into this next phase. We’re excited they’re moving forward with it. ... Our subcommittee and I believe the full committee is going to be ... making sure this becomes a reality.”—*Rep. Randy Forbes (R-Va.),*

House Seapower and Projection Forces subcommittee, statement on USAF’s Long-Range Strike Bomber, Oct. 27.

Breedlove Doctrine

“I really don’t think anyone truly understands what [Russian President Vladimir] Putin is about. ... We watch the capabilities and the capacities that he builds, ... and from those capabilities and capacities, we can deduce what he might want to do. ... That’s how I try to determine where Mr. Putin might be headed. ... The thing that worries me is a snap exercise or an exercise that turns into an invasion. Remember that, for almost two decades, we have been trying to make partners out of Russia. And what we realize now is that we do not have a partner in Russia. And so now we have to refocus our intelligence and redevelop those indications and warnings that make sure we don’t get surprised.”—*USAF Gen. Philip M. Breedlove, Supreme Allied Commander, Europe, interview on NPR, Nov. 2.*

China’s Warning

“If the United States continues with these kinds of dangerous, provocative acts, there could well be a seriously pressing situation between frontline forces from both sides on the sea and in the air, or even a minor incident that sparks war. I hope the US side cherishes the good situation between the Chinese and US navies that has not come easily and avoids these kinds of incidents from happening again.”—*Adm. Wu Shengli, China’s naval commander, statement on sailing of US Navy cruiser USS Lassen in China-claimed area of South China Sea, The Guardian, Oct. 29.*

Forcing Failure?

“[Problems in the VA] have not been as widespread as it has been made out to be. ... Bring in people and just tackle (it), ... have an ongoing review of the care that is being given, do more to make sure that every VA hospital is delivering care to the highest standard of the community. ... They [Republicans in Congress] try to create a downward spiral—‘Don’t fund it to

the extent that it needs to be funded, because we want it to fail.”—*Hillary Clinton, Democratic presidential aspirant, MSNBC broadcast, Oct. 26.*

Blast From McCain

“Hillary Clinton’s remarks downplaying the significance of the scandal in which veterans died awaiting care at the VA hospitals in Phoenix and across our nation while corrupt bureaucrats collected bonuses are disgraceful and show a total lack of appreciation for the crisis facing veterans’ health care today. ... [She] owes an apology to the families of the veterans who lost their loved ones due to mismanagement and corruption in the federal government.”—*Sen. John McCain (R-Ariz.), statement issued on Oct. 26.*

General Trump Checks In

“When they say that this [the F-35 fighter] cannot perform as well as the planes we already have, what are [we] doing? And spending so much more money? I do hear that it’s not very good. I’m hearing that our existing planes are better. And one of the pilots came out of the plane, one of the test pilots, and said, ‘This isn’t as good as what we already have.’ ... So when I hear that, immediately I say we have to do something, because you know, [we’re] spending billions.”—*Donald Trump, Republican presidential aspirant, Hugh Hewitt radio program, Oct. 22.*

From the Black Lagoon

“US nuclear strategy and planning needs to change. ... US policymakers will have to ask searing questions that they have avoided for a quarter-century. How do we respond to nuclear blackmail? What risks are we willing to incur by ignoring direct nuclear threats designed to forestall US military activities abroad? Are we really willing to trade Seoul for Pyongyang, or Los Angeles for Tokyo? ... The questions themselves seem like the return of creatures from a black lagoon of the global past, but not preparing for them may assure a catastrophe of unimaginable proportions.”—*Michael Auslin, American Enterprise Institute, writing in The National Interest, Oct. 28.*



COURAGE **in the Courtyard**

By Aaron M. U. Church, Senior Editor

MSgt. Ivan Ruiz earned the Air Force Cross for his efforts to save two wounded comrades from Taliban determined to kill the injured Americans.

Two CH-47 Chinook helicopters pounded through the early morning darkness of Dec. 10, 2013, bound for the village of Mushan—a Taliban hot spot 30 miles west of Kandahar, Afghanistan. MSgt. Ivan Ruiz, a pararescueman deployed with the 22nd Expeditionary Special Tactics Squadron, was inserting as the rescue specialist with a 12-man Army Special Forces Alpha Team and some 40 Afghan commandos on a clearing operation.

The objective area was “known to harbor insurgents, weapons caches, and improvised explosive devices,” noted Ruiz.

Inserting at 4 a.m., the air assault force hoped to catch insurgents in the area by surprise.

The twin-rotor Chinooks whipped up a dust storm approaching the landing zone. Ruiz and his team ran down the helicopter’s rear ramp into a brownout and were promptly greeted by enemy gunfire as the Chinooks departed back to base. “As soon as we exited the aircraft, we begin taking fire,” he told *Air Force Magazine* in an interview.

Several AH-64 Apache attack helicopters had accompanied the Chinooks, and combat controller TSgt. Matthew McKenna—also embedded with the team—called for clearance to unleash the “gun birds.” With surprise already shattered, the Apaches opened fire with their 30mm chain guns, handily “neutralizing the threat,” according to Ruiz. His team moved toward the village and breached the surrounding wall to gain access to

a suspected insurgent stronghold. After they were through, “we were then told to go conduct damage assessment” of the Apaches’ handiwork.

The helicopters had been firing at an enemy site, and Ruiz pushed on with several Special Forces and a squad of Afghans to check it out. “On the way in, we ended up clearing a couple of IEDs, and as soon as we were 50 yards from the compound, we began taking fire,” Ruiz recounted.

An insurgent had taken up a firing position on top of the compound and now Ruiz’ squad was once again under

A US Army Apache helicopter lands at Bagram Airfield, Afghanistan. Apaches fired on the enemy site but did not clear it out enough for the team on MSgt. Ivan Ruiz’s mission.



Courtesy photo via MSgt. Ivan Ruiz



Army photo by Capt. Richard Barber



Army photo by Spc. Daniel P. Shook

MSgt. Ivan Ruiz in Afghanistan in 2013. In addition to being awarded the Air Force Cross, Ruiz received a Bronze Star Medal with Valor for actions in another firefight in September 2013.

fire. The 15 or so troops in Ruiz' group split into three elements to storm the compound simultaneously from several different points. Someone succeeded in dropping the machine gunner "and I set my guys up as security outside the compound guarding the door," Ruiz said.

SECOND THOUGHTS

The two other elements proceeded into the compound's courtyard and rushed toward the main building. "One of the Special Forces guys threw two grenades into that building" before shouting to the insurgents inside to come out and surrender. Four individuals emerged from the doorway into the darkness and "seemed to surrender," said Ruiz.

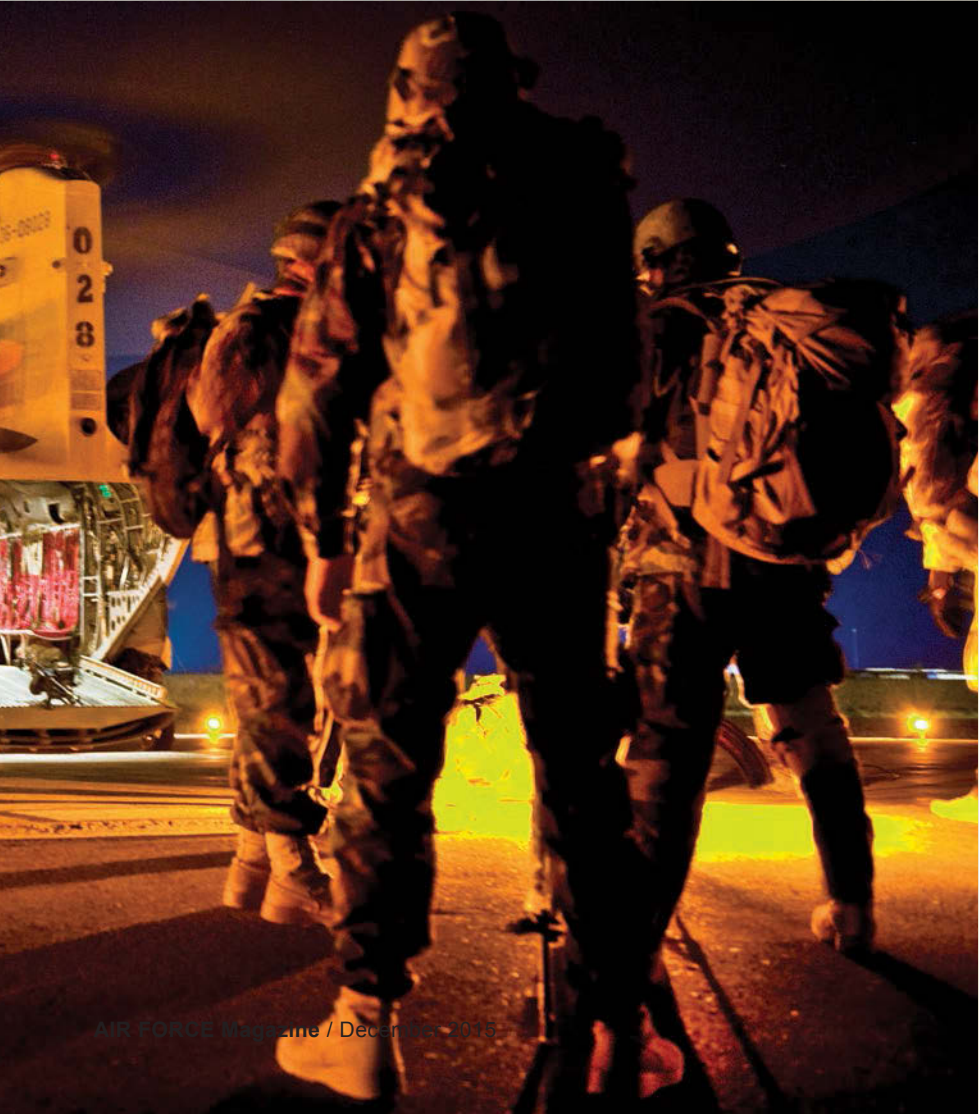
Instead, they were carrying rifles "and immediately we started engaging," with the joint US-Afghan team killing all four of the fighters just outside the doorway.

At about this time, the Afghan National Army troops began having second thoughts about the operation. They decided to wait for sunrise to finish securing the compound—"which wasn't the right answer," Ruiz stressed. "We needed to get things done, because we were already inside the compound." The Special Forces team leader pressed the Afghans to "finish what we came there to do" said Ruiz, but "it wasn't happening—they weren't going for it."

With the Afghans taking the bench, Ruiz and two of the Green Berets



A UH-60 Black Hawk medevac helicopter lands in the Afghanistan dust. Ruiz and his comrade loaded the two wounded Americans on a Black Hawk and got them life-saving medical care.



“decided to go ahead and sweep the courtyard” on their own.

The three spread out toward two small, mud huts 75 feet or so across the courtyard—one to each side ahead of Ruiz. “I had a bad feeling about the mud hut to my left, so I stopped short while the other two guys continued to move through,” he said. Ruiz took up a defensive position just outside the doorway and several seconds later, an insurgent with a rifle appeared at the entrance. Ruiz instantaneously shot him and as the enemy fell backward into the hut, bullets sparked off the ground near him. One of the Green Berets who had advanced beyond Ruiz was struck in the chest, with a round igniting the tracers in a magazine tucked into his gear. Then the other soldier went down.

Through night-vision goggles, “I could see my two buddies fall to the ground, so I turned and began engaging where I felt that the fire was coming from” judging by how they fell, Ruiz explained.

The shooter was in the second mud hut to Ruiz’ right, so he started moving toward the target. As he approached the hut, he could see that advancing to the left would funnel him into a tight spot. He attempted instead to advance toward the injured comrades ahead of him, but the shooter had Ruiz in his sights, making it impossible for the airman to move up.

Ruiz held short, firing at the hut until he made out silhouettes of the shooters. “I saw that they were holding their AK-47s outside the windows and the doors, trying to reach the guys they had already hit on the ground,” Ruiz said. He was determined to prevent the shooters from venturing outside the hut for a clear shot at his already injured comrades and fired at the windows and doors to keep the enemy inside.

As he traded shots with the insurgents, Ruiz started hearing “rounds coming from behind” him, from the Afghan troops who had decided to re-

Afghan commandos and US forces board a CH-47 Chinook in Kandahar province, Afghanistan, in 2010. US and Afghan military members differed on how to clear the enemy stronghold during the December 2013 firefight in Mushan.



USAF photo by SSgt. Jonathan Snyder



Courtesy photo via MSgt. Ivan Ruiz



USAF photo by A1C Jeff Parkinson

An Air Force pararescueman, like Ruiz, scans for ground threats during a mission over Afghanistan. In addition to their life-saving skills, pararescue teams train to assault, secure, and dominate an objective area.

join the fray and were spraying gunfire over his head. “At that point, I realized, ‘This is where I’m going to stand; this is where my fight’s going to be—whatever happens, happens,’” reflected Ruiz. The shootout continued for several minutes. Ruiz managed to make it to within 25 feet of the hut—still about 15 feet from his squad mates lying on the ground ahead and to his right—all while suppressing enemy fire.

Another Special Forces soldier eventually joined Ruiz and kept up suppressive fire while Ruiz attempted to low-crawl forward to begin treating the wounded. “Rounds were hitting right in front of me so I had to stop. I got back to my knee, started suppressing again.”

Ruiz was trying to reload his M4 carbine while looking through his night-vision goggles when his partner shouted, “Grenade!”

He heard the grenade “fall right in front of us with the sound of a rock,” but they couldn’t see it, Ruiz said. “We pretty much jumped on each other, trying to cover each other from the blast, and we waited. Nothing happened for about five seconds. No blast, so we just got back to our knees and started engaging.”

A minute later, using his night-vision device, Ruiz saw a drape in the hut window move. “I was visually able to see one of the bad guys, so I pointed my laser” at the window, Ruiz said, and he called out to his buddy to toss in a grenade. “He throws a grenade right into the window—the blast goes off, and then immediately, a grenade comes back out at us,” Ruiz said. The two jumped on each other again and Ruiz recalled tilting his helmet forward to shield as best he could from the explosion. “I could feel the blast come over us,” but the attack was ineffective and both Americans scrambled back to their knees and began firing again. Ruiz tried low-crawling to the casualties once more only to be blocked by the snap of bullets impacting directly in front of him.

GETTING THE UPPER HAND

A third grenade thudded down next to Ruiz, his buddy, and an Afghan commando who had just come up from behind. The other two troops jumped up to move away from the grenade while Ruiz stayed low. “They both got blasted off their feet,” he recalled.

The Green Beret miraculously popped up and he and Ruiz resumed firing at the hut. “At this time our team sergeant decides that he’s going to quit messing around with the commandos and he’s going to do what he needs to

do,” Ruiz said. “He pretty much came through a hail of gunfire to our left and was able to find a good position” he could use to effectively keep the enemy’s heads down.

Once the team sergeant was confident he’d gained the upper hand and had the enemy bottled up, he shouted to Ruiz and his comrade to reach the wounded again. “We were able to drag them back to a small area where I was able to treat them” using the night-vision equipment to see the wounds. “As soon as I was done packaging and administering whatever aid I could, the Army medevac bird landed,” said Ruiz. The UH-60 helicopter touched down outside the compound, roughly 150 feet from where Ruiz was treating the two SF soldiers. “We immediately got them moving, got them on the bird, passed all my medical information over to the aircrew,” and quickly rejoined the fight back in the compound.

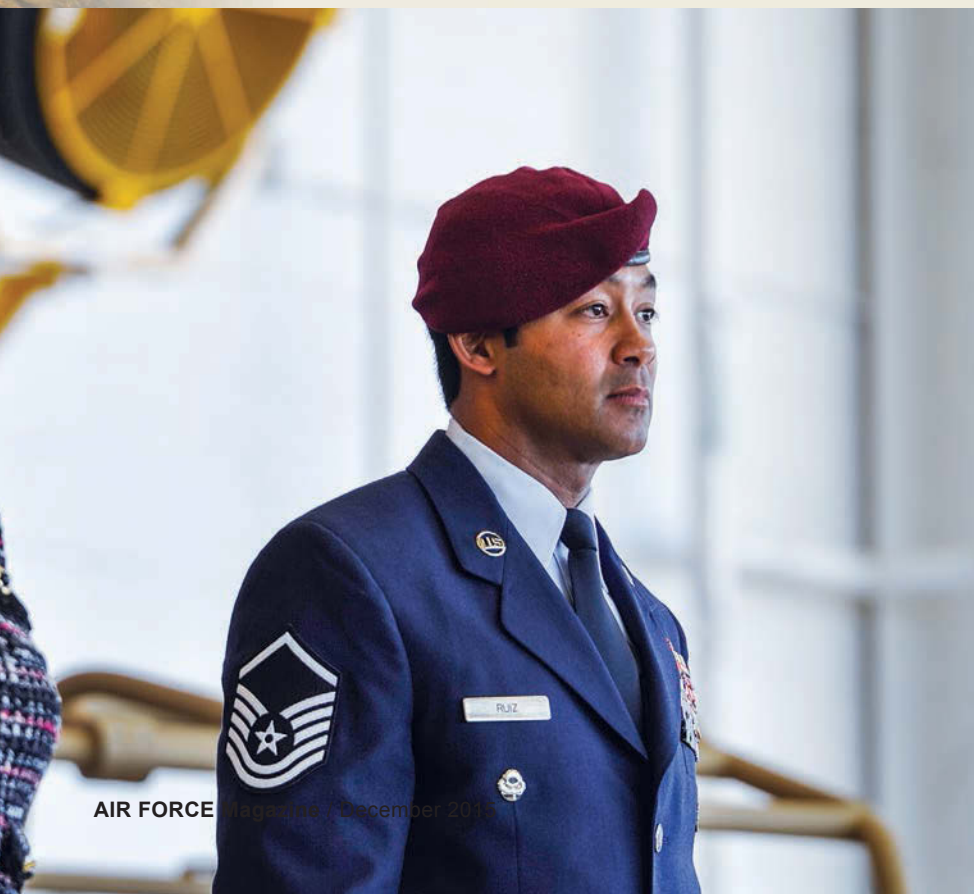
The team finished clearing the compound, and “including the Apache engagements, ... we ended up killing 13 bad guys and we removed a large weapons cache, IEDs, and some communications devices they were using against us,” said Ruiz. The Alpha Team and Afghan commandos held the village for another 36 hours.

Operations to eradicate insurgents and break the enemy stronghold on the area around Mushan had begun in 2009 when US forces had first tried to clear it, so it had taken four years to secure the village. The Special Forces team still operating in the area now has “said that there’s nothing going on in that village” since that day, Ruiz said.

Ruiz received the Air Force Cross—the service’s highest award for valor in combat and the second highest US military honor. Air Force Secretary Deborah Lee James presented the Air Force Cross to Ruiz in a ceremony at Hurlburt Field, Fla., on Dec. 17, 2014.

“Today we are adding his name to an extremely small list of five additional airmen, since Sept. 11, 2001, who demonstrated this highest caliber of service and excellence,” James said. The cross is reserved for “unequaled courage and bravery despite overwhelming odds, and that’s exactly what he did.”

Far left: Ruiz plants a flag during a 2013 mission in Afghanistan. Left: Ruiz at the ceremony where Air Force Secretary Deborah Lee James (l) awarded him the Air Force Cross.



THE NEW LIMITS TO HARDENING

By Marc V. Schanz, Senior Editor

Threats to air bases have evolved. The solutions must, too.

Crew chiefs prepare to launch a B-2 at Andersen AFB, Guam. China's development of air-launched cruise missiles poses a growing threat to the PACAF base.



TARGETING enemy airfields is a strategy as old as military aviation itself, but several trends are pushing Air Force leaders to consider new approaches and investments to increase the survivability and resiliency of American airpower. New analyses and growing anti-access, area-denial (A2/AD) concerns from more capable missile technologies are prompting a more diversified and creative approach to ensuring future air operations are successful.

USAF and Department of Defense officials are examining how they can ensure the survivability of forward based airpower worldwide. In Europe, for example, planners are concerned about a threat that's been given little attention since the end of the Cold War: airborne and missile attacks on main operating bases (MOBs).

In addition to closing a qualitative military gap with new equipment and better training, Russia has invested in improving its strategic aircraft and standoff weapons. In 2014 the US State Department formally charged Moscow with violating the 1987 Intermediate-

Range Nuclear Forces (INF) Treaty by testing a new ground-based cruise missile, known as the R-500, with a range between 300 and 3,400 miles.

Since the 2014 Crimea crisis especially, USAF has deployed assets around the continent—many times from facilities that do not feature the robust infrastructure and recovery capabilities at the command's MOBs. The US and other NATO nations are examining how to better enhance these locations.

In June 2015, US Air Forces in Europe-Air Forces Africa officials declared they are going to push for funds in the upcoming five-year budget plan to make targeted investments at both USAFE-AFAFRICA bases, as well as locations owned by US allies. (The European Reassurance Initiative, a post-Crimea fund for expanded Europe operations, is critical to these investments.)

“The one thing I have come to realize ... is the importance of airfields,” USAFE-AFAFRICA boss Gen. Frank Gorenc told reporters at AFA's Air & Space Conference in September. “Airfields are our platforms. And

they have to have certain things on those airfields that would allow for high-volume combat operations.” One of the unintended consequences of Russia's actions in Ukraine, he added, is a renewed focus on the importance of airfields in contingency planning. Many of the countries where USAF had deployed air assets as part of Operation Atlantic Resolve have the same concerns, and want to build up both infrastructure at fields as well as capability to recover their functionality in the event of attack.

Since the end of World War II, hardening has emerged as a key attribute of airfield survivability. Over time, concepts such as revetments and reinforced aircraft shelters developed, as the vulnerability of air assets in the open became more clear and acute.

By the end of the Vietnam War, US and allied militaries were investing in aircraft hangars with reinforced concrete and blast doors in Europe, and stood up the first prototypes in West Germany at facilities such as Bitburg and Ramstein air bases, according to a June 2015 RAND study on air



Airmen mix water and concrete to patch a hole during an airfield damage repair training exercise at Andersen.



Airmen and marines use front end loaders to fill and level a crater on a mock runway at Kadena AB, Japan.



REBROADCAST

Chinese land-attack cruise missiles rolled through the streets of Beijing during a parade in September celebrating the 70th anniversary of the end of World War II. China's missile activity is putting the spotlight on the need for hardening of US assets in the Pacific.

base defense challenges, “Air Base Attacks and Defensive Counters,” by Alan J. Vick. Though these could not defeat precision attack, the report stated, defenses could protect aircraft from near misses and “large unitary weapons.”

By the time the Cold War ended, the US had built approximately 1,000 hardened aircraft shelters at bases in both Europe and across the Pacific—many of which are still in service today at facilities such as Spangdahlem AB, Germany, Misawa AB, Japan, and other forward bases. Base enhancement was a project undertaken by the Soviet Union and its allies too, and today some 700 airfields around the world in 70 countries feature some version of a hardened shelter, according to the RAND study.

USAF’s overseas presence in Europe and Asia is today far smaller than during the later years of the Cold War. Because of this, the service is shifting its global posture to get more out of its reduced force as demand for airpower continues to go up. USAF and DOD leaders now routinely express concern about America’s ability to project combat and mobility airpower, wherever and whenever it sees fit, from rear echelon bases. Many of these locations are now under an increased threat from medium- and long-range ballistic and cruise missiles—and nowhere in the world is this threat more acute than in East Asia, according to DOD leaders and analyses.

CHINA’S MISSILE COLLECTION

China spent the past two decades, following the Taiwan Strait crisis of 1996, amassing a large inventory of conventional missiles. This missile arsenal was on full display for the world to see during the much-hyped Sept. 3 military parade in Beijing, which commemorated China’s 70th anniversary of the end of World War II. In addition to tanks, armored vehicles, and aircraft, the People’s Liberation Army used the occasion to roll out many missile variants China had previously kept relatively under guard. These included the DF-21D “carrier killer” anti-ship ballistic missile, the DF-10A land attack cruise missile, and the DF-26 intermediate-range ballistic missile, among others. China today has “the most active ballistic missile program in the world,” according to a RAND Project Air Force analysis on the relative military capabilities of the US and China published in September, and has amassed more than 1,200 short-range ballistic missiles, along with medium-range and cruise missiles that are capable of targeting US air bases in Korea and Japan. The development of air-launched cruise missiles also poses a growing threat to Andersen AFB, Guam, some 1,800 miles from the Chinese coast, the report noted. When China fields conventionally armed IRBMs, Guam’s vulnerability to attack will “greatly increase,” the RAND assessment continued. “As important as numbers, ... missile accuracy has also improved dramatically, enabling the force to target critical US facilities,” RAND noted.

The threat of Chinese missiles to airfields in Asia is one that has long concerned officials at US Pacific Command and Pacific Air Forces alike. In April 2013, PACOM Commander Adm. Samuel J. Locklear III told the Senate Armed Services Committee he is “acutely aware” of the resource commitments resilience requires. He declared there would be a number of initiatives to improve base defenses to facilities on the island that “would allow you, ... as quickly as possible, [to] recover ... if it ever were to be attacked by someone.” In addition to hardening certain hangars and storage assets, US officials are reinforcing “fuel heads,”

improving runway recovery tools and capabilities, and the capability for USAF commanders to better command and control assets dispersed to other locations.

Speaking to the House Armed Services Committee in April 2013, USAF Chief of Staff Gen. Mark A. Welsh III and then-Air Force Secretary Michael B. Donley said the service would increase base resiliency activities on Guam in the coming years. “This is not a choice between dispersal or hardening, it’s a combination of factors that will help make our bases ... resilient in any scenario,” Donley said.

Some of these efforts are linked to a fund known as the Pacific Airpower Resiliency Initiative, said Kathleen I. Ferguson, then USAF’s installations chief, as an effort to ensure Guam’s viability as a basing location in light of proliferating missile threats.

In October 2014, PACAF brought Exercise Silver Flag to Andersen from Kadena AB, Japan, a training event for civil engineers and support airmen to build expertise in skills such as base and airfield recovery, command and control, and rapid standup operations. Officials with the 554th RED HORSE Squadron announced in April that they would also reincorporate explosive ordnance disposal training into Silver Flag events in the future at Guam, as EOD operations are a major part of airfield damage repair operations.

In the Fiscal 2016 Air Force budget request, several construction projects on Guam are tied to hardening and enhancement, including some \$22 million for work on an installation control center and \$19 million for dispersed maintenance spares storage and a new storage facility.

These investments are necessary to preserve the potency of US airpower projection in the decades to come, DOD leaders and analysts concede. In Vick’s RAND study, he noted that the overwhelming victory won over Iraq in the 1991 Gulf War gave birth to a new template for power projection, which has ensured success for US forces since—namely, to rapidly deploy large joint forces to forward bases and seas, create rear-area sanctuaries through air superiority, conduct extensive intelligence, surveillance, and reconnaissance operations, and initiate a massive air campaign to seize the initiative and dictate the tempo of operations.

China noted this trend, and built a capability to potentially threaten the US approach.

AMPING UP BASE DEFENSE STRATEGIES

Threats to bases and airfields are a large part of the emphasis on solving A2/AD problems in the Pacific and elsewhere—as DOD has moved to reposture the joint force after years of supporting irregular warfare in Afghanistan and Iraq. In just the past few years since the US drawdown in Afghanistan got underway, and the “rebalance” to the Asia-Pacific ramped up, several studies and analyses have concluded the trends in China (and elsewhere) have significant implications for how the US will be able to fight in the future. “There is a growing appreciation that this era of sanctuary [from air base attack] is coming to an end,” Vick wrote. As a result, there is new interest in aspects of base defense that had long been neglected, from hardening to recovery and repair, to dispersal and camouflage.

In the US Central Command region, for example, major US military operations since the Gulf War have benefited from strike, close air support, air refueling, and air evacuation capabilities that were never really threatened on the ground.

An expectation that enemy attacks would never significantly disrupt sortie generation has steadily formed, Vick noted in his

An F-16D soars skyward as it takes off from Andersen in 2010.



An F-15D in a revetment during Operation Desert Shield. Four Patriot air-to-surface missile launchers are in the background. Desert Shield and Operation Desert Storm, which followed it, created a new template for US power projection. China has adjusted accordingly.



study. Mortar, rocket, and bomb attacks on US bases in Iraq and Afghanistan since 2001 all together “did minimal damage to aircraft and failed to disrupt air operations,” Vick noted. The most successful of these, the September 2012 Taliban attack on Camp Bastion, which destroyed six AV-8B Marine Corps Harriers, “had no impact on sortie generation” in Operation Enduring Freedom, he observed.

The threat of indirect fire and terrorist ground attack, rather than conventional ballistic missiles, was the threat that animated change in base defense approaches in the aftermath of the Gulf War. The 1996 Khobar Towers bombing in Saudi Arabia was a “watershed event” that pointed the way to dramatic changes in protecting USAF forces in theater, and anti-terrorism and force protection standards were upgraded to give guidance on securing expeditionary and permanent locations, said Darren Rice, deputy

director of US Air Forces Central Command’s force protection directorate.

In cases where USAF built a more permanent footing, additional protection measures like expanded hardening or standoff space for facilities were taken into planning for long-term needs. “These plans often require multiple layers,” he added, including host nation and contract security.

As the US has steadily enhanced defense cooperation agreements with nations such as Qatar, the United Arab Emirates, and other nations in the region, it has also moved to transition from an expeditionary footing to one with more permanence. This allows for more investment in hardening facilities, defenses, and recovery operations to ensure airfield function in the event of attack.

The steady growth of ballistic missile threats in the region, such as Iran’s smaller but concerning arsenal of short- and

medium-range ballistic missiles, has led to expanded cooperation between the US and the Gulf Cooperation Council states on missile defense activities as well. The UAE, Qatar, and Saudi Arabia have all invested in advanced Patriot air defense systems to protect critical infrastructure and bases.

LONG- AND SHORT-TERM SOLUTIONS

Last January, Welsh told Pentagon reporters USAF would move toward a “semipermanent” footing in the region over time. Once needs are identified, USAF will provide appropriate investment “whether it’s a new air operations center or it’s trying to expand family presence so we can build stronger relationships with the community and the [host] nations,” he said. But USAF’s shift to a more “enduring” posture in the Middle East is guided by factors such as resources and the need for individual facilities to support tasks and missions, said Col. Michael Saunders, AFCENT’s director of installations.

“If a facility requirement is very expensive, an expeditionary facility may be an appropriate interim solution,” he said—and if a sudden need emerges, an expeditionary solution may be the only solution. The classified US Central Command Theater Posture Plan provides guidance that



Maj. Jason Miller runs a preflight check during Beverly Midnight, an operational readiness exercise, at Osan AB, South Korea, in March.

helps AFCENT determine which types of facilities to invest in, and these plans guide enhancements at longstanding garrisons such as Al Udeid Air Base in Qatar.

Where the Air Force fights can change quickly—as was evidenced when Operation Inherent Resolve began last year. Several locations in the region needed immediate enhancements such as modular facilities to accommodate the influx of personnel and equipment.

“The transition from an expeditionary presence to something more enduring takes time,” Saunders said. AFCENT works in a region with a “dynamic environment where missions and requirements change more rapidly than most other [areas of responsibility].” Over the last several years, AFCENT has invested approximately \$40 million a year in operations and maintenance level construction projects,

much with locally sourced contracts, said Saunders. The other lever AFCENT has pulled to deal with surging need is the Air Force’s in-theater RED HORSE expeditionary civil engineers. These elements have “increasingly been focused on requirements supporting OIR,” he added.

In Europe, planners cast a wary eye toward a recently aggressive Russia. Bombs and missiles have grown more accurate since the end of the Cold War present a greater threat against fixed installations. Second, the US fights in a more expeditionary posture than during the Cold War, and is often operating away from its main bases and responding to contingencies.

“The good news is that a lot of the facilities we have, have hardened facilities on them,” Gorenc said in September. But building hardened facilities everywhere is cost-prohibitive. Going forward, USAFE-AFACRICA and its partners have to take a dual-track approach, he added, making targeted investments in some infrastructure but also considering new approaches to deploying, which could increase survivability.

As part of funds appropriated through ERI, US and allied forces have increased “responsiveness and readiness” through improved training and staging sites with the addition of new pre-positioned stocks of ammunition, fuel, and equipment—plus better infrastructure. This “enhances NATO operations and enables Eastern allies to rapidly receive reinforcements,” said USAFE-AFACRICA spokesperson Capt. Lauren Z. Ott.

Operations-wise, better survivability also includes relooking at tactics, techniques, procedures, and training, Gorenc added.

“It’s pretty clear we are going to have to go back and start exercising some of the things we used to do in the Cold War,” he said. Some of this is already occurring, as so-called “micro deployments” of small numbers of aircraft visit facilities and locations for short durations and then redeploy back to main bases. Gorenc noted his command is working on a concept he referred to as Rapid X, modeled on PACAF’s successful Rapid Raptor F-22 deployment construct. This approach moved aircraft short term to unimproved airfields, with the aid of air mobility forces, “to generate combat power just at the right time, just at the right place,” he said. This expands the number of airfields that can generate sorties and increases targeting uncertainty on a potential adversary.

The increasing vulnerability of airfields within range of missile attack has raised the importance of long-range strike capabilities (such as standoff weapons and bombers, one of the driving requirements animating the Long-Range Strike Bomber program).

In light of the threats, the US should not expect to build up forces under sanctuary at bases and airfields “against the most capable adversaries” in the future, Vick concluded in the RAND assessment of air base vulnerability. Solutions will vary depending on geography and threats present to US forces in a given area.

Hardening, dispersal, recovery, and other techniques will all need to be used to ensure survivability in the future. Heavy-duty hardening at large bases such as Andersen makes more sense than at more expeditionary locations, which in turn can benefit from dispersal and rapid recovery capabilities.

It can be difficult and expensive to ensure the viability of air bases, and with the threats growing and evolving, mission assurance will require a level of commitment not seen in decades.

IRAN AND THE BOMB

By Peter Grier



The Iran nuclear deal is finished. Yet work on the Iran nuclear deal has just begun.

This is how both these statements can be true: The sweeping agreement itself is signed and dotted, wrapped up during months of exhausting final negotiations in Switzerland and Austria.

Eating was one way the US delegation dealt with the stress of the talks, as diplomats chomped their way through pounds of strawberry Twizzlers, string cheese, and mixed nuts.

Shouting was another relief valve—at one point Secretary of State John F. Kerry and Energy Secretary Ernest J. Moniz were yelling so loudly at Iranian counterparts that aides rushed into their hotel conference room to tell them to keep it down, lest random guests hear their secrets.

But the deal—aimed at limiting Iran's nuclear program in return for lifting international sanctions—has yet to be actually implemented. That is because it requires further actions by all parties before its provisions take full effect. Iran must now greatly reduce its stockpile of low-enriched uranium, for instance, and dismantle or alter much of its fissile enrichment infrastructure.

Then, and only then, will the US and its European Union ease existing restrictions on business and financial interaction with Iranian parties.

The US figures that "Implementation Day," as this moment is called in deal documents, will not arrive until the middle or end of 2016.

In addition, the agreement will require constant vigilance on the part of the US, its allies, and the international community. International Atomic Energy Agency inspectors will be crucial to effective enforcement of curbs on Iran's nuclear materials production and research.

It is not an end in itself. The deal is term-limited and most of its important provisions expire after 15 years. That means the US has gained only a period of time in which to convince Iran that a permanent abstention from nuclear weapons is in its best interest.

"Now comes the hard part" is a standard pundit line after diplomatic breakthroughs. In the case of the Iran agreement, known officially as the Joint Comprehensive Plan of Action (JCPOA), this truism might be particularly apt.

"Success will depend heavily on the policies the United States and its partners pursue in the aftermath of the agreement," concludes a Center for a New American Security report on the Iran agreement and what comes next.

"Over the next 20 to 25 years, if implemented effectively, the agreement could succeed in permanently ending Iran's pursuit of a nuclear weapon. Alternately, if implementation fails, the JCPOA could pave the way for an Iranian bomb in 15 years or sooner."

The Joint Comprehensive Plan of Action struck by the P5+1 (the permanent members of the UN Security Council plus Germany) and Iran is a historic accord that aims to block Iran's pathways to a nuclear weapon in return for the lifting of longtime international sanctions and access to piles of Iranian cash now frozen in world banks.

For the US, one of the most important goals of the agreement was to stretch Iran's so-called breakout time—the time it would take if Tehran dropped all pretense of a peaceful nuclear program and raced to produce enough fissile material for a single bomb.

Before the beginning of nuclear negotiations, breakout would have taken Iran about two months, said Kerry at a Council on Foreign Relations meeting in late July.

"We've now pushed the breakout time up to maybe six months or so. And with this agreement for 10 years the breakout time will be one year or more," said Kerry.

Here are key aspects of the agreement, according to the White House:

- **Uranium Limits.** If Iran ever decided to break out and build a nuclear weapon, highly enriched uranium might well be its fissile material of choice. Prior to the signing of the deal, Iran had developed an extensive uranium-enrichment infrastructure that it has long insisted is necessary for a nascent domestic nuclear power network. Its stockpile of enriched uranium reached eight tons—some of it enriched to 20 percent U-235, the isotope necessary for a nuclear reaction. (Bomb grade HEU is 90 percent U-235.)

Under the JCPOA, much of Iran's current enriching machinery will be dismantled. Of the 19,000 existing Iranian centrifuges—thin metal tubes that spin at fantastic speed to separate uranium's natural isotopes—5,060 will continue to operate with uranium feedstock. All will be IR-1s, first generation centrifuges that are relatively inefficient.

This provision will remain in effect for 10 years. Beginning in year 11, Iran will be able to replace the IR-1s, one-for-one, with more advanced models.



An agreement is in place, and the devil is in the details.

A nuclear device, detonated during a test shot on April 18, 1953, at this Nevada Proving Ground tower, yielded the equivalent of 23 kilotons of TNT.



Google Earth image

Above: A satellite captured this image of Natanz nuclear facility in Isfahan province, Iran. Right: Anti-aircraft guns are poised to defend the hardened nuclear facility from air strikes.

All of these uranium-enrichment centrifuges will be located at Iran's Natanz Nuclear Facility. About 1,000 centrifuges at the deeply buried Fordow site, built in secret and discovered by Western intelligence before Iran disclosed it to the IAEA, will remain in operation but be converted to non-nuclear research.

As to the level of enrichment, Iran has agreed to produce uranium with a concentration of U-235 no greater than 3.67 percent for at least 15 years.

Iran's existing low-enriched uranium stockpile will similarly be sharply curtailed for the next decade-and-a-half. Tehran will reduce it to no more than 300 kilograms, all of it enriched only to the 3.67 percent level. Iran can either ship its surplus stock out of the country, or it can blend it down so that it contains the same levels of U-235 found in natural uranium.

■ **Plutonium Limits.** The vast majority of existing nuclear weapons have a plutonium fissile core. Plutonium contains more explosive power than highly

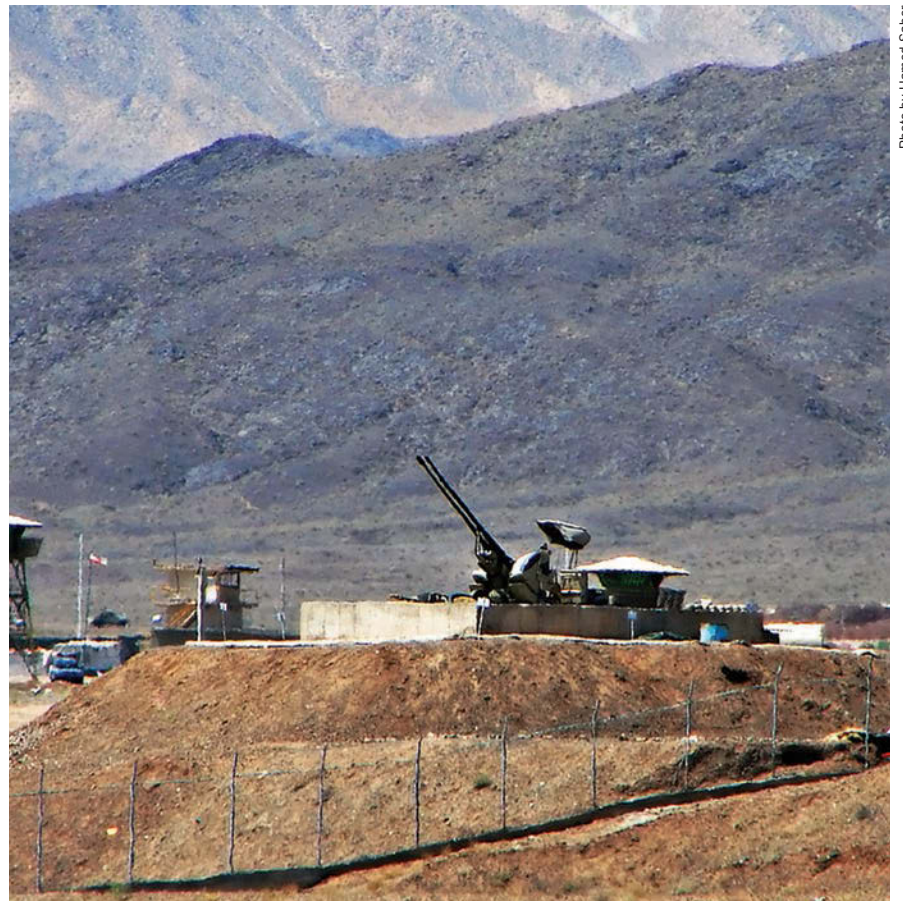


Photo by Hamed Saber

enriched uranium, ounce for ounce, and for advanced nations is easier and less expensive to produce since it is a byproduct of certain nuclear power reactors.

That is why the US and its allies have long been worried about the heavy water reactor Iran has been building near the city of Arak. Iran has said it exists to create radioisotopes for medical purposes but it is the type of reactor that can also produce weapons-grade plutonium. It is ringed with anti-aircraft defenses and was perhaps a sign that Iran was hedging its bets and intended to experiment with an alternative path for production of bomb material.

Under the agreement, Iran has promised to address that concern. It will redesign and rebuild Arak so that it will not produce weapons-grade plutonium, and it has agreed to remove the reactor's original core and render it inoperable. It further promises to not build any new heavy water reactors for at least 15 years.

■ **Verification.** Iran is a big country with difficult, mountainous terrain. It has concealed some of its past nuclear activities from the rest of the world, including the construction of nuclear infrastructure. Thus from the point of view of the US, the success of the agreement could depend on the skills and knowledge of the UN's nuclear watchdog agency, the IAEA, which will get the tough job of verification.

The IAEA says it will increase the number of inspectors it deploys to Iran as a result of the agreement. It will also

theoretically have somewhat better access to declared Iranian nuclear sites, because under the pact Tehran has agreed to the tighter inspection strictures contained in the so-called Additional Protocol to the Nonproliferation Treaty that it signed in 1968.

The new Iran agreement specifies that IAEA teams will have regular access to relevant buildings at the Natanz centrifuge site.

For 15 years the UN agency will also be able to check up on dismantled and stored centrifuge equipment. For 20 years, it will have access to centrifuge component manufacturing plants. For 25 years, it will have access to Iran's uranium mines and mills and its heavy water plant.

Sites that Iran hasn't declared part of its nuclear infrastructure are a different matter. Under the agreement, the IAEA would be able to check almost any location where it suspects covert nuclear activities are taking place—but only after a process that would render the inspections something less than snap assessments.

First, the IAEA would have to ask Iran for access. Iran then would either let the inspectors in or propose some alternative solution. If the parties can't come to agreement after two weeks, the issue gets kicked up to a commission of members from Iran, the P5+1 powers, and the European Union.

The commission then gets a week to work. If a majority of members vote "yes," Iran has to provide the requested access

within a few days. The total time elapsed for the process might reach 24 days.

Critics say that would provide Iran plenty of time to scrub away signs of covert work. Supporters say that it is virtually impossible to clean up all indications of radioactive material, and that in any case the provision reflects a necessary compromise. Iran had long insisted it would never allow the IAEA into non-nuclear military bases.

"Ultimately, the robustness of the entire verification regime depends on all the working parts: information, technology, and access," writes Sharon Squassoni, director of the Proliferation Prevention Program at the Center for Strategic and International Studies, in an assessment of the Iran agreement.

■ **Past Activities.** Some years ago the IAEA obtained a sheaf of intelligence that indicated Iran had carried out a wide variety of activities related to the development of a nuclear warhead. These activities, or possible military dimensions (PMD), allegedly ranged from work on high-voltage detonators to a study of how to fit a nuclear bomb in a missile nose cone.

Beginning in 2011, IAEA officials have asked Iran to explain this information. For the most part the Iranians have not, saying the evidence is faked.

The agreement calls for Iran to clear up this dispute by the end of 2015. How the parties handle this could be a good indication of how smoothly implementation of the whole deal will run. In the past the IAEA has said it would not be able to completely certify that Iran's nuclear program is peaceful without adequate details on the PMD.

Iran has a lot of work to do in the coming months. Dismantling centrifuges, ridding itself of large amounts of low-enriched uranium, and rebuilding the Arak reactor will take time.

Implementation Day for the agreement will arrive when the IAEA certifies that Iran has carried out its obligations. That could come at any point from the spring of 2016 onward, according to US estimates.

Meanwhile, the US and the rest of P5+1 have their own tasks to carry out. The first and perhaps most critical of these is to make sure Iran really does follow up on the deal's requirements and to see that verification is done properly. That in turn will require bolstering IAEA resources and technical capability so it can do its job.

Mahmoud Ahmadinejad, then Iran's President, tours Natanz in 2008.



Office of the Presidency of the Islamic Republic of Iran photo



White House photo by Pete Souza

Given this context the US should get ready to respond to any disputes or controversy over Iran's actions, according to Anthony H. Cordesman at the Center for Strategic and International Studies. That means preparing for a major effort at crisis communications to focus the world on Iran's actions, if necessary.

"The enforcement of arms control agreements between largely hostile states is inevitably an extension of war by other means. Everything ultimately depends on how well and how diligently the US and its allies enforce it, and the credibility that a combination of all the JCPOA's provisions, US and other friendly intelligence efforts, and work by the ... IAEA over time," writes Cordesman.

The US and its allies must also prepare to lift virtually all nuclear-related sanctions on Iran at the Implementation Day deadline. That is the core trade in the agreement, after all.

There is a "snapback" provision in the JCPOA intended to protect against Iranian backsliding. In essence, if the US charges Iran with serious violations, UN sanctions will be restored, unless the Security Council passes a resolution to block such an action. But the process would take at least 30 days and critics worry that once the sanctions are gone and Iran has begun to re-enter the normal world of commerce, it will be politically difficult to get restrictions back.

"Legitimate questions remain about whether businesses and government will conscientiously go along with the reimposition of sanctions, especially if they have established a

strong commercial or political stake in remaining engaged with Iran," writes Robert Einhorn, a senior fellow in the Arms Control and Non-Proliferation Initiative at the Brookings Institution. "Much will depend on the seriousness of the Iranian violation that triggered the reimposition and the strength of the evidence that a violation had been committed," Einhorn wrote in a study of key issues related to the Iran deal.

15 YEARS OUT

Perhaps the biggest weakness in the Iran deal is that it is not permanent. As it stands, some of its provisions expire after 10 years. After 15 years Iran would be legally free to resume the production of as much low-enriched uranium as it wants, using more advanced centrifuges than the JCPOA allows. At some point thereafter its breakout time would decline precipitously, to as little as a few weeks.

Would Tehran then race for a bomb? Much would depend on whether Iranian leaders thought such an effort would enhance their nation's regional security—and whether they believed they could get away with it without retaliatory attacks. At this point the consensus of US intelligence agencies is that Iran has decided to forgo nuclear weapons, though it has pursued them in the past. The trick will be convincing Iranian leaders that this attitude of restraint remains their best

President Barack Obama (l) and Vice President Joe Biden (r), with members of the national security team, on a secure video teleconference with Secretary of State John Kerry, Energy Secretary Ernest Moniz, and members of the US negotiating team, discuss the P5+1 negotiations with Iran on March 31, 2015.

option—and US intelligence agencies have made some notoriously bad calls in the not-too-distant past.

It would be very risky for Iran to attempt a nuclear dash in 2030. One bomb is not a deterrent nuclear force, with delivery vehicles and command and control routines. That sort of infrastructure takes decades to build—and IAEA inspectors, not to mention US intelligence—will have had 15 more years to intensely scrutinize Iranian nuclear activities. The US military will have had 15 more years to work on capabilities to locate and attack deeply buried or hidden nuclear sites.

"It would have been preferable to have permanent or longer-term restrictions on Iran's enrichment program to preserve a one-year breakout time well beyond 15 years. But preventing a nuclear-armed Iran is possible without longer-lasting restrictions—provided the United States and key partners maintain a strong and credible deterrent against a future Iranian decision to go for the bomb," writes Einhorn.

This is the deal in place. Little else is certain. ★

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 Nightmare Before Christmas," appeared in October.

JFK's Air Force

On a crisp June day in 1963, John F. Kennedy became the first president to speak at an Air Force Academy commencement. He was awarded an honorary degree, putting him in the Class of '63. JFK spoke at a time of great tension between his administration and USAF, personified by Gen. Curtis LeMay, Chief of Staff (who was in attendance). The two clashed often—over nuclear arms, Cuba, the B-70 bomber, and more. One of JFK's top advisors called LeMay "my least favorite human being." In his speech, Kennedy talked of his plan for a new civilian aviation program and goes to some length to assure graduates that he saw a bright future for the manned aircraft and an "expanding role" for the Air Force. It was, one might say, the extension of an olive branch.

You will have an opportunity ... for a service career more varied and demanding than any that has been opened to any officer corps in the history of any country.

There are some who might be skeptical of that assertion. They claim that the future of the Air Force is mortgaged to an obsolete weapons system, the manned aircraft, or that Air Force officers of the future will be nothing more than "silent silo sitters," but nothing could be further from the truth.

It is the very onrush of technology which demands an expanding role for the nation's Air Force and Air Force officers, and which guarantees that an Air Force career in the next 40 years will be even more changing and more challenging than the careers of the last 40 years.

Some of you will travel where no man has ever traveled before. Some of you will fly the fastest planes that have ever been built, reach the highest altitudes that man has ever gone to, and lift the heaviest payloads of any aviator in history. Some of you will hold in your hands the most awesome destructive power which any nation or any man has conceived.

Some of you will work with the leaders of new nations which were not even nations a few years ago. Some of you will support guerrilla and counterguerrilla operations that combine the newest techniques of warfare with the oldest techniques of the jungle, and some of you will help develop new planes that spread their wings in flight, detect other planes at an unheard of distance, deliver new weapons with unprecedented accuracy, and survey

"Commencement"

President John F. Kennedy
Remarks at US Air Force Academy
Colorado Springs, Colo.
June 5, 1963

Find the full text on the
Air Force Magazine's website
www.airforcemag.com
"Keeper File"

the ground from incredible heights as a testament to our strong faith in the future of airpower and the manned airplane.

Today the challenging new frontier in commercial aviation and in military aviation is a frontier already crossed by the military: supersonic flight. ... [It] is my judgment that this government should immediately commence a new program in partnership with private industry to develop at the earliest practical date the prototype of a commercially successful supersonic transport superior to that being built in any other country of the world. ...

Congress and the country should be prepared to invest the funds and effort necessary to maintain this nation's lead in long-range aircraft, a lead we have held since the end of the Second World War, a lead we should make every responsible effort to maintain. ... This commitment, I believe, is essential to a strong and forward-looking nation, and indicates the future of the manned aircraft as we move into a missile age as well.

The fact that the greatest value of all of the weapons of massive retaliation lies in their ability to deter war does not diminish their importance, nor will national security in the years ahead be achieved simply by piling up bigger bombs or burying our missiles under bigger loads of concrete. For in an imperfect world where human folly has been the rule and not the exception, the surest way to bring on the war that can never happen is to sit back and assure ourselves it will not happen.

The existence of mutual nuclear deterrence cannot be shrugged off as stalemate, for our national security in a period of rapid change will depend on constant reappraisal of our present doctrines, on alertness to new developments, on imagination and resourcefulness, and new ideas. Stalemate is a static term and not one of you would be here today if you believed you were entering an outmoded service requiring only custodial duties in a period of nuclear stalemate....

In the last 18 years, [the United States] has carried the burden for free people everywhere. I think that this is a burden which we accept willingly, recognizing that if this country does not accept it, no people will, recognizing that in the most difficult time in the whole life of freedom, the United States is called upon to play its greatest role. ✪

Cadets at the US Air Force Academy salute President John Kennedy and Maj. Gen. Robert Warren, the academy superintendent.

Photo by Robert L. Knudsen





An Su-34 strike jet releases a weapon near Aleppo early in Russia's Syrian campaign. Despite the painted-over insignia on this and other aircraft, Russia enthusiastically covered the action through state media. Below, an Su-34's target in Aleppo, described as a factory for improvised explosive devices.

Screenshots via Russian Defense Ministry



Russian Roulette



Russia's air force launched a dangerous, uncoordinated campaign in a complicated battlefield where USAF is already operating.

Nov. 16, 2015

Russia deployed dozens of combat aircraft to Syria in late September, promptly launching an air campaign not coordinated with the US-led coalition air war against ISIS and throwing a dangerous new element into an already maddeningly complex conflict.

The US and its coalition partners in Operation Inherent Resolve said they had no advance warning of Russia's deployment of about 40 aircraft, and less than two hours' notice of Russia's first attacks on ground targets in Syria. On multiple occasions in the ensuing two weeks, coalition and Russian aircraft came within "10 to 20 miles" of each other, a US Central Command spokesman said, although unconfirmed press reports—not denied by the Pentagon—put some close encounters as near as 500 feet.

Moscow said the deployment was aimed at combating what it called "terrorism" in Syria, specifically mentioning the so-called Islamic State.

The initial two weeks of Russia's air strikes, however, chiefly targeted forces near the major western cities of Syria, such as Homs, and Aleppo, where forces of Syrian dictator Bashar al-Assad were having trouble pushing back anti-regime forces. The strikes were not in areas where ISIS is generally operating.

The attacks indicated Russia's real aims: to help Assad retain power, prop up its only remaining Middle East client state, preserve access to its sole remaining Mediterranean naval base at Tartus, and maintain its influence in the region.

Assad flew to Moscow on Oct. 20, where he met with Russian President Vladimir Putin to thank him for the deployment and campaign of air strikes. "I wanted to express my huge gratitude to the whole leadership of the Russian Federation for the help they are giving Syria," Assad told Putin, according to a transcript of the meeting released by Russia.

Putin told Assad he hoped for a political solution to the conflict in Syria, but also suggested there is yet another reason for the intervention. There are "about 4,000 people from the former Soviet Union—at a minimum—fighting government forces with weapons in their hands," Putin said. "We, it goes without saying, cannot allow them to turn up on Russian territory after they have received battlefield experience and undergone ideological instruction."

Through state media, the Russian air force said it had carried out 700 sorties and struck 690 targets in Syria through Oct. 20. However, Operation Inherent Resolve spokesman US Army Col. Steve Warren told reporters on Oct. 21 Russia had conducted 140 strikes in Syria.

A week into its Syrian air campaign, Russia also launched a volley of 26 SSN-30 Kalibr cruise missiles from its Caspian Sea flotilla. The missiles overflew Iran and Iraq before hitting targets in Syria, after a flight of more than 900 miles.

Given that Russia was already operating strike aircraft in the areas where the cruise missiles struck, Western analysts viewed the missile raid as tactically unnecessary and therefore actually intended to demonstrate Russia's cruise missile prowess.

The Kalibrs demonstrated a capability similar to that of the American Tomahawk cruise missile, with a range well beyond what they were thought to have and an accuracy within several meters. Only the US and Britain had previously used such long-range precision guided cruise missiles in combat.

Not all of the missiles performed as expected, however: Four of the Kalibrs were reported to have crashed in Iran.

International airlines immediately changed air traffic routes around the area to avoid being hit by any further missiles. Coincidentally, the same day as the Kalibr volley, a Dutch inquiry board confirmed that a Russian-built Buk missile had downed Malaysia Airlines MH17 in July 2014 over eastern Ukraine, killing 298 people.

Defense Secretary Ashton B. Carter said Russia's intervention was like "pouring gasoline" on the regional conflict, where there are already dozens of separate military factions at war and where the US-led coalition is carrying out combat strikes against ISIS daily.

At an Oct. 9 press conference in London alongside his British counterpart, Michael C. Fallon, Carter said Russia's strategy in Syria is "illogical and self-defeating."

In the first 24 hours, Russia flew about 60 sorties and struck some 55 targets. Daily Russian strikes through mid-October varied from a dozen to 88.

By taking Assad's side, Carter said, the Russians "inflame the civil war, therefore extremism, [and] prolong the suffering of the Syrian people. They're going to have the effect, also, of turning everyone against Russia itself. So this will boomerang, in a very direct way, on Russian security."

Carter said he could not confirm reports that Russian ground forces had been attacked in Syria, but said, "by taking the side of Assad against all opponents in Syria"—at least some of which will have to form the nucleus of a post-Assad government—"Russia has, as we have said repeatedly, made itself a target, and so I expect that Russian forces will come under attack." Two rockets, presumably

An Su-25 Frogfoot takes off on a mission from Latakia loaded with dumb bombs. Most Russian strikes have not been made with precision munitions.



launched by anti-regime forces, hit Russia's embassy in Damascus on Oct. 13.

COLD WAR MINDSET?

China's state-run media warned that Russia and the US were now fighting a proxy war and chided the two powers for their "Cold War mindset."

Putin criticized the US-led coalition for not sharing its intelligence with Russia, saying "some of our partners simply have mush for brains," and lack an understanding of the situation in Syria or "the goals they are seeking to achieve."

Lt. Gen. Robert P. "Bob" Otto, Air Force intelligence, surveillance, and reconnaissance chief, told defense reporters Oct. 1 he has "a low level of trust in the Russians," and "I would not envision a relationship where I would share some of my intelligence with them. I'm not saying it couldn't happen, I just don't envision it" based on "their demonstrated intent."

President Obama said Russia has miscalculated by "doubling down" on Assad.

At an Oct. 2 White House press conference, Obama said Putin's effort to "prop up" Assad risks "alienating the entire Sunni world."

Putin's coalition consists of just Assad and Iran, Obama said, while the US-led coalition has 65 nation members, and no one seems to be "lining up" to join Putin's approach.

"This is not a smart, strategic move on Russia's part," Obama said. Supporting Assad means the rest of the Middle East will view Russia as complicit with "barrel bombs landing on kids, at a time when Russia has a significant Muslim population inside of its own borders that it needs to worry about." Barrel bombs are improvised bombs made by filling a barrel with explosives and shrapnel, then rolling it out of a helicopter.

Obama stated flatly that "we're not going to make Syria into a proxy war" between

Screenshot via Russian Defense Ministry





Screenshots via Russian Defense Ministry

Russian Su-30s on the flight line, their distinctive red star insignia erased. The Flanker mission was not clear, given that the Syrian rebels have no air force.

the US and Russia. This would be “bad strategy on our part.”

The conflict “is not some superpower chessboard contest. And anybody who frames it that way isn’t paying very close attention to what’s been happening on the chessboard,” Obama said. All the Russian action has achieved is to boost Putin’s domestic approval—something Obama said is “easier to do when you’ve got a state-controlled media.”

The Russian deployment began in early September, according to a Pentagon spokeswoman. Russia sent “military equipment and personnel to the Bassel al-Assad air base outside Latakia, Syria,” near the Mediterranean coast. “This includes modular housing for personnel, fighter and attack jet aircraft, helicopters, anti-air missile systems, tanks, armored personnel carriers, and support equipment for airfield operations.”

Commercial satellite imagery previously showed apron extensions and area clearing at the Latakia base, in preparation for the Russians’ arrival.

Satellite imagery obtained after the deployment revealed 12 Su-25 Frogfoot attack jets, 12 Su-24 Fencer strike aircraft, four Su-30 SM strike aircraft, and up to a dozen Mi-24 Hind attack-assault helicopters, as well as a pair of Mi-17 Hip utility helicopters. Pentagon officials estimated about 500 support personnel came with the combat aircraft, transported by some 20 flights of An-124 Ruslan (NATO name Condor) giant airlifters, similar to the US C-5 Galaxy.

The fact that only nine tanks, 36 armored personnel carriers, and two air defense missile systems were part of the deployment lent credence to Russia’s claim that the ground forces are there to protect the Russian contingent, not carry out significant ground operations.

Videos appearing on Russian media of the aircraft on the ground and in actual combat over Syria showed the aircraft had their Russian national insignia painted over.

PRECISION MATTERS

Though Russian media touted the attacks as “precision” strikes, Pentagon spokesmen described the bombings as often “indiscriminate” and lacking in true precision. Internet videos apparently taken through Russian targeting pods showed weapons exploding well away from the crosshairs, sometimes in open areas when a building was clearly the target.

“Those aren’t precision weapons. Those are dumb bombs guided by the pilot,” Otto noted. Asked how he could be sure of this, Otto said, “We determine it based on what we see being brought in. ... With imagery, we can tell what’s hanging off the airplane.” He also said that unclassified imagery of the results of the strikes “was representative of what you’d expect from dumb bombs being dropped from airplanes at medium altitude, which was not that impressive.” That poses a danger, Otto said, because “precision matters. And I think when you hit things that you’re not intending to hit, you create second- and third-order consequences.”

Assad’s campaign “has not been successful,” Otto said. “I believe that’s why the Russians went in, because they recognize that Assad is losing.”

A Russian jet closes within a few hundred feet of an MQ-9 Reaper. After a number of close encounters, a local US-Russian “hotline” was set up to avoid midair conflicts.

Russian combat aircraft also violated Turkey’s airspace on several occasions, for extended periods. Turkey said it shot down a small Russian remotely piloted aircraft that crossed the border. Attacks within Turkish territory by Russian aircraft could trigger a full-scale NATO response under Article 5 of the NATO treaty. It states that an attack on one member of the alliance will be construed as an attack on all.

“We’d certainly like to avoid” a direct confrontation between coalition and Russian jets, Otto said, and “the best way to avoid that is to be in consultation for deconfliction.” Something between a Russian short-notice heads-up and “sharing of ATOs”—air tasking orders—“is where we want to be,” he said.

He noted, though, that Russia’s aircraft deployment includes four Su-30SM air superiority aircraft. These aircraft have no role in anti-ISIS operations over Syria’s friendly airspace. This air superiority presence has to be taken into account, with the aircraft’s movements closely monitored, Otto said.

OIR spokesman Warren told Pentagon reporters Oct. 13, “It is dangerous, right? ... It’s dangerous if two sets of aircraft come into the same ... airspace without very clear, laid-out protocols for [the] safety of all involved,” which was why the US was having meetings with Russia to establish deconfliction rules.

Warren said that aside from close encounters between manned aircraft, Russian



Screenshots via Russian Defense Ministry



pilots have diverted to “take a look at our UAVs,” or unmanned aerial vehicles.

“Maybe they’re flying a pattern of combat air patrols somewhere where ... one of our UAVs will sort of come nearby and the Russian will break his pattern and come over and take a close look,” Warren said, describing a scenario that has been repeated several times. He did not say whether the unmanned aircraft had been targeted.

SAFE DISTANCES

Only on one occasion has a coalition aircraft “changed course and decided to approach a bombing run from a different direction simply because there were ... Russian aircraft” operating nearby.

The deconfliction talks bore fruit on Oct. 20, when the Pentagon announced a deal had been struck to “minimize the risk of in-flight incidents between coalition and Russian aircraft operating in Syrian airspace.”

Spokesman Peter Cook said a memorandum of understanding—the details of which he would not disclose, at the request of Russia—established a baseline frequency for aircraft-to-aircraft communication, as well as “the establishment of a communication line on the ground” between the two forces in the event that coalition and Russian aircraft have a close encounter. He would not reveal what entities would be connected by the communications line, but insisted that the deal should not be construed as a partnership in any way.

“The MOU does not establish zones of cooperation, intelligence sharing, or any sharing of target information in Syria,” nor does it “constitute US cooperation or support for Russia’s policy or actions in Syria. In fact, far from it,” Cook said. “We continue to believe Russia’s strategy in Syria is counterproductive and their support for

Russian pilots “walk through” an upcoming mission. This informal rehearsal is the last stage of mission planning before taking off.

the Assad regime will only make Syria’s civil war worse.”

He declined to say what would constitute a “safe distance” between the aircraft, but if Russia follows the protocols, “we should not have the risk of engagement with Russian aircrews over Syria.” The deal was specific to Syria and did not cover Iraq, where Russian aircraft were not operating at the time. However, elements of the Iraqi government have publicly called for adding Russian jets to the anti-ISIS mix in their own country.

Deliberate close calls between Russian and coalition aircraft—including close proximity between remotely piloted aircraft from the two factions—“would not reflect the professional airmanship that ... this understanding now calls for,” Cook said. Such “activities” could “lend themselves to misunderstanding and to miscalculation.”

Cook added that “anything that could be deemed as threatening or hostile” action on the part of Russian aircraft toward coalition aircraft “would represent a violation of this agreement, and it is very clear to our aircrews what constitutes that right now, and they’re able to identify right away when another aircraft has ... crossed that line.”

The deal is unambiguous about proper protocols, Cook insisted.

Moreover, “our aircrews always have the right to defend themselves,” Cook said. While the US hopes to eliminate any dangerous confusion, “our crews, no matter where they’re flying, have the ability to defend themselves if they feel threatened.”

Warren, in an earlier press conference, maintained that US and coalition aircraft were not in any danger, even before the

deconfliction arrangement. They have “extraordinary situational awareness based both on our capabilities as fliers and on our capabilities for information. ... Everyone knows where everyone is, for the most part.”

Warren called the Russian bombings and missile launches “reckless and indiscriminate,” and also counterproductive, as they had allowed ISIS forces “to make progress ... in the northwestern corner of Syria.”

He also noted “the UN recently announced that they’ve had to cease humanitarian operations in Syria because of the danger posed by these Russian air strikes.”

Secretary of State John F. Kerry told National Public Radio on Oct. 15 that he hoped his personal conversations with Russian Foreign Minister Sergei Lavrov—which led to the deconfliction MOU—would also “lead to a broader set of understandings about where the targeting ought to be and what is truly helpful and what is not.” If Putin’s goal is to prop up Assad, “and fake it with respect to the extremists and terrorists, that’s a serious problem,” Kerry said.

In public statements, Moscow defines all armed militias in Syria—whether they be Islamists, al Qaeda, ISIS, or secular groups seeking the ouster of Assad—as terrorists, and all fair game for strikes. Some of the forces targeted by Russia include those backed by the US—such as the so-called Free Syrian Army—who have received US weapons and materiel support in recent months.

Asked about Putin’s likely intentions, Otto said, “His stated intentions and what I saw” from the first rounds of air strikes “are not congruent.” The areas where the strikes took place “were not anti-ISIS strikes,” and there’s a mismatch between Putin’s statements and what his forces are doing.

One consequence of Russia’s air campaign has been to compel the US to con-



Syrian President Bashar al-Assad (l) visited Russian President Vladimir Putin (r) to thank him for Russia's air attacks, primarily striking non-ISIS anti-regime groups.

duct military-to-military discussions with Russia, abruptly stopped after Russia's seizure of Crimea in 2014. The situation put Carter in the awkward position of explaining how there will be conversations with Russia regarding one conflict but not the other.

Sen. John McCain (R-Ariz.), chairman of the Senate Armed Services Committee—who has been advocating sending US ground forces to Syria for several years—described Russia's new air war as a “disastrous turn in the Middle East.”

Writing an op-ed for CNN, McCain said, “A few weeks ago, the Administration warned Russia not to send its forces to Syria. Russia did it anyway. The Administration then tried to block Russia's access to airspace en route to Syria. It failed.”

The consequences, McCain said, are “humiliating” for the US—forced to enter a deconfliction agreement—and a statement from Kerry that the situation represents “an ‘opportunity’ to cooperate because we agree on ‘fundamental principles.’”

Russia's response to that has been “bombing US-backed opposition groups in Syria,” he said.

McCain argued that the US “cannot shy away from confronting Russia in Syria, as Putin expects the Administration will do,” and he urged President Obama to order US aircraft to “defend civilian populations and our opposition partners in Syria.”

He recommended creating “enclaves in Syria where civilians and the moderate opposition” to Assad “can find greater security,” and that these safe zones be protected by US forces on the ground.



Screenshot via Russian Defense Ministry

“If Assad continues to barrel-bomb civilians in Syria, we should destroy his air force's ability to operate,” McCain said, without specifying how the US would go about doing this.

NO REHABILITATION

Former Defense Secretary Robert M. Gates told the Senate in 2011 that a no-fly zone would require strikes on command and control centers, air defense radars and missiles, airfields, and all the other sinews of Syria's air defenses. Establishing such a no-fly zone would effectively be a declaration of war on Syria, he said at the time. Strikes on Russian assets would likely start a war as well.

Russia announced in 2013 it would veto any UN Security Council measure to authorize a no-fly zone over Syria.

Obama said Russia's air strike campaign “is not particularly different from what they had been doing in the past; they're just more overt about it.”

He reported that when he met with Putin the week before, he put forward a plan for a “political transition” in Syria, one that “keeps the state intact, that keeps the military intact, that maintains cohesion,” but demands Assad give up power.

“You cannot rehabilitate him in the eyes of Syrians,” Obama said of Assad.

“An attempt . . . to prop up Assad and try to pacify the population is just going to get them [Russia] stuck in a quagmire. And it won't work. And they will be there for a while if they don't take a different course.”

Bombing non-ISIS moderates who “have to” be part of any successor government, able to “pick up the pieces and stitch back together a cohesive, coherent country,” is “a recipe for disaster, and it's one that I reject,” Obama said, adding, “we're not going to go back to the status quo ante.”

An Su-24 lights the burners as it takes off on a night mission. Besides shoring up its last Mideast ally, Russia is gaining combat experience for its aircrews.

Obama further explained that he has no plans to put large-scale US ground forces in Syria, saying, “Unless we can get the parties on the ground to agree to live together in some fashion, then no amount of US military engagement will solve the problem.”

The US would “find ourselves either doing just a little bit and not making a difference—and losing credibility that way—or finding ourselves drawn in deeper and deeper.”

He dismissed calls for greater intervention as “half-baked ideas” that offer no solutions as to “what exactly would you do, how would you fund it, and how would you sustain it?”

While many analysts wondered aloud how long the Russian intervention in Syria would go on, state media on Oct. 13 began reporting that the air campaign was running out of meaningful targets—potentially setting the stage for an exit. By that point, according to the Russian Defense Ministry, their aircraft had destroyed “the majority of ISIS ammunition, heavy vehicles, and equipment,” plus weapons plants and field camps.

The state media further claimed that in 10 days, the Russian campaign had done more damage than the US-led “halfhearted campaign” had done in 18 months—a claim met with high skepticism by Western analysts.

Then, on Oct. 31, an ISIS bomb brought down a Russian airliner on a flight from Egypt to St. Petersburg. The attack triggered a new wave of Russian air strikes within Syria, this time clearly against ISIS targets. ✪



BUFF

Metamorphosis

Photography from the collection of Warren E. Thompson



USAF's B-52 force has continuously adapted with the times.

A B-52H Stratofortress—a name long ignored in favor of the simple, affectionate “BUFF”—of the 2nd Bomb Wing returns to Diego Garcia after a successful low-level attack in Afghanistan.

Operational for nearly 61 years, the B-52's range and versatility have given it an essential role in nearly all of America's modern wars. [1] B-52s perform a carpet-bombing mission over North Vietnam. The tactic was used to expose and destroy enemies hiding in the dense jungle. [2] B-52A-1, first flown in 1954, was one of three prototypes of what would become the definitive B-52 shape. It was later modified for research work as the NB-52A. Here, it is carrying an X-15 rocket plane under its right wing. After many years of development service, it was retired to the Pima Air & Space Museum in Tucson, Ariz. [3] A B-52F in Strategic Air Command markings deploys a drag chute at Andersen AFB, Guam. This particular jet was scrapped in 1971 after an accident.



Photo by Robert Andrews



Photo by Robert Dorr



Photo by Bob Amos

Photo from Larry Davis Collection via Warren Thompson



1

USAF photo



2



3

Photo by Warren Bodie

Photo by Dewayne Norville



4

[1] These B-52Fs at Castle AFB, Calif., in the late 1950s are carrying AGM-28 Hound Dog missiles. The ultimate defense suppression weapon, Hound Dogs were air-breathing, nuclear-armed missiles with a range of 700 miles, meant to destroy anti-aircraft systems long before the B-52s reached a target area. [2] An XB-52—one of two built—during 1952 flight tests at Edwards AFB, Calif. These prototypes had a tandem cockpit similar to that of the B-47, before designers adopted the side-by-side configuration. [3] Recently declassified, this photo of a B-52G named Avenger shows off the type's radar. [4] A B-52D lands at U Tapao RTAB, Thailand, after a 1973 mission. This shot illustrates the B-52's distinctive nose-down flying attitude, even when flaring for landing.



1



2



3

[1] A B-52H in high-visibility international orange photographed at Davis-Monthan AFB, Ariz., in May 1974. It served with the 17th Bomb Wing at Wright-Patterson AFB, Ohio, did a lot of test work, and was also referred to as the JB-52H. [2] The crew of B-52G Loaded Dice of the 97th Bomb Wing poses in 1989. They had won SAC's 1988 Mighty Warrior competition. [3] An enemy lining up behind the B-52G was unwise, as he would face these four .50-caliber machine guns, under the MD-9 rear-facing search radar. The guns were later removed from all B-52s. This one served with 340th Bomb Wing at Eaker AFB, Ark.

Photo by Andy Bloom



[1] A B-52H flying over the mountains of Afghanistan. It's a 2nd Bomb Wing jet from Barksdale AFB, La. In Afghanistan, BUFFs added close air support to their lengthy résumé, aided by satellite guided weapons. **[2]** A B-52 wearing Southeast Asia camouflage, with a Hound Dog. **[3]** A heavily loaded B-52D deployed to Vietnam in 1969 readying for an Arc Light bombing mission. The aircraft were painted in Southeast Asia camo on top, black underneath, because they flew mainly at night. **[4]** A close-up of a Hound Dog slung under the wing of a B-52G at Loring AFB, Maine, in 1972. In 1975, the Hound Dogs were withdrawn from alert, freeing up weight that could be used for more fuel and electronic countermeasures gear.

1

Photo by Dave McLaren



2



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Photo by Noel Widdifield

Photo by Hank Marois



3



[1] Nose detail of one of the XB-52s, one of which was later converted into a YB-52. Huge as it was, the B-52 was significantly smaller than its predecessor, the "Aluminum Overcast" prop-jet B-36. The B-52's swept wings were pioneered on the B-47 Stratojet. [2] An iconic image of a B-52D unleashing its immense bomb load. [3] En route to Boeing's Seattle facilities in 1985 to help celebrate the 50th anniversary of the B-17 Flying Fortress' first flight, this B-52G lines up behind a tanker for refueling. In 2002, the B-52 matched the B-17's mark when it celebrated its own 50th anniversary of first flight, but kept right on flying.



1



2



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4

[1] A B-52G launches from RAF Fairford, UK, in 1991 carrying a load of bombs to drop on Iraq. The eight TF33 engines have always produced a lot of smoke; USAF is thinking about replacing them with modern motors to increase range, speed, and altitude. [2] This NB-52E is being tested with a General Electric engine during one of USAF's previous flirtations with replacing the BUFF's powerplants. It was decommissioned in 1980 and cut into pieces to comply with arms treaties. [3] B-52s at the "Boneyard" at Davis-Monthan. These aircraft were scrapped to comply with the 1991 Strategic Arms Reduction Treaty. [4] This B-52 leads a formation back to Guam after a mission over North Vietnam. The last B-52H was delivered in 1963, but Air Force plans call for the adaptable BUFF to serve beyond 2040. ☺

“**C**aptain Miller’s laser data link came to life as she took direct control of Risky 3’s MMLR [multimission, long-range] uninhabited aircraft.” So reads one of the you-are-there vignettes from the Air Force’s future operating concept giving a view of USAF in 2035.

Over the past decade, aerial networks carrying battlespace communications have become coequal partners in many types of USAF missions. Airmen tap into a data network with a smartphone for location, navigation, communications, and the latest information, and the Air Force realizes that’s the kind of reliable data connections needed in combat, too.

Battlespace communications are at the center of operating concepts—and they will be hotly contested.

“Historically, we had superiority in battlespace communications,” said Lt. Col. Tim Wilcox, chief of operations integration in the Air Staff’s A3 directorate. “I don’t think we can count on that in the future.”

Today, airpower depends on data flowing through the battlespace, but that wasn’t always the case. The aerial layer

scarcely existed until the late 1990s. A generation ago, airmen in Operation Desert Storm communicated mainly with voice over radio. A few big computers generated planning orders at air operations centers but they weren’t linked to other computers.

Aerial layer networks began as small clusters. Some of the first networks consisted of tactical data links transmitting information between fighters and E-3 AWACS aircraft, for example.

The Link 16 data link debuted in the 1970s with large terminals at ground stations and aboard AWACS. Air Force F-15Cs then acquired the links, and by the 1990s, Link 16 reached a range of US and NATO fighters and airborne battle managers like JSTARS, Rivet Joint, and the NATO alliance’s own AWACS aircraft.

Secure radio links also branched out from voice to data transmission. Ground communications links to air operations centers provided access to ISR assets transmitting data via SATCOM, such as the U-2, unmanned aircraft, and satellites. The aerial layer thus became a network with

multiple entry points from relying on local links and space-based communications.

Networking created the structure for time-sensitive targeting, as first seen on a wide scale in NATO’s Operation Allied Force in 1999. Link 16’s ability to provide position location and reporting became a cornerstone of rapid strike against newly identified targets. Missions like hunting and destroying enemy surface-to-air missile batteries were highly dependent on links to pass identification and targeting information.

Wars in Afghanistan and Iraq saw airmen linking more aircraft and tapping into bigger pipelines of data at air and space operations centers. By the mid-2000s airmen had regular access to data carried by ad hoc aerial networks. A portfolio of tactical data links exchanged information between platforms and mission partners. They gradually extended those links to fighters, bombers, tankers, and of course, unmanned aircraft and controllers on the ground with handheld ROVER communications tools. The result was fast-moving intelligence, surveillance, recce—and a huge increase in rapid, flexible targeting.



COMMS THROUGH THE AERIAL LAYER

By Rebecca Grant

IMPERFECTIONS

Effective as they were, the networks had obvious gaps and shortfalls from the start. Often communication paths were “lost, denied, or unavailable” as the Air Force put it.

Part of the problem was popularity. Deployments to austere locations in Afghanistan, Iraq, and around the globe increased the number of users dependent on network-delivered data. Link 16 allowed an F-16 pilot, for example, to sign into a slot on the network at the start of a mission period. So could unmanned systems, Navy fighters, aircraft carriers, cruisers, destroyers, Patriot missile defense batteries, coalition fighters, MC-12s, and even satellites and submarines.

The aerial layer network was bursting at the seams. In busy Afghanistan, the Link 16 network sometimes became so overcrowded that not all aerial users could utilize the data link.

Improvements in waveforms and gateways wrung more capacity out of the airborne wireless networks. Line of sight, Internet Protocol-based network-

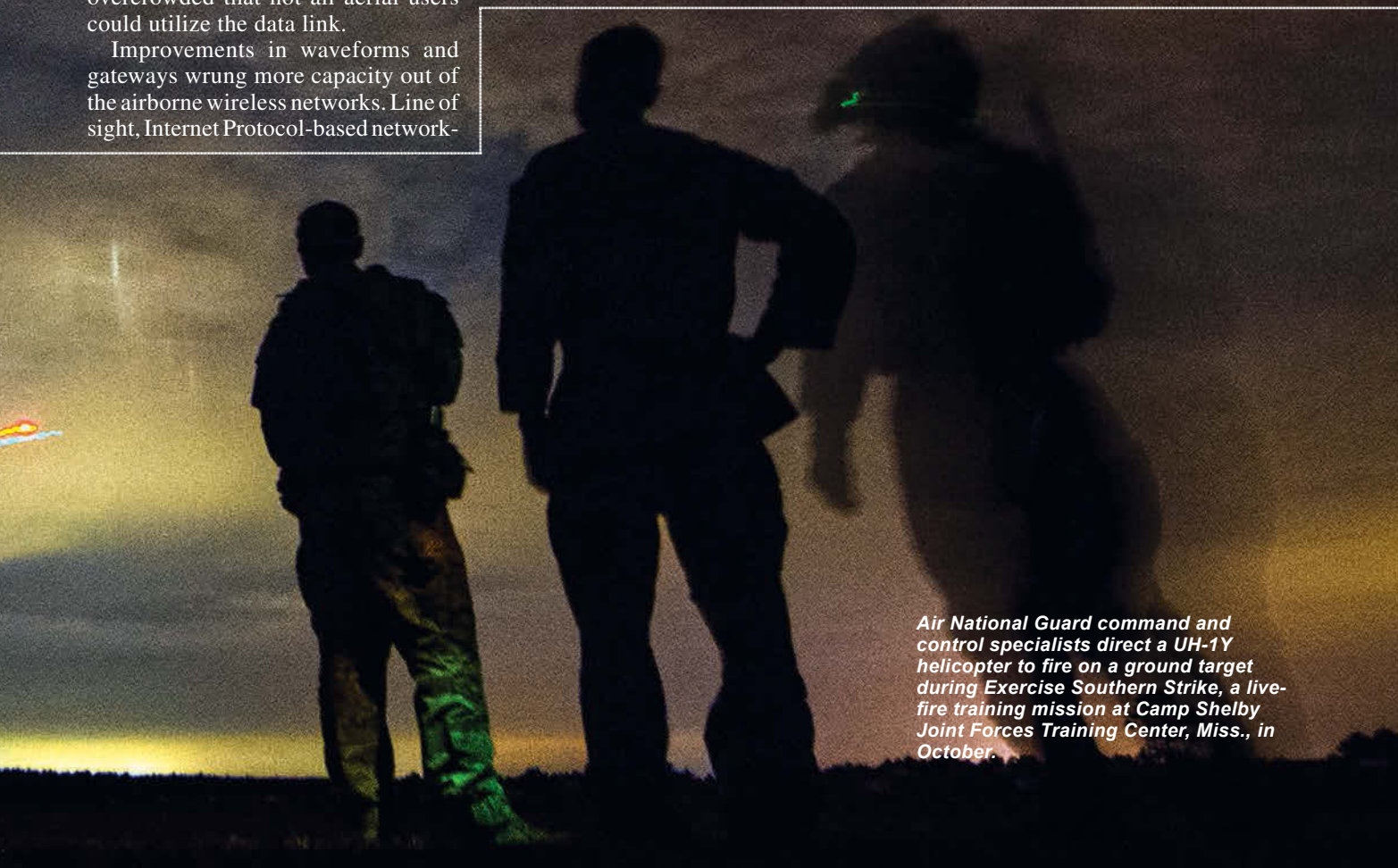
ing use specialized waveforms over joint tactical radios to transmit voice, data, and video. Upgrades let more users connect, improve security, and transmit more data.

One early step was BACN—the Battlefield Airborne Communications Node, which first flew in 2005. The BACN node flown on aircraft like the RQ-4 Global Hawk and E-11 acted as a relay and translator linking up different radios in the battlespace.

In addition to translation, another approach was bumping up capacity. Novel waveforms can pack more data into the transmission and increase throughput in the aerial layer. For example, the Air Force Research Laboratory shepherded development of the Tactical Targeting Network Technology, able to accommodate up to 200 users who join or exit the network as needed.

The network stays intact even as users shift in and out. Aircraft and UAVs equipped with TTNT can extend the network into the combat zone or use each other as relays to hand off information to other platforms or in an informal reachback. The network was designed to prioritize data and to employ frequency-hopping for security of the network. “This masterless, self-healing networking capability ensures that even if a platform node is lost or leaves the area, the network remains active for all the other users,” explained manufacturer Rockwell Collins. Fighters, B-52s, B-2s, AWACS, BACN, and Navy aircraft like E-2C Hawkeye all use TTNT.

Similarly, AFRL initiated project Tactical Quint, built to improve on-demand access to sensor imagery and video requiring higher data rates. Network participants might use TTNT to con-



Air National Guard command and control specialists direct a UH-1Y helicopter to fire on a ground target during Exercise Southern Strike, a live-fire training mission at Camp Shelby Joint Forces Training Center, Miss., in October.

Technological advances are on the verge of opening up new horizons for military communication.



nect while airborne, then Tactical Quint establishes sockets of higher data-rate for rich sensor imagery. QNT (Quint Networking Technology) also ties in nodes for persistent threat detection.

Many links were rushed into place to meet immediate combat needs. From a tactical perspective, that was good, but there was no master plan.

“The Air Force’s information environment evolved and converged as individual mission needs dictated, rather than being designed,” recalled the USAF’s Flight Plan issued in May 2015.

This wasn’t a problem unique to USAF. In October 2009, the Joint Requirements Oversight Council approved plans for a Joint Aerial Layer Network, known as JALN, to concentrate on advanced combatant information exchange. The aerial layer networks (ALNs) also plug in to surface and space networks. JALN isn’t a single program. It’s a concept

MSgt. Zachary Swain, a tactical air command and control specialist with the Mississippi ANG, locates coordinates for a live-fire training operation during Exercise Southern Strike.

whose main goal is to provide reliable and secure links between aerial platforms without depending only on space.

Air Force work on its portions of the aerial layer lodged firmly within the JALN framework. In 2011, USAF signed out a vision for the aerial layer anticipating most platforms would have relay capability by 2024.

“ALN affects the soldier on the ground, the pilot in flight, or the satellite operator,” said Lt. Col. Todd Schug, who was the Air Staff chief of the airborne networking branch. “Think of a warfighter fighting in the hills of Afghanistan getting mission-critical data over ALN that tells him or her the enemy is just on the other side of [the] hill.”

Upgrading aerial layer networks is a constant process of mixing new and old. Efforts also focus on expanding capacity while protecting data. Interoperability is a big issue. “How do planes communicate with different link profiles?” Wilcox asked. Future plans call for extending Internet Protocol (IP) access “across the sky in a secure manner,” he said.

USAF is concerned now with “four capability gaps: communications, capacity, information sharing, and network management,” said Lt. Col. Karina DeGarmo of A6, the Air Force’s Office of Information Dominance and Chief Information Officer. Hailing from the AWACS community, DeGarmo is the Air Staff’s point person for the JALN/ALN initiatives.

FOURTH TO FIFTH

Just how is the Air Force putting the aerial layer technology to work? Collection and transmission of ISR data is a major component. Another priority is combat networks. Aerial layer techniques are particularly important to connect fighters. The technologies assisted with two big steps: creating a path for the fifth generation fighters to network with older, fourth generation aircraft, and building a communications link between F-22s and F-35s.

Scenarios for dealing with enemy aircraft place special demands on the aerial networking layer. It’s no exaggeration to say that air superiority will

The Lunar Laser Communications Demonstration conducted two-way communication from lunar orbit. In October 2013, the LLCD transmitted data from the moon to Earth at 622 mbps.





F-22s and F-35As fly in formation after completing the first integrated training mission over Eglin Training Range in November 2014.

depend as much on the links as on the fighters themselves. An air battle where Red fighters outnumber Blue US joint forces and allies will make information superiority all the more critical. Sharing information will permit aircraft to share tracks of Red fighters, decide on who takes the shot, and keep abreast of the unfolding battle. The B-2 and new Long-Range Strike Bomber will be participants in the aerial layer, too.

For the Air Force, the communication between fourth generation fighters and the new F-22 and F-35 is an especially critical section of the aerial network layer. “The F-35 and F-22, instead of speaking only to each other, need to speak backward to legacy aircraft,” said DeGarmo.

F-22 training with other forces has already shown the need for robust, secure links.

The challenge is how to modernize those fourth generation aircraft that will still be in the fight over the next decade. Link 16 created a solid standard but data needs and security concerns could both outpace older links in the future.

In joint terms, fourth-to-fifth generation connectivity falls under the heading of DARE: distribution, access, range extension. DARE delivers a tailored and scalable network transport capability across domains, according to the Joint Concept for Command Control of the Joint Aerial Layer Network.

What about sharing data between F-22 and F-35? Although both are fifth

generation platforms in capabilities and survivability, they arrived just as IP-enabled networking was becoming de rigueur. Talking to each other demanded a new protocol that was both efficient and secure.

In December 2013, an experiment called Project Missouri—after the nickname of the “Show Me” state—proved they could. (The test was dubbed Project Missouri after Air Combat Command leadership challenged Lockheed Martin to “show me” the capability.)

“We successfully integrated an F-22 with a Rockwell Collins tactical radio for Link 16 transmit and receive capability, and two L-3 Communications devices to support encrypted and secure operations,” said Ron Bessire, who was then vice president of program and technology integration at Lockheed Martin Skunk Works. An F-22 flying from Nellis AFB, Nev., communicated with software on the F-35 avionics test aircraft, known as the Catbird. The test used an open system architecture. Hardware and software development took just seven months.

The end goal is for everything to communicate, noted De Garmo. Under current budgets, the Air Force must prioritize networking upgrades to legacy platforms.

ON WITH JALN

The Air Force is playing a central role in aerial layer networks for joint operations, too. USAF is committed to providing both strategic direction and program funding for development of JALN.

“As airborne networking becomes increasingly important for future forces that will rely on effective communications for mission success,” the Defense Department “requires the ability to conduct information sharing among similar, and disparate platforms, provide access to the ground-layer high capacity backbone to extend DODIN [Department of Defense Information Networks] services to tactical edge users, and support combatant commanders and national leaders,” said the Air Force Information Dominance Flight Plan.

Of course, the aerial layer network is not isolated to the Air Force. Broken links could affect ground forces, too. Marines deployed in fixed sites had become “addicted to big-pipe, space-based systems,” said Lt. Gen. John A. Toolan Jr., commander, I Marine Expeditionary Force.

“We developed an overdependence on high-bandwidth communication systems and the contractors required to run them,”

Toolan told *National Defense Magazine* in February 2014.

With JALN, specific airborne platforms can be repositioned to provide an airborne network for units on the ground. It’s not the main mission—rather, JALN becomes a target of opportunity. Aircraft equipped with the JALN relay capability will normally be tasked with other missions. Commanders may ask them to respond and contribute to the network as a secondary task or even pop them into JALN during a mission.

It’s about giving commanders a number of ways to form and reform aerial networks. Airborne assets aren’t the only way to do it, but they are appealing because of their rapid mobility and flexibility.

The guiding idea behind JALN is to reconnect tactical units with the network they need while carrying out operations.

“When network demand exceeds supply and/or a capable adversary targets US forces’ communications, JALN airborne assets may be the only option that allows a JFC to ensure the highest priority missions operate with their full potential of net-enabled combat capabilities,” summarized the JALN joint concept. As such, part of the JALN concept is for joint force commanders to prioritize who gets up on the network and when. The future may include automated planning tools that take into account when certain units most need to latch onto the airborne relay.

“Priority joint forces must be able to continue net-enabled operations even in the face of overburdened infrastructure, difficult environments, or determined adversaries,” the joint concept acknowledged.

LASER AND BEYOND

How then, might USAF arrive at the point where the Captain Millers of the future operating concept really use lasers? Advanced waveforms like QNT and TTNT make the most of the radio frequency spectrum and improve data management. Next on the horizon are new ways to manipulate electromagnetic energy to carry messages.

“From the earliest days of laser development, researchers realized that light could outperform radio in terms of information speed and density,” summed up science writer Nicholas Gerbis in a “How Stuff Works” article. The tiny laser waves are packed more closely together. Laser printers, DVDs, bar codes—all take advantage of laser light’s ability to handle large quantities of information.



Two AWACS E-3s prepare to taxi down the runway at Goose Bay, Canada, during Exercise Vigilant Shield in October. A KC-135 is in the foreground.

The Air Force has been experimenting with laser light for communications since the 1970s. “Laser communications offer tremendous advantages over radio frequency in bandwidth and security due to the ultra-high frequencies and point-to-point nature of laser propagation,” wrote Lt. Col. James A. Louthain in a 2008 dissertation for the Air Force Institute of Technology.

Technical problems restricted laser communications over greater distances and between ground-to-air and air-to-air nodes. Turbulence and other factors once generated bit errors, but steady experimentation and adaptive designs have overcome most obstacles. For example, Louthain’s work found value in the averaging effect of multiple beams and explored optimum angulation for those beams. Air Force Research Lab has worked on developing components to maintain links between high-speed aircraft even in strong turbulence.

NASA has scored successes, too. In October 2013, the Lunar Laser Communication system transmitted data from the moon to Earth at 622 megabits per second, compared to tens of megabits common in household connections. NASA’s Lunar Atmosphere and Dust Environment Explorer spacecraft hosted the payload, and the space agency called it the longest and most reliable lasercom link ever to function through the atmosphere. The link also debuted an error-correction pathway.

DARPA and AFRL have both funded research on adapting laser technology to communications in the aerial layer. Grouped together, fiber lasers increase power and refine out atmospheric disturbance. The lower power clusters open

possibilities for laser beams to carry communications data. The technology “may also benefit low-power applications such as laser communications and the search for and identification of targets,” said DARPA Program Manager Joseph Mangano.

Time lines for laser communications differ for each mission area. NASA plans to conduct high-speed laser communications to GEO satellites in the next few years. Air-to-air laser communications have already been demonstrated by DARPA and others. As a result, “Air Combat Command may be able to provide requirements for laser communications applications within the next decade,” said Othana Zuch, spokesman for 377th Air Base Wing public affairs at Kirtland AFB, N.M.

By then, quantum computing may be changing encryption techniques. Quantum key distribution is emerging as a physics-based alternative to current techniques. International investment in QKD is on the rise. To keep pace, USAF labs are exploring potential capabilities and limitations of the technology for USAF applications.

But don’t count out the radio frequency spectrum. Recent experiments point to more methods for increasing data capacity. Engineers at the University of Southern California twisted polarized beams into a single spiral and sent 32 gigabits of data per second across about

10 feet of air. The rate was 30 times faster than typical wireless connections. Orbital angular momentum, discovered in the 1990s, lets multiple channels ride a single frequency, researcher Alan E. Willner told *IEEE Spectrum* in October 2014. Those ranges are short for airborne networks, but the premise holds potential. “A radio backhaul like that could be a huge pipe for data centers,” noted Willner.

KEEP A BACKUP

However promising the new communications technology, the Air Force must still ensure cross-domain dominance.

“We don’t want to go 100 percent network,” cautioned Wilcox. Airmen on missions need to react and adjust if the IP networks shut down. Network failure is especially problematic when weapons and sensors are disaggregated from the platform. A missile or unmanned craft drawing information from a network for updates to its mission could be in jeopardy. In the worst case, “you basically have a soft kill,” Wilcox explained.

Future progress in autonomous systems is another reason for improving the aerial network layer. A group of autonomous missiles, for example, may receive endgame updates from the aerial network layer as they seek their targets. Even with terminal guidance aboard, the aerial layer network will supply crucial target identification and permission and, ideally, transmit the final strike decision and impact information to assist in damage assessment.

One solution is to keep manned aircraft in proximity.

“If you sever beyond-line-of-sight links,” Wilcox continued, the air battle manager can control activity through line-of-sight communications. Voice carried over VHF and other radio bands can provide backup communications links. “You can’t abandon all the old ways of communicating just for new technology,” said Air Staff aerial layer network expert DeGarmo.

True agility will call on airmen to work with multiple communications pathways.

“The purpose of all this is to get the mission accomplished,” DeGarmo concluded. “The future is an interoperable communications network between airborne, terrestrial, and space forces.”

Rebecca Grant is president of IRIS Independent Research. Her most recent article for Air Force Magazine was “Defended Space” in September.

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Chennault and Stilwell

The war in China was already five years old when Lt. Gen. Joseph W. Stilwell got there in March 1942 as the US military representative to the Chinese government and chief of staff to Generalissimo Chiang Kai-shek.

China had been fighting alone since 1937. Japan held all of eastern China and the entire Chinese coastline. After Nanking fell to the invaders, Chiang

moved his capital inland to Chungking in 1938. When Stilwell arrived, the Japanese were advancing through Burma and threatening to cut off the Burma Road, China's last lifeline to the outside.

Stilwell brought no US forces with him other than a small staff. Nevertheless, he expected Chiang to be a passive figurehead while he, Stilwell, decided

on Chinese strategy and commanded the Chinese army.

Another prominent officer from the United States was there ahead of him: Claire L. Chennault, already gaining fame as commander of the American Volunteer Group, popularly called the "Flying Tigers." Chennault was liked and respected by the Chinese. He was destined to be Stilwell's great rival and adversary.

In December 1941 and early 1942, the Flying Tigers were the only American military force in China, although they were not part of the US Army. They

They disagreed completely on strategy and objectives in China. They also despised each other.

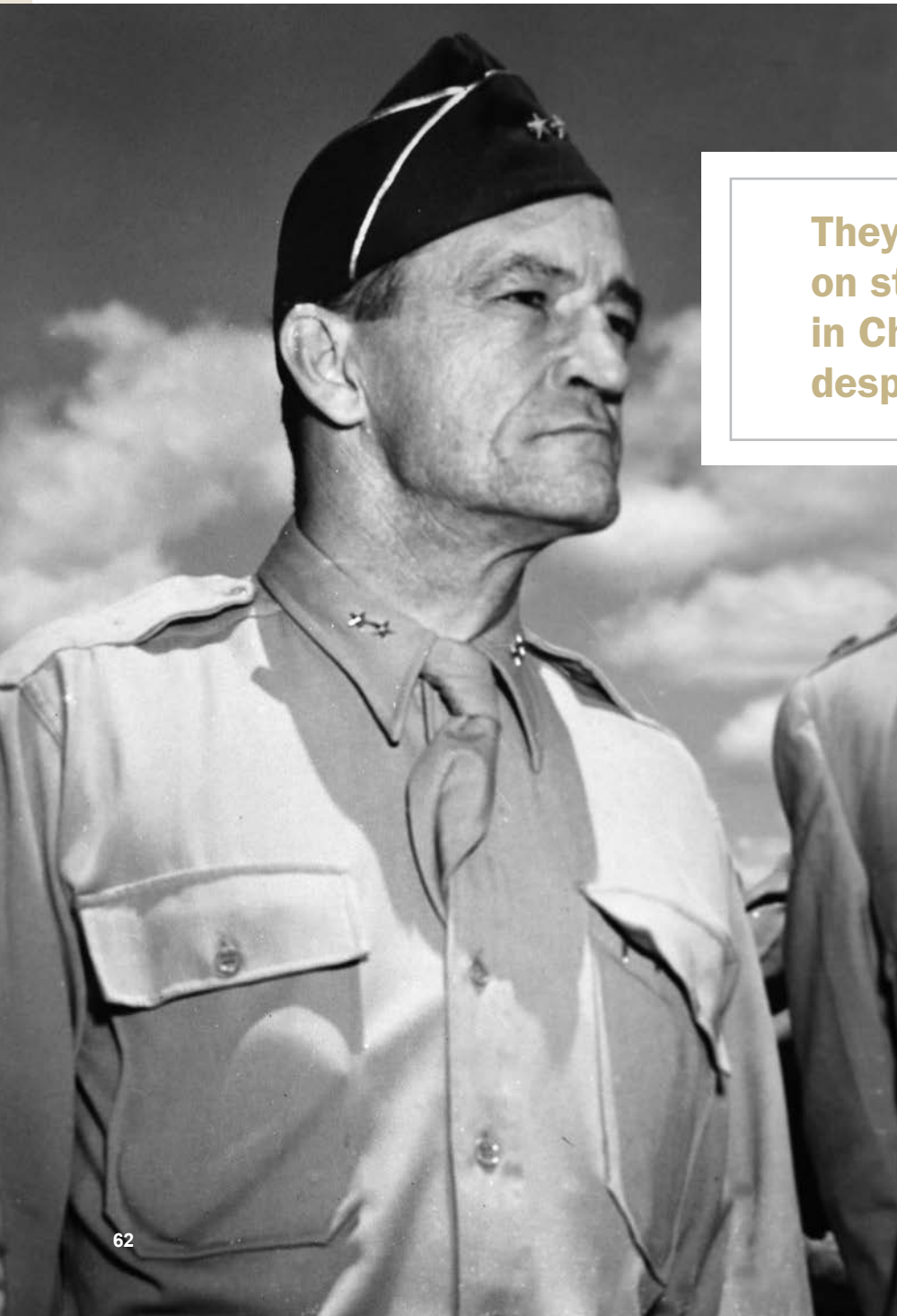
were also the only force anywhere that had beaten the Japanese. They were highly regarded by Chiang, but not by the US Army and most emphatically not by Stilwell.

Stilwell, on the other hand, was the friend and protégé of Gen. George C. Marshall, Chief of Staff of the Army. Stilwell wanted total control of the Chinese army, and he wanted to use it in Burma, which became an obsession with him. He had no interest in Chiang's policies or concerns or in the defense of eastern China.

Chiang's Nationalist government had been recognized by the US since 1928, but in Stilwell's view, it was one of two competing political factions in China. Stilwell actually liked the other

Left: Maj. Gen. Claire Chennault at a Fourteenth Air Force base in China in July 1943. Under Chennault's command, Fourteenth Air Force continued the traditions and successes of the American Volunteer Group. Right: Lt. Gen. Joseph Stilwell and an aide in Burma in December 1943.

USAF photo



Stilwell

By John T. Correll

faction—Mao Zedong and the Communists—better.

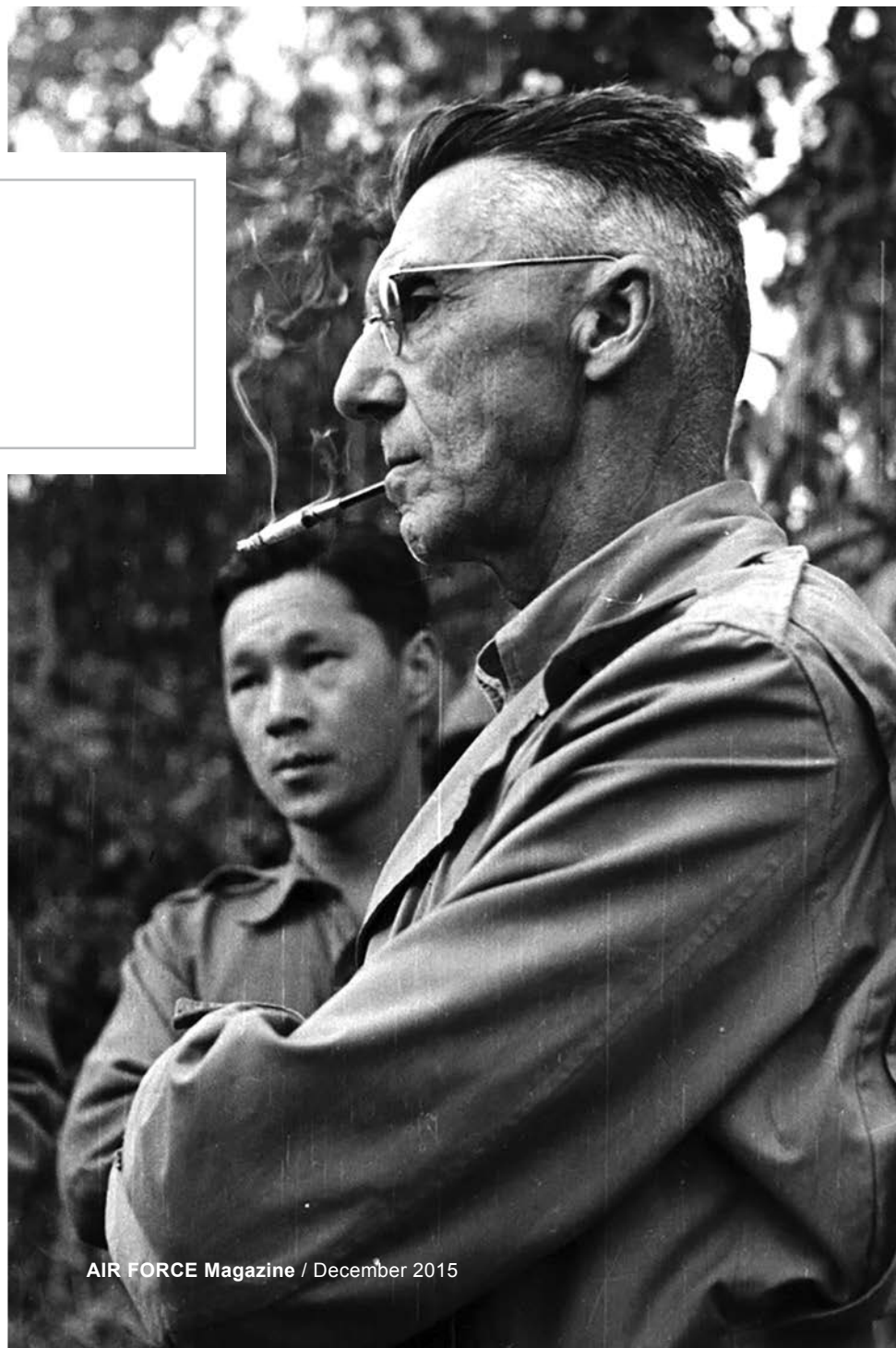
Stilwell was known for good reason as “Vinegar Joe,” so named by junior Army officers who experienced the acerbic temperament for which he was noted.

He referred to Chiang as “Peanut” and made no effort to conceal his contempt. He insisted that China do

USAF photo



A Chinese soldier guards a line of American P-40 fighters at an airfield in China. In early 1942, Chennault's AVG Flying Tigers was the only force in Asia to beat the Japanese in combat.



whatever was best for the overall war effort (as defined by Stilwell) with the long-range consequences for China being a secondary consideration.

In Stilwell's opinion, airpower could do no more than “knock down a few Jap planes.” He told Chennault—whose Flying Tigers had become US Fourteenth Air Force—that “it's the men in the trenches that will win this war,” to which Chennault shot back: “Goddammit, Stilwell, there aren't any men in the trenches.”

Stilwell cultivated news reporters who celebrated him as an earthy, salty, battle-smart combat leader. He could also count on backing and protection from Marshall, but in the end, it wasn't enough.

Things went from bad to worse until Stilwell's inevitable recall in October 1944. Before long, Chennault was recalled as well.

Stilwell remained a cult figure, owing much to an admiring press and more recently to Barbara Tuchman's laudatory *Stilwell and the American Experience in China*, published in 1971. Chennault's contributions get minimal recognition and are often actively disparaged.

On balance, as Lt. Col. Gordon K. Pickler wrote in *Air University Review* in 1972, “If one were to single out a military figure as representative of ‘the American experience in China,’

Claire Chennault more than Joseph Stilwell would be that individual.”

CHIANG AND CHENNAULT

China had been a republic since the overthrow of the Manchu dynasty in 1912, but political consolidation was elusive. It was not until 1926-28 that Chiang, the new leader of the Nationalist or Kuomintang party, unified enough of the country to gain diplomatic recognition from the United States and others.

Chiang's grasp was not secure. Regional warlords had a great deal of independence and followed interests of their own. The most serious opposition was Mao's Communist

army in its stronghold at Yen-an where it was held in check by a blocking force of Chiang's best troops.

Chiang was fighting two wars at once, against both the Japanese invaders and the internal challengers in a continuing civil war. He had tried without much success to build an air force, employing a string of ineffective foreign advisors and mercenaries.

In 1937, Chiang hired Chennault, a former Army Air Corps captain, to do a three-month survey of the Chinese air force. Chennault would stay in China, one way or another, for more than eight years.

Chennault was a misfit in the close-knit Air Corps, an outspoken advocate of pursuit aviation in a force committed to the bomber. Passed over for promotion, he retired, ostensibly because of hearing loss caused by flying in open cockpits, to take the job in China.

In 1940, Chennault organized the American Volunteer Group, recruiting 100 pilots from the United States to fly 100 P-40B fighter aircraft, purchased by special authorization from President Franklin D. Roosevelt. The Air Corps was opposed but could not block the project.

The P-40 was supposedly obsolete, but the AVG pilots, coached by Chennault, outflow and outfought the Japanese. The Flying Tigers nickname first appeared in press notices in the United States. They blunted the advance of the Japanese in eastern China and rose to greater fame in their defense of the British colony of Burma in 1942. They were enormously popular with the Chinese but were regarded by Army Air Corps regulars as hotshots and mercenaries.



Stilwell (front) leads 115 people out of Burma into India over rugged mountain trails in May 1942. The group included soldiers and civilians, Stilwell's staff, a public relations officer, and a correspondent for Time and Life magazines. He made no provisions for the Chinese troops left in Burma and sent no message to China's Nationalist leader Generalissimo Chiang Kai-shek. He earned praise for his grit, but was out of touch for 20 days.

THE DISJOINTED CBI

The United States was not ready to send forces to Asia in 1941, but wanted to keep China in the war and to tie down the Japanese invasion forces so they could not be redeployed elsewhere.

The so-called China-Burma-India Theater was not an actual Allied combat theater. It was an administrative designation, used mostly by the United States. The British had their own commands in Burma and India, and Chiang was supreme commander of the China theater.

Marshall picked Stilwell—one of the few people who ever called Marshall by his first name—to fill a dual role as commander of US forces in the CBI and as advisor to Chiang. Stilwell had served in China between the wars and he spoke and wrote the language. Unfortunately, the mission called for tact and diplomacy, of which he had none.

Chennault was accepted back into the Army Air Forces as a colonel but he was not the senior airman in the theater. That job went to Clayton L. Bissell, who had been a confidante of Billy Mitchell and who clashed with Chennault when they were instructors at the Air Corps Tactical School.

Chennault was promoted to brigadier general April 22, 1942, but Bissell was promoted a day sooner on April 21, ensuring him seniority.

Stilwell had only as much control over the Chinese army as Chiang would give him. The defensive front in eastern China held little interest for him. He focused immediately on the more active fight in Burma, where six Chinese divisions and the Flying Tigers were already engaged along with the British.

The British commitment to Burma was lukewarm. Their main interest was protecting India, crown jewel of the British empire. They would not expend great resources to defend Burma. Postwar recapture of the colony would be soon enough, and that should be done by imperial forces, not by the Chinese neighbors.

Stilwell, his determination undiminished, plunged in fully. He went to Burma in March 1942 and took charge personally. With some reluctance, Chiang gave him command of the Chinese forces which were, Stilwell complained, insufficiently aggressive.

WALKOUT FROM BURMA

By May, the Japanese were advancing rapidly and closing in on Stilwell's line of retreat. Gen. Henry H. "Hap" Arnold, chief of the Army Air Forces, sent an airplane to bring Stilwell out, but he refused to get aboard. He insisted instead on walking out of Burma, 140 miles over rough country to India, in what became the most famous episode in the Stilwell legend.

Stilwell radioed Marshall that he was going, then destroyed the radio as too burdensome to carry. He did not send Chiang a message of any kind nor did he make any provision for the Chinese troops.

For 20 days, Stilwell, 59, led 115 people over rugged mountain trails to Imphal in eastern India. It was a mixed group of soldiers and civilians, including a team of Burmese nurses and Stilwell's staff. Among the marchers were Capt. Fred Eldridge, the public relations officer, and Jack Belden, correspondent for *Time* and *Life* magazines.

The walkout was immortalized in the Aug. 10 issue of *Life*, illustrated with Eldridge photos showing Stilwell in his old campaign hat and leggings, leading the group through the jungle and cleaning his Tommy gun during a break.

Some of the Chinese troops made their way back to China and others went to India. The praises rolled in for Stilwell, but Chennault did not see it that way.

"If Stilwell had been a company, battalion, or regimental commander, whose primary responsibility was for the troops in his immediate command, his walkout would certainly have been commendable," Chennault said. "But for a man with the tremendous burden of the ranking American officer in Asia and chief of staff of the Chinese Republic, it was a startling exhibition of his ignorance or disregard for these larger responsibilities."

Stilwell vowed to return to Burma, which thereafter received nearly all of his strategic attention.

The Flying Tigers were to be merged into the Army Air Forces but it was not an easy union. Bissell's view was,

"Many of the AVG pilots are [a] wild, undisciplined lot unsuitable for command of squadrons at present. They fight well but are probably overrated."

Perhaps so, but the Flying Tigers had beaten the Japanese regularly. The AAF needed them but was unwilling to make any concessions for their service so far. Promotions for them would be slim—even though promotions were generous for Stilwell's staff—and there would be no furloughs before they returned to combat. They could join the AAF as reservists, not regulars.

Bissell set the tone when he gathered the AVG at Kunming and threatened, "For any of you who don't join the Army, I can guarantee that your draft boards will be waiting for you when you step down a gangplank onto United States soil."

Only a few AVG pilots and ground personnel joined the China Air Task Force when it was formed in July 1942, although many of them extended their stay for a few weeks to help defend China through a critical period.

The CATF, commanded by Chennault, became US Fourteenth Air Force in March 1943. Chennault was promoted to major general March 14, but Bissell was promoted March 13, keeping his day of seniority.

Both Chiang and Chennault struggled constantly for more supplies, which were tightly controlled by Stilwell. Bissell wrote a negative efficiency report on Chennault, saying that he did not "render generous and willing support to plans of his superiors." Stilwell supported Bissell enthusiastically until Bissell was recalled in August 1943 at Chiang's request.

STILWELL'S INVECTIVE

Stilwell's dealings with Chiang were seldom tempered by any respect due Chiang as the head of state of an Allied nation. He regarded Chiang and the Nationalists as corrupt and repressive and said so, often in places where he knew word would get back to Chiang.

In his letters and papers, published after the war, Stilwell routinely referred to Chiang as "Peanut" and described him as "a grasping, bigoted, ungrateful little rattlesnake."

Lord Louis Mountbatten, chief of the British Southeast Asia command, was "Glamour Boy."

Elsewhere, Stilwell called the wheelchair-bound President Roosevelt "Rubberlegs."

Over time, Stilwell's criticism of Chiang came to be accepted by the War Department as authoritative. Less credence was given to reports from Chennault, who got along well with Chiang.

In 1943, Stilwell and Chennault were called to Washington for consultation and met with Roosevelt, who asked for their evaluations of Chiang. "He's a vacillating, tricky, undependable old scoundrel who never keeps his word," Stilwell said. Chennault disagreed, saying, "He has never broken a commitment or promise made to me."

Roosevelt liked Chennault and had him to the White House for three private meetings before he went back to China. FDR, apparently suspicious of the information he had been getting, invited Chennault to write to him directly, outside military channels.

"During the next 18 months, I wrote half-a-dozen personal letters to the President fulfilling this request and received personal notes of encouragement from him," Chennault said.

This direct access infuriated not only Stilwell but also Marshall and Arnold.

THE CHINA HANDS AND MAO

By contrast to his disdain for Chiang, Stilwell liked Mao and the Communists—or “the so-called Communists,” as he described them in his journal. His views were reinforced by several advisors lent to him by the US Embassy, notably John Paton Davies Jr. and John S. Service.

These advisors would later become famous as the State Department “China Hands” during the “Who Lost China?” political melodramas of the 1950s, but during World War II they were shuttling back and forth to Yen-an and filing favorable reports.



National Archives photo

Above: The animosity between Stilwell (r), Chiang, and Madame Chiang had not yet reached its ultimate depth when this photo was taken in 1942. Facing page: Chennault in front of a Flying Tiger P-40 in Kunming, China, in November 1944, after Stilwell's recall from the theater. Chennault would soon be recalled as well.

According to Davies, the Communists were mainly “agrarian reformers” and were “liberal, democratic, and soundly nationalistic.” The China Hands saw Mao as committed to the defeat of the Japanese. In fact, Mao’s secret instruction to his followers was, “Our fixed policy should be 70 percent expansion, 20 percent dealing with the Kuomintang, and 10 percent resisting Japan.”

Part of the legend was that Chiang would not fight and that the Communists suffered an undue share of the losses. Stilwell wrote that Chiang’s military effort between 1938 and 1944 was “practically zero.” In fact, the Nationalists fought thousands of battles and minor engagements and lost almost 600,000 men. Mao’s right-hand man, Chou En-lai, acknowledged that in the intense first three years of the war, the Communists had taken only three percent of the casualties.

US emissaries, visiting Yen-an despite Chiang’s disapproval, repeatedly sought to broker a partnership in which Chiang would remove his blocking force and the Communists would join in a unified Chinese effort against the Japanese. It did not happen because Mao’s price was representation in a coalition government, to which Chiang would not agree.

Stilwell never changed in his esteem for the Communists. In 1946, six months before his death, he took note of developments in China and wrote, “It makes me itch to throw down my shovel and get over there and shoulder a rifle with Chu Teh,” the senior Communist military commander.

STILWELL RECALLED

At the Cairo Conference in November 1943, Roosevelt, Churchill, and Chiang agreed on a new offensive in Burma, supported by a major British landing in the south. However, the British, rethinking the plan in view of requirements in Europe, canceled the landing.

With some reluctance, Chiang authorized Stilwell’s use of troops based in southwestern China as well as those who had remained in India since the walkout. They would fight in Burma under American command in cooperation with the British and a US commando force known as “Merrill’s Marauders.”

About the time the offensive in Burma began in early 1944, though, the Japanese struck with Operation Ichi-go, a major effort to capture Allied airfields in eastern China and establish an overland supply route from Korea to Indochina.

Stilwell did not want to divert any resources to eastern China and used his control of Lend Lease supplies to compel Chiang to follow Stilwell’s priorities. Once again, China had to rely on Chennault’s air forces for its main support.

Stilwell was critical of the effort, of course, but after the war, Lt. Gen. Hiroshi Takahashi, chief of Japanese forces in central Asia, said, “I judge the operations of the Fourteenth Air Force to have constituted between 60 and 75 percent of our effective opposition in China. Without the air force, we could have gone anywhere we wished.”

Stilwell rejected any suggestion to lessen the focus on Burma. He wanted the Nationalist and Communist armies

to be combined in common cause against the Japanese and all of them placed under Stilwell's command.

In July 1944, Roosevelt signed what amounted to an ultimatum, drafted by Marshall, telling Chiang that Stilwell had been promoted to four-star rank and urging that he be given command of the Chinese armies. It also said that if Chiang did not reinforce the Burma campaign, "you must be prepared to accept the consequences," which were not stated.

Boxed, Chiang had no choice but to accept a US commander of his armies—but it would not be Stilwell. Chiang wanted Stilwell removed. Marshall protested as best he could, but Stilwell's string had finally run out. He was recalled in October 1944 and replaced by Maj. Gen. Albert C. Wedemeyer.

Stilwell departed within 48 hours. He would not remain a single extra day to see Wedemeyer settled in, much less help him, nor did he leave so much as a scrap of paper to help with the transition.

On Stilwell's desk, Wedemeyer found numerous recommendations for battle awards and decorations from Fourteenth Air Force. Many had laid there for months without attention. Wedemeyer approved them immediately.

"As the weeks passed, I began to understand that the Nationalist government of China, far from being reluctant to fight as pictured by Stilwell and some of his friends among American correspondents, had shown amazing tenacity and endurance in resisting Japan," Wedemeyer wrote later.

In January 1945, the Allies finally reopened the land supply route into China as the first convoy rolled over the Ledo-Burma Road, 1,100 miles from India to Chungking. It no longer mattered much. The airlift across the hump of the Himalayas brought in seven times as much cargo per month as the trucks did.

Wedemeyer told Chennault that he was under orders from Marshall to "ease" him out. In July 1945, a message from Arnold advised Chennault to "take advantage of the retirement privileges now available" before he was "reduced and put back on the retired list" at his permanent rank.

Chennault was relieved of command July 6 and retired Oct. 31.

LEGENDS AND PERSPECTIVES

Some of the accusations against Chiang are valid. His Nationalist party was riddled with corruption. Chiang himself was a heavy-handed dictator and tolerant of cronies who were often crooked or incompetent.

Yet Chiang also held China for the Allies and tied down more than a million Japanese troops. He had little help, except from the AVG and Fourteenth Air Force. He fought and took casualties, which Mao seldom did.

Mao and the Communists turned out not to be agrarian reformers after all. Their People's Republic of China, established in 1949, set new records for oppression and misrule. Deaths from executions and famine in the Great Leap Forward and the Cultural Revolution are estimated in the tens of millions.

As for Chennault, he was undeniably headstrong and insubordinate, and he circumvented the chain of command with regularity. To his credit, though, he was sincerely interested in the long-term security of China. Many Americans were not.

Chennault got results. Stilwell did not. Almost everything Chennault attempted, both with the AVG and Fourteenth Air Force, worked. Stilwell's mission failed in every respect. Chennault sometimes promised more than he could deliver, but he was hardly alone in that.



USAF photo

Arnold sided with Marshall against Chennault but even so, he recognized the extraordinary effectiveness of the AVG and Fourteenth Air Force under Chennault's command. The AVG stopped the Japanese assault in China in 1941 and was the best of the Allied forces in Burma in the spring of 1942.

Chennault achieved strong results against Japanese shipping and infrastructure in 1943 to 1944. His operations may have been the difference in holding China in 1944, tied up an abundance of Japanese forces, and inflicted great damage and casualties on the enemy. ✪

John T. Correll was editor in chief of Air Force Magazine for 18 years and is now a contributor. His most recent article, "The Faded Vision of 'Military Man in Space,'" appeared in the November issue.



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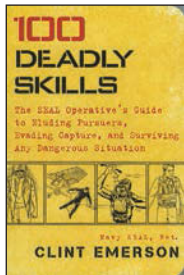
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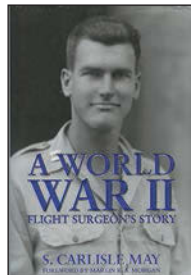
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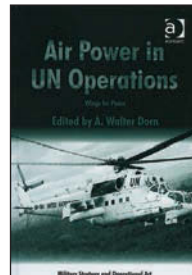
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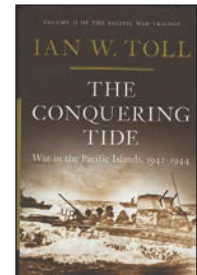
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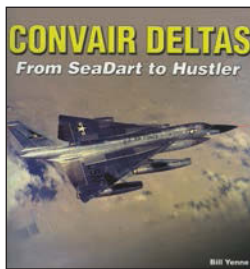
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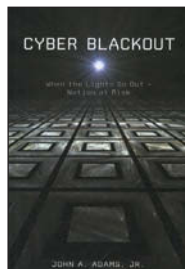
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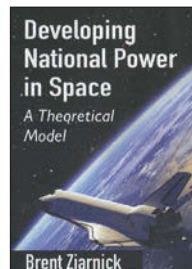
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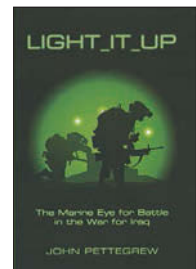
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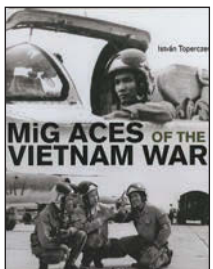
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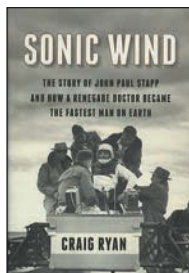
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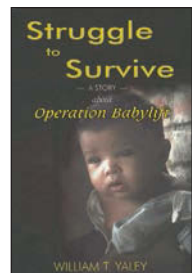
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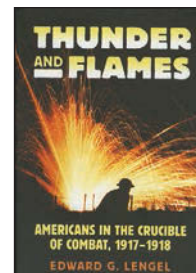
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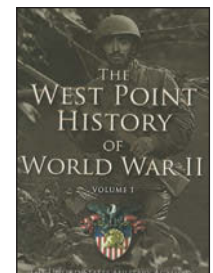
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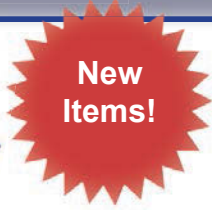


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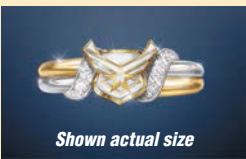
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By Frances McKenney, Deputy Managing Editor



Emerging Leaders

The Air Force Association's Emerging Leaders Program began in 2013 as a way to prepare volunteers for future AFA leadership roles. Here's the first profile in AFA's third group of Emerging Leaders.

Sharon A. Branch

Home State: Texas.

Chapter: Central Florida.

Joined AFA: Life Member, joined in 1981.

AFA Offices: State VP and chapter aerospace education VP. Formerly state aerospace education VP and chapter AFJROTC liaison.

Military Service: 26 years Active Duty.

Occupation: Clerk, Southeastern Freightlines.

Education: B.A., University of Central Florida; master's degree, Troy State University.

Q&A:

How did you first learn of AFA? I learned about it as an ROTC cadet because the Air Force Association did communicate with us. ... There were a lot of awards they provided for ROTC cadets and opportunities to travel to the Air & Space Conference up in Washington.

What was your major initiative as state aerospace education VP? The biggest highlight is: Each year the state hosts a JROTC drill meet, and I became involved in that at the chapter level before I was a state VP for aerospace education. At that point, it was being hosted by a high school, but I changed it to a college level. ... This past spring, we had it at the University of Central Florida, and this upcoming spring we'll be having it at the University of South Florida. ... It gives the ROTC student at the college level a rather large event [to organize], and it allows JROTC students to travel to a college and get a feel for what college is like. The AFA chapter level benefits, the state benefits, and the students benefit.

What's AFA's strength? They're strong on communications. To me they're always visible with the people who make the decisions. They're out there advocating for the Air Force and the airmen.

How can AFA increase membership? It's the same as anything else: It's personal contact. ... If I don't go out and champion what I believe, then nobody's going to know what I believe. ... If you really love it, you're going to talk about it.

Branch speaks to a church council in Orlando, Fla.



Photo by Brenda Johnston



Photo by Scott G. Patton

Nira, a trained therapy dog, sits with Sara Patton and the audience at a veterans facility in Huntsville, Ala. Patton is the daughter of Tennessee Valley Chapter member Scott Patton.

Gone to the Dog

Who enjoyed the visit more: the dog or the vets?

It was hard to tell when the therapy dog Nira joined Alabama's **Tennessee Valley Chapter** and other veterans for an Air Force anniversary celebration in September at a state veterans facility in Huntsville.

Chapter member Scott G. Patton explains that Nira belongs to his 18-year-old daughter, Sara. She rescued the Pit Bull mix from the Humane Society and formally trained her to become a therapy dog. Sara is no stranger to the veterans home and for this Air Force 68th anniversary party brought Nira along for practice in socialization. "Regular contact with groups is good for Nira, and from the veterans' reactions, good for them as well—they love having her visit," wrote Patton in an email.

Another hit: Cutting the Air Force birthday cake. The vets enjoyed identifying the oldest among them, selected to cut the cake, by tradition, with the youngest airmen. A1C Kevin Armstrong, who was home visiting his mom, chapter member Brenda S. Armstrong, filled the role of youngest.

And what's an Air Force birthday party without singing the service song? The chapter had that covered, too, with member Bryan Bennett playing it on his trumpet. 🎺



Photos by Edwin Hurston

Dr. Lee Duke, a former USAF flight surgeon, spoke to Pennsylvania's York-Lancaster Chapter in September. Now executive VP and chief medical officer for Lancaster General Health, his presentation covered a health care system focused on adding value and on patient safety.

How to Photograph Awards Presentations



Take photos before or after: AFA Member of the Year Jim Lauducci and his wife, Marie, chat before the awards banquet. Below, Ron Adams walks back to his table after receiving a Chairman's Citation award.

They already knew the requirement: Take chapter-news photos showing AFA members in action, not posing for the camera.

But at least three chapter leaders asked: What about awards ceremonies? Aren't those photos going to show people shaking hands and posing?

Photographer Jose Ruiz proved otherwise. He covered AFA's Field Awards Banquet at September's National Convention and illustrated several approaches to taking candid awards snapshots:

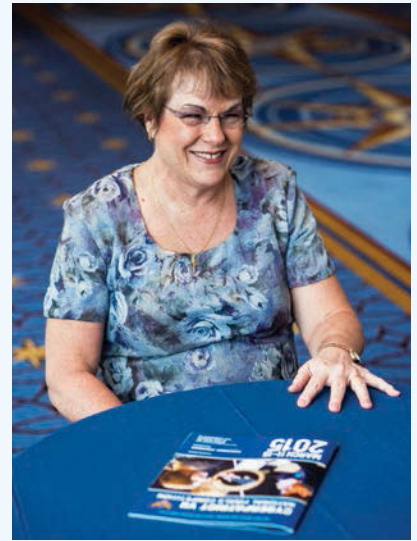
- Photograph the recipients *before* the awards ceremony.
- Photograph them *after* they receive the award.
- Photograph awardees *en route* to accepting the award.
- Take the photo the award winner wants—and then the photo the magazine wants. When Florida's Dann Mattiza arrived with a large group, Ruiz obliged them with the "school photo" they wanted. Then he kept shooting until he got the photo the magazine preferred.
- Take more than one photo. The more you take, the better your chances of nabbing a candid, unposed photo showing people in action.



Dave Shiller before the ceremony where he accepted the Unit of the Year award for the Lance P. Sijan Chapter. Below, CyberPatriot Teacher of the Year Chris Sutton, from Grissom High School in Huntsville, Ala., just after an interview by Alabama Public Television.



En route: Bruce VanSkiver shakes hands as he heads to the stage to receive the Nation's Capital Chapter's Unit Exceptional Service Award for Best Single Program.



One for them and one for the magazine: At left, 15 AFA members from Florida asked for a group photo. Afterward, the photographer kept snapping until he captured Dann Mattiza (at right), Florida state president, who accepted the AFA Outstanding State Organization award.





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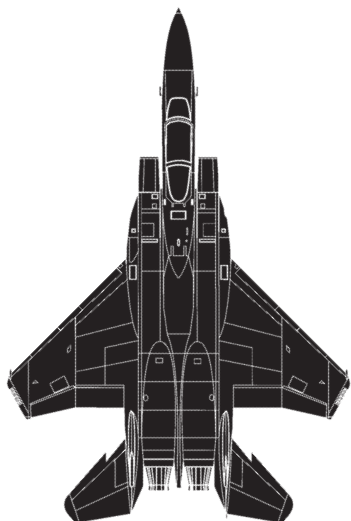
¹ Injury Facts 2012, National Safety Council

² LIMRA Trillion Dollar Baby—Growing Up: The Sales Potential of the US Underinsured Life Insurance Market, August 2011

³ No age restrictions. Provides coverage for children up to 21 years of age, or 23 years of age if full-time, unmarried student. Spousal coverage available up to \$250,000 and child coverage available up to \$50,000. Excludes Alaska, Maine, New Hampshire, and Washington residents.

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F-15 Eagle/Strike Eagle



The F-15—a twin-engine, all-weather tactical aircraft—was, without doubt, the world's top air superiority fighter between 1974 (when it entered service) and 2005 (when the F-22 achieved IOC). The McDonnell Douglas fighter scored 104 aerial victories with zero losses. A later E-variant, optimized for ground attack, dominated in that mission. It was exported to Israel, Japan, Saudi Arabia, South Korea, and Singapore.

McDonnell Douglas gave the Eagle an all-metal fuselage with large, shoulder-mounted wings, thin tailplanes, and two potent turbofan engines. The F-15's dominance stemmed from an unprecedented mix of acceleration, maneuverability, versatile weapons load, and advanced avionics. A high

thrust-to-weight ratio let the F-15 turn tightly without losing airspeed. Its "look-down/shoot-down" radar distinguished moving targets from ground clutter. The airplane was constantly upgraded.

First kills were recorded by Israeli F-15s against Syria in 1979-82. The first major combat by USAF F-15s came in the 1991 Gulf War, when the Eagle scored 34 kills against Iraqi warplanes and struck key ground targets. F-15s have flown in every major US operation since, from the Balkans to Iraq, from Afghanistan to Libya. New models are being produced for export; plans call for keeping the production line open until 2019—47 years after first flight.

—Robert S. Dudley with Walter J. Boyne

This aircraft: USAF F-15C Eagle—#80-0030—as it looked in 1986 when assigned to 57th FIS, NAS Keflavik, Iceland.



In Brief

Designed by McDonnell Douglas (now Boeing), built by MD and Mitsubishi
★ first flight July 27, 1972 ★ number built 1,724 ★ crew of one or two ★
armament one 20 mm cannon; up to eight AA missiles ★ span 42 ft 10 in ★
length 63 ft 9 in ★ height 18 ft 6 in ★ service ceiling 60,000+ ft ★ **Specific to F-15C:** function air superiority ★ two Pratt & Whitney F100-PW-100 or -220 engines ★ max speed 1,650 mph ★ cruise speed 570 mph ★ combat radius 1,061 mi ★ weight (max T/O) 68,000 lb ★ **Specific to F-15E:** function strike ★ two P&W F100-PW-220 or 229 engines ★ load 23,000 lb ordnance ★ max speed 1,875 mph ★ cruise speed 575 mph ★ combat radius 790 mi ★ weight (max T/O) 81,000 lb.

Famous Fliers

Silver Star: Thomas Dietz, Robert Hehemann, Kirk Rieckhoff, Christopher Russell. **Distinguished Flying Cross:** Jamie Damsker, Eric Das, John Easton, Mike Caudle, Daren Sorenson, Kevin Flood, Christopher Anthony, Jon Kelk, William Watkins. **Mackay Trophy:** 1974—Roger Smith, Willard MacFarlane, David Peterson; 1999—Jeffrey Hwang; 2010—Donald Cornwell, Dylan Wells, Leigh Larkin, Nicholas Tsougas. **Multiple US Victories:** Three—Robert Hehemann, Cesar Rodriguez, Thomas Dietz; two—Rhory Draeger, Jeffrey Hwang, Robert Graeter, Ben Powell, Jay Denney, Anthony Murphy. **KIA:** Peter Hook, James Poulet; Thomas Koritz, Donnie Holland; Eric Das, William Watkins; Mark McDowell, Tom Gramith. **CSAFs:** Tony McPeak, Ronald Fogleman, John Jumper, Buzz Moseley. **Notables:** Jeanne Leavitt (USAF's first female fighter pilot), Wilbert Pearson (only pilot to destroy a satellite). **Israeli Notables:** Moshe Melnik (first F-15 kill), Zivi Nedivi (landed after loss of wing). **Saudi Notable:** Ayedh Al-Shamrani (two kills). **Test Pilots:** Irv Burrows, Gary Jennings.

Interesting Facts

Has never been shot down in air-to-air combat ★ was first US fighter with thrust sufficient to accelerate vertically ★ destroyed satellite with ASM-135 missile ★ set eight time-to-climb records in 1975 ★ reached 98,425 ft altitude in 3 min, 28 sec ★ downed 41 Syrian fighters (zero losses) in 1982 Lebanon War ★ destroyed 18 Iraqi jets on ground at Tallil in Gulf War ★ downed Iraqi Mi-24 helo in flight with a 2,000-lb bomb ★ flew longest-ever fighter mission (15.5 hours, Afghanistan) ★ escorted Israeli strike against Iraq's Osirak nuclear plant in 1981.



An F-15E Strike Eagle from the 333rd Fighter Squadron, Seymour Johnson AFB, N.C., flies on Aug. 25, 2000.

USAF photo by MSgt. Thomas Meneguin



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