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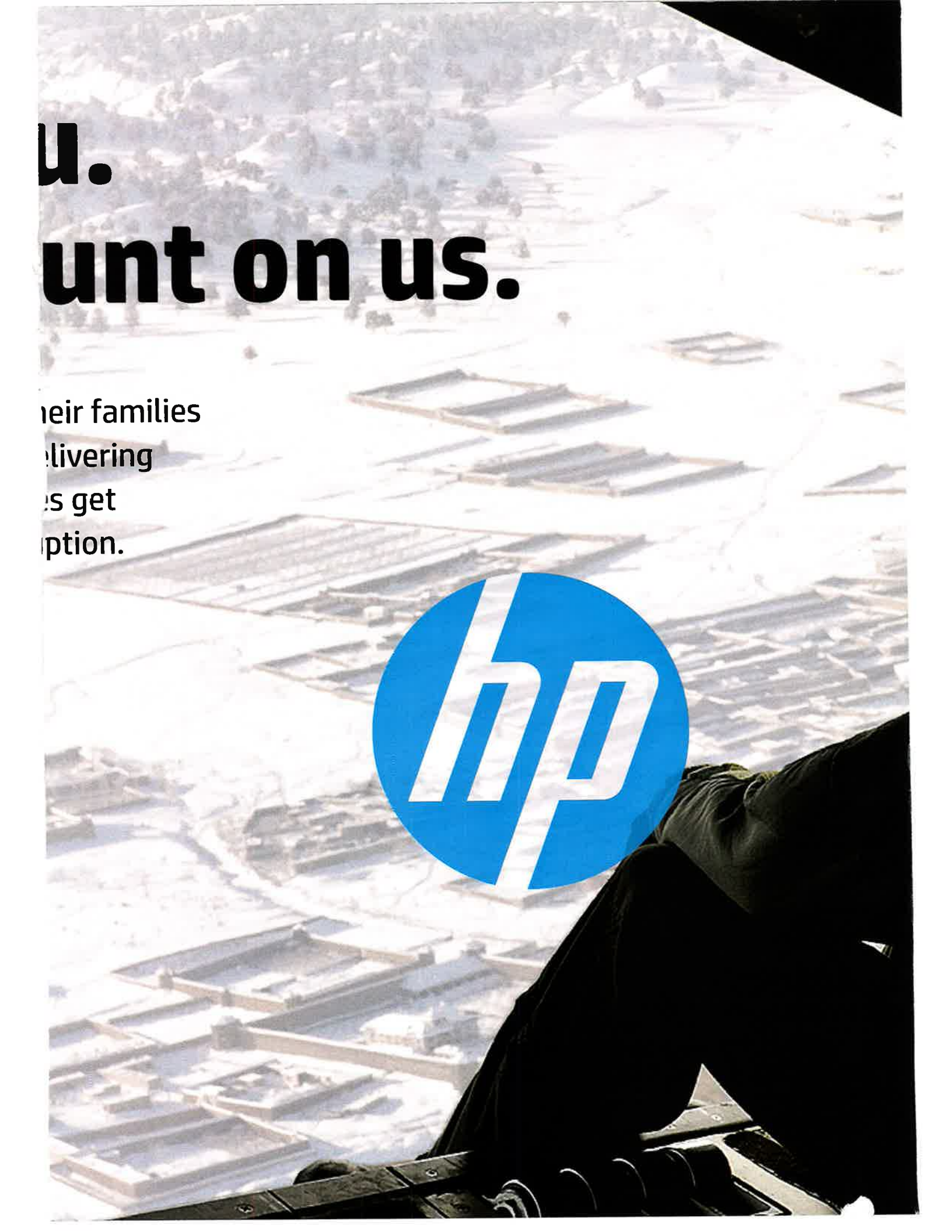
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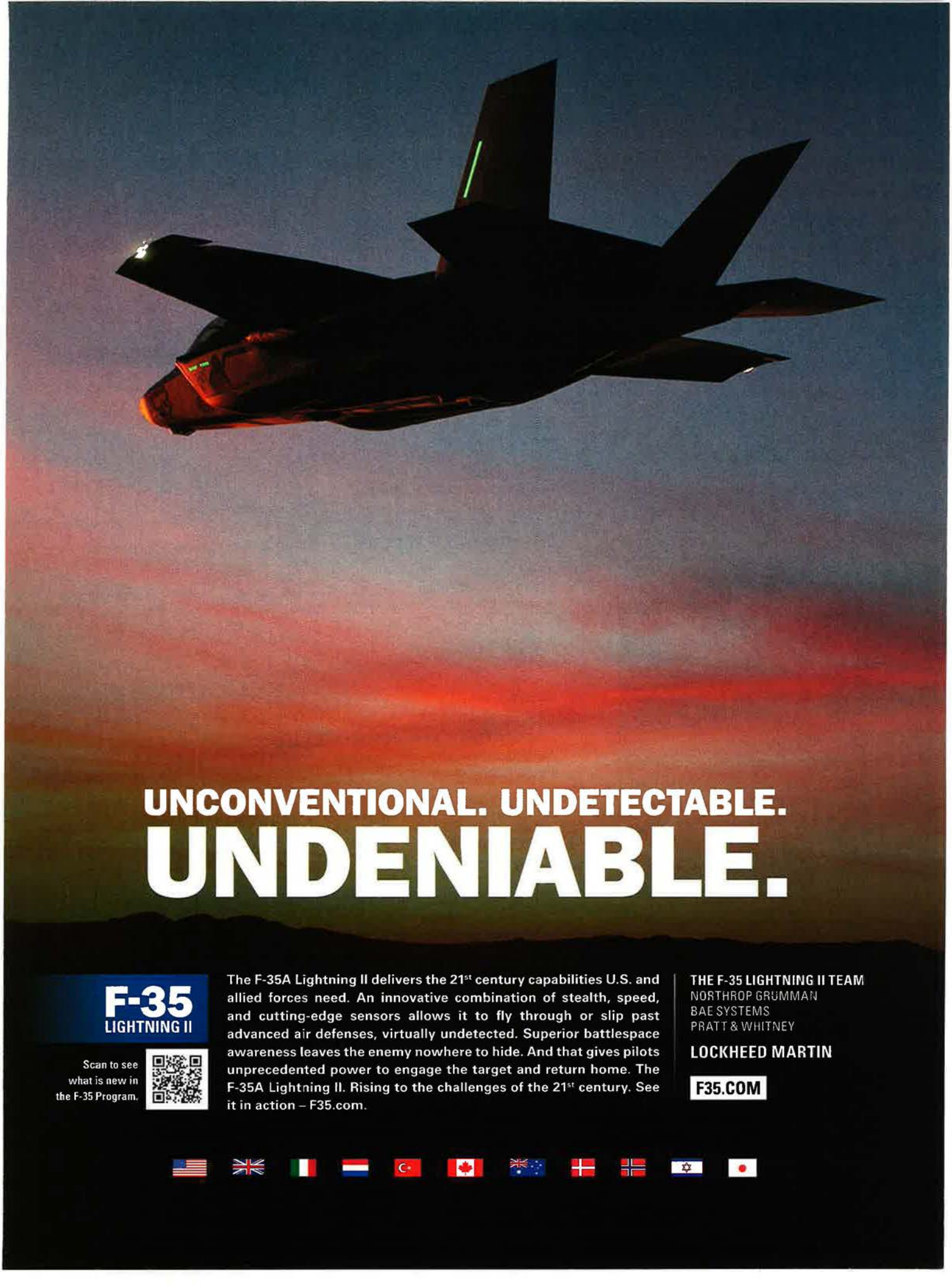
September 2012, Vol. 95, No. 9

About the cover: A1C Ryan Wagoner and a B-1B at Nellis AFB, Nev. See "The Weapons School Way," p. 84, USAF photo by SrA. Brett Clashman.

FEATURES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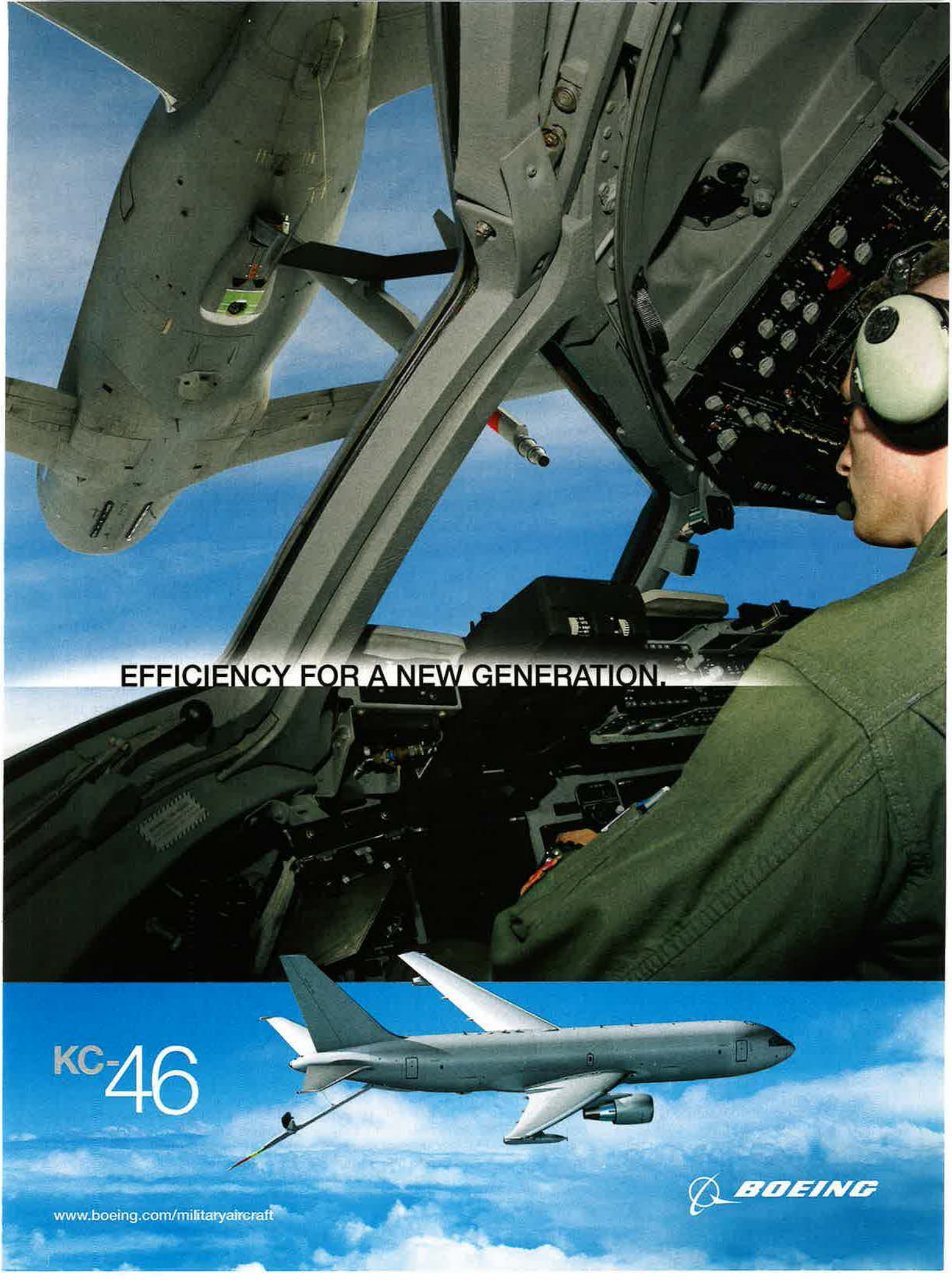
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Editorial

By Adam J. Hebert, Editor in Chief

Five Months To Heal a Rift

THE force structure changes proposed in the Air Force's Fiscal 2013 budget request this spring were a political disaster—so much so that Gen. Mark A. Welsh III, the new Chief of Staff, recently declared USAF's plan "simply not executable."

The Air Force proposed cutting 227 aircraft and nearly 10,000 airmen. Politically, there were two problems with this. First, the cuts were concentrated in the well-connected Air National Guard. Second, the proposals caught almost everyone by surprise.

USAF seeks to meet its requirements while saving money by rebalancing force structure. Nearly 250,000 airmen have been cut from the Active Duty force over the past 25 years, making it increasingly difficult to rely on Active airmen for rotational forces. Since the regular Air Force sought to preserve manpower, the Guard and Reserve bore the brunt of the 2013 cuts. But because there was no discussion of the process, many moves seemed arbitrary or even contradictory.

The new Chief himself said he had "no idea" how the process "to turn this into individual organizations' units and equipment" worked. Welsh was commander of US Air Forces in Europe when the decisions were made.

Governors, lawmakers, and the adjutants general quickly mobilized against USAF's plan. Part of the angst was reflexive local opposition to the prospect of losing jobs and money, because these decisions are felt acutely at the local level. Consider, as a case study, recent history at Selfridge Air National Guard Base in Michigan. (Full disclosure: My hometown was one city over.)

In 2005, Selfridge's 127th Wing flew Guard F-16s and C-130s, while the 927th Reserve Wing operated KC-135 tankers. That year's base realignment process ordered all these aircraft and the Reserve unit away, replacing F-16s with A-10s. The C-130s and tankers were replaced with different KC-135s, this time ANG-operated.

The conversions took years, during which time the wing's airmen and aircraft deployed repeatedly to Iraq, Afghanistan, and elsewhere.

The 127th finished converting to the A-10C in June 2011 and deployed to Afghanistan six months earlier than originally scheduled. Its airmen flew 2,000 combat sorties, returned last November, then learned two months later that USAF intended to remove all of the base's 24 A-10s while adding four KC-135s.

Overall, the proposals for Michigan would cut 673 military positions—a quarter of the state's 2,728 total—and end Selfridge's 95-year-old fighter mission. Col. Michael T. Thomas, commander of the 127th Wing, described this sort of recurring rejiggering as a "shell game." It "strikes me as a colossal waste of money," he said.

National decisions are felt acutely at the local level.

The financial impact would be significant in an area that can ill-afford it. Selfridge is 20 miles north of Detroit, and Michigan is still reeling in the aftermath of the nation's 2008 economic collapse and the 2009 General Motors and Chrysler bankruptcies.

Michigan has a nine percent unemployment rate, worse than all but nine states. Not that it receives much from DOD today: On a per capita basis, Michigan ranks 43rd among the states in total defense spending and dead last in number of defense employees and DOD payroll.

Selfridge's advocates say the plan will do nothing to improve Air Force capabilities while actually increasing costs. Every time the aircraft and mission change there are retraining, construction, and other costs.

If Selfridge's fighter mission ends, the bulk of the 127th's A-10 airmen will likely leave the military and take their expertise with them. They are locally based Guardsmen, and there are no other fighter units anywhere nearby.

The uncertainty is already bruising morale, base officials say. Unlike the 2005 BRAC adjustments, heavily debated and phased in over years, the 2013 changes were to be sudden. Thomas says Selfridge is actually underutilized and is an ideal location for an active association and more aircraft and airmen, not fewer. "It's time to bring the Active Duty back to Selfridge," he said.

The Defense Department is not and cannot function as a jobs program. It is the nation that ultimately loses if USAF cannot manage its structure holistically, as a total force, and is required to protect 54 separate air forces across each of the states and territories.

No state or community wants to lose jobs, of course. The specifics at Selfridge are unique, but the desire to understand the process and save the mission are not.

Buffalo, N.Y., Pittsburgh, and Mansfield, Ohio, are also struggling economically while facing significant Air Force cuts. An Alaskan senator blocked Air Force promotions while trying to learn the rationale behind a plan to move an aggressor squadron out of Fairbanks. And the governor of Montana actually sued the Air Force and Defense Secretaries in an attempt to block USAF's plan to pull F-15s out of his state.

Never cutting anything, ever, is not a viable defense strategy. But as Col. Philip R. Sheridan, vice commander of the 127th, noted, "'It's *your turn* to take cuts' is not a strategy" either.

"I don't think there's anything you can do to avoid being blindsided by a Pentagon proposal," said Al Lorenzo, assistant county executive for Selfridge's Macomb County. Locales "pretty much have to react," he said.

Airmen and communities never saw these changes coming. That is what created today's toxic environment.

Congress may very well reject all the 2013 moves, and the Fiscal 2014 budget request will be released in February. It too will feature force structure cuts, and they will not feel equitable to those affected. The Air Force has but five months to improve communication and lay a new foundation for cooperation.

Welsh recognizes the need. "We're in a place we cannot stay," he said at his July 19 confirmation hearing. "However we move forward, it has to be together," with better communication among the various Air Force and National Guard components, "so that we never wind up here again." ■

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Letters

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Remember Space and Cyber

In "A Force Rebalanced" (July 2012) *[p. 28]*, Executive Editor John Tirpak does a masterful job of describing how and why our air domain forces must be modernized. However, in slightly over 3,000 words discussing our air, space, and cyberspace service's "bedrock modernization programs," he devoted only two—"and satellites"—to the space and cyberspace domains. While in many cases the air domain is rightly considered to be the pointy end of our business, it is increasingly true that the space and cyberspace domains provide foundational capabilities for our Air Force.

I often challenge audiences to think of an operational mission the Air Force performs that doesn't require space and cyberspace capabilities. Our command and control is generated in, and passes through, cyberspace–and often through space as well. GPS enables precision in everything from aircraft navigation to bomb guidance to high-speed network timing. Satellite communications enable the reachback that allows us to bolster operations like the war in Afghanistan without deploying additional forces forward—avoids unnecessary exposure to hostilities and saves the resources that would be required for logistically supporting those forces.

Even the modernization efforts described in Mr. Tirpak's article are likewise space- and cyber-enabled. For example, the F-35 is loaded with cyber assets; in fact, if we do this right, it could function as a node on the Air Force network. Its command and control, navigation, communications, weapons, and many other systems are space-dependent. The F-22, the ISR platforms, and the airframes remotely piloted from halfway around the globe rely even more heavily on support from the space and cyber realms.

It's no exaggeration to say almost every military program operating in the land, maritime, or air domains is intimately intertwined with the foundational cyberspace and space domains. So it seems shortsighted that an article about modernization within the Air Force doesn't mention two of the three domains we cite in our mission statement—especially when our space and cyberspace systems are in the midst of significant modernization as well. With the exception of our weather satellites, literally all of our satellite constellations are being modernized to respond to increasing threats and increasing demand. We're concurrently revamping our cyber networks for similar reasons.

These modernizations will significantly enhance the space and cyber support for every other warfighting domain. However, in some cases, we're the pointy end of the spear as well. I don't think it's a stretch to envision a time when decisive effects are the result of a few well-timed keystrokes. The modernizations we're working now will facilitate some of these tip-of-the-spear operations.

The new Defense Strategic Guidance states that in addition to a shift of emphasis to the Asia/Pacific region, "DoD will continue to ... invest in advanced capabilities to defend its networks, operational capability, and resiliency in cyberspace and space." Our leadership understands the foundational nature of these domains. They understand the American way of war depends critically on information, and that much, if not all, of that information is generated in, stored in, or transits the space and cyberspace domains.

No question, our air domain systems are front and center of what is the United States Air Force, the best air force the world has ever known. But our space- and cyber domain systems also are strong contributors to what makes us the best. When discussing budget priorities and force modernization, let's not forget such foundational capability in our service.

The thesis of Mr. Tirpak's article is that there's quite a lot good about the future of the Air Force. And to that thesis, I say, amen! But let's make sure we balance the rebalance with coverage of the other two of our three domains.

Gen. William L. Shelton
Peterson AFB, Colo.

A better [subhead] for the article would be, "Through the declining budgets, the Air Force is becoming a third-rate US military arm." The F-22 program is too small in numbers, and therefore is doomed in the outyears to become unsustainable due to cost vs. mission capability. It is time for DOD to stand up for the USAF air superiority mission with a follow-on F-22, as USAF cannot be in two places at once. Wouldn't our key allies stream back under the USAF umbrella in an F-22 [foreign military sales] program? In the meantime, I am sure China, Russia, North Korea, Iran, and others are playing out this weakness in their wargames. What do you have to say, new Air Force leadership?

Lt. Col. Sid Howard,
USAF (Ret.)
Midwest City, Okla.

Poking the Hornet's Nest

Fifty-two years after the mission, we are still writing about it: in the July issue of the *Air Force* Magazine, p. 4 editorial *["Long Roads to Redemption"]*, the first four paragraphs and the chart on p. 59 *["The Berlin For Lunch Bunch"]*. I was a flight surgeon crew member on that mission. I have seen portions of the mission apparently declassified since 1999. Certainly it was appropriate for Capt. John McKone and Capt. Bruce Olmstead to have been recognized in 2004.

Our primary mission of a flight of three RB-47Hs was to provoke the Russians and do radar mapping of their flight path. We were attacked by two Russian MiGs over the Barents Sea. All six crew members exited the RH-47 that was shot down, five with open parachutes.

We should remember the four men who paid the ultimate sacrifice. The pilot, Maj. Willard G. Palm, was the only crew member whose remains were returned to the United States. I was told that he had a fatal bullet wound. Maj. Eugene E. Posa, Capt. Oscar L. Goforth, and

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Capt. Dean B. Phillips' bodies were not recovered.

We returned fire on an attacking MiG and one was shot down. The other MiG broke off the attack. We stayed in the area as a search and rescue until low fuel made us return to base. I was ordered to say nothing about the mission and I have not until now.

Col. R. J. Black Schultz,
USAFR (Ret.)
Pueblo, Colo.

Your editorial about the Silver Star being presented to Gary Powers posthumously *["Long Roads to Redemption," July 2012]* brought to mind some information I read about the Powers story many years ago that I have never heard discussed. The book *The Trial of the U-2* is the transcript of the trial.

Powers' trial was certainly a show trial, conducted in front of a 2,000-person international audience with simultaneous translation into six languages. The transcript seems very fair for Soviet trials, except of course that Powers was compelled to testify. Powers pleaded guilty and, in fact, was guilty. Powers' "testimony" seems very factual but he played the part that he was a simple pilot who turned switches on and off over various places shown on his map.

The US government seemed certain that Powers did not survive whatever happened to him when he failed to reach Bode, Norway. Five days after the shootdown, the Soviets announced that they had shot down a spyplane, but didn't mention the fate of the pilot. On the same day the State Department announced that a NASA U-2 weather research airplane had had trouble with its oxygen system on May 1 and may have strayed into Soviet territory on autopilot and was missing. Of course, the Soviets had Powers alive.

The airplane was not hit by the missile, although the tail was blown off from the blast behind the aircraft. The U-2 is a fragile airplane and disintegrated from aerodynamic stress as it tumbled from the sky. At the trial Powers testified that he was hit "at the maximum altitude, at about 68,000 feet." Powers testified in response to the question, "How did you leave the airplane?":

"I was unable to use the ejection seat because of the forces originating in the falling plane. I remember I was at a height of 30,000 feet and I realized I could not use the ejection seat. So I opened the canopy and loosened the straps. The centrifugal forces pressed half of me against the instrument panel while the other half hung outside. I had forgotten to disconnect the oxygen hose and they held me in. I had to struggle to get out. The parachute opened automatically immediately after I left the airplane. By that time I was at 14,000 feet."

The Soviets collected all the parts they could find and studied the prize. A special committee of experts was selected to study the destructor unit that was found intact in the wreckage of the plane. They discovered the destruct device was operated from the cockpit. There were two ways the plane could be destroyed. On the instrument panel near the electrical instruments there was the word "explosion" which they assumed referred to a special switch for remote control destruction. However, elements of the remote control wiring were not found.

The other device operated with the ejection seat in one of two ways. It operated (1) either with electrical control with a timing mechanism or (2) with an electrical control without a timing mechanism. The experts did not find any timing mechanism in the wreckage.

When Powers flew on the mission he carried a "blood chit" (I am not sure of the exact nomenclature) that consisted of ample escape and evasion material, but he was also given a needle loaded with curare sufficient to cause a quick death if captured. He was not instructed to use the needle but it was an option for him.

So why was the State Department so confident their cover story about the faulty oxygen system would stand? Why did Powers elect to get out of the cockpit manually instead of with the ejection seat? The book shows a photo of the destructor unit on display with the caption: "Destructor unit Powers didn't use because he believed he would be killed instantly."

Maj. Charles W. Hinton,
USAF (Ret.)
Satellite Beach, Fla.

What a Mess

I have read and reread Rebecca Grant's article "End of the Cold War Air Force" *[July, p. 40]*. It treats the changes to the operational Air Force in considerable depth and discussion. However, the treatment of subsuming AFSC, the Air Force Systems Command, into AFMC, the Air Force Materiel Command, gets fairly minimal treatment.

AFSC was an attempt to create a strong, knowledgable system development, engineering, and production organization as a counter to a Lockheed, Boeing, or Grumman. At various times it was led by Ben Schriever, Sam Phillips, and Al Slay. It took calculated risks and pushed us into the future. It produced the Titan and Minuteman ICBMs well ahead of the Soviets, and the B-52s, F-15s, and F-16s dominated the skies well before our adversaries. AFSC was a training ground for fledgling program managers, military and civilian, and the best from captain on up were tracked and positioned to grow. I had 11 years of increasing acquisition experience before I became the program manager for the SRAM (Short Range Nuclear Attack Missile) for defense suppression carried by the B-52s and FB-111s.

On the contrary, AFMC is the logistic support for all Air Force systems. It was and is, of necessity, risk averse and must support the fighting Air Force units today and every day around the globe. The two organization missions are not compatible, and priorities will change, sometimes dramatically, on a day-to-day basis.

We have been arguing the role of acquisition in the Air Force for the last 40 years with no uniformed breakthrough or enlightened motivation. So let me just focus on just two critical aspects.

Experience and continuity:

Experience—if we truly believe that we need experienced Air Force military and Air Force civilian program managers, then we need to grow them, save them from the predatory personnel system, get them some " real world" experience in dealing with the aerospace industry, and lead them up the growth curve. A few "hits" along the way will be good conditioning. ... It was for me! There is no substitute for knowing you are in a management chain in which you are expected to grow, become accountable, and learn through exposure to the "real" acquisition world.

Continuity—continuity is critical. We have it in industry in "spades," but not in OSD or the military. In the military we do have an essence as program managers grow up, if left to do so! One of the great errors of Goldwater-Nichols was to remove acquisition from the military and tie it to the selected officials in the OSD and service hierarchy, who are first and foremost political appointees. When Gen. Ron Yates, USAF (Ret.),was principal deputy to the Air Force undersecretary for acquisition, he was involved in every program. When he got his fourth star as commander of AFSC, he was automatically excluded by Goldwater-Nichols from having anything to do with Air Force acquisition programs! His experience of years of USAF acquisition was cast aside! Did that make sense? No complaint from the political side.

Furthermore, as political candidates were ushered into key OSD and Air Force acquisition roles, they mostly lacked any practical experience, but instead of policymaking, which is a legitimate headquarters function, they ventured into the acquisition details that USAF had lost to Goldwater-Nichols. Program details and trades are now managed out of the Pentagon. Hoorah for Goldwater-Nichols! I could have never successfully managed SRAM and AWACS in today's stifling system. Is it any wonder that General McPeak would say to Air Force Secretary Don Rice, "Are you now going to tell me how sharp the bayonet should be?"

Gen. Lawrence A. Skantze,
USAF (Ret.)
McLean, Va.

Readers deserve more than the uncritical pablum served up in Grant's article on the reorganization of the Air Force under then Chief of Staff Gen. Merrill McPeak and Air Force Secretary Donald Rice. Much of what was done had to be undone. What comes across in the article is the enormous ego of McPeak. Lost in his rush to dismantle SAC was any appreciation that the strongest justification for an independent Air Force was the strategic bombing mission. A more balanced analysis of the reorganization would have highlighted the danger of too much ego in decision-making. McPeak's legacy would have been even worse had it not been for the approach of his successor, Gen. Ronald Fogleman, who took to binding up the open sores left by McPeak. It is a shame that Grant's article does not represent something of lasting value in cataloging the lessons of the reorganization.

Col. Michael R. Gallagher,
USAF (Ret.)
Hillsboro, Ore.

Having served as an aircraft maintenance officer at Luke AFB, Ariz., during the USAF reorganization in the summer of 1992, I can vouch that General McPeak's comment that "others might call it turmoil, even confusion" rang true at the time (all office furniture was to remain in place during the reorganization, but pickup trucks were spotted with desks and chairs all over the base on the big day). The amazing thing is that we effectively continued our mission despite the relentless speed of the reorganization. In my opinion we succeeded because of the truly outstanding professionals we had, from the wing commander to the dedicated maintenance professionals on the flight line and in the shops. We were successful due to the way USAF had organized to train and fight during the previous decade. Had we not been so well prepared, the reorganization may not have gone so smoothly. In my case, having already had the opportunity to command two aircraft maintenance squadrons, I felt I was well-prepared to take command of a 1,200-person maintenance squadron that had been created from four existing squadrons (in just a few weeks) supporting both F-15s and F-16s. While it was certainly a challenge, we prevailed due to the professional dedication of all the men and women in the new super squadron.

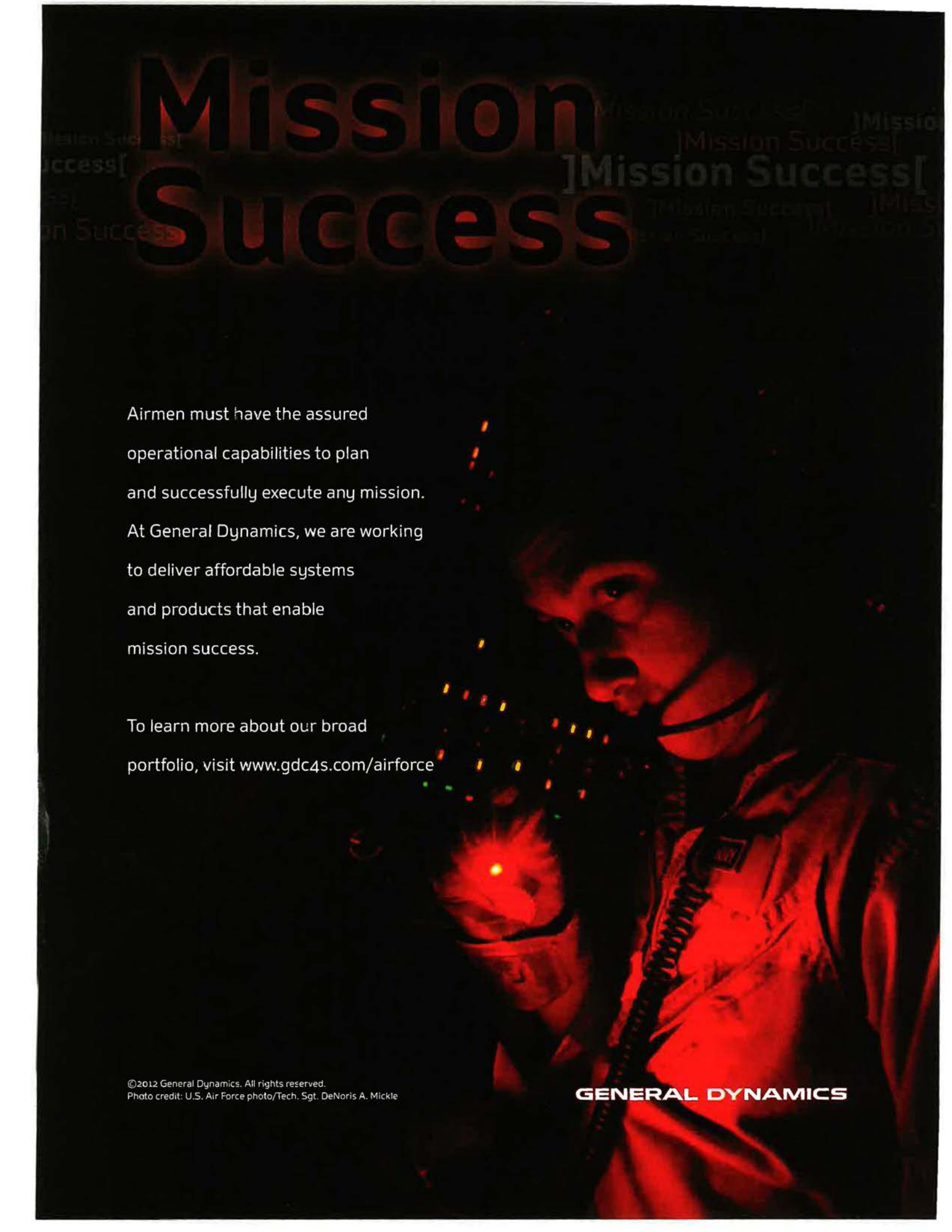
I believe the otherwise excellent article should have pointed out that not all of the changes made during that period turned out to be good for the Air Force and had to be reversed in subsequent years. McPeak said it best in the last sentence of the article, "Are we properly organized? That's something every Chief should ask." In fact, every Chief did ask, and USAF has changed some small things, i.e., officer rank back on the shoulders; some big things, i.e. Global Strike Command; and some very fundamentally important things, i.e., flight line aircraft maintenance under the maintenance group.

Col. Steve Sylvester,
USAF (Ret.)
Goodyear, Ariz.

I survived the McPeak era but it wasn't easy. It was like "shock and awe" before its time. ... So much, so fast, so landscape altering. The relatively uncomplicated graphic display that accompanies Rebecca Grant's article doesn't do it justice. If you overlaid all the additional Majcom and organizational changes that occurred during McPeak's reign you'd get a truer picture of the uproar caused, and all in a relatively compressed time span. Military patch manufacturers were by far the biggest winners and undoubtedly made a fortune!

I was a young field-grader and career ATC officer at the time and survived the disruption of my professional world with the disintegration of Air Force Communications Command. I consequently went from a career of largely working for communications officers, in direct sup-

Mission Success



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GENERAL DYNAMICS

port of the operators (pilots), to working directly for the operators themselves. It was quite a cultural shift and not without a fair share of pain and suffering for all involved.

As the German philosopher Friedrich Nietzsche put it, "What does not destroy me, makes me stronger," so perhaps I owe General McPeak a vote of gratitude. Maybe I'll buy his new memoir, *Hangar Flying,* the first of a planned three-volume series, as a fitting payback.

Col. Bill Malec,
USAF (Ret.)
O'Fallon, Ill.

Having worked for the air staff and Rand, I can see why Dr. Grant is so positive on former Secretary of the Air Force Rice and former USAF Chief of Staff McPeak. Her July article reflects a certain familiarity. Personally, I have a different perspective. I'm not sure that that fighter pilot and that McNamara era "Whiz-Kid" were the perfect pair to reorganize the Air Force in the early 1990s. Too much ego.

In the article, McPeak appears as "me," the saving avenger. He rushes into the SAF's office and says, "Let's reorganize the AF." The SAF said, "OK ... how do you want to do it?" This suggestion from a general officer, who admitted that he didn't know the difference between tactical and strategic weapons application, who saw USAF's core mission as "manned wing combat," and believed that "no one was better at keeping track of them [nuclear weapons] than me." The admission of needing to get rid of Gen. John T. Chain (CINCSAC) because, he "would never have acquiesced" also says a lot about the individuals involved. If you don't agree, let's just get rid of you. As stated in the article, "McPeak wanted to move fast. He felt a four-year term was not much time to drive change into the fabric of USAF." Note the use of terms like "drive change" and "fabric" of the Air Force. In the trenches, we saw false starts, jerk stops, and in many cases arbitrary approaches that would have been comical if they hadn't been so damaging and costly. We waited in anxious anticipation for the next crazy decision.

Considering ICBMs as "shooters" shows complete lack of understanding of weapons application, unless we can apply them like iron bombs and 20 mm cannons. The ICBM movement to ACC HQ reinforces one of the monumental blunders. The comment by McPeak speaks volumes, "That was stupid and I undid that as quick as I could, without it looking like I spilled ketchup on my tie." Would that be the new uniform tie? These were real weapons and real people. Even today, USAF is correcting some of the blunders. Using AFI's resulted in a series of near disastrous incidents. We finally stood up Air Force Global Strike Command to bring control back to our strategic nuclear forces. With AFGSC, we have decided that clear guidance might be better than operational suggestions. General Chain could have offered that perspective.

The light blue-dark blue command structure of USSTRATCOM borders on diabolical. We made groups into squadrons, then back to groups. Where was the considerate, professional forethought and planning that the Air Force had such a respected reputation for? Seems like too many "mes" and "Is."

Bottom line ... How is that change working out? I believe the Air Force is still recovering from the early 1990s reorganization. "See you on the flight line!"

Col. Quentin M. Thomas,
USAF (Ret.)
Woodstock, Ga.

Concerning the article by Rebecca Grant, I believe the breakup of the Strategic Air Command was a tragic mistake. This was only done to appease the Russians and Chinese and nothing more.

Now as these two countries greatly build up their military forces, our defense department is being gravely cut back, SAC is gone, and the greatest deterrent to war is nowhere to be found.

The Chinese, Vladimir Putin, and the mullahs in Iran must be overjoyed.

Ed Kochie,
Brick, N.J.

Speak No Evil

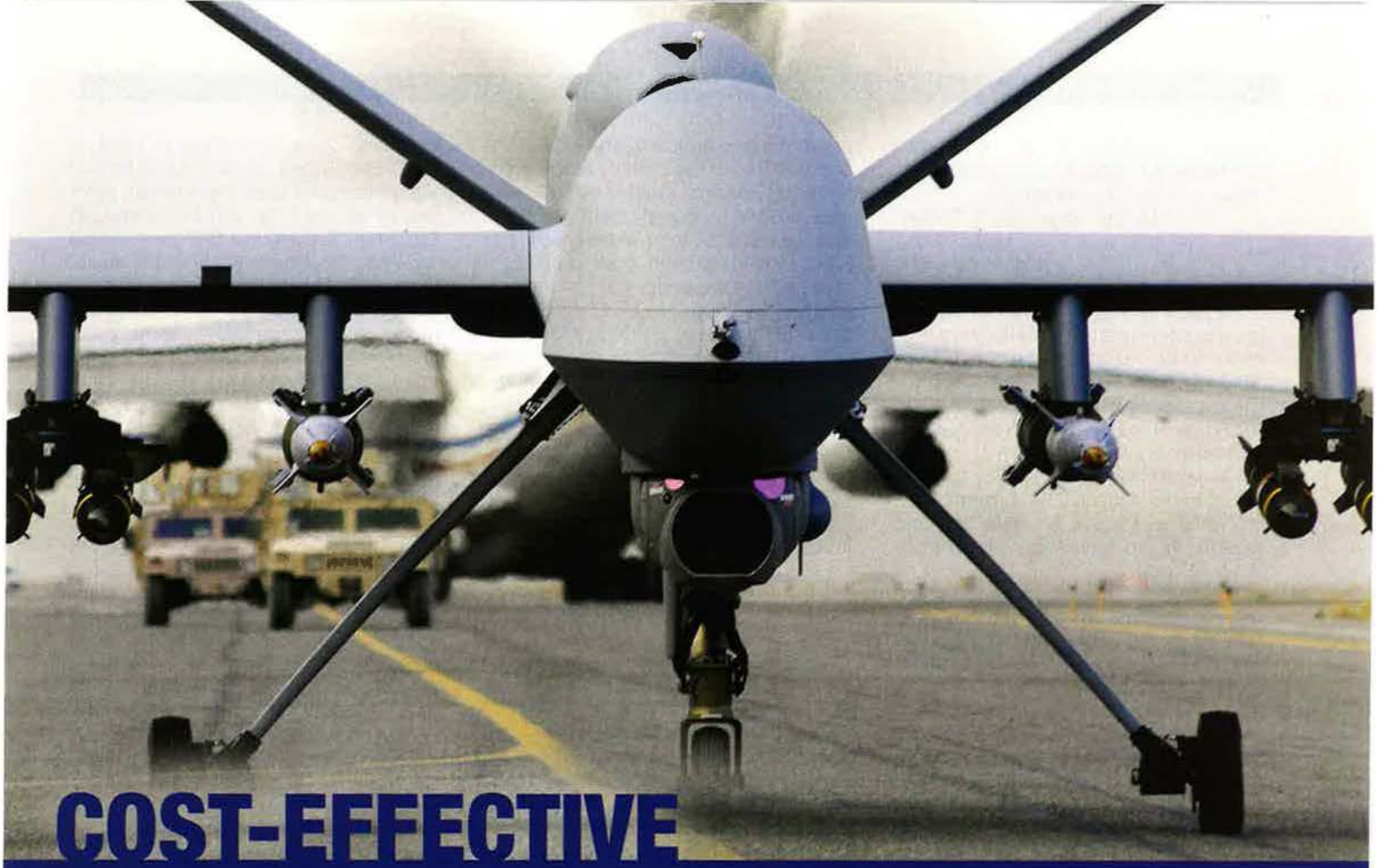
Brian Shul and Walter Watson Jr. have never had their their day in court. They deserve one.

I am saddened and disappointed by the statements made by Maj. Gen. Patrick J. Halloran, USAF (Ret.), about Brian Shul in the July 2012 issue of Air Force Magazine *["Letters: Famous or Infamous?" p. 7].* For a senior officer with such a distinguished career and so greatly admired to impugn in a widely read professional journal the reputation of an equally fine man is inappropriate and unfortunate.

Well-known to many, both inside and out of the Blackbird community, are the negative comments that, for the past 25 years, have continued from the head of the Blackbird Association concerning Brian Shul—perhaps the "landslide" the general is referring to. Had the general bothered to inquire of other sources or, better yet, interview the two people directly involved in an event that took place 13 years after he left the SR-71 program, he might have learned what many members have long known but are unwilling to discuss for fear of being ostracized by the association's leadership. It has been far too easy for these few leaders to use their positions and titles as added credibility in launching slanderous attacks of half-truths and innuendos against Shul and Watson. General Halloran failed to mention two of these, an SR-71 operations officer and a wing commander, now prominent members of the association, were both summarily fired from their positions. Shul and Watson were never fired. Watson continued a distinguished career and retired as a colonel. Shul, though removed from flying the SR-71 without a hearing, flew the T-38 at Beale until retirement. No official, punitive action was ever taken against either, simply because there was absolutely nothing, aside from poor judgment, to charge them with. These are facts and matters of official record. One can only assume from all this that the "Blackbird standards" mentioned in General Halloran's letter are applied in a very selective manner.

Walter J. Boyne made an excellent choice in including Brian Shul and Walter Watson as a notable crew *["Airpower Classics: SR-71," May, p. 152].* Ironically, though vilified by a select few within the Blackbird community, this crew has done more than any other SR-71 crew to promote the message of extraordinary achievement this great aircraft represented through their informative, inspiring, and highly acclaimed presentations. Their books, like their message, are world class. Regardless of how anyone feels about Brian Shul, General Halloran's heavy-handed remarks reflect negatively on the Blackbird Association as there is much that is left out, and they bear the stain of vendetta or even jealousy. As "Godfather," he has allowed this sort of reckless behavior from senior members of the association to go on far too long. Regrettably, it has also been witnessed by many in aviation circles in this country and overseas to the detriment of the association's reputation and the truly legendary achievements of its members.

In all of their books and public speaking, Shul and Watson have never spoken ill of anyone in the SR-71 program nor chosen to air the politics that consumed the squadron in its final days. Apparently, some in the Blackbird Association felt it necessary to enlist the aid of one of their most respected and admired members to publicly slander Shul for simply being mentioned as "notable" by a renowned aviation writer he has never met. Watson and Shul would never write these things in a public forum. Perhaps it's time someone did. For those with heartburn from what I have said or the way I have



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said it in this letter, there's no need to ask General Halloran to haul your water again. Contact me directly.

Lt. Col. Raymond B. Tucker,
USAF (Ret.)
Panama City, Fla.

Regarding Maj. Gen. Patrick J. Halloran's commentary, I find his comments about Walter Boyne's choice of Brian Shul as a "famous flier" in the "Airpower Classics" section of the May 2012 issue *Air Force* Magazine, inappropriate and unprofessional.

General Halloran's objection to Brian Shul should not have been mentioned in the letter. Rather, his objection and reason should have been directed to Walter Boyne.

Shul's flying the El Dorado Canyon mission seems, to me, a reasonable qualifier for a "famous flier." Shul's book, with stunning images and narrative about the mission, enhanced the mission's notoriety, in my opinion.

It seems inappropriate for the "Godfather" to have character assassinated Shul's service. To provide the reader with open-ended verbiage such as "removed for cause" with reasons as "long and appropriate list of negative activities" doesn't belong in this magazine. They suggest career-ending political issues. Where's the connection to flying successful missions, the stick and rudder skills needed to harness the Blackbird, and hours spent in a pressure suit over hostile territory?

"Not a member of the Blackbird Association" sounds like political censure to me. General Halloran, along with the Blackbird Association's "former crew members" come across as jealous ax grinders.

Brian Shul gave us nonplayers a front-seat view of the Blackbird in action with his stunning crisp images and descriptive prose. Likewise, Shul and Watson gave the US government stunning images of the bad guys!

I'll speculate the squadron commander, wing commander, and Blackbird Association naysayers didn't like Shul's photography and subsequent success.

Tim Marshall
Dover, N.H.

I was an aircraft commander in the KC-135Q at Beale in the early days of the SR-71 program. I knew General Halloran and in the intervening years have had the opportunity to meet Walt Watson and Brian Shul—all very fine men of the highest caliber. Walter Boyne is spot on in his inclusion of Watson and Shul as one of the notable SR-71 crews as they have served to benefit the SR-71 community as a whole with their unique presentations and beautiful depictions of the SR-71 in their widely read books. I found General Halloran's remarks disturbing in tone and intent. Shul and Watson paid for their indiscretion and have moved on with their lives quite successfully. It appears that professional jealousy has appeared in the Blackbird community. In every organization there are incidents that occur that will be classified as indiscretions or professional lapses of judgment. The Shul-Watson incident doesn't make the top 10 among SR-71 pilots. The 25-year-old ax that the Blackbird Association continues to grind can only reflect poorly on the many exceptional people who served in that program.

Lt. Col. Wilbur L. Tracy,
USAF (Ret.)
Yuba City, Calif.

Having worked in the aviation museum business for 20-plus years, it has been my honor and privilege to have met both Brian Shul and Walt Watson and to have enjoyed their excellent multimedia presentation on the Blackbird ... many times. I was surprised to see Brian's name mentioned in General Halloran's letter to the editor in less than exemplary terms.

Since 1992, whether speaking to capacity-filled museums, or patiently answering questions from the endless masses at air shows across this country, I believe Brian has singularly accomplished more for the proud legacy of this stellar aircraft, and the pilots who flew her, than any other individual, in or out of the service. I think Walter Boyne was spot on. The Blackbird Association, in my opinion, should be thanking Brian and Walter as honorable torchbearers for their namesake jet, instead of getting all spooled up over some dusty, decades-old event, and attempting to now cast aspersions.

Cory Crowell
San Diego

In the Boonies at PSAB

Thanks for a walk down memory lane. I could not help but smile as I read Rebecca Grant's article *["The Short, Strange Life of PSAB," July, p. 52].* The article was well-written and contained several familiar names. However, I wanted to highlight one unit in particular that was not mentioned at all: the 5th Combat Communications Group from Robins AFB, Ga. Back in 1996, in the aftermath of the Khobar Towers bombing, the "5th Mob" was placed on alert in anticipation of executing their mission to set up communications and air traffic services in bare base locations. Within 48 hours of receiving the execute order, the 54th Combat Communications Squadron departed on Aug. 6, 1996, in six C-5s carrying over 275 short tons of equipment and over 130 airmen. After two aerial refuelings and a crew swap in Ramstein, we arrived at Prince Sultan Air Base 36 hours later under visual flight rules. There was a tanker and airlift control element on the ground and not much else. So, in 120+ degree heat, the 5th Mob crew proceeded to unload the aircraft of everything we needed to sustain ourselves for a few days. During the next 30 days, as RED HORSE and other units began arriving, the 5th Mob crew established a fully functional airfield (TACAN, tactical ATC Tower, and RAPCON) and a communications infrastructure consisting of 44 miles of telephone and networking capability, satellite communications connectivity, and AUTODIN messaging services. We even brought a CTAPS terminal online to pick up the air tasking order. It was an amazing accomplishment and a tribute to combat communicators then and now.

Fast forward six years, and I found myself back at PSAB in June of 2001, for a year-long remote. It was a much different operation from the humble beginnings of 1996. Once again, as we ramped up for Operation Iraqi Freedom, PSAB became even busier. With the combined air operations center just a couple of miles away, and the 363rd Air Expeditionary Wing bursting at the seams with people and aircraft, it was an amazing time to be there and a testament to teamwork at its finest. What was more amazing is how fast the drawdown began as combat operations start slowing. We began tearing down infrastructure and shipping it to al Udeid just as fast as we could. Again, thanks for highlighting a special place in our Air Force history!

Col. Gary McAlum,
USAF (Ret.)
San Antonio

I deployed to Desert Shield in late December 1990 from Holloman AFB, N.M., arriving in early January 1991 to the 4th Fighter Wing Provisional. At that early stage, there were already two squadrons of F-15Es, one of F-15Cs, two squadrons of F-16As, and a detachment of C-130s. Also the base was active from November 1990 through June 1991 when as the recently constituted 4404th Provisional Wing, it moved to Dharan. As members of the advance party, we were housed in mobile trailers, as Khobar Towers was just being turned over to US forces. I redeployed back to Holloman in July 1991, after 183 days in theater.

SSgt. Rodney June,
USAF (Ret.)
Milwaukee

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Washington Watch

By John A. Tirpak, Executive Editor

Time for USAF to blow its horn; Will Welsh change the formula?; Acquisition disappointments; Sponsored reserves for the US? ....

CONSCIOUSLY QUIET

Former Chief of Staff Gen. Norton A. Schwartz made a "conscious choice" during his tenure to discourage airmen from advocating for the Air Force's unique capabilities and missions. "I don't apologize for making the best use of Air Force resources to see American objectives attained in Iraq and Afghanistan," Schwartz asserted.

It is time for the service to once again speak up for itself, he added in a late July exit interview. Gen. Mark A. Welsh III took over the reins as the uniformed chief of the Air Force in August.

Schwartz, who was brought in as Chief in 2008 after the firing of Gen. T. Michael Moseley and Secretary of the Air Force Michael W. Wynne, said in an exit interview that over his four years as Chief he made a priority of supporting the ground services, deep in the fights in Iraq and Afghanistan, where air supremacy was never an issue.

He suggested it wasn't necessary for USAF to do any self-promotion at the time, saying, "There is still wisdom ... in your performance speaking for your institution. False bravado serves no useful purpose."

Asked in a later press conference why the Air Force has seen two of its last eight Chiefs fired, one reprimanded publicly, and one resign early, Schwartz chalked it up to the unique circumstances in each case.

In none of those incidents, Schwartz said, was there any "malfeasance" or suggestion of criminal wrongdoing.

"We work for civilian masters in this country, and that's the way it works," he said. "All I can do is tell you what my own experience has been, in that there are lots of reasons for leaving a position ... and not all of them ... are what they appear to be."

Schwartz offered high praise for Welsh and said the succession will be smooth because "Mark ... has been at the table for much of my tenure. And so he has insight in terms of what has occurred, what the substance of the decisions were, what the thought processes were, what the debates entailed." Welsh has "a good sense of what ground truth is," Schwartz asserted.

Times have changed since Schwartz took command and Welsh will face a different set of challenges. Among those will be securing adequate resources to fulfill the Air Force's multiplying "no-fail" missions.

"This is a competitive environment," in the budgetary realm, and "it's important for decision-makers, both on the policy and on the resourcing side, to appreciate the contributions of their Air Force," said Schwartz. The case may be easier to make because the new national military strategy, which shifts focus to the Pacific, demands USAF's strengths of "'global reach, power, and vigilance' going forward."

Welsh will have an opportunity to "change the formula" of how USAF presents itself to national leaders and the American people, Schwartz said.

Former Defense Secretary Robert M. Gates fired Moseley and Wynne ostensibly for neglecting the nuclear enterprise. But Wynne has since said the real reason was their unwillingness to publicly support Gates' wish to truncate the F-22 fighter buy, among other pieces of Gates' agenda.

Schwartz said he and Air Force Secretary Michael B. Donley pushed back against Gates' wish to terminate the F-22 at 187 aircraft.

USAF photo by James Varhegyi

No apologies from Schwartz.

GATES CLOSED

"We in the Air Force took the position to the [Defense] Department's leadership that the right number of F-22s was 243," Schwartz said in his July interview. That figure was still well below a long-established requirement of 381, but was one that Schwartz defended as "analytically based."

Gates would have none of it, though, and Schwartz and Donley concluded there was nothing to be gained from continued argument.

"It was our feeling that the Air Force had invested all the capital it could afford to invest in that program at that time. And it was time to move on," Schwartz said. Given today's extreme budget austerity, he sees "no chance of revisiting that decision."

It was not a waste to retain the F-22's tooling, however, Schwartz said. At a fleet size of 185 aircraft, "you need each and every one" and it made sense to retain the tooling against the need to fabricate replacement wings or other large structures damaged in accidents. While "anything is possible," Schwartz said an F-22 restart down the road is "not a likely outcome," unless there is a national emergency. The good thing about the

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decision to retain the tooling is that it's one "which everyone agrees with," he said.

Gates also publicly rebuked the Air Force, charging the service was withholding its full effort in supporting the wars in Iraq and Afghanistan. While USAF rebutted this charge as much as it could without seeming insubordinate, Schwartz believes part of his legacy as Chief is the demonstration of the Air Force's commitment.

"There was a time when ... folks doubted whether we were 'all in' in the fights that were under way" in Iraq and Afghanistan, Schwartz observed. Now, he said, "there's little doubt, at least in the joint team, that our Air Force is 'all in' in any given dimension." He claims the Air Force's "warrior spirit has always been there" but is now beyond question.

Other aspects of his legacy, Schwartz said, include revitalizing the nuclear enterprise and re-establishing its "standard of excellence."

"I think we did that, and that will certainly continue" under Welsh's leadership. Schwartz declined to say whether the nuclear enterprise was in such a bad state that it required nothing less than the firing of the uniformed and civilian leaders of the Air Force to set it right.

Creating a "path for institutionalizing" remotely piloted aircraft in the force and a career track for those who operate and maintain them is another part of Schwartz's legacy, he said. These foundations will "serve the Air Force and the joint team well going forward."

Schwartz also noted an emphasis on USAF families during his tenure, ranging from a focus on dependent child education to recognizing spousal contributions to the service.

He also counts getting the new Long-Range Strike Bomber project launched as a modernization highlight of his four-year tour. "We succeeded in persuading [Gates] that this is a capability the country must have," he said in a July press conference. "Extending a sense of vulnerability [to] others is a tool of statecraft, and one we should not concede."

However, in the field of acquisition, Schwartz regrets he "didn't apply enough attention." While Schwartz counts the KC-46 tanker project a success, albeit after several false starts, he was bothered by USAF's failure in the Light Air Support program and in other procurement efforts. Welsh, Schwartz said, possesses an acquisition background that Schwartz himself lacked, and he expects Welsh will "lead the uniformed part of the acquisition community in a more direct and material way than, perhaps, I did."

The outgoing Chief said he "underperformed" in the sense that he was too deferential to "those who have statutory authority in the acquisition realm"—specifically to the "service acquisition executive."

Schwartz even felt he was overly deferential to Donley, "who ultimately is responsible" for these programs. Schwartz thinks he should have been more assertive in presenting the "uniformed perspective" with regard to acquisition and taken a more direct leadership role of the acquisition career field and workforce. These professionals "need to know" the Chief is "attentive to their needs and represents their role in maintaining a ready and effective Air Force."

Schwartz, in the press conference, said USAF has struggled to improve "the skills and the expertise of the [acquisition] workforce, whether it be in contracting, ... cost estimation, or program management." These skills, "frankly, defensewide, are in short supply," and all the services are trying to build their "bench" of experts "who can run major programs [and] ... tell the difference between a good deal and ... good advertising."

With the Light Air Support program, Schwartz thinks maybe the service felt that success on the KC-46 meant it had solved its procurement problems and could relax. "In this business, there can be no relaxing," he said.

Likewise, Schwartz said in the interview that the Air Force was so focused on the fight in Iraq and Afghanistan that it may have become too complacent and lost its tradition of constant self-reinvention.

During his tenure, Schwartz allowed, "I think that we ... maybe became too 'status quo.'"

Under Moseley and Wynne, the Air Force was pursuing a project called Air Force Smart Operations for the 21st Century, or AFSO21. While it was appropriate to set that program aside given the "other priorities" of combat in two theaters, Welsh should make a renewed effort to "encourage and incentivize innovation" and renew an innovation culture in the Air Force.

MANY QUESTIONS, FEW ANSWERS

One place where innovation is needed will be in keeping a proper balance between the capability and manpower it retains in its Active, Guard, and Reserve forces.

"There will continue to be a place" for all three components in the future Air Force, Schwartz asserted, because of the unique lifestyle demands of one versus the others. Active Duty airmen accept a lifestyle that involves "frequent relocations and near-instantaneous demand on one's availability," while their comrades in the Air Reserve Components have chosen a "more stable" lifestyle that still offers the chance for volunteerism.

The Air Force ran afoul of Congress in its 2013 budget offering which sought to make deeper cuts in the Air Reserve Components than in the Active Duty—after years of reductions in the Active force. He acknowledged that Congress' trust of the Air Force has "eroded a bit" as a result, and that in the future the service should be more careful to give Congress long warning of such moves to avoid surprises.

The trust issue Schwartz considers "a temporary condition. ... We know what the cause was, and we know essentially what the remedy is, although satisfying everybody will be a tall order." He added, "Making force structure reductions is ... not for the faint of heart."

In the interview, Schwartz said, "We will have to continue to make the argument that we cannot have 50 air forces. We are one Air Force."

When "emotions subside a bit, and we're able to approach this in a more dispassionate way, we'll have the opportunity to collectively, collaboratively, collegially adjust our force mix in both traditional ... and imaginative ways."

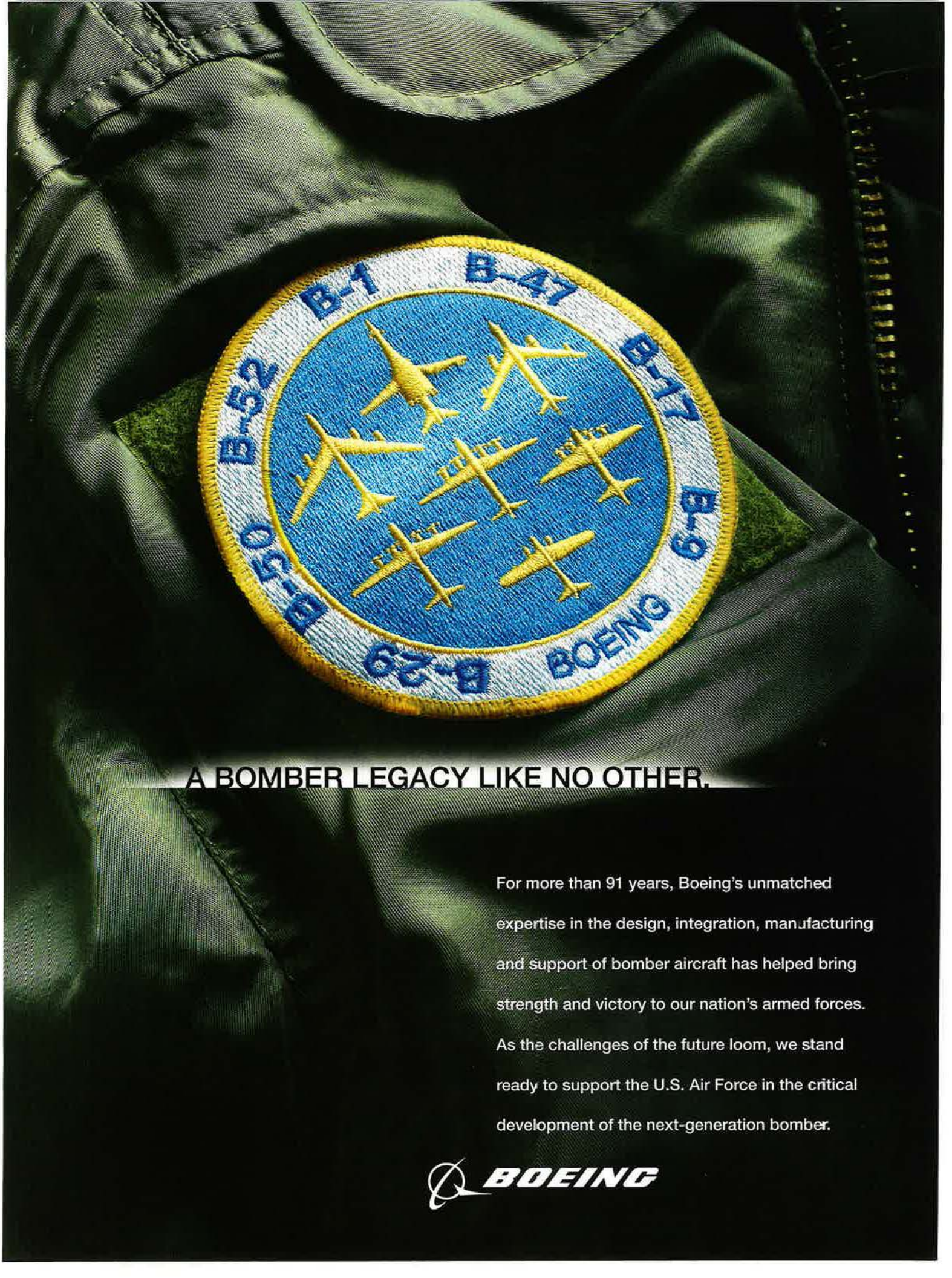
Among those imaginative ways, he said, may be "Sponsored Reserves" in which personnel work for a contractor providing an essential service. The UK uses Sponsored Reserves in aerial refueling—but activates the airmen to uniformed service in wartime.

Schwartz oversaw a steep drop in the size of his service's force structure, totaling more than 700 aircraft, but that was not driven by an ability to accomplish with cyber weapons what has always been done with kinetic ones, he said.

The rise of cyber warfare is "not like major transitions in weaponry in the past," such as the shift from horse-drawn to mechanized artillery or the change from piston engines to jets, Schwartz said.

"There is a transition under way," he observed, but "it is not yet clear, I don't think, even to those who are most knowledgeable, where the cyber capabilities will ultimately end up." Kinetic and cyber weapons will operate side by side for "an indefinite period," he forecast, "because there are advantages and disadvantages to both," as well as "complications in terms of employment of both."

While the consequences of using kinetic weapons are well-understood, cyber is "still nascent in that regard." In any case, "we're far from a point where we're going to rely on cyber as a principal means of securing US national interests." ■



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Air Force World

By Aaron M. U. Church, Associate Editor

Welsh Becomes Chief of Staff

Gen. Mark A. Welsh III succeeded Gen. Norton A. Schwartz on Aug. 10, becoming the 20th Chief of Staff of the Air Force, after the Senate lifted a hold on his nomination two weeks before.

Welsh, most recently head of US Air Forces in Europe, is a command pilot with more than 3,400 hours in the F-16, A-10, and training aircraft. Before that, he served as associate director of the Central Intelligence Agency, for military affairs. He is a 1976 graduate of the US Air Force Academy.

The Senate confirmed Welsh on Aug. 2 after Sen. John Cornyn (R-Tex.) lifted a hold on his nomination. Cornyn placed the hold because he wanted reassurances the Air Force would address the underlying causes of sex abuse by military training instructors at JBSA-Lackland, Tex. Cornyn met with Welsh in late July and reported being satisfied Welsh would work to combat the problems.

Schwartz, who had served as CSAF since August 2008, will formally retire effective Oct. 1 after 39 years of Air Force service.

Theater, Reserve Leaders Change

Gen. Philip M. Breedlove took command of US Air Forces in Europe in a July 31 ceremony at Ramstein AB, Germany. Breedlove previously served as vice chief of staff and succeeded the new Chief of Staff, Gen. Mark A. Welsh III, at USAFE.

Gen. Herbert J. Carlisle succeeded Gen. Gary L. North as commander of Pacific Air Forces on Aug. 3. Carlisle, promoted to four-star rank the day before, previously served as deputy chief of staff for operations, plans, and requirements.

North, who had commanded PACAF since 2009, is set to retire after 36 years in uniform, effective Oct. 1.

New leaders stepped up to command the reserve component as well. Lt. Gen. James F. Jackson took the helm at Air Force Reserve Command the same week that the Senate confirmed new leadership for the Air National Guard in late July.

The Senate confirmed Army Lt. Gen. Frank J. Grass to become the next head of the National Guard Bureau, succeeding Air Force Gen. Craig R. McKinley, who is retiring. McKinley was the first head of the Guard Bureau to be a member of the Joint Chiefs of Staff.

Nineteenth Air Force Stands Down

Air Education and Training Command inactivated 19th Air Force, which oversaw the command's flight training mission for nearly two decades, in a ceremony at JBSA-Randolph, Tex., July 17.

"Nineteenth Air Force led the stand-up of the F-35 [strike fighter] schoolhouse and the Air Force's only undergraduate remotely piloted aircraft training program for pilots and sensor operators. The unit also activated student squadrons, streamlining the administrative control of the nearly 1,400 student pilots who begin training each year," said AETC chief Gen. Edward A. Rice Jr. at the inactivation.

The numbered Air Force "did all this while maintaining the day-to-day flying training missions, which account for 47 percent of the Air Force's total flying hour program," added Rice.

Nineteenth Air Force is one of three NAFs slated for elimination as part of the Air Force's $34 billion overhead-cutting initiative. US Air Forces in Europe inactivated its constituent 17th Air Force in Germany earlier this year, and Pacific Air Forces is slated to stand down 13th Air Force in Hawaii this month.

First International F-35 Delivered

British Defense Minister Philip Hammond accepted delivery of the UK's first F-35 strike fighter in a July 19 ceremony at manufacturer Lockheed Martin's aircraft facility in Fort Worth, Tex.

Designated BK-1, Britain's F-35B short takeoff and vertical landing (STOVL) aircraft is the first F-35 supplied to an international customer.

BK-1 flew for the first time in April and is slated for test and training duties at Eglin AFB, Fla.

"The United Kingdom was the first partner nation to join the F-35 program and has been a tremendous partner throughout the development, testing, and the initial production," said Defense Sec-

USAF photo by SSgt. Sheila deVera

retary Leon E. Panetta in a joint briefing with Hammond in the Pentagon July 18.

The British government dropped plans to buy the naval F-35C in favor of the F-35B earlier this year. "Buying the STOVL version of the F-35 will allow us quickly to generate strike capability from our next generation aircraft carriers," reasoned Hammond, speaking at a Center for a New American Security event July 18.

He was referring to Britain's two planned Queen Elizabeth-class carriers. Britain plans to buy 48 F-35Bs, Reuters reports.

AFMC Reorganizes Depots

Large pieces of Air Force Materiel Command's restructuring plan came together at Hill AFB, Utah; Tinker AFB, Okla., and Robins AFB, Ga., in July.

AFMC officials redesignated the air logistics centers at Hill, Tinker, and Robins, as complexes, rebranding them the Ogden Air Logistics Complex, Oklahoma City Air Logistics Complex, and Warner Robins Air Logistics Complex, respectively.

The complexes now report directly to the newly minted Air Force Sustainment Center, which stood up July 10 at Tinker to oversee the well-being of USAF's combined weapon systems fleets.

"Mission-capable and ready weapons systems are ... required to fight and win our nation's wars, and that is what

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SSgt. Aaron Bingham, SSgt. Ryan Shaw, SSgt. Robert Hill, and SrA. David Taylor push an engine cradle to the lift trailer before replacing a C-17's engine in Southwest Asia. Such engine changes—in a controlled environment such as in a hangar—usually take 48 hours, but the team completed the heavy job and sent the aircraft back into action in just 34 hours.

Three BMT Instructors Found Guilty of Sexual Misconduct

Air Force military training instructor TSgt. Christopher Smith was convicted of sexual misconduct with two trainees in basic training at JBSA-Lackland, Tex., Aug. 1. Smith was sentenced to 30 days of confinement and a reduction in grade to airman first class for unprofessional relationships with his subordinates.

At least 12 instructors are under investigation by the Air Force for sexual misconduct involving MTIs at Lackland.

Former basic military training instructor SSgt. Luis Walker was convicted of 28 counts of sexual misconduct and sentenced to 20 years of confinement at a court-martial the month before.

Walker was stripped of his grade, compelled to forfeit all pay and allowances, and dishonorably discharged, following his conviction July 20.

The weeklong court-martial found him guilty of charges including rape and aggravated sexual contact, in incidents involving 10 female basic military trainees between October 2010 and June 2011.

SSgt. Peter Vega-Maldonado, the first ex-instructor tried, pleaded guilty to a single charge of improper relations with a trainee. Vega was sentenced to 90 days of confinement and reduced in rank to airman, according to Air Force officials.

AFSC will deliver," said Lt. Gen. Bruce A. Litchfield, AFSC's commander.

The air logistics complexes will continue their missions, minus their previous in-house command staff, reducing management overhead, according to Tinker officials.

The changes are part of AFMC's overall consolidation from 12 centers to five, in an effort to trim about $109 million in annual operating costs.

The Air Force Flight Test Center at Edwards AFB, Calif., was also renamed, to become the Air Force Test Center on July 13.

C-27J Fleet Grounded

A flight-control problem grounded the Air National Guard's C-27J Spartan airlift fleet after an aircraft experienced in-flight difficulty on a training sortie July 10.

Aeronautical Systems Center officials at Wright-Patterson AFB, Ohio, suspended flight operations as "a precautionary measure" while service and industry officials investigated the incident, Air Force spokeswoman Ann Stefanek said.

"The program office is working with the C-27J prime contractor, L-3 Communications, and the aircraft manufacturer, Alenia Aermacchi, to resolve the matter as quickly as possible and return the C-27J fleet to normal flight operations," she said in an interview July 18.

The Air Force's decision to pull the C-27Js out of Afghanistan in June was unrelated to the temporary-control issue, though service officials say they have no plans to redeploy the small airlifters at present.

Despite the Air Force's attempts at divesting the C-27J fleet in Fiscal 2013, Congress has thus far prohibited their retirement, at least until next fiscal year.

As of press time, the C-27J fleet remained grounded.

BRAC Didn't Save Us Much

Projected net savings from the 2005 Base Realignment and Closure fell about 72 percent, dropping from $35.6 billion in Fiscal 2005 to $9.9 billion in Fiscal 2011, according to Government Accountability Office estimates.

GAO blamed higher-than-expected construction costs for the growth, stating that "overall, military construction costs ... increased 86 percent, from $13.2 billion estimated by the BRAC commission to $24.5 billion," in a summary of the report, publicly released in July. "Over the same time period, general inflation increased by 13.7 percent," further escalating implementation costs, GAO said.

Analysts figure that future BRAC savings will actually amount to less than the up-front investment cost of implementing the measures, when calculated in present value terms, according to GAO.

"In contrast, military construction costs for the four prior BRAC rounds combined amounted to less than $7 billion." Of the BRAC commission's 182 approved recommendations in 2005, 75—about 41 percent—are now expected to net a negative 20-year present value, noted the report summary.

Luke Hosts F-35A Pilot Training

Air Force leaders chose Luke AFB, Ariz., to host USAF's F-35A pilot training center, Air Force Secretary Michael B. Donley announced Aug. 1. After pilots complete initial F-35 training at Eglin AFB, Fla., they will go to Luke for Air Force-specific combat training in the aircraft.

Three squadrons of 72 F-35As are slated to take their places at Luke between late 2013 and mid-2014, depending on the production schedule.

"This is a great day for Luke. Our selection for F-35 training ensures the long-term viability of our mission of training the world's greatest fighter pilots, which we've been doing at Luke for seven decades," said Brig. Gen. Jerry D. Harris, 56th Fighter Wing commander.

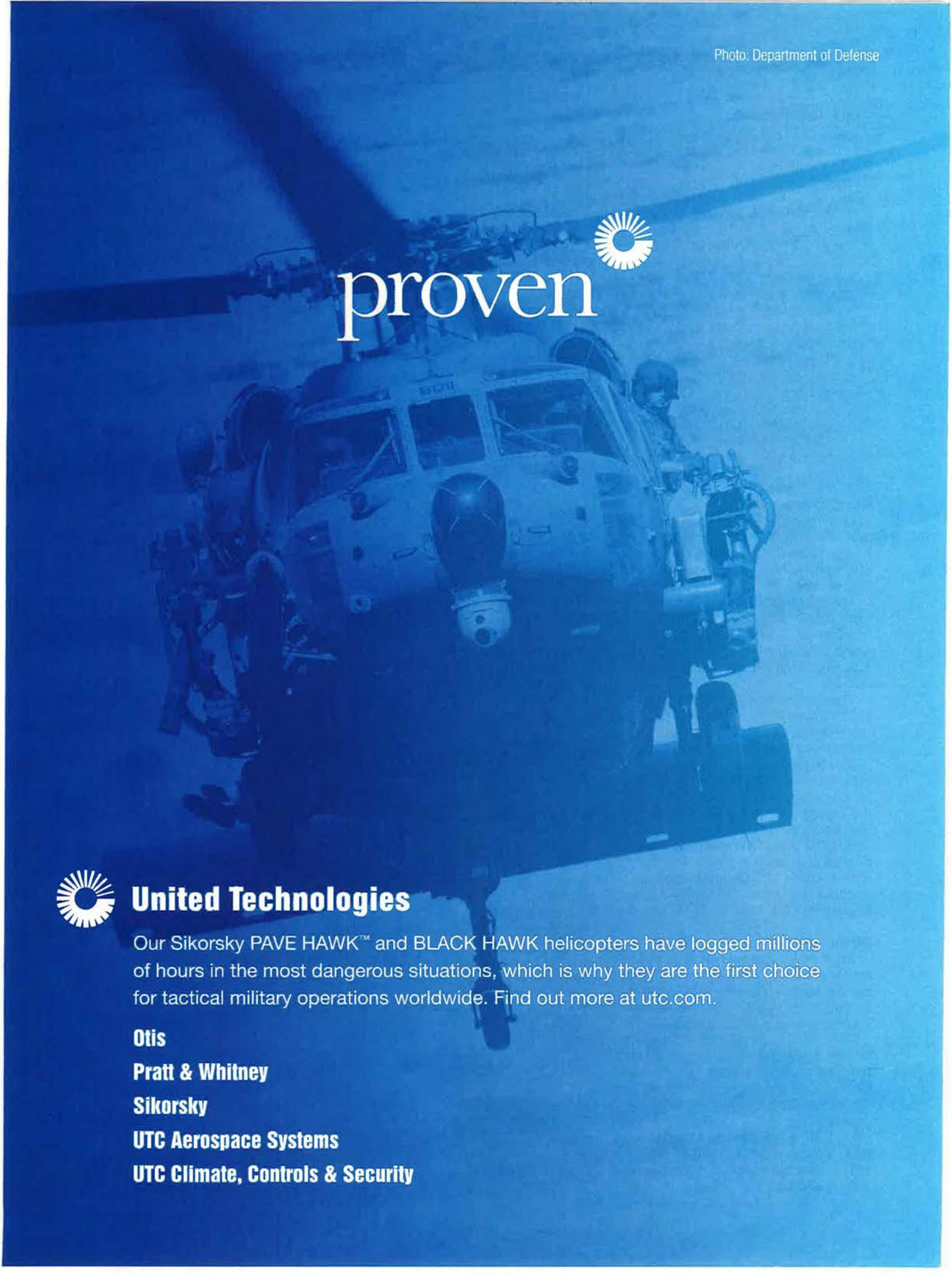
Luke was chosen for its ample facilities and ramp space, nearby range access, favorable weather, and future growth capacity, among other reasons.

Luke won its place over two Air National Guard sites at Boise, Idaho, and Tucson, Ariz., as well as Holloman AFB, N.M.

Luke currently hosts US and international F-16 conversion training and will eventually serve as an international partner training site for the F-35A.

USAF photo by SSgt. Craig Cisek

Backdraft Ahead: *Firefighters from the 51st Civil Engineer Squadron fight a fire started during a simulated C-130 crash at Osan AB, South Korea. The event was part of an operational readiness exercise, Beverly Midnight.*



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Ax the Triad?

US Strategic Command would eliminate part of the US nuclear triad at the President's direction, but the mix of bombers, ICBMs, and submarine-launched ballistic missiles remains the best deterrent option for now, said STRATCOM Commander Gen. C. Robert Kehler.

"My view today is that the triad continues to serve us well. It may not be true in the future, but it continues to serve us well," stated Kehler during an Air Force Association co-sponsored address on Capitol Hill July 12.

US nuclear doctrine has traditionally adhered to an indivisible triad concept, wherein each "leg" provides unique and indispensable capability.

Kehler affirmed that the survivability, speed of response, and flexibility offered by each respective leg is "the best arrangement that we have today," but opened the door to possible changes to long-standing nuclear force structure doctrine in the future.

He asserted that there has "always been concern" about whether the ICBM force is stabilizing or destabilizing, adding that for now it's "still a valuable component" in the range of alternatives for the President.

Kehler said the command regularly reviews the triad concept, and if the President determines that the deterrent need has diminished, "it's up to us to meet his needs," up to and including eliminating a whole leg of the nuclear triad.

AC-130J Takes Shape

Line workers began converting the first new-build AC-130J gunship for Air Force Special Operations Command at Lockheed Martin's plant in Marietta, Ga., in July.

The gunship is being reconfigured from an MC-130J Commando II special-mission airplane, with the addition of USAF's modular Precision Strike Package, according to a company statement July 23.

The PSP scalable weapons and sensor suite designed to equip the AC-130J is already operational on AFSOC's MC-130W Dragon Spear special-mission aircraft.

The Air Force plans to purchase 16 factory-fresh AC-130Js under a $1.6 billion recapitalization effort to replace the legacy AC-130H fleet, and expand the overall gunship fleet.

AFSOC plans to operate a combined fleet of 33 gunships, including the 17 late-model AC-130Us already on duty.

Lockheed said that AFSOC expects to field its first AC-130Js in 2015.

Strike Eagle—Now With JASSM

An F-15E launched a Joint Air-to-Surface Standoff Missile over White Sands Missile Range, N.M., clearing all Strike Eagles to use the weapon, Lockheed Martin officials said.

The F-15E successfully destroyed its intended target from an altitude of 22,000 feet. The aircraft is now the sixth platform for the cruise missile, said Lockheed Martin's JASSM Program Director Alan Jackson.

"JASSM on the F-15E will enhance that tactical fighter's capabilities by broadening the range of options available," he added.

This was the first weapon certification accomplished using USAF's new Universal Armament Interface. The system eliminates the need for flight software changes.

JASSM is already cleared for use on the B-1, B-2, and B-52 bombers, the F-16 fighter, and Australia's F/A-18 fleet.

C-17 End of the Line

The Air Force awarded Boeing a $500 million contract to transition from production of the C-17 transport to postproduction support.

"The contract allows the US Air Force to purchase critical spare assemblies and also allows for postproduction planning of the C-17 program," explained Bob Ceisla, Boeing's airlift vice president, in an interview July 11.

"This is the beginning of a 10-year process ... to leverage cost-effective purchases of critical parts to support the C-17 during its operational lifetime," he said.

Boeing plans to deliver the Air Force's 224th, and likely final, C-17 constructed at its Long Beach, Calif., plant next May. The company is still "pursuing international sales" though, and believes there is "strong customer interest in the capabilities only the C-17 can deliver," said Ceisla.

Boeing delivered its 27th international C-17 this May. It went to the United Arab Emirates.

Another Chinese Stealth Fighter?

Photos of what may be a new Chinese stealth fighter design turned up on the Internet, less than two years after China surprised the West by unveiling its first fifth generation design, the J-20.

Some analysts believe the aircraft is the long-rumored direct analogy to the F-22, known as the Shenyang F-60.

The fact that China may be working on a second advanced fighter in addition to the stealthy J-20 that came to light in early 2011, however, "should not come as a surprise," said former Air Force intelligence chief David A. Deptula.

"The [People's Liberation Army Air Force] has a very comprehensive planning process and may have several advanced

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You Can Breathe, Now

The Air Force believes that a flaw in the design of F-22 pilot flight suits is to blame for the mysterious hypoxia-like symptoms that have plagued Raptor pilots for the past few years.

The service is confident that two problems—a faulty valve connection in the upper part of the Combat Edge full-body G-suit and a charcoal filter—are the culprits and is taking measures to address the problems, then-Air Force Chief of Staff Gen. Norton A. Schwartz said.

Data for the official investigation ruled out contamination of the Raptor's oxygen system, and the service was finally able to narrow the problem to these specific components, Schwartz revealed in a press conference July 24.

USAF is taking a "phased approach" to fixing the problem, gradually lifting flight restrictions on the F-22 as hardware retrofits are incorporated into the aircraft to rectify the issues, he said.

Schwartz said Air Force officials apprised Defense Secretary Leon E. Panetta of their finding on July 20. Panetta in turn loosened flight restrictions on the F-22 enough to allow a squadron-sized group to deploy to Kadena AB, Japan, several days later, said Schwartz.

Centrifuge and altitude-chamber tests confirmed the Air Force's findings that the problem was "the amount, not the quality" of the air pilots are receiving, he said.

Filters installed on the jets as a precaution last year have already been removed, and the Air Force plans to have a modified G-suit sometime this month, Schwartz said.

For the Japan deployment, the jets followed the Aleutian Island chain across the Pacific, staying within 90 minutes' flight time of a useable runway at all times.

Tankers accompanied the Raptors to allow them to descend to lower, less fuel-efficient altitudes, if necessary.

The Air Force must submit a final report to Panetta, detailing its complete findings before the aircraft are cleared for unrestricted operations.

aircraft in various stages of design and development," Deptula said.

The aircraft was shown heavily shrouded in tarpaulin lying on a flat-bed truck, purportedly en route to a stress-testing facility somewhere in China.

The photographs originally appeared in late June, according to press reports.

F-22s Deploy to Japan

F-22s and airmen of the 1st Fighter Wing at JB Langley-Eustis, Va., deployed to Kadena AB, Japan, in July for a show-of-presence rotation, under revised flight limitations having to do with the F-22's oxygen issues. (See "You Can Breathe, Now," at left.)

Defense Secretary Leon E. Panetta authorized the deployment after officials confirmed they'd pinpointed the cause of pilot in-flight oxygen deprivation and were implementing a plan to resolve the problem.

"The F-22 deployment to Kadena AB is in support of US Pacific Command's security obligations in the Western Pacific, and the deployed unit will perform training under the direction of the 18th Wing at Kadena," according to PACAF.

As a safety precaution, the Raptors flew the Aleutian Island chain en route to Japan, staying close to potential divert airfields along the way.

F-22s usually deploy to the Pacific for about four months at a time.

Next Time, Just Sink it a Little

Four A-10s bombed, strafed, and sank the decommissioned naval supply ship USNS *Niagara Falls* off the coast of Kauai, Hawaii, during this summer's Rim of the Pacific exercise, leaving nothing for other aircraft in the wargame to shoot at.

"I think they underestimated the ability of the A-10," said Maj. Grant McCall, a pilot with Air Force Reserve Command's 47th Fighter Squadron, deployed to RIMPAC from Barksdale AFB, La.

"Other groups were supposed to shoot at the target ... but never got the chance because we sank it" on the first run, he said upon returning from the July 14 sortie.

A-10s struck the ship with four inert 2,000-pound laser guided bombs—one of

Photo by Jim Haseltine

Great Things, Small Packages: *An F-15E staging from Holloman AFB, N.M., on July 17 released a Small Diameter Bomb which then successfully acquired, tracked, engaged, and scored a direct hit on a moving target during testing over the White Sands Missile Range in New Mexico. See "Swarming Boats Beware," p. 34.*

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Casualties

As of Aug. 16, a total of 2,080 Americans had died in Operation Enduring Freedom. The total includes 2,077 troops and three Department of Defense civilians. Of these deaths, 1,646 were killed in action with the enemy while 434 died in noncombat incidents.

There have been 17,204 troops wounded during OEF.

Big Time Lancer Presence

Nine B-1 bombers and more than 400 airmen from the 7th Bomb Wing at Dyess AFB, Tex., have returned home after a six-month deployment to Southwest Asia for combat operations in Afghanistan.

The overseas stint was the largest single deployment of B-1 bombers and associated support personnel in the last decade, according to wing officials.

"There wasn't a single moment during our deployment that we did not have a B-1 in the air over Afghanistan," said Lt. Col. Matthew Brooks, commander of Dyess' 9th Bomb Squadron.

The expeditionary contingent of B-1s "flew 130 more sorties than any B-1 squadron had flown in any other six-month deployment," delivering more than 400 weapons on target, he said.

Bombers and personnel began arriving at Dyess July 25. They were replaced in theater by B-1s of the 28th Bomb Wing from Ellsworth AFB, S.D.

Valor in the Door

Aerial gunner SSgt. Justin Tite was awarded the Distinguished Flying Cross with Valor Device for heroic actions during a rescue mission in Afghanistan, in a ceremony at Nellis ABF, Nev.

Flying as an HH-60 door gunner on a rescue mission April 23, 2011, Tite suppressed intense enemy fire, covering the extraction of a downed Army helicopter crew.

Over the course of the six-hour mission, Tite's actions allowed the safe recovery of two soldiers and the recovery of the body of a third.

"In all honesty, I'm just humbled to get this," said Tite, after receiving the decoration from Air Force Warfare Center Commander Maj. Gen. James W. Hyatt July 9. "I don't take this award necessarily [because] of just what I've done. I think it's more or less for the [rescue] community itself," he said.

Capt. Elliot Milliken, one of the pilots on Tite's crew—call sign Pedro 83—also received the DFC for the mission back in April.

Tite is assigned to the 88th Test and Evaluation Squadron at Nellis.

Bars in 3,000 More Places

USAF's tiny fleet of E-11A Battlefield Airborne Communications Node jets completed 3,000 combat support sorties over Afghanistan in less than four years on deployment.

"It's a great honor and feeling of satisfaction knowing our missions have such a significant impact supporting the ground and air forces in theater," said Lt. Col. Paul Bedesem, 451st Tactical Airborne Gateway pilot, after the milestone flight July 14.

Airmen and contractors of the 451st TAG at Kandahar Airfield operate the E-11As as overhead communications relays to overcome the limitations of ground communications in Afghanistan's mountainous terrain.

The modified Bombardier BD-700 business jets augment the Air Force's BACN-outfitted EQ-4B Global Hawk remotely piloted aircraft.

Northrop Grumman announced that the Air Force awarded it a $156 million contract in July to extend both fleets' deployments in theater, at least through June 2013.

"These awards are evidence of that invaluable support and the exceptional performance of the BACN program office," Northrop Grumman's communication systems vice president Claude Hashem said in a company news release July 23.

which penetrated the hull—and finished the crippled vessel with cannon fire.

"The 30 millimeters were pounding the ship and sending monster geysers of water up in the air. It was a spectacular sight, like something out of old World War II footage," added Lt. Col. Jim Travis, 47th Fighter Squadron commander.

A-10s struck maritime targets—possibly for the first time in combat—during the Libya campaign last year.

F-16 Pilot Ejects Over Pacific

An F-16 pilot ejected over the Pacific Ocean en route to North America, roughly 250 miles northeast of Hokkaido island, Japan, July 21.

The pilot, assigned to the 35th Fighter Wing at Misawa AB, Japan, was retrieved from his survival raft by a US commercial vessel, guided by USAF and joint service assets, according to USAF.

"The men and women of US Forces Japan are extremely grateful for the successful and safe recovery of our pilot," said Lt. Gen. Salvatore A. Angelella, US Forces Japan commander, following the incident.

Misawa suspended F-16 flight operations for several days to review aircraft safety records, crew procedures, and maintenance practices.

"To further ensure our commitment to safety, all F-16 pilots were briefed on long-duration mission and egress procedures," with an emphasis on extended overwater flights, said Col. Van A. Wimmer Jr., 35th Fighter Wing vice commander.

Though PACAF investigators are still probing the cause of the crash, Misawa's F-16s returned to the air July 26.

More F-35 Shooters Than Testers

Lockheed Martin delivered four F-35 strike fighters in early summer, pushing the size of the operational fleet beyond that of the test fleet, the company announced.

The F-35s delivered in late June and early July bolstered the operational F-35 fleet to 16 aircraft, surpassing the 14-strong test fleet for the first time.

"We're increasingly becoming more operationally focused. These deliveries illustrate the program's natural progression and maturation that is taking place on a daily basis," said Lockheed Martin's F-35 program general manager Orlando Carvalho.

Three of the new jets are Air Force F-35A variants and one is a Marine Corps F-35B short takeoff and vertical landing model.

All four jets were assigned to units at Eglin AFB, Fla., home of the initial joint F-35 schoolhouse, for use in pilot and maintainer training, according to the company.

Testing Shuffle at Eglin

Air Force Material Command in a July 18 ceremony inactivated the Air Armament Center and realigned the test wing at Eglin AFB, Fla., under a commandwide shake-up.

Eglin testers now report to the rebranded Air Force Test Center at Edwards AFB, Calif., AFMC officials said.

The development and acquisition missions of the former AAC now align under the also newly formed Air Force Life Cycle

Management Center at Wright-Patterson AFB, Ohio.

In addition, Eglin's 96th Air Base Wing was redesignated the 96th Test Wing, then absorbed the 46th Test Wing mission and people. The 96th is aligned to AFTC.

"Our mission to develop, test, and produce war-winning weapons remains vital, ... and it must continue," said Maj. Gen. Kenneth D. Merchant, outgoing AAC commander.

Despite elimination of the center, Eglin retains its previous functions, simply without its own administrative and command staff, which were done away with on cost grounds.

A proposed measure in the Fiscal 2013 defense authorization legislation could reverse the consolidation, however, Florida's *Emerald Coast Daily News* reported in July.

"My pending legislation is explicit. ... When it becomes law, the Air Force will be required to re-establish and restore the Air Armament Center," said Rep. Jeff Miller (R-Fla.), who represents the Eglin community.

Hawaii F-22 Problem

Investigators deemed that a life support malfunction caused a Hawaii Air National Guard F-22 pilot's hypoxia symptoms during a training sortie July 6.

The Air Force is formally investigating the incident, but unlike similar incidents with the F-22, the service classed the malfunction as "a physiological 'cause-known' event," officials confirmed July 17.

Accordingly, the case did not factor into the service's then-ongoing quest to determine the cause of Raptor pilots' mysterious disorientation and nausea in flight.

The Hawaii Air Guard pilot received a cockpit warning at the end of his training sortie from JB Pearl Harbor-Hickam that his onboard oxygen-generating system was not delivering sufficient oxygen, according to officials.

The pilot experienced oxygen deprivation but activated the emergency oxygen system, and "the symptom immediately subsided" allowing the pilot to return to base "uneventfully," according to USAF.

The pilot experienced no lingering physiological effects and has returned to flight status.

Domestic Predator

An MQ-1 Predator remotely piloted aircraft flew a search and rescue exercise in national airspace for the first time earlier this year, Air National Guard officials revealed.

Controllers with the Texas Air Guard's 147th Reconnaissance Wing launched the aircraft from Fort Polk, La., during exercise Ardent Sentry. After takeoff, the Texas crews handed the RPA off to California Air Guard controllers of the 163rd Reconnaissance Wing at March ARB, Calif., for the search.

The MQ-1 "demonstrated the capability to safely fly within the US national airspace system and provide persistent full-motion video from remotely piloted aircraft to incident commanders, first responders, and interagency partners," Col. Randall R. Ball, 163rd RW commander, said in a wing news release July 7.

The Predator orbited above a simulated hurricane-ravaged zone, locating survivors and relaying potential hazards to rescue teams on the ground during the exercise this spring, according to the release.

USAF photo by MSgt. Scott MacKay

Maintenance Fever: *SSgt. Pedro Acevedo, a crew chief with the 380th Expeditionary Aircraft Maintenance Squadron, holds up a landing gear pin as Capt. Jeffrey Yeates runs through the preflight checklist in an F-15C. The 380th in Southwest Asia keeps the air superiority mission running smoothly. The F-15s in the region are tasked in coordination with the Gulf Cooperation Council countries.*

Air Force Buys 10th WGS

The Air Force awarded Boeing $338.7 million to build the 10th Wideband Global Satellite Communications spacecraft, Air Force Space Command announced July 27.

WGS-10, like WGS-8 and WGS-9 which are in production, will feature a new wideband digital "channelizer" that nearly doubles the satellite's bandwidth compared to the earlier iterations, according to AFSPC.

All WGS spacecraft are designed to support simultaneous X- and Ka-band communications.

The first four WGS are already operating in orbit, with the 3rd Space Operations


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Squadron at Schriever AFB, Colo., taking control of WGS-4 on July 30.

WGS-4 launched from Cape Canaveral AFS, Fla., in January, and WGS-5, WGS-6, and WGS-7 are still in production, with the next launch slated for 2013.

The deal for WGS-10 is part of the commercial-like arrangement the Air Force instituted with Boeing to purchase procurement of WGS-7 through WGS-10. The model has already generated "significant savings to the US government," according to AFSPC.

Swarming Boats Beware

An F-15E flying from Holloman AFB, N.M., scored a direct hit on a moving target for the first time with a GBU-53/B Small Diameter Bomb II, in tests at White Sands Missile Range, N.M., July 17.

The bomb's trimode seeker acquired, tracked, and guided the bomb to its intended target, demonstrating success at each flight phase, manufacturer Raytheon announced.

The SDB II's sophisticated seeker allows the bomb to "engage moving targets in bad weather or battlefield obscurants in high threat environments," explained Harry Schulte, Raytheon's missile systems vice president.

For its part, the weapons' small warhead is extremely useful in "defeating threats, such as swarming boats, mobile air defense systems, or armored targets," while limiting collateral damage, he said.

The weapon, undergoing development for the Air Force, is capable of striking targets with accuracy even from standoff range.

Battle-Ready MOP

The bunker-busting Massive Ordnance Penetrator is ready for operation if needed, although the powerful bomb is still undergoing final tests and tweaks, according to Air Force Secretary Michael B. Donley.

"If it was needed to go today, we would be able to do that," he said speaking at an Air Force Association co-sponsored event in Washington, D.C., this July.

"We could go with the existing configuration," but the Air Force is continuing to test and refine the weapon, he said.

Air Force officials first announced that the 30,000-pound MOP built by Boeing was ready for use on the B-2 stealth bomber last fall.

MOP is designed to give the United States the means to attack tough targets—for example, hardened and deeply buried nuclear development and test facilities in countries such as Iran and North Korea—without resorting to nuclear weapons.

F-15E AESA, Round Two

The Air Force approved production of the second batch of APG-82(V)1 active electronically scanned array radars for the F-15E, lead integrator Boeing announced.

Under Lot 2, the Boeing-led industrial team will build 10 APG-82 units, in addition to the six units already completed in Lot 1, the company stated in a July 23 release.

The AESA radar, built by Boeing partner Raytheon, will replace the F-15E's mechanically scanned APG-70, significantly improving reliability and the F-15E's ability to detect and track targets.

The APG-82 is undergoing testing at Eglin AFB, Fla., and Nellis AFB, Nev.

Retrofitting the new radar units onto the F-15Es will begin next fall, according to the manufacturer.

Eighth Super Galaxy Completed

Lockheed Martin delivered the eighth C-5M Super Galaxy transport to the Air Force, from its rework plant at Marietta, Ga., July 20.

This C-5 completed the Reliability Enhancement and Re-Engining Program upgrades at Marietta and quickly departed for interior refurbishments to the cargo bay and passenger deck at Stewart ANGB, N. Y., before final delivery to Dover AFB, Del.

The Air Force intends to upgrade 52 C-5s overall to the Super Galaxy standard, which encompasses the RERP modifications, along with an avionics update performed prior to RERP under the separate Avionics Modernization Program.

Dutch Doubts

The Dutch Parliament voted to terminate participation in the F-35 strike fighter program in a nonbinding resolution strongly condemned by Dutch Defense Minister Hans Hillen, July 5.

"If we were to stop investing in fighter aircraft, ... it would simply mean that we would be neglecting our duties," said Hillen in a statement three days before the vote.

The Netherlands is one of the F-35 project's original industrial partners, and Hillen noted it has "reserved 4.5 billion euros [$5.3 billion] for the purchase" of as many as 80 F-35s.

Labor Party ministers plan to front a formal bill to challenge Dutch participation

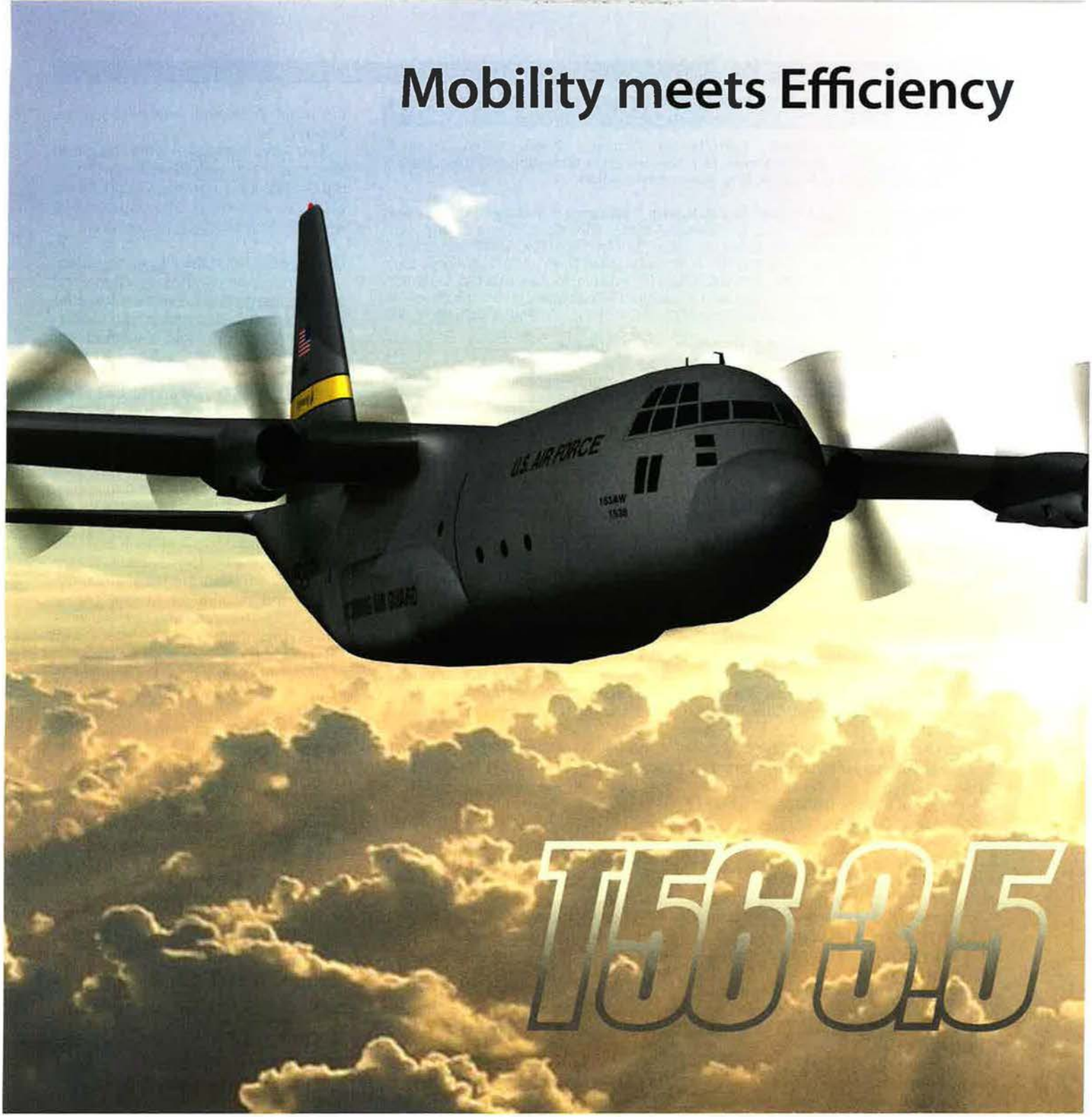
Summer of Sequestration

As implementation of the 2011 Budget Control Act looms ever closer—which would result in an automatic, additional half-trillion dollars in defense cuts in January, called a "sequester"—industry groups, members of Congress, and academics tried to sound the alarm in hopes that Congress will act to stave off financial disaster.

- The National Association of Manufacturers released a report on June 21 warning that by 2014, more than a million jobs could be lost in the private sector, including 130,000 manufacturing positions, if sequestration takes effect.
- George Mason University economist Stephen S. Fuller projects in a July 17 report the total number of jobs lost to sequestration across all industries would be 2.14 million.
- Seven senators, including John McCain (R-Ariz.) and Joe Lieberman (I-Conn.), sent a letter to 15 major defense companies, asking what sequestration's effects would be on the defense industry. The Senators wanted to know the impact on employees, suppliers, and bottom line, and how many contracts the companies would have to restructure or terminate. Lockheed Martin's outgoing chief executive officer, Robert J. Stevens, has already stated publicly that his company will notify its 120,000 employees next month that their jobs could disappear in January due to sequestration.
- Air Force Secretary Michael B. Donley said in June that sequestration will deeply affect the Air Force's budget. Operation and maintenance accounts would lose $6 billion, procurement would come down $4.5 billion, and research, development, test, and evaluation activities would be cut by $3.4 billion. "All our programs would have to be reduced, restructured, or terminated," Donley said at a July Capitol Hill event co-sponsored by the Air Force Association.
- House Armed Services Committee Chairman Rep. Howard P. McKeon (R-Calif.), along with GOP committee members, urged Senate Majority Leader Harry Reid (D-Nev.) to bring a plan to the Senate floor without delay to resolve sequestration. "The time for rhetoric has passed," wrote McKeon and the other members in their June 29 letter.
- Deputy Defense Secretary Ashton B. Carter urged "action now" while testifying before the HASC on Aug. 1.
- The House and Senate approved the Sequestration Transparency Act, forcing President Obama to provide specific information about $1.2 trillion in cuts to domestic and defense programs. President Obama signed the bill on Aug. 7, giving him 30 days to provide the information to Congress.

—Evan A. Milberg

Mobility meets Efficiency



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Senior Staff Changes

RETIREMENTS: Lt. Gen. William T. **Lord,** Lt. Gen. Thomas J. **Owen,** Lt. Gen. Charles E. **Stenner Jr.,** Maj. Gen. C. Donald **Alston,** Maj. Gen. Robert H. **McMahon,** Maj. Gen. Mark S. **Solo,** Brig. Gen. Robert C. **Nolan II,** Brig. Gen. Jeffry F. **Smith.**

CHANGES: Maj. Gen. (sel.) Richard D. **Clark,** from Commandant of Cadets, US Air Force Academy, Colorado Springs, Colo., to Defense Attaché, DIA, Cairo, Egypt ... Brig. Gen. Bobby V. **Page,** from Command Chaplain, AETC, JBSA-Randolph, Tex., to AF Dep. Chief of Chaplains, Pentagon ... Maj. Gen. Stephen D. **Schmidt,** from Cmdr., NATO, Airborne Early Warning & Control Force Command, NATO, Casteau, Belgium, to Spec. Asst. to the Cmdr., USAFE, Ramstein AB, Germany ... Brig. Gen. Christopher P. **Weggeman,** from Cmdr., 52nd FW, USAFE, Spangdahlem AB, Germany, to Dep. Dir., C4/Cyber Sys., Jt. Staff, Washington, D.C.

SENIOR EXECUTIVE SERVICE RETIREMENT: Joan A. **Causey.**

SES CHANGES: Douglas M. **Bennett,** to Dep. Asst. Secy. for Financial Ops., Office of the Asst. SECAF, Financial Mgmt., & Comptroller, Pentagon ... Douglas L. **Bowers,** to Dir., Aerospace Systems Directorate, AF Research Lab, AFMC, Wright-Patterson AFB, Ohio ... Roberto I. **Guerrero,** to Dir., Staff, AFRC, Robins AFB, Ga. ... Gilbert J. **Montoya,** to Dir. Log., AF Sustainment Center, AFMC, Tinker AFB, Okla. ... William C. **Redmond,** to Dep. Dir., Air, Space, & Info. Ops., AFMC, Wright-Patterson AFB, Ohio ... James T. **Rubeor,** to Exec. Dir., AF Safety Center, Kirtland AFB, N.M. ... Teresa M. **Salazar,** to Dep. Chief, Info. Dominance & Dep. CIO, OSAF, Pentagon ... Glenda H. **Scheiner,** to Dir., Human Capital & Resource Mgmt., Office of the USD, Comptroller, Pentagon ... Angela L. **Tymofichuk,** to Dir., Engineering & Tech. Mgmt., AF Sustainment Center, AFMC, Tinker AFB, Okla. ... Debra A. **Warner,** to Dir., Civilian Force Integration, AFPC, JBSA-Randolph, Tex. ... Steven D. **Wert,** to PEO, Battle Mgmt., AF Life Cycle Mgmt. Center, AFMC, Hanscom AFB, Mass. ... Steven J. **Zamparelli,** to Dir., Enterprise Sourcing Gp, AFMC, Wright-Patterson AFB, Ohio. ▪

in the F-35 project ahead of elections to replace the sitting government this month.

Manufacturer Lockheed Martin says it is confident, however, that the Dutch will stick with the program despite the opposition of some in Parliament, Bloomberg reported July 10.

Dutch industry holds a roughly 9 billion euro industrial share in the F-35 program, according to Hillen, and the first Dutch F-35A rolled out of Lockheed Martin's Fort Worth plant in Texas, this April.

F-2 Surrogates

Three Japan Air Self-Defense Force pilots are undergoing F-16 conversion training with the Arizona Air National Guard's 162nd Fighter Wing in Tucson, after last year's tsunami dented Japan's training capacity.

"Not many of our pilots have flown this type of fighter. It's a real privilege for us," said JASDF 1st Lt. Kazuhiro Ota in a July 9 Tucson release.

Last year's devastating earthquake and tsunami in northern Japan severely damaged several of Japan's Mitsubishi F-2 fighter trainers, so the trio is training in the United States to regenerate Japan's air defense capability and relieve strain on JASDF's training pipeline.

Though the F-2 is a different design from the F-16, it's based on the F-16 and the two aircraft have many common attributes. Mitsubishi collaborated with Lockheed Martin to develop the fighter.

This makes the F-16 an ideal training surrogate, according to wing officials. Another JASDF pilot is scheduled to arrive at the same time that the first three trainees finish the course this fall.

Rescue Unit Ends Gulf Alert

The 64th Expeditionary Rescue Squadron, which covered forces in Iraq since the beginning of combat operations there in 2003, recently returned from Kuwait, closing out USAF's Gulf personnel recovery operation.

"It is the end of 64th ERQS deployments" to the Middle East, said Col. Steven Gregg, commander of the 347th Rescue Group at Moody AFB, Ga., as the unit headed home in July.

"Since every Active Duty HH-60G Pave Hawk rescue squadron has served in the 64th ERQS, I feel that this is significant," he added.

The unit left JB Balad, Iraq, with the US military's withdrawal from the country last year, restaging its alert forces to Ali Al Salem Air Base in central Kuwait.

"We look forward to meeting the challenges of the future with the same professionalism as we did in Iraq and Kuwait," affirmed Gregg.

The first wave of 64th ERQS airmen returned to Moody on July 17.

Airman Killed in Theater Shooting

Air Force Reservist SSgt. Jesse Childress was killed in a mass shooting at a movie theater in Aurora, Colo., July 20, Air Force officials stated. Eleven other people lost their lives in the attack.

The Thornton, Colo., native was serving on active status with the 310th Forces Support Squadron at Buckley AFB, Colo., when he was killed. He was 29 years old.

A second Reservist was wounded in the shooting as well, according to officials.

The injured airman, also on active duty orders at Buckley, was admitted to the hospital, treated, and released the following day.

Two Navy personnel were caught in the cross fire as well. Navy Petty Officer 3rd Class John T. Larimer, 27, of Crystal Lake, Ill., was killed, and one seaman was injured, according to the Navy.

Missileers and Maintainers Together

Air Education and Training Command officials merged its previously separate missileer and ICBM maintenance training squadrons into a single combined unit at Vandenberg AFB, Calif.

"The newly merged unit will continue to teach 12 different ICBM and Air Launched Cruise Missile courses," but with less administrative and support infrastructure, said Col. Michele Edmondson, commander of Vandenberg's 381st Training Group, said in a July 13 release.

"Class structure and teaching requirements will not change." Instead, the new structure will allow ICBM and ALCM trainees "to further capitalize on synergies between the missile maintenance and missile operations career fields, ultimately resulting in more well-rounded maintainers and operators," said Edmondson.

Under the commandwide streamlining initiative, the 392nd Training Squadron, which previously trained all ICBM missileers, became part of the 532nd TRS, formerly responsible only for training Minuteman III and ALCM technicians.

The 392nd TRS, which traces its lineage to World War II and was most recently redesignated in 1994, was inactivated July 2.

Sailplane Upgrade

The Air Force Academy retired its TG-10C Kestrel glider fleet after certifying one last cadet as an instructor pilot on a check ride in July.

The school acquired its fleet of 12 TG-10s in 2002 to teach cadets basic flying skills as well as more advanced aerobatic maneuvers.

Now, the academy is replacing the Kestrels with an all-new fleet of high-performance, German-built DG-1000 sailplanes—designated TG-16A in USAF service.

USAFA's new TG-16As "are made of fiberglass instead of sheet metal. [They're] leading-edge soaring equipment," said Lt. Col. Richard Roller, 94th Flying Training Squadron commander.

As of late July, the academy had received 15 of the 19 total TG-16s on order, allowing cadets to begin training on the new aircraft for the first time July 16.

The school's Kestrels logged a total of 140,000 flights before they were handed over to the Civil Air Patrol to train CAP cadets, according to 94th FTS officials. ■


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Hot Present, Un

The Air Force continues to refine its skills, presence, and infrastructure at Bagram Airfield—and throughout Afghanistan.

Bagram Airfield, Afghanistan, is being configured for the long term because an Air Force presence will likely extend well beyond the planned 2014 handover of security to Afghanistan's indigenous forces. New aerial port facilities opened at Bagram recently, as they have at USAF's other main base in the country, Kandahar. Likewise, new dormitories have risen near the abandoned, rotting plywood huts they replace. New office buildings are going up. The runways, ramps, and hangars are in good condition and are more than ample for the heavy traffic at the base, whose aerial port facilities are the busiest in the Air Force.

"We're going to be here, in some capacity, in support of the Afghans beyond 2014," said Brig. Gen. Thomas H. Deale, commander of Bagram's 455th Air Expeditionary Wing. "The exact structure of that is to be determined, but since the beginning [of Operation Enduring Freedom], Bagram has been a central hub for both logistics and operations affecting the entire [area of responsibility] ... and I would expect in some way, shape, or form, Bagram will continue to do that as we progress."

The dorms replace temporary B-Huts that have been "out in the elements for five to seven years," Deale said. The plywood structures have delaminated, become unsound, and are overrun with vermin. "There's a risk based on their condition," he said, describing the construction as a matter of treating airmen right.

"We have roughly 30,000 people here, inside the wire," Deale said. Beyond 2014, Bagram will not have many. "We do not need that capacity in an enduring presence," he noted. "So, what I would envision for Bagram is a much smaller footprint, with appropriate facilities to

An A-10 takes off, passing an MC-12 Liberty at Bagram Airfield, Afghanistan. Bagram is undergoing a facelift despite the planned 2014 handover of security to Afghan forces.

certain Future

By John A. Tirpak, Executive Editor

USAF photo by Capt. Raymond Geoffroy

Staff photos by John A. Tirpak

Airmen load a West Virginia ANG C-130 with parachute-rigged bundles of "gasoline and groceries" to be dropped to a forward operating base in eastern Afghanistan.

support the force structure, extended beyond 2014, with the ability to fall in on it in the future." The USAF operation will likely consolidate to just one side of the runway, "back to the way Bagram originally was" in the early 2000s, before the US expanded the airfield.

The US still makes full use of the expansion, because the Air Force has not slowed down in Afghanistan. Every few hours, like clockwork, a brace of A-10C Thunderbolts accelerates down the long runway. For the next six to 10 hours, they'll offer on-call close air support to any joint terminal attack controller in the eastern part of the country.

JTACs in Charge

The A-10s fly whether their awesome firepower has been called for—or not. If not, they put their sensors to work keeping watch over ground forces in their assigned area of coverage—another element in the vast intelligence, surveillance, and reconnaissance network over the country.

Lt. Col. Paul Zurkowski, commander of the 104th Expeditionary Fighter Squadron at Bagram, said his unit of 24 A-10s—comprising aircraft from several Air National Guard units and flown by members of all of them—flies 22 "lines," or missions a day, with 24 hours of coverage.

On the sprawling Bagram flight line, A1C Mark Anderson of the 455th Expeditionary Aircraft Maintenance Squadron loads liquid oxygen into an A-10 from the Maryland Air National Guard.

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"We have three shifts," Zurkowski said. "Eight in the morning, eight in the afternoon ... and then we have six at night." These missions are "preplanned" in the sense that A-10s will be up and in their area of responsibility, called RC East, at a specified time. They don't have planned fixed kinetic targets, but are on-call for JTACs if there are troops in contact—TIC—with the enemy. Their missions, however, have them using their onboard sensors, "looking at interest points on the ground," Zurkowski said. These points are places where ground forces have consistently encountered the enemy or at positions where the enemy has previously set up firing positions.

The A-10s will also escort ground convoys, flying ahead of the ground units to look for ambushes, and provide top cover for HH-60 Pave Hawk rescue helicopters dispatched to recover injured troops or flying secret missions.

The Warthogs take off with a consistent weapons load that includes its massive 30 mm internal gun, white phosphorous rockets, countermeasures, and four 500-pound Joint Direct Attack Munitions, or JDAMs, of various configurations.

There's no hard rule, but the units measure success by whether A-10s respond to troops in contact within 12 minutes, Zurkowski said.

The A-10s are not the only providers of CAS in the region. Weighty B-1 bombers with heavy bomb loads orbit the area, and at night the A-10s coordinate with AC-130 gunships, especially when supporting special operations teams. They also work with Army "air weapons teams" comprising OH-58 Kiowas and AH-64 Apaches. All can provide "fire support for the JTAC at low altitude."

Most of the time, two A-10s can handle whatever calls come in, though "we've stacked four in the area," Zurkowski said. However, the lines of authority are clear, and the JTAC is in charge.

"The JTAC will coordinate fires. The JTAC answers to the ... on-scene [ground] commander," usually a lieutenant to a major.

Though every mission involves some ISR collection, about "70 percent of the time, we're responding to a priority or a troops in contact" request.

And close air support is just one of a broad range of missions the Air Force performs from Bagram. Just up the runway, HH-60 Pave Hawks stand alert, ready to respond if a coalition soldier is wounded in battle.

A Study in Restraint

JALALABAD, AFGHANISTAN

A reporter accompanied an Air Force crew on a recent "airland" delivery, meaning the C-130 set down at a small runway, taxied to a revetment constructed of old conex containers, unloaded its cargo, and make a swift departure.

The area was considered "hot," and the pilot made a series of highly aggressive turns in making his descent, so enemies on the ground would have as small and unpredictable a target as possible. Everyone on the aircraft was required to wear helmets and body armor, given that C-130s sometimes return from such missions with extra holes after being hit by small-arms fire.

After the airplane landed and taxied in, two security forces airmen jumped off the C-130 and took up positions at the wingtips, ready to protect the crew and aircraft while ground personnel unloaded the cargo. The operation went smoothly, and the pallets of food, water, fuel, and equipment, which had taken about 45 minutes to load, were off the airplane in less than seven minutes.

However, the C-130 did not quickly button up and taxi back out. It remained in the revetment, engines turning. The crew had received instructions to stand by.

In a few minutes, a small group of figures appeared from around one of the conex containers. Soldiers of the 1st Infantry Division, as advertised by the "Big Red One" patches on their sleeves, led three men in traditional Afghan attire, wearing blacked-out goggles, "Mickey Mouse" ear protectors, and plastic handcuffs. The soldiers were in full battle gear. The prisoners were effectively blindfolded by the goggles and unable to hear, and the soldiers patiently but firmly led them to seats across from the reporter.

One of the crew members pointed out that one of the detainees, despite being blindfolded and handcuffed, had just attempted to take a weapon away from a soldier. Under the circumstances, it would not have been surprising to see him thrown to the floor and held down with a knee or boot, at gunpoint.

Instead, the three were simply positioned to sit down in the canvas troop seats. One of the soldiers—baby-faced and red-haired—spoke loudly and sternly to them in their language, perhaps Pashto. The only rebuke from these soldiers was to insist the three men sit straight up and not recline in their seats. They did so and remained flanked by soldiers wearing latex gloves.

When one continued to complain that his handcuffs were too tight, a soldier cut the plastic bonds and firmly placed the detainee's hands on his knees, to let him know that's where they should stay. The prisoner, obviously grateful, took the hint.

At all times, the soldiers treated the prisoners with firmness but civility. They suffered no humiliating treatment, and one soldier even steadied a fearful detainee as the aircraft climbed out on what was, in all likelihood, the man's first flight. The soldier gave him a small bag, just in case. Upon arrival at Bagram, the soldiers led the prisoners off the airplane.

It is highly unlikely that this little scene was staged for the benefit of the visiting journalist. Neither the pilot nor loadmasters knew they would be taking detainees back to Bagram, and when the prisoners appeared at the back of the airplane, the media escort quickly warned: "No pictures of this."

Later, one of the crew members said if the commanders at Jalalabad had known a reporter was aboard, the prisoners probably wouldn't have been boarded.

From time to time, sad evidence emerges that soldiers in this war, perhaps frustrated by its length and the losses they have suffered among their comrades, have resorted to treating the enemy in humiliating ways, sometimes posing for the camera as they do so. But on that hot day in Jalalabad this summer, the soldiers treated their enemy with professionalism, despite being given ample incentive to do otherwise.

—John A. Tirpak

Remotely piloted aircraft share the ramp with the HH-60s, along with a large contingent of Army attack, scout, and utility helicopters. A small detachment of Marine Corps EA-6B Prowler electronic warfare jets are there as well, as are a mix of USAF and Army C-12 variants that provide a manned ISR capability.

On the other side of the airfield, Air Force, coalition, and contractor cargo aircraft land and take off in a constant flow, bringing in supplies and taking away equipment as part of the broad US withdrawal from the country. Across the base, troops from a melting pot of NATO and coalition armed forces carry out assigned duties.

Deale acknowledged Bagram's sprawling, multimission nature, but insisted it is "not about strategic-level


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USAF photo by Capt. Raymond Geoffroy

A1C Mary Wiuff, a munitions systems specialist, checks a GBU-38's guidance system at Bagram. Some 30,000 people are currently "inside the wire" at the base.

operations." Rather, he said, Bagram is a tactical base, focused on providing "every ounce of support we can" to the soldier in the field. That, Deale said, is "our sole purpose, ... so he is successful in his mission and ... that he gets off the battlefield safely."

The nascent Afghan Air Force doesn't have a presence at Bagram, but it will. The base will likely host Afghanistan's C-27 airlifter fleet, and the new Afghan light strike aircraft will be based there.

In February, Bagram's contingent of F-16s and Kandahar's A-10s swapped bases.

"Part of the reason for moving the A-10s up here is to have a unit to partner the Afghan units with, for close air support and light attack," Deale explained. The Afghans can take advantage of operating with a USAF unit having a similar mission, "if there is an enduring presence here with that capability."

The "graveyard" of junked Soviet-type aircraft seen at some bases in the country is a stark example of how not to foster a new Afghan Air Force, Deale said.

"The equipment they use, ... the capabilities they develop, have got to be supportable by Afghanistan, ... by the economy, by the Afghan education system," he said. The sophisticated Soviet aircraft handed over to the country when Russia created a client state there in the 1980s were more than Afghanistan could manage within its resources, both financial and human.

"There was no way that kind of fleet of aircraft was going to be sustainable," he said. Instead, the US approach has been to help Afghanistan develop a solution comprising C-27s, Mi-17 helicopters, and "a light attack capability" still to be determined. The mix will be manageable by the Afghans such that "we will not have to continue to provide support and services" to facilitate their capabilities, Deale said.

Partnering with the Afghan Air Force on the C-27s and Mi-17s takes place at Kandahar, where Deale also served as commander before his assignment at Bagram.

USAF photo by SSgt. Heather Skinkle

Although USAF has not had to perform air sovereignty for Afghanistan, "they live in a rough neighborhood," Deale observed, and neighboring countries possess power projection capabilities. Afghanistan shares borders with Iran, Pakistan, several former Soviet republics, and even a sliver of China.

Air Force officials have said privately that Afghanistan may also adopt one of the many variants of the C-12, which in Army and Air Force versions ply the skies of Eastern Afghanistan, offering multimode, crewed intelligence support to troops on the ground.

Deale said USAF added six additional USAF MC-12 Liberty aircraft to the Bagram fleet after the end of their mission in Iraq last year. The Army operates "several different C-12 configurations" from the base.

"They make a difference quite a bit on the battlefield with the advanced ISR capabilities that they bring," he said. They are superior to RPAs in some ways because "they are a lot less restricted as far as [how] weather impacts their ability to conduct their mission." The crews are much more integrated with the ground forces they support. They have "much closer, much more direct tactical relations."

One mission probably not in the cards for Bagram is to host air refueling aircraft. Deale noted that Afghanistan doesn't have any domestic fuel production capability, so the fuel would have to be brought in "somehow, so it almost defeats the purpose of basing a tanker here."

Out of the 30,000 people on the base, some 5,000 are Afghan nationals, Deale said, and this, too, helps pave the way for Afghanistan to take over its own security.

Although there's a danger that among those 5,000 are Taliban sympathizers who could "cause some sort of disruption," Deale said, "we do quite a bit to mitigate that risk." Long lines of workers wait to enter the base every day, and they go through screening "very similar to what you go through in the United States to get on board an airliner."

Close Air Support, Refined and Evolved

BAGRAM AIRFIELD, AFGHANISTAN

Compared with the ad hoc coordination of close air support that characterized the early phases of Operation Enduring Freedom, CAS as practiced in Afghanistan today is a refined process taking full advantage of years of hard experience and specialized technology developed with the mission in mind.

Brig. Gen. Thomas H. Deale, commander of the 455th Air Expeditionary Wing here, said, "I've been an A-10 pilot my whole career," and "we have got our ability to integrate aerial operations and direct support to the ground force at the highest degree I've ever seen."

He explained that USAF has "matured the theater air-to-ground system," to include joint terminal attack controllers—airmen embedded with ground troops who call in air strikes—as well as the air operations center and "the aircraft themselves."

The hallmarks of this coordination lie with the transition of the A-10 to a digital platform, able to take full advantage of data sharing systems, and having the ROVER (Remotely Operated Video Enhanced Receiver) system in the hands of JTACs.

"If you ask what is working better than it should," then the coordination of CAS falls in that category, Deale said. "Granted, we have had two wars and 10 years of development of that, but ... our ability to integrate direct fire and support of our ground forces is extremely good."

Using Litening targeting pods to survey the scene, A-10s can share imagery digitally with JTACs using the ROVER set.

The JTACs can then see everything the pilots see, said Lt. Col. Paul Zurkowski, a deployed A-10 squadron commander. The JTACs can even manipulate the A-10's Litening pod, slewing it to look at the areas they want to see. Both the pilot and the JTAC can simultaneously see enemy positions or places the JTAC wants the fighter to attack.

"They can vector our pods to where that specific individual or vehicle or house is. So the ROVER is a great capability," Zurkowski noted. Up to five hours of four-channel imagery can be recorded and mined for useful "stills" that can be sent back to the ground troops, he said.

Also, "we can change the 'lens' that we look through on the pods," to go from superwide and big to small, to put a scene in context. At the tightest resolution, "now you can count the number of doors on the house," he said. "If you zoom in, you can find people who are located up to four miles away."

USAF photo by Capt. Raymond Geoffroy

Far left: Brig. Gen. Scott Dennis (l) speaks with Brig. Gen. Thomas Deale at Kandahar Airfield in Afghanistan, where Deale served as commander before his assignment to Bagram. Left: Two South Korean HH-60 Pave Hawks take off from Bagram. Coalition and contractor aircraft constantly come and go from the airfield.

USAF photo by Capt. Raymond Geoffroy

SrA. Zane Gorman loads high-explosive incendiary rounds into containers for A-10s at Bagram. The airfield is a tactical base focused on supporting troops in the field.

Still, that doesn't seem to be enough. There were five so-called "green-on-blue" attacks in just one week in August, which Defense Secretary Leon E. Panetta said has him "very concerned." As such, Panetta said he is working with Marine Corps Gen. John R. Allen—the top commander of US and coalition forces in Afghanistan—on a range of measures to "stop these attacks," including implementing a more thorough vetting process and an increased intelligence presence.

Maj. Gen. Tod D. Wolters, former commander of the 9th Air and Space Expeditionary Task Force-Afghanistan, said such events can undo years of hard-earned trust and can force commanders to rethink troop ratios for those assigned to work with the Afghans. "It's something that has to be looked at day in and day out," said Wolters during an August Mitchell Institute event.

About 20 people a week are put off the base and not permitted to return—roughly "half a percent," Deale observed. The infractions are often due to inattention, but Deale said, "We're ... not naïve." USAF recognizes that some of those who break the rules may be enemies trying to infiltrate or case the base.

"It really drives home the fact that we're serious about the rules. And for many of them, this is their livelihood," he said. "If you lose access, you lose your job." The jobs, by Afghan standards, are well paying, and to lose one hurts.

Deale said the biggest challenge at Bagram is recognizing the complex nature of the conflict. Attitudes within the country swing back and forth about the American presence, but the tone shifts dramatically if there's an incident—such as when US troops mistakenly burned several Korans earlier in the year.

A Changing Dynamic

The incident was "clearly a mistake," Deale said, made "by very junior enlisted members who were directed to dispose of this material. There was no harm meant; it wasn't meant to be disrespectful." Likewise, occasional "navigational errors" made with RPAs "create cross-border issues." These would be small problems in another theater, but in Afghanistan and nearby countries, "you see it resonate at the strategic level." Late last year, a stealthy American RPA went down in Iran, which recovered its wreckage. The event was a propaganda coup for the Iranian government and possibly a technological bonanza as well.

Overall, "the dynamics of this theater are changing about every six months. So when you come into theater, if you're relying on previous experiences, you're out of touch," Deale asserted. He makes it a priority to ensure that "everyone is aware of what the context of the fight is today," so airmen understand "how to conduct themselves in the air or on the ground, in a way that prevents those tactical-level issues from growing" into major political crises.

The US is already starting to "retrograde"—move—equipment out of Afghanistan, either to pre-positioning stocks in the Middle East or all the way back to the States.

"We're still looking at the smartest way to remove equipment from the battlefield," Deale observed. It's not clear whether Bagram will continue to be a transshipment point, where large gear such as vehicles are brought in on the surface but leave on large "gray tail" USAF transports. Alternatively, cargo jets may pick up gear directly from some of the forward operating bases that have a suitable airfield. Only military jets may do such work; it's not safe enough to send commercial freighters out to the FOBs.

Despite the drawdown, Deale said, "I have no challenge with morale and motivation across the wing. Every airman understands his direct role in the mission. ... And they'll put up with a lot: long duty hours, harsh working environments. ... They'll put up with rocket attacks because they understand how important it is and how they contribute to the mission."

Two schools of thought seem to be coalescing around how the enemy will react to the planned exit of US forces in 2014. One suggests that the Taliban and its allies will lay low, wait until the US departs, and then make a renewed grab for power. The other suggests that the Taliban will make a full military press through the US departure and then declare that it defeated the US militarily and drove it out of the country.

Deale said the US, unequivocally, is "achieving tactical success" in Afghanistan, and he doesn't see a need for more capability right now. Moreover, after the Taliban made grandiose announcements about the launch of its spring fighting season, their military efforts have been spotty.

However, "if we need additional resources, we'll bring more resources into the theater," Deale said. The US has demonstrated that it will boost its capabilities in the country "when we need to, based on what the [operating] tempo is ... and there's no doubt in my mind that should the ground situation dictate that we need more resources, we'll do the same. We aren't there yet," he added.

The US has adequate capabilities "in theater to meet what the requirement is for our ground forces: to be mission successful, to be safe." ■

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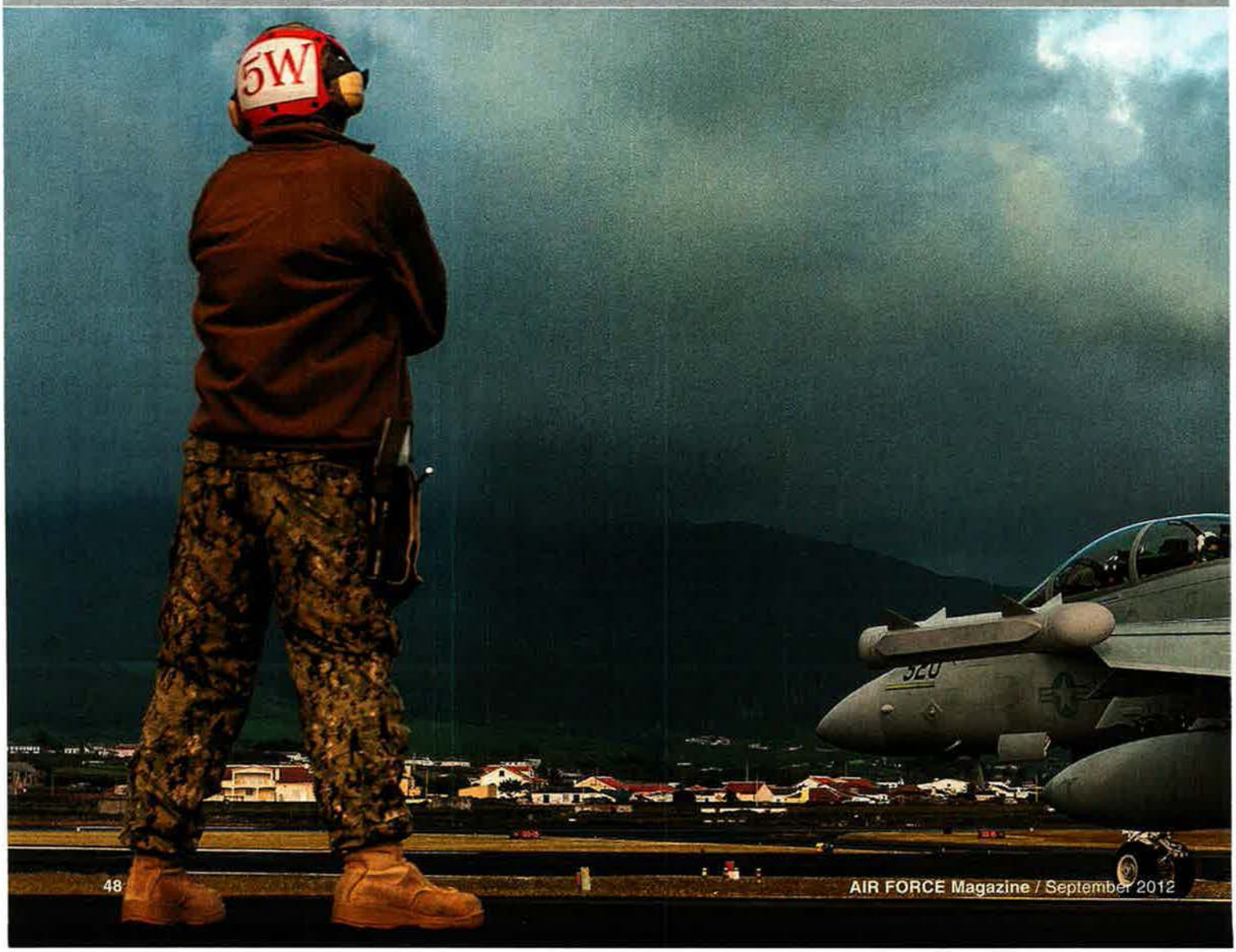

By Marc V. Schanz, Senior Editor

Naval Air Station Whidbey Island, on Washington's Puget Sound, is home not only to the Navy's airborne electronic attack (AEA) mission, but to the Air Force's component of this mission as well. From here, electronic warfare officers of USAF's 390th Electronic Combat Squadron provide this increasingly important capability—as they train and operate side-by-side with Navy aviators.

The 390th ECS shares space with a Marine Corps support squadron in a building just down the way from Whidbey's hangars and runways. Squadron Commander Lt. Col. Karl Fischbach acknowledges it's an unusual setting: airmen flying missions aboard Navy jets. He's frequently called away from Whidbey to give briefings about this unique unit, and he likes to open with a good sea story—usually about learning to land an EA-6B Prowler on a rolling and pitching aircraft carrier during a dark and stormy night.

"We're the only tactical [Air Force EA] game in town here," Fischbach said in June. His squadron is the USAF element of what's called the Joint Airborne Electronic Attack program. He's on his second tour at Whidbey; on an earlier tour as an electronic warfare officer, or EWO, he also flew Prowlers with Navy aviators. Now, he's more comfortable with the Navy's unique military culture.

"I remember as a captain saying, 'It's not wrong, it's just different,'" Fischbach said. "There are a lot of things we learn out here [that aren't necessarily] something you get in Air Force operations." The 390th ECS is a part of Mountain Home AFB, Idaho's, 366th Operations Group, but its daily mission at Whidbey is to build electronic attack experts for USAF.

For EWOs, Whidbey is a sought-after billet, a chance to get in a fast jet and work the cutting edge of cracking open enemy air defenses—from locating and jamming emitters to frying communications networks and employing anti-radiation missiles.

While EWOs fly in aircraft across the Air Force, at Whidbey, a specific mindset is nurtured.

"It's a great experience out here. ... We are on the operational end of [EW]—we employ the latest and greatest," said Capt. Ian Cunningham, a career F-15E EWO and instructor at Whidbey in the Navy's Growler training squadron (VAQ-129).

A Navy EA-18G Growler from VAQ-135 (Electronic Attack Squadron 135), NAS Whidbey Island, Wash., rests on the tarmac at Lajes Field in the Azores during a refueling stop. The Growler is steadily replacing the Navy's EA-6B Prowler electronic attack aircraft, and the Air Force and Navy have agreed to continue a partnership that puts USAF electronic warfare officers in the jet with Navy pilots.

USN photo by Sr. Chief Photographer's Mate Mahlon K. Miller

Amn. Clay McGeshick, a bow safety observer, ducks down as an EA-6B Prowler of NAS Whidbey Island's VAQ-129 launches from the flight deck of USS Ronald Reagan to conduct a carrier qualification sortie. Just like their Navy counterparts, Air Force EWOs get to conduct "carrier quals" during their stint with the 390th Electronic Combat Squadron as they help meet the need for electronic warfare specialists.

He's been assigned there since February, teaching nascent electronic warriors the art of "turning up the noise" on enemy air defenses.

VAQ-129 is the sole EA-6B and EA-18G training squadron for the Navy and Marine Corps. USAF would call it a replacement training unit, but the Navy calls it formally a "fleet replacement squadron" or, more commonly, among aviators, RAG, for replacement air group. It is one of six electronic attack squadrons the 390th supports. EWOs operate in expeditionary squadrons at the base, known in the Navy as "concrete squadrons" because they are not attached to carriers.

Embedding

Whidbey's naval character is evident every time a Prowler or Growler makes an approach and slams down on the runway. Naval aviation revolves around carriers, and pilots make day or night "bounces"—short, violent landings—whether or not they're actually landing on a flattop at sea.

L-r: Navy Lt. Nicholas George briefs USAF Lt. Col. Karl Fischbach, 390th Electronic Combat Squadron commander, USAF Capt. Ian Cunningham, and Navy Lt. j.g. Justin Brown before a sortie from Whidbey Island.

"It takes getting used to, for sure," Cunningham said of landing Growlers instead of F-15Es at Mountain Home AFB, Idaho.

In the midst of this unique exchange arrangement, USAF has maintained its own culture of electronic attack since divesting its own escort and standoff EA assets in the 1990s.

For years, Air Force electronic attack meant dedicated EW aircraft flying escort for large strike packages. These aircraft would crack open bristling networks of search-and-track radars, surface-to-air missiles, and anti-aircraft artillery batteries, collectively known as integrated air defenses. In the Air Force, this capability reached its zenith during the 1991 Gulf War.

As EW capabilities migrated piecemeal to other platforms, however—and as USAF's plans relied increasingly on stealth—the service in the late 1990s gave up its dedicated EA jets, in the form of EF-111 Ravens. Since then, management of the escort-standoff electronic jamming mission has been ceded to the Navy, which continues to rely heavily on jamming for its nonstealthy carrier jets. Meanwhile the Air Force decided sometimes it is best to send in EW aircraft to accompany even stealthy aircraft, to give the strike packages every possible advantage.

As part of a 1995 deal brokered by the Office of the Secretary of Defense, USAF electronic warfare airmen embedded with the Navy's EA-6B Prowlers, and now EA-18G Growlers.

In the 390th ECS the Air Force sharpens its airborne electronic attack cadre. The culture is undergoing significant change, however. The number of empty spots on Whidbey's ramps has grown, as the Navy retires its four-seat EA-6Bs and trades up for a smaller number of new, two-seat EA-18Gs. These aircraft—F/A-18F Super Hornets permanently tricked out as escort jammers—carry the latest tools of the EA trade, including USQ-113 communication jammers, active electronically scanned array radars, wingtip receiver pods, and ALQ-99 tactical jamming pods, among other features.

Whidbey's electronic attack wing has completed about 50 percent of its transition from the Prowler to the Growler, and this affects the 390th ECS as well. Fischbach himself transitioned in late

Widening the EW Perspective

NAS Whidbey Island, Wash.

Air Force Lt. Col. Don Keen, director of operations for the 390th Electronic Combat Squadron here, spends a lot of time on temporary duty assignments. A career F-15E backseater, he recently briefed a commander's conference at Osan AB, South Korea, on electronic warfare. This is all part of the squadron's mission, he says: preserving the electronic attack mindset in the Air Force and taking that perspective into future assignments.

Officials at this Air Force squadron, at a Navy facility, run into just as much of a culture shock when they head out to USAF installations. Officers joke they are frequently called on to use their "decoder rings" to help airmen understand all things EA.

"We are here to learn, and to share our experience when we leave," Keen notes—and that means looking at EA strategically and not just from the perspective of self-protection. He recalled one assignment where he was sent to a conference to discuss the Miniature Air Launched Decoy program, and everyone who spoke came at the problem from a self-protection point of view, rather than looking at EA as a battlespace effect. "I think I was the only EW guy in the room," he said.

The 390th ECS is a key component of a USAF-wide drive to reinvigorate EW culture across the service and increase manpower in this sensitive mission set.

The unit has a unique role, says Lt. Col. Karl Fischbach, the squadron's commander. "As far as EWO development, you're maintaining a cadre of spectrum dominance experts." Flying with the Navy affords a different perspective on electronic attack, emphasizing jamming. The Air Force, meanwhile, must look holistically at the battlespace and ensure the safety of an entire air campaign.

The Air Force is charged with rolling back an integrated air defense system in any given strike package, Fischbach notes, and that requires a tailored use of skills, from dealing with detection radars all the way up to defeating SAM batteries.

"All those operate in the [electromagnetic] spectrum— ... We operate in the lower end of that spectrum," he says. Navy and Air Force EWOs attack and outsmart early warning, detection, and acquisition radars—the prime targets of standoff and stand-in jamming.

While suppressing radars and SAM sites is a part of the mission, EA looks at the problem from a bit higher up, Fischbach and the squadron EWOs say.

"Fighter pilots—if you ask what [EW] is doing—they say, 'Oh yeah, it's my pods,'" Fischbach explains. "They're looking at the end game." For the EWOs, however, it is about generating an effect that can apply across the combat zone. This ensures, as Fischbach put it, that SAMs are kept "on the rail."

An EA-18G Growler of VAQ-132's "Scorpions" on approach to Whidbey Island. USAF electronic warfare officers helped support operations during the unit's first deployment with the Growlers in the Middle East and over Libya during Odyssey Dawn and Unified Protector.

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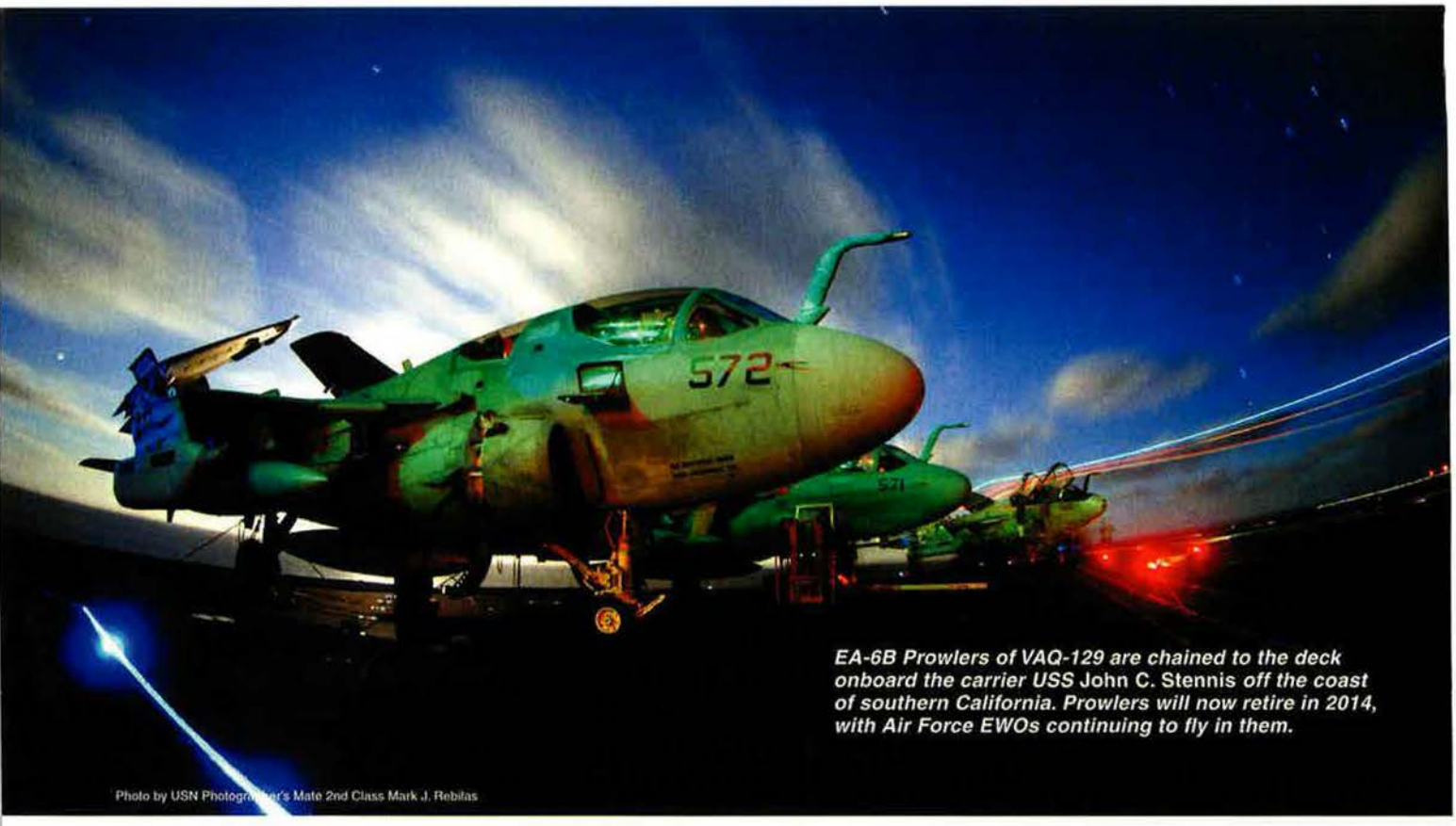

EA-6B Prowlers of VAQ-129 are chained to the deck onboard the carrier USS John C. Stennis off the coast of southern California. Prowlers will now retire in 2014, with Air Force EWOs continuing to fly in them.

Photo by USN Photographer's Mate 2nd Class Mark J. Rebilas

June. "Three weeks ago, I was a Prowler guy," he noted.

As of late June, the 390th had 13 of an authorized 24 EWOs supporting six electronic attack squadrons, as the Navy draws down its four-seat Prowler force.

The Prowlers were slated to go away entirely by 2012, and in the original plan this would mark the end of USAF's participation in the mission. However, combatant commander demand for EW has extended the Prowlers' service lives and the need for EA-18Gs. The Navy stood up its first three EA-18G squadrons as "concrete" expeditionary squadrons and will acquire 26 more EA-18Gs than it initially planned. Now, Air Force EWOs will serve in Prowler operations until it reaches its new retirement date of 2014. Under a memorandum of understanding between USAF and Navy signed in February, Air Force EWOs will continue to embed with the Growlers indefinitely.

Getting to Domination

The electronic attack mission is getting tougher, as potential adversaries up their game by creating increasingly lethal integrated air defenses. The 390th ECS, it should be noted, is also just one part of the Air Force's EA portfolio. The service's EA roadmap got an Air Staff overhaul in 2010 and since then has played out under trying circumstances.

"This mission is inherently fast-paced and technologically driven," said Col. Jim Pryor, a career B-1B weapon systems officer and currently chief of EW requirements in the Air Staff's plans and programs directorate at the Pentagon. What's really changing is the advancement of technology, a strategy shift with greater emphasis on operating in denied and defended airspace, and an uncertain near-term budget picture, he noted.

Getting to the end state of being able to dominate the electromagnetic spectrum for the combatant commanders is "certainly not an easy task," Pryor said.

Modernization must be planned with both rapid technological change and fiscal limits in mind. Still, "we have made a lot of progress," said Col. Joseph Skaja, chief of the combat enabler division at Air Combat Command headquarters.

USN photo by Mass. Comm. Spec. 2nd Class Tucker Bates

Sailors inspect an EA-18G Growler (left) next to an F/A-18F Super Hornet at Whidbey.

Staff photo by John A. Tirpak

Marine Prowlers are seen in revetments at Afghanistan's Bagram Airfield.

As it has gotten harder to track and counter electronic warfare, so has it been harder to find solutions in large, set-piece programs.

"With all of the advancements in technology now, there is no single system that could enable us," Skaja said, adding that USAF's EW portfolio must be "a system of systems." That means pairing escort and standoff electronic attack with other pieces of the EW portfolio. Such pairings, for example, include putting the EC-130 Compass Call, and its offensive communications and counter-command and control tools, with F-16CJs, which perform the defense-suppression Wild Weasel mission of baiting and killing SAM batteries.

Fiscal Limitations

Across the spectrum, "we are going to have a standoff ... escort jammer and self-protection" capability, Skaja said. "We have funded and upgraded all portions, ... but with the fiscal reality we have limitations."

A big piece of the puzzle is modernizing self-protection tools for tactical fighters, Skaja noted. The Air Force must bridge the gap between the legacy fleet and the future force dominated by F-22s and F-35s, both having comprehensive and complementary electronic attack suites.

USAF will upgrade its legacy fleet self-protection systems in the coming years. These range from onboard electronic countermeasures to ALQ-131 electronic countermeasures pods, employed on the A-10, F-16, and C-130. Air Combat Command has set aside roughly $250 million for the upgrade, and the first improved pods will arrive in 2013.

In addition to jamming pods, the Miniature Air Launched Decoy and MALD-Jammer (MALD-J) are undergoing development and testing efforts, with the goal of upgrading USAF's F-16 fleet and its EW capabilities. MALD is an expendable air launched weapon that fools adversary radars. The jammer variant actively denies early warning radars the ability to track aircraft, using methods similar to those employed by Prowlers and Growlers.

Aside from the technical aspects, the mission of the 390th answers USAF's need to maintain continuity of its own EW/EA culture. The squadron maintains and builds EA culture to better prepare airmen for carrying out effective electronic attack missions, both in Air Force and joint assignments.

USN photo by Mass Comm. Spec. 3rd Class Rialyn Rodrigo

Top: Navy EA-18G pilot Brown and Air Force EWO Cunningham ready for a training sortie. Middle: An EA-18G takes off from NAS El Centro, Calif. Bottom (l-r): Fischbach, Brown, Cunningham, and George head to the Whidbey flight line for a morning Growler sortie. Air Force EWOs assigned to Whidbey work in tandem with Naval aviators every day to sharpen and refine core electronic attack skills.

USAF photo by SSgt. Nadine Y. Barclay

A Growler takes off from Aviano AB, Italy, on March 20, 2011. Electronic attack against Libyan air defenses was a critical capability during Operation Odyssey Dawn and Operation Unified Protector last spring.

Lt. Col. Don Keen, 390th ECS director of operations, said the transition from an EWO job on a B-52, EC-130, or even EA-6B to the tandem EA-18G can be challenging. Two-man crews face greater demands, he said, as they balance tasks ranging from helping the pilot navigate, communicate, work the radar, and manage signals analysis.

EWOs face another transition. For nearly a decade, they have operated in a fairly permissive combat environment, free of a modern integrated air defense system (IADS). If the last decade has asked the military's electronic attack warriors to adapt to the amorphous and blurry world of irregular warfare in the skies over Iraq and Afghanistan, the task for the future becomes even more complicated.

Air Force and Navy EWOs were front and center in last year's operations over Libya, where electronic attack proved critical to the success of dismantling Libyan air defenses—but presented a contrast in operating environments.

Maj. Jeff Kassebaum, a former 390th ECS exchange EWO and currently chief of EW integration at USAF's Weapons School at Nellis AFB, Nev., said operations in permissive environments have led to some complacency. Traditional doctrines needed to be updated to deal with flexible "nontraditional" IADS, such as those experienced in Libya.

Muammar Qaddafi's forces, Kassebaum noted, could find, fix, track, target, engage, and assess due to a number of factors, but especially due to its ability to tap civilian infrastructure such as the air control radar at Tripoli Airport.

"Suppressing an IADS must not rely on doctrine focused only on military infrastructure," Kassebaum asserted, adding that "suppression is more than employing anti-radiation missiles." Writing in the *Journal of Electronic Defense* in December 2011, Kassebaum, who served as chief of the Suppression of Enemy Air Defenses cell during Operation Unified Protector, wrote, "We deceive ourselves if we assume tomorrow's threat IADS will look anything like past IADS."

The profile of EA is rising, due in large part to proliferation of electronic systems for both attack and defense. In fact, the new catchphrase in combatant commander requirements documents is their need to operate in a "contested EMS" or electromagnetic spectrum. The growing lethality of worldwide anti-access and area-denial capabilities likewise raises the prominence of EA.

"I don't know how to scale that, but I think there are more people who are looking at [EA] and it is generating a lot of conversation," said Pryor. "Across the joint spectrum it is gaining importance. ... The whole force has to operate in this domain," he said.

Squeezing the Nickel

Electronic warfare is an inherently expensive enterprise, however, and the Pentagon is tightening its belt severely. A keystone Air Force program to expand its EA capabilities, the B-52 Stand-Off Jammer, was killed off twice in the last decade due to "requirements creep" and ballooning cost. While ACC planners felt the SOJ was critically needed at the time, demands on the fleet and requirements have shifted.

Now, USAF plans to concentrate on the assets already in hand to get the most out of its EW dollars and fulfill its slice of the EW mission. No one expects reinstatement of the SOJ or anything like it in the near future.

"Threats are changing, and we need to challenge our core concept of electronic warfare overall," Pryor said.

Key to this effort is maintaining the health of programs such as the agreement between the Navy and Air Force for joint manning. Air Staff and ACC officials tout the exchange program with the Navy as a great success story, and say the program stands now on "solid ground" going forward.

As the Air Force continues to embed airmen on new Navy Growlers, another exchange in the works could see Marine Corps EA-6B aircrew swap seats with counterparts on Air Force EC-130 Compass Call aircraft. An ACC spokesperson said the benefits of the agreement would include cross-tactic coordination, a further expansion of joint EW operations, and building awareness of shared responsibilities during EA operations.

In the late 1990s, as the Air Force determined its future lay in an all-stealth fighter force, a certain school of thought held that stealth would largely solve the problem of escort and stand-off electronic attack. Today, however, that view is hard to come by. In fact, when asked about the future of USAF electronic attack culture in the absence of a service-owned flying mission, the USAF officers at Whidbey were bullish. EA, they said, is here to stay.

"Our guys have moved on to staff billets," and leadership positions, Fischbach pointed out. The breadth of experience at Whidbey gives EWOs training that offers a unique perspective. "We're building the guys ... who are going to be in the Air Force for 20 more years. They will carry that EW culture back with them" to their squadrons, to ACC, or to the Air Staff.

It is incumbent on the Air Force to make sure the service retains this valuable perspective—as it looks to the future of working with the EA mission in a joint environment. "At the end of the day, the Navy doesn't really care if the Air Force understands electronic warfare," Keen said bluntly. "They have their own mission to worry about. It's up to us." ■

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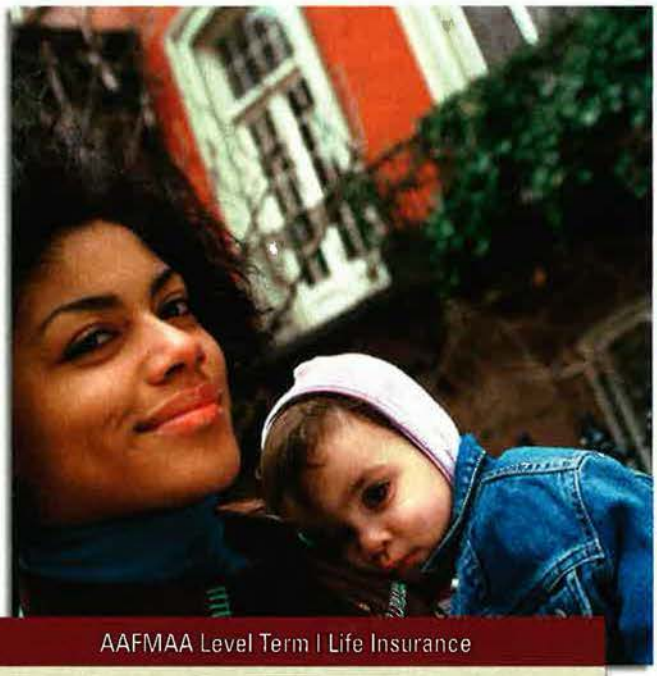

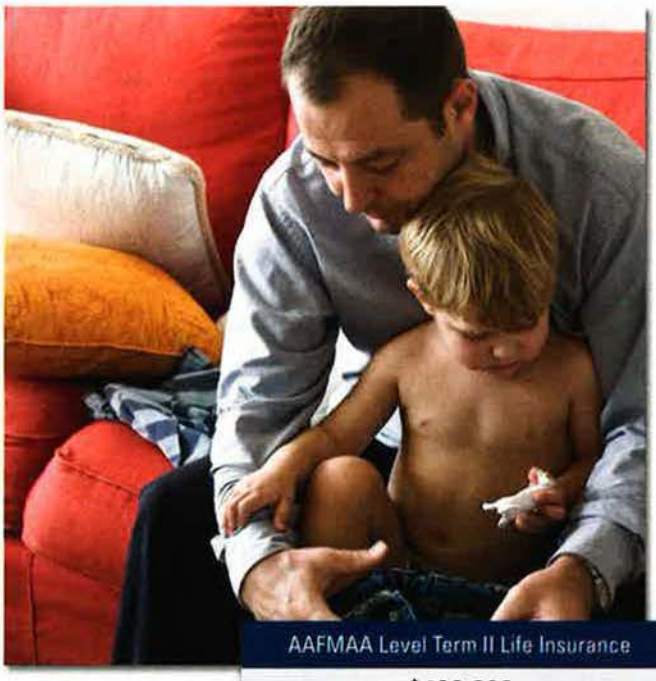

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USAF photo by SSgt. Heather Skinkle

SrA. Chad Mann (l) and A1C Crystal Martinez, security personnel at Kandahar Airfield, Afghanistan, prepare to respond to a situation on the flight line. Mann was on his third deployment to the region, Martinez her first.

WHAT'S NEXT FOR THE AEF

By Amy McCullough

THE Air Force has postponed implementing its new air and space expeditionary force (AEF) model at least a year, but leaders are confident that once in place, AEF Next will provide the predictability and stability promised when the concept was first introduced more than a decade ago.

Ten years of fighting two wars forced the Air Force to move away from unit-based deployments, which was the original mandate for air expeditionary forces. In its place, a piecemeal approach evolved. Smaller and smaller elements—sometimes even a lone airman from a specific squadron—deployed to an overseas location, creating, it is hoped, "serendipitous" unit cohesion, Gen. Norton A. Schwartz, then-Air Force Chief of Staff, said in June.

Still, "my sense is that we need to recycle a bit back toward the more unit-based deployments that we had before the surge period in Iraq and Afghanistan, where commanders and chiefs and first

sergeants actually deploy with their people and fight with them," he said. "So instead of, let's say, 35 wings in our Air Force contributing to the expeditionary wing at Bagram, maybe it will only be five wings. And those five wings will actually train and associate together."

Deploying Alone

The ultimate goal for AEF Next is to build a more cohesive deployment cycle that allows for surge without requiring a complete restructuring of the existing cycle. The built-in predictability of such a model would allow airmen to know exactly when they will deploy, how long they'll be gone, and when they'll return. In addition, for the first time, the Air Force should be able to synchronize its deployment schedule with permanent change of station moves, continuing education, and other personnel activities, promoting a better work-life balance for airmen while boosting the overall readiness of the force.

According to CMSAF James A. Roy, instead of today's complicated "tempo banding" system—which few airmen claim to actually understand—the new deployment system will be made up of six different airpower teams, all based on Air Force core functions and values: strike; mobility; command and control intelligence, surveillance, and reconnaissance; space and cyberspace; special operations; and agile combat support.

The Air Force is going back to basics for deployments, but the changes will have to wait for an Afghanistan drawdown.

Each of the six major categories will be broken into subcategories defined by mission type. Though the exact breakdown is still in draft form, the idea is to bundle like capabilities together. For example, a larger strike group could include a smaller air superiority airpower team that may combine pilots and maintainers from squadrons at JB Langley-Eustis, Va.; Seymour Johnson AFB, N.C.; and Shaw AFB, S.C., all of whom have matching mission sets, said Col. John Long, chief of the Air Force war planning and policy division at the Pentagon.

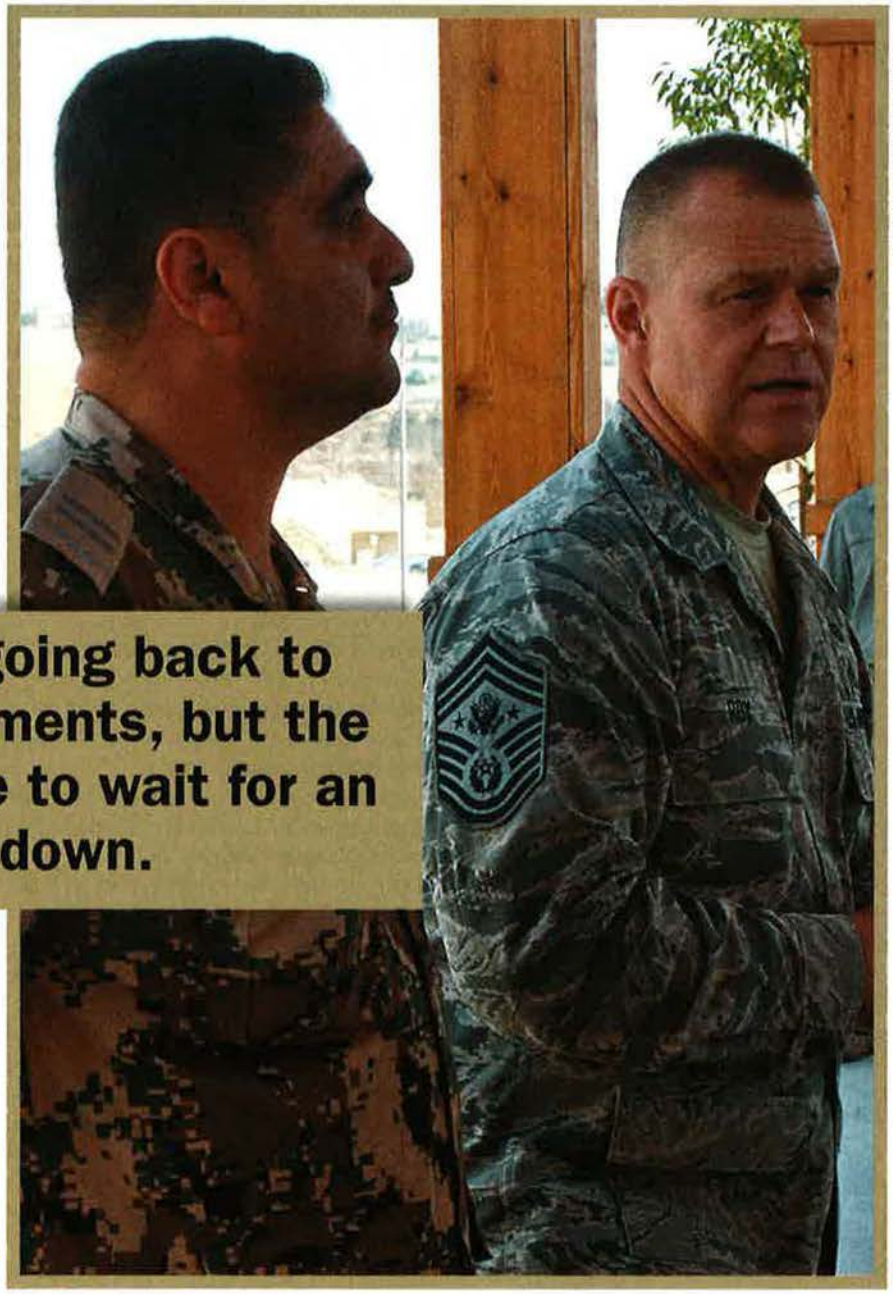
Those teams would then train together at home base or in exercises such as Red Flag and deploy together downrange, creating a more unified battle rhythm.

"One of the complaints I hear all the time," Roy said last September, is, " 'Why am I deploying by myself? I'm falling in on another team that fell in on another team, and it's just kind of a mismatch.' ... [AEF Next] will help clarify that."

Speaking at AFA's Air and Space Conference outside Washington, D.C., Roy added, "I like it because what it does is you fight like you train. You certainly train like you fight, but the idea is you fall in with your unit leadership. You deploy as a unit rather than as an individual. It's a little bit different than what we do today."

The air expeditionary force concept originated in the mid-1990s during the Balkan conflict. At the time, the commander of USAF forces in Bosnia didn't have a clear line chain of command for units that reported to him directly. Gen. Michael E. Ryan, who served as the commander of US Air Forces in Europe from 1996 to1997 and was later Chief of Staff, wanted to see a single airman in charge of all USAF forces committed to the fight.

Eventually, the AEF concept evolved in an attempt to address the larger issue



USAF photo by 1st Lt. Nicholas Mercurio

CMSAF James Roy (r) and Mowafaq Mohammad Al-Mastafa, Chief Master Sergeant of the Royal Jordanian Air Force, speak to US airmen and coalition personnel during Exercise Eager Lion in Jordan this May. Roy says six types of airpower teams will make up the new deployment system.

USAF photo

Airmen and marines work at a refueling point at an airport in Japan during a March 2011 disaster relief mission. AEF Next should increase readiness by 10 to 15 percent, by synchronizing deployment, assignment, and force development schedules.

of predictability for airmen, said Bradley Higginbotham, chief of the plans division in the AEF directorate at Air Force Personnel Center.

When the concept was initially implemented a few years later, there were 10 AEFs, or equivalent composite groupings of capabilities, such as fighters, bombers, and support, all under a single wing commander. The Air Force then paired those 10 AEFs together for a total of five pairs that deployed nose-to-tail in 90-day increments.

When the Afghanistan war broke out, the assumption was that the Air Force's superior airpower would allow the service to go in, kill the enemy, and then come home as the Army and Marines took over the mission on the ground, said Higginbotham. That's not exactly how things worked out. The original AEF deployment structure soon became unsustainable, and the Air Force was forced to continually tinker with the construct in an attempt to get it right. In 2004, the standard 90-day deployment was extended to 120 days, and in 2010 it was changed again, to half a year, with varying lengths of time between deployments.

"What we mis-predicted was that we would be allowed to come back to a sustainment level that allowed us to come back to 90-day deployments without having to surge or take extra people," said Higginbotham.

To adapt, the Air Force converted to the tempo banding system used today. It includes five bands for Active Duty—at different deploy-to-dwell ratios—and two completely separate bands for the reserve components.

The "A band" is the baseline for peacetime operations. Active Duty airmen assigned to this band deploy for 120 days at a deploy-to-dwell rate of one-to-four. Only about 10 percent of the force remains in this band today.

Blending the Reserves

Airmen in "B band" deploy for six months instead of 120 days but still operate at a one-to-four deploy-to-dwell. The vast majority of the force, however, has been bumped to bands C to E to accommodate the last decade's high operational tempo.

"C band" reduces the dwell to 18 months, so airmen under this band operate at a one-to-three deploy-to-dwell even though they still deploy for six months at a time. Those in "D band" operate at one-to-two and are typically deployed for six months and are home for 12 months.

The most stressed career fields, such as explosive ordnance disposal, fall into the "E band" and operate at one-to-one, or six months out and six months at home.

The banding concept was created based on combatant commanders' requirements and is now driven largely by enemy actions. Although the more stressed bands were never meant to be permanent, necessity has forced them to become so. The Air Force reviews the system every year, but once an Air Force Specialty Code gets bumped up a band, Higginbotham said, he can't remember a time when it has ever gone back down.

"Part of that is driven by force structure cuts, some of it is driven by the other services," he observed.

Another problem with today's system is that despite efforts to integrate the Active Duty and reserve components, the Air National Guard and Air Force Reserve operate on two completely separate bands from the Active Duty. The "M band" is at a mobilization-to-dwell ratio of one-to-five, while the "N band" is at a mobilization-to-dwell ratio of one-to-four. Mobilization-to-dwell, as opposed to deploy-to-dwell for Active Duty, allows for more ramp up time before deployment for Guardsmen and Reservists.

"They do not [align] with their Active Duty units. It's not predictable so we can take a blended unit or a ... composite unit and get them to volunteer or mobilize and go together," said Higginbotham. "Frankly, that was part of our disconnect. We have blended the Guard and Reserve together, and now, the last count I saw is 117 units, but we don't have a good planning standard for when we can have access to the Guard and Reserve, nor do we have a good standard for what they have

to be able to contribute to the fight either in a volunteer status or through mobilization status."

What AEF Next is intended to do is simplify today's complex deployment system and give senior leaders more visibility into stressed career fields by putting all AFSCs back on the same battle rhythm. In theory, all Active Duty airmen will operate at a one-to-two deploy-to-dwell and the reserve components will operate at a one-to-five mobilization-to-dwell.

Higginbotham said the Air Force "almost had it right" with the original AEF construct, but instead of the five pairs it really needed six. That would allow for a deploy-to-dwell of one-to-two, with one unit deployed, one unit just coming back, and another one getting ready to go out, he said.

"If I want to surge, I have to have a multiple of three and that's what AEF Next does. It goes in six AEFs, not five," he said. "When I do that, I can send out a part of a unit and instead of going nose-to-tail, I overlap them. I have a six-month deploy-to-dwell for the people in AEF I, but six months into that, I have another group of AEF units that overlap by three months. If I send out two of the six AEFs, I have one-third of the Air Force deployed."

The added benefit, said Higginbotham, is that the new model allows the Air Force to send the Guard and Reserve out for three-month increments, instead of six months, allowing them to match up with their Active Duty counterparts.

"If I do that for three months over an 18-month period, you can see they are out for three months, come back for 15 months, then I'm at a [mobilization] -to-dwell of one-to-five. It's magic how the numbers match up mathematically," he said. "Now I can predictably assign my Guard and Reserve units with their Active Duty units that they are going to go and support on their time line of one-to-five while I'm executing the Active Duty at one-to-two."

The three-month gap between when the first and second units deploy also means there is never a break in the home station mission.

Schwartz signed off on the new model in November 2011. However, during June's Corona summit—a periodic powwow of top Air Force generals and civilians—the leadership decided to delay AEF Next's initial operational capability from October 2012 to 2013. That means AEF Next is not expected to be fully implemented until 2015—a full year after the US plans to withdraw the vast majority of its troops from Afghanistan.

Officials most familiar with the plan say it would be too difficult to change the deployment cycle during wartime because of the way today's banding system is set up. What USAF is trying to avoid is the need to assign an airman who recently returned from Afghanistan to an airpower team that's on the hook to deploy again. It would mean airmen would not get any dwell time back home.

In order for AEF Next to really work, everyone in an airpower team needs to be on the same schedule and everyone must be able to deploy together as one team.

To transition during wartime, "I would have to institute a series of waivers to move everybody and it would take about 12 to 18 months to transition. And then I would do it on the backs of my airmen in an unpredictable fashion and that's not something the Air Force is willing to do," said Higginbotham. "We've spent a lot of time trying to figure out how to do this better and not injure airmen or their personal lives or their predictability while we do it."

Showing the Assets

During the 40-minute Corona briefing on AEF Next, senior leaders decided the concept needed more analysis to ensure the Air Force gets it right this time. Long said he expects to report back to leadership with that analysis by year's end.

Although the airpower teams have mostly been worked out on paper, some have yet to be vetted. Agile combat support continues to be one of the biggest sticking points because it is "one area that's very, very vast," said Roy.

ACS is based on a force module that says airmen assigned to that airpower team must be able to open and establish a base, sustain the fight, and protect the force. That's a diverse mandate encompassing a variety of AFSCs, such as civil engineering, EOD, aeromedical evacuation, and even more specialized career fields such as RED HORSE combat construction, said Long.

The challenge is "trying to capitalize on the diversity of those groups in today's environment where the Air Force offers tremendous capability, even down to single-person [unit type codes] to a deployed location," added Long. "It has worked over the last 10 years, but we believe that there may be some room for improvement."

Unit type codes are updated and monitored in a live database known as the Joint Operation Planning and Execution System. JOPES is a complex system that requires all the services operating within it to have a standard of measure, said Higginbotham.

So, for example, through JOPES, a commander can take a fighter squadron with 12 aircraft and see right away what equipment must deploy with it. The system allows him to follow the logistical movement, but also to see how many of those aircraft are operationally capable and report that information back to the Secretary of Defense.

Because the Air Force is moving out of the banding system, all of those UTCs will have to be reworked.

Air Force officials are still in the process of dividing UTCs and mission capability structures for each of the airpower teams. Once all that is worked out, the service will be able to report to the Defense Secretary exactly how many airmen are deployed throughout the world, how many airpower teams are committed to the war, and how many are supporting the fight from their home stations.

"We can show all of the assets. What's been used, what's coming back to be reset, and what's going out the door," said Higginbotham. "This is all tied to a SecDef initiative for global force management called 'adaptive planning.' That is to be able to tell the SecDef very quickly, usually within 30 days, all his assets he has committed, [so] if [he] wants to do something different, he can."

Finally, AEF Next should increase readiness by 10 to 15 percent just by synchronizing deployment time lines with the assignment and force development time lines, said Higginbotham.

"The reason is because everyone is at a different deploy-to-dwell and for the last six years we have been rebanding to more and more stressed tempo bands, [so we haven't been able to] synchronize an assignment action, which is typically decided a year in advance, [with] a deployment action, which is typically decided between four to six months in advance," he said.

In other words, airmen who should have been prepared for deployment were not available to fight because of the lack of continuity between personnel actions and deployment schedules, added Higginbotham.

"This is not rocket science. This can be done. And that's the end piece of AEF Next, which I think will be a benefit to all of our people," said Schwartz. ■

Adaptive Engi

Airpower is nothing without propulsion, and this summer, USAF made a $213.6 million down payment on its future by launching a new Adaptive Engine Technology Development (AETD) research program. With the adaptive engine program, USAF is laying the foundation for a new class of engines that go beyond the limits of today's fixed cycle engines. The goal is clear: Demonstrate a variable cycle propulsion system enabling a 25 percent or greater specific fuel consumption reduction.

Senior officials say that success in adaptive engine technologies can deliver better range, persistence, performance, and energy savings for multiple types of combat aircraft.

"AETD technologies are expected to improve fuel efficiency, durability, and thrust performance for a wide range of air vehicles and applications," Steven H. Walker, then deputy assistant secretary of the Air Force for science, technology, and engineering, testified in February.

Exciting Advances

"This effort really does leverage off of some fairly exciting technological advances" and opens the door to "all of industry that may want to participate," testified Gen. Janet C. Wolfenbarger in May.

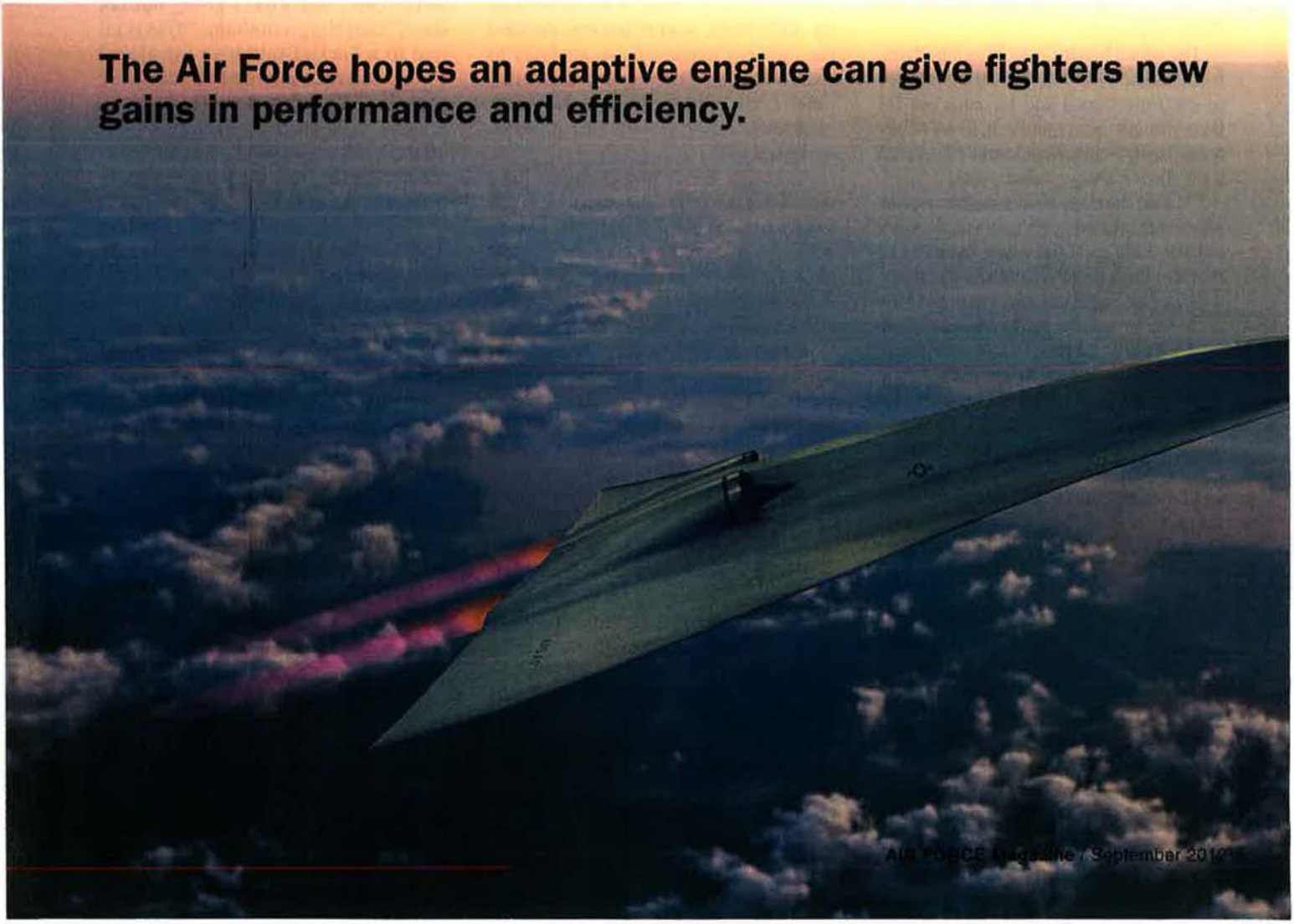
"This engine could be used in a whole host of platforms should it ever reach the point of being a development program," said Wolfenbarger, who was then USAF's three-star military deputy for acquisition. "Right now, it's just a question of ensuring that we are ready to go, should we as an Air Force decide that we want to embrace this opportunity to really reduce the fuel consumption in future generations of ... strike aircraft, bomber aircraft, tactical aircraft."

The potential for an adaptive, variable cycle engine is enormous. As Walker said, fuel efficiency buys range in combat. As a result, a new engine family "will also increase the unrefueled range for several platforms engaged in [anti-access, area-denial missions]," he said.

Take the case of a future long-range bomber powered by a new adaptive engine. Adaptive technology opens up the possibility for fuel savings that could be utilized in many ways: lighter vehicle weight, supercruise dash while preserving fuel efficiency, and of course, a longer combat radius.

Flying a segment at higher speed—without a big fuel penalty—could help bomber aircrews get from a theater base to the target area for faster response time. Then they could use the variable

The Air Force hopes an adaptive engine can give fighters new gains in performance and efficiency.



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By Rebecca Grant

USAF photo by TSgt. Justin D. Pyle

An F-22 in afterburner. Today's high-performance combat engines date to the 1990s, when the F119 engine was selected for the Raptor.

cycle engine to add bursts of speed for a tactical dash through enemy SAMs and fighters to get to the target and out safely.

In short, the investment in adaptive engine technology has the makings of a game changer.

The funding commitment comes as overall spending on RDT&E accounts is heading for a 10 percent decline from Fiscal 2012 through 2016, according to the DOD comptroller's budget tables. In recent years, rapid acquisition for immediate war needs took top priority.

During this time, USAF kept alive a five-year engine research program run by the Air Force Research Laboratory.

Two decades have passed since the Air Force introduced the current family of high-performance combat engines, which dates back to the early 1990s, when the Pratt & Whitney F119 engine was selected for the F-22 fighter. The production F119 later became the basis for the F135 engine for the F-35 strike fighter.

Artist's conception by Erik Simonsen

An adaptive, variable cycle engine could be used on a host of airplanes. Shown here: an artist's illustration of a hypersonic aircraft.

However, the technologies leading to the F119 took root in research that began in the late 1960s and 1970s. The backstory sheds light on why investing in long-term research on propulsion is so important.

Decades ago, aircraft programs drove engine development. Radical designs such as the SR-71's Pratt & Whitney J58 engine and the General Electric J93 designed for the supersonic XB-70 Valkyrie bomber—both capable of Mach 3 flight—highlighted this period.

With a steady flow of aircraft programs under way, engine development was robust. "The 1960s were glory days of aircraft engine development," found authors William S. Hong and Paul D. Collopy in a case study of jet engine development published in the fall 2005 issue of the *Journal of Propulsion and Power.* An average of one new engine per year was introduced in the 1960s.

Engines were developed as complete products with research advances taking place inside the scope of the engine work. "Every program provided opportunities to develop new components, explore new material temperature capabilities, and work in new aerodynamic regimes," they wrote. When a new engine debuted, it was usually produced in quantity and often modified over time. This allowed engine innovation to piggyback on aircraft development programs, benefit from long production runs, and carry over to commercial applications.

A good example was the GE F101. This 30,000-pound-thrust engine was designed in 1970 for the original B-1 bomber program. When the Air Force restarted the B-1 program in 1981, GE tweaked the engine to become the F101-GE-102 and the Air Force ultimately bought 469 of them for the bomber.

From B-1 to U-2

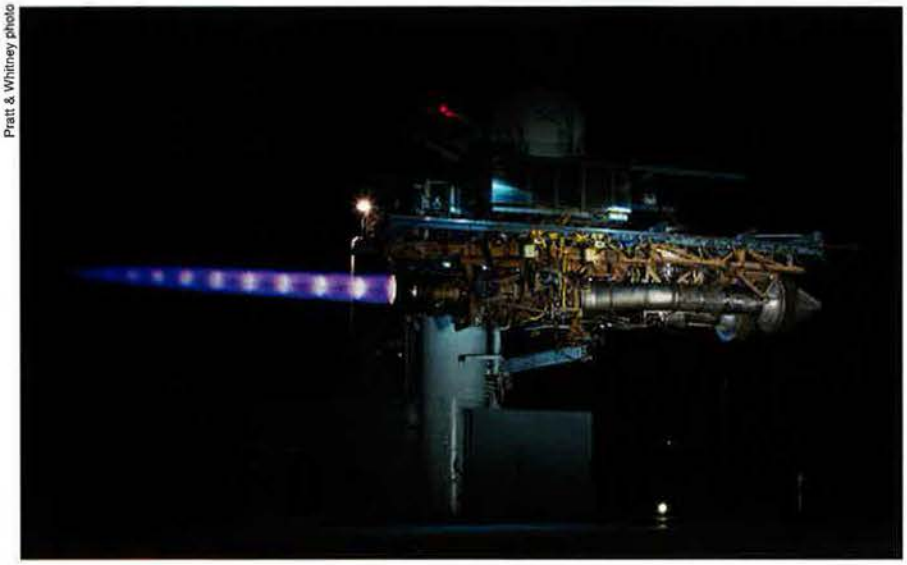
A nonafterburning version of the engine became the F118 for the B-2 bomber, which first flew in 1989. Then it morphed into another derivative to power the upgraded U-2R as the F118-GE-101 in a 1990s program.

The F101 fed a big commercial success, too. In 1974, after much political wrangling, GE set up a 50-50 joint venture company with the French firm Snecma to produce the CFM56 family of engines. The CFM56 was based directly on the F101 core. Part of the deal was a royalty payment to the US to compensate for the F101 technology flow. By 2011, the joint venture had delivered more than 22,208 CFM56 family engines to worldwide customers.

Even in the midst of plenty, USAF propulsion managers noticed the innovation curve was leveling. Already it was taking longer to develop new engine technology than to design airplanes.

The Air Force stepped in with a series of long-term research and development programs to maintain continuous effort on breakthrough propulsion technologies.

Pratt & Whitney photo



The F135 engine—shown here in a test—powers the F-35. It is a derivative of the F119 that powers the F-22, so it, too, has its origins in the 1990s.

The first of these began in the 1960s. It was called the Advanced Turbine Engine Gas Generator (ATEGG) project, which took a different path by focusing not on a specific engine but on component technologies: materials, fan, compressor, modeling of the engine environment, and so on.

Seeding funds to industry advanced propulsion teams was essential to the strategy. The USAF propulsion directorate in Air Force Systems Command funded research study and work at all the major engine makers of the day.

A sample of the kind of work done under ATEGG was a 1969 report on diffusion titanium bonding and other material topics by Frederick G. Groh of Pratt & Whitney. The work was funded by USAF's Aero Propulsion Lab's longtime chief of the Turbine Engine Division, Ernest C. Simpson. Having key individuals like Simpson in place for long periods of time assured continuity of effort.

The Air Force was not the only market, either. In the mid-1970s, USAF and the Navy formalized cooperation under a Joint Technology Demonstrator Engine program; it broadened research to all engine components.

Ongoing development work led directly to today's best engines. For example, a 1976 Pratt & Whitney study outlined the potential for supercruise. The concept was picked up by the Air Force Scientific Advisory Board, then written into secret early requirements for the Advanced Tactical Fighter, which became the F-22. The engine was demonstrated in the 1990-1991 ATF competition and powered the F-22's first flight in 1997.

Next came the Integrated High Performance Turbine Engine Technology initiative. Like other programs before it, IHPTET deliberately reached for new technology breakthroughs. Program managers set an ambitious goal of doubling engine thrust-to-weight ratio. The initiative was active from 1987 through 2005. The Joint Advanced Strike Technology (JAST) program, which begat the F-35, carried out engine work within IHPTET. Money came from both industry and government.

On Their Own

The ... commitment to IHPTET was a major step for both the government and the engine companies with respect to programs and funding stability," observed Hong and Collopy.

The Air Force was fortunate to have made that investment via IHPTET. After the early 1990s, aircraft buys plummeted and the market for military engines shrank with it.

That all but guaranteed future advanced propulsion work would have to be led by USAF efforts that were not tied to any particular program.

In the past, military engine sales were robust enough to create a substantial share of the overall engine market. For example, on the commercial side, Pratt & Whitney has an installed base of 16,000 large commercial engines, with roughly 11,000 military engines in service with 29 armed forces around the world.

The military engine numbers reflect past sales and inventories that won't be seen again. The count includes much older engines such as the TF33 on the E-3 AWACS. In other cases, for example, the F117 engine for the C-17, the buy is largely complete.

Even the buy of the F135 for the single-engine F-35 variants is unlikely to top more than 3,000 engines over two decades. The military engine market has collapsed into a prestigious but tiny niche.

Since market forces alone won't drive the kind of research needed for combat applications, what are the incentives to continue advanced propulsion development? The Air Force answer has two parts.

One is continuing to take the lead for the basic work toward the revolutionary performance enhancements that are now within reach.

The second is finding common areas of interest between commercial and combat designs, such as fuel efficiency.

The Air Force has maintained its leadership role in engine research and development through the 2000s. Final research under IHPTET showed that engineers were on the cusp of advances in efficiency and refinements pointing toward adaptive engine technology. The Air Force Research Laboratory planted more seeds of innovation with a batch of no-fuss engine research projects under yet another acronym: VAATE, or Versatile Affordable Advanced Turbine Engines.

"After the success of IHPTET, we faced an uphill battle bringing VAATE on board," the first VAATE program manager, Larry Burns, told *Flight Global* in 2007. According to Burns, "People believed turbine technology had peaked and asked why we needed another multiyear program. It was a fierce battle to convince military planners to put research and development money into technology for next generation turbine engines."

AFRL won the battle. One helpful factor was broadening the VAATE research slate. Work included everything from Mach 4 missile motors to improving helicopter engines. For the Air Force, the most enticing item on the VAATE research menu was a program called ADVENT.

The clue was in the name: Adaptive Versatile Engine Technology. In simplified terms, the idea of an adaptive engine is to vary the airflow and pressure ratios in the engine. Aircrews can then toggle between fuel-efficient cruise modes and thrust for high-speed and even supersonic flight. That, however, required a string of refinements and outright inventions.

GE and Rolls Royce North American Technologies, Inc., won 2007 contracts for ADVENT work, while Pratt & Whitney was deeply engaged in the F119 and F135 engines and other advanced engine research.

ADVENT set out to demonstrate specific improvements. One was auxiliary or third-stream technology. Different engines are optimized either for long-range cruise or for speed bursts in combat. Airliner engines and high-speed military airlifters employ high bypass ratios. A high bypass ratio produces better efficiency with less fuel burn because it allows in more air around the engine and flows less through the core. A low bypass ratio does the opposite. Low bypass ratios squeeze more air through the core to produce greater thrust, as with fighter jet engines.

ADVENT research explored the possibility of toggling between cycles. For example, ducts running to the engine could be opened to raise the bypass ratio and improve efficiency of fuel burn. Or the duct could be closed to push more air into the core and gain additional thrust.

ADVENT already has logged several demonstrations to prove the technology is within reach, and they will culminate in 2013 with test stand demonstrations.

The Air Force is keeping up the pace: The start of AETD overlaps with the end of the ADVENT program and takes the work further. The goal is for AETD to fully mature adaptive component and common core technologies aligned with multiple future Air Force combat aircraft ready for a notional engineering and manufacturing development start in three years. Call it sixth generation propulsion. Key beneficiaries are likely to be strike aircraft—future bombers and fighters.

The Air Force accepted a new set of competitive proposals for the adaptive engine program this summer, and two teams will push ahead with work beginning in the fall. That's just in time to support future aircraft programs for the 2020s.

The AETD program is adding technologies not covered by ADVENT such as thrust augmentors and exhaust systems. Taken together, the flow of research from 2007 through 2016 will prepare for a smooth, low-risk engine solution not tied to any one platform.

The bar is high. The program is aiming to demonstrate a 25 percent reduction in fuel consumption. Beyond this, AETD will clear the way for an engine that has real benefits in anti-access and area-denial scenarios.

USAF is funding the program at $213.6 million for the first year. It's a classic mix of 6.2, 6.3, and 6.4 money—funds for applied research, advanced technological development, and demonstration and validation—to nurture and prove technologies. Industry teams are expected to kick in their own internal research and development funding, too.

USAF photo by A1C Anthony Sanchelli

A B-1 runs up to full takeoff power. With the collapse of the military engine market, USAF must find creative ways to advance propulsion development.

Over a three-year period, that should take the technology demonstration to Technology Readiness Level 6, the desired threshold where a formal development program should begin. At TRL 6, a near final version of the technology is tested in real-life conditions. Flight test occurs at TRL 8.

Hence, the adaptive engine program is on an aggressive path. Tests of the compressor rig will occur in 2014, with separate fan and core tests to follow in 2015. On that schedule, a full engine run on a ground test stand could take place in 2016.

Not for the F-35

In reality, AETD is not delivering an engine. The deliverables for the three-year schedule are component rig tests, modeling and simulation, an engine ground demonstration, and an adaptive engine preliminary design.

Still, the program raised eyebrows and questions from Congress when the funding first appeared in the Fiscal 2013 budget.

"We just have gone through a multiyear battle here in Congress about whether we would build one or two engines for the Joint Strike Fighter," said Sen. Joseph I. Lieberman (I-Conn.), who questioned whether the Adaptive Engine Technology Development program was actually an alternative engine for the F-35. "I wanted to ask you flat out," he said to Wolfenbarger.

"No, sir, it is not," she replied. "It is a technology maturation program that takes the advances that we have seen under the ADVENT program and takes them to the next maturity level."

Wolfenbarger also clarified that the target 25 percent fuel efficiency gains can't be reached by modifying any current engines.

Advanced engine work is important to the industrial base, too. Most of the work is under export control. Primes therefore use almost exclusively a slate of highly specialized US suppliers for tasks from precision castings to manufacture of blisks, airfoils, fuel pumps, and even fasteners. Dollars spent on advanced propulsion help fuel cutting-edge US manufacturing. "The investment will also help maintain a competitive industrial base in turbine engine technology, an area critical to our future military capability," Walker said.

National security competitors in Russia and China are sticking with their efforts to develop high-performance engines, too. Russia's Saturn engines have been highly successful. China has purchased Russian engines, the CFM56 core family through its Boeing 737s, and has a co-production deal for an older Rolls Royce engine.

"The China Gas Turbine Establishment (GTE) apparently is also leading the development of the fifth gen turbofan that will power the Chengdu J-20 fifth gen fighters," noted Richard Fisher Jr., an expert on China's military and technology.

As others move forward, in the US an adaptive engine could advance technologies and lower risks. With any luck, it will put USAF within striking distance of a new adaptive engine family ready for flight in the 2020s. As Walker noted, "We haven't developed anything new since the F119 in the F-22." ■

Rebecca Grant is president of IRIS Independent Research. Her most recent article for Air Force *Magazine was "RPAs for All" in the August issue.*

Verbatim

verbatim@afa.org

By Robert S. Dudney

Farewell Assessment

"We have more backup [nuclear weapon] systems ... than we actually have deployed. Some of that is a reasonable hedge, [but] there is probably room for reductions."—***Gen. Norton A. Schwartz, USAF (Ret.), former Chief of Staff of the Air Force, farewell interview with the*** **Boston Globe,** ***Aug. 6.***

For the Long Haul

"[Sexual assault] just has the potential to rip the fabric of your force apart. I think it is doing that to a certain extent now. ... I'm not an expert in this. I don't know how to fix it, but I won't quit working on it."—***Gen. Mark A. Welsh III, new USAF Chief of Staff, commenting on the expanding sex scandal involving Air Force trainers at JBSA-Lackland, Tex., interview with*** **Stars and Stripes,** ***Aug. 3.***

Needed: Manned Aircraft

"We're training ... more [remotely piloted aircraft] aviators than we are bomber and fighter pilots. ... Ultimately, it is conceivable that the majority of aviators in our Air Force will be remotely piloted aircraft operators, [but] ... manned aviation will be a part of the chemistry here, because, at least for the near term, the remotely piloted aircraft capability is not for contested airspace. It is a benign airspace capability. ... I would estimate at least for a generation-and-a-half, 30 years probably, maybe—maybe more, probably not less."—***Schwartz, farewell Pentagon news conference, July 24.***

98 Percent Solution

"We were about two percent high in terms of our estimate—a huge amount of money—but looked at another way, we were 98 percent correct. ... Back over 10 years, we've often underestimated the amount, so we're not perfect, but 98 percent, two years in advance? That was an 'A' when I went to school."—***Pentagon Comptroller Robert F. Hale, discussing how DOD overbudgeted for military health care expenses and wound up with a surplus in 2012, ArmyTimes.com, Aug. 2.***

Time Is Running Out

"However forceful our statements, they have not convinced Iran that we are serious about stopping them. Right now, the Iranian regime believes that the international community does not have the will to stop its nuclear program. This must change, and it must change quickly, because time to resolve this issue peacefully is running out. ... You yourself said a few months ago that, when all else fails, America will act, but these declarations have also not yet convinced the Iranians to stop their program."—***Israeli Prime Minister Benjamin Netanyahu, remarks directed at Secretary of Defense Leon E. Panetta, news conference in Israel, Aug. 1.***

Definitive Panetta

"I want to reassert again the position of the United States that, with regard to Iran, we will not allow Iran to develop a nuclear weapon. Period. We will not allow them to develop a nuclear weapon, and we will exert all options in the effort to ensure that that does not happen."—***Secretary of Defense Leon E. Panetta, same news conference in Israel, Aug. 1.***

High Confidence

"In the end, there is no smoking gun [concerning F-22 oxygen problems]. We have assembled the pieces of the mosaic. They reside in the cockpit ... in the upper pressure garment, in the oxygen delivery hoses, in the quick connection points, and for a short time, in the air filter canister. As we completed end-to-end testing in the life support systems components, we were able to piece together the contributing factors for our previously unexplained incidents. ... I have high confidence that we have eliminated the major contributors to our problem."—***Maj. Gen. Charles W. Lyon, Air Combat Command director of operations, Aug. 1 Pentagon news conference.***

Is Anybody Surprised?

"Kofi Annan turned in his resignation as United Nations special envoy to Syria on Thursday, but his mission was over months ago. It was doomed by Syrian President Bashar al-Assad, who was never serious about peace and determined to crush the opposition, and by his chief backer, Russian President Vladimir Putin. The five months that Mr. Annan devoted to talk, with the ill-considered backing of the Obama Administration, simply gave Mr. Assad more time to wage war."—***Editorial,*** **Washington Post,** ***Aug. 2.***

As Always, Free and Useless

"My Departing Advice On How To Save Syria"—***Title of essay by Kofi Annan, former UN secretary-general, Nobel peace laureate, and failed special envoy for Syria,*** **Financial Times,** ***Aug. 2.***

Rearranging the Rocks

"The right course is not to spend time moving around rocks at the bottom of the cliff to make for a less painful landing. The right course is to avoid driving off the cliff altogether."—***Jeffrey D. Zients, acting director of the Office of Management and Budget, remarks opposing the idea of planning for a possible defense sequester, House Armed Services Committee, Aug. 1.***

Don't Say. Be.

"If Congress decides to retain force structure, ... you have to provide the resources to operate that force structure. There's nothing worse—and some of us who've been around a little long have seen this picture before—[than] where you have too much structure and not enough money. That is the path to a hollow force. That is not where we want to go. Our young people who have been in the fight for more than 10 years know the difference between saying we're good and being good, and we definitely want to be the latter, not the former."—***Schwartz, "This Week in Defense News," July 26.***

China's Eye

"'Peaceful' is in the eye of the beholder. The Chinese military is thinking of space in ways that would threaten US space assets. ...The Chinese military has concluded that winning the next war requires the ability to establish space dominance and superiority."—***Dean Cheng, analyst of Chinese security affairs at the Heritage Foundation,*** **McClatchy Newspapers,** ***July 17.***

Flying Blind

"Cost [of the F-35A fighter] is a major concern. If we can't clearly identify how much this airplane will cost to buy and to fly after we acquire it, then we really have no idea how many airplanes we can afford or how many we should expect to receive. Pressure on the company [Lockheed Martin], on the acquisition process internal to the department is mandatory. We have to stay focused and ... that would be a daily event for me."—***Welsh, remarks to the Senate Armed Services Committee, July 19.***

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All Wings Are Not Created Equal

Today's Air Force has 236 wings. The vast majority of them—213—are commanded by colonels. Only 23 are commanded by general officers. Although wings exist at the same organizational echelon, their size, scope of responsibility, and symbolic importance vary widely. For example, the 509th Bomb Wing at Whiteman AFB, Mo., controls only a few aircraft, but its 20 B-2 bombers form the entire nuclear-capable stealth-bomber fleet. Like the 509th BW, most of the Stateside wings commanded by generals play essential one-of-a-kind roles. Overseas, a sizeable number of these wings have crucial combat missions, politically key locations, or historically strategic locations.

Air Force Wings Commanded by General Officers

Wing	Location	Commander
18th Wing	Kadena AB, Japan	Brig. Gen. Matthew H. Molloy
31st Fighter Wing	Aviano AB, Italy	Brig. Gen. Scott J. Zobrist
36th Wing	Andersen AFB, Guam	Brig. Gen. Steven D. Garland
45th Space Wing	Patrick AFB, Fla.	Brig. Gen. Anthony J. Cotton
56th Fighter Wing	Luke AFB, Ariz.	Brig. Gen. Jerry D. Harris Jr.
57th Wing	Nellis AFB, Nev.	Brig. Gen. Charles L. Moore Jr.
59th Medical Wing	JBSA-Lackland, Tex.	Maj. Gen. Byron C. Hepburn
79th Medical Wing	JB Andrews, Md	Maj. Gen. Gerard A. Caron
81st Training Wing	Keesler AFB, Miss.	Brig. Gen. Bradley D. Spacy
82nd Training Wing	Sheppard AFB, Tex.	Brig. Gen. Michael A. Fantini
86th Airlift Wing	Ramstein AB, Germany	Brig. Gen. Charles K. Hyde
96th Test Wing	Eglin AFB, Fla.	Brig. Gen. David A. Harris
325th Fighter Wing	Tyndall AFB, Fla.	Brig. Gen. John K. McMullen
354th Fighter Wing	Eielson AFB, Alaska	Brig. Gen. Mark D. Kelly
379th Air Expeditionary Wing	Southwest Asia	Brig. Gen. Roger H. Watkins
380th Air Expeditionary Wing	Southwest Asia	Brig. Gen. Paul H. McGillicuddy
412th Test Wing	Edwards AFB, Calif.	Brig. Gen. Michael T. Brewer
438th Air Expeditionary Wing	Kabul, Afghanistan	Brig. Gen. Timothy M. Ray
451st Air Expeditionary Wing	Kandahar Airfield, Afghanistan	Brig. Gen. Scott L. Dennis
455th Air Expeditionary Wing	Bagram Airfield, Afghanistan	Brig. Gen. Joseph T. Guastella
502nd Air Base Wing	JB San Antonio, Tex.	Brig. Gen. Theresa C. Carter
509th Bomb Wing	Whiteman AFB, Mo.	Brig. Gen. Thomas A. Bussiere
711th Human Performance Wing	Wright-Patterson AFB, Ohio	Brig. Gen. Timothy T. Jex

As of Aug. 17, 2012.

Weinberger Conquers Oxford

The Oxford Union is a debating society at the renowned British university. In an infamous 1933 case, it voted 275-to-153 for the motion, "This house will under no circumstances fight for King and country." In 1984, members debated the idea "that there is no moral difference between the foreign policies of the US and USSR." The "for" speaker was E. P. Thompson, a noted Marxist. Opposing him was Defense Secretary Caspar W. Weinberger. Weinberger was an underdog; Europe's Left was in an uproar over deployment of US nuclear weapons, US policy in Central America, and more. Weinberger, however, spoke of a clash of ideas, noting the basic difference between a free society and a totalitarian one. His eloquent defense of US policy clearly won the argument and, to the shock of many, the Union's vote—271-232.

"Oxford Union Speech"

Caspar W. Weinberger, Secretary of Defense
University of Oxford, England
Feb. 27, 1984

Find the full text on the *Air Force* Magazine's website www.airforce-magazine.com "Keeper File"

It does seem to me that, if we are to debate the moralities of the two systems, we should look at Soviet definitions and our definitions. ... The Soviet definition has always been that moral policy is what advances the Soviet state, that moral policy is what helps the cause of communism.

Brezhnev said it many times and, indeed, it is part of the litany. It is a moral system which turns the definition of the word "moral" upside down, as far as we are concerned.

Our view of morality is basically that policy is moral if it advances certain basic principles and rights. ... And some of our ... basic principles, of course, are that all of our power and all of the power of government springs from the consent of the governed, that all of our policies—foreign and domestic—must be supported by the people.

If not, then the policies have to be changed until they are supported by a majority of the people.

In order to secure that informed consent of the governed, we have the utmost freedom of speech and press and religion, as Mr. Thompson has quite properly and generously acknowledged, and we have all of the other human and civil rights that are guaranteed by our Constitution. And, guided by these principles, our foreign policy not only reflects but actually is based upon our political system. ...

The foreign policy of any country ... cannot stand alone as a separate entity. It has to be based upon the mores and morals and the principles of the political system which gives it life.

And I think, therefore, that all of this has to be taken as very substantially at contrasted variance with the Soviet policy, where the policy is made by one or, at best, a very few men.

That policy never has any chance to be challenged or vindicated by public discussion. ...

That's why the Soviet system, as we have heard many times tonight, cannot possibly stand, cannot possibly tolerate or accept the first glimmerings of freedom of association or freedom of speech. ...

Now, we've heard a fair amount tonight about the American troops who have been here 39 years. We indeed have a very large number of people at home who would be perfectly delighted with the suggestion that they be brought back, and would welcome it. ...

The troops who are here—by invitation of NATO, and by invitation of the host country, and who have been here a very long time—are here for a very specific purpose of trying to ... join with people to protect and preserve their own freedoms, because they have been invited by the regularly chosen, legitimate governments of these countries to do that.

There's quite a difference between that and the Warsaw Pact troops, who are there because they are imposed on those countries. ...

The Warsaw Pact is held together with force, with intimidation, and with threat, and the Soviet troops don't leave. ...

We think you can't have a moral foreign policy if the people cannot control it, if the people cannot change it. ...

Now, who among the Soviets voted that they should invade Afghanistan? Maybe one, maybe five, men in the Kremlin. Who has the ability to change that and bring them home? Maybe one, maybe five, men in the Kremlin. Nobody else. And that is, I think, the height of immorality. ...

If our people disapprove of [US foreign policy], if our people think that we are making the error that you think we are making, something can be done about it, and that cannot be done in the Soviet Union, and that I think is the significant difference in morality.

The ability of people to participate in and control their own government and their own foreign policy is, I think, the highest form of morality. ...

Mr. Thompson ... said that we aren't really discussing how it would be for people to live in the Soviet Union, and we aren't really discussing internal conditions in the Soviet Union.

It seems to me we are. We have to, because it is those conditions which give rise to a foreign policy. ... And if it cannot be changed, it cannot possibly be considered moral. ...

Mr. Thompson again said in his very eloquent talk: "What is this quarrel all about?"

It's really very simple. The quarrel is all about freedom—individual, human, personal freedom—and whether or not we are allowed to exercise it. ... That's what it's all about. It's all about personal freedom. ■

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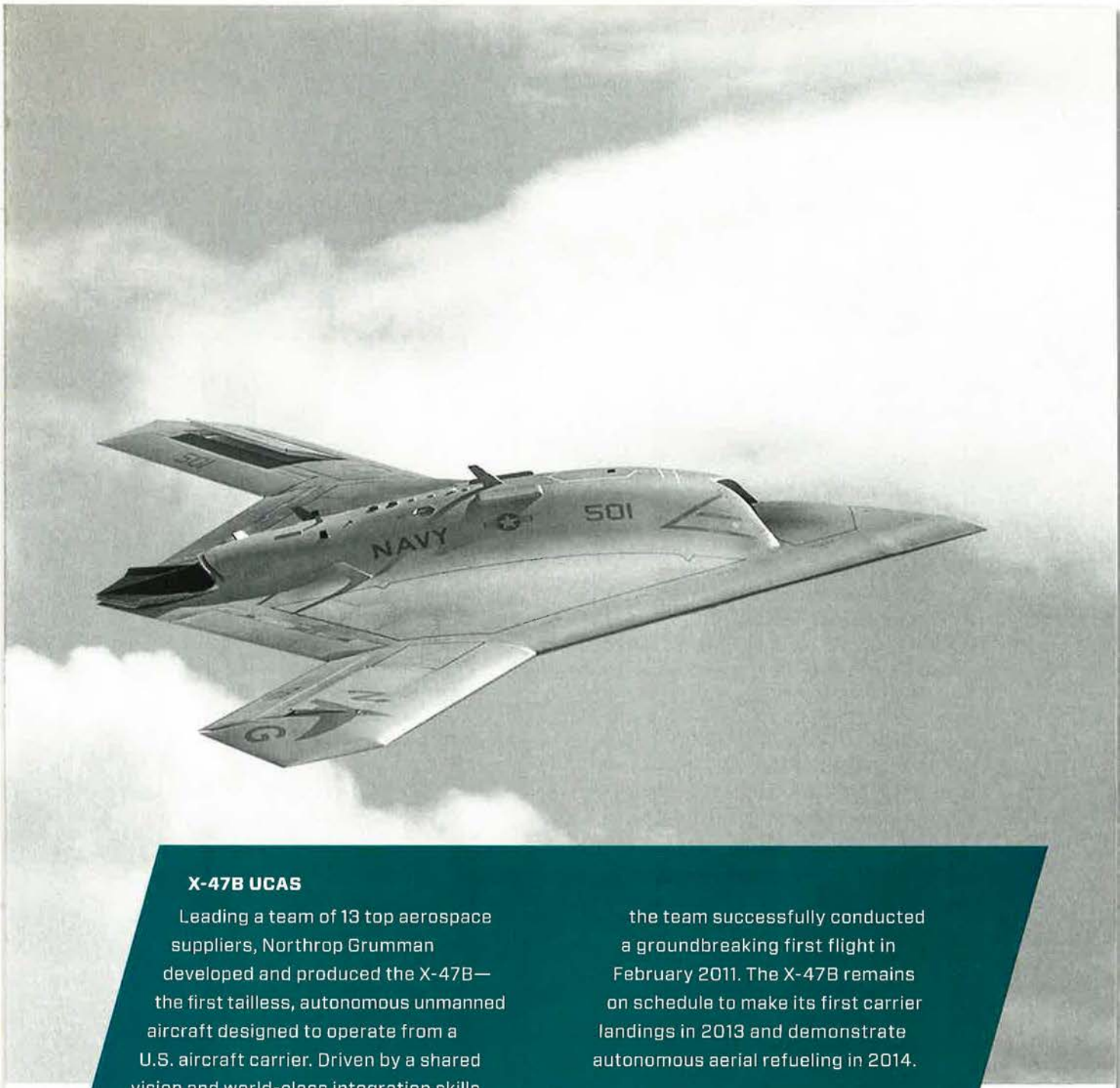
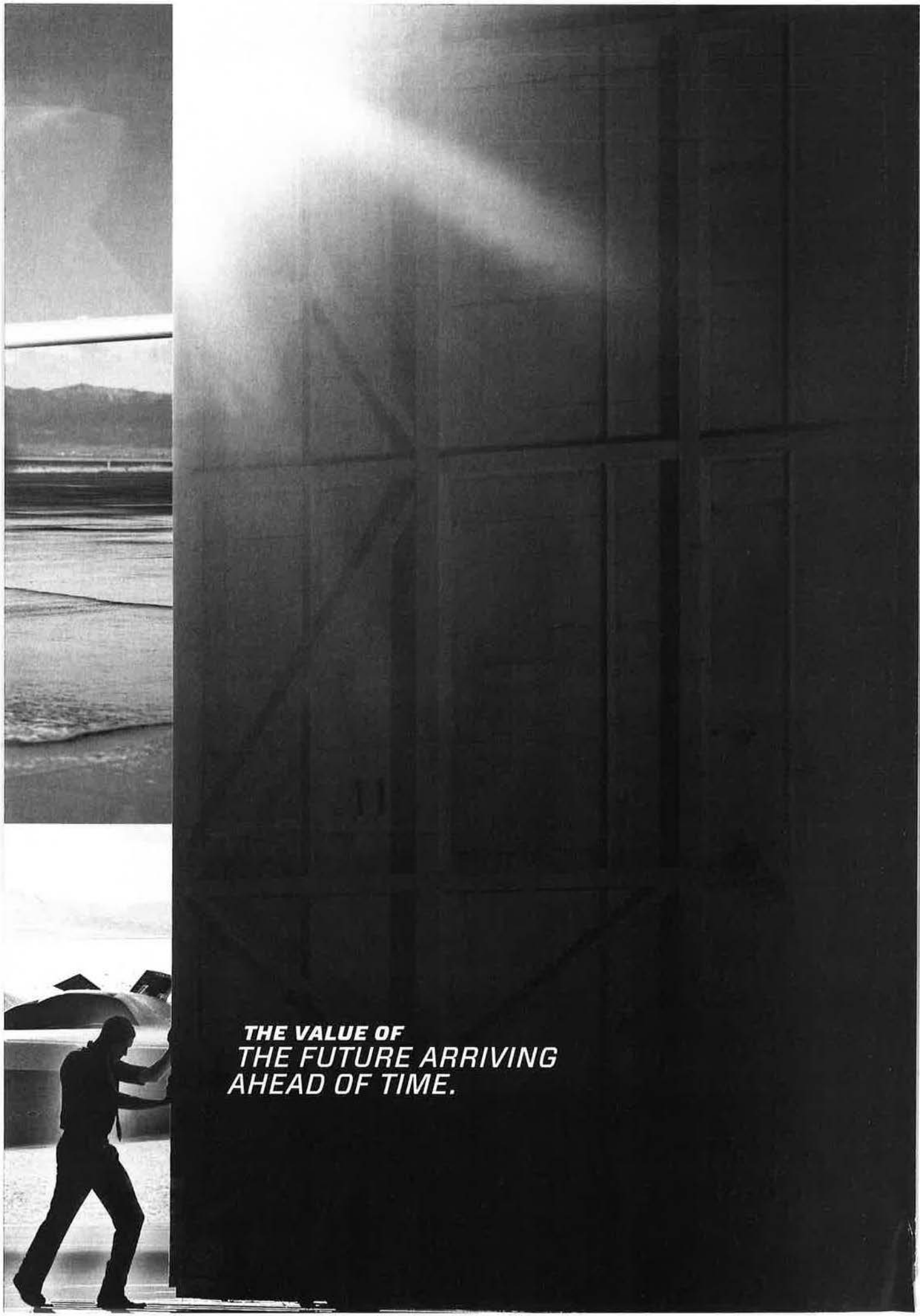


X-47B UCAS

Leading a team of 13 top aerospace suppliers, Northrop Grumman developed and produced the X-47B—the first tailless, autonomous unmanned aircraft designed to operate from a U.S. aircraft carrier. Driven by a shared vision and world-class integration skills, the team successfully conducted a groundbreaking first flight in February 2011. The X-47B remains on schedule to make its first carrier landings in 2013 and demonstrate autonomous aerial refueling in 2014.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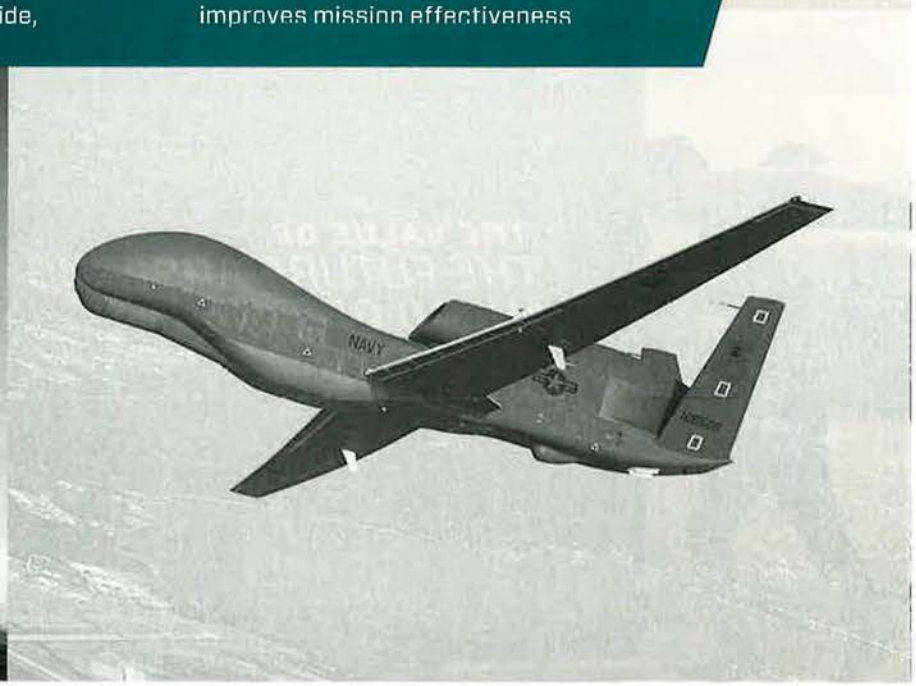

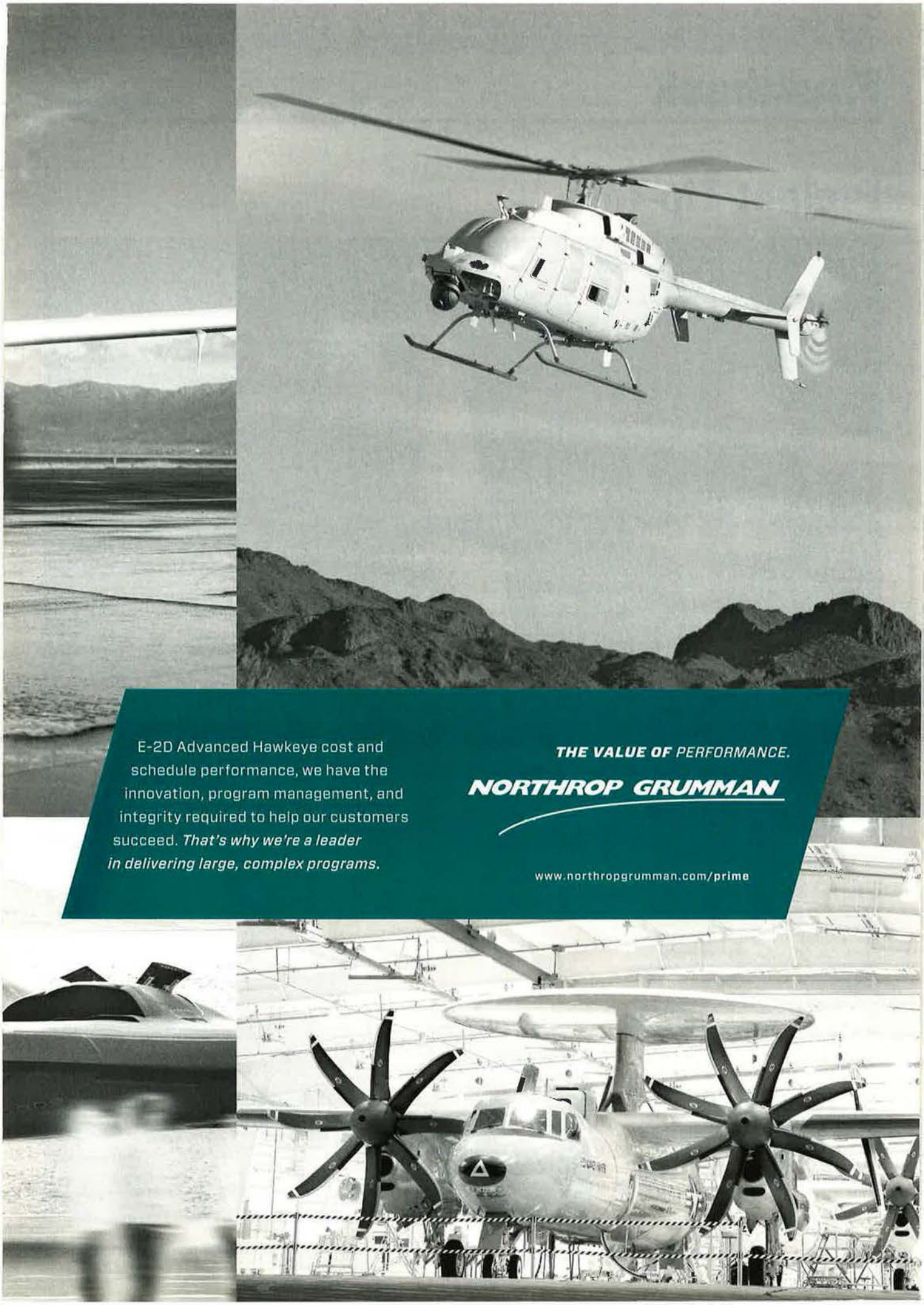

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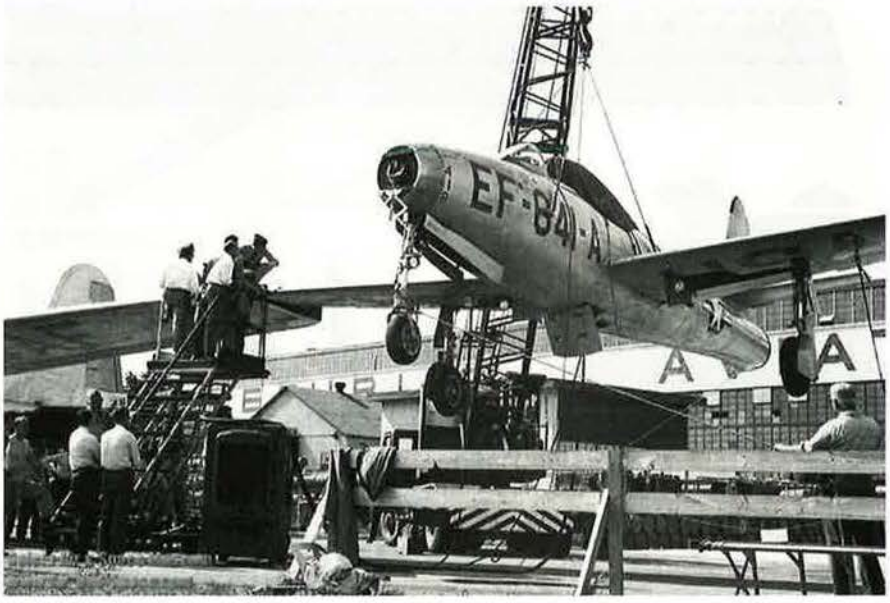
Project Tip-Tow

Photo via Brian Lockett, air-and-space.com

In 1950, Strategic Air Command had a problem: Its jet fighters gulped fuel and lacked the range to escort bombers. SAC launched an odd range-extension effort called Project MX-1016, code-named "Tip-Tow." A fighter—in flight—would lock on a bomber wingtip, shut down its engine, and ride along to a release point. Tip-Tow had a dedicated B-29 "mother ship" and two F-84 fighters (above). The F-84 and B-29 tips fit together (right, in a coupling ground test). The first hook-on flight took place in July 1950. The first coupling came later in 1950. Initially, F-84 pilots kept manual control when attached. On April 24, 1953, however, the left-hand F-84 locked on and activated an automatic flight control. The F-84 rolled onto the bomber's wing and both aircraft crashed into Peconic Bay off Long Island, killing all involved. Similar work with a B-36 continued, but advances in air refueling soon made "towing" a thing of the past.



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Compiled by Chequita Wood, Media Research Editor

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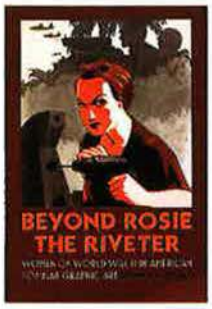

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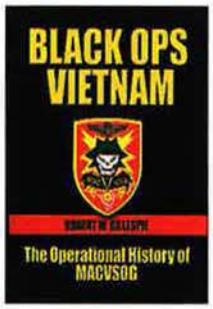

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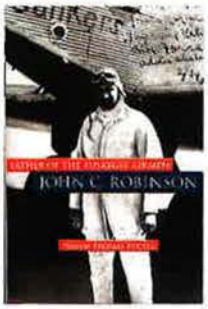

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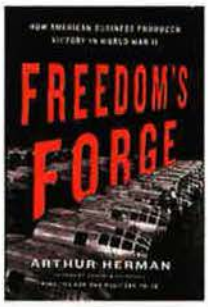

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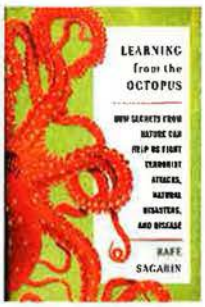

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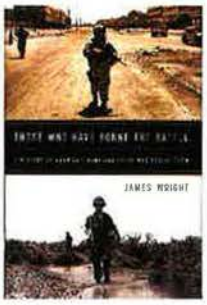

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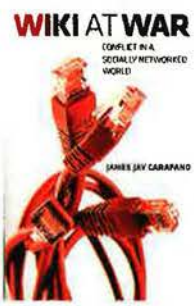

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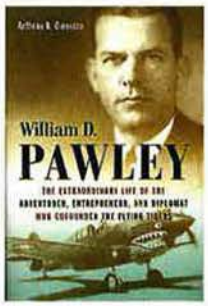

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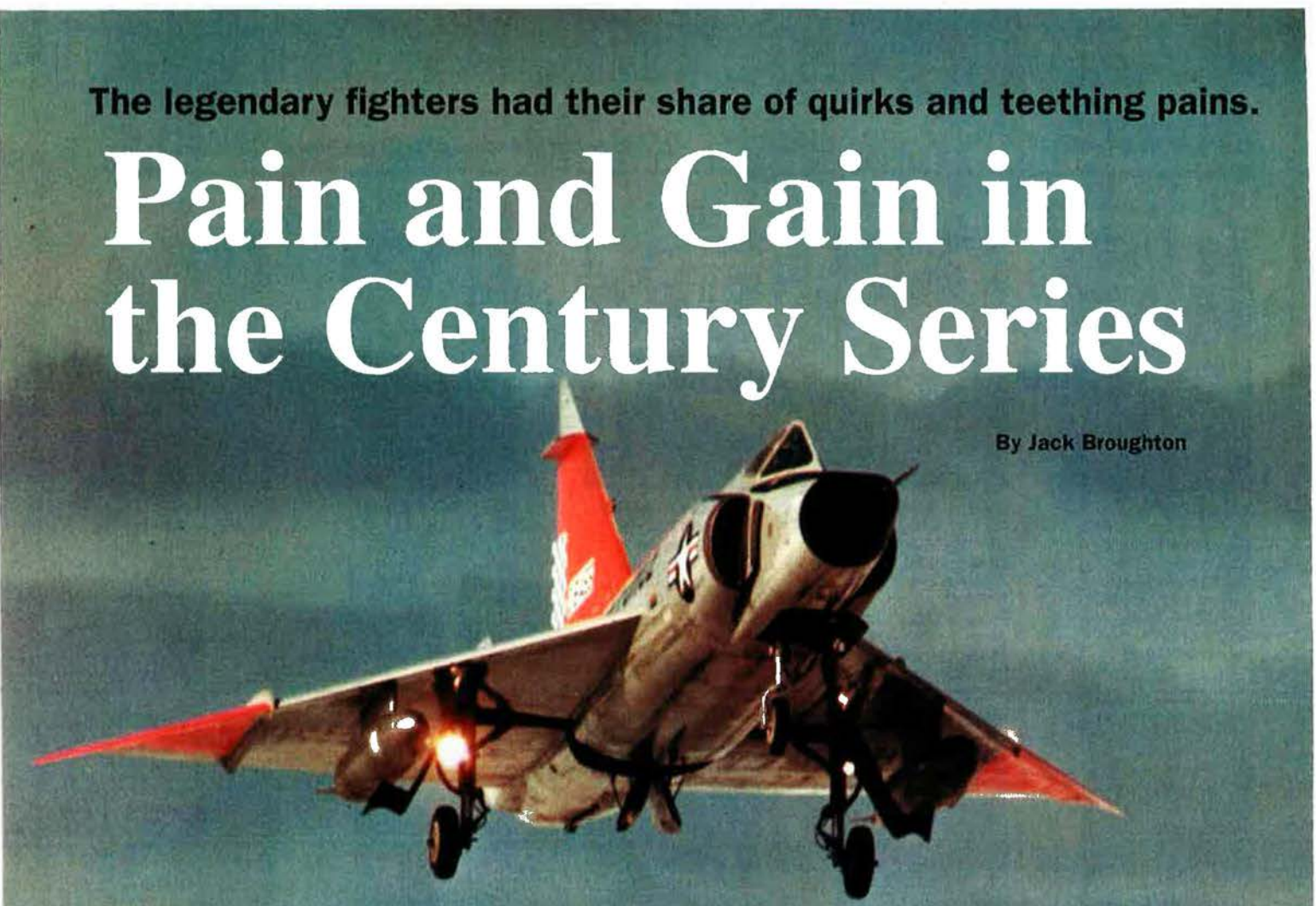
The legendary fighters had their share of quirks and teething pains.

Pain and Gain in the Century Series

By Jack Broughton



The "Century Series" aircraft were a new breed of cat in their time, following the first generation jet fighters that proved their worth but had become outdated. Lessons learned from Korea revealed that aircraft such as Soviet Union MiG fighters could perform better than US jets in certain situations. Engineers went back to the drawing board and, starting with a designation of 100, launched the Century Series of supersonic fighters.

The Century Series looked and flew differently, with new body and wing shapes, electronic flight controls, and afterburners to push them through the speed of sound. They were also tough to maintain. None came out of the box quite as desired, and maintenance technicians and pilots found they had much to learn to make their new charges war-worthy.

The Century Series each had different personalities, and I got to fly all of them—in situations ranging from air shows to combat—and had the opportunity to evaluate their good and bad points.

The North American F-100A Super Sabre was plagued by recurring fatal problems of loss of control at high speeds and high G forces, and demanding max performance from an A model often resulted in violent compressor stalls that would blow flames out of both ends of the aircraft. It was not a universally admired bird, but during my tenure with the Thunderbirds, the team received six vastly improved, factory-fresh C models. These proved to be dependable for our demanding show routine. The fighter's smooth flight controls and increased power fit our show perfectly, and we could turn around tightly enough between maneuvers to keep the show in front of the

USAF photo

An F-102 takes off from Keflavik, Iceland. The Delta Dagger was far from perfect, but it was a serviceable, easily handled, and forgiving interceptor.

USAF photos

Here: USAF fuel specialists refuel an F-101 Voodoo on the flight line at the Air National Guard Base at Hector Arpt., N.D. Below: F-105s take off for a Rolling Thunder mission over North Vietnam.

crowd. But the big fun new thing was the afterburner. From behind a crowd, the roar and fire of four unannounced burners lighting overhead was a real attention getter.

Nuclear-capable C models equipped two European wings, and transoceanic flights, eventually with air-to-air refueling, became common. The factory converted to more sophisticated and heavier D models, later stretching the D into a two-seater called the F-100F.

Then came Vietnam, with heat, humidity, and long supply lines. Support personnel had amazing success in keeping their aircraft combat-ready for aircrew, who flew multiple missions while dodging enemy ground fire. The F-100s were good at their prime mission of close air support of ground forces, but also found themselves escorting other aircraft within the combat zones, seeding the North's supply routes with various munitions, and flying armed reconnaissance missions.

Suddenly the Super Sabres were needed up north, in ugly places around Hanoi, with the fiercest air defenses in the history of aerial warfare. The first anti-surface-to-air missile units, "Wild Weasels," comprised flights of F-105 "Thuds" augmented with F-100Fs that had their rear cockpits filled with first generation SAM-seeking electronics. The Weasels preceded the strike aircraft into the target area, attempting to clear the route of SAMs by searching electronically for and attacking the SAM sites and their radar control units while exposing themselves to attack. That was a terribly tough job with staggering loss rates, so for morale purposes the F-100 pilots adopted the slogan, "First In, Last Out."

It really meant the 100s were much slower than the Thuds, so they had to enter early, and were left behind on the way out.

The first Century Series interceptor was the Convair F-102 Delta Dagger. Despite drastic redesign of early prototypes, the "Deuce" didn't have the desired zip and couldn't go supersonic if external fuel tanks were installed. The air intakes were not adequate at high angles of attack, and in a snap-up intercept—calling for max power, high speed at high altitude, and a hard pull up—Deuce pilots had to throttle back to minimum burner or risk an immediate engine overheat and damage. Not good, but most systems were reasonably reliable, and the Delta Dagger was a serviceable interceptor. It handled easily and honestly and was forgiving. Initial armament included radar and heat-seeking missiles plus "Mighty Mouse" folding-fin rockets, with nuclear missiles coming later.

Pointing at the Half Dollar

In 1956 the 102 became operational with Air Defense Command and immediately got cold weather duty along the Pinetree Line, stretching from Vancouver, British Columbia, Canada, to the Great Lakes and on up Canada's eastern shoreline. By 1958 things got even colder as Deuces inherited the far-north warning line from Anchorage, Alaska, to Thule, Greenland. The mission was to keep Russian bombers from heading for the heart of America.

The Deuces always kept busy at Goose Bay, Labrador, in Canada, where winter winds and temperatures of negative 40 degrees drove chill factors off the charts. Four inches of ice commonly covered the runways and taxiways, with 30-foot-high rock solid snowbanks along both sides.

US and Russian commercial aircraft would make regular penetrations of the defense zones, but if they were off schedule, Deuces from Goose Bay would be scrambled. Russian military aircraft often headed straight for Goose until radio chatter indicated a scramble in progress.

Deuces saw temporary duty in South Vietnam and Thailand. They pulled alert duty, escorted nightly B-52 strikes, and looked for MiGs. But the MiGs didn't have the legs to come south, nor did the Deuces go north. In their only meeting, over Laos, a MiG-21 shot down a Deuce.

The real glamorous celebrity of the Century Series was the Lockheed F-104 Starfighter—the missile with the man in it—known as the "Zipper."

Mach 2 was an easy task, and the F-104A-model interceptor checked in at 1,404 mph and 91,249 feet altitude and was an absolute ball to fly. A pilot felt as if he were part of some awesome hardware, and it was even fun to taxi. At takeoff throttle you were in charge of the world's fastest tricycle. Normal climb was at a 45-degree angle, and you could sit with minimum stick movement and zip through Mach 1—or wait a bit and check Mach 2.

Above: F-100 Super Sabres sometimes arrived in country unpainted, but were eventually given the camouflage scheme sported by the aircraft at top. Right: Author and Century Series pilot Jack Broughton at Minot AFB, N.D.

A bird of this nature could be tough to handle if it balked. During a flight in 1959 I was in the clouds, going through 24,000 feet in a max vertical climb, when the lights and flight instruments went out with electrical failure. Almost invisible on the top left of the instrument panel were a half-dollar-sized emergency attitude indicator and a magnetic compass, not a lot of help at that moment. Recovery from something like that is almost too much. I had to get the nose down and do some seat-of-the-pants flying, while cross-checking that tiny attitude indicator. I came out of burner, fed in left rudder and aileron, and gave her some forward stick pressure to get into a smooth, descending arc.

As I came closer to something that looked and felt almost like level attitude, I broke into a small clear tunnel in the clouds on my left with a round blue spot at the end. I didn't know if it was water or sky, or if it was up or down, but I had plenty of altitude, so I went for it. It turned out to be sky, and that led to a good repositioning for recovery.

In the "Four" you also always had to keep a close eye on your fuel supply, since there wasn't all that much of it, and it went in a hurry if you were maneuvering at max performance.

Not too many USAF pilots got to fly the Zipper, as the gears went for minimum production of 104s and a push for nuclear-capable F-105s. The thinking was that there would be no more conventional air warfare, and everything in the future would be nuclear. That thinking later cost us in Vietnam.

Despite tepid US interest, the Four was a hot item within NATO. The

USAF photo

Photo courtesy of Jack Broughton

safety records were grim, but overseas production and sales were welcome, and the air shows were great.

The US sent Zippers to Vietnam, and that was a mismatch. The guys tried, hanging a single bomb under a wing, but the Four was simply not well-suited to hunt for trucks in the jungle or for dueling around downtown Hanoi.

The F-101 Voodoo saw its own teething pains. Preproduction engineering voices at McDonnell Aircraft warned they needed two more years to overcome a severe aerodynamic problem that caused the F-101 to pitch up and depart control. The engineers were ignored, and the Voodoo never recovered from that decision. Initial production runs of A and C models wound up flying out of England, tasked as nuclear bombers, but they were pitch-up prone and difficult to maintain.

Pitching Up

New pilots were routinely briefed that the aircraft was dangerous, could climb like mad, took half of the stratosphere to do any vertical maneuvers, and had never forgiven anyone, ever.

In simplest terms, pitch-up could happen when the nose was pulled to an angle that interrupted the airflow over the tail section, and caused the aircraft to go bananas.

"At 38 thou, tangling with two Voodoos. ... Yo-yo [steep climbing turn trying to get above and behind them]. ... Nose snapped up, stick useless," read one excerpt from a pilot's account. "Violent snap left to inverted spin. ... Nose back up to vertical. ... Engines stalling. ... Tail slide to inverted. ... Spinning left. ... Nose snapped vertical, tail slide, left spin back to vertical, then tail slide and back up to vertical for another tail slide. ... Standard recovery futile. ... Deployed drag chute, nose down, hanging absolutely vertical, airspeed increased to 130, got stick feel, leveled at 20 thou." Fortunately, this pilot had 18,000 feet to spare.

The factory attacked the problem with a stick pusher, a system whose delicate computerized sensors constantly measured the nose's angle, and if the angle, the airspeed, fuel load, and G forces didn't match the desired chart figures, the computer kicked the pilot's control stick forward. This did not solve the pitch-up problem, and since the push could come in the wrong place at the wrong time, the pusher was involved in fatal and near-fatal accidents.

Then there were bothersome things such as a large, unprotected, hidden electrical junction called "the pineapple." It was prone to catch stray washers or bits of wire that could lodge between any number of contact points

to provide the crew with surprises, like jettisoning the canopy at night in a thunderstorm.

But the Voodoo was very fast, had good instruments and navigation capability, flew straight lines OK, and could go over the top of a snap-up at 58,000. It also carried the nuclear AIR-2 Genie rocket—supposedly effective against bomber formations if detonated in their general area. McDonnell delivered B models for 18 Air Defense Command squadrons, and they quickly became part of US defense lines. They never saw any combat, however.

The combat heroes were the supersonic RF-101C photoreconnaissance Voodoos, which did good work over Vietnam. Management wanted detailed photo coverage after every strike against the North, and the SR-71s and the U-2s got the high assignment, while the unarmed RF Voodoos got the low assignment.

When F-105s finished bombing a target, the locals were understandably upset. That's when a photo Voodoo pilot was required to fly over the same target—and defenses—while taking pictures of the damage. The pilots used their birds' speed to streak in, cameras churning, get their bomb damage photos, and get out of there as best they could—and they did a superb job.

Convair was still studying lessons learned from the Deuce as requirements firmed up for the "Ultimate Interceptor." It entered the force as the F-106 Delta Dart. Pilots had always wanted the Deuce to do a little more, a little better, and they got their wish when the "Six" started moving into perimeter defense positions around the US. The Six set a world speed record, but more important to operators, it made difficult, high-speed and high-altitude intercepts easier to accomplish. The nuclear Genie rocket was an added deterrent. The Six was as big as a C-47 but handled like a little scat-cat.

Delta Scramble

The cockpit was designed for pilots: The primary flight instruments were eye level vertical tapes, far easier to interpret than round gauges and pointers. A pilot could set moveable horizontal indexes for altitude, airspeed, etc., and matching horizontal bars moved up and down the tapes in response to the aircraft's motions. If a quick visual scan showed all the little bars in a straight line across the panel, you were doing it right. The animated, television-like tactical situational display illustrated the positions of friends and foes, provided a real-time presentation of intercept progress, and showed how to get to the next checkpoint or destination.

Buttons and switches that could activate all mission essential and weapons functions covered the dual-handled control stick. The radar was efficient, and once locked onto a target it provided a clear, steerable presentation to get to missile firing position. If you locked on from an angle or elevation where steering to the firing point would be difficult or manually impossible, you could click the autopilot takeover button and hang on for the wild aircraft gyrations that would take you to the firing point.

All squadron pilots got to fly the Dart's max performance mission one time. After a burner takeoff and climb, the pilot leveled at 35,000 feet, then let it roll for a few hundred miles to Mach 2 and a bit more—where things get really quiet. Smoothly reducing power, easing into a reverse climbing turn, and leveling about 60,000 feet would allow the pilot to retain idle throttle while coasting back to base to land. All this took about 17 minutes.

Due to their position in the US defense plan, Dart squadrons took frequent no-notice alerts and scrambles seriously. An exercise, code-named Flush, simulated a high probability of missile attack in advance of bomber penetration. One black, cold winter morning, Flush started with an alert call at 12:25 a.m. Five hundred enlisted personnel and 50 officers started running through blowing snow at 28 degrees below zero, and at 1:40 a.m. all 26 of the squadron's 106s were ready on the flight line.

Five minutes later pilots were strapped in, radios on, ready to push the start button. Every crewman and pilot that day could say the next 22 minutes were the coldest in their lives. At 2:07 a.m. radios barked, "Flush," and 25 jets roared to life while one cold-soaked bird burst its hydraulic lines and bled in the snow. Six minutes later they were airborne, afterburners roaring.

The F-104, below with tip tanks and pylon tanks, was the glamour girl of the Century Series. Pilots learned to keep an eye on the instruments when flying the Zipper.

USAF photo

The F-106 suffered from faulty ejection seats, and 13 pilots died when trying to punch out. The Dart went on to become the ultimate interceptor of its time.

The alarming problem with the Six was that the ejection seat would not work. Thirteen attempts at ejection were fatal. After pulling the ejection handles, more than 30 separate, sequential, manual operations had to be completed successfully before the first squib in an electronic-explosive ejection sequence could operate. The backup manual system was physically impossible to operate when strapped into the seat. Almost constant inspection and alignment by highly skilled and dedicated technicians made no difference. The seat was a killer.

It took a career-threatening campaign against industry and higher headquarters, but we finally replaced the killer seats for the entire 106 fleet. When the last 106 retired two decades later, the new seat had a 100 percent success rate within parameters.

The Six never got to go to war, but she sure would have fit in well on F-105 missions. Operational combat commanders asked our headquarters requirements chief to push for speeding up existing programs that were modifying the Six with air refueling, a gun, a bubble canopy, and an infrared sight, and to get us the fighters ASAP. We would have loaded the huge weapons bay and delta underwing with cluster bombs and Sidewinder missiles and used them as the lead flight on Hanoi area strike missions. They could have suppressed lots of flak and zoomed up off target to keep the MiGs off the strike aircraft. But the suggestion was not well-received.

Of all the Century Series birds, the Republic F-105 Thunderchief probably had the toughest time getting into full production, due to vacillating mission requirements and extensive, recurring contract skirmishes. By the time the B models got to tactical units it was clear that while the Thud retained conventional air warfare capabilities, those calling the shots were far more interested in high-speed, on the deck, nuclear delivery capability.

The early Thuds were a maintenance nightmare with unacceptable readiness rates, but as improved D models appeared, they were used to upgrade the US worldwide nuclear posture. Not too many people really liked the Thud by then.

Dreaming of an F-106

There was hope of a better image when the Thunderbirds ran a few of the old B models through an extensive depot level rework and applied air show colors. As show season opened, the team flew a few arrival maneuvers for a San Francisco show. As they pulled to vertical, Thunderbird Two had a wing fold and separate, and then crashed.

The Thud's stock hit an all-time low.

Vietnam changed that. Suddenly conventional air warfare was no longer passé. Individual Thud squadrons began rotating to bases in Thailand on conventional warfare temporary duty, while others at home base maintained their nuclear commitments. As soon as facilities were available two Thud wings became Thailand tenants, dedicated to striking the North. The Thud was at war. Among the first of many aircraft modifications, the Thud's internal nuclear weapons bay became a large fuel tank. All aspects of conventional air superiority, such as gun sights, became important again.

Thuds hauled 75 percent of all the bombs that went north on attacks against the Hanoi area, and we lost about half of the entire F-105 fleet, plus pilots, in the process. Wild Weasel missions became more successful as extensively modified two-seat Thuds entered the fray. Thuds performed all their combat tasks well, and the ugly duckling of the Century Series became the most successful and admired warhorse of the bunch.

Having flown 56 different aircraft, I often get asked to pick a favorite. My reply is a fantasy that, on a night with a few puffy cumulus clouds and a bright full moon, my wife and I roll our highly modified 106B two-seater out of the garage. ■

Jack Broughton is a retired USAF colonel and fighter pilot. During his time on active duty he was the recipient of four Distinguished Flying Crosses, two Silver Stars, and the Air Force Cross. He is the author of two memoirs from the Vietnam War era, Thud Ridge *and* Going Downtown. *This is his first article for* Air Force *Magazine.*

The Weapons

School Way

The USAF Weapons School provides the skills that keep the Air Force the world's best.

Photography by Rick Llinares
Text by Seth J. Miller

A USAF Weapons School F-16 blasts into action from Nellis AFB, Nev., on June 6, 2012.

The USAF Weapons School is a key factor in keeping the Air Force's qualitative edge. Every six months, a new class of top airmen receives training in the finer points of their weapons system and how it integrates with the Air Force as a whole. Before graduation, the class of roughly 90 students must pass the Mission Employment (ME) phase—a capstone exercise to demonstrate tactical expertise. ME includes flying exercises and takes place at the Nevada Test and Training Range. ***I1I*** *A Weapons School F-22 soars above the training range during a June 13 Mission Employment flying window called a "vul"—short for vulnerability period.* ***I2I*** *L-r: Lt. Col. Matt Bowers and student Capt. Robert Switzer at the controls of their KC-135 during the final vul for the class that graduated in June.*

I3I *A 66th Weapons Squadron A-10 has sun shields placed on the cockpit canopy to protect the aircraft's instruments from extreme desert heat. Warthogs are housed on the far side of the base's main runway in revetments.* ***I4I*** *During ME, an F-22 is photographed from the vantage point of a KC-135 boom operator.*

*The Weapons School selects only the best as students. At the school, students hone their skills for nearly half a year. By the time they graduate, they are expected to be approachable experts in the art and science of combat. Newly minted graduates take these skills to follow-on assignments throughout the Air Force. This year, with the introduction of a cyber weapons instructor course, 23 different combat specialties were represented at the first 2012 course. **I1I** An F-16 from the 64th Aggressor Squadron departs Nellis. **I2I** On the ground, A1C Joshua Rivera cleans an aggressor F-16's canopy. **I3I** The lead element breaks away from a formation of six F-15Es over Nellis. **I4I** A KC-135 lifts off in June. Ninety USAF and Navy aircraft from across the US took part in this ME. **I5I** A C-17 from the 57th Weapons Squadron at JB McGuire-Dix-Lakehurst, N.J., lands at Nellis. The Weapons School, a part of Nellis' 57th Wing, has squadrons both on base and at other locations across the US.*

The vuls consist of day and night missions where bombers, transports, fighters, command and control aircraft, tankers, and other assets simulate combat operations. On the ground, numerous air, space, and cyberspace personnel support these missions, aimed at improving the students' combat, surveillance, and defensive tactics. Munitions, maintenance, fuels, and weapons loading personnel are all essential to the task. ***|1|*** *L-r: A1C Mai Khanh and SSgt. Kyle Britton transport AIM-9 Sidewinders on the ramp.* ***|2|*** *A B-52 from the 340th Weapons Squadron at Barksdale AFB, La., undergoes maintenance in the dedicated bomber pad, located across from the main Weapons School static ramps.* ***|3|*** *Crew chief A1C Reuben Stoica straps Maj. Ronald Gilbert into an F-22.*

The Nevada Test and Training Range provides the perfect space to simulate combat operations. Stretching over 2.9 million acres of land and 5,000 square miles of airspace, it allows the students to test weapons in a realistic environment. ***I1I*** *A 64th Aggressor Squadron F-16 takes off on an ME sortie.* ***I2I*** *SrA. Jaquan Dixon, 2nd Lt. Noah Demerly, and A1C Jessica Swanger (l-r, on the ground) perform postflight maintenance on an F-15C. A1C Oliver Gutierrez works atop the aircraft.* ***I3I*** *An E-3 AWACS, framed against Sunrise Mountain, approaches the runway at the end of a training flight.* ***I4I*** *A B-1B Lancer, assigned to the 77th Weapons Squadron at Dyess AFB, Tex., rolls down the runway for an ME sortie.*

During their culminating exercise, students plan and execute every aspect of air and space combat operations. It takes more than 30,000 man-hours and 1,400 flight hours to prepare students for ME. ***I1I*** *An F-15C Eagle departs from Nellis in full burner. The WA tail code indicates it belongs to the Weapons Center's parent organization, the USAF Warfare Center.* ***I2I*** *SSgt. Michael Cooper removes foreign object damage covers from a 16th Weapons Squadron F-16.* ***I3I*** *An F-15C flairs on rollout after landing on the Nellis runway.* ***I4I*** *Swanger, Dixon, and Demerly (l-r, on the ground) and Gutierrez work on an F-15C after a sortie in June.*

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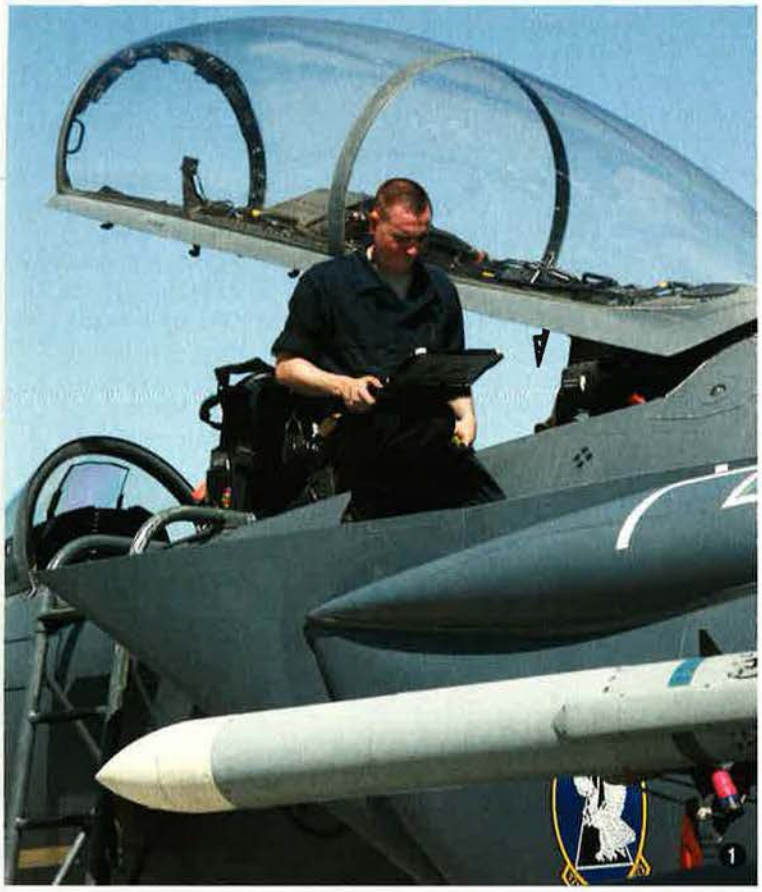

I1I A1C Richard Dougherty inspects an F-15E after the day's flight activity. I2I An F-16 from the 64th Aggressor Squadron taxis to the southwest end of the runway pad for checks before an ME sortie. I3I An F-15E, as seen from a KC-135, as the Strike Eagle takes on fuel. I4I An EC-130H from Davis-Monthan AFB, Ariz., prepares to land at Nellis. The Compass Call, a heavily modified C-130 Hercules, disrupts enemy command and control communications. After their last ME mission, crew members receive a traditional dousing with water, then a bottle of champagne. On successfully completing the exercise and course, graduates earn the highly prestigious USAF Weapons School patch to wear on their flight suits. The graduates are then known as "Patch-Wearers." ■

THE FORGOT

The AAF's Fifteenth Air Force was a war baby, born in Italy after a brief gestation and as the result of induced labor. It had a short life—just 22 months. It lived in the shadow of its older and much bigger brother and strategic partner, the England-based Eighth Air Force.

During the war, the public heard much about "The Mighty Eighth" and little of "The Forgotten Fifteenth." Veterans of the Italian campaign have an explanation of sorts: "If you were a war correspondent, would you rather sip scotch in a London hotel or swig vino in a tent at Foggia?"

At its peak, the Fifteenth was about half the size of the Eighth. It had 21 bomb groups, compared to 41 in the Eighth. The Fifteenth had seven fighter groups; the Eighth had 15. Americans have heard much about the Tuskegee Airmen of the 332nd Fighter Group, a famous part of the Fifteenth, but almost nothing of the other bomber, fighter, and reconnaissance groups.

Even so, the Fifteenth did at least its part in the war, consistently doing more than expected, taking the air war to the Axis factories and refineries beyond the reach of Britain-based aircraft. Most importantly, the pilots of the Fifteenth in the spring and summer of 1944 turned off the Wehrmacht's Balkan oil taps, wrecking the Ploesti refinery complex in Romania with strategic effects felt throughout the theater.

Not So Sunny

The Fifteenth attacked targets in a large number of Axis and Axis-occupied countries, including Italy, Germany, Bulgaria, Austria, France, Romania, Hungary, Czechoslovakia, Greece, Poland, and Yugoslavia.

When the Fifteenth was established on Nov. 1, 1943, it began life with a famous commander, Maj. Gen. James H. Doolittle, He had not only led the 1942 raid on Tokyo but had served as commander of Twelfth Air Force and the joint North African Strategic Air Forces.

Doolittle owned an unrivaled reputation in military and civil aviation. Having learned the trade of a senior commander in his 13 months in Africa and the Mediterranean, he was well-suited to establish the US Army's southern strategic air arm. He was given only two weeks' notice. At the end of November, he established his headquarters in Bari, on Italy's Adriatic coast.

Twelfth Air Force contributed its heavy bomb groups to Doolittle's new command. Meanwhile, Maj. Gen. John K. Cannon turned the Twelfth itself into the Mediterranean tactical air arm.

The Fifteenth was brought into being as a result of two factors: geography and climate.

The goal was to take advantage of good weather and proximity to the Romanian oil fields. Fifteenth Air Force found the going tougher than expected.

TEN FIFTEENTH

By Barrett Tillman

Geography was crucial. Allied strategists had long recognized the importance of Romanian oil in fueling the Axis war machine. Romania lay a daunting 1,300 miles from Britain, putting the Balkan oil fields beyond the reach of Eighth bombers. On the other hand, the oil fields were less than 600 miles distant from the big Allied air base complex at Foggia, Italy.

Weather also equally important to the Allied planners. Britain and northern Europe were notorious for their overcast and soggy weather. Italy, in sharp contrast, was viewed as being mostly sunny and clear. The Foggia complex, in this view, would be able to support a continuous strategic air campaign against the Third Reich.

Thus, when the Fifteenth stood up in November 1943, top airmen reckoned that they would be flying in a more permissive environment.

The predictions were wrong.

Take weather, for example. During the first two months of life, the Fifteenth's heavy bombers managed to conduct operations on just 30 days. Throughout 1944, the Eighth actually operated 20 percent more often than did the Fifteenth.

The Fifteenth also faced geographical realities few Americans had ever encountered. Its bombers flew westward across the Tyrrhenian Sea, Corsica, and Sardinia to French targets; northward over the Alps to Austria and Germany; eastward over the Adriatic to the Balkans, Carpathian Mountains, and Greece.

Meanwhile, Doolittle absorbed units from XII Bomber Command. His fledgling force comprised three B-17 and two B-24 bomb groups plus three P-38 Lightning groups. Temporarily attached were a number of medium bombers.

The Fifteenth launched its first heavy bomber mission on Nov. 2, 1943. It was a long-range attack on the Messerschmitt factory near Vienna. Because the badly damaged Foggia complex of

A Fifteenth Air Force B-24 slogs though mud and water, lumbering toward the runway and a takeoff position at an airdrome in Italy. Bad weather plagued the Fifteenth even in Italy, normally sunny and clear.

bases was still under repair, the B-24s flew from Tunisia.

In his memoir, *I Could Never Be So Lucky Again,* Doolittle described the first mission:

"Our B-17s and B-24s hit the Messerschmitt factory at Wiener Neustadt, a 1,600-mile (round trip) mission that netted excellent results," he said. "That facility was turning out about 250 fighters a month. We estimated we put it out of action for at least two months."

Doolittle recalled that some 150 German fighters attacked the Allied bombers before, during, and after their bombing runs, even flying though their own flak. He lost six B-17s and five B-24s that day.

Though Weiner Neustadt Messerschmitt production was cut roughly 75 percent, the Germans proved exceedingly resilient, and soon the rate began rising again. A restrike policy became mandatory, as proved by postraid regeneration at Ploesti, Regensburg, Schweinfurt, and other hard targets.

The Army Air Forces' industrious aviation engineers struggled against rain, mud, and shortages of heavy equipment to bring Foggia and other bases up to fighting trim. By the end of March 1944, 20 bases in the Foggia aviation complex had become operational, affording adequate facilities for the growing air force.

In January 1944, mere months after it started operations, the Fifteenth underwent a sudden command change. Gen. Dwight D. Eisenhower, the Supreme Allied Commander, tapped Doolittle to take over Eighth Air Force. The famous airman had barely had time to "shake the stick" before he left for England, turning the command over to Maj. Gen. Nathan F. Twining, future Chairman of the Joint Chiefs of Staff.

By late January 1944, the Fifteenth had sprouted stronger wings. It now comprised a dozen bomb groups and four fighter outfits, including one equipped with P-47s.

Air strategists had long argued the merits of "morale bombing," which had failed against Britain and thus far had little effect in Germany. Nonetheless, early in 1944 the combined chiefs directed the Fifteenth to bomb city centers in Bucharest and Sofia, hoping to separate those capitals from the Axis camp.

Some resented the missions, considered "terror bombings" by many, including many airmen. One B-17 group member noted, "It would seem that orders are orders." Eventually the morale missions proved ineffective and even counterproductive.

The new year brought multiple tasks: supporting Allied troops on the Anzio beachhead, conducting tactical operations (including the controversial bombing of Monte Cassino), and carrying out a strategic bombing campaign against Germany's aircraft industry.

The latter effort, officially designated Operation Argument, was better known as "Big Week."

Shooting Their Way In

Bombers of the Fifteenth Air Force, during the period Feb. 20-25, 1944, joined with the Eighth for three missions against Luftwaffe production sites in Germany and Austria. Because most of the targets lay at the edge of P-38 coverage, the "heavies" mostly had to shoot their way in and out.

And so they did, along the way striking aircraft plants at Regensburg on Feb. 22, at Steyr, Austria, on Feb. 23, and again at Regensburg on Feb. 25.

B-17s and B-24s inflicted significant damage on Messerschmitt factories, but the Luftwaffe itself exacted a grim price. Nearly 40 bombers were shot down, as were four fighters.

B-24 flight engineer Loyd Lewis recalled the Feb. 22 mission in the 449th Bomb Group's history, *Maximum Effort.* Lewis, flying with Lt. Carl Browning, said, "Everything seemed to be going OK, when all of a sudden I spotted fighter planes very far out at 3 o'clock. They were diving down into the clouds and out of sight. I remember getting on the intercom and announcing the enemy planes. This was the last I remembered. I was hit ... and knocked unconscious."

He regained consciousness a couple of days later in an Austrian hospital, where he learned his bomber had been attacked by Me-109s and FW-190 fighters firing cannon shells. The bomber pilot was stunned by a shell burst, and the aircraft went into a dive. The copilot managed to right the bomber and help the crew bail out.

At the end of Big Week, Twining counted a horrendous cost: 89 bombers

Fifteenth Air Force bombers score hits on the oil storage facilities at Regensburg, Germany (top), and at the Turin/Orbassana ball bearing works in Italy (bottom). War correspondent Ernie Pyle wrote so eloquently of the war in the Mediterranean Theater that a B-29 Superfortress was named in tribute to him (middle).

and seven fighters lost. The attrition amounted to about 16 percent of total bomber sorties—four times the maximum sustainable rate. Already short of fighters, the Fifteenth conducted no further deep penetration missions until the situation could be redressed.

On the way, however, was some help: P-51 Mustangs. The Eighth already had P-51s by the time of Big Week. The Fifteenth needed them too. Spitfire groups transferred to the Fifteenth and converted to Mustangs. At the same time, the 325th exchanged its P-47s for Mustangs, and by early July, the 332nd had also done so.

The Spitfire outfits—the 31st and 52nd—managed an orderly transition while the 325th "Checkertails" parked their P-47s on May 24 and flew their first Mustang mission three days later.

The US strategic air commander was Lt. Gen. Carl A. Spaatz in London. He oversaw the efforts of the Eighth and Fifteenth, maintaining cordial relations with Lt. Gen. Ira C. Eaker, commander of Mediterranean Allied Air Forces. Spaatz had a huge task, requiring coordination of vast air fleets at opposite ends of the European continent. By and large, it worked.

The run-up to D-Day in mid-1944 placed strategic air forces under the direct control of Eisenhower. At that time, strategists differed in supporting either "the transportation plan" or "the oil plan" as the best way to defeat Germany. As commander of the Allied Expeditionary Force, Eisenhower naturally leaned toward the transport plan. Wrecking German communications in northwestern Europe would directly support Operation Overlord, whereas focusing on oil would pay benefits over a longer term.

In August 1943—three months before the Fifteenth was established—a low-level B-24 mission against Ploesti had produced spectacular losses for marginal results, proof that many industrial targets required persistent bombing.

However, because Romanian oil lay within reach only of Italy-based bombers, Mediterranean commanders chafed under the transport plan. Eaker and Twining began attacking the Ploesti complex in April 1944, near the end of the transport phase. They were directed to strike the rail yards, presumably preventing oil from being shipped elsewhere. With a wink and a nod from Spaatz, however, bomber leaders began moving aim points closer to the 10 refineries circling the city. It was a rare case of de facto insubordination, but it began paying dividends.

L-r: Lt. Gen. Carl Spaatz, Lt. Gen. George Patton, Lt. Gen. Jimmy Doolittle, Maj. Gen. Hoyt Vandenberg, and Brig. Gen. Otto Weyland. As a major general, Doolittle was the first commander of Fifteenth Air Force. Spaatz took on the enormous task of coordinating vast air fleets—including Fifteenth Air Force—from London.

Meanwhile, two Fifteenth airmen received the Medal of Honor for missions against Ploesti petroleum targets.

Romanian Danger

On June 23, 1944, 2nd Lt. David R. Kingsley was a 97th Bomb Group bombardier on a B-17 that was hammered by flak and chased by fighters. When the pilot ordered the crew to bail, Kingsley unhesitatingly gave his parachute harness to a badly wounded gunner. The Fortress, with Kingsley aboard, crashed in Bulgaria, where local residents established a memorial to their neighbors killed in the crash—and to the selfless Kingsley.

First Lt. Donald D. Pucket was a 98th Group B-24 pilot. Two weeks after Kingsley's sacrifice, Pucket's B-24 was crippled by AAA bursts, which killed one man and wounded six. Pucket nursed the damaged Liberator 150 miles southwest of Ploesti before ordering a bailout. With the bomber rapidly descending, Pucket returned to the cockpit rather than leave three men who either could not or would not jump. His attempt to bring the bomber under control failed, with the loss of all crew still aboard.

A remarkable mission against Ploesti was flown by two P-38 groups on June 10. The 1st Fighter Group escorted 82nd Group Lightning aircraft in a long-range attack that hoped to elude detection by flying low. It didn't work. Spotted by Romanian and German defenders, the top-cover Lightnings were drawn into widespread dogfights, and Ploesti's guns and smoke generators were ready when the dive bombers rolled in. Some worthwhile targets were struck, but losses were heavy: 24 of the 96 fighters on the mission were lost.

Two dozen Ploesti missions cost the Fifteenth some 230 aircraft—but produced results. When Romania capitulated in August 1944, Allied researchers found the refineries mostly reduced to wreckage, their output only 10 percent of what it had been five months earlier. It was a severe blow to the Axis.

By June, at the height of the Ploesti campaign, the Fifteenth had achieved maturity. Though flying the same aircraft as the Eighth, the proportions differed. The Eighth was nearly 60 percent B-17s, while the Fifteenth was three-quarters B-24s. Mustangs dominated VIII Fighter Command. In the Fifteenth, four P-51 groups provided long-range escort, while P-38s flew shorter escorts and increasingly performed dive bombing and strafing.

June also brought the start of Operation Frantic: shuttle missions to and from Russia. The goal was to attack targets ordinarily out of reach in Eastern Europe. Frantic I in June saw the assembly of 130 B-17s and 70 Mustangs. Two later

missions, in July and August, featured only fighters.

After Romania's capitulation, the Luftwaffe had little reason to commit heavy forces to the Balkans. Aerial opposition all but disappeared. In the last eight months of hostilities, the Fifteenth lost 26 bombers to enemy aircraft. Some bomb groups began flying with one waist gunner instead of two, and Twining's fighters increasingly went down on the deck, strafing whatever moved and much that did not.

Going Home ... But Not Yet

By then, however, the invasion of southern France had grabbed the world's attention. The Aug. 15 operation Anvil-Dragoon was supported by Fifteenth bombers and fighters, including the 1st and 14th Groups' P-38s, temporarily operating from Corsica.

Meanwhile, other operations continued. Little known today is the remarkable work of the 859th and 885th Bomb Squadrons that conducted special operations missions and rescued downed fliers. Working with Yugoslavian partisans, Fifteenth airmen carved out landing strips in German-occupied territory. Additionally, the 5th Photographic Group and a dedicated weather recon squadron plied their esoteric trades, losing far more airplanes to the climate than enemy action.

A brief resurgence of the Luftwaffe in March and April 1945 brought new German Me-262 jet fighters to the southern skies, harassing bomber formations and occasionally inflicting losses, but Fifteenth fighter pilots mostly took their measure. The 31st Fighter Group downed eight Me-262s.

The Fifteenth mounted its only Berlin mission on March 24, 1944. This attack on a tank factory and other targets cost the US only 10 heavy bombers among some 660 dispatched—proof of Allied ownership of German skies.

The Fifteenth logged its last bombing mission on May 1, 1945, with a small strike at Salzburg, Austria. Thereafter Twining's crews largely flew recon sorties and supply drops in Yugoslavia.

With VE Day on May 8, most Mediterranean airmen breathed a sigh of relief. However, elation among some was short-lived upon learning they were slated to rotate to the Pacific for the expected invasion of Japan. Three months later, those concerns ended by the atomic bombings of Hiroshima and Nagasaki, which prompted the surrender of Japan. The Fifteenth was formally deactivated Sept. 15, 1945.

The Blue Streak, ***a Fifteenth Air Force B-24, passes by steaming Mount Vesuvius, in the Naples region of Italy. German armaments minister Albert Speer said he could see the war's end when the Fifteenth's bombers crossed the Alps from Italy toward the Third Reich's industrial targets.***

Fifteenth Air Force was successful, but it paid a high price, losing at least 1,850 bombers, 650 fighters or recon aircraft, and hundreds of airmen. Romania's oil spout was almost totally closed off, and Axis communications were severely hampered. Fifteenth fighters claimed 1,800 enemy aircraft destroyed and produced 74 aces.

The enemy knew the Fifteenth's worth. Albert Speer, the organizational genius and Third Reich's armaments minister, wrote that he could "see omens of the war's end almost every day in the blue southern sky when, flying provocatively low, the bombers of the American Fifteenth Air Force crossed the Alps from their Italian bases to attack German industrial targets."

Fifteenth Air Force's veterans continued making contributions long after VE Day. Twining became Air Force Chief of Staff—1953 to 1957—and Chairman of the Joint Chiefs until retirement in 1960.

Other Washington insiders from Foggia were three B-24 men who became United States Senators: Democrats Lloyd M. Bentsen Jr. of Texas; William D. Hathaway of Maine; and George S. McGovern of South Dakota.

War correspondent Ernie Pyle was the popular chronicler of the Mediterranean Theater, writing about fliers as well as GIs. Before departing for the Pacific (where he was killed by a sniper shot) he wrote, "Few of us can ever conjure up any truly fond memories of the Italian campaign. The enemy had been hard, and so had the elements. ... There was little solace for those who had suffered, and none at all for those who had died, in trying to rationalize about why things had happened as they did."

Today, the men of the Forgotten Fifteenth, with their numbers rapidly decreasing, look back on their experience and know that Pyle's tribute remains as valid as ever. ■

Barrett Tillman is an author and speaker who has flown a variety of historic aircraft and has received six writing awards for history and literature. His most recent article for Air Force *Magazine, "Battle of Midway," appeared in February 2011.*

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The US Embassy building, under construction in Moscow in 1988. The tortured project took 27 years to complete. The building finally opened in 2000.

The new US Embassy in Moscow was half done. Then officials realized the Soviets had built hundreds of listening devices right into the structure.

Cleaning the Bug House

By Peter Grier

In December 1991, Robert S. Strauss, US ambassador to the Soviet Union, visited KGB chief Vadim V. Bakatin in his Moscow office. Strauss—a genial Texan—thought he was making a simple courtesy call on a Kremlin official with whom he had good relations. Instead the American envoy got one of the biggest surprises of his life.

After the pleasantries were over Bakatin opened his safe and took out a thick file and a valise full of electronic devices. He handed them to Strauss.

"Mr. Ambassador, these are the plans that disclose how the bugging of your embassy took place, and these are the instruments that were used," said Bakatin. "I want them turned over to your government, no strings attached." Strauss was dumbstruck, according to an account of the incident he gave later that year.

After years of denial, the Soviet intelligence arm was admitting its role in one of the most notorious espionage incidents of the 1980s: It had packed the new US Embassy office building in Moscow with sophisticated listening devices. The edifice's structure was so riddled with bugs that some US counterespionage experts described it as nothing but a giant microphone. The unfinished building stood half-completed for years, as Washington

AP photo by Boris Yurchenko

But it was not always thus. In the latter years of the Cold War, the building was the "bug house" in news headlines. Embassy construction—using Soviet workers and materials—began in 1979, but was halted in 1985. US experts had determined the building was so compromised by KGB listening devices that it was unusable; at least, it was unusable if the US wanted its diplomats' conversations to remain private.

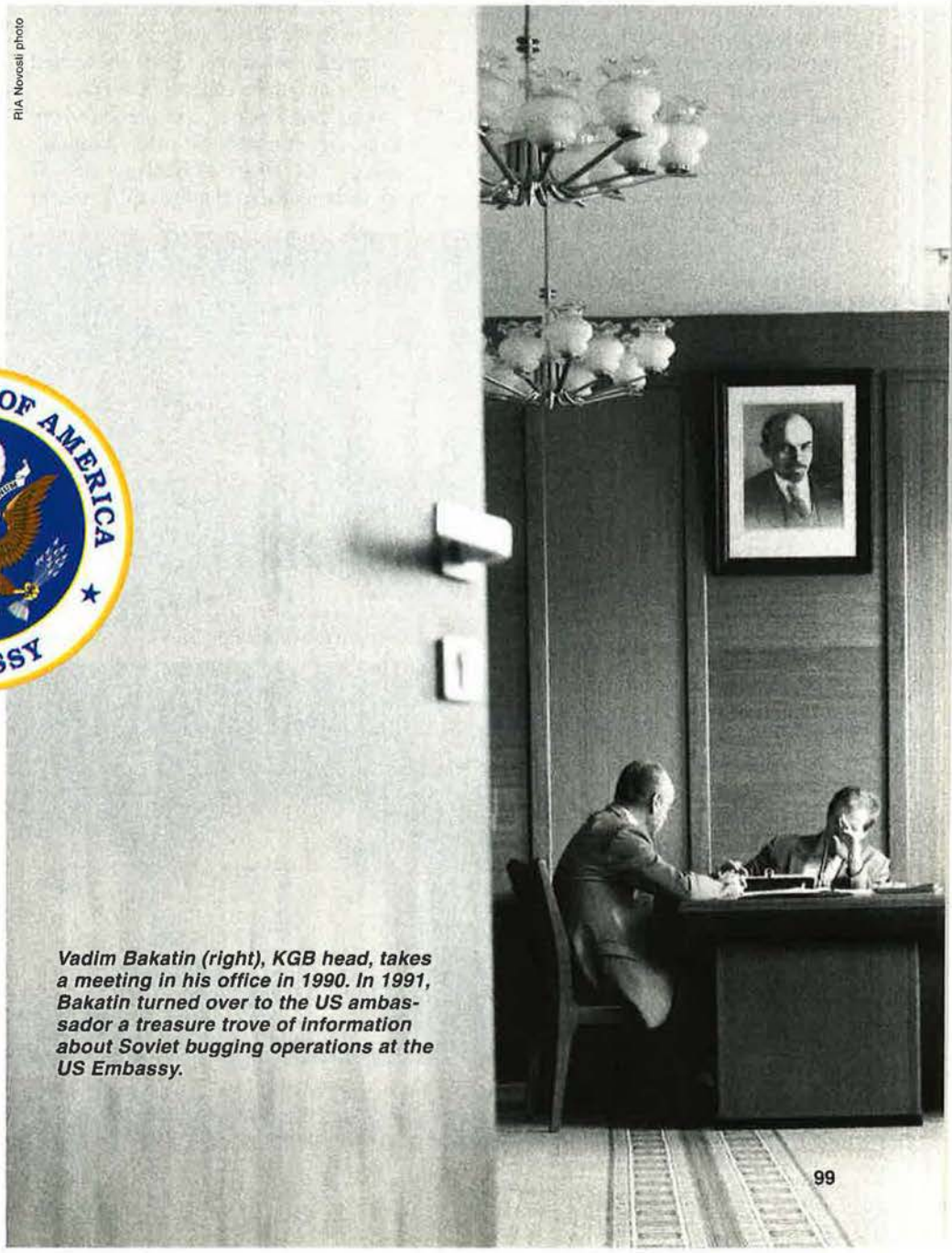
US counterintelligence eventually discovered that Soviet workers had secreted a vast array of objects within the concrete used in the embassy structure, according to congressional reports and State Department histories of the period. Listening devices were just part of it. The workers had also thrown in unconnected diodes, as well as wrenches, pipes, and other junk, to frustrate electronic scanners and metal detection.

Some bugs were located at spots where metal I-beams were welded together. Lengths of steel rebar had been altered to serve as transmitters. Buried within one wall US inspectors found a sophisticated power source shaped like a bow tie, which they dubbed "batwing." US engineers decided a nearby Soviet house of worship was suspicious—its lights would go on at odd times, and it seemed like a good spot from which to oversee the embassy's bugs. Eventually they dubbed the edifice "The Church of Holy Telemetry."

In a final twist, Soviet workers had arranged darker bricks in the building's brick façade to spell out CCCP, the Cyrillic initials for USSR. It was as if they were thumbing their nose at Washington.

Appalled at the breach in security, many US lawmakers and intelligence officials urged that the building be torn

RIA Novosti photo



Vadim Bakatin (right), KGB head, takes a meeting in his office in 1990. In 1991, Bakatin turned over to the US ambassador a treasure trove of information about Soviet bugging operations at the US Embassy.

struggled with how to deal with the intelligence debacle.

Bakatin expressed the hope that now the US could finish construction and move in. Strauss thought the sentiment genuine. But he knew mistrust remained on both sides.

"Mr. Bakatin, if I were to try to use that building, people would believe that you'd given me three-fourths of [the bugs] and kept [one]-fourth back," said the US ambassador.

Today the US Embassy in Moscow is a lovely buff-colored structure in the city center, with large windows that reflect the Russian White House, seat of the Russian government, across the street. It's the center of activity for a diplomatic relationship that in the 21st century remains one of the most important facets of American foreign policy.

down. They felt reconstruction—from the ground up—was the only method that would thwart the KGB. However, in the end, the embassy wasn't razed.

"The American premium on sophisticated wizardry and pride in our overall technological superiority often leads us to ignore the possibility that others could be doing to us the same things of which we ourselves are capable, so we do not take elementary precautions against known or possible techniques," said Rep. Henry J. Hyde (R-Ill.), then ranking member of the House Select Committee on Intelligence, in remarks about the embassy in 1990.

US officials should have been on alert from the beginning of the embassy's construction. After all, Soviet agents had been eavesdropping on US diplomats, stealing secret US papers, blackmailing US guards, and generally harassing American diplomats in Moscow since the beginning of full diplomatic relations between the two countries in 1933.

When the US opened its USSR outpost in that pre-World War II era, at first officials lacked such security basics as codes and safes. Communications with Washington occurred over open telegraph lines. The Soviet NKVD—forerunner of the KGB—quickly supplied "girlfriends" for the Marine guard contingent, according to a State Department history of the Bureau of Diplomatic Security.

One of the embassy's early code clerks, Tyler Kent, had a Soviet mistress. A chauffeur for the US military attaché turned out to be another NKVD agent. "US Embassy officers knew of the Soviet espionage but did little to stop it," read the diplomatic security history.

To some extent, US officials thought the espionage served American purposes. Ambassador Joseph E. Davies felt it would enable Soviet leaders to discover all the sooner that "we were friends, not enemies."

But by today's standards, the lax security is astonishing.

Sergei the Caretaker

In 1946, Soviet schoolchildren presented Ambassador W. Averell Harriman with a carved wooden replica of the Great Seal of the United States. It hung prominently in Spaso House, the US ambassador's residence, for years—at least part of that time in the ambassador's private study. Eventually, security personnel discovered a tiny microphone concealed within.

Sergei, the Spaso House caretaker, kept his basement apartment in the building locked at all times. Apparently no US official bothered to obtain a key from him until 1952. By then Sergei had decades to use the flat as a base from which to plant additional bugs.

In 1960, Henry Cabot Lodge Jr., US ambassador to the UN, publicly unveiled the Great Seal bug before the Security Council to counter Soviet complaints about U-2 overflights. More than 100 similar bugs had been unearthed at US missions and residences in the USSR and Eastern Europe, Lodge charged.

By the 1970s, Soviet surveillance was simply a fact of life for US diplomats behind the Iron Curtain. In his memoir, *Turmoil and Triumph,* former Secretary of State George P. Shultz recalled that prior to his first trip to Moscow, in 1973, the Secret Service and CIA warned him repeatedly that bugs would be everywhere.

"The only place to have a private conversation was in a boxlike room in the middle of our embassy with electronic measures surrounding it. It was claustrophobic, but it was the one place in the whole city of Moscow, I was told, that was 'secure,'" Shultz wrote.

By this point, it had long been apparent that the US needed a new Moscow embassy. American diplomats had occupied their chancery, an old apartment building, in 1953. It was cramped, inefficient, unsafe—and thoroughly vulnerable to Soviet espionage.

The USSR wanted to upgrade its facilities in Washington as well, so in 1969 the two nations

RIA NNovosti photo

A miniature transmitter and microphone are displayed in Moscow during an exhibition of spy equipment. The US Embassy had been riddled with listening devices during construction.

In these stills from a film shot during a presentation to the UN Security Council, Ambassador Henry Lodge opens a copy of the Great Seal of the United States given to Averell Harriman by Soviet school children in 1946 and reveals listening devices the Soviets had hidden inside. The bugged seal hung at the US ambassador's house in Moscow for years.

reached a reciprocal agreement: The US would get a 10-acre site near its old building for a new embassy complex, and the Soviets would get a similar plot on Mount Alto in Washington, D.C., where Wisconsin Avenue peaks on its rise out of Georgetown in the northwest quadrant of the city.

This pact set a 120-day deadline for further agreement on conditions of the new buildings' construction. In a preview of what was to come, striking this particular part of the deal actually took more than three years, due to disagreements about edifice height and the degree of host country control over contractor work.

The US use of Soviet labor and materials was a "fatal error," Hyde later charged on the House floor. But it was the era of détente, and President Nixon and Secretary of State Henry A. Kissinger felt larger issues were at stake. In any case, Soviet workers would be cheaper, argued the State Department. Plus, the Soviets had built all other foreign embassies in Moscow. What could go wrong?

Further haggling over details pushed back the laying of the cornerstone for the new embassy building to September 1979. It was clear from the start that counterintelligence would be a challenge, as the KGB maneuvered for ways to implant listening devices. At the time, US intelligence services thought they could neutralize any bugs they might find. This was overly optimistic, according to a 1987 report from the Senate Select Committee on Intelligence.

"Unlike the Soviets ... the United States did not employ a systematic, stringent security program to detect and prevent Soviet technical penetration efforts," judged the report.

For instance, Soviet officials overseeing the Mount Alto construction site in Washington routinely changed their blueprints without warning during the architectural bidding process, according to the Senate study. Their design plans were vague, with rooms identified as nothing more specific than "office space."

In contrast US blueprints identified office spaces by name, making the location of sensitive areas clear to the Soviet workers—and their overseers.

The Soviets would use only concrete poured on site. The US accepted precast concrete forms constructed off site with no American supervision.

The Soviets inspected all materials carefully and were willing to halt construction work if they had questions. The US inspection system was less stringent, and the construction schedule ruled.

RIA Novosti photo

Ambassador to Russia Robert Strauss (second from left) greets a USAF aircrew member in 1992. The year before, the Soviet KGB chief had turned over to Strauss details of how the USSR had bugged the US Embassy in Moscow.

Soviet officials used about 30 of their own personnel to oversee about 100 US workers in Washington, on average. The US used 20 to 30 Navy Seabees to watch upward of 800 Soviet workers in Moscow.

The Soviets used a badge identification system, maintained tight perimeter security, and installed multiple surveillance cameras. The US had perimeter sensors and closed circuit TV monitoring, but they were soon disabled due to various "mishaps," according to the Senate intelligence committee.

In sum, US counterintelligence was playing catch-up almost from the beginning of the Moscow embassy project.

"By and large, US countermeasures against Soviet technical penetration had to be directed against a huge prefabricated structure already in place," the Senate intelligence panel concluded.

By the early 1980s, some officials on President Reagan's National Security Council had become concerned about the hostile foreign intelligence threat in general, and about the security of the new Moscow embassy in particular, according to a National Security Agency report declassified in 2011.

So in 1982, the NSA sent a team of specialized electronic intelligence personnel to the USSR to check on the situation. They found a chancery "honeycombed with insecurities," according to the report, which is a partial history of NSA activity during the Cold War.

The NSA alerted the FBI, which conducted its own investigation and confirmed the seriousness of the situation. US intelligence and the FBI briefed Reagan on the matter.

"The State Department, already suspicious of NSA 'meddling' in embassy affairs, was reportedly unamused," reads the NSA report.

Some diplomats felt the Security Council's worries about embassy bugs were overblown. But in the end the evidence was too compelling.

On Aug. 17, 1985, the on-site US acting project director told the Soviet contractor to suspend all work on the new embassy office building. At the time it was 65 percent complete.

The rest of the US complex at the site, including residential and recreational buildings, was finished the following year, but the embassy itself remained undone, an expensive and very public white elephant. Many in Washington doubted that the US would ever be able to use the building for its intended purpose.

In May 1990, legendary entertainer Bob Hope hosted a show for US Embassy personnel on a grassy field in the middle of the new embassy complex. He got some of his biggest laughs from 300 or so assembled American expatriates with jokes about the plight of the unfinished building at the site.

"What a shame that this new US Embassy has to be destroyed because of all the listening devices in it," said Hope. "This place has so many bugs, it should be known as the roach motel."

Then there was this one: "I'm not saying this place is bugged," said Hope, "but I looked at myself in the bathroom mirror and said, 'Boy, what a handsome guy!' And the mirror said, 'That's funnier than any joke you'll tell today.'"

The audience played along. At one point, Brooke Shields stopped her act and told a director that she was hearing a strange sound. "Microwaves!" yelled some people in the crowd.

1991, the Soviet Union finally splintered, and the new Russian Federation rose in its place. In June 1992, Russia agreed to allow the US to finish the new embassy office building with a largely American workforce, using American materials, pursuant to an American design.

Two years later Congress granted final approval for use of $240 million of taxpayer funds for a Secure Chancery Facilities effort. Nicknamed "Top Hat," this involved demolishing the eight-story building to the sixth floor concrete slab and construction of four new floors, plus a penthouse.

Above: The completed US Embassy in Moscow. Below: Russia's new embassy in Washington, D.C. The Soviets employed a stringent security oversight system during the construction of their embassy. The US did not.

As Hope's comments show, at the time many in the US assumed the embassy was doomed. It was too riddled with bugs, and US counterintelligence would never be confident it had cleansed the place of them all. That was certainly the opinion of many in Congress. The Senate committee on intelligence, for instance, had recommended as early as 1987 that the building be torn down.

"The committee recognizes that demolishing an office building in which $23 million and the considerable energies of specialists in the field have been invested is a difficult and potentially controversial recommendation. However, failure to take action, even at this late date, would obligate further sizable expenditures in the future to no foreseeable gain," said a panel report at the time.

This conclusion, however, was not universal. Former Secretary of Defense James R. Schlesinger spent five months examining the situation at the request of Shultz, and he recommended demolishing only the top three of the building's eight stories. These would be replaced with new modular steel and perhaps a new annex to house the most sensitive embassy activities.

Top Hat

The 1972 construction agreement that allowed the Soviets to pour concrete off site, among other things, was the real problem.

"The prime party to blame is not the Soviets but ourselves. We have presented them with too much opportunity, too much temptation for them to resist," said Schlesinger at a 1987 press conference.

In retaliation for the bugging, the US prevented the USSR from fully occupying its new Mount Alto complex. Both sides blamed the other for the situation. Stalemate became the status quo.

Conditions for US diplomats working in Moscow had long been problematic, due to lack of space and continuing security concerns. They only deteriorated over time. The bowling alley was turned into a communications center, for example. Half the parking garage was turned into workspace. Pressed for space, and facing increased congressional pressure for budget discipline, the State Department decided that Schlesinger's partial demolition idea might work after all.

Bakatin's attempt to provide the United States with a map of the listening devices in its bugged shell of an embassy did not quite work out as he had planned. He had given Strauss the plans following discussions with Prime Minister Mikhail Gorbachev and other leaders of the Soviet Union, but the US was suspicious of his intentions, and hardliners in his own government accused him of treason for the action.

A few weeks after his meeting with Strauss, the Soviet Union fell apart and the KGB itself was dissolved, its functions folded into other security agencies of the new Russian state. Then, at the end of

The bottom, unsecured floors would be used for public functions and other low-security activities. The higher, secured floors would be for more sensitive work.

Contractors hired for the job had to have top secret clearance. Lead firm Zachry, Parsons, and Sundt did not have a public telephone number and required workers to sign secrecy oaths. Construction materials, furniture, and other equipment for the building were shipped from Finland into Russia, escorted by armed US guards.

New construction began in September 1997. The embassy finally opened in May 2000, after more than two decades of delays and at a cost to the US of more than $370 million. Its tortured 31-year history remains a lesson in US diplomatic and technical hubris and a reminder of a spy-versus-spy world that may (or may not) be long past.

In celebrating the occasion, then-Ambassador James F. Collins called the new building "one of the most challenging construction projects ever undertaken by the Department of State. It has been a task ... beset by the unexpected."

That was putting it mildly. ■

Peter Grier, a Washington, D.C., editor for the Christian Science Monitor, *is a longtime contributor to* Air Force *Magazine. His most recent articles, "CyberPatriot World" and "Aerospace, Robotics ... and Hip Hop," appeared in June.*

OUTSTANDING AIRMEN OF THE YEAR

SSGT. ANGELO C. BANKS
Pass & Registration Clerk, 81st Security Forces Squadron
81st Training Wing (Air Education and Training Command)
Keesler AFB, Miss.
Home of Record: Salina, Kan.

During deployment to Transit Center at Manas in Kyrgyzstan, Banks led a quick response fire team providing security for 90 sorties delivering vital cargo for Operation Enduring Freedom and trained Kyrgyz military members how to search vehicles for improvised explosive devices. Also supporting OEF, he led 19 flyaway security missions to 39 austere forward operating bases and spearheaded a vulnerability assessment footprint for air mobility protection. His home station efforts included streamlining base access registration for 25,000 technical school airmen; strengthening base defenses; and championing an Air Force Smart Operations for 21st Century initiative that led to an AETC "best practice" for an electronic entry authorization list system.

MSGT. ALAN M. BRADEN
Career Assistance Advisor, 88th Force Support Sq.
88th Air Base Wing (Air Force Materiel Command)
Wright-Patterson AFB, Ohio
Home of Record: Monroe, Mich.

Braden designed a Career Assistance Advisor Community of Practice program that provided training to 82 Career Assistance Advisors and became the Air Force's benchmark. He led 83 courses, visited 82 organizations, met with 432 airmen, and developed new professional development programs. He also drafted the CAA and First Term Airmen Center inspection program, which has been adopted by the functional manager for use across AFMC. He served as acting First Sergeant for eight months and squadron superintendent for 14 weeks. He created a deployed airman outreach program that attracted 101,000 website hits. He also supported Total Force efforts, addressing an Air National Guard leadership conference and planning an Air Force Reserve Command professional development seminar.

SSGT. CORY T. BRANHAM
Customer Support Supervisor, 366th Logistics Readiness Sq.
366th Fighter Wing (Air Combat Command)
Mountain Home AFB, Idaho
Home of Record: Shelby, Ohio

Air Combat Command designated Branham's reports program as a "best practice" after he coordinated with 25 units to manage 158 performance reports with on-time completion. He also took control of the expendable asset program, recovering 2,500 assets and returning more than $4 million to the Defense Department. During a 30-day absence of the NCOIC, Branham led the customer support section team and trained new staff members, providing a seamless transition for wing and group leadership. His organization of four Expeditionary Combat Support System courses and training of 55 wing points of contact laid the groundwork for Air Force-wide system implementation. He was cited as a superior performer during the first combined Unit Compliance Inspection/Logistics Compliance Assessment Program.

The Air Force Outstanding Airman program annually recognizes 12 enlisted members for superior leadership, job performance, community involvement, and personal achievements.

The program was initiated at the Air Force Association's 10th annual National Convention, held in New Orleans in 1956. The selection board comprises the Chief Master Sergeant of the Air Force and the command chief master sergeants from each USAF major command. The selections are reviewed by the Air Force Chief of Staff.

The 12 selectees are awarded the Outstanding Airman of the Year Ribbon with the bronze service star device and wear the Outstanding Airman badge for one year.

SRA. BRYENNA L. BROOKS

Aerospace Medical Services Technician, 2nd Medical Operations Sq.
2nd Bomb Wing (Air Force Global Strike Command)
Barksdale AFB, La.
Home of Record: Appleton, Wis.

Deployed for 205 days for Operation Enduring Freedom, Brooks provided direct medical support to the 101st Sustainment Brigade Troop Medical Clinic at Bagram Airfield, Afghanistan, and 13 forward operating bases. She also served as the sole convoy medic on 25 missions, providing 24-hour care to more than 1,000 troops. She was wounded during an RPG attack but kept treating other personnel. She earned a Combat Medic Badge and received an Army Commendation Medal. She also taught combat lifesaver classes for more than 1,000 soldiers, dedicated more than 80 hours toward expansion of the Troop Medical Clinic, was a key asset in the mass casualty plan rewrite, and assisted at the blood bank at the Afghan National Army hospital.

TSGT. BRANDON C. BRUNER

Vehicle Operator/Dispatcher, 1st Special Ops Logistics Readiness Sq.
1st Special Ops Wing (Air Force Special Operations Command)
Hurlburt Field, Fla.
Home of Record: Panama City, Fla.

While loggng 13,000 miles in the Iraq Joint Operations Area, Bruner led one convoy of 23 troops through a small-arms attack with no injuries. He received an Army Combat Infantry patch and a Bronze Star Medal. In all, he led 11 combat missions, trained 32 joint team members, certified six convoy positions, and qualified 312 airmen with the M-4 rifle, ensuring his 1,200-person battalion was combat ready. In Kuwait, he directed first-responder action following a three-car collision, assisting four casualties and receiving local leader praise. He also provided armed security for six recovery operations, ensuring minimal exposure of team members in insurgent hotbed areas. At home base, he filled a senior master sergeant position for four months, managing an "excellent" inspection rating with a short workforce.

SRA. MATTHEW J. BUTLER

Weather Forecaster, 15th Operational Weather Sq.
1st Weather Group (Air Force Weather Agency)
Scott AFB, Ill.
Home of Record: Colorado Springs, Colo.

Deployed for Operation New Dawn, he executed 400 forecasts to enable 5,500 flight hours and 40 combat convoys. He identified low-risk routes for 53 missions, enabling 30,000 tons of cargo to be airlifted to battlefield outposts. Executing 63 close air support briefings, he identified opportunities to ensure supplies were delivered to troops pinned down by enemy fire. When entrusted with a high-visibility resource protection role, he beat the forecasting accuracy standard by 22 percent. His timely forecasts of damaging hail, a blizzard, and mission-limiting winds to units of USAF, the Air National Guard, and Army enabled cost-saving preventive measures for high-value aircraft and weapons and life-saving measures for helicopter medical evacuation flights.

SMSGT. LAURA A. CALLAWAY
Physical Medicine/Emergency Dept. Supt., 60th Medical Operations Sq.
60th Air Mobility Wing (Air Mobility Command)
Travis AFB, Calif.
Home of Record: Ormond Beach, Fla.

Callaway led the Air Force's largest physical medicine and emergency departments and forged a clinical practicum, identified as a career field benchmark, with the University of California, Davis. She secured a multiyear contract to ensure on-site care for veterans, reducing diverted care by 30 percent and saving $500,000. She was the architect for a team program for an $8 million rehabilitation center. Her efforts during Operation Pacific Passage were instrumental in the safe evacuation of 2,600 people. She was the ramrod for USAF's largest civilian physical therapy training exchange program, chartering agreements with five universities, saving the Air Force $600,000. She also established a splint/amputee/inpatient care in-service program, increasing staff productivity by 30 percent.

SMSGT. EMILIO HERNANDEZ
Operations Flight Supt., 100th Civil Engineer Sq.
100th Air Refueling Wing (US Air Forces in Europe)
RAF Mildenhall, UK
Home of Record: Hialeah, Fla.

Hernandez led 52 people in 53 civil engineering projects at 163 forward operating bases in Afghanistan. He led the largest buildup of tactical operations centers in the Southwest Regional Command area, boosting command and control for the 2nd Marine Force. He orchestrated repairs for nine USMC aircraft hangars to support a vital ISR platform for Southwest Asia operations. He led an outside-the-wall mission to coordinate emergency repairs to Kandahar government buildings, including rewiring an electrical grid to sustain police station operations. He also oversaw the regional command's top civil project, upgrading the electrical grid for a dam to preserve water and power flow for 450,000 Afghans.

SRA. NICHOLAS A. HURT
Response Force Leader, 721st Security Forces Sq.
21st Space Wing (Air Force Space Command)
Cheyenne Mountain AFS, Colo.
Home of Record: Chino Valley, Ariz.

As part of a quick reaction team at Bagram Airfield, Afghanistan, Hurt disrupted an insurgent supply point by discovering a weapons cache and destroying 200 pounds of explosives. He also responded to 14 indirect fire attacks, clearing mission-critical zones without taking casualties or losing assets. He was the designated radio telephone operator for 38 outside-the-wire missions, gathering key intelligence and strengthening the coalition bond with host nationals. He was also the only airman first class to lead three 13-personnel squads for outside the wire presence/reconnaissance patrols. He responded to a severe head trauma injury, applying combat lifesaver skills to stabilize the victim, and provided emergency medical help to an ill Afghan child.

MSGT. SANDRA L. PLENTZAS
Chapel Operations Supt.
944th Fighter Wing (Air Force Reserve Command)
Luke AFB, Ariz.
Home of Record: Glendale, Ariz.

Plentzas leveraged the Headquarters Chaplain Total Force Initiative to integrate Active Duty and Air Reserve Component chaplain training and scheduling, maximizing Luke's ministry efforts for more than 2,000 airmen. By employing a spiritual needs assessment, she identified an increase in financial/relationship issues and developed a comprehensive airman fitness ministry plan in response. Volunteering to deploy, she was NCOIC of the largest chaplain team in the Southwest Asia area of responsibility, covering four sites in three countries and ministering to more than 18,000 troops. She also oversaw two ministry facility renovation projects, managed 54 religious programs per week, and was handpicked to fill a critical helping agency void in Saudi Arabia.

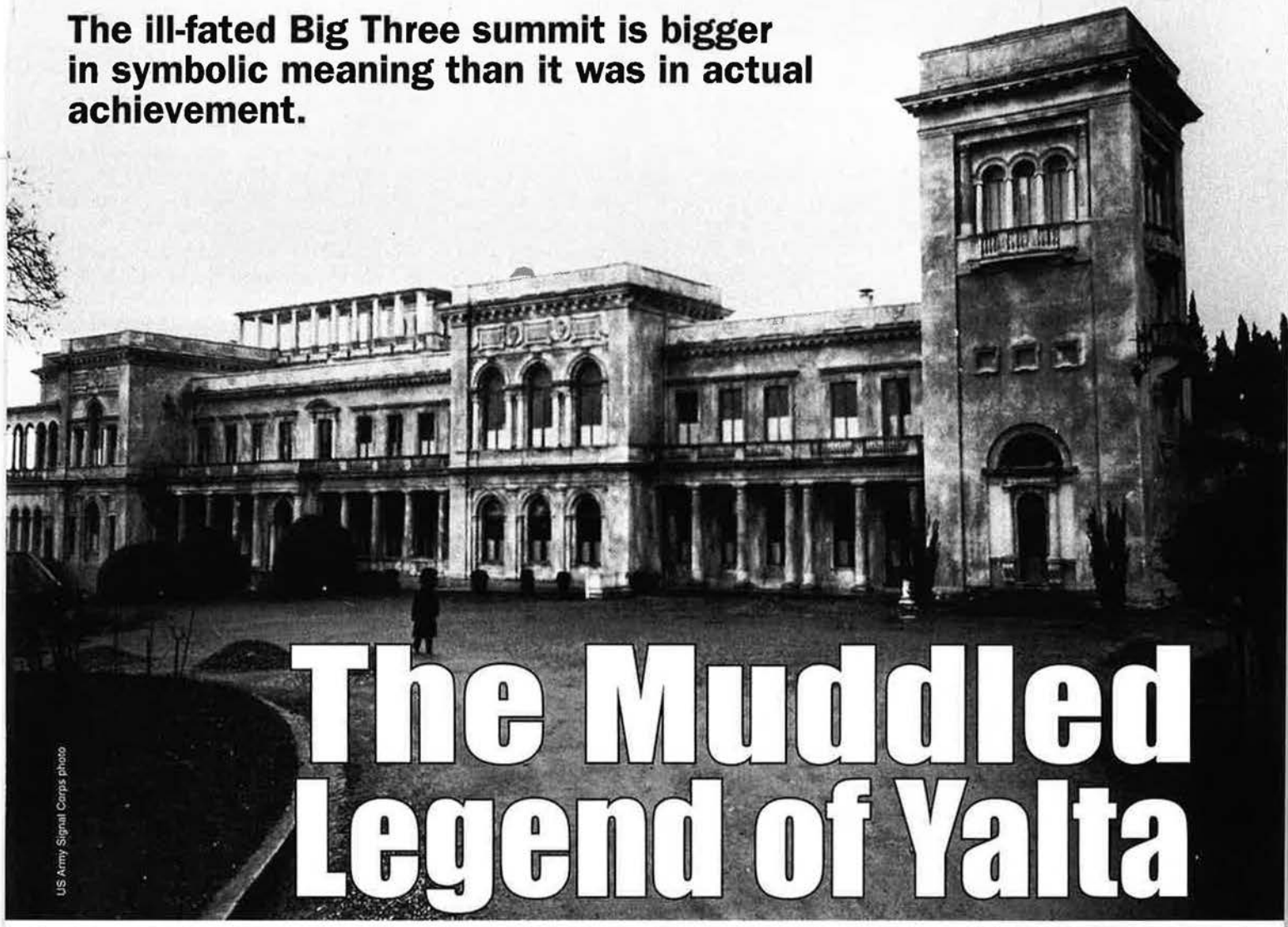
TSGT. MATTHEW G. STARK
EOD Quality Assurance Section Chief, 354th Civil Engineer Sq.
354th Fighter Wing (Pacific Air Forces)
Eielson AFB, Alaska
Home of Record: Amherst, N.Y.

Filling a senior NCO position for 80 days during combat operations, Stark led the most decorated explosive ordnance disposal flight in Iraq. He oversaw 27 operations with zero casualties during Operation New Dawn. He revamped the Ali Base weapons safety program, earning a command safety excellence award. He directed the Ali Base response to five rocket attacks. He directed responses to several vehicle-borne improvised explosive devices, coordinating joint service actions and neutralizing the threats. He also directed the response to destroy unexploded ordnance found on a Predator remotely piloted aircraft ramp, securing the Predator. Handpicked for a US President security team at the United Nations, he organized and conducted IED sweeps to ensure the security of 193 world leaders.

SMSGT. LUKE W. THOMPSON
Combat Controller, 125th Special Tactics Sq.
Air National Guard
Portland Arpt., Ore.
Home of Record: Battle Ground, Wash.

Thompson led an expeditionary special tactics squadron in Afghanistan, preparing 85 battlefield airmen to support two Combined Joint Special Operations Task Forces. He enabled 55 operators to conduct more than 1,200 combat missions, including capturing 241 high-value targets, and provided 50 combat controllers to conduct village stability operations behind enemy lines. His management also enabled joint terminal attack controllers to deliver 142 lethal air strikes to the enemy. He was the driving force in construction of a multimillion dollar special tactics operations center to enhance combat capability in theater. He was also the architect for the ANG special tactics growth plan and engineered the first ANG special tactics mobilization, providing 27 battlefield airmen to US Central Command.

The ill-fated Big Three summit is bigger in symbolic meaning than it was in actual achievement.



US Army Signal Corps photo

The Muddled Legend of Yalta

By John T. Correll

National Archives photo

The war in Europe was not over yet as 1945 began, but the outcome was not in doubt. The Germans were in retreat everywhere. The Allies were about to enter the Rhineland on the western front. To the east, the Soviets were within 400 miles of Berlin.

The prewar governments of most European nations were defunct, having fallen to invasion between 1938 and 1941. Borders had been moved and moved again. Industries, economies, and national infrastructures were in ruins. Refugees were a common sight, displaced by war and political turmoil. Germany itself would soon be in the hands of its former enemies.

The allied Big Three leaders—President Franklin D. Roosevelt of the United States, Prime Minister Winston Churchill of Great Britain, and Premier Joseph Stalin of the Soviet Union—met at Yalta in the Crimea on the coast of the Black Sea Feb. 4-11, 1945, to decide the postwar fate of Europe. In eight days, they agreed among themselves on new governments and boundaries for the defeated and liberated nations.

Yalta, initially heralded as a success, is mostly remembered today as a failure, but the legend is muddled. Some of the things attributed to the conference happened there. Some didn't. However, it is Yalta that is linked—sometimes fairly, sometimes not—to the beginning of the Cold War and the takeover of eastern and central Europe by the Soviet Union.

Stalin refused to travel, so war-torn Yalta in the Soviet Union was chosen as the venue. Churchill said, "If we had spent 10 years on research, we could not have come up with a worse place in the world."

Left top: Livadia Palace, where Roosevelt was lodged and most of the Yalta meetings took place. Left, bottom: The Big Three—l-r, Churchill, Roosevelt, and Stalin—pose for photos on a patio at Livadia.

Coffee? No, Vodka

Yalta offered a panoramic view of the Black Sea from the tip of the Crimean peninsula, not far from Balaclava, where the British Light Brigade charged into the "Valley of Death" against Russian guns in 1854. Yalta was an imperial resort in the days of the Romanovs, but the Germans did not leave much of it standing when they pulled out in April 1944. The Soviets managed to refurbish just enough to house the conference participants.

The Americans and British, some 700 of them, gathered in Malta and flew the rest of the way. The transports, mostly C-54 Skymasters, took off singly and made their 1,500-mile journey by night to avoid detection by scattered Luftwaffe interceptors still operating in the Balkans. The aircraft carrying Roosevelt and Churchill had P-38 fighter escorts. The others flew without protection. From the landing field at Saki, 85 miles from Yalta, the delegations traveled south to the "Russian Riviera" by a six-hour motorcade over rough roads.

Roosevelt and his party were lodged about five miles from the small town in the 116-room Livadia Palace, built in 1911 as a summer residence for Tsar Nicholas II and his family. More recently, it had been occupied by German Army Group South. Stalin's headquarters was just down the shore at Koreiz Palace, and the British were at Vorontsov Palace, some 12 miles farther along.

Amenities, especially restrooms, were in short supply. Everyone except the most senior individuals lined up to wait their turn. In a rare concession to luxury, the Russians brought a double bed down from Moscow for Churchill, who liked to work in bed and spread out his papers.

Cabbage soup was served every day for lunch. For breakfast there was Cream of Wheat and butter spiced with garlic. One morning, Adm. William D. Leahy, Roosevelt's Chief of Staff, asked for egg, toast, and coffee. Fifteen minutes later, the waiter brought caviar, ham, smoked fish, and vodka.

The American delegation included senior administration officials and military leaders. The new Secretary of State, Edward R. Stettinius Jr., was a lightweight on foreign policy but was offset by the presence of W. Averell Harriman, the

RIA Novosti photo

German troops, such as those pictured here in Crimea after being captured by the Russians in 1944, left much of the former Tzarist resort Yalta in ruins.

RIA Novosti photo

A Russian artillery crew in Poland in 1945. A USSR puppet government retained control of Poland after the war, despite Stalin's promises at Yalta of free elections.

able US ambassador to the Soviet Union. Alger Hiss, a Soviet agent embedded in the State Department, was also there, but it does not appear he did any damage at Yalta. Hiss reported through Soviet military intelligence channels but his keepers were not particularly interested in the agenda of the conference.

Churchill led a strong British team anchored by his friend and longtime colleague, Foreign Secretary R. Anthony Eden. Stalin's right hand man at Yalta was his protégé, V. M. Molotov, the Foreign Minister.

At Stalin's initiative, conference sessions were held at Livadia for the convenience of Roosevelt, who was in a wheelchair. The plenary, or main sessions, always chaired by Roosevelt, began around 4 p.m. and ran until the early evenings. Diplomatic and military members of the delegations held their own meetings earlier in the day.

The Yalta conference was not paperwork intensive. There was no official record. Each of the nations kept their own notes and contributed to a summary joint communiqué at the end. The looseness of the plenary sessions suited Roosevelt and Churchill. Both of them liked to talk and often improvised as they went along.

At Yalta, Stalin ran rings around them.

At 63, Roosevelt was the youngest of the Big Three. Ravages of chronic illness made him look older and he had two months left to live. Despite his frailty, his mental capacity at Yalta was not impaired. His political style was intuitive and personal. He saw the Soviet Union as an ally rather than a potential threat. Despite cautions from Harriman, he was inclined to trust Stalin.

The Atlantic Charter

Like many Americans, Roosevelt had a distaste for "spheres of influence," the 19th century practice in which strong nations established domination—if not outright rule—over their weaker neighbors. He was committed to the principle of self-determination and looked forward to the breakup of the European colonial empires.

Churchill, 70, had led Britain through the darkest days of the war. By 1945, British power was in decline relative to that of the United States, which had more than twice as many forces engaged and had assumed the leadership position previously held by the British. Churchill understood, but he did not like it.

He had joined Roosevelt in 1941 in proclaiming the Atlantic Charter, which promised "the right of all peoples to choose the form of government under which they will live."

At the time, however, Churchill was seeking to induce the United States to enter the war. He did not regard the principle of self-determination as applying to colonies of the British Empire.

Unlike Roosevelt, Churchill did believe in spheres of influence. He and Stalin met bilaterally in Moscow in October 1944 and settled on a division of influence in the Balkans. By a formula proposed by Churchill, Britain got predominance in Greece—traditionally a British sphere of influence—in exchange for Soviet hegemony in Rumania and Bulgaria. The Russians did not interfere as British troops disarmed pro-communist forces in Greece and installed a government favorable to Britain.

At Yalta, Churchill wanted to provide for a postwar balance of power in Europe, offsetting Soviet expansion. An independent Poland, if it could be achieved, would be of enormous value. With US troops expected to go home soon after the victory, Churchill also sought to strengthen France to help with defense of the west.

Stalin, 66, felt that the Soviet Union had carried the war in Europe without much help from the Western Allies, who did not open a second front until

D-Day in 1944. He saw no reason to negotiate about territory the Red Army had taken and now held. From Stalin's perspective, freedom for his neighbors was a security risk. Germany had twice invaded the Soviet Union through Poland. Self-determination for eastern Europe was not part of Stalin's plan.

The Americans and the British had already revealed they would not risk the cohesion of the alliance for the sake of small nations. At the first Big Three meeting at Teheran in 1943, Roosevelt and Churchill had agreed that Stalin could keep the Baltic states of Lithuania, Latvia, and Estonia when they were recaptured from the Germans.

Roosevelt's Priorities

Roosevelt came to Yalta with two main objectives: to persuade Stalin to enter the war against Japan and to secure Soviet support and participation for the United Nations, of which Roosevelt was the leading sponsor.

The United States had done most of the fighting in the south Pacific. British commitment was minimal and the Soviet Union was still party to a neutrality pact with Japan, signed in 1941 when Stalin needed to concentrate on Europe without worrying about his eastern border.

Roosevelt did not believe that a naval blockade and strategic bombardment by B-29s would force a Japanese surrender anytime soon. The atomic bomb in development at Los Alamos, N.M., was not a significant factor in his thinking. He assumed that defeat of Japan would ultimately require an invasion of the Japanese home islands.

To Roosevelt's pleasure, Stalin agreed at Yalta to a deal that had been discussed at Teheran and promised to declare war on Japan as soon as Germany was finished. In a secret protocol, Roosevelt agreed to a Soviet sphere of influence in the Far East. It included parts of the Sakhalin and Kurile Islands, access to the ice-free ports at Dairen and Port Arthur, and joint control with the Chinese of railroads in Manchuria.

The United Nations, as envisioned by Roosevelt, would vest executive power in "four policemen"—the US, USSR, Britain, and China—to guarantee world security. The concept was further defined at Dumbarton Oaks in Washington, D.C., in 1944.

At Yalta, Stalin agreed to virtually the entire US plan. He wanted separate membership for the Ukraine and Belorussia, which were, he argued, Soviet republics in their own right. Roosevelt agreed, although the extra memberships for the Soviet Union were not disclosed publicly. France was added as a fifth UN executive "policeman" and approved as a fourth occupation power in Germany.

Roosevelt was elated with the success of his two priorities and wanted to secure them from risk. He softened the United States position on issues of importance to Stalin, including the war reparations to be imposed on Germany and the new borders and government for Poland.

No Allied nation had suffered more grievously from German aggression than the Soviet Union. As the German armies fell back from Moscow, they destroyed anything they had left standing on the way in. Stalin proposed that the Allies extract $20 billion from Germany, with half of that going to the Soviet Union. The amount, he said, was equal to about 20 percent of the actual Soviet war losses.

Churchill urged restraint. The victors had not gained much from punitive reparations, more than Germany could pay, after World War I. The international economy was disrupted and the total collected in reparations, about a billion pounds, was possible only because of US loans to Germany. The United States did not want reparations in 1945, but saw no reason that Germans should have a postwar standard of living higher than that of the Soviet Union.

Roosevelt and Churchill eventually agreed to Stalin's numbers, with reparations to be collected in kind rather than in money. Consequently, the Soviets stripped their part of Germany—occupation zones had been established in 1944—of plants, factories, and rolling stock as well as "surplus" food and raw materials. Additional reparations were taken in forced labor.

The Agony of Poland

"Poland had been the most urgent reason for the Yalta conference," Churchill said. It was discussed at seven of the eight plenary sessions, but several of the critical decisions were already made.

Under the Molotov-Ribbentrop pact of 1939, Hitler and Stalin divided up Poland with the USSR taking the eastern third. Yalta confirmed the Allied agreement at Teheran that the Soviets would keep the part of Poland seized in 1939 and that the Poles would be compensated by the addition of conquered German territory in the west.

The net effect was to shift Poland more than 100 miles westward. Fixing the new German-Polish border was deferred, and the border was not set until the final Big Three meeting at Potsdam in 1945.

Two groups of Poles were competing for postwar control. The government in exile group operated from London and was supported by the British. The Soviets supported the "Lublin Poles," so called for the city in eastern Poland where they began.

The Lublin Poles had gained considerable advantage in 1944 when the Polish Home Army in Warsaw, loyal to the government in exile in London, was destroyed by the Germans while the Red Army, approaching from the east, halted in place and offered no help. The uprising lasted 43 days, during which the Germans wiped out more than 200,000 members of the Polish resistance. When it was over and the Germans ousted, the Lublin Poles moved into Warsaw as the provisional government.

Stalin Shows His Hand

Churchill and Roosevelt managed to convince themselves that Stalin was open to the idea of a coalition government and free elections in Poland, even though he had given diplomatic recognition to the provisional regime in January 1945. According to Churchill, Stalin said elections could be held "within a month, unless there is some catastrophe on the front, which is improbable."

So satisfied were Roosevelt and Churchill with Stalin's indicated cooperation that they did not quibble about the wording of the joint communiqué, which stated, "The provisional government which is now functioning in Poland should therefore be reorganized on a broader democratic basis with the inclusion of democratic leaders from Poland itself and from Poles abroad." The provisional government was cited by name, but the government in exile in London was not. The communiqué also promised "free and unfettered elections as soon as possible." A Big Three commission, operating out of Moscow, would consult with the Poles on the reorganization.

The Americans put great stock in inspirational words on paper and Stalin was happy to oblige. The Yalta communiqué included a "Declaration on Liberated Europe," which recognized the Atlantic Charter and "the right of all peoples to choose the form of government under which they will live."

Returning home, Churchill and Roosevelt proclaimed Yalta to have been a great success. Churchill told the House of Commons that he believed "Marshal

President Roosevelt signs a bill in 1944. Although only 63 years old, his health was in steep decline. He died just two months after the Yalta conference.

Stalin and the Soviet leadership wish to live in honorable friendship and equality with the Western democracies."

In his address to Congress, Roosevelt said, "We have made a good start on the road to a world of peace." He cited the prospect of a "free, independent, and prosperous Polish state" as one of the achievements, and said the Yalta agreements should "spell the end" of the old system of spheres of influence.

Unfortunately, as Churchill later said, "our hopeful assumptions were soon to be falsified." There was no sign of elections in Poland. Using their control of the provisional government as a wedge, the Soviets blocked rival candidates from the deliberations of the new government and refused access to American and British observers.

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Stalin revealed his intentions in April, after the death of Roosevelt, in a letter to Churchill and US President Harry Truman. "The Soviet government cannot agree to the existence in Poland of a government hostile to it," Stalin said.

Enthusiasm for Yalta in Congress and the news media dropped with developments in Poland, and the uproar worsened when it was revealed that the Soviet Union had been given extra seats in the United Nations. However, there was not much that could be done about it, and in July, the United States and Britain recognized the pro-Soviet regime as the government of Poland.

On Aug. 6, the United States dropped the first atomic bomb on Hiroshima. The Soviet Union declared war on Japan Aug. 8, fully three months after Germany's surrender. A second atomic bomb, dropped on Nagasaki Aug. 9, brought on the Japanese surrender of Aug. 15. The Red Army swept across Manchuria, carrying away captives and loot, and securing the new Soviet holdings in the Far East. Soviet operations had no effect on the outcome of the war with Japan.

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The issue flared up anew in May 2007, when US President George W. Bush, en route to Moscow on the 60th anniversary of the defeat of Nazi Germany, denounced the results of the Yalta conference in a speech in Riga, Latvia.

"The agreement at Yalta followed in the unjust tradition of Munich and the Molotov-Ribbentrop Pact," Bush said. "Once again, when powerful governments negotiated, the freedom of small nations was somehow expendable. Yet this attempt to sacrifice freedom for the sake of stability left a continent divided and unstable. The captivity of millions in Central and Eastern Europe will be remembered as one of the greatest wrongs of history."

Back in the United States, liberal historians and Roosevelt loyalists counterattacked furiously. Jacob Heilbrunn of the *Los Angeles Times* called it "cheap historical revisionism" and a "slander against Roosevelt." Historian Robert Dallek of Boston University said, "This idea that Roosevelt and Churchill gave away Eastern Europe to the Soviets is nonsense." Cold War historian John Lewis Gaddis said, "If the Yalta conference had never taken place, the division of Europe into two great spheres of influence would still have happened."

For his part, Russian President Vladimir Putin said, "Our people not only defended their homeland but also liberated 11 countries of Europe."

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In the course of the Big Three conferences, Stalin got almost everything he might have hoped for—including western recognition that conferred legitimacy on his subjugation of Eastern Europe—and he got it at a bargain price. ■

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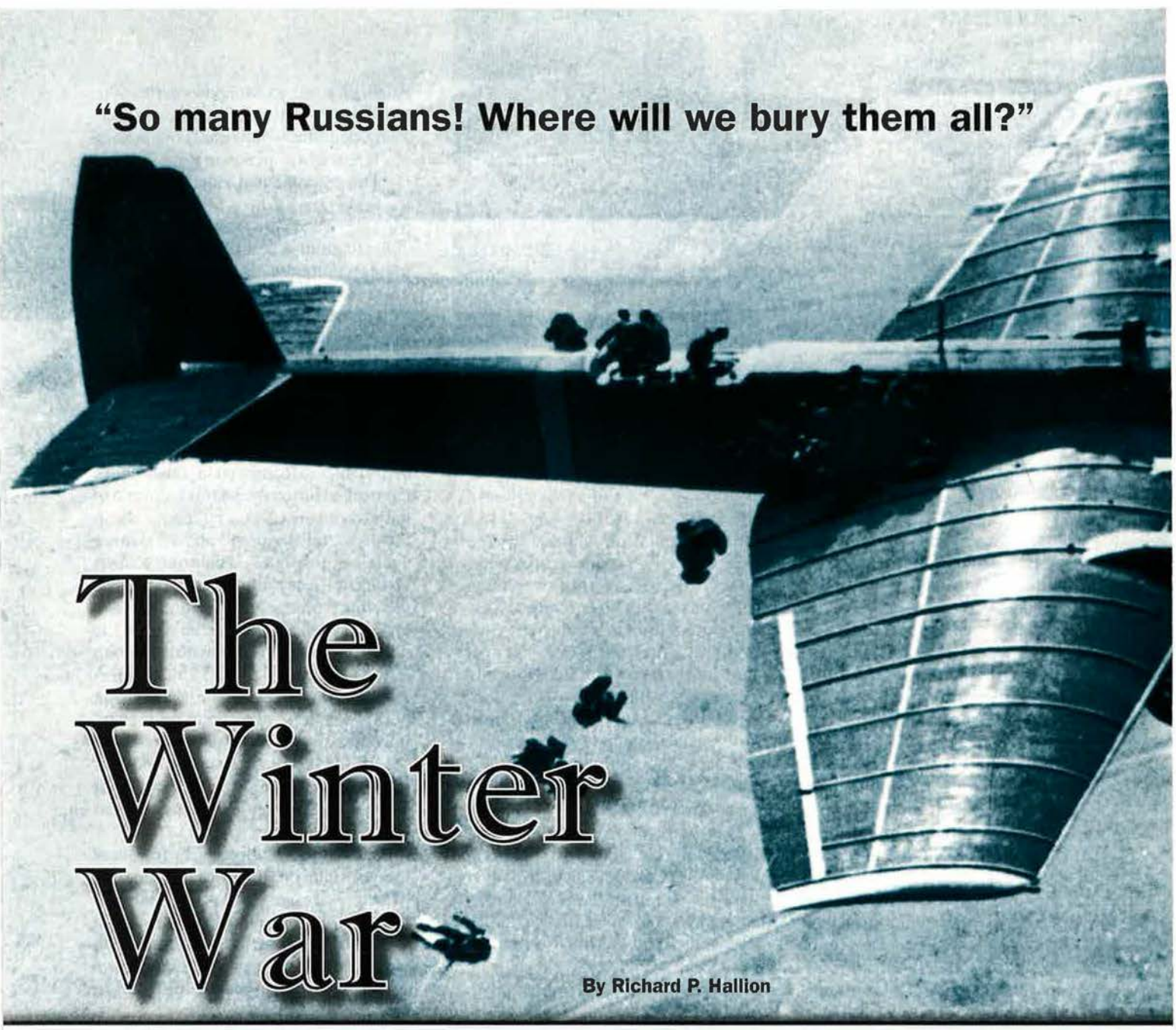

The Winter War

By Richard P. Hallion

At the end of the 1930s, the Soviet Union's Krasnaya Armiya (Red Army) embodied Stalin's military strength. It had five million troops, more than 300 divisions, a formidable reserve, and included the Voenno-Vozdushnye Sily (VVS), the Air Force. It seemed invincible, and Defense Commissar Kliment Voroshilov even said so to delegates at the 1939 Party Congress.

In August 1939, Stalin and Hitler executed a nonaggression pact essentially giving Stalin a free hand in the Baltic States and Bessarabia, the region around modern-day Moldova encompassing parts of Ukraine and Romania. Stalin wrung concessions from Estonia, Latvia, and Lithuania—a prelude to absorbing them later into the USSR—then set his gaze upon Finland.

Finland, a nation of 3.7 million confronting one more than 40 times larger, seemed doomed—particularly since years of political indifference, questionable acquisition priorities, and complacency had left its military undersized, underfunded, and poorly equipped.

A Drawn-out Slugfest

The Red Army had more than one million soldiers already deployed on its borders; Finland, prior to mobilization, had just 33,000. The VVS and Soviet Navy deployed 2,300 aircraft; the Finns had just 114.

Finnish troops had several months' worth of ammunition, some czarist-legacy artillery, and few tanks or heavy machine guns. Fortunately, they wielded an excellent Finnish-made submachine gun, giving them withering close-combat firepower.

Finland's "Mannerheim Line"—named after Field Marshal Carl Gustaf Mannerheim—defending the Karelian Isthmus was simply coils of barbed wire, some obstructions, and occasional machine gun nests connecting lakes and marshes. As its namesake soberly reflected, "The Mannerheim Line is the Finnish soldier standing in the snow."

Yet the fiercely patriotic Finns refused to give in. "So many Russians! Where will we bury them all?" one soldier quipped. His jest soon proved grimly prophetic.

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Soviet paratroopers tumble out of a Tupolev TB-3. Finland shot down at least one of the transport-bomber aircraft early in the war, along with dozens of other bombers.

Photo courtesy of Air Force Historical Research Agency, via Richard P. Hallion

Staff map by Zaur Eylanbekov

Sweden. The Soviet Navy prowled the coast. Aloft, VVS fighters and bombers struck at ports, cities, and installations.

But the offensive quickly degenerated into a drawn-out slugfest, with the thrust into central Finland ending in a grim landscape of abandoned vehicles and frozen, snow-covered corpses. Everywhere white-clad Finnish snipers took a deadly toll, as did ski troops, attacking swiftly out of the woods with submachine guns, grenades, and tank-destroying Molotov cocktails. Stalin's Navy suffered from coastal artillery, its landing attempts repulsed.

But nowhere did the Finns fight more tenaciously than in the air.

Finland established an air service in 1918, when a group of adventurers joined its fight against the Bolsheviks. One of them, Sweden's Eric von Rosen, donated an airplane marked with his personal good luck symbol, a blue swastika. It became the official Finnish air emblem (but had no connection to the Nazis' later use of the symbol).

In 1928, the air service became the Ilmavoimat, the Air Force. But it was inadequately supported by the Army and Navy traditionalists who dominated the general staff and who selected Army- and maritime-centric leaders to run it. On the positive side, Finnish airmen became masters of making do, operating under rough conditions, even in the frozen tundra and wastes of the high Arctic. They developed portable shelters and heating for exposed aircraft; mobile logistical support to enable austere operations; and thorough unit-level maintenance.

In 1936 Finland purchased two squadrons of British Bristol Blenheim bombers and two more Dutch Fokker D.XXI fighters. But it needed more fighters. The Finnish Air Chief was Jarl F. Lundqvist, an artillery officer turned air commander. His predilection for bombers and maritime patrol constrained Finnish fighter modernization at a time when world fighter design was evolving rapidly.

Frustrated fighter advocates saw numerous opportunities missed to secure better, more advanced, aircraft that, in retrospect, could have dramatically affected the Winter War.

Thus, in 1940, the obsolete Fokkers constituted the front line of Finnish air defense, even though they only had an armament of four 7.9 mm machine guns and a maximum speed of just 286 mph. Still, they were fast enough to intercept most bombers and were

Photo courtesy of Mikko Veijalainen, Military Aviation Museum of Central Finland, via Richard P. Hallion

When the war began, Finland had 18 Bristol Blenheim light bombers, such as this one at Immola. Finland marked its military aircraft with blue swastikas, a good luck symbol. There was no connection to Nazi Germany's ubiquitous use of the ancient symbol.

potentially deadly opponents if flown by skilled pilots.

Finland's fighter pilots were superbly trained, thanks to Lt. Col. Richard Julius Lorentz and Capt. Gustaf Erik Magnusson. In the early 1930s, Lorentz commanded Lentolaivue 24 (LeLv 24), Finland's premier fighter squadron. It was a time when his pilots took pride in flying a tight three-ship Royal Air Force-inspired V-shaped arrowhead. But Lorentz realized it limited effectiveness and increased vulnerability.

Setting the Stage for Defense

Instead, he made an element of two fighters, leader and wingman, the basic formation. He stressed mutual protection, gunnery, use of radio in aircraft and ground observer networks, and exploiting signals intelligence. His initiatives created a crude command and control system, with radar being unavailable to Finland at the time of the Winter War. As well, he encapsulated his thinking in an air war manual issued in 1939.

"Eka" Magnusson, one of Lorentz's flight commanders, was so interested in tactics that he traveled at his own expense to fly with France's l'Armée de l'Air. He returned impressed by its use of gun cameras for analysis and by the extensive critique following each training mission.

In 1938, now himself commanding LeLv 24, he visited Germany. Magnusson returned convinced Europe was at best a year away from war. He exercised LeLv 24 hard, emphasizing tactics, marksmanship, and maintenance. He advocated beam and stern attacks,

Col. Richard Lorentz (above) and Maj. Gustaf Magnusson (right) readied and trained a cadre of superb Finnish pilots who fought tenaciously in the air despite being greatly outnumbered.

deflection shooting, and firing at short range, targeting gunners first, and then engines and pilots.

Magnusson pitted his Fokkers against each other and against older but more nimble Bristol Bulldog biplanes. It was excellent preparation: The Fokker pilots learned not to attempt turning fights against biplanes such as the Polikarpov I-15bis and I-153.

In the fall of 1939, as Soviet reconnaissance incursions increased, Lorentz (newly appointed as commander of fighters) dispersed his aircraft. Teams prepared caches of supplies and ammunition and loaded trucks with spare parts, tools, and other necessities.

"Our esprit de corps was high despite the fact that we would be up against heavy odds," ace Ilmari Juutilainen recalled later. "We were ready."

Russia's Air Force outnumbered Finland's by 20 to one. The Soviet Union deployed 2,318 aircraft, including 1,044 fighters and 855 bombers. The Soviets had 395 others for strategic bombing, paratroop insertion, reconnaissance, artillery observation, and maritime patrol. In contrast, Finland's 114 aircraft included 42 Fokkers, 15 older Bulldogs, and 18 Blenheims.

Photo courtesy of George Mellinger Collection, via Richard P. Hallion

A Polikarpov I-15bis sports a "For Stalin!" slogan on its flank. The biplanes were deadly foes in turning fights, but the Finns knew how to avoid that sort of battle.

On Nov. 30, amidst bad weather that shielded Stalin's airmen from Finnish interception, eight bombers set out to raid port and oil storage facilities near Helsinki. But they missed their targets and instead dropped bombs across the city, killing almost 100 Finns—and triggering international outrage.

The next day, when more returned, they ran into a swarm of Fokkers led by Magnusson. The angry Finns swiftly shot down 11 Soviet bombers, one falling before Magnusson's own guns.

That encounter established a pattern for the subsequent air war. Finnish pilots focused on destroying bombers, engaging fighters only when necessary or when defending their own bomber and reconnaissance aircraft.

On Dec. 19, LeLv 24's pilots shot down 12 bombers, one pilot recalling, "Everything went exactly like training." On Dec. 23, they destroyed six bombers and two fighters, at the cost of one Fokker lost—its pilot survived.

LeLv 24 ended the year having shot down 54 aircraft for the price of one Fokker.

On Jan. 6, 17 Ilyushin DB-3 bombers flew across the Gulf of Finland from Estonia, but signals intelligence had alerted the Finns of the impending raid. Thus, near Utti, the second wave of eight encountered a Fokker piloted by 1st Lt. Per-Erik Sovelius, who shot one bomber down.

The remainder were attacked by 1st Lt. Jorma Sarvanto. In just four minutes, Sarvanto shot down six. The seventh Soviet bomber then fell to Sovelius, who caught it as it crossed the coast.

On Jan. 17, the Finns intercepted 25 Tupolev SBs over Karelia, shooting down nine and damaging several others. Three days later, they shot down a further nine, at the cost of one Fokker and pilot lost to a pair of I-16s.

Altogether, in the month of January 1940, Finland's Fokkers shot down 34 Soviet aircraft, primarily bombers.

A Brutal Cold Winter

Throughout the war, Lorentz and Magnusson repeatedly stressed attacking bombers, reconnaissance, and artillery spotters. Over time, as the threat of Soviet fighters increased, the Finns refined their tactics further, so that once a bomber formation was located, dispersed radio-directed fighters would "swarm" and attack in great numbers, destroying as many as possible before returning to dispersed bases.

The Finns constantly shifted detachments among remote sites with tamped-down snow runways. They operated off frozen lakes using skis instead of wheels. As the winter of 1939-40 was brutally cold, maintenance was a nightmare. Mechanics risked frostbite and even used blowtorches to keep tools warm.

Accidents caused by fatigue—for pilots flew up to eight sorties each day—constituted as much a danger as Soviet fighters and anti-aircraft fire. By the end of January, LeLv 24 had only 28 mission-capable Fokkers left.

Fortunately, diplomatic efforts to secure additional airplanes were now bearing fruit. Arriving aircraft were assembled in Sweden, and a total of 116 aircraft were readied by the end of March.

Britain sent 30 Gloster Gladiator biplanes, the French supplied 30 Morane-Saulnier MS 406 monoplanes, and South Africa donated 29 Gauntlets (the Gladiator's predecessor).

Finland ordered other fighters, including 35 Italian Fiat G.50 monoplanes (32 of them delivered before war's end), 44 American Brewster B-239s (an export version of the US Navy's F2A-1, though only a few had been delivered before hostilities ceased), and a dozen British Hawker Hurricanes, 10 of which arrived, though too late to participate in the campaign.

The Moranes and Fiats, with generally similar performance to the Fokkers, proved equally deadly against the Soviet bombers beginning in February 1940.

Many foreigners volunteered for Finnish military service, but as the Finns were highly selective, few actually flew. The only organized foreign air unit was the Swedish volunteer squadron, Flygflottilj

LeLv 24 pilots—four shown here with a Fokker D.XXI—claimed 120 air-to-air victories. Though obsolete, the Fokker racked up a 16-to-one kill ratio.

Photo courtesy of Mikko Veijalainen, Military Aviation Museum at Central Finland, via Richard P. Hallion

19 (F19), commanded by Maj. Hugo Beckhammar. Made up of aviators and support personnel from the Flygvapnet (the Swedish Air Force), it consisted of a dozen Gloster Gladiator biplane fighters and four two-seat Hawker Hart biplane dive bombers.

F19 entered combat in early January, completing 464 sorties over 62 days, losing five aircraft in combat and one in an accident. In turn, its pilots destroyed eight (and possibly 12) Soviet aircraft, including a four-engine Tupolev TB-3 shot down outside Kemijärvi on March 10. The F19's presence freed the Finnish Air Force to concentrate its efforts over the Karelian Isthmus.

In January, Stalin replaced Voroshilov with Semyon K. Timoshenko, a cavalry commander and systematic planner. He instituted an all-forces training program while building up his artillery and armor. Then, in February, he unleashed an assault.

Mannerheim's doughty troops repelled this latest Soviet assault as well, though at great cost.

Finnish Air Force fighters now turned to ground attack, strafing troops and vehicles trying to cross Lake Ladoga and, later, Viipuri Bay and other iced-over waterways. From the air, each column looked like "a long black snake," Capt. Eino Luukkanen recalled. "We could not have been offered a better target." One strike repulsed a battalion-sized column, leaving half its vehicles and personnel dead on the ice.

Patrolling Soviet fighters increased the risk to Finnish airmen as well. "We grimly went in at extremely low level and emptied our guns," Chief Warrant Officer Eino Ilmari Juutilainen recalled, "then it was save yourself against the enemy fighters who would roar down from overhead. ... Those ground attacks were the most miserable missions we flew during the Winter War."

Timoshenko's strategy and resources eventually succeeded. Massed artillery fire, followed by armor and infantry assaults breached the Mannerheim Line on Feb. 12. Still, Finnish discipline held, and its soldiers withdrew in good order to a secondary defense line. Though France and Britain offered assurances of imminent aid, the Finns realized both countries were more concerned about their own war with Germany.

The Finns also knew other European states were reluctant to risk widening the war, one that might even see Germany entering on the side of its erstwhile ally, the Soviet Union.

An Uneasy Peace

In early March, Sweden announced it would not permit any foreign forces to cross its territory to fight in Finland. Messages from Mannerheim and other front commanders grew increasingly pessimistic.

On March 6, after much debate, a Finnish delegation left for Stockholm, then flew on to Moscow, arriving the next day. There, on March 12, Finnish and Russian conferees signed a treaty of peace. The next day, at 11 a.m. Helsinki time, an uneasy peace returned, beginning, as Finnish journalist and diplomat Max Jakobson recalled, a "day of quiet, bitter mourning."

The Winter War cost Finland 68,480 casualties, including 24,923 dead or missing, and 43,557 wounded. Its casualties constituted nearly two percent of the nation's population. Finland lost 10 percent of its territory and the Karelian Isthmus, whose remaining inhabitants took refuge in Finland rather than remain in place as Soviet subjects.

Still, Finland's ferocious defense saved it from having to form a puppet state and sharing the fate of Lithuania, Latvia, and Estonia. The Soviet empire eventually absorbed each of those once-independent nations. More than a million Baltic citizens vanished into the labor camps of the gulag, where most were shot or worked to death.

For Stalin, any satisfaction derived from conquering Finland was tempered by the Red Army's amateurish performance and extreme casualties. Soviet fatalities numbered 273,000—10 times more than Finland's—with thousands more wounded. The combined casualty total was likely a quarter of the 1.2 million Soviet soldiers deployed.

Asked what had been gained, one Soviet general replied, "We have won enough ground to bury our dead."

Stalin characteristically reacted in Draconian fashion, wasting little time in assigning blame and punishments.

He considered the 5,648 Soviet soldiers and airmen taken prisoner by the Finns to be traitors. When they returned, they immediately passed from the hu-

France supplied Finland with 30 Morane-Saulnier MS 406 aircraft, such as this one, to help the war effort against the Soviets, but France was clearly more concerned with its own war, against Nazi Germany.

Photo courtesy of Mikko Veijalainen, Military Aviation Museum of Central Finland, via Richard P. Hallion

mane captivity of the Finns into gulags. Few, if any, survived.

In March, Voroshilov was forced, in Stalin's words, to "acknowledge the bankruptcy of his leadership." Yakov Shmushkevich, chief of the VVS was arrested and shot, together with other airmen and ground commanders.

But Stalin himself bore the greatest responsibility for the Red Army's miserable performance. His purges had claimed the cream of its officer corps and almost all its senior leadership, resulting in the elevation of inexperienced and ill-trained subordinates. Coupled with organizational and training weaknesses, this meant the Red Army was a hollow force, vulnerable to a better trained and focused opponent.

This particularly held true for the VVS. While its airmen had fought over Spain, China, and Manchuria, they had little experience in combined arms warfare or following established doctrine and tactics. Many of the most experienced had been purged as well, robbing the VVS of the benefits of their knowledge.

Though the Winter War gave the Red Army and the VVS an inkling of vital changes each had to make, both still possessed serious deficiencies when, slightly over a year later, Germany invaded the USSR.

Finland's Air Force ended the Winter War stronger than it had been at its outbreak. It was now combat-proven, seasoned, and confident. Finnish airmen had acquitted themselves with obvious distinction, and that March, an American air attaché reported, "The accomplishments thus far of the Finnish pilots have been truly remarkable."

The Finns claimed 521 Soviet aircraft in the course of 5,963 sorties: 207 shot down air-to-air and another 314 falling to ground fire. Of these, Lorentz' fighters claimed 170, more than 80 percent of Soviet aircraft allegedly lost in air-to-air action. Of the 170, Magnusson's LeLv 24 claimed 120, a hundred of them (83 percent) bombers. Finnish fighter pilots frustrated the VVS' efforts to undertake systematic bombing operations, undoubtedly saving hundreds, and perhaps thousands, of lives—particularly civilians in various towns and cities who otherwise would have perished.

Standards of Performance

Though obsolescent, the Fokker D.XXI achieved a 16-to-one kill ratio, due to the courage, training, tactics, and marksmanship of its pilots. Ten Finnish pilots earned ace status, accounting for 68 bombers and fighters. Finland lost 62 aircraft, mostly bombers, reconnaissance, and artillery spotters.

The single worst engagment, from Finland's perspective, occurred Feb. 29. Due to intelligence failures, 40 Polikarpov fighters surprised and trapped a mix of Fokkers and Gladiators over Immola. In the multibogie furball that followed, VVS pilots shot down seven Finnish aircraft, while losing four of their own.

But this marginal victory constituted the apex of Soviet success. Stalin may have lost 900 aircraft, almost eight times the number Finland possessed at the war's outset.

In June 1941, Hitler abrogated the pact with the USSR, sending his Wehrmacht into Soviet-occupied Poland and across the Soviet frontier. Finland joined Germany as a co-belligerent, hoping to regain its lost territory. The "Continuation War" lasted through the summer of 1944, during which Finnish airmen again dominated the VVS.

Despite the vast power of the Red Army, which forced a settlement, the Finns again succeeded in retaining their independence, avoiding the postwar fate of Eastern Europe, though again they lost much territory. The Paris Peace Treaty of 1947 constrained the size of Finland's Air Force in the postwar era, though not its excellence.

Today the Finnish Air Force operates F-18 Hornets and BAE Hawks with advanced precision munitions. Its airmen exercise with the Nordic air forces, and those of other nations, including the United States.

If Finland's equipment has vastly changed, its standard of performance has not. Today as then, the Finnish Air Force punches well above its weight. ■

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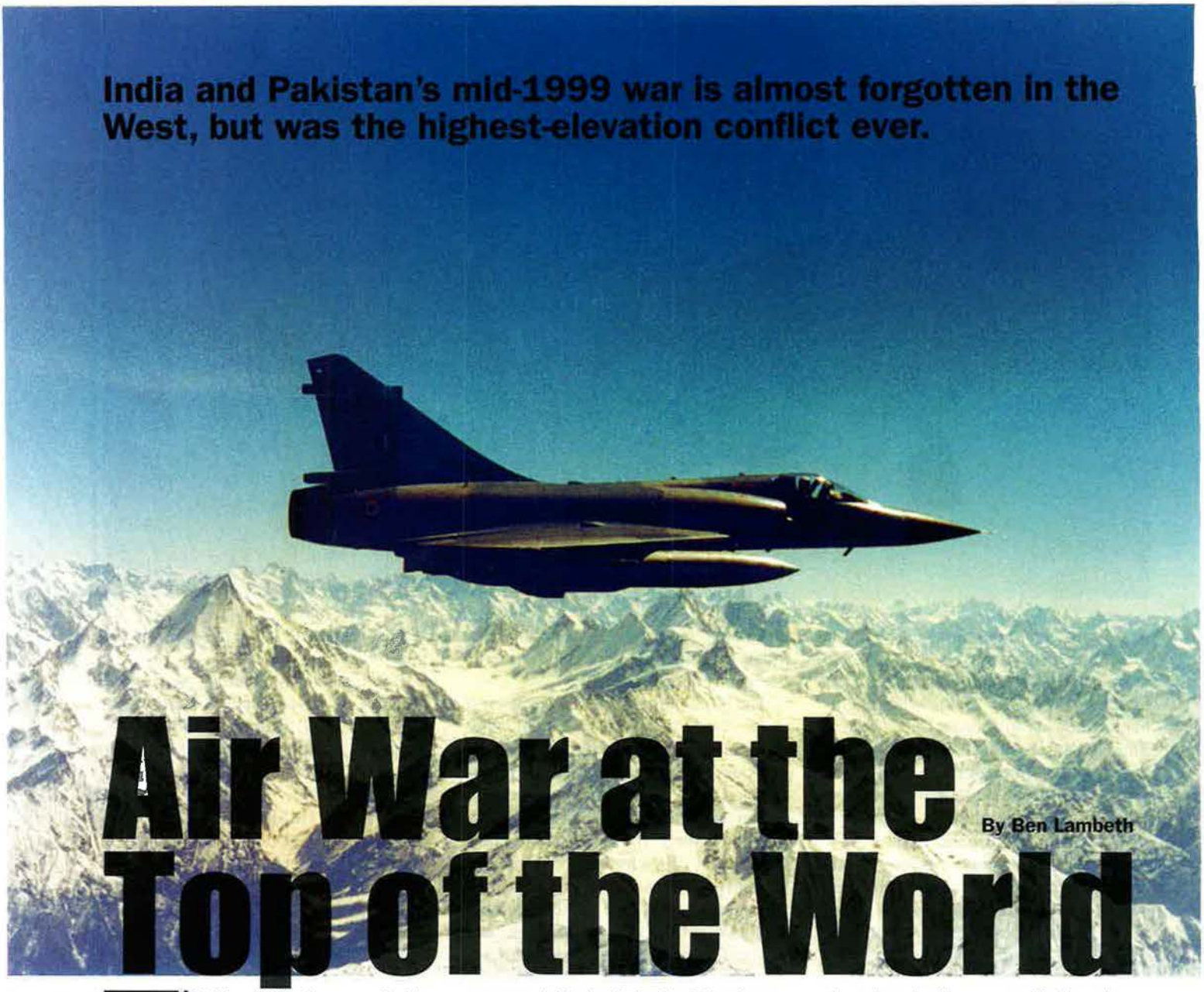
India and Pakistan's mid-1999 war is almost forgotten in the West, but was the highest-elevation conflict ever.



Air War at the Top of the World

By Ben Lambeth

The Kargil War between India and Pakistan, waged in the disputed and mountainous Kashmir region in mid-1999, rates as the highest-elevation conflict in air war history. The clash lasted 74 days and cost more than 1,000 killed and wounded on each side. Though a blank to most Westerners, the Indian Air Force (IAF) experience was a milestone, providing insights into uses of airpower in extremely demanding combat settings.

The Western profile of this war is low, receding to the vanishing point. It was pushed off the front pages by NATO's higher profile air war over Serbia, fought at the same time. Still, it bears closer examination.

The seeds of war were planted in March 1999, when units of the Pakistani Army's Northern Light Infantry (NLI) crossed the so-called line of control (LOC) into India's portion of contested Kashmir in the Himalayas. From this new vantage point, Pakistani troops overlooked the Indian town of Kargil.

The LOC that separates the Indian- and Pakistani-held portions of Kashmir bisects some of the world's highest and most forbidding terrain. Because of dangerous weather, the Indian Army, in harsh winter months, routinely vacated inhospitable forward outposts that it normally manned.

Too Much Jawboning

When the Indians withdrew in the late winter months of 1999, however, Pakistan mounted an infiltration that sought to make the most of this opportunity.

As many as 1,000 troops of the NLI, moving by foot and helicopter, crossed the line. It was a stealthy success; the NLI troops managed to unobtrusively establish a new forward line six miles deep into Indian-controlled territory. On May 3, they were finally spotted by local shepherds.

Then, in the first week of May 1999, the Indian Army units that had formerly manned the outposts began returning to their stations. It was at that point that they came face-to-face with the fact that NLI troops had moved in and were prepared to fight.

At first, embarrassed Indian Army leaders were bound and determined to turn back the Pakistan incursion all by themselves. Thus commenced several exchanges of fire. However, there was no change in the situation on the ground.

Checked for days by Pakistani forces, Indian Army leaders on May 11 finally approached the IAF for *help. The Indian Army wanted the IAF to provide close air support with its armed helicopters. The IAF responded* that the high terrain over which the

Left: An Indian Air Force Mirage 2000H on patrol over the Himalayas. An Mi-17 helicopter, like the one pictured here, was shot down on the war's third day by a Pakistani shoulder-fired Stinger surface-to-air missile. The Indian Air Force was reluctant to introduce the helicopters to the fight, and insisted fixed wing aircraft would better serve the Army. Below: Pakistani Army members look over the wreckage of an Indian MiG-21 shot down over Kashmir.

Photo by Sharad Saxena/The India Today Group/Getty Images

The Indian Army used heavy Bofors howitzers in the high-altitude fight.

requested support was to be provided lay well above the effective operating envelope of its attack helicopters and that the use of fixed wing fighters would be required if the Army really needed assistance.

The Army for days persisted in demanding use of attack helicopters alone. The IAF no less adamantly declined to accede to that demand.

Because of this back and forth jawboning, some later complained the IAF had refused to cooperate and, in the end, was forced into the campaign against its will.

In fact, the IAF at the early date of May 10 had begun conducting reconnaissance missions over the Kargil heights. It also at that time forward deployed IAF combat aircraft in numbers sufficient to support any likely tasking, established a rudimentary air defense control arrangement, and began practicing air-to-ground weapon deliveries at Himalayan elevations.

On May 12, as interservice deliberations to establish an agreed campaign plan continued, an IAF helicopter was fired upon near the most forward based of the NLI positions. That hostile act was enough to prompt the IAF to place Western Air Command on alert and establish quick-reaction aircraft launch facilities at the IAF's most northern operating locations.

The next day, IAF Jaguar fighter aircraft launched on a tactical reconnaissance mission to gather target information. At the same time, the IAF established a direction center for the tactical control of combat aircraft; it was located at Leh, the IAF's highest-elevation airfield.

Concurrently, Canberra PR57 and MiG-25R reconnaissance aircraft were pressed into service, and electronic intelligence missions started in the vicinity of the NLI intrusion.

The IAF sent a Canberra to conduct reconnaissance of the area overlooking Kargil. It descended to 22,000 feet and entered a racetrack pattern that put the aircraft as low as 4,000 feet above the ridgelines. The Canberra was hit in its right engine by a Chinese-made Anza infrared surface-to-air missile. The Indian pilot brought the airplane in for a safe emergency landing.

On May 14, the IAF activated its air operations center for Kashmir and mobilized its fighter units in that sector for an all-out air counteroffensive. Such activities attested to the IAF's clear expectation that it would engage the intruders to the fullest once its final role was settled upon.

After much back and forth between the IAF and Indian Army over the character and extent of air support IAF would provide, the Army finally acceded to the IAF's insistence on using fixed wing fighters. This cleared the way for the air force to enter the fight.

In a key May 25 meeting chaired by Indian Prime Minister Atal B. Vajpayee, the Indian Army Chief outlined the seriousness of the situation and the need for the IAF to step in without further delay. At that, the Prime Minister said: "OK, get started tomorrow at dawn."

The Air Chief agreed that the IAF would attack only those Pakistani targets that were dug in on India's side of the line of control. However, he requested permission for his aircraft, in the course of its operations, to fly across the LOC. Vajpayee said no; there would be no crossing of the LOC.

With that rule of engagement firmly stipulated by the civilian leadership, the die was finally cast for full-scale IAF involvement. The stage was set for Operation Vijay (Hindi for "victory"), as the joint campaign was code-named.

Kinetic air operations began at 6:30 a.m. on May 26, three weeks after the infiltration into Indian-controlled territory was detected. The opening salvo comprised six attacks by MiG-21s, MiG-23s, and MiG-27s against NLI targets. It was the first time IAF pilots had dropped bombs in anger since its Vampire fighters destroyed Pakistani bunkers in the same Kargil area 28 years earlier, in the 1971 Indo-Pakistani War.

Pakistan chose to keep its F-16s out of the fight.

Deadly Lessons Learned Quickly

Nearly all targets attacked were on or near Himalayan ridgelines at elevations ranging from 16,000 to 18,000 feet. The stark backdrop of rocks and snow complicated target acquisition, already made difficult by the small size of the NLI positions in a vast and undifferentiated snow background. That unique terrain feature, as seen from a cockpit, inspired the code name given to the IAF's campaign—Operation Safed Sagar, or "White Sea."

In the second day of air operations, the IAF lost two fighters. One, a MiG-27, suffered engine failure while coming off

Staff map by Zaur Eyfanbekov

In March 1999, units of the Pakistani Army's Northern Light Infantry crossed the so-called line of control into India's portion of contested Kashmir in the Himalayas.

a target. After two unsuccessful attempts at an airstart, the pilot ejected, only to be captured. He was repatriated on June 3.

The second, a MiG-21, sustained an infrared SAM hit while its pilot was flying over the terrain at low level, assisting in the search for the downed MiG-27 pilot. Its pilot also ejected, but he was not as lucky as the first pilot. He was captured, then reportedly brutalized and executed.

On the third day of operations, an armed Mi-17 helicopter, introduced to the fight reluctantly by the IAF to placate India's Army leaders, was downed by a shoulder-fired SAM while providing low-level fire support. The crash killed all four crew members.

In conducting these early attacks, IAF officers quickly relearned what the Israelis had learned at great cost during the October 1973 War, when Egyptian and Syrian SAMs and anti-aircraft artillery had downed nearly a third of the Israeli Air Force's fighter inventory (102 aircraft in all) before Israel managed to pull out a victory in the war's latter stages.

Badly bloodied, the Indian Air Force called a halt to further use of armed helicopters and directed that future fighter attacks would be conducted from above the lethal envelopes of enemy man-portable SAMs. Afterward, not a single Indian fixed wing aircraft was lost to enemy fire.

Whenever ground attack operations were under way, Western Air Command put MiG-29s on combat air patrol stations to keep the Pakistani Air Force (PAF) out of the fray. Pakistan's F-16As typically maintained their CAP stations at a safe distance, 10 to 20 miles away from the line of control.

By the time air operations reached full swing, the IAF had forward deployed some 60 of its best fighters to support the campaign. As they awaited tasking, committed squadrons initiated special training aimed at better acclimating their pilots to night attacks under moonlit conditions. Such combat operations over high mountainous terrain at night had never before been attempted by the IAF.

Because of the rudimentary bomb sights on their MiG-21, MiG-23, and MiG-27 aircraft, IAF pilots typically achieved only limited effectiveness when attempting to provide close air support.

Accordingly, India's Air Chief decided on May 30, just four days into the campaign, to enlist Mirage 2000H fighters capable of delivering laser guided bombs. By June 12, the Mirages were ready to commence precision strike operations.

On June 17, the clash reached a turning point. A strike package of Mirage 2000Hs destroyed the NLI's main logistics camp with unguided 1,000-pound bombs delivered in high-angle dive attacks using the aircrafts' computer-assisted weapon aiming capability.

The war reached a second milestone on June 24, when an element of Mirage 2000Hs, in the IAF's first-ever combat use of LGBs, destroyed the NLI's command bunkers on Tiger Hill with two 1,000-pound Paveway II LGBs. In these attacks, the target was acquired through the Litening pod's electro-optical imaging sensor at about nine miles out, with weapons release occurring at a slant range of about five miles and the aircraft then turning away while continuing to mark the target with a laser spot.

On June 29, the Indian Army captured two vital posts on the high ridgelines. On July 2, it launched a massive attack. It finally recaptured the important NLI outpost on Tiger Hill on July 4, after an exhausting 11-hour battle in which the attackers climbed fixed ropes at night and in freezing rain to scale vertical mountain faces 1,000 feet high.

By July 26, Indian forces had reclaimed a majority of their seized outposts and driven NLI occupiers back to their own side of the LOC.

The IAF's contribution to Operation Vijay lasted two months. IAF fighters had flown more than 1,700 sorties, including about 40 at night during the campaign's last weeks. In the final tally, the Indian Army suffered 527 troops killed in action and 1,363 soldiers wounded. The NLI losses were not announced, but they were at least equal to India's.

The Indian Army and IAF were both key players in a joint campaign; it would be hard to select one as the pivotal force. From a simple weight-of-effort perspective, artillery was the main source of fire support. The Army fired more than 250,000 rounds. One assessment said that this sustained laydown of fire was the most intense seen anywhere since World War II.

In contrast to this "profligacy in the use of artillery in a carpet-bombing mode," as the campaign's air component commander later called it, the IAF dropped only around 500 bombs. Most were effective against their assigned targets.

Close air support was a source of frustration for the IAF. The small and well-concealed NLI positions in the Hi-

Photo via Ben Lambeth

Indian airmen arm a MiG-27 with heavy general-purpose bombs.

malayas were nothing like conventional targets that fighters typically engage in supporting friendly ground operations.

The IAF's CAS efforts were hampered by numerous constraints on their freedom of action. New Delhi's refusal to countenance crossings of the LOC was a limiting factor. Fighters were forced to use tactics featuring ingress and egress headings that were not optimal or, in many cases, even safe.

Man-portable SAMs used by Pakistan had a slant range sufficient to require the IAF's pilots to remain 6,000 to 8,000 feet above the ridgelines to remain safely outside their threat envelopes. This degraded weapon delivery accuracies.

At such extreme elevations, the IAF's munitions did not perform as they did at lower release altitudes. The reduced air temperature and density altered drag indices and other performance parameters that had never before been calculated for such conditions. Weapons did not guide as predicted. IAF pilots had to adapt through real-time improvisation.

The stark terrain folds tended to obscure the enemy from aerial observation and to mask the effects of bomb detonations, rendering even near misses all but ineffective. They further served to canalize aerial approaches to targets, dictating ingress and egress headings and, in the process, rendering IAF fighters more predictable and susceptible to ground fire.

NLI positions in deep ravines were often immune to effective attacks by pilots attempting dive deliveries when their LOC-driven roll-in points were not tactically ideal.

The IAF rode a steep learning curve as pilots adapted to unfamiliar conditions. MiG-21 pilots lacking sophisticated onboard avionics suites resorted to the use of stopwatches and Global Positioning System receivers to conduct night interdiction bombing.

Another example: The IAF took to choosing weapon impact points that would create avalanches over NLI supply lines.

The IAF pioneered what has since come to be called nontraditional intelligence, surveillance, and reconnaissance. It was the first to use electro-optical and infrared imaging targeting pods for high-resolution aerial reconnaissance.

The Kargil Experience

The IAF expended only two LGBs because it had so few in stock and because few targets merited use of such an important and costly munition. Still, even this limited use dramatically altered the campaign's dynamics.

After the successful LGB attacks, targeting pod imagery showed enemy troops abandoning their positions at the very sound of approaching fighters. Troop diaries later recovered by Indian Army units attested to the demoralization caused by the IAF's attacks, especially when precision munitions were introduced.

Much of the IAF's improved combat effectiveness over time resulted from replacing classic manual dive bombing by MiG-23s and MiG-27s with more accurate GPS-aided level bombing from safer altitudes. Once the Mirage 2000H was introduced, the accuracy of unguided bomb deliveries increased even further, thanks to the aircraft's much-improved onboard avionics suite.

A major joint-arena shortcoming highlighted by the Kargil experience was the total absence of candid communication between the Indian Army and IAF immediately following the initial detection of the NLI incursion. That failure was a remarkable foreshadowing of US Central Command's similarly flawed Operation Anaconda in Afghanistan three years later, in which the land component likewise sought to go it alone at first, with the air component having been brought in just in time to help ensure a satisfactory outcome in the end.

Once the Indian Army and IAF resolved their disagreements, harmony prevailed.

In the going-in front-line fighter balance, India enjoyed a marked 750-to-350 advantage over Pakistan. Pakistan's fleet of some 30 F-16s was greatly outclassed by the IAF's 145 high-performance aircraft (MiG-29s, Mirage 2000Hs, and Su-30s). That asymmetry may well have been decisive in keeping the PAF out of the fight.

However, Pakistan maintained the initiative for most of the Kargil War. Both the nature of the challenge the IAF faced in the Himalayan heights and the targeting requirements that ensued from it dictated a suboptimal use of India's air weapon.

The IAF's combat experience showed that innovation and adaptability under the stress of confining rules of engagement is a hallmark of modern airmanship. It attested to the fact that professionalism in campaign planning, presentation of forces, and accommodating to new and unique tactical challenges is scarcely a monopoly of more familiar Western air arms.

The experience demonstrated yet again that effective use of air-delivered firepower can generate success in a conflict that might otherwise have persisted indefinitely with less conclusive results. ■

Ben Lambeth is a senior fellow at the Center for Strategic and Budgetary Assessments. He is the author of The Transformation of American Air Power *(2000), which won the Air Force Association's Gil Robb Wilson Award for Arts and Letters in 2001. His most recent article for* Air Force *Magazine was "Behind Israel's 2006 War with Hezbollah," in September 2011.*

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By June Lee, Editorial Associate

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Air Component Commander
JB Pearl Harbor-Hickam, Hawaii

US Southern Command

Gen. Douglas M. Fraser
Commander, US Southern Command
Miami

US Strategic Command

Gen. C. Robert Kehler
Commander
Offutt AFB, Neb.

US Transportation Command

Gen. William M. Fraser III
Commander
Scott AFB, Ill.

AFA Almanac

By Frances McKenney, Assistant Managing Editor

Chapters of the Year

Year	Recipient(s)
1953	San Francisco Chapter
1954	Santa Monica Area Chapter (Calif.)
1955	San Fernando Valley Chapter (Calif.)
1956	Utah State AFA
1957	H. H. Arnold Chapter (N.Y.)
1958	San Diego Chapter
1959	Cleveland Chapter
1960	San Diego Chapter
1961	Chico Chapter (Calif.)
1962	Fort Worth Chapter (Tex.)
1963	Colin P. Kelly Chapter (N.Y.)
1964	Utah State AFA
1965	Idaho State AFA
1966	New York State AFA
1967	Utah State AFA
1968	Utah State AFA
1969	*(no presentation)*
1970	Georgia State AFA
1971	Middle Georgia Chapter
1972	Utah State AFA
1973	Langley Chapter (Va.)
1974	Texas State AFA
1975	Alamo Chapter (Tex.) and San Bernardino Area Chapter (Calif.)
1976	Scott Memorial Chapter (Ill.)
1977	Thomas B. McGuire Jr. Chapter (N.J.)
1978	Thomas B. McGuire Jr. Chapter (N.J.)
1979	Brig. Gen. Robert F. Travis Chapter (Calif.)
1980	Central Oklahoma (Gerrity) Chapter
1981	Alamo Chapter (Tex.)
1982	Chicagoland-O'Hare Chapter (Ill.)
1983	Charles A. Lindbergh Chapter (Conn.)
1984	Scott Memorial Chapter (Ill.) and Colorado Springs/Lance Sijan Chapter (Colo.)
1985	Cape Canaveral Chapter (Fla.)
1986	Charles A. Lindbergh Chapter (Conn.)
1987	Carl Vinson Memorial Chapter (Ga.)
1988	Gen. David C. Jones Chapter (N.D.)
1989	Thomas B. McGuire Jr. Chapter (N.J.)
1990	Gen. E. W. Rawlings Chapter (Minn.)
1991	Paul Revere Chapter (Mass.)
1992	Central Florida Chapter and Langley Chapter (Va.)
1993	Green Valley Chapter (Ariz.)
1994	Langley Chapter (Va.)
1995	Baton Rouge Chapter (La.)
1996	Montgomery Chapter (Ala.)
1997	Central Florida Chapter
1998	Ark-La-Tex Chapter (La.)
1999	Hurlburt Chapter (Fla.)
2000	Wright Memorial Chapter (Ohio)
2001	Lance P. Sijan Chapter (Colo.)
2002	Eglin Chapter (Fla.)
2003	Hurlburt Chapter (Fla.)
2004	Carl Vinson Memorial Chapter (Ga.)
2005	Central Florida Chapter
2006	Enid Chapter (Okla.)
2007	Central Oklahoma (Gerrity) Chapter
2008	Lance P. Sijan Chapter (Colo.)
2009	Paul Revere Chapter (Mass.)
2010	C. Farinha Gold Rush Chapter (Calif.)
2011	Lance P. Sijan Chapter (Colo.)
2012	Hurlburt Chapter (Fla.)

AFA Membership

Year	Total	Life Members	Year	Total	Life Members
1946	51,243	32	1980	156,394	2,477
1947	104,750	55	1981	170,240	3,515
1948	56,464	68	1982	179,149	7,381
1949	43,801	70	1983	198,563	13,763
1950	38,948	79	1984	218,512	18,012
1951	34,393	81	1985	228,621	23,234
1952	30,716	356	1986	232,722	27,985
1953	30,392	431	1987	237,279	30,099
1954	34,486	435	1988	219,195	32,234
1955	40,812	442	1989	204,309	34,182
1956	46,250	446	1990	199,851	35,952
1957	51,328	453	1991	194,312	37,561
1958	48,026	456	1992	191,588	37,869
1959	50,538	458	1993	181,624	38,604
1960	54,923	464	1994	175,122	39,593
1961	60,506	466	1995	170,881	39,286
1962	64,336	485	1996	161,384	39,896
1963	78,034	488	1997	157,862	41,179
1964	80,295	504	1998	152,330	41,673
1965	82,464	514	1999	148,534	42,237
1966	85,013	523	2000	147,336	42,434
1967	88,995	548	2001	143,407	42,865
1968	97,959	583	2002	141,117	43,389
1969	104,886	604	2003	137,035	42,730
1970	104,878	636	2004	133,812	42,767
1971	97,639	674	2005	131,481	43,094
1972	109,776	765	2006	127,749	43,266
1973	114,894	804	2007	125,076	43,256
1974	128,995	837	2008	123,304	43,557
1975	139,168	898	2009	120,507	43,782
1976	148,202	975	2010	117,480	43,954
1977	155,850	1,218	2011	111,479	44,182
1978	148,711	1,541	2012	106,780	43,686
1979	147,136	1,869			

Profiles of AFA Membership

As of June 2012 (Total 106,780)

40%	One-year members
19%	Three-year members
41%	Life members
15%	Active duty military
52%	Retired military
14%	Former service
5%	Guard and Reserve
7%	No military service
4%	Cadet
2%	Spouse/widow(er)

Of AFA's service members who list their rank:

66% are officers
28% are enlisted

Of AFA's retired military members who list their rank:

63% are officers
28% are enlisted

H. H. Arnold Award Recipients

Named for the World War II leader of the Army Air Forces, the H. H. Arnold Award has been presented annually in recognition of the most outstanding contributions in the field of aerospace activity. Since 1986, the Arnold Award has been AFA's highest honor to a member of the armed forces in the field of national security.

1948 W. Stuart Symington, Secretary of the Air Force
1949 Maj. Gen. William H. Tunner and the men of the Berlin Airlift
1950 Airmen of the United Nations in the Far East
1951 Gen. Curtis E. LeMay and the personnel of Strategic Air Command
1952 Sens. Lyndon B. Johnson and Joseph C. O'Mahoney
1953 Gen. Hoyt S. Vandenberg, former Chief of Staff, USAF
1954 John Foster Dulles, Secretary of State
1955 Gen. Nathan F. Twining, Chief of Staff, USAF
1956 Sen. W. Stuart Symington
1957 Edward P. Curtis, special assistant to the President
1958 Maj. Gen. Bernard A. Schriever, Cmdr., Ballistic Missile Div., ARDC
1959 Gen. Thomas S. Power, CINC, SAC
1960 Gen. Thomas D. White, Chief of Staff, USAF
1961 Lyle S. Garlock, Assistant Secretary of the Air Force
1962 A. C. Dickieson and John R. Pierce, Bell Telephone Laboratories
1963 The 363rd Tactical Recon. Wing and the 4080th Strategic Wing
1964 Gen. Curtis E. LeMay, Chief of Staff, USAF
1965 The 2nd Air Division, PACAF
1966 The 8th, 12th, 355th, 366th, and 388th Tactical Fighter Wings and the 432nd and 460th TRWs
1967 Gen. William W. Momyer, Cmdr., 7th Air Force, PACAF
1968 Col. Frank Borman, USAF; Capt. James Lovell, USN; and Lt. Col. William Anders, USAF, Apollo 8 crew
1969 *(No presentation)*
1970 Apollo 11 team (J. L. Atwood; Lt. Gen. S. C. Phillips, USAF; and astronauts Neil Armstrong and USAF Cols. Buzz Aldrin and Michael Collins)
1971 John S. Foster Jr., Dir. of Defense Research and Engineering
1972 Air units of the Allied Forces in Southeast Asia (Air Force, Navy, Army, Marine Corps, and the Vietnamese Air Force)
1973 Gen. John D. Ryan (Ret.), former Chief of Staff, USAF
1974 Gen. George S. Brown, USAF, Chm., Joint Chiefs of Staff
1975 James R. Schlesinger, Secretary of Defense
1976 Sen. Barry M. Goldwater
1977 Sen. Howard W. Cannon
1978 Gen. Alexander M. Haig Jr., USA, Supreme Allied Commander, Europe
1979 Sen. John C. Stennis
1980 Gen. Richard H. Ellis, USAF, CINC, SAC
1981 Gen. David C. Jones, USAF, Chm., Joint Chiefs of Staff
1982 Gen. Lew Allen Jr. (Ret.), former Chief of Staff, USAF
1983 Ronald W. Reagan, President of the United States
1984 The President's Commission on Strategic Forces (the Scowcroft Commission)
1985 Gen. Bernard W. Rogers, USA, SACEUR
1986 Gen. Charles A. Gabriel (Ret.), former Chief of Staff, USAF
1987 Adm. William J. Crowe Jr., USN, Chm., Joint Chiefs of Staff
1988 Men and women of the Ground-Launched Cruise Missile team
1989 Gen. Larry D. Welch, Chief of Staff, USAF
1990 Gen. John T. Chain, CINC, SAC
1991 Lt. Gen. Charles A. Horner, Cmdr., CENTCOM Air Forces and 9th Air Force
1992 Gen. Colin L. Powell, USA, Chm., Joint Chiefs of Staff
1993 Gen. Merrill A. McPeak, Chief of Staff, USAF
1994 Gen. John Michael Loh, Cmdr., Air Combat Command
1995 World War II Army Air Forces veterans
1996 Gen. Ronald R. Fogleman, Chief of Staff, USAF
1997 Men and women of the United States Air Force
1998 Gen. Richard E. Hawley, Cmdr., ACC
1999 Lt. Gen. Michael C. Short, Cmdr., Allied Air Forces Southern Europe
2000 Gen. Michael E. Ryan, Chief of Staff, USAF
2001 Gen. Joseph W. Ralston, CINC, EUCOM
2002 Gen. Richard B. Myers, USAF, Chm., Joint Chiefs of Staff
2003 Lt. Gen. T. Michael Moseley, Cmdr., air component, CENTCOM, and 9th Air Force
2004 Gen. John P. Jumper, Chief of Staff, USAF
2005 Gen. Gregory S. Martin, Cmdr., AFMC
2006 Gen. Lance W. Lord, Cmdr., AFSPC
2007 Gen. Ronald E. Keys, Cmdr., ACC
2008 Gen. Bruce Carlson, Cmdr., AFMC
2009 Gen. John D. W. Corley, Cmdr., ACC
2010 Lt. Gen. David A. Deptula, USAF Deputy Chief of Staff, ISR
2011 Gen. Duncan J. McNabb, Cmdr., TRANSCOM
2012 Gen. Norton A. Schwartz, Chief of Staff, USAF

John R. Alison Award Recipients

AFA's highest honor for industrial leadership.

1992 Norman R. Augustine, Chairman, Martin Marietta
1993 Daniel M. Tellep, Chm. and CEO, Lockheed
1994 Kent Kresa, CEO, Northrop Grumman
1995 C. Michael Armstrong, Chm. and CEO, Hughes Aircraft
1996 Harry Stonecipher, Pres. and CEO, McDonnell Douglas
1997 Dennis J. Picard, Chm. and CEO, Raytheon
1998 Philip M. Condit, Chm. and CEO, Boeing
1999 Sam B. Williams, Chm. and CEO, Williams International
2000 Simon Ramo and Dean E. Wooldridge, missile pioneers
2001 George David, Chm. and CEO, United Technologies
2002 Sydney Gillibrand, Chm., AMEC; and Jerry Morgensen, Pres. and CEO, Hensel Phelps Construction
2003 Joint Direct Attack Munition Industry Team, Boeing
2004 Thomas J. Cassidy Jr., Pres. and CEO, General Atomics Aeronautical Systems
2005 Richard Branson, Chm., Virgin Atlantic Airways and Virgin Galactic
2006 Ronald D. Sugar, Chm. and CEO, Northrop Grumman
2007 Boeing and Lockheed Martin
2008 Bell Boeing CV-22 Team, Bell Helicopter Textron, and Boeing
2009 General Atomics Aeronautical Systems Inc.
2010 Raytheon
2011 United Launch Alliance
2012 Boeing

W. Stuart Symington Award Recipients

AFA's highest honor to a civilian in the field of national security, the award is named for the first Secretary of the Air Force.

1986 Caspar W. Weinberger, Secretary of Defense
1987 Edward C. Aldridge Jr., Secretary of the Air Force
1988 George P. Schultz, Secretary of State
1989 Ronald W. Reagan, former President of the United States
1990 John J. Welch, Asst. SECAF (Acquisition)
1991 George Bush, President of the United States
1992 Donald B. Rice, Secretary of the Air Force
1993 Sen. John McCain (R-Ariz.)
1994 Rep. Ike Skelton (D-Mo.)
1995 Sheila E. Widnall, Secretary of the Air Force
1996 Sen. Ted Stevens (R-Alaska)
1997 William Perry, former Secretary of Defense
1998 Rep. Saxby Chambliss (R-Ga.) and Rep. Norman D. Dicks (D-Wash.)
1999 F. Whitten Peters, Secretary of the Air Force
2000 Rep. Floyd Spence (R-S.C.)
2001 Sen. Michael Enzi (R-Wyo.) and Rep. Cliff Stearns (R-Fla.)
2002 Rep. James V. Hansen (R-Utah)
2003 James G. Roche, Secretary of the Air Force
2004 Peter B. Teets, Undersecretary of the Air Force
2005 Rep. Duncan Hunter (R-Calif.)
2007 Michael W. Wynne, Secretary of the Air Force
2008 Gen. Barry R. McCaffrey, USA (Ret.)
2009 Sen. Orrin G. Hatch (R-Utah)
2010 John J. Hamre, Center for Strategic & International Studies
2011 Rep. C. W. "Bill" Young (R-Fla.)
2012 Gen. James L. Jones, USMC (Ret.)

AFA Lifetime Achievement Award Recipients

The award recognizes a lifetime of work in the advancement of aerospace.

2003	Maj. Gen. John R. Alison, USAF (Ret.); Sen. John H. Glenn Jr.; Maj. Gen. Jeanne M. Holm, USAF (Ret.); Col. Charles E. McGee, USAF (Ret.); and Gen. Bernard A. Schriever, USAF (Ret.)
2004	Gen. Russell E. Dougherty, USAF (Ret.), and Florene Miller Watson
2005	Sen. Daniel K. Inouye; William J. Perry; and Patty Wagstaff
2007	CMSAF Paul W. Airey, USAF (Ret.)
2008	Col. George E. Day, USAF (Ret.); Gen. David C. Jones, USAF (Ret.); and Harold Brown
2009	Doolittle Raiders, Tuskegee Airmen, and James R. Schlesinger
2010	Col. Walter J. Boyne, USAF (Ret.); Andrew W. Marshall; Gen. Lawrence A. Skantze, USAF (Ret.); and Women Airforce Service Pilots
2011	Natalie W. Crawford; Lt. Gen. Thomas P. Stafford, USAF (Ret.); Gen. Larry D. Welch, USAF (Ret.); Heavy Bombardment Crews of WWII; and Commando Sabre Operation-Call Sign Misty
2012	Gen. James P. McCarthy, USAF (Ret.); Vietnam War POWs; Berlin Airlift Aircrews; Korean War Airmen; Fighter Pilots of World War II

Gold Life Member Card Recipients

Awarded to members whose AFA record, production, and accomplishment on a national level have been outstanding over a period of years.

Name	Year	Card No.	Name	Year	Card No.
Gill Robb Wilson	1957	1	Martin H. Harris	1988	11
Jimmy Doolittle	1959	2	Sam E. Keith Jr.	1990	12
Arthur C. Storz Sr.	1961	3	Edward A. Stearn	1992	13
Julian B. Rosenthal	1962	4	Dorothy L. Flanagan	1994	14
Jack B. Gross	1964	5	John O. Gray	1996	15
George D. Hardy	1965	6	Jack C. Price	1997	16
Jess Larson	1967	7	Nathan H. Mazer	2002	17
Robert W. Smart	1968	8	John R. Alison	2004	18
Martin M. Ostrow	1973	9	Donald J. Harlin	2009	19
James H. Straubel	1980	10			

The Twelve Founders

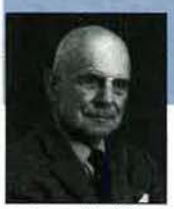
John S. Allard, Bronxville, N.Y.
Everett R. Cook, Memphis, Tenn.
Edward P. Curtis, Rochester, N.Y.
Jimmy Doolittle, Los Angeles
W. Deering Howe, New York
Rufus Rand, Sarasota, Fla.
Sol A. Rosenblatt, New York
Julian B. Rosenthal, New York
James M. Stewart, Beverly Hills, Calif.
Lowell P. Weicker, New York
Cornelius Vanderbilt Whitney, New York
John Hay Whitney, New York

Dottie Flanagan Staff Award of the Year

A donation from the late Jack B. Gross, national director emeritus, enables AFA to honor staff members each quarter. Those members become eligible for the staff award of the year.

1992	Doreatha Major
1993	Jancy Bell
1994	Gilbert Burgess
1995	David Huynh
1996	Sherry Coombs
1997	Katherine DuGarm
1998	Suzann Chapman
1999	Frances McKenney
2000	Ed Cook
2001	Katie Doyle
2002	Jeneathia Wright
2003	Jim Brown
2004	Pearlie Draughn
2005	Ursula Smith
2006	Susan Rubel
2007	Ed Cook
2008	Michael Davis
2009	Chris Saik
2010	Bridget Wagner
2011	Merri Shaffer

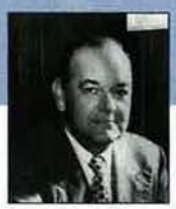
AFA Chairmen of the Board and National Presidents



Jimmy Doolittle
President, 1946-47
Chairman, 1947-49

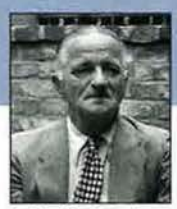
Edward P. Curtis
Chairman, 1946-47

Thomas G. Lanphier Jr.
President, 1947-48
Chairman, 1951-52



C. R. Smith
President, 1948-49
Chairman, 1949-50

Robert S. Johnson
President, 1949-51



Carl A. Spaatz
Chairman, 1950-51

Harold C. Stuart
President, 1951-52
Chairman, 1952-53

Arthur F. Kelly
President, 1952-53
Chairman, 1953-54

George C. Kenney
President, 1953-54
Chairman, 1954-55

John R. Alison
President, 1954-55
Chairman, 1955-56

Gill Robb Wilson
President, 1955-56
Chairman, 1956-57

John P. Henebry
President, 1956-57
Chairman, 1957-58

Peter J. Schenk
President, 1957-59

James M. Trail
Chairman, 1958-59

AFA Chairmen of the Board and National Presidents (cont.)

Howard T. Markey
President, 1959-60
Chairman, 1960-61

Julian B. Rosenthal
Chairman, 1959-60

Thos. F. Stack
President, 1960-61
Chairman, 1961-62

Joe Foss
President, 1961-62
Chairman, 1962-63

John B. Montgomery
President, 1962-63

W. Randolph Lovelace II
President, 1963-64
Chairman, 1964-65

Jack B. Gross
Chairman, 1963-64

Jess Larson
President, 1964-67
Chairman, 1967-71

Robert W. Smart
President, 1967-69

George D. Hardy
President, 1969-71
Chairman, 1966-67
Chairman, 1971-72

Martin M. Ostrow
President, 1971-73
Chairman, 1973-75

Joe L. Shosid
President, 1973-75
Chairman, 1972-73
Chairman, 1975-76

George M. Douglas
President, 1975-77
Chairman, 1977-79

Gerald V. Hasler
President, 1977-79
Chairman, 1976-77

Victor R. Kregel
President, 1979-81
Chairman, 1981-82

Daniel F. Callahan
Chairman, 1979-81

John G. Brosky
President, 1981-82
Chairman, 1982-84

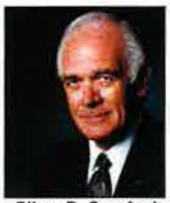
David L. Blankenship
President, 1982-84
Chairman, 1984-85

Edward A. Stearn
Chairman, 1985-86

Martin H. Harris
President, 1984-86
Chairman, 1986-88

Sam E. Keith Jr.
President, 1986-88
Chairman, 1988-90

Jack C. Price
President, 1988-90
Chairman, 1990-92



Oliver R. Crawford
President, 1990-92
Chairman, 1992-94

James M. McCoy
President, 1992-94
Chairman, 1994-96

Gene Smith
President, 1994-96
Chairman, 1996-98

Doyle E. Larson
President, 1996-98
Chairman, 1998-2000

Thomas J. McKee
President, 1998-2000
Chairman, 2000-02

John J. Politi
President, 2000-02
Chairman, 2002-04

Stephen P. Condon
President, 2002-04
Chairman, 2004-06

Robert E. Largent
President, 2004-06[a]
Chairman, 2006-08[a]

Joseph E. Sutter
Chairman, 2008-10

S. Sanford Schlitt
Chairman, 2010-12

[a] The office of National President, an elected position, was disestablished in 2006.
[b] AFA's Chairman of the Board also serves as Chairman of both AFA affiliates, the AFA Veteran Benefits Association and the Air Force Memorial Foundation.

Vice Chairmen for Field Operations

Joseph E. Sutter	2006-08
James R. Lauducci	2008-10
Justin M. Faiferlick	2010-12

Vice Chairmen for Aerospace Education

L. Boyd Anderson	2006-07
S. Sanford Schlitt	2007-10
George K. Muellner	2010-12

National Treasurers

W. Deering Howe	1946-47
G. Warfield Hobbs	1947-49
Benjamin Brinton	1949-52
George H. Haddock	1952-53
Samuel M. Hecht	1953-57
Jack B. Gross	1957-62
Paul S. Zuckerman	1962-66
Jack B. Gross	1966-81
George H. Chabbott	1981-87
William N. Webb	1987-95
Charles H. Church Jr.	1995-2000
Charles A. Nelson	2000-05
Steven R. Lundgren	2005-10
Leonard R. Vernamonti	2010-

National Secretaries

Sol A. Rosenblatt	1946-47
Julian B. Rosenthal	1947-59
George D. Hardy	1959-66
Joseph L. Hodges	1966-68
Glenn D. Mishler	1968-70
Nathan H. Mazer	1970-72
Martin H. Harris	1972-76
Jack C. Price	1976-79
Earl D. Clark Jr.	1979-82
Sherman W. Wilkins	1982-85
A. A. "Bud" West	1985-87
Thomas J. McKee	1987-90
Thomas W. Henderson	1990-91
Mary Ann Seibel	1991-94
Mary Anne Thompson	1994-97
William D. Croom Jr.	1997-2000
Daniel C. Hendrickson	2000-03
Thomas J. Kemp	2003-06
Judy K. Church	2006-09
Joan Sell	2009-11
Edward W. Garland	2011-

AFA Executive Directors/ President-CEOs

Willis S. Fitch
Executive Director
1946-47

James H. Straubel
Executive Director
1948-80

Russell E. Dougherty
Executive Director
1980-86

David L. Gray
Executive Director
1986-87

John O. Gray
Executive Director
1987-88
1989-90

Charles L. Donnelly Jr.
Executive Director
1988-89

Monroe W. Hatch Jr.
Executive Director
1990-95

John A. Shaud
Executive Director
1995-2002

Donald L. Peterson
Executive Director
2002-06[c]
President-CEO
2006-07

Michael M. Dunn
President-CEO
2007-12

[c] The position of Executive Director was replaced in 2006 by President-CEO.

AFA's Regions, States, and Chapters

These figures indicate the number of affiliated members as of June 30, 2012. Listed below the name of each region is the region president.

CENTRAL EAST REGION 11,191
Scott Van Cleef

Delaware	**444**
Brig. Gen. Bill Spruance	118
Delaware Galaxy	326
District of Columbia	**366**
Nation's Capital	366
Maryland	**2,238**
Baltimore*	698
Central Maryland	405
Thomas W. Anthony	1,135
Virginia	**7,897**
Danville	41
Donald W. Steele Sr. Memorial	3,354
Gen. Charles A. Gabriel	1,440
Langley	1,228
Leigh Wade	152
Northern Shenandoah Valley	265
Richmond	760
Roanoke	314
Tidewater	343
West Virginia	**246**
Chuck Yeager	246

FAR WEST REGION 9,968
Rich Taubinger

California	**9,258**
Bob Hope	669
Brig. Gen. Robert F. Travis	603
C. Farinha Gold Rush	1,186
Charles Hudson	80
David J. Price/Beale	351
Fresno*	291
Gen. B. A. Schriever Los Angeles	399
General Doolittle Los Angeles Area*	1,320
Golden Gate*	585
High Desert	183
Maj. Gen. Charles I. Bennett Jr.	244
Orange County/Gen. Curtis E. LeMay	656
Palm Springs	381
Robert H. Goddard	501
San Diego	780
Stan Hryn Monterey Bay	177
Tennessee Ernie Ford	484
William J. "Pete" Knight	368
Hawaii	**710**
Hawaii*	710

FLORIDA REGION 9,142
Michael Emig

Florida	**9,142**
Brig. Gen. James R. McCarthy	307
Cape Canaveral	935
Central Florida	1,133
Col. H. M. "Bud" West	265
Col. Loren D. Evenson	403
Eglin	1,225
Falcon	469
Florida Highlands	285
Gold Coast	655
Hurlburt	851
Miami-Homestead	437
Red Tail Memorial	564
Sarasota-Manatee	299
Waterman-Twining	1,314

GREAT LAKES REGION 7,219
William Grider

Indiana	**1,426**
Central Indiana	394
Columbus-Bakalar	120
Fort Wayne	212
Grissom Memorial	265
Lawrence D. Bell Museum	200
Southern Indiana	235
Kentucky	**692**
Gen. Russell E. Dougherty	406
Lexington	286
Michigan	**1,152**
Battle Creek	78
Lake Superior Northland	124
Lloyd R. Leavitt Jr.	201
Mount Clemens	749
Ohio	**3,949**
Capt. Eddie Rickenbacker Memorial*	569
Frank P. Lahm	469
Gen. Joseph W. Ralston	400
North Coast*	228
Steel Valley	162
Wright Memorial*	2,121

MIDWEST REGION 6,445
Michael Cook

Illinois	**2,561**
Chicagoland-O'Hare	1,025
Heart of Illinois	217
Land of Lincoln	270
Scott Memorial	1,049
Iowa	**624**
Fort Dodge	38
Gen. Charles A. Horner	227
Northeast Iowa	223
Richard D. Kisling	136
Kansas	**596**
Lt. Erwin R. Bleckley	393
Maj. Gen. Edward R. Fry	203
Missouri	**1,429**
Whiteman	250
Harry S. Truman	537
Spirit of St. Louis	642
Nebraska	**1,235**
Ak-Sar-Ben	1,002
Lincoln	233

NEW ENGLAND REGION 3,559
Bob Wilkinson

Connecticut	**690**
Flying Yankees/Gen. George C. Kenney	407
Lindbergh/Sikorsky	283
Massachusetts	**1,708**
Minuteman	319
Otis	243
Paul Revere	839
Pioneer Valley	307
New Hampshire	**745**
Brig. Gen. Harrison R. Thyng	745
Rhode Island	**219**
Metro Rhode Island	179
Newport Blue & Gold	40
Vermont	**197**
Green Mountain	197

NORTH CENTRAL REGION 2,946
Ron Garcia

Minnesota 1,130
Gen. E. W. Rawlings 917
Richard I. Bong 213

Montana 307
Big Sky 259
Bozeman 48

North Dakota 373
Gen. David C. Jones 179
Happy Hooligan 100
Red River Valley 94

South Dakota 439
Dacotah 239
Rushmore 200

Wisconsin 697
Billy Mitchell 697

NORTHEAST REGION 5,669
Eric Taylor

New Jersey 1,394
Brig. Gen. Frederick W. Castle 130
Hangar One 130
Highpoint 106
Mercer County 144
Sal Capriglione 241
Shooting Star 210
Thomas B. McGuire Jr. 433

New York 1,924
Albany-Hudson Valley* 338
Chautauqua 38
Gen. Carl A. "Tooey" Spaatz 179
Genesee Valley 201
Iron Gate 85
L. D. Bell-Niagara Frontier 309
Long Island 774

Pennsylvania 2,351
Altoona 63
Joe Walker-Mon Valley 225
Lehigh Valley 203
Liberty Bell 635
Lt. Col. B. D. "Buzz" Wagner 105
Mifflin County* 95
Olmsted 290
Pocono Northeast 206
Total Force 236
York-Lancaster 291

NORTHWEST REGION 4,451
Rick Sine

Alaska 704
Edward J. Monaghan 523
Fairbanks Midnight Sun 181

Idaho 110
Snake River Valley 110

Oregon 1,023
Bill Harris 267
Columbia Gorge* 756

Washington 2,614
Greater Seattle 872
Inland Empire 626
McChord Field 1,116

ROCKY MOUNTAIN REGION 5,650
Gayle White

Colorado 4,041
Gen. Robert E. Huyser 122
Lance P. Sijan 2,242
Mel Harmon 169
Mile High 1,508

Utah 1,247
Northern Utah 440
Salt Lake 429
Ute-Rocky Mountain 378

Wyoming 362
Cheyenne Cowboy 362

SOUTH CENTRAL REGION 6,678
Thomas Gwaltney

Alabama 2,296
Birmingham 373
Montgomery 1,249
South Alabama 195
Tennessee Valley 479

Arkansas 846
David D. Terry Jr. 654
Lewis E. Lyle 192

Louisiana 934
Ark-La-Tex 586
Maj. Gen. Oris B. Johnson 348

Mississippi 868
Golden Triangle 318
John C. Stennis 436
Meridian 114

Tennessee 1,734
Chattanooga 132
Everett R. Cook 374
Gen. Bruce K. Holloway 588
H. H. Arnold Memorial 181
Maj. Gen. Dan F. Callahan 459

SOUTHEAST REGION 6,949
David Klinkicht

Georgia 3,220
Carl Vinson Memorial 1,100
Dobbins 1,562
Savannah 323
South Georgia 235

North Carolina 2,108
Blue Ridge 396
Cape Fear 243
Kitty Hawk 72
Pope 385
Scott Berkeley 345
Tarheel 667

South Carolina 1,621
Charleston 493
Columbia Palmetto 360
Strom Thurmond 415
Swamp Fox 353

SOUTHWEST REGION 6,394
Bob Hale

Arizona 3,675
Cochise 100
Frank Luke 1,955
Prescott/Goldwater 404
Tucson 1,216

Nevada 1,235
Thunderbird 1,235

New Mexico 1,484
Albuquerque 994
Fran Parker 311
Llano Estacado 179

TEXOMA REGION 12,255
Bob Slaughter

Oklahoma 1,989
Altus 184
Central Oklahoma (Gerrity) 1,187
Enid 260
Tulsa 358

Texas 10,266
Abilene 325
Aggieland 187
Alamo 3,595
Austin 1,158
Concho 242
Del Rio 107
Denton 529
Fort Worth 1,545
Gen. Charles L. Donnelly Jr. 235
Northeast Texas 423
San Jacinto 1,082
Seidel-AFA Dallas 838

*These chapters were chartered prior to Dec. 31, 1948, and are considered original charter chapters; the North Coast Chapter of Ohio was formerly the Cleveland Chapter; and the Columbia Gorge Chapter of Oregon was formerly the Portland Chapter.

AFA's Overseas Chapters

CHAPTER	LOCATION
United States Air Forces in Europe	
Charlemagne	Geilenkirchen, Germany
Dolomiti	Aviano AB, Italy
Lufbery-Campbell	Ramstein AB, Germany
Spangdahlem	Spangdahlem AB, Germany
United Kingdom	Lakenheath, UK
Pacific Air Forces	
Keystone	Kadena AB, Japan
MiG Alley	Osan AB, South Korea
Tokyo	Tokyo, Japan

AFA Member of the Year Award Recipients

Year	Recipient(s)
1953	Julian B. Rosenthal (N.Y.)
1954	George A. Anderl (Ill.)
1955	Arthur C. Storz (Neb.)
1956	Thos. F. Stack (Calif.)
1957	George D. Hardy (Md.)
1958	Jack B. Gross (Pa.)
1959	Carl J. Long (Pa.)
1960	O. Donald Olson (Colo.)
1961	Robert P. Stewart (Utah)
1962	*(no presentation)*
1963	N. W. DeBerardinis (La.) and Joe L. Shosid (Tex.)
1964	Maxwell A. Kriendler (N.Y.)
1965	Milton Caniff (N.Y.)
1966	William W. Spruance (Del.)
1967	Sam E. Keith Jr. (Tex.)
1968	Marjorie O. Hunt (Mich.)
1969	*(no presentation)*
1970	Lester C. Curl (Fla.)
1971	Paul W. Gaillard (Neb.)
1972	J. Raymond Bell (N.Y.) and Martin H. Harris (Fla.)
1973	Joe Higgins (Calif.)
1974	Howard T. Markey (D.C.)
1975	Martin M. Ostrow (Calif.)
1976	Victor R. Kregel (Tex.)
1977	Edward A. Stearn (Calif.)
1978	William J. Demas (N.J.)
1979	Alexander C. Field Jr. (Ill.)
1980	David C. Noerr (Calif.)
1981	Daniel F. Callahan (Fla.)
1982	Thomas W. Anthony (Md.)
1983	Richard H. Becker (Ill.)
1984	Earl D. Clark Jr. (Kan.)
1985	George H. Chabbott (Del.) and Hugh L. Enyart (Ill.)
1986	John P. E. Kruse (N.J.)
1987	Jack K. Westbrook (Tenn.)
1988	Charles G. Durazo (Va.)
1989	Oliver R. Crawford (Tex.)
1990	Cecil H. Hopper (Ohio)
1991	George M. Douglas (Colo.)
1992	Jack C. Price (Utah)
1993	Lt. Col. James G. Clark (D.C.)
1994	William A. Lafferty (Ariz.)
1995	William N. Webb (Okla.)
1996	Tommy G. Harrison (Fla.)
1997	James M. McCoy (Neb.)
1998	Ivan L. McKinney (La.)
1999	Jack H. Steed (Ga.)
2000	Mary Anne Thompson (Va.)
2001	Charles H. Church Jr. (Kan.)
2002	Thomas J. Kemp (Tex.)
2003	W. Ron Goerges (Ohio)
2004	Doyle E. Larson (Minn.)
2005	Charles A. Nelson (S.D.)
2006	Craig E. Allen (Utah)
2007	William D. Croom Jr. (Tex.)
2008	John J. Politi (Tex.)
2009	David R. Cummock (Fla.)
2010	L. Boyd Anderson (Utah)
2011	Steven R. Lundgren (Alaska)
2012	S. Sanford Schlitt (Fla.)

State names refer to recipient's home state at the time of the award.

AFA National Report

natrep@afa.org

By Frances McKenney, Assistant Managing Editor

Coffee Talk

Air Force Association Chairman of the Board S. Sanford Schlitt headed to Alaska in July, at the invitation of Alaska State President Harry Cook and former AFA National Treasurer Steven R. Lundgren. Cook and Lundgren, both members of the **Fairbanks Midnight Sun Chapter,** wanted Schlitt to meet community leaders and airmen in the 49th state.

In Fairbanks, Cook saw an opportunity to set up a quick chat between Schlitt, AFA's top elected official, and US Sen. Mark Begich. Cook arranged the get-together on a day's notice, after learning the senator—who was visiting several cities in Alaska—would be in Fairbanks while Schlitt was.

Schlitt and Begich—a Democrat elected to Congress in 2008 and member of the Senate Armed Services Committee—rendezvoused at a coffee shop in the late afternoon. Schlitt had been given 15 minutes to talk, but he and Begich began discussing the Air Force budget challenges, congressional hearings for the Air Force Chief of Staff nominee, and other topics, and before they knew it, nearly an hour had gone by.

At Eielson AFB the day before, Schlitt had received a briefing on the 354th Fighter Wing and toured the resident 18th Aggressor Squadron. He then spent time with explosive ordnance disposal personnel at the ammunition processing facility and ate lunch with a group of all-ranks airmen. An afternoon with the Air National Guard's 168th Air Refueling Wing followed.

Schlitt also attended a meeting of the Midnight Sun Chapter and conducted an installation ceremony for the new chapter president, Lisa Hall.

Gregory Miller, president of the **Edward J. Monaghan Chapter,** hosted Schlitt's AFA activities in Anchorage.

At JB Elmendorf-Richardson, Schlitt spent a jam-packed day learning about the base's fighter, airlift, and rescue operations, as well as its medical and family support organizations. He paid an office call on Lt. Gen. Stephen L. Hoog, the top military officer in the state. Hoog accompanied Schlitt as he spent an afternoon learning about the mission of airmen on "The Last Frontier."

During a visit to Alaska in July, AFA Board Chairman Sandy Schlitt (left) listens to US Sen. Mark Begich (D-Alaska). An informal meeting between them turned into a long discussion on Air Force topics.

More photos at http://www.airforce-magazine.com, in "AFA National Report"

Yes, I Know Polly

When Pauline K. Morrisey of the **Gen. Bruce K. Holloway Chapter** presented an AFA medal to a local high school student, she didn't just show up, shake hands, and disappear.

In April, chapter treasurer Morrisey attended the AFJROTC dining-in at William Blount High School in Maryville, Tenn., to present Emily Easterling with an AFA Bronze Medal for cadets. Morrisey also gave the junior an AFA membership.

Easterling earned the awards because of her achievements—among them qualifying for solo wings after two months of training in a Cessna—and her leadership skills: Retired Col. Thomas M. Shaughnessy, the AFJROTC instructor at Blount and a chapter member, put her in charge of 30 students, organizing the very dining-in where she received her AFA medal and ribbon.

After the event, Morrisey—whom everyone calls "Polly"—continued to keep in touch with the young award winner. Easterling attended a chapter meeting and later on saw Morrisey at the Tennessee State Convention in Chattanooga this May. Easterling not only performed in the color guard at that gathering but also went home with the Outstanding JROTC Cadet Award for East Tennessee.

Morrisey arranged for Easterling to tour the Air National Guard facility at McGhee Tyson Airport in Knoxville in June. A month afterward, the high-schooler still spoke with excitement about the 134th Air Refueling Wing's tankers, the maintenance hangar, and the KC-135 crew chief she met.

Morrisey's contacts with Easterling clearly put her on the student's radar. A couple months after Easterling first met Morrisey at the high school AFJROTC banquet, her name came up in a conversation, and Easterling said without hesitation, "I know Polly."

Recalling 9/11

Air Force Magazine's September 2011 issue featured Heather R. Perney in its "Airmen on 9/11" collection of stories about that day. This past July, **Iron Gate Chapter** members in New York heard the Air National Guard fighter pilot recount her Sept. 11, 2001, mission in person.

"Hearing it from her, everything meant a lot more," commented Chapter President Frank T. Hayes.

As he had told chapter members when inviting them to this meeting, Penney has served two tours in Iraq since 9/11 but didn't have to go to Southwest Asia for the War on Terror. It came to her.

Penney had launched on 9/11 from Andrews AFB, Md., to intercept a hijacked commercial airliner believed to be inbound for Washington, D.C. (This was United Airlines Flight 93, and it had already crashed in Shanksville, Pa., after its passengers took on the hijackers.)

Penney's and her flight lead's F-16s were armed only with training ammunition, so she decided that if she had to take down the airliner, she would ram its tail. This meant killing everyone on board and probable death for her.

Hayes said Penney's chapter presentation "was about our US Air Force at its best," well-trained and -equipped, and willing to carry out the mission.

The "oversold event," as he called the chapter meeting, attracted nearly 90 guests to New York City's 21 Club, the group's usual meeting site.

A **Thomas W. Anthony Chapter** (Md.) member, Penney now works for Lockheed Martin in Washington as director, Air Force Air Superiority Systems. She focuses on F-22, F-35, and F-35 training, and reported Hayes, she is a Reno Air Race pilot and has been teaching her two daughters to fly a 1941 Taylorcraft.

Sixteen Eagles

The **Montgomery Chapter** in Alabama hosted its annual Gathering of Eagles Brunch in June, paying tribute to 16 notables in aviation history. Their number included combat controller TSgt. Robert Gutierrez Jr., who received the Air Force Cross in 2011 and was the only active duty "Eagle" in this year's group of honorees.

The chapter's brunch takes place during a week of activities held as a capstone for Air Command and Staff College at Maxwell AFB, Ala. The events aim to bring ACSC students together with airpower legends. The Eagles are interviewed over the course of three days, before an auditorium that this year was filled with more than 500 majors about to graduate from ACSC.

The first official Gathering of Eagles took place in 1982, and one of those original Eagles, retired Col. Gail S. Halvorsen—the Berlin Airlift "Candy Bomber"—returned to participate again.

Along with Gutierrez and Halvorsen, other Eagles attending the chapter's brunch, held at a golf and country club in Montgomery, were: Retired Army Brig. Gen. Rhonda Cornum, a Desert Storm POW; retired Col. Henry P. Fowler, a Vietnam War POW; retired Lt. Leon Frankel, a World War II Navy Cross recipient; retired CMSAF James M. McCoy, the sixth Chief Master Sergeant of the Air Force; and retired Lt. Col. Edward Saylor, a Doolittle Raider.

Two former Eagles attending were retired Lt. Gen. Charles G. Cleveland, Korean War ace, and Kenneth Rowe, who defected from North Korea in a MiG-15 in 1953.

Other Eagles who took part in activities that week were: retired Brig. Gen. Robert L. Cardenas, World War II and Vietnam War pilot; Tuskegee Airman retired Lt. Col. James H. Harvey III; Women Airforce Service Pilot Gloria W. Heath; Polish cosmonaut retired Brig. Gen. Miroslaw Hermaszewski; Vietnam War "River Rat" retired Col. Howard C. Johnson; three-war vet and Vietnam War POW retired Col. James H. Kasler; and retired Col. Leo K. Thorsness, Medal of Honor recipient.

Chapter Communications VP Joseph Panza and Maj. Meghan Doherty from ACSC headed up the team organizing the brunch for the chapter, whose president is Larry Carter.

Training Cadets To Be Leaders

In West Virginia, the **Chuck Yeager Chapter** of Charleston co-sponsored the 12th annual Mountaineer Cadet Officer Leadership School.

Called MCOLS, for short, the week of AFJROTC leadership training in

AFA Conventions

Sept. 15-16	**AFA National Convention,** National Harbor, Md.
Sept. 17-19	**AFA Air & Space Conference,** National Harbor, Md.

June took place at Concord University in Athens, where 175 cadets gathered from five states: North Carolina, Pennsylvania, Tennessee, Virginia, and of course, the Mountain State itself.

Retired Lt. Col. Steven H. Boyd, a **Roanoake (Va.) Chapter** member, served as MCOLS commandant. The senior aerospace science instructor at Patrick Henry High School in Roanoake led the students in five days of education, training, athletics, and drill practice. Hershey Flores from Monticello High School in Charlottesville, Va., received the overall Outstanding Cadet Trophy for the highest scores in these categories.

The Yeager Chapter provided all plaques and trophies awarded at the culminating pass-in-review graduation ceremony.

Chapter President Ira S. Latimer and Secretary Herman N. Nicely II both attended the event. Cadets from AFJROTC units in Virginia all but swept these awards, taking home eight out of 10 top honors.

The awards ceremony appears on YouTube. (Search for MCOLS 2012.)

Salute to SMC

In June, the **Gen. B. A. Schriever Los Angeles Chapter** sponsored a symposium and black-tie formal, with the Space and Missile Systems Center's commander, Lt. Gen. Ellen M. Pawlikowski, as co-host.

The 31st annual SMC Executive Forum took place at a hotel near Los Angeles AFB, Calif. It brought together the center's senior managers and aerospace industry leaders for panel discussions on three topics: transitioning from RDT&E to production; tailoring mission assurance and oversight for lower cost and manageable risk; and future architectures.

Brig. Gen. Kenneth J. Moran, director of SMC's Program Management and Integration Directorate; Douglas L. Loverro, SMC executive director; and R. Scott Correll, Air Force program executive officer for space launch, moderated the forum.

That evening, everybody donned tuxedos and mess dress uniforms for the 38th annual Salute to SMC, this year celebrating the Infrared Space Systems Directorate's accomplishments. Col. James Planeaux leads the section.

During the awards presentations that evening, Secretary of the Air Force Michael B. Donley accepted the Gen. Bernard A. Schriever National Space Leadership Award, acknowledgment of his support for Air Force space and missile programs.

Among the airmen and civilians receiving SMC Salute awards for outstanding performance were Capt. Brian A. An, Ann R. Birbeck, Capt. Kristen A. Clark, Capt. Phillip M. Dobberfuhl, SSgt. David L. Dvorak, 1st Lt. Sean R. Fisher, Lt. Col. Donald R. Frew, Kathleen J. Helwig, Capt. Jason M. Holman, Louis M. Johnson Jr., Lt. Col. David M. Learned, Lt. Col. David D. Lessick, and SrA. Madeline J. McLain.

NY Chapter's Teacher of the Year

In New York, the **Albany-Hudson Valley Chapter** awarded Lawrence Perretto the Chapter Teacher of the Year honor at an AFA state executive committee meeting held at West Point in June.

Chapter President Michael A. Szymczak made the presentation.

A science teacher at Hommocks Middle School in Larchmont, Perretto has taught sixth through eighth grades. He created a program to reinforce his school's science curriculum, integrating earth science, engineering, math, and technology into a unit that had students designing and constructing earthquake-resistant towers out of balsa wood.

Szymczak wrote that Perretto secured a $60,000 grant to equip his school's science department with interactive whiteboard technology and landed a $30,000 grant to implement a robotics program for 400 eighth-graders.

Also during the executive committee meeting, Dave Ribbe stepped forward to become president of the **Gen. Carl A. "Tooey" Spaatz Chapter** in White Plains. He plans to lead a chapter revitalization. ■

reunions@afa.org

Reunions

21st Fighter-Bomber Wg and 66th Destroyer Sq, Chambley AB, France. Oct. 18-22 in Tucson, AZ. **Contact:** Jim Kirkpatrick (480-688-3465).

366th Fighter Assn, 366th Fighter Gp, 366th Fighter-Bomber Wg, 366th Tactical Fighter Wg, 366th Fighter Wg. Oct. 10-14 in Charleston, SC. All former and current members invited. **Contacts:** Wayne Pickelsimer (864-642-5801) or Joe Daniel (919-365-7123) (jdaniel171@aol.com).

445th Fighter-Interceptor Sq, Wurtsmith AFB, MI. Oct. 16-19 in San Antonio. **Contact:** Larry Flinn (210-695-1944) (c24712@aol.com).

F-4 Phantom II Society, Holloman AFB, N.M. Oct. 15-19. **Contact:** Bill Crean (856-461-6637) (www.f4phantom.com).

F-100 Maintainers Assn. Oct. 18-20 in San Antonio. **Contact:** Mike Dean (610-486-6320) (mvdean@verizon.net).

UNT 63-04, James Connally AFB, TX (1961-62), instructors welcome. Nov. 4-8 in New Orleans. **Contact:** Don Nash (504-715-6509) (dnash22@cox.net).

USAF, Airspace, & Air Traffic Services Div & AF Reps (1976-91). September 2013 in Oklahoma City. **Contact:** Les Heavner (828-675-0290) (lrheavner@earthlink.net).

USAF Military Training Instructor Assn. Oct. 16-19 at Lackland AFB, TX. **Contact:** John Pavey Jr. (828-586-8987 (j.pavey@pdlawnc.com). ■

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

Artwork by Zaur Eylanbekov

C-5 Galaxy

The C-5 Galaxy is a giant high-wing cargo airplane used by USAF in every major contingency since its delivery in 1969. The Lockheed airplane, with a singular T-tail and 25-degree wing sweep, emerged from a 1970s morass of problems and cost overruns—and near-cancellation—to become one of the world's longest-serving heavy cargo systems. With jet speed and long range, it has hauled everything from tanks to fleeing refugees.

The C-5's distinctive design derived from its predecessor, the Lockheed C-141. It was made much bigger, however, in part to satisfy an Army need for delivery of outsize equipment. The four-engined Galaxy features front and rear cargo openings, allowing drive-through use by wheeled and tracked vehicles. The C-5's landing gear "kneels" to truck-bed height so that pallets can be swiftly loaded onto a roller-equipped floor.

Development and production of the early C-5A model was hampered by an overambitious performance requirement and the flawed Total Package Procurement contracting methods of the era. Still, the aircraft has been continuously modernized. First came an upgraded C-5B model in the 1980s. A more recent C-5M has new avionics and F138-GE-100 engines of greatly improved performance and reliability. It can transport cargo directly from home station to combat base.

Models of the Galaxy have served ably in both combat and humanitarian missions. It has been vital for heavy lift in many US military operations, including Vietnam, Iraq, the Balkans, and Afghanistan. Israel specifically recognized the C-5 as critically important in supplying Israel with vital arms in Operation Nickel Grass during the October 1973 Mideast War. It is expected to serve for decades to come.

—Walter J. Boyne

This aircraft: C-5A Galaxy—*#69-0008*—as it looked in March 2001 while with the 105th Airlift Wing, Stewart ANGB, N.Y.

The C-5 has seen service in every major contingency since 1969.

In Brief

Designed, built by Lockheed ★ first flight June 30, 1968 ★ number built 131 ★ crew of six (pilot, copilot, two loadmasters, two flight engineers) ★ armament none ★ **Specific to C-5A:** Four General Electric TF39-GE-1 turbofan engines ★ max (wartime) cargo load: 291,000 lb ★ max speed 571 mph ★ cruise speed 537 mph ★ max range 3,500 mi ★ weight (loaded, wartime) 840,000 lb ★ span 222 ft 10 in ★ length 247 ft 10 in ★ height 65 ft 1 in.

Famous Fliers

Notables: Paul Carlton, Duane Cassidy, Jack Catton, Christopher Kelly, William Moore Jr., Charles Robertson Jr. **Test pilots:** Hank Dees, Glen Gray, Frank Hadden, Ralph Moore, Leo Sullivan.

Interesting Facts

Nicknamed "FRED" (fantastic ridiculous economic-environmental disaster), "Linda Lovelace," "Lockheed Hilton" ★ contains cargo hold one foot longer than length of Wright brothers' first flight ★ suffered a thrown wheel and tire blowout on 1970 maiden operational landing ★ made in-flight drop launch of Minuteman ICBM (Oct. 24, 1974) ★ set 41 flight records on Sept. 13, 2009 ★ became first development program with $1 billion overrun ★ seats passengers facing to the rear ★ remains largest aircraft to operate in Antarctic region ★ has wing tanks with capacity of six railroad tank cars ★ wears 2,600 pounds of paint ★ incorporates five miles of control cables.