

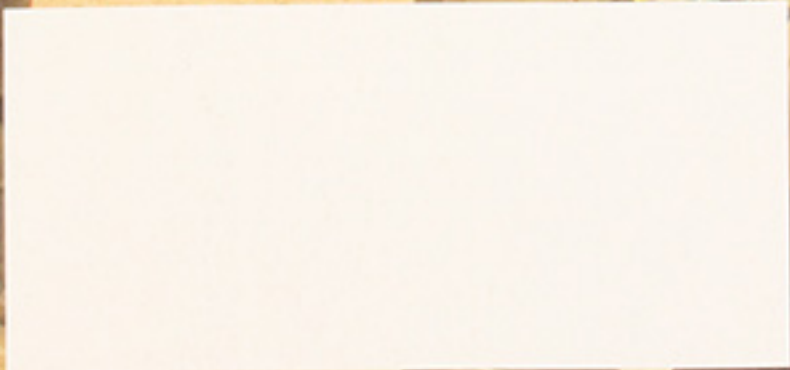
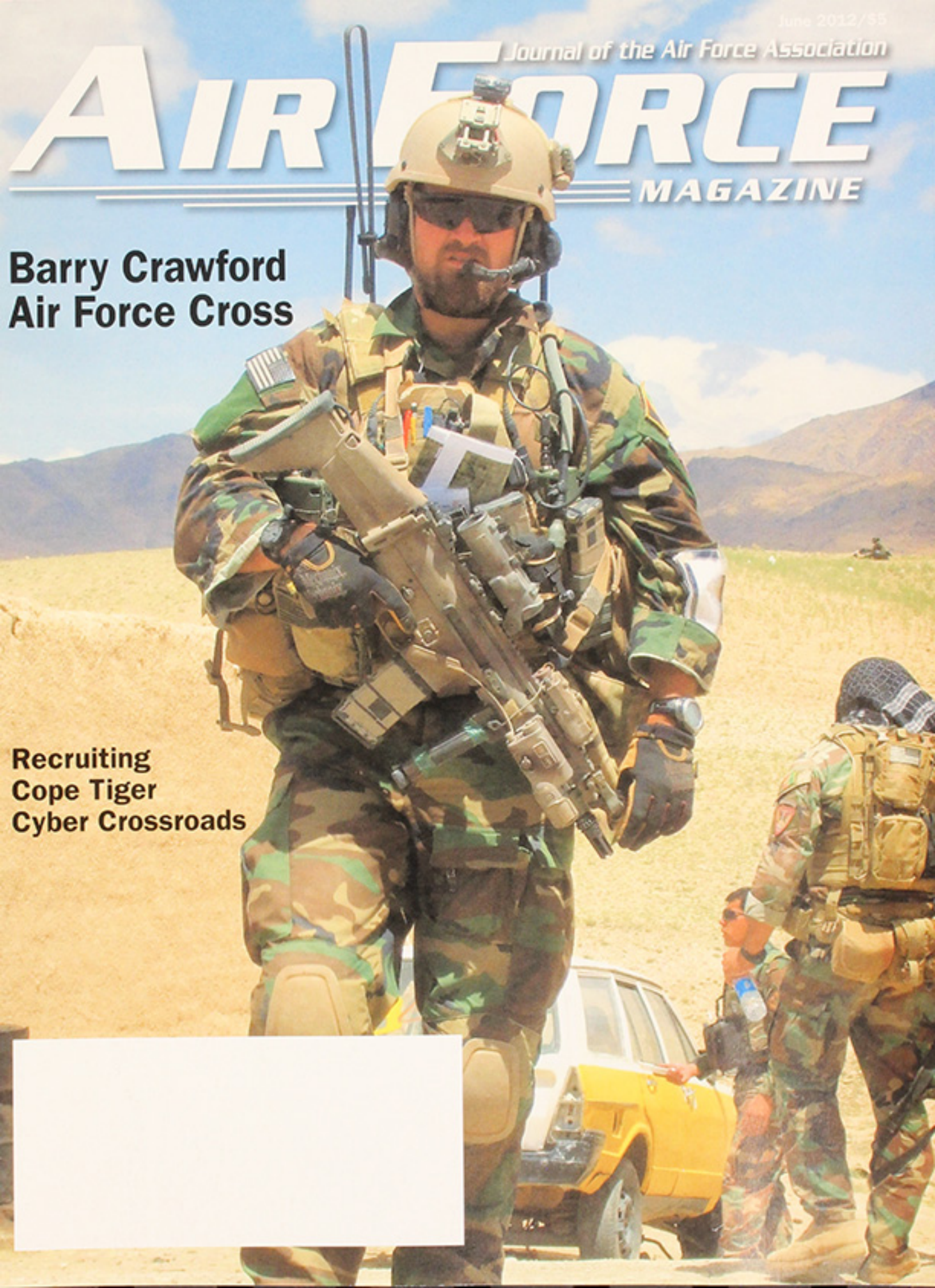
# AIR FORCE

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## MAGAZINE

**Barry Crawford**  
**Air Force Cross**

**Recruiting**  
**Cope Tiger**  
**Cyber Crossroads**





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*Advocate for aerospace power and STEM education.*

*Support the Total Air Force family and promote aerospace education.*

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## Raptor Turbulence

**“I**S THE F-22 a plane that is badly designed—or just badly produced?” asked reporter Brian Ross on ABC’s “Nightline,” May 2.

Pierre Sprey, a relentless critic of defense procurement programs identified by Nightline only as a former war-plane designer, paused to admire this softball. There were only two possible responses coming: yes or both. Sprey went with, “Both.”

That exchange may not have been quality journalism, but it was a fitting beginning for what was, at the time of this writing, two weeks of nonstop, mostly negative press for the F-22 Raptor. The Air Force took delivery of the 187th and final F-22 from Lockheed Martin on May 2, but this was completely overshadowed by other Raptor news.

On May 6, CBS’ “60 Minutes” featured two Virginia Air Guard F-22 pilots who stopped flying the Raptor because they felt an unresolved oxygen system problem made the fighter unsafe. They sought whistleblower protection and went public. 60 Minutes presented an evenhanded report on their concerns.

And so, a year after grounding the fleet while it attempted to determine what was giving F-22 pilots hypoxia, and eight months after determining the aircraft is safe enough to fly even if the cause was still undetermined, the Air Force again found the aircraft’s oxygen system dominating the news.

Until this problem is solved, the F-22—and the Air Force—will be under a harsh light. USAF is in a tough situation. One pilot, Capt. Jeff Haney, died in a 2010 crash. USAF’s accident investigators controversially found Haney responsible for the crash after his F-22 experienced an air system malfunction unrelated to the hypoxia issue in other jets. The leadership believes the F-22 is safe enough to fly, but sending Raptor pilots up without solving the riddle invites charges it is callously disregarding its airmen’s safety.

ABC’s report was, in its own biased and misleading way, an absolute masterpiece—the Raptor’s professional critics couldn’t have written a better script. Nightline managed, in a single five-and-a-half-minute segment, to trot out every tired argument F-22 critics keep in their arsenals. This deserves

some discussion, because these claims will surely come up again.

*The F-22 has no purpose.* Sen. John McCain (R-Ariz.) said the F-22 has “no purpose, no mission in Afghanistan or Iraq, unless you believe that al Qaeda is going to have a fleet of aircraft.” For some reason, McCain chose to ignore all possible future threats. China and Russia have advanced fighters and defensive systems—and sell them on the open market.

*The F-22 has never been used in combat.* DOD could use the Raptor to attack targets in Afghanistan tomor-

### **USAF must solve the F-22’s oxygen problem to change this narrative.**

row if it chose to, but an advanced air dominance fighter is not needed against a low-tech enemy. USAF should not kowtow to critics just to put the aircraft in combat—military commanders know what capabilities are needed where.

*The F-22 was designed to fight an enemy that no longer exists.* Almost everything in the US arsenal designed before 1991 was intended to fight the Soviet Union, which no longer exists. The F-22 offers capabilities needed against any major power—the ability to go just about anywhere and attack with huge advantages.

*The F-22 is too complicated to maintain.* So-called defense reformers have for decades made variations of this argument about aircraft such as the F-15, AWACS, and now the F-22. In reality, the Raptor’s 80 percent readiness rate compares well with older, less-capable fighters.

*F-22 pilots still experience hypoxia-like symptoms.* There have been 11 more cases since the Raptor returned to flight. This is a serious concern, but F-22s have flown 12,000 sorties in that time. The 11 incidents represent one in every 1,091 sorties. Military flying is inherently risky, and Air Combat Command finds this a tolerable rate while it continues to work the problem.

The Raptors are flying because they have unmatched capabilities. F-22s perform homeland air defense missions and deploy overseas. An adversary

knows if F-22s are nearby, its military facilities are vulnerable to attack. This helps keep renegade nations on their best behavior.

F-22s have staged within range of China, North Korea, Syria, and Iran—places that have much tougher defenses than al Qaeda. When the aircraft deploy, people notice. This spring, Raptors were sent to an undisclosed Middle Eastern base to fly with friendly air forces—and perhaps send a message to nearby hostile nations.

Unfortunately, millions of Americans who know very little about the fighter or airpower viewed the Nightline report. The segment ended with an implication that the Raptor is best suited for air shows. USAF must solve the F-22’s oxygen problem to change this narrative.

Lawmakers are looking for places to save money and reduce the deficit by going after unpopular programs. The first financial hits could be delivered to F-22 upgrades, but an unrelenting drumbeat of bad press could lead to much wider cuts. Ultimately, security suffers.

Pilots now fly with additional instrumentation, improved emergency oxygen pull-handles, pulse oximeters (to check their own blood-oxygen level), and orders to abort missions the moment something seems wrong.

On May 15, Defense Secretary Leon Panetta ordered additional steps to improve safety. A backup F-22 oxygen system is being expedited, and Air Force officials will limit the distance pilots fly from base so they can quickly return if a problem develops. Gen. G. Michael Hostage, head of ACC, pledged to begin flying the F-22 himself and not stop until the Air Force solves the problem.

“Our adversaries are all abuzz and all aflame” about the most recent Middle East deployment, Hostage said.

“People pay attention to where this airplane goes and what it does because, regardless of the furor in the press and public about the suitability or the safety of the airplane, [enemies are] very worried about its capability.”

This is what the F-22 offers, even under current limitations: a powerful deterrent, without ever seeing combat. ■

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**GENERAL DYNAMICS**

## Yeah? No.

I take exception to Lieutenant Colonel Piowaty's critique of John Correll's article, "The Man From Thud Ridge" [*Letters: Lie, Cheat, Steal*, May, p. 8]. I flew a tour in Thuds from Takhli and knew both Broughton and Piowaty. Jack did good work and took care of his people. Piowaty makes a big deal about finding errors in the article, but his scorecard on accuracy is not impressive as he tries to correct factual "errors" that were in fact not wrong.

The first error cited is the statement that pilot Ted Tolman "may have hit a ship" and says in refutation that "the Thud was a superior strafing platform, and Tolman was a highly experienced strafing pilot. If he was aiming at something, he hit it. If he was not, he didn't."

In fact: Ted Tolman told Broughton that there was a lot going on, lots of flak, and he did not know if he had hit the ship or not. Experience does not guarantee direct hits by good gunners under all conditions. The report I know of, that is based on evidence from the ship itself, is that noted in the article, indicating that the hits on the ship were friendly fire from the North Vietnamese shore batteries. It would have been nice for all concerned to have had that information at the time of the incident.

Next supposed error: "diverted to refuel at Ubon." Piowaty says, "I heard it was Da Nang, but wherever they went for gas they missed their tanker because Tolman broke formation discipline and separated from his flight lead."

Way off base. Court records verify Ubon. Tolman did not separate from his flight. The flight leader had aborted on takeoff, and No. 2 had aborted before entering the combat area. Ted and his wingman, Lonnie Ferguson, were the complete flight, and Ted was the leader. There was no aerial refueling as they were ordered to divert and recover at Ubon when all operations were shut

down due to bad weather and Takhli was closed.

Supposed error: "Shaken, Tolman denied firing his cannon." Piowaty asks, "Why deny [it] if he strafed a legitimate target? Whatever happened to the code 'I will not lie, cheat, or steal'?"

Not sure what the question is, since it is clearly stated in the article that Tolman made a false official statement, which is a court-martial offense.

Supposed error: "Had the sergeant open the containers (sic), pull out the film, and expose it in the headlights (sic) of the truck (sic)." Piowaty comments: "I watched Colonel Broughton himself turn on the headlights of his jeep, open the film magazine, and strip out the film across the left headlight of the jeep, thinking to myself, 'You dummy, you can't see anything on the film; you're just exposing it.'"

In fact: Broughton did not have a jeep. He had a staff car and it was parked back at his quarters. The vehicle was the film sergeant's truck, which he drove up with his headlights already on because it was nighttime. Common sense indicates that Broughton was not expecting to see anything on film that had not been processed.

Lt. Col. Harold W. Bingaman,  
USAF (Ret.)  
Ashland, Ore.

## Do More. Now.

First of all, let me thank AFA for bringing to the fore what will be the biggest moral battle of the future, that being the total elimination of sexual assault and rape (against men and women) from USAF and our other armed forces [*An Air Force War on Sexual Assault*, January, p. 42]. There really isn't a larger long-term moral challenge to the US military.

It is ludicrous that there should be a higher probability of rape for a female service member at her Stateside base from fellow service members than there

would be from enemy combatants at a battlefield outpost, but we know this is the case.

While I am in emotional sympathy with retired Brig. Gen. Gerald E. McIlmoyle's call [*Letters: Fix It Now*, April, p. 7] for punishment—and greater punishment is both required and long in coming—I would like to point out another imperative that calls for this effort.

Until President Harry Truman desegregated the US armed forces, they were as rife with bigotry and prejudice as was American society in general in the 1940s. Types of conduct in the force that would be considered topics for fictional legends now were as common then as separate latrines, drinking fountains, command structures, and base housing—if any—and that was the "better" part of the life of any black service member. Similar and not-so-subtle separations also followed Jewish service members, Asians, Latinos, and anyone else who was "not white enough."

Then came a directive from President Harry Truman: in a few words, "Stop that. Now."

It has never been properly credited, but that directive in many ways set in motion what would later be called the Civil Rights Era. And I am saying that when—not if—the US armed

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MISSILE SYSTEMS

forces (hopefully led by USAF) take it upon themselves to eliminate sexual harassment, assault, and rape from their midst, a message can and will be sent that will reverberate throughout American society. That message will be: "We acted to stop this human crime. Let our fellow citizens follow our example." And my question is, can USAF afford to be less than the exemplars in human dignity than they are in our tech-heavy armed forces? The time to act is passing, but the benefits to USAF and to America would be monumental. To do less would and will tarnish every accomplishment achieved by our men and women in uniform. The idea is: Do more. Now.

Norman E. Gaines Jr.  
Hartsdale, N.Y.

### How Many More Times?

In reading the article "The Scourge of the Zeppelins" in the February issue, I could not help but notice that you had to be a die-hard "Zeppelin" fan to get the irony of the captions used for the pictures in the article [p. 88]. They are all titles of songs from the super rock group Led Zeppelin.

SMSgt. Phillip Peterman,  
USAF (Ret.)  
Bowdle, S.D.

### Plenty of Insanity To Go Around

In your mention of Army SSgt. Robert Bales, who killed the Afghan civilians, you called him a lone "psychopath" [*Editorial: Exiting Afghanistan*, April, p. 4]. I read that Sergeant Bales had been subjected to a head injury in one of his many past deployments. Does his killing of women and children [and] attempting to burn the bodies indicate that he is a one-time "lone psychopath"? I find this not to be a rational act, but possibly the action of one that has gone temporarily insane.

Somehow I failed to read your editorial where you addressed the killing of 13, wounding of 29, by Army Maj. Nidal Hasan as [the work of] a lone "psychopath."

Sergeant Bales, as determined by fellow soldiers, did not premeditate his actions. But Major Hasan planned his killings in advance.

Does the liberal bias press-media have some input in this magazine?

SMSgt. Allan Pochop,  
USAF (Ret.)  
Vacaville, Calif.

### Elf Was On the Shelf

I enjoyed John Correll's account of the "Air Strike at Osirak" in the April issue [p. 58], especially the details on the planning and conduct of the strike.

There is one minor error on p. 61 where Correll describes the evasive routing the IAF used to avoid early detection. He states the E-3 AWACS airborne at the time over Saudi Arabia was a Royal Saudi Air Force AWACS, when in fact it was a USAF AWACS. The RSAF didn't receive its first AWACS until 1986. In September 1980, at the outset of the Iran-Iraq War, Saudi King Khalid requested US assistance in protecting the oil fields of eastern Saudi Arabia from possible Iranian air attack. USAF deployed AWACS and KC-135 tankers to Riyadh Air Base and began continuous aircraft operations that lasted 24/7 for eight-and-a-half years. This was known as European Liaison Force 1, or ELF-1, and US crews controlled RSAF F-15 and F-5 fighters, including two F-15s that shot down two Iranian F-4Es in June 1984 over the Persian Gulf. Little did we know when we redeployed in April 1989 that we would be back in Saudi in 16 months for Operation Desert Shield/Storm.

Kirk Warburton  
Huntington Beach, Calif.

### Tossing Dirt Clods

Authors John A. Tirpak ("A 10-Year Plan," p. 22) and Amy McCullough ("Seeking a Total Force Balance," p. 28), in the April issue, have two traits in common: First, they are both excellent writers. Second, they both report about Air Force capabilities with emphasis on hardware needs as perceived by Air Force leaders, but not once indicate exactly what future enemies the United States may be facing that requires such sophisticated hardware.

This has long been a weakness in military planning with four military services individually vying for scarce dollars without any apparent joint planning to meet realistic perceived threats. Certainly I am wrong, but public information, such as the cited articles and many similar ones, lead to this conclusion. Perhaps the Joint Chiefs consider their threat analysis too sensitive to release publicly, but the military service Chiefs do not seem reluctant to make a public case for hardware to enhance their parochial interests without stating publicly the threat they are tasked to meet.

Lt. Col. C. W. Getz,  
USAF (Ret.)  
Fairfield, Calif.

### Hot-and-Cold Pit

I like your magazine and look forward to it monthly. Having been an F-15 maintainer for about 30 years now, I want to point out a very minor

malfunction. On p. 14 [April], the bottom right picture caption reads, "The aircraft is fueled while the engines are still running." During hot pit ops, the left engine is shut down and the right engine is running. No big deal, just thought I'd mention it.

Art Dunn  
Wichita Falls, Tex.

### Whither Airman Archer?

I got the 2012 "USAF Almanac," dated May 2012, last week. Today, I was listening to the History Channel and watching the show called "Dogfights." This particular show was about the Tuskegee Airmen. They, of course, were the African-American pilots stationed in Europe in World War II as the 332nd Fighter Group.

In the show, they mentioned that Lt. Col. Lee A. Archer, USAF [Ret.], was the only black ace in the war. Well, I looked at p. 124 through 130 of the USAF Almanac entitled "Air Force Aces" and Lt. Col. Lee A. Archer's name was not listed. Take note, I looked on the Internet and in the Jan. 29, 2010, edition of the *New York Daily News* is an article entitled "Retired Air Force Lt. Col. Lee A. Archer, Lone Ace Tuskegee Airmen, dies at 90." It says: "Retired Lt. Col. Lee A. Archer, a Tuskegee Airmen considered to be the only black ace pilot who also broke racial barriers as an executive at a major US company and founder of a venture capital firm, died Wednesday in New York City. He was 90."

In the show "Dogfights" on the History Channel it clearly listed Archer as an ace. We know for sure that he did shoot down at least five enemy aircraft in combat. Therefore, his name should be listed in the USAF Almanac—Air Force Aces department. He should also be listed in the area "Some Famous Firsts," because he was the first and only Tuskegee Airmen ace. I just thought I would bring this to your attention. If we are going to stay updated in our magazine, then we should make sure that everybody who is entitled to be in one of these special areas should be.

MSgt. Joe M. Gardner,  
USAF (Ret.)  
Deming, N.M.

■ *This is not the first query about the victory credits of Tuskegee Airman Lee Archer. Air Force Magazine uses official USAF sources to compile the list of aces. According to the Air Force Historical Research Agency, Archer has four official kills. We reconfirm our list each year because AFHRA does sometimes find new documentation that alters the counts for individual airmen.—THE EDITORS*



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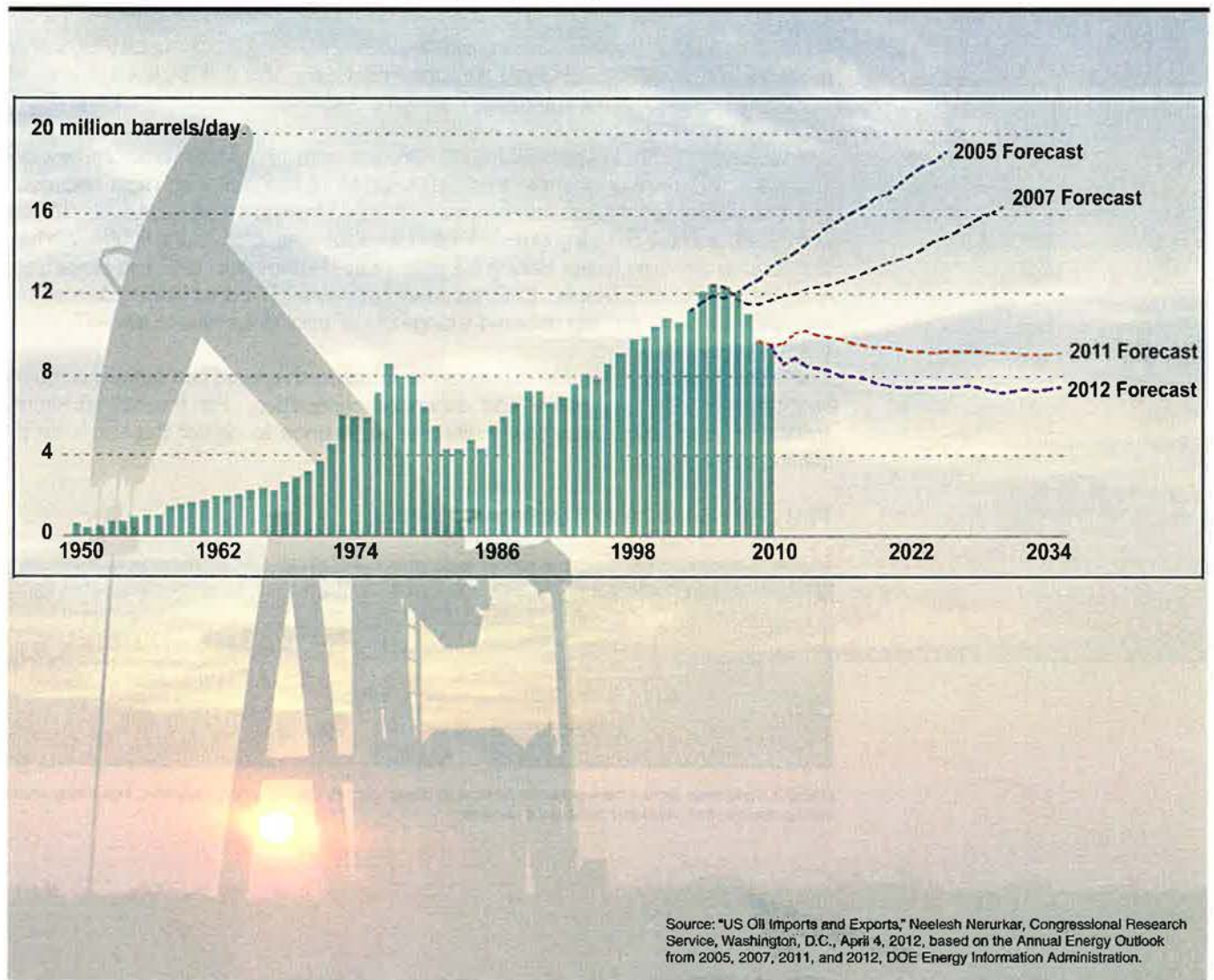
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## Is the “Oil Weapon” Fading Away?

Ever since the early 1970s, US dependence on foreign oil—more particularly “Arab oil”—has been a military concern of the first order. President Nixon gave thought to seizing Gulf oil in the Arab embargo of 1973. After that, the US focused on keeping others—Saddam Hussein, Iran—from doing the seizing. What if the US need for such oil simply fades away? That, suggests a

Congressional Research Service study, is happening. In the last six years, overall US imports fell by 33 percent, to 8.4 million barrels a day in 2011. Foreign oil, 60 percent of US usage in 2005, is now 45 percent. A new US forecast (chart below) projects imports will decline or flatten out for another two decades. If so, will we see the end of “the oil weapon” itself?

### Lower Expectations for Future US Oil Imports



Source: “US Oil Imports and Exports,” Neelesh Nerurkar, Congressional Research Service, Washington, D.C., April 4, 2012, based on the Annual Energy Outlook from 2005, 2007, 2011, and 2012, DOE Energy Information Administration.

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## Replacing aircraft on the fly; No rest for the weary Air Force; The essential F-35; A Hostage warning; Future ISR; Finally, a tanker ....

### THERE'S NO "RESET" BUTTON

After Operation Allied Force in 1999, the Air Force, which bore the brunt of that intense, three-month military campaign, took half a year to "reset": to give its airmen some extra rest and get their schools and upgrades, to repair and refurbish its aircraft, replace weapons expended, and generally get itself back up to par.

After 11 years of war in Afghanistan and 20 years of war in Iraq, however, the Air Force will not catch such a break. No reset is planned for the service, and indeed, no letup in operating tempo is in the cards.

Aircraft lost in the course of combat have, when possible, been replaced "as we go," according to Lt. Gen. Christopher D. Miller, deputy chief of staff for strategic plans and programs. Miller said the Air Force has to renew itself on the fly, because there's been no indication of an extended breather ahead.

"We have been doing depot work on our airframes at a higher rate because of contingency flying," he said, and that work has largely been paid for out of the overseas contingency operations account, or "war supplemental," that Congress has used to fund the wars.

Chief of Staff Gen. Norton A. Schwartz set a goal of managing operating tempo "for every type of airman and every component to be at sustainable levels," Miller said in an interview. Even so, some career fields have been "very highly deployed," he acknowledged, and "demands for deployed forces are really expected to stay where they've been."

The Air Force will probably be engaged in some form of combat flying through the departure of US ground forces from Afghanistan in 2014.

After that, senior service officials expect to remain long after the majority of ground troops depart, providing intelligence, surveillance, and reconnaissance support to the Afghan Army, training for the Afghan Air Force, and some degree of air sovereignty until the Afghan Air Force, can perform those missions for itself. USAF will be involved in similar tasks in Iraq.

"I don't think anyone knows exactly what it will look like, but there will be ... a residual mission just like there was after Desert Storm," Miller said.

### SLEP TO THE FUTURE

The Air Force is trying to convince Congress to fund service life extension programs for the F-15 and F-16 fleets because, while not many of those aircraft were lost in Operations Enduring Freedom or Iraqi Freedom, a large chunk of their service lives was consumed in those contingencies. This will leave the service with a gap in capability until new aircraft arrive—the F-35 strike fighter in particular. And there was no make-up funding for the years of wear and tear incurred during combat flying during Northern and Southern Watch, the aerial blockade of Iraq from 1992 to 2003.

It is easier to make a case for replacement equipment "when a ground vehicle is just flat worn out," Miller said, be-



USAF photo by TSgt. Michael R. Holzworth

**Don't borrow from future capabilities—but fix the fighters now.**

cause that is plain to see. It's harder to visualize fatigue stress and structural wear on a well-maintained aircraft.

"We keep the airframes in 100 percent flyable shape as a matter of course," he said, and "that abstract service life number of hours that you've flown off them is kind of difficult to pin down." However, "we're continuing to make the case for funding to extend the life of the platforms we have."

The big danger for the Air Force during the disengagement from the ground war lies in how those continuing operations will be paid for, Miller said. The Pentagon has agreed to "wear" itself off OCO funding and fund its activities almost entirely through the baseline budget. But while the other services won't have a big residual mission in Afghanistan, the Air Force will.

It's important, Miller said, that Congress understand "that we are going to have to sustain" activities in Southwest Asia "and make sure that is resourced in our baseline and not taken out of procurement and modernization, and ... capability for the future."

### F-35 OR BUST

The Air Force simply can't do without the F-35 strike fighter, and buying new fourth generation fighters to maintain inventories is a bad response to F-35 delays, said Air Combat Command chief Gen. G. Michael Hostage III at a late-April briefing in Arlington, Va. "Beyond 2018, our fourth generation fleet can't fight without fifth generation fighters" to back them up," he said. "We have a woefully tiny F-22 fleet, and we won't be getting any more."

After the "painful agony of concurrency" problems have been shaken out, Hostage said he has no doubt the F-35 will be a world-beater. "I have every reason to believe" the F-35 will be up to the job, and do it better than any other aircraft, "but I need all 1,700-plus," he said.

Without the F-35 in sufficient numbers, the F-15 and F-16 fleet "can't survive" the murderous environment of anti-access, area-denial systems—no matter how tricked out with upgrades they are.

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The F-35 concurrency issue is “getting smaller” as fewer bugs are discovered in testing and fewer changes need to be made to the early production jets, but “it’s a fact of life,” said Hostage. The same kind of issues plagued all previous fighters, and he thinks the F-35 is doing better at this stage of production and test than any of them.

### BATTLE CRY OF THE HOLLOW FORCE

The only viable way to accommodate reduced budgets is to slim down the force and keep what’s left highly ready, Hostage said in his April 26 presentation. He said slashing funding while maintaining forces at existing levels will bring severe consequences.

Doing “more with less is the battle cry of the hollow force,” he said. If personnel and force structure accounts are off the table, the only items left to cut are “flying hours, [operations and maintenance], and base operating support”—the prescription for hollowness, he said.

In the early 1980s, said Hostage, many of the aircraft on Air Force ramps had no engines, and half of them couldn’t fly. The Soviet Union, counting jets from on high, didn’t know the condition of the aircraft, “and they didn’t call our bluff,” he observed. At the time, the Air Force was not engaged in frequent large-scale deployments and constant combat, however. A hollow force will not work today. The Air Force has to keep its aircraft ready for use.

### SURVEYING THE VIEW FROM '42

The Defense Department will spend about \$770 billion over the next 10 years on new aircraft, aircraft modifications, and support. The inventory of all-service fighter/attack types will shrink, but the number dedicated to intelligence, surveillance, and reconnaissance will balloon.

However, the growth in the ISR fleet is scheduled to come almost exclusively through remotely piloted aircraft purchases, and there is no money available to launch big-wing manned ISR replacement programs to succeed today’s E-3 AWACS, RC-135, and E-8 JSTARS fleets. By 2022, the ISR fleet will grow from 1,169 to 1,418 aircraft, a greater than 20 percent increase, and most of it will be in the form of remotely piloted aircraft.

The numbers were included in the Pentagon’s “Annual Aviation Inventory and Funding Plan, Fiscal Years (FY) 2013-2042,” completed this spring.

The aircraft plan was structured around five main objectives, presumably listed in order of priority.

They are, first, to meet the need for “persistent, multirole” ISR. Next, to provide “sufficient enabler capability and capacity.” Third, to acquire fifth generation fighters “while maintaining sufficient inventory capacity,” by extending the service lives of F-15s, F-16s, and F/A-18s. The fourth listed objective is to modernize long-range strike capabilities, and the last stated goal is to “emphasize modernization and readiness.”

Although ISR was listed first, the Air Force’s “big wing” ISR fleet didn’t get much discussion in the 30-year aircraft plan. “Potential recapitalization” of the fleet is considered a “far-term” effort, according to the document, though USAF has conducted an analysis of alternatives on how best to replace the aged and battle-worn platforms. One E-8C JSTARS will be retired because of damage that isn’t economical to repair.

Each service contributed its own numbers and explanations to OSD, which collated and confirmed the numbers before sending the document to Congress.

Lawmakers demanded the document several years ago, prompted in part by the controversy over terminating the F-22 fighter. Lawmakers, frustrated by service comments that near-term aircraft cuts made sense in the long run, wanted more context and asked to see the long-range aviation plan.

The first iteration of the document—in February 2010—only included fixed-wing manned aircraft. Congress then insisted the report broaden in scope to include helicopters, remotely piloted aircraft, executive aircraft, and support costs.

This year’s 36-page document states annual Pentagon funding for aircraft will peak in Fiscal 2022, when spending will total about \$80 billion.

### THERE ARE SOME WINNERS

According to the aircraft inventory plan, the Air Force plans to launch a program to replace Air Force One—the President’s transport—in the next few years, aiming for “the first aircraft being delivered to begin modification in 2019.”

However, despite its longstanding desire to replace its Hueys with a modern helicopter, USAF said it will have to keep flying the UH-1N. The Air Force will “selectively mod-



Bring on the KC-46A—soon.

Photo illustration by Boeing

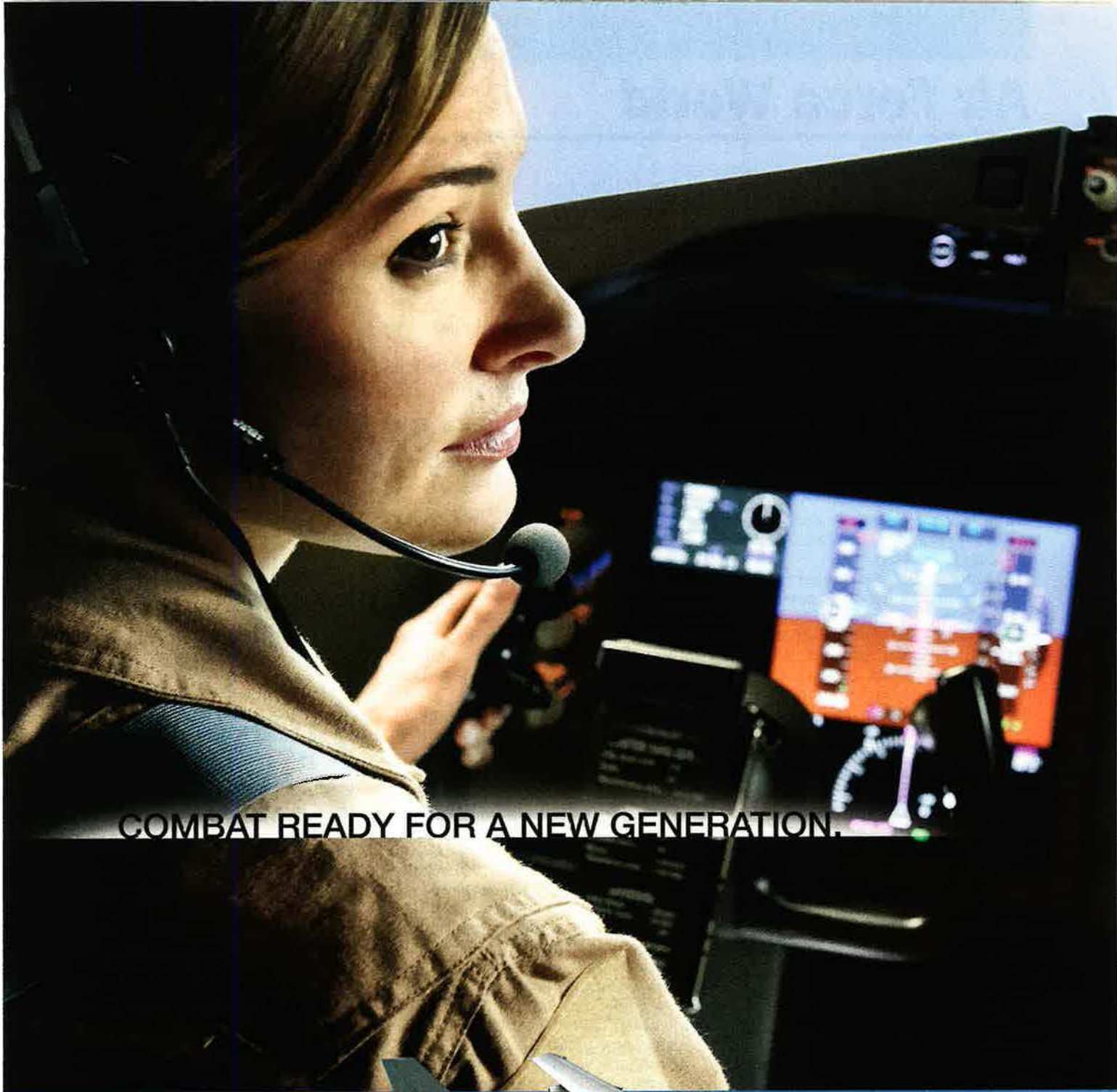
ernize” the aircraft, mostly to “avoid increased sustainment costs brought on by obsolescence.” A program to replace the HH-60G rescue helicopter will go forward, with research and development funding peaking in Fiscal 2015.

The Army and Marine Corps score a big plus in attack helicopters. The two services will be buying new or remanufactured AH-64 Apaches and AH-1W Cobras, respectively. The attack helicopter inventory will bloom 10 percent, from 882 today to 966 in 2022. Accompanying text only says the increase meets Army and Marine Corps procurement objectives; it does not explain why the increase is needed, nor is any link drawn to national military strategy.

Much-needed modernization of the aerial refueling fleet is on the horizon as well. USAF will retire 20 KC-135 tankers during the next five years and start bringing on the new KC-46. By 2022, some 83 KC-46As should be delivered, and the 179-aircraft buy is to be completed in 2029. Future competitions will determine how to recapitalize the rest of the KC-135 inventory—already more than 50 years old—and the KC-10 Extender, now almost 30 years old.

Air Force leaders have said they wanted to launch a replacement for the T-38 in Fiscal 2013, but the project slipped between the budgetary cracks. The 30-year plan calls for a T-X replacement aircraft “to begin production around FY18, with a planned IOC [initial operational capability] in FY20.” ■





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## First C-17 Retires

The Air Force's prototype C-17 transport recently retired to the National Museum of the US Air Force in Dayton, Ohio, ending 21 years of testing at Edwards AFB, Calif.

"This aircraft will serve as the representative C-17 airframe in the museum's collection, allowing us to share with the public more of the story of the demanding airlift missions facing today's Air Force," said museum director John L. Hudson.

McDonnell Douglas workers essentially fabricated the aircraft, designated T-1, by hand. T-1 was specifically built for the C-17's five-year developmental test and evaluation program, but was successively rebuilt over its career, exceeding its design life by four times, according to museum officials.

Since the prototype first took to the skies in September 1991, T-1 supported a plethora of USAF, NASA, and other agency test programs above and beyond the type's development.

The aircraft also appeared in five Hollywood films during its active career.

After landing in Dayton April 25, T-1 was decommissioned in preparation for display in the museum's outdoor airpark, beginning later this summer.

## Brit Lightning Takes Flight

Britain's first production F-35 strike fighter flew for the first time recently on a predelivery check flight from Lockheed Martin's facility at Fort Worth, Tex.

Lockheed test pilot Bill Gigliotti put the F-35B short takeoff and vertical landing jet through its paces, checking system functionality during the 45-minute hop April 13.

The UK ordered the F-35B, designated BK-1, before its Defense Ministry abandoned the STOVL variant in favor of the carrier-optimized F-35C in October 2010. The first flight came as the UK government was mulling whether to reverse course yet again—abandoning the F-35C for the STOVL F-35B, which the Defense Ministry ultimately did, announcing its decision May 10.

"BK-1 is the first international F-35 to fly. ... It also brings us one step closer to delivery of this essential fifth generation capability for the UK," said Britain's F-35

program representative, Group Capt. Harv Smyth.

Lockheed Martin also completed the first F-35A for the Royal Netherlands Air Force earlier in April.

Both aircraft will be based at Eglin AFB, Fla., supporting their respective country's maintenance and pilot training at their F-35 schoolhouse.

## Advanced To the End

With little fanfare, an excavator severed the fuselage of the Air Force's last AGM-129A Advanced Cruise Missile in a simple ceremony at Hill AFB, Utah.

Destruction of this AGM-129 completed demilitarization of the cruise missile type and associated trainers, components, and engines "within budget and ahead of schedule," stated officials at Tinker AFB, Okla., April 24.

Tinker's Missile Sustainment Division and Oklahoma City Air Logistics Center, along with Hill's Ogden ALC, began the process of decommissioning and destroying the 460-strong AGM-129 inventory in February 2008.

The Air Force opted to eliminate the fleet as part of US efforts to draw down nuclear force levels to meet the cap of 2,200 operational nuclear warheads imposed by the 2002 Strategic Offensive Reduction Treaty with Russia.

The B-52H bomber was the only aircraft capable of deploying the low observable, subsonic cruise missiles operationally. With the Advanced Cruise Missile now gone, the AGM-86 ALCM serves as the Air Force's sole air-launched nuclear cruise missile.

## The Big 4,500

Lockheed Martin trumpeted delivery of the 4,500th F-16 Fighting Falcon—a Block 52 fighter built for the Royal Moroccan Air Force—in a celebration on the floor of the company's plant at Fort Worth, Tex., April 3.

"The F-16 is the world standard for evolutionary fighters today, and it will continue to secure the freedom of the United States and its allies in peace and combat for decades to come," summed up company aeronautics vice president Larry Lawson.

The current F-16 production queue includes aircraft on order from Egypt,

Photo by Jim Haseltine



Iraq, Morocco, Oman, and Turkey, according to the company.

Since F-16 production first began in 1975, air forces from 26 countries have purchased and flown the fighter, according to Lockheed Martin.

#### Reaper's Day Out

An MQ-9 Reaper remotely piloted aircraft aided civilian agencies for the first time on a specifically authorized search and rescue mission in US national airspace.

Airmen launched the RPA from Holloman AFB, N.M., to help authorities look for a pair of kayakers who went missing in the nearby Gila National Forest.

The Reaper scanned the riverbed, relaying footage to mission command, and ultimately aiding in the recovery of the two missing sportsmen.

Air Combat Command quickly cleared the flight with the FAA, obtaining special permission to aid civil authorities operating outside the RPA's designated range space April 2.

"To be able to fly in the national airspace, there is a lot of coordination that has to take place," said Maj. Dustin Pittman, assistant operations director of the base's 29th Attack Squadron, responsible for training Reaper crews.

"This is a big step forward to ... extend ourselves outside our normal flying ranges," he stressed.

#### Last in Glass

Lockheed Martin finished upgrading the last C-5 Galaxy cockpit, delivering



**05.05.2012**

*Two F-15Cs from the Oregon Air National Guard's 142nd Fighter Wing pass by Mount St. Helens in Washington state while on a mission from Portland Arpt., Ore. The 142nd flies aerospace control alert missions out of Oregon in support of NORAD, as well as drug interdiction and contingency operation missions.*

USAF photo by SrA Christopher S. Muncy



the 79th C-5 fitted with a state-of-the-art digital instrumentation to the Air Force this April.

Company officials handed over the final C-5 in a special ceremony marking the end of the C-5 Avionics Modernization Program at Travis AFB, Calif., April 27.

"This delivery continues the ever-growing legacy of the C-5 Galaxy and the critical role it plays," said Greg Ulmer, Lockheed Martin's C-5

program vice president, in a company news release.

AMP retrofits to the C-5 include a new mission computer, digital avionics, new communication, navigation, and surveillance equipment, and an autopilot system.

The C-5s that the Air Force is planning to keep are also being fitted with new turbofan engines and an airframe reliability enhancement package to remedy key ills.

### Parole for Global Hawk?

Members of the House Armed Services Committee are moving to block the Air Force from retiring its RQ-4 Global Hawk Block 30 remotely piloted aircraft next fiscal year.

The committee's tactical air and land forces panel inserted language barring USAF from using any Fiscal 2013 funds "to retire, prepare to retire, or place in storage" any Block 30 aircraft, in the committee chairman's 2013 budget markup.

In addition, the panel included a stipulation that the service "maintain the operational capability of each" of the Block 30 airframes at least through the end of 2014.

The mandate would cover the entire operational fleet, as well as any Block 30s slated for delivery between now and the 2014 date.

The HASC personnel panel's chairman buttressed the measure by retaining 560 Active Duty billets to sustain the aircraft.

The Block 30 variant was designed to replace the U-2 for high-altitude surveillance. However, the Air Force says it is proving to be too expensive to operate and is not close to being ready to take over the mission from the manned Dragon Lady spyplane.

The HASC modifications of the Pentagon's Fiscal 2013 budget request were released before the budget went to mark-up hearings, April 26.

***That's Only Part of the Island. There's Also a Very, Very Nice Beach: Airmen from the New York ANG's 106th Rescue Wing conduct casualty recovery training at Plum Island Animal Disease Center in New York's Gardiners Bay. The exercise included simulated search and rescue missions. The Department of Homeland Security, which controls access to the island, allows the 106th to use a helicopter pad there for touch-and-go landings.***

Service leaders plan to rework 52 C-5s—one C-5A, 49 C-5Bs, and two C-5Cs. USAF leadership wishes to retire 27 older C-5As to the "Boneyard" in Fiscal 2013.

Assigned to JBASA-Lackland, Tex., the C-5A will fly with Air Force Reserve Command's 433rd Airlift Wing.

Lockheed Martin's C-5 AMP began in 1998.

### New Air Force Reserve Chief

The Senate on April 26 approved Maj. Gen. James F. Jackson as the next head of Air Force Reserve Command. Jackson would receive a third star for his new assignment.

Jackson will replace current AFRC boss Lt. Gen. Charles E. Stenner Jr., who has commanded the Reserve since June 2008. Jackson is currently AFRC deputy chief. He has advised the Chief of Staff on Reserve issues since May 2010.

## Air Forces Africa Shuttered

Seventeenth Air Force, also known as Air Forces Africa, officially inactivated in April, standing down as a designated air component to US Africa Command.

US Air Forces in Europe took over as AFRICOM's new air component, in an inactivation ceremony at Ramstein AB, Germany, April 20. USAFE's 3rd Air Force at Ramstein is now responsible for day-to-day air support of AFRICOM in addition to US European Command obligations.

"The inactivation for 17th Air Force is one of the first visible steps in the Secretary of Defense-directed command restructuring," USAFE officials stated in a release announcing the change.

Members of 17th Air Force, USAFE, and 3rd Air Force began integrating last October, with 3rd Air Force's 603rd Air and Space Operations Center assuming command and control of US air operations in both Europe and Africa.

Since taking the mantle as AFRICOM's air component in October 2008, "we have actively engaged our African partners by offering them our respect, trust, and the desire to build and strengthen enduring friendships," said Maj. Gen. Margaret H. Woodward, 17th Air Force's commander at the time of its disestablishment. When AFAFRICA folded, Woodward was reassigned as acting director of operational planning, policy, and strategy on the Air Staff.

The numbered air force engaged 36 African countries in more than 200 outreach efforts during its tenure, Ramstein officials said. AFAFRICA's most prominent role was managing the short-notice air campaign over Libya last year.

A 1978 Air Force Academy graduate, Jackson had leadership positions at both squadron and wing levels, before staff assignments as mobilization assistant at USAF headquarters and US Strategic Command.

Jackson logged more than 3,600 flight hours in trainers, fighters, and tankers. At press time, the Air Force had yet to announce Stenner's retirement date.

## Raptors in the Sandbox

F-22 Raptors quietly deployed to an undisclosed air base in the US Central Command area of operations this spring.

"The purpose [of the deployment] is to strengthen military-to-military relationships with our partners in the region, to promote sovereign[ty] and regional security, improve combined tactical air operations, and enhance interoperability for forces, equipment, and procedures," a service spokesman told *Air Force Magazine*.

In past regional deployments, Raptors flew multilateral exercises at the Air Warfare Center hosted by the United Arab Emirates.

Iran's Defense Minister Brig. Gen. Ahmad Vahidi, however, told Iran's state-run Fars news agency that the deployment was a "harmful" move, warning that it risked the regional security balance, reported Bloomberg April 30.

Despite such speculation that the deployment is connected to upcoming talks with Iran on the future of its nuclear program, or is intended as a strategic message to Iran, the Air Force stressed that the deployment was actually planned more than a year ago.

The Air Force declined to specify how many aircraft deployed or to which base, due to diplomatic and security concerns.

## Melting Moments

DARPA's Hypersonic Technology Vehicle probably burned up in midflight last August because its aerodynamic heat shield degraded more quickly than expected under the intense energy of high-Mach flight.

HTV-2's ablative skin was designed to gradually burn away at high Mach numbers, but the agency's independent engineering review board determined that "larger than anticipated portions of the vehicle's skin peeled from the aerostructure."

The rapid degradation caused the vehicle to roll sharply, exceeding recovery parameters and crashing into the Pacific

Ocean, the agency surmised in its investigation findings, released April 20.

Last year's flight was DARPA's second HTV-2 experiment, incorporating lessons drawn from the first expendable vehicle which flew in April 2010.

Despite early termination, HTV-2 "successfully demonstrated stable aerodynamically controlled flight at speeds up to Mach 20 ... for nearly three minutes," DARPA officials said.

"The result of these findings is a profound advancement in understanding the areas we need to focus on to advance aerothermal structures for future hypersonic vehicles," said DARPA program manager Maj. Chris Schulz. "Only actual flight data could have revealed this."

## Alaskan Chimichanga

Three 37th Bomb Squadron B-1 Lancers departed Ellsworth AFB, S.D., on a 10-hour deep-penetration strike—dubbed Operation Chimichanga—against heavily defended practice targets on the Joint Pacific Alaska Range Complex, April 4.

"The objective of this operation was to validate the long-range strike capability of the B-1s as well as the F-22's and F-16's ability to escort them into an anti-access target area," said Lt. Col. Joseph Kunkel, 90th Fighter Squadron commander at JB Elmendorf-Richardson, Alaska.

Lifting off with F-16s from Eielson Air Force Base west of the target, the Raptors from the 90th FS cleared a path for the B-1s, slipping past an E-3 AWACS and "blue air" F-16s defending the target from positions at Elmendorf.

The US Strategic Command scenario was the first time F-22s flew in a major

USAF photo by SrA. Anthony Sanchelli



**Stepping On Toes:** SSgt. Micah Hackett, a loadmaster with the 6th Airlift Squadron, crouches on a ramp toe of a C-17 Globemaster III as he watches a CH-47 Chinook at Kabul Arpt., Afghanistan, May 5. The 6th AS, from JB McGuire-Dix-Lakehurst, N.J., transported a Turkish Air Force UH-60 Black Hawk helicopter to Kabul from Incirlik AB, Turkey.

exercise using the Raptor's new increment 3.1 software upgrades.

### Strike Eagle Crashes, Crew Safe

An F-15E crashed in Southwest Asia during a routine training mission May 3, Air Forces Central officials said.

"Both crew members ejected safely," AFCENT stated in a news release. The Strike Eagle was part of an expeditionary contingent deployed to the region from the 366th Fighter Wing at Mountain Home AFB, Idaho.

The cause of the incident is under investigation. However, an AFCENT spokesman said the mishap "was not due to any hostile fire or insurgent activity."

Another of the wing's F-15Es crashed in Southwest Asia earlier this year, killing 391st Fighter Squadron pilot Capt. Francis D. Imlay, March 28.

### Reaper Crashes in Seychelles

An unarmed MQ-9 Reaper remotely piloted aircraft crashed into the ocean near Seychelles Airport on the island of Mahe, April 4.

The cause of the mishap was still unknown as of press time but the incident was under investigation, according to Air Forces Africa officials.

Unarmed Reapers have flown counter-piracy missions over the Indian Ocean and Gulf of Aden from the Seychelles for several years. Another Reaper crashed at Seychelles Airport last December.

## Moving Mountains

Air Mobility Command is packing US military airlifters with excess war material on return flights to the US from Southwest Asia, in an effort to avoid a postwar logjam when coalition operations wind down.

"We are saving time and money by using aircraft that are already positioned and would otherwise return empty," said Brian Trout, deputy plans chief with the 618th Air and Space Operations Center at Scott AFB, Ill.

AMC is cooperating closely with US Central Command and US Transportation Command to identify "retrograde" equipment not assigned to any specific unit. CENTCOM and TRANSCOM then sort it for repatriation either by air or seallift.

"The operation is in its infancy at the moment," explained Lt. Col. Chris Fuller, 618th AOC planning chief. "With constant collaboration, we can maximize operations to efficiently move this mountain of cargo."

The command began the concerted effort early this year and AMC officials believe they are still "ahead of the game." The challenge, however, "will last the next couple of years," admitted Fuller.

Meanwhile, military leaders are increasingly concerned the US will not be able to meet the 2014 target date to withdraw the vast majority of its combat troops if Pakistan continues to bar overland movement of material to its seaport at Karachi.

"If they want us out, ... Pakistan's going to have to open up their lines or we just can't get out of there by then," asserted Marine Corps Maj. Gen. John A. Toolan Jr., former commander of Afghanistan's Regional Command-Southwest, speaking in April.

No injuries were reported on the ground, and USAF personnel worked closely with Seychelles civil aviation officials to retrieve the aircraft and debris for analysis.

### Snake Handling

Tactical air control party airmen directed 33 allied strike aircraft in NATO exercise Serpentex 2012 on the isle

of Corsica, closely simulating coalition operations in Afghanistan.

"Participants are going to Afghanistan all the time," said Capt. Michael Hogan of the 4th Air Support Operations Group at Ramstein AB, Germany. "The training is important because it gives our multinational counterparts the training needed for deployments in a life-like, controlled environment."

Hosted by France at Ventiseri-Solenzara Air Base—a former USAAF airfield—the mountainous island setting gave TACPs a chance to "train in all geographic terrains, which has been extremely productive," explained Hogan.

During the two-week exercise, the TACPs worked side by side with allied controllers and more than 550 military personnel from countries including Belgium, Britain, France, Germany, Italy, the Netherlands, and Spain, from March 26 to April 6.

### Rocket's Red Glaring Error

North American Aerospace Defense Command monitored North Korea's long-range ballistic missile test, confirming that the missile failed in midcourse April 12.

North Korea launched the Taepo Dong-2 missile, fulfilling part of the communist regime's well-publicized boast, but the missile's second stage failed, NORAD officials said in a release the same day.

US systems "detected and tracked" the missile blasting off at 6:39 p.m. on a southerly trajectory over the Yellow Sea, stated NORAD.

USAF photo by Jeff Fisher



**Thirty Seconds Over Dayton:** Twenty B-25 bombers landed at the National Museum of the US Air Force at Wright-Patterson AFB, Ohio, April 17, as part of the Doolittle Raiders' 70th-anniversary reunion. The bombers took off single file from the museum's normally closed runway, as they did from the deck of the carrier USS Hornet on April 18, 1942. The bombers then made a low pass in formation over the museum. Eighty airmen in 16 B-25s took part in the original surprise attack on Japan. For more, see "AFA National Report," p. 75.

### Operation Enduring Freedom

#### Casualties

By May 16, a total of 1,965 Americans had died in Operation Enduring Freedom. The total includes 1,962 troops and three Department of Defense civilians. Of these deaths, 1,547 were killed in action with the enemy while 418 died in noncombat incidents.

There have been 15,950 troops wounded in action during OEF.

#### Predatory Pause

The Air Force has temporarily halted increasing the number of Predator and Reaper combat air patrols flying in support of operations in Afghanistan, in order to ease strain on the force and rebuild the training pipeline, said Lt. Gen. Larry D. James, deputy chief of staff for intelligence, surveillance, and reconnaissance.

The goal of reaching 65 CAPs—with a surge capacity of 85 CAPs—remains in place, and the service is flying 57 orbits today. It will maintain this level until November, when it adds the 58th CAP, said James during an Air Force Association-sponsored Air Force Breakfast Program address in Arlington, Va., April 26.

"That will give us time to reconstitute our training pipeline and allow us to start building capacity back in to the system, because we really are people-limited in terms of operating the Predator and Reaper," he explained.

James said he doesn't expect the Predator and Reaper crew ratio to balance out until 2016 or 2017.

#### Trial by Fire, Trial by Budget

The C-27J Spartan airlifter may be on the Air Force's chopping block, but the tiny airlifters are earning high praise from airlift units and ground forces alike.

While USAF's "standard mission tasking process requires 96 hours of notice, the C-27J has been 'time on target' in less than 24 hours," under Army tactical control in Afghanistan, said Capt. Steffen Landrum, USAF's liaison to the Army's 25th Combat Aviation Brigade.

"For the troops out in the field, that is the ultimate flexibility," said Landrum, according to an Army news release April 23.

Assigned to the 25th CAB, 702nd Expeditionary Airlift Squadron Spartans have flown from Kandahar Airfield since deploying to Afghanistan last August. Landrum calculates that the Army has saved \$30 million during this span by fulfilling some missions with C-27Js instead of CH-47 Chinook helicopters. Likewise, he figures USAF has saved "more than \$3.8 million" by operating the C-27J instead of the C-130 in the direct support role.

Though USAF plans to supplant the Spartans with C-130s, the C-27J is "by far the better choice for the last tactical mile," said Lt. Col. Jeffrey Charette, 702nd EAS director of operations.

Army Chief of Staff Gen. Raymond T. Odierno has said the Army is interested in snapping up the more than two dozen C-27s already in the fleet, and the Coast Guard is reportedly eyeing the aircraft for the maritime surveillance and rescue role as well.

The C-27J's fate is ultimately in the hands of Congress. Air Force leaders are seeking to divest the C-27 fleet in Fiscal 2013, arguing that it cannot afford to keep the aircraft under current budget constraints.

The A-10's presence "will enhance our combat capabilities and provide a strong deterrent, ensuring peace and stability" for South Korea, said Lt. Gen. Jan-Marc Jouas, 7th Air Force commander.

Dubbed the 75th Expeditionary Fighter Squadron, the 250 airmen from Moody constitute a theater security package, regularly rotated to bolster combat assets available on the Korean peninsula.

The Moody A-10s relieved F-16s dispatched to provide rotational fighter cover to USAF's other peninsular base from Hill AFB, Utah. The 421st Fighter Squadron F-16s returned from Kunsan AB, Korea, in mid-April.

#### Lightning May Strike Twice

The Air Force picked Hill AFB, Utah, and Burlington Arpt., Vt., as the preferred operational Active Duty and Air National Guard F-35 bases, respectively, based on first-round environmental impact studies.

"The Air Force is analyzing the impacts of basing three squadrons of 24 aircraft each at the Active Duty location and one squadron of 24 aircraft at the Air National Guard location," said Kathleen I. Ferguson, USAF's installations chief. Ferguson unveiled the environmental impact study results April 13.

The Air Force also is considering Jacksonville Arpt., Fla.; McEntire JNGB, S.C.; Mountain Home AFB, Idaho; and Shaw AFB, S.C., as potential contenders.

Service officials are now conducting a series of 17 public hearings to give citizens in communities surrounding the proposed sites the opportunity for feedback.

Leaders expect to make a final decision on the Active Duty and ANG basing location this fall, bedding aircraft down as early as 2015, according to the draft EIS.

#### Questions Up North

House Armed Services Committee members oppose cutting several Air National Guard fighter units guarding US airspace, a move requested in the President's Fiscal 2013 budget.

Plans to eliminate two aerospace control alert sites, including one at Duluth, Minn., means "there will be virtually no US armed force protection for our country's northern border between Madison, Wisconsin, and Portland, Oregon," stressed Rep. Chip Cravaack (R-Minn.).

"Narrowing the mission of a unit nationally recognized for its high performance leaves our nation more vulnerable to attack," asserted Cravaack.

"Initial indications are that the first stage of the missile fell into the sea [102.5 miles] west of Seoul, South Korea," stated the release. As the missile transitioned to second-stage boost "the remaining stages were assessed to have failed and no debris fell on land."

NORAD officials said that neither the missile nor the debris from its breakup posed a threat at any time to the US or allies in the region.

Despite the missile's failure, White House Press Secretary Jay Carney

stressed that the launch constituted "provocative action" that directly "threatens regional security, violates international law, and contravenes [North Korea's] own recent commitments."

#### Warthogs to Korea

Nine A-10C ground-attack aircraft of the 75th Fighter Squadron arrived April 30 for a six-month regional stability stint at Osan AB, South Korea, from their home at Moody AFB, Ga.

## Senior Staff Changes

**RETIREMENTS:** Lt. Gen. John C. **Koziol**, Lt. Gen. Richard Y. **Newton III**, Maj. Gen. Blair E. **Hansen**, Brig. Gen. Francis L. **Hendricks**. **AFRC RETIREMENT:** Brig. Gen. Patrick A. **Cord**.

**NOMINATION: To be AFRC Lieutenant General:** James F. **Jackson**.

**CHANGES:** Lt. Gen. (sel.) Salvatore A. **Angelella**, from Vice Dir., Strat. Plans & Policy, Jt. Staff, Pentagon, to Cmdr., 5th AF, PACAF, Yokota AB, Japan ... Maj. Gen. (sel.) Howard B. **Baker**, from Cmdr., AF Global Log. Spt. Ctr., AFMC, Scott AFB, Ill., to Cmdr., Ogden Air Log. Complex, AFMC, Hill AFB, Utah ... Maj. Gen. (sel.) Thomas W. **Bergeson**, from Defense Attaché, DIA, UK, to Dir., Operational Capability Rqmts., DCS, Ops., Plans, & Rqmts., USAF, Pentagon ... Lt. Gen. (sel.) Andrew E. **Busch**, from Cmdr., Ogden Air Log. Complex, AFMC, Hill AFB, Utah, to Vice Cmdr., AFMC, Wright-Patterson AFB, Ohio ... Maj. Gen. Michael J. **Carey**, from Dep. Dir., Command & Control and Nuclear Ops., Jt. Staff, Pentagon, to Cmdr., 20th AF, AFGSC, F. E. Warren AFB, Wyo. ... Lt. Gen. Charles R. **Davis**, from Cmdr., ESC, AFMC, Hanscom AFB, Mass., to Mil. Dep., Office of the Asst. SECAF, Acq., Pentagon ... Brig. Gen. Steven J. **Depalmer**, from Dep. Cmdr., Jt. Warfare Ctr., Supreme Allied Command for Transformation, NATO, Stavanger, Norway, to Dep. Cmdr., Jt. Interagency Task Force-South, SOUTHCOM, Miami ... Brig. Gen. John W. **Doucette**, from Cmdr., 36th Wg., PACAF, Andersen AFB, Guam, to Dep. Cmdr., Jt. Warfare Ctr., Supreme Allied Command for Transformation, NATO, Stavanger, Norway ... Maj. Gen. Barbara J. **Faulkenberry**, from Dir., Log., AFRICOM, Stuttgart, Germany, to Vice Cmdr., 18th AF, AMC, Scott AFB, Ill. ... Lt. Gen. Burton M. **Field**, from Cmdr., 5th AF, PACAF, Yokota AB, Japan, to DCS, Ops., Plans, & Rqmts., USAF, Pentagon ... Brig. Gen. Donald S. **George**, from Dir., Intel., STRATCOM, Offutt AFB, Neb., to Spec. Asst. to DCS, ISR, USAF, Pentagon ... Brig. Gen. Scott P. **Goodwin**, from Commandant, AF Expeditionary Ctr., AMC, JB McGuire-Dix-Lakehurst, N.J., to Dir., Ops., AMC, Scott AFB, Ill. ... Brig. Gen. David A. **Harris**, from Vice Cmdr., Air Armament Ctr., AFMC, Eglin AFB, Fla., to Cmdr., 96th Test Wg., AFMC, Eglin AFB, Fla. ... Maj. Gen. James W. **Hyatt**, from Cmdr., USAF Warfare Ctr., ACC, Nellis AFB, Nev., to Dir., Air & Space Ops., USAF, Ramstein AB, Germany ... Brig. Gen. Gregory J. **Lengyel**, from Exec. Asst. to Supreme Allied Cdr. Europe, SHAPE, NATO, Mons, Belgium, to Commandant of Cadets, USAF Academy, Colorado Springs, Colo. ... Lt. Gen. (sel.) Bruce A. **Litchfield**, from Cmdr., Oklahoma City ALC, AFMC, Tinker AFB, Okla., to Cmdr., AF Sustainment Ctr., AFMC, Tinker AFB, Okla. ... Maj. Gen. (sel.) Jeffrey G. **Lofgren**, from Cmdr., 380th AEW, AFCC, Southwest Asia, to Cmdr., USAF Warfare Ctr., ACC, Nellis AFB, Nev. ... Maj. Gen. Frederick H. **Martin**, from Dir., Ops., AMC, Scott AFB, Ill., to Dep. Dir., Ops., Office of Security Cooperation-Iraq, CENTCOM, Baghdad, Iraq ... Brig. Gen. Lawrence M. **Martin Jr.**, from Vice Cmdr., 18th AF, AMC, Scott AFB, Ill., to Vice Cmdr., 618th Air & Space Ops. Ctr., AMC, Scott AFB, Ill. ... Brig. Gen. Paul H. **McGillicuddy**, from Cmdr., 9th Recon Wg., ACC, Beale AFB, Calif., to Cmdr., 380th AEW, ACC, Southwest Asia ... Brig. Gen. Jon A. **Norman**, from Vice Cmdr., 12th AF, ACC, Davis-Monthan AFB, Ariz., to Dir., USAF-UK, USAF, RAF Mildenhall, UK ... Brig. Gen. Mark C. **Nowland**, from Dir., Plans, Prgms., & Assessments, AETC, JB San Antonio, Tex., to Dir., Strategy, Policy, & Plans, SOUTHCOM, Miami ... Brig. Gen. Timothy M. **Ray**, from Cmdr., 438th AEW, ACC, Kabul, Afghanistan, to Dir., Ops., DCS, Ops., Plans, & Rqmts., USAF, Pentagon ... Maj. Gen. Anthony J. **Rock**, from Spec. Asst. to DCS, Ops., Plans, & Rqmts., USAF, Pentagon, to Vice Dir., Jt. Staff, Pentagon ... Brig. Gen. Steven M. **Shepro**, from Dir., Strategy, Policy, & Plans, SOUTHCOM, Miami, to Cmdr., 438th AEW, ACC, Kabul, Afghanistan ... Brig. Gen. Giovanni K. **Tuck**, from Cmdr., 379th AEW, ACC, Southwest Asia, to Cmdr., Defense Log. Agency-Energy, Fort Belvoir, Va. ... Brig. Gen. Scott A. **Vander Hamm**, from Cmdr., 509th Bomb Wg., AFGSC, White-man AFB, Mo., to Dir., Plans, Prgms., Rqmts., & Assessments, AETC, JB San Antonio, Tex. ... Brig. Gen. Mark W. **Westergren**, from Dir., ISR & Recon Strategy, Plans, Doctrine, & Force Dev., DCS, ISR, USAF, Pentagon, to Dir., Intel., STRATCOM, Offutt AFB, Neb. ... Maj. Gen. Brett T. **Williams**, from Dir., Ops., DCS, Ops., Plans, & Rqmts., USAF, Pentagon, to Dir., Ops., CYBERCOM, Fort Meade, Md.

**SENIOR EXECUTIVE SERVICE RETIREMENT:** John T. **Manclark**.

**SES CHANGES:** Devin L. **Cate**, to Dep. Dir., Test & Eval., USAF, Pentagon ... Michael M. **Hale**, to Prgm. Dir., Activity-Based Intel. Sys. Prgm. Office, Natl. Recon Office, Chantilly, Va. ... Valerie L. **Muck**, to Asst. Auditor General, Acq. & Log. Audits, AF Audit Agency, Wright-Patterson AFB, Ohio ... Dominic F. **Pohl**, to Exec. Dir., AF ISR Agency, JB San Antonio, Tex. ... David K. **Robertson**, to Exec. Dir., AFOTEC, Kirtland AFB, N.M. ... Joseph D. **Rouge**, to Tech. Advisor for ISR Space & Cyberspace Capabilities, DCS, ISR, USAF, Pentagon ... Jeffery R. **Shelton**, to Dir., Resource Integration, DCS, Log., Instl., & Mission Spt., USAF, Pentagon ... Todd I. **Stewart**, to Dir. & Chancellor, AFIT, AU, AETC, Wright-Patterson AFB, Ohio ... Susan J. **Thornton**, to Dir., Engineering & Tech. Mgmt., AFMC, Wright-Patterson AFB, Ohio.

**COMMAND CHIEF MASTER SERGEANT RETIREMENT:** Eric R. **Jaren**.

**COMMAND CMSGT CHANGE:** Michael J. **Warner**, to Command Chief Master Sergeant, AFMC, Wright-Patterson AFB, Ohio.

Rep. Tom Latham (R-Iowa) derided the decision to reduce continental US air defense saying it "was made using nonstrategic criteria." He added that "the greater cost-effectiveness of relying on Air Guard units" rather than Active Duty fighter squadrons was "completely ignored" in the decision process.

Latham further asserted that the Air Force refused to justify its decision to cut the Iowa Air Guard's 132nd Fighter Wing, an F-16 unit based at Des Moines. USAF termed the cuts "a judgment call" based on unknown criteria, said Latham.

### Long-Haul Reaper

General Atomics Aeronautical Systems unveiled retrofit kits that can be used to extend the range and endurance of the company's MQ-9 Reaper remotely piloted aircraft.

Adding a pair of fuel pods and heavier landing gear, one option increases the aircraft's surveillance mission endurance from 27 hours to 37 hours, according to a company news release April 18.

A second option optimizes the aircraft for multipurpose missions, replacing the MQ-9's 66-foot wings with an 88-foot span, in addition to the new undercarriage and fuel tanks. The full-up package increases Reaper endurance from 27 hours to 42 hours, according to General Atomics.

The field-installable kits wouldn't require the aircraft to be modified at the depot and could quickly be delivered to the Air Force, said the company.

New MQ-9 configurations are the result of a recent company-funded endurance-enhancement study, said Frank W. Pace, president of the company's Aircraft Systems Group.

Earlier this year, General Atomics also unveiled a new undercarriage strut design to increase the Reaper's gross takeoff weight.

### Mud Raptors Unleashed

F-22s dropped Joint Direct Attack Munitions using self-generated coordinates for the first time outside of testing, on a training sortie from JB Elmendorf-Richardson, Alaska.

"The ability to drop weapons on self-generated coordinates is significant because it gives commanders the ability to task us against dynamic targets," said Lt. Col. Robert Davis, 90th Fighter Squadron director of operations at Elmendorf.

Before installation of the Increment 3.1 upgrades, Raptors pilots were forced to rely on surrogate aircraft and systems to locate targets and generate strike coordinates for attack.

This slowed detection-to-strike response time and limited the F-22 to





ground targets within airspace that the targeting aircraft could safely operate.

With Increment 3.1 software and equipment, “the F-22 now has significantly more lethality, flexibility, and survivability in an anti-access, area-denial scenario,” said Davis.

Squadron F-22s dropped 20 JDAMs—eight live and 12 inert—over the Joint Pacific Alaska Range Complex during a week’s worth of training, base officials revealed April 19.

#### Promoting Enlisted History

Air Force officials approved construction of a new 50,000-square-foot Airman Heritage Museum to better showcase enlisted history at JBSA-Lackland, Tex., at USAF’s basic training site.

The current 6,778-square-foot museum “is limited in exhibit space and accessibility,” explained Jaime Vazquez, Lackland Gateway Heritage Foundation president. “Building the new facility adjacent to the parade

ground will provide easy access for the approximately 3,000 family members and friends of trainees who attend the basic military training graduation parade each week,” he said.

The planned two-story museum and learning center will highlight the history of basic and enlisted technical training and is scheduled to open in September 2017.

#### Huey Upgrade

Air Force Global Strike Command is contemplating stretching the service life of its 1970s-era UH-1N Huey helicopters an extra 30 years through a combination of upgrades and modifications to the existing airframe.

AFGSC hopes to sustain the fleet’s enviable mission capable rate as a stopgap until the type is eventually replaced, according to a request for information issued April 17. The Hueys are used to guard the nation’s ICBM fields.

The command is soliciting industry interest in bidding to increase the

**No C-17 Left Behind:** A C-17 damaged Jan. 23 when it ran off the runway during foul weather at FOB Shank, Afghanistan, was successfully moved to a suitable repair pad on April 16. The aircraft was maneuvered back onto the runway via a specially constructed “bridge” that prevented the massive airlifter from sinking into the soil, then moved to the repair site. A team comprising joint service troops and civilians completed the move after months of careful preparation. Officials hope to repair the aircraft and put it back into USAF’s C-17 fleet.

aircraft’s endurance, range, speed, all-weather capability, and survivability. In addition, AFGSC would like to fit modernized communication and navigation systems on the venerable helos in the near future, according to the RFI.

AFGSC officials want to begin upgrades between Fiscal 2014 and Fiscal 2018, according to solicitation details.

#### Every Man a Tester

The first class of 12 enlisted airmen graduated from the Air Force Test Pilot School’s new Enlisted Flight Test Course at Edwards AFB, Calif. The school is training personnel for upcoming programs such as the KC-46A. The next generation tanker will require more aircrew than just test pilots, school officials said in April.

Making efficient use of every crew member aboard, “we are empowering the students through knowledge to go out there and be effective testers,” explained MSgt. Thomas Ireland, 445th Flight Test Squadron superintendent.

EFTC students learned the essentials of aerodynamics, experiment design, and

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aircraft systems in a condensed course including instructional test flights on a C-12 Huron, KC-135 Stratotanker, and a sailplane.

"The students now know test conduct, how the test will proceed, what the objectives of the test are. ... They now speak the same language," said Col. Noel Zamot, TPS commandant.

The EFTC course is specifically designed to complement the school's 48-week test pilot program. The inaugural batch of enlisted airmen graduated EFTC April 18.

**More Than a Lot of F-35s**

The Pentagon ordered two more F-35 Lightning IIs in Lot 5, awarding Lockheed Martin \$259 million to modify the contract in April.

The modification adds a single Air Force F-35A and a Navy F-35C to the production batch, meaning the company will build a total of 32 jets in Lot 5.

According to the Defense Department announcement April 13, Lockheed Martin is expected to complete Lot 5 in February 2014, producing 22 F-35As, three short-takeoff F-35Bs for the Marine Corps, and seven F-35Cs.

DOD and Lockheed Martin agreed to an undefinitized Lot 5 contract last December, allowing work to begin on the fifth batch of aircraft late last year.

**Lead or Quit**

The Air Force needs to either "step up" and lead airborne strategic intelligence or "step back" and let other services take over for USAF's large intelligence gathering fleets, said retired Gen. Ronald R. Fogleman, former Air Force Chief of Staff.

**Last of the Best**

The 187th and final F-22 Raptor production aircraft entered Air Force service in a handover ceremony at Lockheed Martin's assembly plant in Marietta, Ga., May 2. Raptor tail No. 4195 completed USAF's total order for the fifth generation fighter.

"The very existence of this airplane—your airplane—has altered the strategic landscape forever," said Robert J. Stevens, Lockheed Martin chairman and CEO, addressing production workers at the plant.

Speaking to the audience gathered for the hand-off, Gen. Norton A. Schwartz, Air Force Chief of Staff, said advanced weapon systems such as the F-22 will "help shape the future security environment and not just respond to it."

Air superiority is the F-22's primary mission, but "it clearly will play a starring role" in the nation's new defense strategy that emphasizes deterring and defeating aggressors and projecting power into contested areas, Schwartz said.

Schwartz noted an F-22's retargeting of a submarine-launched Tomahawk cruise missile in flight as just one example of the aircraft's growing interoperability with other systems and services as the platform matures. "Your remarkable efforts will make very important contributions to our national security ... for many, many years to come," he told the crowd.

Raptor 4195 was completed in December and undertook several months of testing before being transferred to the Air Force and flown to its operational home with the 3rd Wing at JB Elmendorf-Richardson, Alaska.

USAF hasn't done "the square root of squat" to modernize its RC-135s and other 707-based intelligence, surveillance, and reconnaissance platforms, Fogleman alleged, speaking at the Air Force Association's Mitchell Institute for Airpower Studies in Arlington, Va., April 11.

At the same time, "the Navy has figured out a way to modernize" its comparable platforms, rolling out the brand-new and capable P-8 Poseidon maritime intelligence aircraft, he noted.

The ISR mission is "not an Air Force birthright," he stressed, and USAF

should decide if it wants to be the key player in the field or simply a figurant among the services.

Continuing to lead the US military's airborne ISR requires significantly more investment and commitment than the Air Force has given the mission, he said.

"Somebody needs to do this for the nation," charged Fogleman, and if the Air Force does not pay attention to the mission, "it will go to somebody else."

**Behold, Your Champions**

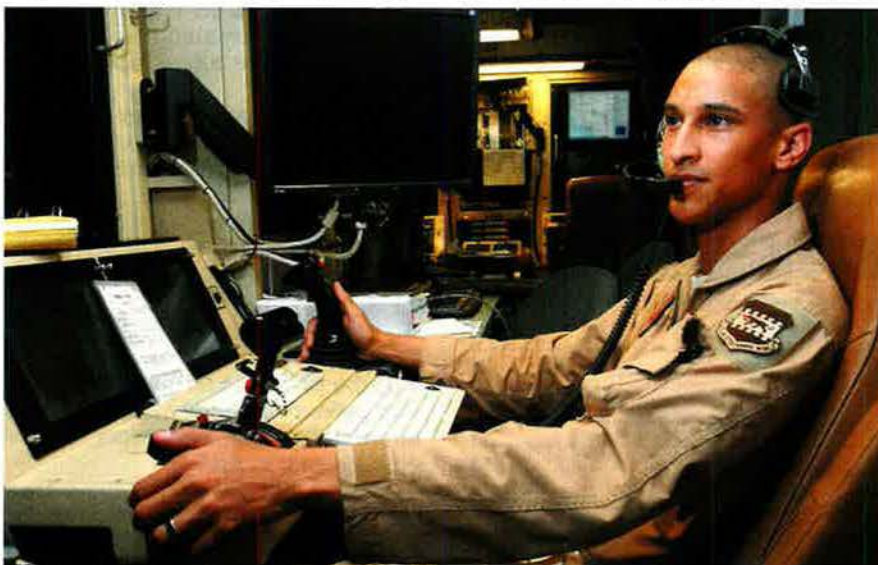
Swordsman Capt. Weston S. Kelsey, an Air Force Reservist, and biathlete A1C Emily J. Shertzer, from the Pennsylvania Air National Guard, were crowned Air Force 2011 athletes of the year.

Kelsey is the nation's top men's épée fencer and is currently ranked 14th in the world, according to Air Force personnel officials. He will represent the United States at the summer Olympic Games in London later this year.

Shertzer won the women's overall title at the 2011 Summer Biathlon Championship in Jericho, Vt., organized by US and international biathlon associations. Last year she also set an All-Guard Marathon Team female speed record, finishing with a time of 2:54:20 at the National Guard Marathon in Lincoln, Neb., according to USAF.

Kelsey is a support officer assigned to the 310th Mission Support Squadron at Buckley AFB, Colo. Shertzer is musician with the 553rd Air Force Band at Fort Indiantown Gap, Pa. ■

USAF photo by SSgt. James Liebh



**Not So Remote, Really:** A1C Xavier Williams, a sensor operator deployed to Southwest Asia with the 64th Expeditionary Reconnaissance Squadron, operates the controls for an MQ-1 Predator. Williams and other in-theater airmen control the Predators during launches and recoveries, while the MQ-1s are often operated mid-mission by crews back in the United States.



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*Capt. Barry Crawford, loaded down with gear, is credited with saving the lives of many Afghan and US troops.*

USAF photo



**Capt. Barry Crawford, an Air Force special operator, earned the Air Force Cross for his heroism in Afghanistan.**

# Caught in the Crossfire

By Amy McCullough, Senior Editor

**C**apt. Barry F. Crawford Jr. was caught in the crossfire. He waved his arms toward the HH-60 Pave Hawk that hovered above as he ignored the bullets pelting the ground at his feet, kicking up dirt and rocks. His headset muted the sound as a round flew just past his ear, though he definitely felt the antenna of one of his radios slap the back of his neck hard after the bullet struck it. The special tactics officer thought he had been shot. He felt for blood, but there was none. He carried on.

The landing zone was hot and it was tiny. More than a hundred enemy fighters were hidden in the jagged mountainside surrounding the remote Afghan village in Laghman province, in eastern Afghanistan. The insurgents had been accurately firing machine guns and sniper rifles down at the US and Afghan commandos for hours. Two Afghan soldiers were dead and three more were severely wounded. Crawford knew the casualties didn't have long to live, but the wind and rain combined with the fortress-like terrain made it difficult for the medevac helicopter to land. Without regard for his own life, he remained exposed to heavy fire and guided the pilots onto the landing zone.

For Crawford's actions that day, Air Force Chief of Staff Gen. Norton A. Schwartz awarded him the Air Force Cross—the second highest honor for valor, after only the Medal of Honor—at a Pentagon ceremony April 12. Crawford is the fifth Air Force battlefield airman to receive the Air Force Cross since Sept. 11, 2001, and only the third living recipient to receive the award in that time. Only seven other airmen have earned the honor since 1975.

Multiple mission participants “painted a consistent and compelling picture of Captain Crawford’s technical expertise and exceptional courage under fire during the day-long battle with the

enemy,” said Lt. Col. Parks Hughes, commander of the 21st Special Tactics Squadron, Crawford’s home unit at the time. “They credited his decisive actions with enabling the US ground force and their Afghan partners to survive and escape an extremely dire situation.”

No one expected the massive assault that took place on May 4, 2010. Crawford was assigned to Army Special Forces Operational Det. Alpha, which was partnered with a group of Afghan infantry trained to mirror US Army Rangers. The operation was part of a larger scale plan to work with International Security Assistance Force troops in a completely denied area east of Kabul that had gone a long time without a coalition presence.

## An Eerie Absence

The US forces were acting as mentors. The idea was to put an Afghan face on the operation, intended only to be a regional engagement effort. The soldiers wanted to sweep the area and talk to the village elders. The area was known to be sympathetic to the Taliban, but the assault force—including nearly 100 US and Afghan personnel—only expected resistance from some 10 fighters. Unbeknownst to the troops on the ground, though, the mission had been compromised and insurgents had holed up in tunnels and caves in the mountains waiting for them.

It turns out the assault force was ambushed by a highly capable enemy numbering roughly 10 times what they anticipated.

As the troops entered the village, they quickly realized the normal signs of life were eerily absent. The villagers should have been getting up for their first prayer. Women, children, and men should have been moving around.

“There was none of that, so our ‘spidey senses’ picked up and we knew something wasn’t right,” Crawford told *Air Force Magazine* in an interview from

Maryland where he is now assigned to the Air National Guard’s 104th Fighter Squadron in Baltimore, awaiting a pilot training slot. Crawford hopes to fly A-10s for the Guard.

Army AH-64 Apaches, Air Force F-16s, an AC-130 gunship, and a manned intelligence, surveillance, and reconnaissance platform circled overhead, passing information to Crawford. Initially, aircrews could make out 50 insurgents moving in the mountains, but that number more than doubled as the battle dragged on. After intercepting an enemy communication, it was clear the insurgents were preparing to attack once the sun came up.

The insurgents knew the US and Afghan troops had air assaulted in, but they thought they were going to drive out of the village, said Army MSgt. Sean Berk, team sergeant with the 3rd Special Forces Group who was deployed with Crawford that day. “We got information that there were about 30 insurgents a kilometer south of us putting IEDs in the road, so they were setting up down below us,” said Berk.

Army Capt. Timothy Driscoll, the ground force commander, gave the signal to begin clearing the village. Within the first 30 minutes, the assault force found the first cache of weapons—grenades, rocket-propelled grenades, anti-tank mines, and some recoilless rifles with ammunition. The houses were mostly empty but were set up like defensive fighting positions, with firing ports built up in the corners. There was no doubt they had walked into a Taliban stronghold, said Crawford.

Around 5 a.m. an element just north of the village started taking fire. Immediately after, bullets began raining down inside the village. “One of my teammates referred to it as getting shot at like fish in a barrel,” said Crawford. “Once the enemy started firing on us, it didn’t stop for 10-plus hours. ... Wherever we moved, everyone was



Throughout the fighting, Crawford remained in constant communication with the Apaches, which were strafing the mountainside with 30 mm rounds and rockets. One of the elements spotted a large boulder, roughly 250 feet in diameter, that was serving as shelter for a couple of fighting positions. Crawford called on the F-15E Strike Eagles, which had replaced the F-16s, to lay down 500-pound and 2,000-pound Joint Direct Attack Munitions.

The shooting stopped, but only for about 15 minutes, said Crawford. That's when they realized the insurgents were maneuvering through a tunnel system dug high up in the mountains.

A few hours into the fight a heavy layer of clouds covered the mountaintops and rain started pouring down, forcing Crawford to rely heavily on the Apaches. Two-thirds of the weapons employed during the battle were danger close, he said.

"The professionalism of the Apaches' [crews] was incredible," said Crawford. Back at the base, "they were actually waking people up to come out and putting ad hoc flights together to support us. If I said I need weapons here, they didn't question it ... because they knew too many lives were on the line."

*Left: Crawford communicates with his team in the field. Below: An Army AH-64D Apache helicopter fires a rocket during a training exercise. Crawford relied heavily on the Apache gunships for fire support during the firefight.*

constantly under fire. It was like running the gauntlet, like it was straight out of a movie."

Loaded with well more than 50 pounds of gear, Crawford ran down the street with his team as rounds struck the ground near their feet and walls exploded alongside them.

Overall, "we were certainly lucky that day. A lot of guys had a lot of close calls," he said.

But some weren't so lucky. The first casualty suffered a gunshot wound to the face, so one of the medics ran over to provide medical treatment.

"Then it was kind of like dominoes. The first guy was wounded; we took another guy—he was killed in action. A few minutes after that we took another wounded," said Crawford. In less than 45 minutes the team suffered five casualties—two killed in action and three more severely wounded. All were Afghans.



The casualties required airlift out, but the village was too hot with ground fire, so Crawford held off a medevac. The HH-60G Pave Hawk rescue helicopters went to get fuel and when they came back, he tried to guide them through what he called “the worst possible conditions.”

The long battle was starting to take its toll on the men. They had been dodging bullets all day. The Afghans ~~had their bodies were hurt, was~~ rainy. And they were out of markings for the landing zone.

### Medical Heroics

“I knew it was a dire situation,” said Crawford. He also knew he had one shot left to get the wounded out, so he came up with a battle plan to unleash hell on the mountainside.

“Recognizing that the wounded Afghan soldiers would die without evacuation to definitive care, Captain Crawford took decisive action and ran out into the open in an effort to guide the helicopter to the landing zone,” reads his Air Force Cross citation. “Once the pilot had eyes on his position, Captain Crawford remained exposed, despite having one of his radio antennas shot off mere inches from his face, while he vectored in the aircraft to his position. ...



USAF photo by SSgt. Aaron Allmon

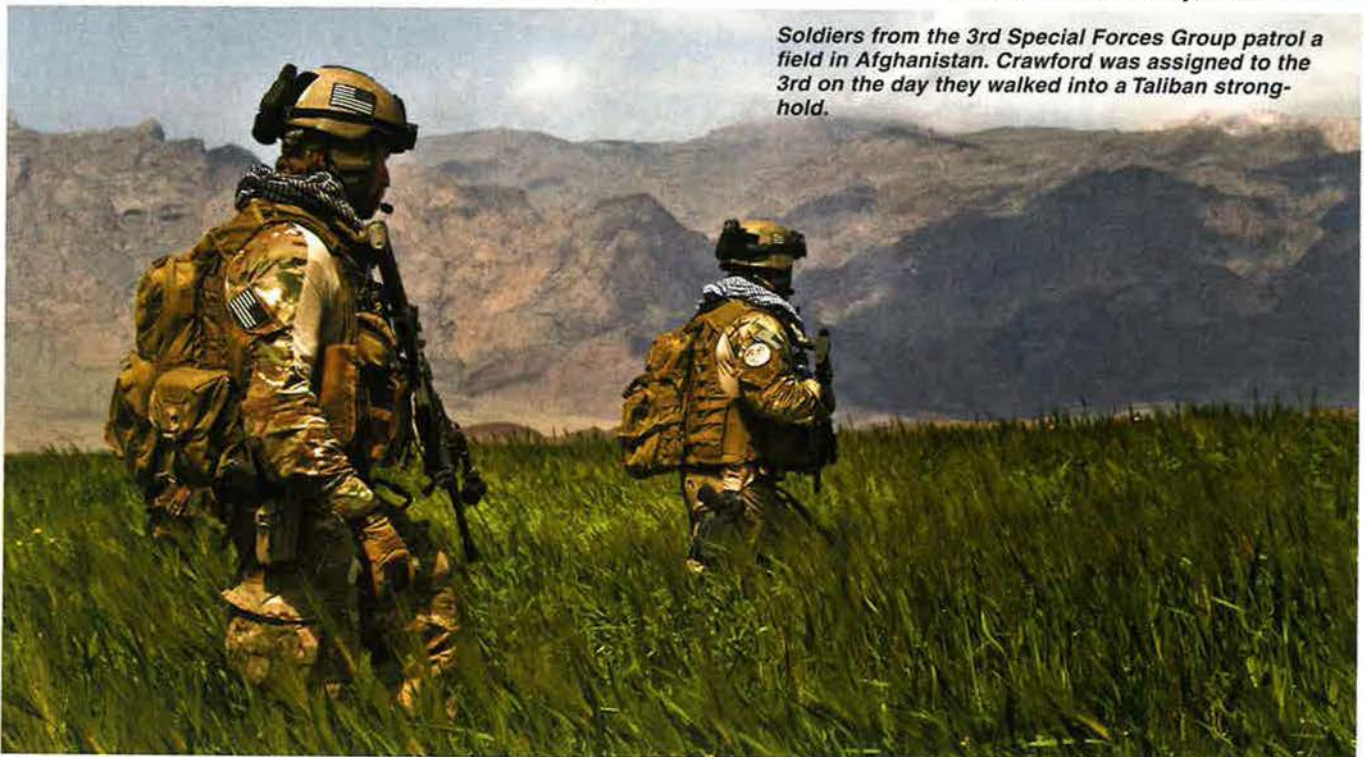
**An F-15E flies overwatch above the mountains of Afghanistan. Crawford called on Strike Eagles to lay down 500- and 2,000-pound JDAMs during the firefight.**

“Captain Crawford then bounded across open terrain, engaged enemy positions with his assault rifle, and called in AH-64 strafe attacks to defeat the ambush, allowing the aid-and-litter teams to move toward the casualties,” states the citation.

The helicopters successfully evacuated four of the five casualties despite taking at least 10 direct hits, but then Crawford had to call them off due to the overwhelming fire. There was one casualty still on the ground, and he was in bad shape.


The US and Afghan medics tending to the wounded man came under direct fire and the Afghan partner forces who were helping Army SSgt. Grant Derrick, the senior medic, carry the litter ran for cover. Unwilling to leave the wounded Afghan alone in the open under fire, Derrick stayed behind as Crawford called in gun strafes.

The Afghan had been shot in the face. The bullet pierced his nose and then exited out the side of his jaw. Derrick, who received a Silver Star for his actions that day, turned him on



**Soldiers from the 3rd Special Forces Group patrol a field in Afghanistan. Crawford was assigned to the 3rd on the day they walked into a Taliban stronghold.**

US Army photo by Spc. Joseph A. Wilson



his side so he wouldn't swallow his own blood. That's when the Afghan got shot again, this time in the lower glute. The wound was too high for a tourniquet, so Derrick packed it with medical gauze to stop the bleeding. He knew he needed to keep pressure on the wound, but the enemy wasn't letting up, so he hid the wounded soldier behind a pile of rocks and used the weight of his own body to put pressure on the wound as he returned fire. Derrick remained out in the open even after a bullet grazed his ankle.

Crawford continued calling for more strafing attacks as he looked for a safer landing zone to evacuate the Afghan. Meanwhile, an engineering team had gathered the entire cache of weapons and placed them in a single building for a controlled detonation. Derrick realized that might be his only chance to safely move the wounded man.

#### Moments To Live

The explosion was so large, it engulfed the entire village in smoke. "That's how I was able to get him out of there," said Derrick. He unstrapped the patient and carried him through the maze of alleyways toward the new landing zone, using the sound of the helicopters to guide him through the smoke.

The man was bleeding out and had only a few minutes to live, but the HH-60s were out of fuel.

Crawford began communicating with a conventional Army Black Hawk overhead. "I said, 'I'm not going to lie, it's really nasty down here, but we still have

a commando on the ground. He just got shot again en route to the HLZ and the senior medic is laying on top of him providing him with medical treatment and trying to block him from getting hit again,'" said Crawford. The Black Hawk came in and successfully evacuated the last wounded commando without taking any direct hits.

Driscoll, the ground force commander who would receive a Bronze Star with Valor Device for his actions that day, called headquarters and requested a quick-reaction force for support. As the

team landed a couple kilometers west of the village, they too immediately came under fire, so they stayed in place to secure the final landing zone. Crawford split the air assets to provide them some cover. At this point, there were more than 160 US and Afghan personnel on the ground in multiple elements.

Crawford continued engaging with the Apaches, which were unleashing gun, rocket, and Hellfire attacks on the mountainside, allowing the ground force to begin the trek of more than a mile over steep terrain and out of the village. As



*Crawford—shown here in an armored vehicle in Afghanistan—and his element were attacked several times by enemy combatants firing from less than 500 feet away. The team had to fight its way to the landing zone.*





USAF photo by Andy Morataya

**Air Force Chief of Staff Gen. Norton Schwartz on April 12, 2012, pins the Air Force Cross on Capt. Barry Crawford in recognition of his bravery and valor during the 10-hour firefight in eastern Afghanistan.**

runs, Hellfire missiles, and 500- and 2,000-pound bombs, allowing the men to successfully evacuate the village without sustaining any more casualties.

As they finally reached the landing zone, Crawford kept some air assets over the village to confuse the enemy, which was plotting its fourth major ambush of the day, according to more intercepted radio calls.

“Throughout the course of the 10-hour firefight, Captain Crawford braved effective enemy fire and consciously placed himself at grave risk on four occasions while controlling over 33 aircraft and more than 40 air strikes on a well-trained and well-prepared enemy force,” reads his Air Force Cross citation. “His selfless actions and expert airpower employment neutralized a numerically superior enemy force and enabled friendly elements to infiltrate the area without massive casualties.”

During the award ceremony, Crawford said he was “deeply honored” and “extremely humbled” not only by the “magnitude of the award” but also by

they were leaving, a small pickup truck carrying about three insurgents came in firing RPGs. “We engaged the truck and neutralized the threat,” said Crawford.

The US troops and Afghan soldiers bounded through streets and alleys trying to clear the way out, but the insurgents kept launching ambushes. “We knew the air was doing an incredible job because at one point the enemy said they were dying like vegetables. We kind of laughed about it after the fact because we don’t even know what that means, but they knew we were moving. We knew they were going to make one last-ditch effort to mass us and move into the village, so we had to get out of there,” said Crawford.

As they moved south, another small pickup truck rolled in firing on the troops. Crawford called in a Hellfire attack. In the explosion, the truck’s fender blew over the small ravine where they were fighting and landed on the infil HLZ. “It was up close and personal,” Crawford said.

Crawford’s element was ambushed from multiple fighting positions as they moved out of the village. The enemy was less than 500 feet away, firing from caves, houses, and a ravine that had been dubbed the “green zone” because the vegetation made it almost impossible to see in there. The men were pinned down in the open, so Crawford relocated the air assets.



USAF photo by Andy Morataya

**Crawford, speaking at the Air Force Cross ceremony at the Pentagon, stressed that everyone in the air and on the ground that day was valiant. He gave special mention to US Army Special Forces soldiers who fought alongside him.**

He then “moved alone across open terrain in the kill zone to locate and engage enemy positions with his assault rifle while directing AH-64 30 mm strafe attacks,” according to the citation.

### Every Person Valiant

After roughly 10 hours of constant battle, coalition forces were running out of ammunition. The men started handing around magazines as they fought back against the insurgents.

Crawford integrated AH-64s and F-15Es in a coordinated air-to-ground attack plan that included strafing

the overwhelming support he’s received. He specifically acknowledged the Army Special Forces soldiers, including Derrick and Berk, who served with him that day and also attended the ceremony.

“We forged our friendship in battle and conflict. We sealed our forever friendship in blood on multiple combat missions and firefights,” said Crawford. “This award is an individual award, but I consider it much more than that. It’s our award. Everyone that day ... was valiant. Everyone was heroic. And thank you for being my true friends, my brothers.” ■

US forces go to “war” with the Thai and Singaporean Air Forces in an ever more important large-force exercise.



L-r: An F-15C from the Florida Air National Guard, an F-15SG from Singapore's Air Force, and a Royal Thai Air Force JAS-39 Gripen fly in formation.

Photo courtesy of the Singapore Ministry of Defense

# Cope Tiger

By Marc V. Schanz, Senior Editor



Staff photo by Marc V. Schanz

USAF airmen walk to their C-130 on a misty morning during Cope Tiger 2012.



USAF photo by Capt. David Herridon

*A USAF pilot talks with airmen from Singapore (l) and Thailand (c) at Korat RTAFB, Thailand, after a simulated air-to-air combat mission.*

**K**orat, Thailand—known to most Thais as Nakhon Ratchasima—is a familiar name to the thousands of US Air Force airmen and civilians who served at the nearby air base during the Vietnam War. The 388th Tactical Fighter Wing, stationed at Korat from 1966 to 1975, launched thousands of F-105 and F-4 sorties against North Vietnam from the airfield.

The Vietnam War-era control tower still looms over Korat Royal Thai Air Force Base on the edge of the Korat Plateau some 160 miles northeast of Bangkok, but aside from a few memorials and static

displays of retired aircraft, the scene has changed dramatically. In March, brand-new fighter aircraft—including Royal Thai Air Force JAS-39 Gripens and Republic of Singapore Air Force F-15SGs—lined the field, alongside veteran US Air Force F-15Cs and squadrons of older fighters. The fighters and the airmen behind them were here for Cope Tiger 2012, the annual large-force multinational air exercise.

During its two weeks, the exercise—including Pacific Air Forces and hosted by the Thais—drew a diverse air armada ranging from fighters, helicopters, and transports to militarized business jets used for airborne command and control. The assembled airmen practiced air-to-air tactics, weapons delivery, coordination

with airborne early warning systems, and simple communications. More than 400 US military personnel traveled to Thailand for the exercise.

Most of the fighters operated from Korat—although transports such as C-17s and C-130s, as well as A-10 attack jets—worked from Udon Thani Royal Thai Air Force Base.

The activity resembled any number of large-force exercises US airmen have participated in during their careers, such as Red Flag. But Cope Tiger offered experiences American airmen can't gain any other way.

"Most crews ... don't get to do [large-force engagements] very often," said USAF Maj. Dixon Croft, a mission commander at Korat whose job entailed monitoring and adjusting the tempo of the exercise.

### Large and Foreign

Croft's "day job" as detachment commander of the 497th Combat Training Flight in Singapore—which runs the Commando Sling aerial exercise with the Republic of Singapore Air Force—and his familiarity with one of the participants, this was his first Cope Tiger.

"Commando Sling is just us and the [Singaporeans]," Croft noted. "Here, we're only a third of what's going on; there are language barriers you have to work with, and you're not just doing air to air, it's a range of dissimilar missions." US pilots are "hitting their marks" just like at any other exercise, but they do so in a multilateral venue where they must plan, execute, recover, and debrief in a coalition environment.

From the commanders down to fliers and maintainers, the point was clear: If the call comes to fight in Southeast Asia, chances are good the US will be fighting with these allies.

"Planning every day out here is challenging; it's a process," said Maj. Jeff Yost, one of four mission commanders at Korat. "But this is how multilateral operations work and why they are so important." Croft added, "If there is a conflict, we can't go at it alone."

Cope Tiger is a fast-paced and evolving exercise, with scenarios changing daily. An array of aerial and ground threats pop up across the military ranges of the Korat Plateau, and by Week 2 things get complicated.

At the morning brief on March 19, a Thai intelligence officer, Flight Lt. Suwit Thitong, provided the day's fliers with the status of the campaign against "Redland," the notional enemy.



**Above:** A Republic of Singapore Air Force F-5S. **Right:** A G550 airborne early warning aircraft, also belonging to Singapore, at Korat Royal Thai Air Force Base.

“Redland information warfare is becoming effective, and nonaligned countries are wavering in support,” he said, adding that the fictional enemy had deployed the bulk of its integrated air defenses and was now on a full war footing. According to the scenario, an F-16 had been shot down the previous day, some damage was done to the enemy’s surface-to-air missile sites, and Redland had now reportedly undertaken a rescue operation for a downed pilot, using special operations forces.

“Redland will use all resources to prevent the use of [their] airspace,” the lieutenant warned. Signals intelligence indicated medium-range ballistic missiles were being readied for deployment.

Cope Tiger threw a range of scenarios at its participants as part of LFEs, or large-force engagements. These entailed the whole spectrum of air operations, including air strikes, rescue missions, disaster response, airdrops, mobile air



gested these continuing developments indicate how operations in this corner of Asia are growing in importance.

The Florida Air National Guard’s 125th Fighter Wing deployed 12 F-15Cs on a world-girdling journey, and all arrived in good condition, ready to fight. It was the first large employment of an ANG unit during the exercise’s 18-year history, said Col. Marc E. Caudill, the Cope Tiger US exercise director.

**Practice Makes Perfect**

Singapore sent eight factory-fresh F-15SG multirole fighters. (One Air Guardsman joked he could detect that “new car smell” across the flight line.) These new Eagles boast all the options:

active electronically scanned array radars, top-shelf integrated avionics, GE F110 engines, and several other advanced sensors and upgrades. It was the first time the F-15SGs exercised with US forces.

The final day of Cope Tiger featured a massive multinational personnel drop, as USAF C-17s and C-130s ferried more than 240 Royal Thai Air Force, Royal Thai Army, and US airmen to a drop zone at

Lop Buri, Thailand, where they carried out both static line and high-altitude, low-opening jumps. It was the largest such jump in exercise history, and the first to have both Thai Army and Air Force personnel in large numbers in the same operation.

On the morning of the jump, TSgt. Steven Raethel, a survival, evasion, resistance, and escape specialist with the 374th Operations Support Squadron at Yokota AB, Japan, was the jumpmaster aboard one of the C-17s bearing RTAF personnel to the drop zone. Raethel is a Cope Tiger veteran participating in his second iteration. “We try to get [the Thais] to jump whenever we visit,” he said. A past participant of jumps at exercises in Indonesia, Bangladesh, and other locations, he said the joint jump is a rarity. “It’s a great opportunity to get these many guys in this environment. It can be tricky. ... It’s a good thing to practice this sort of operation as much as we can.”

“This is a big deal, a first for the Royal Thai Army and Air Force,” said Capt. Michael Recker, a C-17 operations officer for the exercise based at Udon Thani and pilot from Joint Base Pearl Harbor-Hickam’s 535th Airlift Squadron. Leading up to the jump, both C-17 crews and C-130



**Above:** A JAS-39D fighter, one of the Swedish Gripen fighters recently acquired by the Royal Thai Air Force. **Right:** An RTAF Dornier-Dassault Alpha Jet.

defense threats, and more. By the close of the exercise, nearly 2,000 USAF, Thai, and Singaporean airmen generated more than 900 sorties.

This year’s Cope Tiger involved several firsts. Both Thai and US officials sug-





**Capt. Raul Roldan (r), Cope Tiger C-130 liaison officer, discusses Hercules operations with F-16 pilots from Singapore. The Republic of Singapore and Thailand field some of the most modern air assets in the region.**

crews had been flying in challenging conditions, facing aggressive aerial and ground threats, he noted.

The other day, “we won one, and we lost one,” he said of an airlift sortie where simulated surface-to-air threats were employed. “We don’t get a chance to do large-force employments from the mobility side very often,” Recker commented. “It’s the first time I’ve done a multinational exercise, and back home, much of our training is over water, so the feel is very different.”

Cope Tiger started out in the 1990s as an event emphasizing air combat, but in recent years has evolved significantly. Now it entails simulated airdrop of humanitarian relief, combat search and rescue, air interdiction, close air support, and deep strike missions. Mobility is an increasingly important part of Cope Tiger.

Thai officials and US officers alike point to the range of operations undertaken in just the last several years, from more airdrop practice to search and rescue to forcible entry into denied airspace.

Cope Tiger “has progressed steadily, both in scope and complexity,” said Col. Tommy Tan Ah Han, the RSAF exercise director. A pilot of F-5s, F-16 Block 52s, and the F-15SG, Tan said the assets exercised are “increasingly advanced, and this has helped to add realism to training, enhancing the training benefits for the participating forces.”

As USAF rearranges its force structure, it’s unlikely the Florida Air Guard will be the last ANG unit to come to Thailand. The dozen F-15s of the 125th FW got the call because PACAF couldn’t spare any of its other air superiority assets, and the unit rose to the challenge, said Caudill.

“We’re really getting a new experience here,” said MSgt. Michael Ramsey, a maintenance first sergeant with the 125th FW. “It’s a smaller world every day. ... If we ever go to fight [in this region], we’re going to do it with our allies.”

First Lt. Jeff Blaufuss, an Eagle driver with the Florida ANG, said that at Cope Tiger his fellow pilots got to stretch operation muscles they rarely get to use at home.

“Sometimes it’s to protect a target; other times we’re clearing airspace for strike packages,” he said. “We want to protect our objectives, and we want to learn from what we do every day.”

### Clearing Out the Red Air

US, Thai, and Singaporean pilots and crews were mixed and matched daily—some in blue air, some in red air—and this provided an excellent opportunity to not only push skills but learn from other pilots flying dissimilar aircraft. For the Guard, it offered the opportunity to fly

with and against the latest model of their own F-15s with the visiting Singaporeans.

The Singaporeans “are very well-trained, and they have a great jet,” Blaufuss said. “You wouldn’t be able to tell they’re not our guys. ... [They] have a lot of skilled pilots.”

If missions are executed correctly, blue forces should not be losing, several fliers observed. For first-timers, the experience of flying with the Thais and Singaporeans can be an eye-opener.

“The proficiency of our allies and partners is ... high,” Croft acknowledged. A career F-16 pilot, Croft said he’d long heard USAF conventional wisdom that the F-15 was superior to everything else in air-to-air combat. However, “I’ve sat through debriefs, and sometimes it’s the Thais [F-16s] and the [Singaporeans] who are clearing out the red air off [our] F-15s’ backs,” he said. “That is interesting to see.”

For the Royal Thai Air Force, the event is an enormous undertaking. Cope Tiger’s tabletop command post exercise begins months before the flight training phase; the planning iteration for the March event took place in Singapore last December. Thailand, a designated major non-NATO US ally, has one of the oldest air forces in Asia—this year marks the 100th anniversary of its military aviation branch—and along with Singapore fields some of the most modern air assets in the region.

In airdrops over the Nam Phong range north of Korat, Thai C-130 crews exercise the same procedures used by US aviators, and the Thais have used this training to great benefit, said Group Capt. Thawonwat Chantanakom, the Thai exercise director. He noted that the RTAF mobilized to deliver food and water to wide swaths of the country last fall, bringing relief to areas devastated by deadly floods, even as floodwaters



**RTAF and US Army personnel prepare to board a C-17 at Don Muang Arpt., Thailand, on March 22, in preparation for a mass jump.**



**The final day of the exercise featured Royal Thai Air Force and US Army troops conducting a high-altitude, low-opening jump.**

encroached up to Bangkok's Don Muang Airport military runway.

On the combat side, Thawonwat said, the Thais were eager to test out their newly acquired Swedish Gripen fighters in a dissimilar combat scenario at Cope Tiger. They wanted to pair the Gripens with and against both USAF F-15s and Singapore's new F-15SGs.

Among the allies, there was a sense there could be broader participation in the event.

"Now, we have just three nations; ... we hope in the future we can expand more. ... This may be looked at," Thawonwat said. Thailand, along with Singapore, is a member of the Association of Southeast Asian Nations, which has embarked on an effort to bring its 10 members together in a security community in several years. Having observers participate in multilateral events such as Cope Tiger could well serve stability and security in the region.

The same tactics used "to put soldiers in a drop zone, we can easily use those ... to put medicine and medics on target [or] ... relief materials on time and on target," Caudill said.

Two weeks is a lot of time to be flying together, and a great deal of what was learned at Cope Tiger was gained informally among the airmen day in and day out.

"[At] the tactical level, we are all learning from each other," Yost noted, and much happens after the formal debrief. Pilots from all countries talked to each other, and if someone in a flight suit with an instructor patch was talking—regardless of the nationality—others gathered around and hashed out what went right or wrong.

First Lt. Erik Gonsalves, an A-10 pilot from Osan AB, South Korea, took turns planning missions from RTAF's Wing 23 located at Udon Thani, some 200 miles north of Korat, not far from the Laotian border. He said opportunities for train-

ing abounded at the exercise that he'd be hard-pressed to get back in Korea.

"There is a lot less airspace restriction and more room to get a bunch of qualifications," said Gonsalves. Dissimilar strike packages were a regular event, he pointed out; he flew with A-10s and Thai F-5s on his first sortie of the exercise. "It was something I don't get to do very often," he said, noting A-10s would do air intercepts, then have Thai and US forces come through, with the Warthogs swinging around on bomb runs.

#### Off the Charts

A key part of the exercise for A-10 pilots was the chance to fly forward observation and escort for combat search and rescue sorties. "It's a unique opportunity," Gonsalves said. Several A-10s were paired up with Thai UH-1s and Singaporean Super Puma crews to fly escort and observe the rescuers attempt to swoop in and pick up "survivors" in a drop zone. Gonsalves and other pilots dubbed the endeavor "rescort."

Ideas and tactics were exchanged as the exercise progressed and helped all parties get a better idea of how joint SAR would work in a real fight. "Culturally, we piece together the gaps fairly well. Their English is a lot better than my Thai," Gonsalves quipped. US forces are guests of a long-standing and stalwart regional ally. Like the Philippines, Thailand was a signatory to the 1954 Manila Pact, making them America's only two mutual defense treaty allies in Southeast Asia.

USAF assets were just as often in supporting roles during Cope Tiger operations as they were in the lead. Indeed, of the 79 aircraft taking flight over Thailand in March, fewer than 25 were USAF assets. The Thais and Singaporeans field some of the most well-trained air arms in Asia.

US aircraft sortie counts were relatively low compared to the other two partners in the exercise. "We are in the minority

here, which is certainly not normally what our pilots are used to," said Yost, one of the Korat mission commanders.

The Thais and Singaporeans have their own objectives for the exercise. Cope Tiger "serves as a great platform for exchanges and sharing so that our forces will be able to assist one another should the need arise," the RTAF exercise director, Thawonwat, observed. Led by the Thais, all three countries also participated in civil affairs projects in the communities surrounding Korat and Udon Thani, providing assistance such as school supplies and medical services during the course of the event.

Nearly all participants interviewed believe the exercise will only grow in importance in coming years. America's interests, as stipulated in the newly revised national defense strategy, are closely bonded with those of its treaty allies, especially as the US moves to reassure its commitment to the stability of its allies in light of a changing military balance in the region.

Asked about allied concerns over China's regional ambitions, Caudill said, "This is important because it lets other nations and potential adversaries know that we are prepared, we train together, and we are ready to respond to any challenge or provocation."

"Individually, we're good. Collectively, we're off the charts," said Lt. Gen. Stanley T. Kresge, commander of PACAF's 13th Air Force, who attended Cope Tiger's closing ceremony along with the Singaporean Air Chief Maj. Gen. Ng Chee Meng and RTAF Air Chief Marshal Ittaporn Subhawong. Personal and lasting relationships between allies form at events like this, with the inevitable result that all three get better at coordinating, controlling, and executing air operations.

"If our processes are right, we'll successfully meet any future challenge," Kresge said.

On the exercise's final day, Kresge visited the contingent of Florida Air Guardsmen at Korat to hand out awards and thank them for a job well done. He took a moment to remind them why they were flying in Thailand, thousands of miles from home.

"These F-15s are the most valuable resource in any future fight in this region," Kresge noted. "If we have to go to war, it will be an air war. ... Make no mistake," he stated soberly. "I expect to call you. And some of you might not come back. But you have proven you have the ability and skill to answer the call, should it ever come." ■

By Robert S. Dudney

## Money Talks ...

"If you give us force structure back, give us the money, too, because the quickest way I know to a hollow force is if you give us force structure and no money. To just indicate that [the Air Force must] keep it and make it work is not a satisfactory solution in my mind."—*Gen. Norton A. Schwartz, USAF Chief of Staff, remarks directed to lawmakers seeking to block cuts in Guard and Reserve units, Military.com, May 2.*

## ... and Congress Balks

"The preference would be not to cut a single aircraft or a single person [from ANG or AFRC], but if it's going to happen because the budget forces these decisions in the end, then we need to be smart about things. ... The Air Force sees the Guard and Reserve as a safe place to go for savings, which is somewhat contradictory when the Guard and Reserve are still doing a lot of the heavy lifting overseas."—*Joe Kasper, aide to Rep. Duncan Hunter (R-Calif.) of House Armed Services Committee, Air Force Times, May 7.*

## Your Time Will Come

"The problem for Zawahiri, however, is that the CIA has demonstrated that it can break the code [of al Qaeda security]. Bin Laden actually practiced pretty good operational security, but Zawahiri has to take it up a notch. If I were him, I would be worried. I think we'll find him, and I don't think it will take 10 years."—*Newsweek, quoting former CIA official Bruce Riedel, advisor to the Obama Administration on counterterrorism measures, referring to the hunt for al Qaeda leader Ayman al Zawahiri, May 7.*

## The Party's Over

"Don't turn on the light."—*Osama bin Laden's final words, spoken to his wife Amal as Navy SEALs reached their bedroom, Time, May 7.*

## How You Shoot Is Moot

"Is it more honorable for us to engage a target from an F-16 or an F-15 than it is from an MQ-9? Is that somehow more ethical? Come on. ... The question ... is, 'Is it a legitimate target?' If it is, then I would argue that the manner in which you engage that target, whether it be close combat or remotely, is not a terribly relevant ques-

tion."—*Gen. Norton A. Schwartz, USAF Chief of Staff, Air Force Times, May 1.*

## Russian Roulette

"Taking into account a [NATO] missile-defense system's destabilizing nature—that is, the creation of an illusion that a disarming strike can be launched with impunity—a decision on pre-emptive use of the attack weapons available will be made when the situation worsens."—*Gen. Nikolai Y. Makarov, Russia's Chief of General Staff, remarks at a conference in Moscow, Time.com, May 4.*

## All Together in Space

"What we know from looking at every military operation that we undertake is that there is value in combined and coalition operations. It's time for us to bring those concepts to space. It makes sense for us. It makes sense for all the same reasons that combined operations in every other warfighting discipline make sense."—*USAF Gen. C. Robert Kehler, commander of US Strategic Command, National Space Symposium in Colorado Springs, Colo., April 20.*

## How To Provoke an Attack

"The Obama Administration is said to be considering negotiations for a new round of nuclear reductions to bring about ceilings as low as 300 warheads. ... The goal of future negotiations should be strategic stability, and ... lower numbers of weapons should be a consequence of strategic analysis, not an abstract preconceived determination. ... Indeed, excessively low numbers could lead to a situation in which surprise attacks are conceivable."—*Former Secretary of State Henry A. Kissinger and former National Security Advisor Brent Scowcroft, writing in the Washington Post, April 23.*

## Dead Spin

"The centrifuges are spinning. They were spinning before the talks began recently with Iran, they were spinning during the talks, they're spinning as we speak. ... If the sanctions are going to work, they better work soon."—*Israeli Prime Minister Benjamin Netanyahu, remarks to CNN, April 24.*

## Invitation to Disaster

"There's a very dangerous enemy out there ... with safe havens in Pakistan.

To get out before the Afghans have a full grip on security, which is a couple of years out, would be to invite the Taliban, Haqqani, and al Qaeda back in and set the stage for another 9/11. And that, I think, is an unacceptable risk for any American."—*Ryan C. Crocker, US ambassador to Afghanistan, speaking to CNN in Kabul, April 16.*

## Blurred Vision

"Anyone with clear eyes saw long ago that behind these drills is reflected a mentality that will lead the South China Sea issue down ... the road towards military confrontation and resolution through armed force. Through this kind of meddling and intervention, the United States will only stir up the entire South China Sea situation towards increasing chaos, and this will inevitably have a massive impact on regional peace and stability."—*Commentary on US-Philippines military exercises, Liberation Army Daily, mouthpiece of the Chinese People's Liberation Army, as reported by reuters.com, April 21.*

## Ninety Percent Solution

"The technology of the current satellite architecture is pretty much at its limit, and the commercial satellites are producing just about the same thing at a much lower cost. The government's satellites are better, but the question is, What do you need? Most studies show that about 90 percent of what the military needs can be solved with commercial."—*Retired USMC Gen. James E. Cartwright, former JCS vice chairman, New York Times, April 19.*

## Nothing Fails Like Success

"Over the past decade, the all-volunteer force has been put to the test and has succeeded, fighting two sustained foreign wars with troops standing up to multiple combat deployments and extreme stress. This is precisely the reason it is time to get rid of the all-volunteer force. It has been too successful. Our relatively small and highly adept military has made it all too easy for our nation to go to war—and ignore the consequences. ... When the wars turned sour, we could turn our backs. A nation that disregards the consequences of its gravest decisions is operating in morally hazardous territory."—*Thomas E. Ricks, Center for a New American Security, Washington Post, April 22.*



USAF photo by Col. Bob Thompson

**O**n April 30, the first of some 1,400 new Air Force-branded accounts sprang up on Facebook, each assigned to an Active Duty recruiter. This Air Force Recruiting Service initiative was one of the largest-ever corporate launches on the social media giant's website.

The Air Force's recruiting community is embracing new technology and communication methods, such as Facebook, Twitter, smartphone applications, and Quick Response Codes, to reach young Americans who spend much of their time nowadays in online social networks and virtual worlds. Doing so allows recruiters to share the career opportunities the service offers in an environment where younger people are comfortable.

"You either adapt and stay relevant and engaged with this audience, or you become less relevant and, frankly, miss out on some of America's best and brightest," said Brig. Gen. Balan R. Ayyar, AFRS commander.

Air Force recruiting, like US military recruiting overall, has been strong in recent years. USAF's Active Duty force, the Air National Guard, and Air Force Reserve all meet their accessions goals, thanks in part to the sluggish economy. Recruiters have brought in quality young Americans to meet the requirements for new airmen capable of executing the Air Force's challenging, technologically advanced missions such



*Top: Capt. Holly Fredericks speaks with an Army officer at an Air Force Reserve recruiting event. Here: USAF security forces and their working dogs patrol an air show at JBSA-Randolph, Tex. Air shows are an important recruiting venue.*

as flying sophisticated combat aircraft, operating state-of-the-art airborne and space-based information-gathering systems, or defending cyber networks. Of note, the Air Force Reserve "led the Department of Defense in meeting recruiting goals" in 2011 for the 11th straight year, Lt. Gen. Darrell D. Jones, deputy chief of staff for manpower, personnel, and services, told a House oversight panel in March.

Yet, Air Force recruiting officials warn that as the economy strengthens, it will generally become more difficult for the service to compete with the private sector for the cream of the crop of high school graduates. Already Air Force recruiters have only "a small pool of American youth" to draw from as more young Americans rule out military service at an earlier age, said Ayyar in an interview.

Further, only about one-quarter of



# 21st Century Recruiting

The Air Force's recruiting service, smallest among the military branches, is reinventing itself to attract the best and brightest of the digital age.

By Michael C. Sirak, Executive Editor

American youth actually qualify for military service. That's due to moral and legal grounds (illegal drugs or criminal records can make an applicant ineligible), medical and physical issues, or poor performance on the Armed Services Vocational Aptitude Battery, the standardized test all applicants must take.

To best prepare for anticipated tougher recruiting times ahead and societal transformation, "every aspect of the Air Force Recruiting Service is transforming except our fundamental values," said Ayyar. That includes "our processes, the

community ties—will always be central to the service's recruiting efforts.

## Friendly Competition

"I can't see that ever going away," said CMSgt. William J. Cavanaugh, AFRS command chief. "In the end, fundamentally, recruiting is a human endeavor and you have got to get face-to-face with someone." In fact, nothing makes a stronger impression on a young American interested in joining the Air Force than "a good-looking recruiter in a blue uniform who is confident and knows what they are talking about," he said.

AFRS, headquartered at JBSA-Randolph, Tex., is a component of Air Education and Training Command. It has some 2,600 employees, including about 1,200 recruiters who deal with enlisted accessions and approximately 150 who are dedicated to bringing in new officers: medical professionals, chaplains, and line officers. The recruiting force is spread across 1,300 offices in the United States, Europe, and the Pacific. "We are the smallest and, I like to say, the most competitive and powerful, productive recruiting organization among the ser-

vices," stated Ayyar. He said that while "there is always friendly competition" with the other services' recruiters, they actually work well together.

The recruiting service is responsible for accessing 100 percent of the Active Duty enlisted force, 100 percent of Active Duty chaplains, 90 percent of Active Duty health professions officers, and approximately 15 percent of Active Duty line officers for Officer Training School. (The Air Force brings in most new officers through the Air Force Academy and the Air Force Reserve Officer Training Corps.)

The Air National Guard has a separate force of about 500 recruiters, while the Air Force Reserve fields a cadre of slightly more than 300 recruiters. Recruiters from all three components go through "rigorous training" that starts off with the Air Force Recruiting School at JBSA-Lackland, Tex., said Cavanaugh. At the schoolhouse, their instruction includes professional sales training.

"Once they graduate [from] the school, they are entered into an on-the-job training program that lasts about



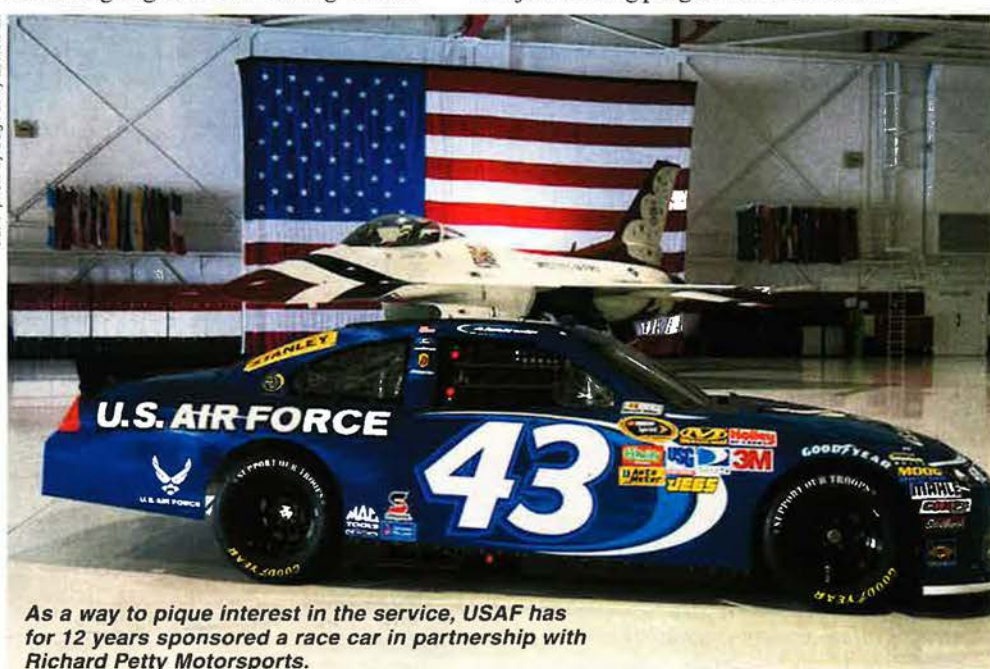
USAF photo by Melissa Peterson



USAF photo by SSgt. Larry E. Reid, Jr.

technology that we use to support our accessions, [and] how we engage and where we engage" young Americans, he said. This also means evolving how AFRS develops and fosters "the profession of recruiting," he noted.

While embracing technology will enhance the Air Force's art of recruiting, the role of the individual recruiter—and activities such as visiting schools, attending career fairs, and building com-



As a way to pique interest in the service, USAF has for 12 years sponsored a race car in partnership with Richard Petty Motorsports.



**Airmen in Georgia hustle through Moody Air Force Base's portion of a 2,182-mile Ruck March to Remember, a 9/11 memorial event. Showing the service colors while out in surrounding communities is an important outreach tactic for recruiting.**

a year” before they can be certified as a recruiter, said Cavanaugh. About 70 percent of Active Duty enlisted accession recruiters work in one-person offices, with responsibility for a zone, a specific geographic area. For example, AFRS has one enlisted recruiter who covers all of Washington, D.C. Conversely, health professions recruiters operate together in hubs in parts of the nation where there is “a rich recruiting environment” for doctors and nurses, said Ayyar.

Recruiters are trained to go after “the highest performing young men and women in any market,” he said. They look for physically fit youth who have indicated an interest in service and who have a strong math and science background, since the high-tech Air Force requires airmen steeped in the STEM fields—science, technology, engineering, and math—to execute the service’s advanced missions.

Requirements for some career fields are quite tough, said Ayyar. “You have to be in pretty good physical shape to consider Air Force special operations, for example, and so our recruiters have to find their way into the most competitive athletic environments to find young men and women who might be interested in that.”

“With battlefield airmen, we have found a lot of success by targeting the wrestling teams in the high schools [and] the water sports,” noted Cavanaugh. “We know that folks with those sports-related backgrounds tend to do a little better” in qualifying for that field. Ayyar said recruiting health professionals “is extraordinarily competitive” since remuneration is so high for top-notch doctors in the civilian market. “In some cases, we are courting medical professionals for 18 or 24 months before we can get

them to a point where they are ready to make a decision to serve their nation,” he said. Health professions recruiters sponsor visits to San Antonio so interested doctors and nurses can tour Air Force medical facilities there.

### Social Media

Recruiters need to have “thick skin” and be flexible, said Cavanaugh. “You’ve got to be able to handle rejection, but at the same time, be persistent,” he said. “From a recruiter’s perspective, they have to run through about 100 or so folks before they get to that one who can actually join the Air Force.”

While that really hasn’t changed over time, what has is the way recruiters have to access the youth—hence AFRS’ transformation efforts. “This generation is less likely to use a phone than they are text, and ... e-mail is passé for many

of the young men and women we are engaged with now,” said Ayyar. “They will view their Facebook page in some cases every hour of the day and they will respond via text when they won’t return calls.”

Accordingly, AFRS is instructing its recruiters on how to operate in the social media world and engage interested youth in a professional manner that leads “to a physical meeting and then the beginning of the process of accessing,” said Ayyar. In the case of Facebook, the Active Duty recruiters will use their new accounts “to keep content flowing and inspire” the youth, he said.

AFRS has also been enriching its online content at airforce.com, the Active Duty component’s interactive recruiting website. “In a very real and authentic way, they can find airmen who made the choice they are thinking about making and hear about their experience.” That online experience, “we think, will validate what a recruiter might tell them when a recruiter talks to them,” said Ayyar.

The Air Guard has the GoANG.com interactive website, providing information to those interested in service as citizen airmen. It established an official Facebook page in 2010, but hasn’t yet created individual pages for each of its recruiters, said Col. Marie E. Wauters, ANG recruiting and retention chief.

Air Force Reserve also has “a very strong Web presence,” including AFR-live.com where interested parties can post questions and receive feedback, said Col. Joe Wilburn, Air Force Reserve Command recruiting service



**TSgt. Victor Follis and his wife, Jillian, pass under an archway of swords during an Operation Blue Suit ceremony. Blue Suit annually recognizes top USAF recruiters worldwide.**

commander. The Reserve is also “very comfortable” with its social media presence. “A whole host of Air Force Reserve recruiters” have Facebook pages, he said.

Each of the Air Force’s components engage in marketing activities, such as sponsoring NASCAR drivers. The Air Force Reserve partners with musical performers such as Blake Shelton and the band Daughtry. Behind the scenes, “what you don’t normally see are four or five recruiters” at the events, said Cavanaugh. They’ve got “a tent set up and [are] talking to folks and generating leads and helping young Americans understand what service in the United States Air Force is all about.”

As part of its internal transformation, AFRS awarded in March, for the first time, the designation of Master Recruiter to 10 of its most-senior recruiters. It is a recognition “that the most important resource that we have is the professional recruiter,” stated Ayyar. “Master Recruiters basically have demonstrated the breadth of experience within the recruiting service, the leadership within recruiting service, to operate at the highest levels and to provide strategic-level guidance” to the AFRS leadership, said Cavanaugh, a 23-year recruiting veteran who received Master Recruiter badge No. 0001.

Master Recruiters are stepping up efforts to mentor newer recruiters, he said. Already teams of them have gone out to the field on mentoring visits, he said. AFRS intends to build to “about 60 to 70 Master Recruiters,” said Cavanaugh.

Also under the transformation, AFRS has implemented the “Recruiter After Next” initiative. This reinforces to current recruiters the imperative of building and maintaining relationships with their communities, in particular the “influencer networks” of school coaches and counselors who help point interested students to an Air Force recruiter. Even when recruiting times are good, recruiters need to nurture those relationships and maintain their recruiting chops, so to speak, to prepare them for more challenging times, said Ayyar.

“We succeed based on the relationships that we build in the communities,” said Cavanaugh. Thus, recruiters “need to consistently be out in their zone, building and cultivating those mutually beneficial relationships,” he said. Recruiter After Next, as the name implies, also stresses the importance of each recruiter keeping that foundation



**Brig. Gen. Balan Ayyar (l), Air Force Recruiting Service commander, presents TSgt. Leonor Roman with a medallion during an Operation Blue Suit ceremony.**

strong, so the follow-on recruiter for that zone doesn’t have to rebuild those relationships from scratch.

### The Reserve Components

“It is far more powerful ... to stay competitive in the market than it is to try to get competitive,” said Ayyar.

AFRS is also calling on every airman to help recruit the next generation. “One of the challenges that we have is we are a very small recruiting force,” said Ayyar. Accordingly, “we really encourage and challenge the larger Active Duty, Guard, and Reserve force to be representatives ... in their local communities.”

The recruiting service instituted the “We Are All Recruiters” program. It includes outreach efforts such as an airman wearing his uniform and speaking about his service life to his old high school during a visit home, or airmen who are competing in running or cycling races wearing blue shirts with Air Force logos to help create awareness. “We are trying to help the larger Air Force recognize ... that they have an important role to play in talking about the capabilities that the Air Force provides the nation,” said Ayyar. “This discussion, in the larger sense, is very important to our future as a service.”

The Air Guard and Reserve have traditionally sought out prior-service airmen or prior-service personnel from the other military branches to fill a large portion of their ranks. For example, between 2007 and 2011, some 48 percent of Air Guard accessions were prior-service individuals, said Wauters. The majority of them were former Active airmen, she said.

The Air Guard has 23 in-service recruiters stationed at bases throughout the United States, Europe, and Japan. “Their role is to make contact with members leaving Active service,”

she said. They offer them “part-time employment, continuation of military benefits, such as education assistance, and the opportunity to continue their contributions to the country and their local communities” through Air Guard membership.

However, as Active Duty end strength has come down and retention remained high, the reserve components’ pool of prior service airmen has gotten smaller. “In the early 1990s, there were times when 80 percent of the people whom we recruited were prior Air Force,” said Wilburn. He noted that over the past two fiscal years, just about half of Reserve accessions were prior-service airmen, and another 10 percent were personnel who separated from another service.

Another difference between Active and reserve component recruiting is that Active Duty recruiters bring in accessions to fill positions nationally, while Air Guard and Reserve recruiters bring in accessions from the local community generally to serve in that same locality. “Our citizen airmen are members of their local community, so we must ensure our missions are the right fit for that particular region,” said Wauters. The Guard and Reserve also offer part-time service opportunities with skills training, in addition to full-time positions.

The Air Force plans a series of end-strength reductions next year, totaling 9,900 airmen compared to 2012. Cuts will total 3,900 in the Active Duty; 5,100 for the Air National Guard; and 900 in the Air Force Reserve.

Despite those planned manpower reductions, USAF plans a “minimal” reduction in accessions next year, said Tina S. Strickland, division chief for USAF accessions and training at the Pentagon. Cutting too many accessions



**CMSgt. William Cavenaugh (r) and his wife, Kristi (c), dine with USAF trainees during basic military training at JBSA-Lackland, Tex.**

would “create holes” in career fields that ripple through the force for decades. “We try to minimize those reductions and use voluntary force management programs to meet our [end strength] goals,” she said.

Determining the accessions goals for enlisted airmen and officers is “complicated,” said Strickland. End strength requirements and budget constraints shape those goals, she said, and enlisted accessions goals have to take into account attrition at basic military training. “They get in there and it is just more than they can handle. They get sick. They get injured,” she explained. She noted, however, that attrition at BMT “is very low right now.”

The accessions goals may require adjustments as the fiscal year progresses, said Strickland. “Our goal is to, by the end of any particular fiscal year, to get to our authorized end strength. We don’t want to be too far over. We don’t want to be too far under,” she said. “Our force management team works very hard to make sure we meet those numbers.”

In Fiscal 2012, AFRS’ goals for the Active Duty—still subject to change—are to bring in some 28,276 enlisted recruits and 1,514 officer recruits (nearly one-third of the Air Force’s total officer accessions). The Air Guard’s goals are 8,210 enlisted and 2,553 officer accessions. For the Air Force Reserve, the numbers are 8,639 enlisted and 1,173 officer accessions. Through half of the fiscal year, all three components were on track to meet those accessions goals.

Jones said the Active Duty recruiting plan for Fiscal 2013 calls for reducing enlisted accessions by some 1,232 individuals, but there will be no reduction in officer accessions.

To support recruiting efforts next fiscal year, the Air Force has requested \$82 million for the Air Force Recruiting Service and an additional \$97 million for

advertising, said Jones. That’s “a slight reduction in the total recruiting budget from [Fiscal] 2012,” he said.

Jones said nine career fields, such as linguist, special operations, and explosive ordnance disposal specialties, have “high operational demand where critical shortages remain.” To help attract young Americans with the skills to enter those fields, the service has budgeted for \$14.5 million in initial enlistment bonuses in Fiscal 2013, he said.

### Recruiting at the Tip of the Spear

MSgt. Jivaro Johnson is the Air Force’s enlisted accession recruiter in Washington, D.C. Out of his one-person downtown office, he oversees a zone of some 65 square miles containing 17 public high schools and an annual pool of some 2,400 seniors. That pool grows when factoring in the private high schools, which he engages but to a lesser extent, he said in an interview at his office.

A nine-year airman with two-and-half years of recruiting under his belt, Johnson is charged with averaging two accessions each month. He will work with scores of interested youth for each accession that actually makes it through the recruiting process all the way to basic military training at JBSA-Lackland.

Johnson’s first guiding principle is to “be a great airman,” acting with integrity as a beacon for attracting recruits. He also seeks to draw applicants from the broadest of demographic landscapes and recruit the best of the best.

Although his new Facebook page will help him make connections, his outreach to a new crop of prospects usually begins on the telephone. He’ll call seniors and invite them to stop by his setup when he visits their school. He attends career fairs and local events, such as festivals, “where a lot of people

are, so they can see us in their communities,” he said.

His first face-to-face interactions at the schools are meant to build rapport. If a student seems interested, Johnson will gauge eligibility for service. If the student seems like a sound fit—good grades, in physical shape, no criminal record—Johnson will recommend visiting the recruiting office. “Our goal for a qualified kid is to get them in our office,” he explained.

There, Johnson can begin selling the interested student on the Air Force. He focuses on the individual’s needs to help the student see how his or her goals, such as job security or a college education, align with what the Air Force offers.

If the student has no disqualifying tattoos (e.g., above the collarbone or gang-related) and does well on the enlistment screening test Johnson administers in the office, “we are going to get you ready to join,” he said. Thus starts the paperwork process for the now-applicant, including providing personal information and medical history. Minors need parental consent.

At this point, Johnson schedules the applicant’s Armed Services Vocational Aptitude Battery and sends the medical history up the chain for review. If there are no medical red flags and the applicant passes the ASVAB, a physical exam or screening and a morals interview come next, up at the military entrance processing station in Baltimore.

Johnson then works with the applicant to pick some 10 preferred career fields, with the understanding that the Air Force will do its best on placement, based on physical attributes and ASVAB score. The applicant is then sworn in as a “DEP,” shorthand for those placed in the Delayed Entry Program. In the case of a high school senior, the student may not have graduated yet. The agreement is that the DEPs will stay qualified for Air Force service during this time, and the service will reserve a slot for them.

Johnson continues to engage face-to-face with DEPs during this interim period to ensure they “walk the straight and narrow” until they leave for BMT. The frequency of these meetings increases as the ship-out date nears. On that day, the DEP is sworn into the Air Force at the processing station.

The now-airman trainee then leaves for Lackland and eight weeks and three days of BMT, while Johnson continues working to bring in the next batch of future airmen. ■

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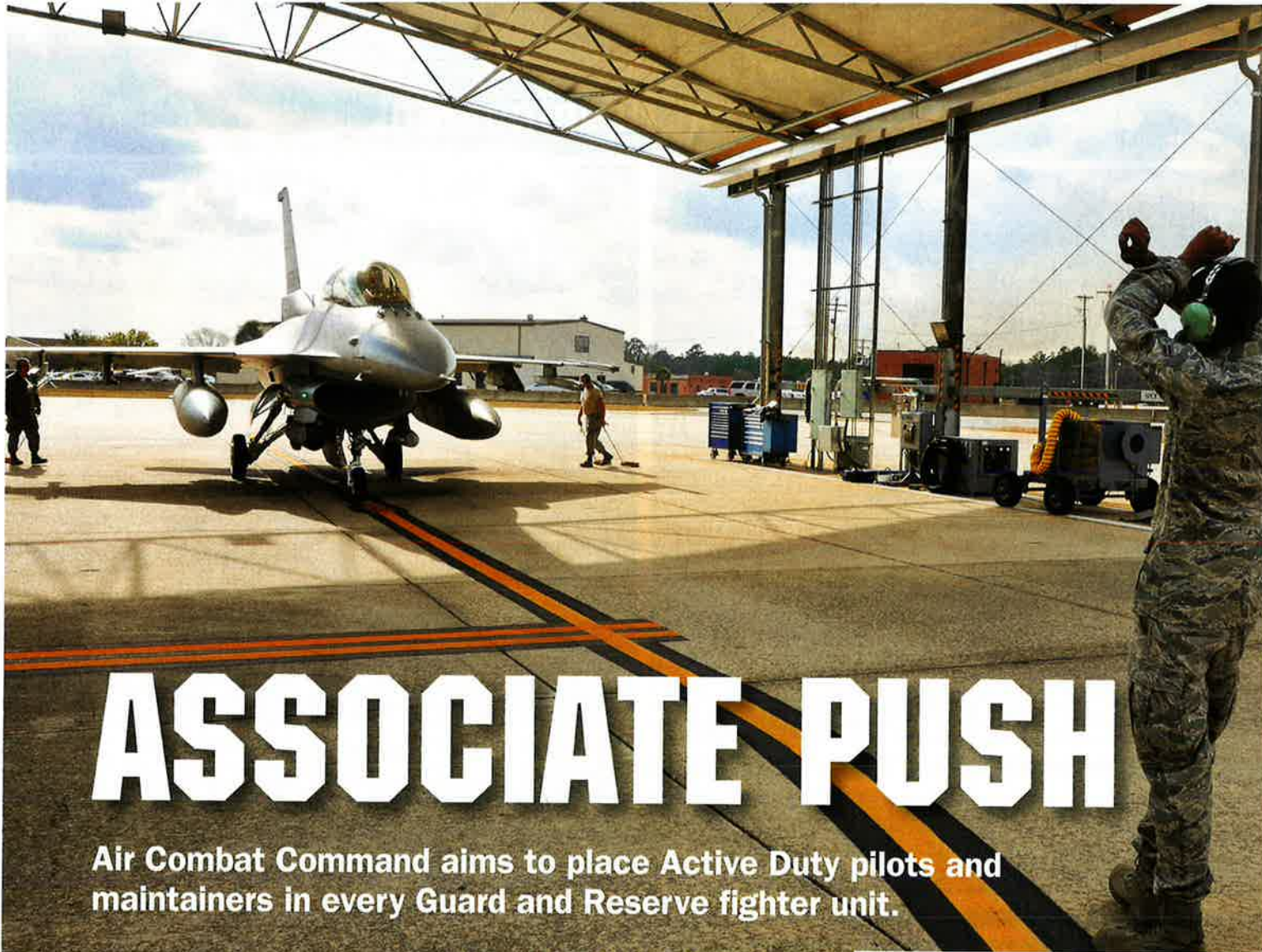
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# ASSOCIATE PUSH

Air Combat Command aims to place Active Duty pilots and maintainers in every Guard and Reserve fighter unit.

By Aaron M. U. Church, Associate Editor

**F**OR years, Active Duty fighter squadrons have struggled to get younger pilots the experience and cockpit time needed to develop them into combat pilots, instructors, and leaders. Air National Guard and Air Force Reserve squadrons, on the other hand, have experienced mentors and space in the flying schedule.

To increase the absorption of pilots and rectify the imbalance, the Air Force is moving out with a plan to build active associations with every Air National Guard and Air Force Reserve Command fighter squadron over the next few years. The new initiative aims for nothing less than building an associate relationship with every Guard and Reserve fighter unit by 2018.

Chief of Staff Gen. Norton A. Schwartz announced the move in February at AFA's Air Warfare Symposium in Orlando, Fla.

"In addition to the 100 Total Force Integration associations that we cur-

rently maintain, ... we are planning to add active associations at all air reserve [component] fighter locations," Schwartz asserted.

"We will continue to explore additional opportunities for associations in order to enhance operational synergies, improve access to aircraft and total rotational capacity, ... leverage experience, and improve retention of valuable human capital," he said.

Air Combat Command already has "classic associate" constructs with USAF's two Air Reserve Components (ARCs), but ACC is confident the "active associate" model—in which a Guard or Reserve unit has principal responsibility for a weapon system and shares the equipment with Active Duty personnel—will be the most efficient way of maturing Active Duty fighter pilots.

The reasoning behind the move boils down to simple demographics: There are too many Active Duty junior fighter pilots and not enough midgrade fighter



*Left: A crew chief marshals a 157th Fighter Squadron F-16 at McEntire JNGB, S.C. The 157th is an active associate unit. Right: SrA. Adam Hamel sets up a maintenance station next to a 192nd Fighter Wing F-22 at JB Langley-Eustis, Va. The 192nd became a classic associate in 2007.*

pilots. Active squadrons frequently have too few aircraft and budgeted flying hours for everyone in them to build an appropriate level of flight time.

It's a serious problem, and not fixing it would hamstring a generation of fighter pilots. Getting such pilots their initial 500 flight hours in the first three years is essential for career development.

If a young pilot "doesn't come out of that [first operational tour] labeled an experienced fighter pilot, his options for follow-on assignments are limited," said Col. Brent King, ACC Basing Division chief. Without the logbook, pilots are barred from teaching in formal training units, flying as aggressors and evaluators, or instructing at weapons schools. That hurts the service as much as the individual airmen.

### A Pilot Factory

Meanwhile, "you've got Guard and Reserve units out there that are full of highly experienced folks; 98 percent of them are probably instructors," King noted. Most of today's Guard and Reserve pilots are combat experienced, and



by apprenticing the new pilots to these squadrons, "we basically make a factory to make experienced fighter pilots that we didn't have before," King said.

There's also enough space in the flying schedules of ARC fighter squadrons to permit more sorties and a higher aircraft utilization rate. That's because ARC units tend to be populated by high-time veterans who don't need as many hours to maintain proficiency.

On the heels of a service summit to cope with the problem, Schwartz last year directed Air Combat Command to establish 171 "absorbable active association pilot billets ... at all Air National Guard and AFRC fighter squadrons," King said.

By late March, King noted, ACC Commander Gen. G. Michael Hostage

**SSgt. Stephen Polkinghorne and TSgt. Andrea Senecal with the 158th Fighter Wing load an F-16 at Burlington Arpt., Vt. Burlington has a small "footprint" of Active Duty personnel.**



USAF photo by SSGT Dan DiPietro

**A1C Christopher Kreager of the 158th Fighter Wing's maintenance squadron works on an F-16. ACC found that reserve maintainers are the "crunch factor" when it comes to deployments.**

had a handshake deal with Air Force Reserve Commander Lt. Gen. Charles E. Stenner Jr. and Air National Guard Director Lt. Gen. Harry M. Wyatt III to establish the billets. There is a separate arrangement for each component.

The new program of record expands the number of active associations by 10 squadrons. Most importantly, it provides the necessary funding, Active Duty personnel, and flight hours to begin the process this year.

ACC has two active fighter associations already in place. Both are test cases. One, with South Carolina ANG's 157th Fighter Squadron at McEntire Joint National Guard Base, is fully operational. The second, with the 158th Fighter Squadron at Burlington Airport in Vermont, has only a "small footprint of Active Duty guys," which the command will now complete under the new plan, said King.

Pitching the proposal to Air Force leaders in March, ACC pegged the cost of creating associate slots for Active Duty pilots at "\$2.7 million on average, per absorbable billet," said King. Although it's an efficient structure, ACC's bill to stand up the associations by Fiscal 2018 comes to roughly \$400 million per year. Those funds will have to come from efficiency measures or cuts to other ACC programs.

However, it's still cheap by comparison, pointed out Lt. Col. Jeffrey Burdett, ACC Total Force Initiatives branch chief. Creating the capacity needed to absorb and integrate 171 junior fighter pilots in the Active Duty force would require 12 new squadrons. That's "\$200 million a year approximately, per squadron," for F-16 units,

he said—far more expensive than piggybacking on Guard and Reserve units already on the books.

On the Reserve side, ACC is standing up active associations with fighter units at NAS Fort Worth JRB, Tex., and Whiteman AFB, Mo.

With the Guard, in addition to filling out the ANG test unit at Burlington, the command is standing up partnerships with fighter squadrons at Buckley AFB, Colo.; Montgomery Regional Arpt., Ala.; Duluth Arpt., Minn.; Homestead ARB, Fla.; Joe Foss Field, S.D.; and Truax Field, Wis. As of March, ACC was selecting leaders for each association and conducting site surveys of each intended base.

### A Seasoning Shortage

King expects personnel will be in place at Fort Worth, Homestead, and Whiteman by the end of the year, and that all 10 associations will reach initial operational capability by 2017. While the active association principle functions the same way with AFRC units as it does with ANG units, Air Combat Command agreed to a slightly different manpower footprint for each.

The Reserve plan assigns nine Active Duty pilots to each AFRC fighter squadron—seven rookies and two veterans to command the Active detachment and liaise with the host unit. To compensate for added wear on the aircraft, each unit also gains a complement of Active Duty maintainers—156 for F-16 squadrons and 100 for A-10 squadrons, King said.

With the same funding, the Guard proposed a slightly different arrangement which ACC and USAF leaders approved. Instead of nine pilots and roughly 100

maintainers at each squadron, the Guard suggested a smaller Active Duty footprint at both Burlington and Dannelly. This saved money and allowed the Guard to stand up associations at four additional ANG locations, according to King.

Four locations were originally slated to lose several F-16s under the Fiscal 2013 budget, so Guard leaders suggested using the remaining funds to essentially buy back the airframes, explained King. "Since they still had the airframes, ... it was really a perfect match to increasing our combat capability," King said. Rolling in Active Duty funding, flight hours, and manpower allowed the Guard to keep Buckley, Duluth, Joe Foss, and Truax at 18 jets each, instead of the 15 aircraft first budgeted for Fiscal 2013.

Now, each of the six Guard units will be assigned four Active Duty pilots—one experienced squadron commander and three green pilots. In addition, they will get a reduced complement of 40 Active maintainers to bolster the part-time workforce. The Air Force essentially redistributed regular Air Force manpower slated for Montgomery Regional Airport and Burlington, and combined it with some REGAF savings "to form associations at four additional ANG locations," said King.

Though ACC is moving ahead with sending four pilots to each ANG squadron, the command approved eventually upping the number of pilots to eight pilots and 80 maintainers—if and when funding permits. This would change the ratio of experienced to inexperienced pilots, but King said the higher number of Active Duty airmen was planned into the scheme from the outset and wouldn't harm the student-teacher ratio.

Neither the pilot absorption issue nor associations with the ARC is new. Air Combat Command began exploring the idea—especially in the A-10 community—as far back as 2002. King led the effort at the time.

Before 9/11, "pilots were getting out of the Air Force, separating and doing other things," said King. "That created a shortage of those very seasoned, very experienced fighter pilots." Instead of becoming commanders and instructors, fighter jocks went elsewhere, leaving a "void for units to train their new guys," with cascading effects on the force.

The idea of associating fighter units took hold with the 2005 Base Realignment and Closure process, although it was touted at the time as an efficiency measure, rather than a cure for any other problem. As a result, the first two asso-



ciations—one at Hill AFB, Utah, and a second at Langley AFB, Va.—stood up as classic associations in 2007.

Classic associations essentially align a Guard or Reserve unit together with an Active unit. Both pool their personnel to cooperatively fly and maintain the aircraft owned by the Active Duty unit. This approach cuts flying costs and injects experience back into the Active wings, but “doesn’t provide a lot of help for the absorption problem,” observed King. For fighter units, “if you really want to benefit from experiencing young guys faster, ... active associations are the way to go.”

The classic associations at Langley and Hill faced an uphill battle from the outset, confronting a number of difficult issues. Outside circumstances, such as cutting the fighter force USAF-wide, hampered the initiative somewhat as well, but “kluging two wings together and determining what the real, right manpower was for it” afterward was not something ACC cared to repeat, King said, adding, “we really didn’t have a good handle on that back then.”

While things functioned smoothly at the operational level, the chain of command and differing responsibilities, such as the Guard’s state-level mission in peacetime, created conflicts.

“From the standpoint of the daily flying schedule, here, it is seamless; there is no difference between the pilots,” said Lt. Col. Pete Fesler, commander of Langley’s Active Duty 27th FS. However, he acknowledged, “there’s a different command, control, and administrative chain,” which proves tricky in terms of unity, planning, and discipline.

“You basically have competing interests and competing bosses,” noted King.

On top of the command problem was the severe overmanning issue, exacerbated by the Combat Air Forces Redux, which cut 250 fighters from the inventory in 2010. At the outset, “there were a lot of airplanes, so they could handle the increase of pilots” at both bases, said King. However, Hill lost an entire squadron of F-16s, and Langley—in the midst of transitioning from the F-15 to the F-22—dropped from three squadrons to two.

With too few jets to keep pilots current, both bases found themselves struggling to adjust. Cutting Guard or Reserve pilots would sacrifice valuable experience, while cutting Active Duty positions endangered the units’ ability to deploy. This tension represented the Achilles’ heel of the classic construct.



*Amn. Branden Jewell closes the canopy of a 442nd Fighter Wing A-10 after loading the aircraft with liquid oxygen at Whiteman AFB, Mo. Air Combat Command began exploring the idea of associations in the A-10 community in 2002.*

In wartime, an activated reserve component airmen deploys like any other. For peacetime and expeditionary commitments, though, “it’s all based on volunteerism, whether it’s a deployment to the area of operational responsibility or an exercise,” explained ANG Maj. Darren Gray, 149th FS assistant operations director at Langley. “Some guys have a lot of flexibility based on their job. ... Others are much more constrained.”

### Finding the Sweet Spot

While active associations don’t suffer from this problem, there was no realistic way of changing the framework already in place at Langley and Hill. Instead, ACC studied the personnel mix to find a way of better matching the mission and equipment needs.

“It was obvious they were fat—overmanned—and we needed to right-size that,” said King. “Split operations,” where one squadron deploys and the other stays behind to maintain proficiency, turned out to be the most manpower-intensive. “When you do the math, there’s kind of a sweet spot on where REGAF and [air] reserve component manning” should be to handle deployments, he noted.

Furthermore, ACC found that maintainers, rather than pilots, were the real crunch factor.

“They’ve got a higher part-time presence and it takes more of those folks to go,” explained King.

The command decided to trim both organizations to fit a split-operating scenario, starting with Langley last November. Hill followed suit in March.

The plan for both keeps Active manning high enough for each organization to rotate a squadron out on deployment and uses the part-timers to bring them up to full war footing.

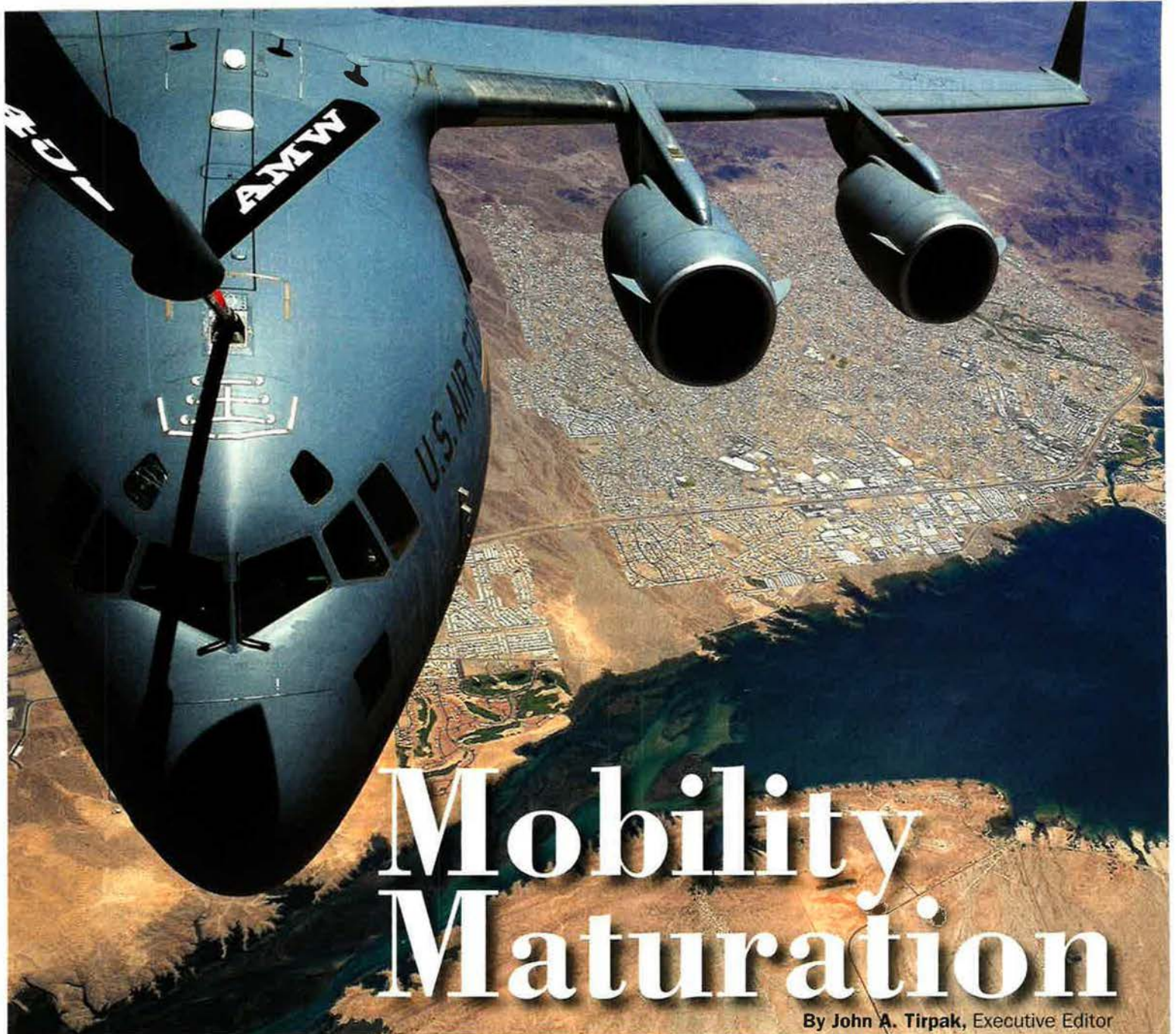
Langley shed 19 pilot authorizations, some of which they already struggled to fill, along with 162 maintenance slots. Those cuts came mostly from the Active cohort. The effort at Hill followed similar lines, and King expects ACC will continue to massage the mix as the effects become clear. Through the adjustment process at Langley and Hill, “the Air Force and ACC have learned how to do this better,” asserted King.

For fighters, the big lesson is that sending a small Active Duty detachment to a reserve squadron is better suited to solving the unit’s seasoning and absorption problems.

“We’ve had issues with certain associations and we’ve worked through them” benefiting all components involved, King added. On the other hand, the lessons learned at Langley and Hill have been of benefit to highly successful classic associations in other fields—notably security forces, intelligence, and remotely piloted aircraft operations.

The best type of association is “very much dependent on mission,” said Burdett. “They’re two different entities” with different benefits, King observed. To balance experience across the Air Force and gain access to previously untapped aircraft and flying hours, though, the Air Force prefers active associations.

“That’s where we get our big absorption benefits from associating,” said King. ■



# Mobility Maturation

By John A. Tirpak, Executive Editor

**Air Mobility Command is carefully realigning its plans to accommodate the new defense strategy and tight budgets.**

**H**aving sent Congress a budget plan to reduce the airlift fleet some 20 percent, the Air Force and the Pentagon are now gearing up for a study to ensure mobility force levels are adequate to meet new national strategy requirements while leaving enough to deal with pop-up contingencies.

To fulfill the strategy, Air Mobility Command is focusing on standardizing the aircraft types it will keep and launching its own studies of how

eventually to replace them. Its commander, Gen. Raymond E. Johns Jr., sees the makeup of the fleet remaining stable nearly to midcentury. However, he worries about the ability to retain overworked personnel and commercial carrier partners whose contracts will diminish rapidly in the coming years.

Gen. Norton A. Schwartz, USAF Chief of Staff, acknowledged that mobility studies typically take years, and the airlift cuts in the Fiscal 2013 budget were determined after only a few months of analysis. However, he

USAF photo by Jason Minio





A C-17 refuels over Lake Havasu, Ariz. There will be 223 Globemaster IIIs in the new, smaller strategic fleet.

DOD photo by MSgt. Rick Storza

said, planned reductions in the size of the ground-based military branches, as well as the drawdowns in Iraq and Afghanistan, made the reductions fairly obvious.

“We’re pretty dramatically cutting the ground forces that depend on the mobility,” Schwartz told defense reporters in late February. Nevertheless, he said, there will still be slightly more airlift capacity than the Air Force thinks it will need in the coming years.

The last big lift analysis—the Mobility Capabilities and Requirements Study 2016—set a benchmark requirement for 32.7 million ton miles per day, Schwartz said. However, “the analysis that we have done,” based on the needs of the new national strategy and the reduction in force of tens of thousands of Army and Marine Corps ground troops, suggests “the force size that flows from that is about 29.4 million ton miles per day. Our actual capability, based on 275 big airplanes and 318 small lift airplanes is about 30.4 to 30.6” MTM/D. While he said there’s “some ambiguity there,” the actual capacity should be “slightly more than what we understand the demand signal to be, which is the right place to be.”

Schwartz waved off the notion that a new mobility study would be a mere justification for numbers already set down in the budget. “There will be another MCRS,” he said. However, USAF will suggest it be more comprehensive by counting factors not included in previous studies.

“In addition to assessing lift,” he said, USAF wants the new evaluation to also look at “air refueling, ... intrathe-

ter requirements, ... mission-critical, time-sensitive delivery to maneuver forces,” and pre-positioned equipment.

For now, the Air Force leadership is comfortable it has a level of capability “suited to the force structure the strategy envisions.” Even so, USAF wants the new mobility study to “get started right away and that it not take two years to complete,” Schwartz said. While the Air Force typically provides data and other input to such studies, the new MCRS will be conducted by US Transportation Command and the Pentagon’s Cost Assessment and Program Evaluation shop.

Johns said the new MCRS will give him “the final level of confidence that we got this right.”

The Air Force has proposed reductions in both its strategic and tactical airlifter fleets that emphasize flexibility and multirole capability while eliminating niche capabilities the service says it can’t afford.

The strategic fleet, which was to have numbered more than 300 airframes, will now be set at 275. It will comprise 223 C-17s and 52 C-5Ms.

The C-17s—not all delivered yet—will be standardized to the Block 18 configuration, said Johns. That means the entire fleet will have extended-range fuel tanks and cockpit enhancements not included on early models that began to be delivered in the 1990s. This block “defined” the C-17A configuration, Johns said in an interview.

“With that capability on the C-17A model, and the 223 numbers, I’m good to go as far as meeting the need,” he said.

The C-5M represents a substantial upgrade to the C-5B and C models



A C-5 takes to the sky. USAF planners would like to retire more of the oldest Galaxys. Fifty-two C-5Ms would make up the fleet.

and includes full re-engining, structural enhancements, and avionics changes. Though it was at one time thought the older C-5As might also be modified, USAF has instead decided get Congress' permission to retire 27 of them.

Johns said the C-5M represents an "investment in aircraft availability" because the giant airlifter was not very reliable before the upgrade—but is now turning in markedly better performance, both in capacity and on-time takeoffs.

C-17s have been flying well beyond their planned allotment of annual flying hours. Now that there are a small handful of upgraded C-5Ms available, Johns said he has been trying to offload some of the C-17's burden onto the C-5.

"We didn't use it as much as we could have in the last 10 years," he said of the Galaxy, "so we have really put it on the road."

The accelerated experience, he said, has built a new book on C-5 operations, rewriting what can be expected of the aircraft. Because it is so much more dependable, and can go farther and to more places than it could before, crews at Dover AFB, Del., have been "pushing" the C-5M to be tried in new and more aggressive ways, Johns reported.

The last C-17 will join the Air Force inventory in about 2014. The exact timing isn't certain because USAF has been allowing foreign customers to cut in ahead of it on the production line, due to their funding situations, Johns said. Taking later deliveries also allows

## Supplies on Target

Much has been done to make the Joint Precision Airdrop System more accurate and less costly. JPADS marries GPS guidance to a parachute load and steers the parachute to a precision landing at precise coordinates.

The parachutes in the system are now disposable, and GPS units less heavy, so there is less for the Army to collect and haul back for reuse, said Air Mobility Command's Gen. Raymond E. Johns Jr.

The JPADS units make it possible to hit a drop zone only a few dozen yards long or less, instead of the mile-long drop zone that must be secured for regular airdrop. The mission is now called Airborne Direct Support.

"It's going to be increasingly high speed, low altitude. We're doing low speed, low altitude, all to get the footprint down so we can reduce the burden on the Army," Johns reported. "We're actually dropping inside [forward operating bases] now, because sometimes they can't get to their DZ," or drop zones.

Air Force Research Lab and other innovators are working to make JPADS even more accurate, but it doesn't have to be perfect, Johns said.

"I don't want to put a bundle through somebody's front window; I just want to put it at their front door."

Variations on the system are also being explored for relief operations such as last year in the Haiti earthquake.

"One pass with the C-17, with airdrop, will feed about 4,000 people for 24 hours," he noted.

USAF to keep the C-17 line open just a bit longer, thus preserving options for continued production if circumstances change—a nod to the "reversibility" aspect of the new national strategy.

## Get Back in Line

To get all the C-17s up to a common configuration, it will be necessary to have about nine of them in depot at any given time, Johns said. The approach to updating AMC's aircraft with common configurations represents a sea change in thinking, he noted.

"We've walked away from doing 'spiral development,'" said Johns, referring to the scheme in which aircraft were incrementally upgraded with small improvements. "We're back to doing P3I," or preplanned product improvements, in which a whole fleet receives a common menu of upgrades, such as avionics and self-protection countermeasures. The spiral method created a sustainment headache, and common configurations make it easier for him to calculate capacity across AMC's entire enterprise, without having to go into a variety of special cases.

"We've got the money" programmed into the budget "to get the whole fleet to a common configuration," Johns explained. However, due to capacity, it will take until about 2021 to get the C-17 fleet standardized, he noted.

Whether the Air Force will do a service life extension program on the C-17 is still to be determined.

"We actually started looking at that, and that's an important conversation to have," but there's no money except for "the studies and trying to frame it out." A C-17 SLEP would be expensive, especially if it included new engines.

"I want to go into this gradually and see what's the knee in the curve—45,000 hours, 60,000 hours, 90,000 hours—and then the engineering analysis of wing box, life cycle, all those things," he noted. Fuel consumption will be an increasingly important factor.

The decision whether to SLEP the C-17 will be key to whether AMC begins pursuing a C-X that might

USAF photo by AIC Sierra Bullock



Gen. Raymond Johns Jr., AMC commander, deplanes at Dyess AFB, Tex. He's stepping off the 17th of 28 C-130J airlifters slated for the base.

potentially replace both the C-17 and C-5, Johns said; the latter will phase out of the inventory around 2040. The last C-5M will emerge from Lockheed Martin's conversion facility in Marietta, Ga., around 2017, Johns said.

Several other considerations affect the timing and need for a potential C-X, Johns noted. One is if industry will be able to build what he called "one-offs." Can a contractor efficiently produce one or two airlifters such as the C-17 or C-130J without a major order requiring a years-long production line? The second question is whether there could be a major modification of the C-17 akin to the "stretching" of the C-141A Starlifter into the C-141B. Yet another question concerns preserving C-17 tooling when the line eventually closes, he said, in case the nation wants the line restarted later, as happened with the C-5.

There also will be a foreign platform available for consideration, Johns said: the Airbus A400 airlifter, which is sized between the C-17 and the tactical C-130.

Complicating the forecast is a new generation of lighter-than-air technology now being pursued by a number of companies.

"I have [an] interest in hybrid airships," Johns said, because they represent a capability that could be used in a "semipermissible environment" that would be "about one-third the cost of fixed-wing [at] ... about one-third the speed." Such aircraft would also be "three times the cost of surface," but "three times as fast." So "there may be a huge niche—logistically, operationally—with this hybrid airship construct."

Other kinds of vertical lift—helicopters and tilt-rotors—may also be required if operators demand that capability, but Johns noted, "the minute you go powered" in a vertical lift aircraft, "you just drive a huge bill, and that's just the nature of physics."

There is a Joint Future Theater Lift program for replacing the Army's CH-47, and Johns said he wants to investigate alternative approaches. One option is to do more with the Joint Precision Airdrop System, by which cargo dropped by parachute can be steered with great precision to the area where it is needed. (See box, p. 50.)

Putting a JPADS load "within 25 meters" of a drop target is "a lot cheaper" than a whole new aircraft program, he said. The JPADS has been working well in Afghanistan, and Johns said some



USAF photo by A1C George Goslin

**RED HORSE** airmen parachute from a C-17 above Alamo, Nev. The last C-17 will likely join the Air Force inventory in 2014.

loads have been dropped directly inside forward operating bases.

Johns is reluctant to discuss which way he thinks the C-X ought to go. Given the emergence of the airship possibility, a new generation of engines, and other considerations, "I don't want to get boxed into" a choice that may not be the right one in just a few years.

### Let's Get Small

The tactical air fleet will consolidate to the C-130J and a standardized configuration of the C-130H; however, the latter will not receive the full Avionics Modernization Program, a huge electronics update deemed unaffordable. A series of lesser updates are regarded as sufficient to meet requirements.

The previous fleet of some 380 C-130s will now be reduced to 318.

Perhaps most controversial of the mobility choices made in the Fiscal 2013 budget was eliminating the C-27J Spartan from USAF's fleet. The small airlifter was meant to fill the role of operating from small landing strips both domestically and abroad and was specifically tasked with supporting Army units at small airfields where larger aircraft can't go. The Air National Guard was slated to operate all the Spartans, but USAF decided it couldn't afford to complete the planned buy of 38 aircraft and fully develop a logistics tail for them.

Schwartz told reporters in February that a CAPE analysis comparing the 25-year life-cycle costs of the C-27J, C-130J, and C-130H told the whole story.

"If I recall the numbers correctly, it was \$308 million—an-airplane life-cycle cost for the C-27J; it was \$209 [million] for the J model C-130; and it was \$185 million for the H," Schwartz reported.

"The C-27J is not a cheap airplane," he continued. "It's a fine machine and I wish we could have kept it. It was the last thing that went. But the bottom line is that the C-130 or airdrop can perform the time-critical, mission-sensitive missions we are obliged to provide for the Army."

Johns agreed that the C-27J is a good aircraft but is simply not as "versatile" as the C-130, and AMC can't keep it if the command must reduce the types of airframes it flies.

"It's not about the money," Johns added, but the need to field only those aircraft capable of doing as much as possible. He said USAF is already operating the C-130 as the Army's on-call support aircraft in two locations and is meeting all its requirements.

"If I lose C-130s at the expense of C-27s, I lose capability and capacity to meet the plans across the spectrum."

AMC's No. 1 acquisition priority—and that of the Air Force—is the KC-X tanker. Johns said he planned to attend the preliminary design review for the aircraft in April because he believes industry and the Air Force need to partner at all phases of the program, and operators must be included at every level to ensure the delivered product meets the need.

"We have a great partnership with Boeing, a very transparent system,

[and] we are putting great rigor into the system,” Johns asserted. “There will be no requirements change. This aircraft, when it comes off the line, will go into combat if I need it to.”

A question so far unanswered is how the Air Force will address the issue of replacing Air Force One, the President’s airplane. Johns said he’s not yet ready to launch a new program.

“I have a plan lined up so we can first and foremost sustain the VC-25A,” he said, calling it one of his two “no fail” missions, the other being nuclear airlift. After a sustainment program is fleshed out, “we’ll look at bringing the PAR [Presidential Aircraft Recapitalization] on.”

### Tanker Endurance

The KC-10 also will have to last until 2040, and Johns said the 59 aircraft in that fleet will need to be upgraded to keep them relevant for the remainder of their service lives.

“Right now I’m spending a lot of time ensuring that it stays as ready as it needs to,” Johns noted. The Extender can do “huge things” and will be essential for the next 28 years or so. The KC-10 will need additional gear to make it compliant with international navigation norms and also needs investment to solve some “vanishing vendor” issues.

Johns said there are still KC-Y and KC-Z programs to replace, respectively, the remainder of the KC-135s that won’t be supplanted by the KC-46 and, eventually, the KC-10. However, given the need to focus on the KC-46 and get that program per-

## One-Third To Be Supported Exclusively by Airdrop

As the US draws down its presence in Afghanistan, the remaining forces there will increasingly depend on airdropped supplies. Air Mobility Command chief Gen. Raymond E. Johns Jr. said in an interview.

“As you start drawing down, ... the leadership has said we need to keep ... the shooters, the ones that are engaging, there,” Johns observed. Thus, a planned exit of 30,000 troops from Afghanistan this year will draw heavily on logistical personnel who drive trucks and operate convoys—“all the folks who help process, distribute.”

The remaining forces will therefore “become more dependent on airdrop because there will be less support structure in place.”

He predicted that about a third of the forces in Afghanistan later this year will be supported exclusively by airdropped supplies—everything from food and ammunition pallets to water and fuel bladders.

forming properly, plus future financial uncertainties, those programs are on the back burner for now. Certainly, they are not within the Pentagon’s five-year horizon.

The critical role played by commercial carriers does not get much scrutiny.

“Ninety percent of the passenger movements and 37 percent of the cargo goes by commercial conveyance,” Johns pointed out. Participants in the Civil Reserve Air Fleet—commercial carriers that have volunteered their aircraft to be “drafted” in a national emergency—get first dibs on the day-to-day contracts for airlift, and the value of those contracts is running “about \$2.6 billion this year.”

However, with operations in Iraq over and operations in Afghanistan soon to be winding down, Johns expects the value of the commercial contracts to decline. Before 9/11, the commercial bill was around \$500 million annually.

“I expect the number to come down—way down—by about [2015],” he said. “The problem is, how do we glide this

to a safe landing, and how do we do it in the most transparent way we can, so I [can] allow commercial industry to stay ahead of it?” He said AMC is studying how it can soften the blow of rapidly declining commercial contracts.

Johns said AMC must fly its organic fleet only as much as needed. That means doing the minimum flights necessary to “grow” aircrews with training and proficiency flights and check rides, but “above that, I know I’m just burning through” aircraft service life and “keeping my crews away from their families more than they need to be.” However, AMC cannot fly aircraft half-empty, as “I then have to write a check to TRANSCOM because I’m driving inefficiencies.”

So anything above the minimums required for training or transport of gear that can’t fly any other way, “I’ll give that to ... commercial,” Johns said, adding that he meets with the commercial carriers quarterly to discuss AMC’s needs and to fill them in on the command’s forecasts for future business.

One of the biggest worries for Johns is the operating tempo for his personnel—specifically, the deployment-to-dwell ratios.

“I’d like to have the Active Duty at a one-to-two; someday at a one-to-three,” he said, but “right now, the Active Duty is down to one-to-1.4. I had the [KC-135s] at one-to-.85 dwell-to-deploy, so they were gone more than they were home. And the KC-10s were the same way, one-to-one.” That’s a principal reason the Air Force’s plan for 2013 is drawing down a proportionally larger set of force structure from the Guard and Reserve than from the Active Duty—the Active units are deploying too much.

Johns said he fears that when the economy improves, perhaps as early as 2014, AMC may see an exodus of people who are simply tired of running full-out with no breaks in sight. ■

USAF photo by SFA Abigail Klein



TSgt. Stefan Sianis inspects a KC-135 engine at McConnell AFB, Kan. KC-135s will be replaced with KC-46s. Eventually, even the KC-10 will see a successor.



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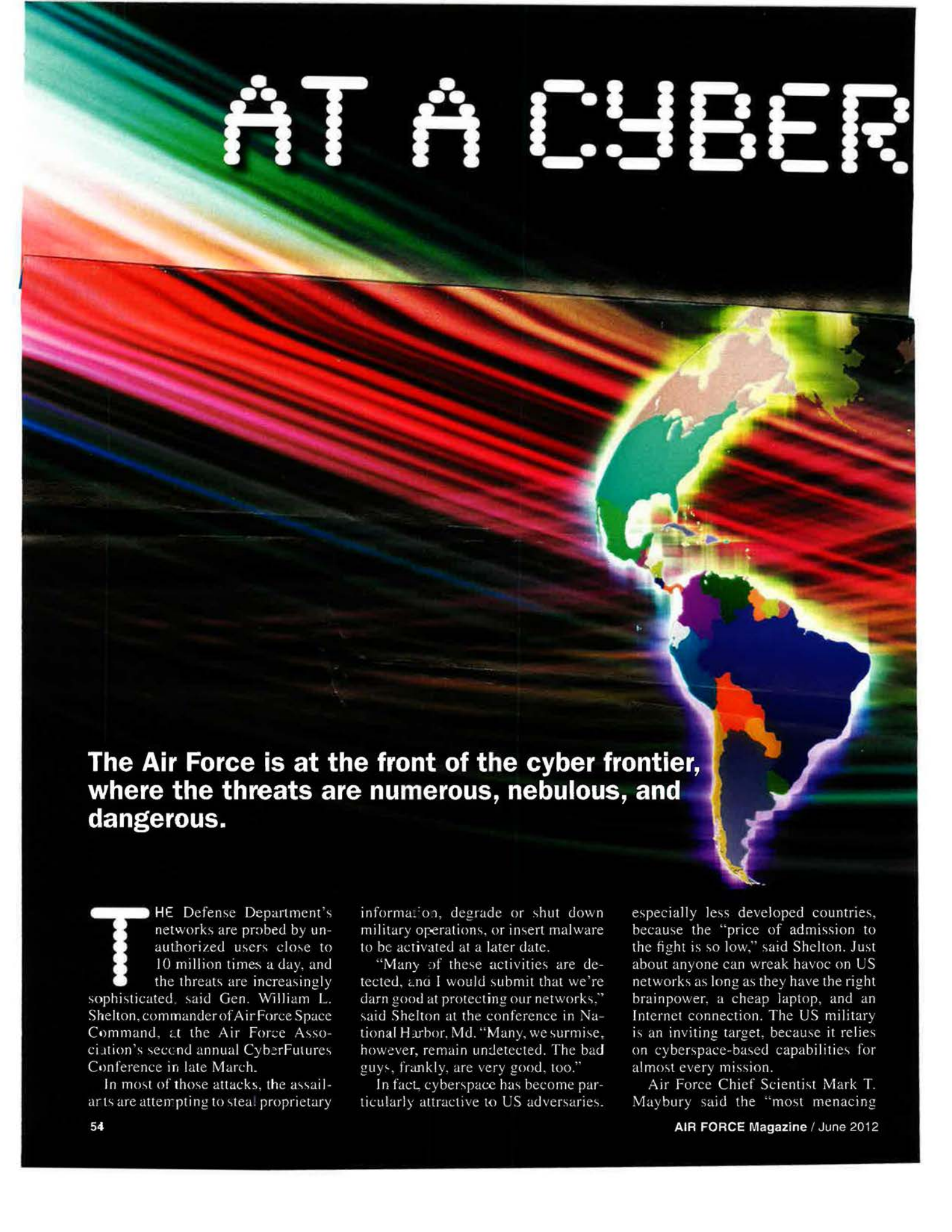
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# AT A CYBER



**The Air Force is at the front of the cyber frontier, where the threats are numerous, nebulous, and dangerous.**

**T**HE Defense Department's networks are probed by unauthorized users close to 10 million times a day, and the threats are increasingly sophisticated, said Gen. William L. Shelton, commander of Air Force Space Command, at the Air Force Association's second annual CyberFutures Conference in late March.

In most of those attacks, the assailants are attempting to steal proprietary

information, degrade or shut down military operations, or insert malware to be activated at a later date.

"Many of these activities are detected, and I would submit that we're darn good at protecting our networks," said Shelton at the conference in National Harbor, Md. "Many, we surmise, however, remain undetected. The bad guys, frankly, are very good, too."

In fact, cyberspace has become particularly attractive to US adversaries,

especially less developed countries, because the "price of admission to the fight is so low," said Shelton. Just about anyone can wreak havoc on US networks as long as they have the right brainpower, a cheap laptop, and an Internet connection. The US military is an inviting target, because it relies on cyberspace-based capabilities for almost every mission.

Air Force Chief Scientist Mark T. Maybury said the "most menacing



# CROSSROADS

Illustration via iStockphoto.com

By Amy McCullough, Senior Editor



threat” the US will face in the coming years will involve cyber espionage conducted by China, Russia, and Iran. However, he cautioned, the entire domain is highly contested and unlike the air domain, it will be extremely difficult to obtain superiority in cyberspace.

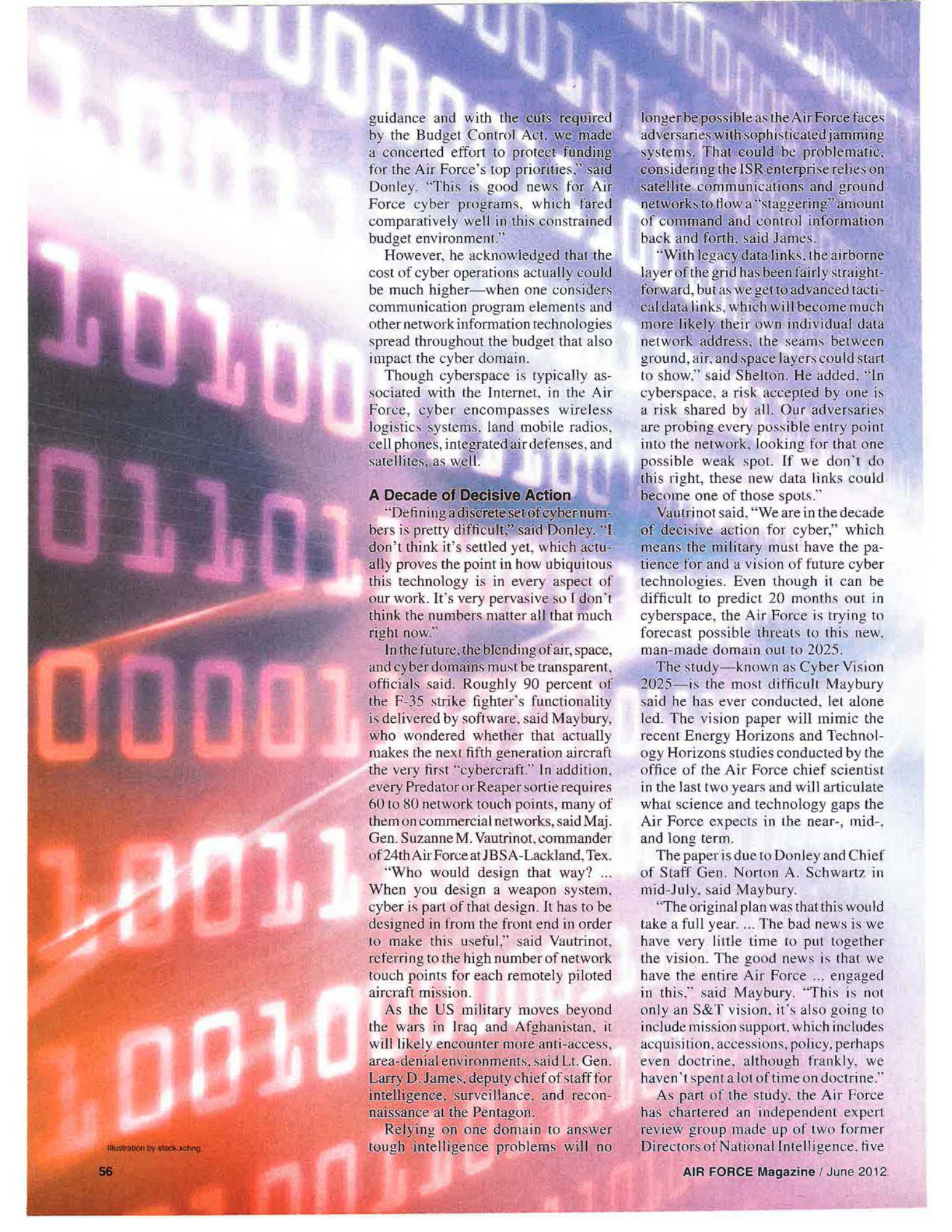
“Our responsibility in terms of national security is to protect the security of those systems,” said Maybury. “We’re moving from an environment that has gone from a fairly static

and fairly uncontested, ... uninterested environment, as a matter of fact, ... [into a] highly fluid, dynamic decision-making environment where time is of the essence. And we’re talking 15 milliseconds.”

That’s why USAF has tried to protect cyber funding in the President’s Fiscal 2013 budget request. That request includes \$4 billion for “cyberspace superiority,” said Air Force Secretary Michael B. Donley at the conference.

If approved, that funding will be used to invest in advanced technologies for monitoring and securing classified and unclassified networks. It also will support the ongoing migration to a single Air Force network, which Donley said will increase situational awareness and improve information sharing capabilities.

“While Air Force leaders made many hard decisions to align the FY13 budget request with the new defense strategic



guidance and with the cuts required by the Budget Control Act, we made a concerted effort to protect funding for the Air Force's top priorities," said Donley. "This is good news for Air Force cyber programs, which fared comparatively well in this constrained budget environment."

However, he acknowledged that the cost of cyber operations actually could be much higher—when one considers communication program elements and other network information technologies spread throughout the budget that also impact the cyber domain.

Though cyberspace is typically associated with the Internet, in the Air Force, cyber encompasses wireless logistics systems, land mobile radios, cell phones, integrated air defenses, and satellites, as well.

#### **A Decade of Decisive Action**

"Defining a discrete set of cyber numbers is pretty difficult," said Donley. "I don't think it's settled yet, which actually proves the point in how ubiquitous this technology is in every aspect of our work. It's very pervasive so I don't think the numbers matter all that much right now."

In the future, the blending of air, space, and cyber domains must be transparent, officials said. Roughly 90 percent of the F-35 strike fighter's functionality is delivered by software, said Maybury, who wondered whether that actually makes the next fifth generation aircraft the very first "cybercraft." In addition, every Predator or Reaper sortie requires 60 to 80 network touch points, many of them on commercial networks, said Maj. Gen. Suzanne M. Vautrinot, commander of 24th Air Force at JBSA-Lackland, Tex.

"Who would design that way? ... When you design a weapon system, cyber is part of that design. It has to be designed in from the front end in order to make this useful," said Vautrinot, referring to the high number of network touch points for each remotely piloted aircraft mission.

As the US military moves beyond the wars in Iraq and Afghanistan, it will likely encounter more anti-access, area-denial environments, said Lt. Gen. Larry D. James, deputy chief of staff for intelligence, surveillance, and reconnaissance at the Pentagon.

Relying on one domain to answer tough intelligence problems will no

longer be possible as the Air Force faces adversaries with sophisticated jamming systems. That could be problematic, considering the ISR enterprise relies on satellite communications and ground networks to flow a "staggering" amount of command and control information back and forth, said James.

"With legacy data links, the airborne layer of the grid has been fairly straightforward, but as we get to advanced tactical data links, which will become much more likely their own individual data network address, the seams between ground, air, and space layers could start to show," said Shelton. He added, "In cyberspace, a risk accepted by one is a risk shared by all. Our adversaries are probing every possible entry point into the network, looking for that one possible weak spot. If we don't do this right, these new data links could become one of those spots."

Vautrinot said, "We are in the decade of decisive action for cyber," which means the military must have the patience for and a vision of future cyber technologies. Even though it can be difficult to predict 20 months out in cyberspace, the Air Force is trying to forecast possible threats to this new, man-made domain out to 2025.

The study—known as Cyber Vision 2025—is the most difficult Maybury said he has ever conducted, let alone led. The vision paper will mimic the recent Energy Horizons and Technology Horizons studies conducted by the office of the Air Force chief scientist in the last two years and will articulate what science and technology gaps the Air Force expects in the near-, mid-, and long term.

The paper is due to Donley and Chief of Staff Gen. Norton A. Schwartz in mid-July, said Maybury.

"The original plan was that this would take a full year. ... The bad news is we have very little time to put together the vision. The good news is that we have the entire Air Force ... engaged in this," said Maybury. "This is not only an S&T vision, it's also going to include mission support, which includes acquisition, accessions, policy, perhaps even doctrine, although frankly, we haven't spent a lot of time on doctrine."

As part of the study, the Air Force has chartered an independent expert review group made up of two former Directors of National Intelligence, five

former Air Force chief scientists, a former CIA director, and several nationally recognized cyber experts from national laboratories and academia to ensure the vision is top quality.

Air Force Space Command also is working on a Cyberspace Superiority Core Function Master Plan to help shape future funding and capabilities.

"Over time, the master plan's strategy to reduce legacy defensive structures and processes, which are manpower-intensive, will allow the Air Force to recapitalize resources into more flexible and dynamic capabilities," said Donley. The plan "will allow us to change the way the Air Force thinks about the cyberspace mission, essentially shifting our mindset on cyberspace."

Thinking differently will be key if the Air Force wants to maintain an edge in cyberspace. Vautrinot said the Defense Department must move from a passive defense environment, where cyber experts are merely trying to catch up and figure out what the enemy did to the networks, into a more active era. That means changing the architecture from heterogeneous to homogeneous and automating that environment to free up more brainpower.

The Air Force currently has a capacity problem where complex sensors from sophisticated RPAs and ISR platforms are simply pushing out more information than analysts could ever hope to process. James cited a RAND study, which said that by about 2016 the US military would need about 100,000 analysts to do this job (up from 5,000 to 7,000 today). "So, obviously, we can't do that," he said. "We have to let the machine do a lot of that. Bringing the machines, the tools, the processes into this ISR domain, so we can do that process, dissemination, and exploitation, is absolutely critical."

Vautrinot used a football analogy to explain the Air Force's cyber defenses. Specifically, she cited the 1985 career-ending play for Washington Redskins quarterback Joe Theismann. During a Monday Night Football game, Theismann took the snap and handed the ball off to his running back, who in a complex play, then tossed the ball back to Theismann. "Up to now, the quarterback is defined by what the quarterback sees, but he's about to be defined by what he doesn't," said Vautrinot.

Legendary New York Giants defensive end Lawrence Taylor came from

behind and sacked Theismann, breaking his leg and ending his career on live television in what NFL viewers in an ESPN poll dubbed the "most shocking moment in history."

"It's important to think about the game-changing nature of defense and, more importantly, that you don't want the adversary to come back and play another down," said Vautrinot. "So you set yourself up in a proactive environment and you take advantage of what you understand about your network and what you understand about your adversary, because the adversary has a blind side. The adversary thinks we are doing nothing, and you can take that to the bank and, therefore, you can make it to your advantage."

#### **Needed: White Hat Hackers**

Actively defending the network requires a layered defense, which is why the Air Force is putting hundreds of touch points on its network through a gateway structure. Such a system gives cyber experts the visibility and awareness they need, to know what's going on across the architecture.

Going back to the football analogy, Vautrinot said cyber forensics is like watching game tapes. "When you look at forensics, you are looking at the game tapes over and over. And if you watch the game tapes, just like in sports, then you can predict what the play looks like. You can see the setup coming and you can get in the backfield long before the football is released. ... If you know what the setup is going to look like, you can write a signature and you can prevent that setup from being effective in your neighborhood," she said.

Most of the Air Force's cyber priorities are defensive in nature because it is believed the service must establish a strong defense before it can "swing toward offensive cyber operations and contingency network extensions," said Shelton.

However, Shelton warned that the lack of cyber recruits capable of accomplishing this mission is a "serious national security issue." Although the Air Force is producing the right kinds of people on the backside of the pipeline, it just isn't getting the right people, with the right backgrounds, in the front end.

Only about four percent of degrees granted in the United States are technical in nature. The eligible pool of

recruits, though, is even smaller than that, considering the number of foreign nationals graduating with degrees in those areas, the number of people who actually want to work in national security, and the number of people who can pass a background check, said Shelton.

Nonmilitary organizations "also may pull some of that talent," and of the remaining pool, "many of these folks aren't the kind of folks that would necessarily take well to the military life," he added.

Lynn A. Dugle, Raytheon's president of intelligence and information systems, acknowledged the Air Force has an uphill battle recruiting the sometimes eccentric personnel needed to seize the initiative in the cyber realm. Though many of the most talented white hat computer hackers are more comfortable coming to work barefoot than donning a uniform, Dugle said there is no reason the service can't attract the best.

"The most important element of attracting and retaining a great cyber team ... is the quality of the work and the degree of the challenge," she said. "While I think we're very well-suited to perhaps relax some of the work environment rules, ... the bottom line is you supply great work tools and interesting work, and the best of the best will come to you."

Donley said the Air Force has made "considerable progress" in its efforts to meet the ever-evolving challenges of cyberspace, by fielding more than 45,000 trained and certified professionals.

It will continue building on those efforts this year by establishing three new cyber units—two Air National Guard information operations squadrons located in Washington state and California and one Air Force Reserve association with the Active Duty 33rd Network Warfare Squadron at JBSA-Lackland. The Air Force also plans to expand the Maryland Air National Guard's 175th Network Warfare Squadron, he said.

"As we consider the future, it's daunting to imagine the changes that may be in store for our nation," said Donley. "But if the transformative air and space technologies of the 20th century are any guide to where we may be headed with cyberspace in the 21st century, we are in for an exciting adventure." ■



Teams from the Colorado Springs Civil Air Patrol and Alamo Academies in San Antonio took home top honors in this year's high school cyber defense competition.

By Peter Grier

# CyberPatriot World

**A** record number of teams—more than a thousand—representing all 50 states, the District of Columbia, Puerto Rico, and Department of Defense Education Activity schools in Europe and the Pacific, entered the Air Force Association's CyberPatriot IV cyber defense competition for high school students. Canadian students participated as well, with five squads from Manitoba competing as CyberPatriot's first international teams.

The Open Division is for nonaffiliated teams, while the All Service Division includes high school teams with military ties, such as JROTC and CAP units. The two divisions compete in parallel competitions with their peer teams. In the Open Division, "Team Unknown," representing Alamo Academies of San Antonio took home the President's Trophy.

A team from Lewis and Clark High School in Spokane, Wash., finished second in the Open Division, while Palos Verdes Peninsula High School from Rolling Hills Estates, Calif., took third.

In the All Service Division during the final round of competition, the "Wolfpack" of the Civil Air Patrol's Colorado Springs, Colo., cadet squadron captured the Commander-in-Chief's Trophy for its first place finish.

An Air Force Junior ROTC contingent from John R. Rogers High School in Spokane, Wash., took second. A fellow AFJROTC team from Clearfield High School in Clearfield, Utah, placed third.

After three rounds of long-distance competition that began last October, 26 winning teams traveled to the CyberPatriot IV National Finals, held March 22-23 at the Gaylord National Resort and Convention Center outside Washington, D.C. Twelve were All Service JROTC or CAP teams; another 12 finalists competed in the Open Division.

In addition, two Canadian teams participated in an international exhibition and observed the CyberPatriot finals firsthand.

As usual, the announcement of the winners stopped traffic in convention center's nearby halls, as the teenagers let out their enthusiasm.

Photos by Chuck Fazio



Students from Spokane, Wash., compete in CyberPatriot IV.

"There were certainly some loud cheers," said CyberPatriot Commissioner Bernard K. Skoch, who attributes the continued growth of the event to good word-of-mouth from past entrants, hard work on the part of event organizers, and the efforts of AFA members to promote CyberPatriot in their communities.

"We are pitch up and full throttle," said Skoch.

CyberPatriot's founders take care to emphasize that they are not developing a new generation of hackers. They work to teach high school students how to deal with malware, viruses, system intruders, and other computer system security problems. Nor do they focus only on defense needs. Banks, universities, manufacturing firms, retail chains, even academia—in coming years all will likely see an increased need for cyber defense.

"We're drawing cyber professionals to every aspect of the economy," said Skoch.

Backed by AFA, presenting sponsor Northrop Grumman Foundation, as well as SAIC, the Center for Infrastructure Assurance and Security, and other sponsors, CyberPatriot is intended to get kids interested in cyber defense, a 21st century field of great national need, as well as science, technology, engineering, and math.

The competitive nature of CyberPatriot aims to attract teens raised on video games. It also allows students with strengths



*"Team Unknown" from San Antonio celebrates as the Open Division winners. AFA Chairman of the Board S. Sanford Schlitt is at far left.*

in math and science a chance at the sort of interscholastic glory typically won only by sports stars.

In preliminary rounds, student teams battled each other from their own classrooms. At an appointed time, they downloaded simulated computer networks preloaded with security problems. They attempted to patch those holes and guard against new intrusions, while a central CyberPatriot server kept score.

The best scores earned teams a trip to Washington for the spring final round. There, they competed in another network protection exercise, which included a live Red Team attack that the teams had to defend against.

### Cyber Forensics

This time, CyberPatriot organizers added an extra twist to the championship round: a cyber forensics element. This involved teams entering a "crime scene" that contained cyber evidence of some sort. Teams received a crime scenario and a transcript of a suspect's interrogation. Beyond that, they were on their own to figure out what happened. Their forensics score counted for 10 percent of their final numerical mark.

"The students just loved it," said Skoch.

The forensics round, conducted by several Department of Defense Cyber Crime Center personnel, tested student skills not strictly related to computers. Teams had to search a "suspect" mannequin within specific guidelines, find additional evidence such as concealed memory devices and passwords, and determine how to use their findings. They needed the mental agility to analyze a situation, think critically about their evidence, and then attempt to work to a solution.

For most finalists this was not a problem, said Skoch. "By the time a team gets to the national finals, they're working as a team," he said.

Another notable feature of the CyberPatriot IV finals was the number of female participants. Though overall they remain in the minority, "their number more than doubled," said Skoch, from seven in 2011 to 17 this year.

After four years of CyberPatriot experience, it is clear that a supportive community environment greatly aids the competitors.

A good example in this regard is the city of Spokane, which accounted for an amazing seven teams of the 26 in the finals. Of these seven, four came from John R. Roberts High School, and four of the city's schools were represented overall.

Mentoring may have been the secret of Spokane's success. Daniel Wordell, a former Lockheed Martin cybersecurity manager who is now supervisor for the Instructional Technology Support Center for Spokane Public Schools, rounded up 10 mentors, including five cyber specialists and three college students who had competed in past CyberPatriots. Teams learned to build Linux and Windows systems, focusing on cyber defense.

To encourage this kind of supportive environment, CyberPatriot has established a Centers of Excellence program to recognize communities that embrace the cyber competition concept. Officials have awarded two Centers of Excellence certificates so far: one to the Los Angeles Unified School District and another to the city of San Antonio.

The LA school system, in conjunction with local universities, has hosted a three-day cyber camp for teenagers and established



*All Service Division winners, CAP's "Wolfpack" from Colorado Springs, display their award. At far left is CyberPatriot Commissioner Bernard Skoch.*

a drop-in summer program to get cyber defenders ready for next year's CyberPatriot, among other steps. In 2012, the district sent a team to the national finals for the second year in a row.

San Antonio's business and community leaders worked together to help attract USAF's 24th Air Force, the cyber-oriented command, to their city. Since then they've recruited mentors to train high school students interested in CyberPatriot and awarded leather jackets and other symbols of recognition to top cyber defense teens.

What do cities get with their Center of Excellence certificate? "They get more focused attention from us. And they get bragging rights, which we've learned are very important to teenagers," said Skoch.

CyberPatriot V is now open for business. Registration began April 1.

*Peter Grier, a Washington, D.C., editor for the Christian Science Monitor, is a longtime contributor to Air Force Magazine. His most recent article, "The Highest Ranking," appeared in March.*

Lawmakers are concerned that many of the Air Force's cost-saving moves may be penny-wise but pound-foolish.

# The Austerity Budget Hits the Hill

By Megan Scully

**A**s he was making his rounds on Capitol Hill following the release of the Pentagon's budget request for next year, Air Force Secretary Michael B. Donley painted a stark and detailed picture of his fleet.

The service, he told the Senate Armed Services Committee March 20, is in desperate need of modernized aircraft. The average age of the fighters is 22 years, while many Air Force cargo aircraft have been flying since the 1970s and many aerial refueling tankers date to the Eisenhower era. But like every military service, the Air Force is feeling a squeeze on its budgets, straining plans to buy new gear. The Defense Department is trimming its planned spending over the next decade by \$487 billion—and the department may be forced to double that if a sharply divided Congress cannot come up with a deficit-reduction plan by January 2013.

Topline budgets are coming down after a decade of growth fueled by the wars in Iraq and Afghanistan. The Air Force request for Fiscal 2013, including war spending, totals \$154.3 billion—down from \$162.5 billion this year. “So we have an extreme requirement for modernization that will be very difficult to meet in this budget environment, but we must protect those core capabilities for the future so the Air Force continues to get better over time,” Donley explained.

Still, the Air Force's priorities have remained largely the same, even as its budgets decline. The F-35 strike fighter, KC-46 tanker, and new nuclear-capable bomber remain at the top of the procurement wish list, just as they have for the last several years.

The 2013 budget slows down the procurement timeline for the F-35, but the goal of ultimately buying 2,443 fifth

generation fighters to replace aging jets in the Air Force, Navy, and Marine Corps fleet remains the same. “We remain fully committed to the F-35,” Donley said at the Pentagon, Feb. 3. “This is a ‘must do’ for our armed forces.”

## Holding No Illusions

Air Force officials, meanwhile, have acknowledged that the first of the service's 80 to 100 new bombers may initially be certified only for conventional missions—a cost-saving measure that takes some of the early risk out of a program that is little more than a concept at this time. The initial operational capability for the bomber, which will replace aging B-2s and B-52s, isn't until the mid-2020s. But as with most major procurement programs, the run-up to production requires a lengthy and significant investment of time and resources. The service has requested \$300 million in its Fiscal 2013 budget proposal as seed money for the bomber, on which it expects to spend \$6.3 billion over the next five years.

For the tanker, which is based on a Boeing Co. 767 aircraft, the Air Force has requested \$1.8 billion in research and development spending. The program's annual costs will increase sharply as the service prepares to purchase the 179 new airframes. The service argues it needs a replacement tanker as soon as possible, for without it USAF will no longer be a global fighting force.

With these and other big-ticket items requiring billions annually, the Air Force must find savings elsewhere. The Air Force wants to divest itself of 230 fighter, mobility, and intelligence, surveillance, and reconnaissance aircraft next year. This is a large first step toward a total of 286 aircraft retirements, yielding

\$8.7 billion in savings, over the next five years.

USAF is also cutting its end strength by 9,900 personnel—with more than half of those billets coming from the Air National Guard. Officials have argued they are maintaining a balanced mix of active and reserve forces, and the reductions align the force structure with a new defense strategy the Pentagon revealed earlier this year. But it's proving to be a tough sell on Capitol Hill, where lawmakers are loathe to see manpower decreases in their respective Air Guard units.

“We hold no illusions that these personnel reductions affecting all 54 states and territories will be easy,” Air Force Chief of Staff Gen. Norton A. Schwartz told the House Appropriations defense subcommittee March 6. “Taken comprehensively, however, this recalibration will robust almost 40 units across the Air National Guard and thus enhance overall Total Force readiness.”

One of the Air Force's budget decisions that lawmakers are finding particularly curious is the service's plan to park 18 Global Hawk Block 30 drones at the service's “boneyard” at Davis-Monthan Air Force Base in Tucson, Ariz. In their place, Air Force officials want to keep flying venerable U-2 manned spyplanes, which first deployed in 1956 but are, on average, 28 years old.

After listening to Air Force leaders bemoan the age of their fleet, lawmakers are demanding they explain why they're opting for the U-2 over the Global Hawk. The Block 30s, after all, are brand-new aircraft and reflect the service's increasing reliance on unmanned aircraft, particularly for intelligence missions. Indeed, four of the Block 30s the Air Force wants to mothball are still in production—and

will be transferred directly from Northrop Grumman Corp.'s lines to Davis-Monthan without ever having flown a mission.

Many of the other 14 Global Hawks tagged for the boneyard have been tapped for missions in Iraq, Afghanistan, and Libya, as well as the military's humanitarian relief effort following last year's devastating earthquake in Japan.

The decisions, lawmakers say, simply won't resonate among increasingly cost-conscious taxpayers who don't want to see the billions already invested in the aircraft go to waste. "When I have to talk to my constituents and the taxpayers, and I say, 'Yes, we've got these really cool surveillance Global Hawks that are going to take the place of this 50-year-old plane. We've got 14 of them made, but now we've made the decision to just park them in the garage somewhere'—you see, it's hard for me to be able to explain that," Rep. Thomas J. Rooney (R-Fla.) said at a Feb. 28 House Armed Services Committee hearing.

Others, such as Rep. Norman D. Dicks, the top Democrat on the House Appropriations Committee, want to see the aircraft put to use—even if it's not the Air Force that's flying them. Dicks has suggested that NATO, US special operations forces, or the Navy (whose Broad Area Maritime Surveillance drone is based on the same platform) could put the Block 30s to good use. "Our intelligence, reconnaissance, and



USAF photo by Jim Vanhegyi

**Secretary of the Air Force Michael Donley answers questions during a congressional hearing. Donley says USAF has "an extreme requirement for modernization."**

surveillance is a high national priority," Dicks said at a March 6 hearing with Air Force leaders. "So if the Air Force isn't going to use them, we've got to find a home for them."

The Air Force has been receptive to finding alternative uses for the Block 30s, one of several Global Hawk variants that specialize in capturing imagery and detecting electronic signals. But service officials remain clear that, given the state of the technology and the available

funding, USAF no longer wants to fly the aircraft. After all, the decision to stand down the Block 30s and keep the U-2 flying played a big role in the service's budget cuts, saving an estimated \$2.5 billion over the next five years—most of which comes from stopping planned buys of any additional Block 30s.

### A New Strategy

Specifically, the Air Force expects \$3.8 billion in total savings by parking the Block 30s. By comparison, updating the U-2s will cost just \$1.3 billion through Fiscal 2017. Further fueling the decision, Air Force officials said, were changes in the joint military requirement for high-altitude ISR, which threw the new cost analysis in the U-2's favor.

Last year, officials told Congress that the U-2 would cost \$220 million more per year to operate than the Global Hawk, largely because more Dragon Lady spyplanes would be needed to do the work of one unmanned Block 30.

"Our conclusion was that we could get this work done with the U-2," Donley told House appropriators. "While it does not have the persistence of the Global Hawk, the reduced overall requirements would still allow us to get the missions done and meet the operational tempo required, and the U-2 has in some areas a superior sensor which the Global Hawk does not."

To save additional dollars, the Air Force is looking to make cuts in its strategic airlifter fleet, a move that requires consent from lawmakers who have historically been reluctant to



USN photo by Mass Comm. Spc. 1st Class Peter D. Lawlor

**Air Force Chief of Staff Gen. Norton Schwartz testifies before the House Appropriations defense subcommittee about USAF's 2013 budget. Schwartz said the C-27J Spartan was the last program to be cut from the budget.**

retire airframes they believe are in high demand.

Last year, Congress agreed in the Fiscal 2012 defense authorization bill to grant the military's request to cut the Air Force's fleet of 316 C-17 and C-5 strategic airlifters to 301 aircraft. Now, USAF wants to further reduce that congressionally mandated number to 275 by retiring all but one remaining C-5A, the oldest in the airlifter fleet.

Military leaders have said the further reductions in strategic airlift reflect the military's new strategy, which moves away from the idea that the military must be capable of fighting and defeating two major regional threats at the same time. "We have a new strategy. The force structure that is put forth supports that strategy," Gen. William M. Fraser III, the commander of US Transportation Command, told the Senate Armed Services Committee. "And it is also backed by some analysis that we have actually completed in looking at that strategy and also in working with the combatant commanders."

Fraser added that the Air Force's long-standing plan to have 52 more-modern C-5Ms will ultimately drive up mission capability rates and improve the military's global transport capacity and capability—even if the actual size of the fleet is reduced.

Still, key lawmakers are leery of reducing the size of the airlifter fleet, which has been tapped heavily during the last decade of war.

"We need to be sure that the Air Force's planned retirements do not leave us short of the strategic lift capability we need," said Senate Armed Services Chairman Carl Levin (D-Mich.). Aside from the C-5As, the Air Force also proposes retiring 65 C-130 intratheater cargo aircraft and 20 KC-135 tankers, decisions made at least in part because of planned personnel cuts and other military force structure reductions.

In a move similar to the Global Hawk decision, the Air Force plans to divest itself of 38 C-27Js, small cargo aircraft tagged for Air National Guard units with few, if any, miles on them. USAF has argued that its remaining fleet of 318 C-130s would ultimately be more cost-effective because the larger aircraft have a broader mission portfolio and do not rely on contractor logistics support, as the C-27Js do.

"I think we made the right strategic choice here," Donley told the Senate Armed Services Committee, adding that the C-27 is a "nice-to-have" capability

designed specifically to provide support to the Army.

The move to favor the C-130 reflects DOD's preference for multirole platforms over more niche capabilities. Still, it was not an easy decision for the Air Force to make. Service leaders had previously pledged that they would support the C-27 program, and Schwartz said the Spartan airlifter was the last item to get cut from the service's 2013 budget.

### More Cuts Loom Large

Several lawmakers were perplexed by the Spartan decision and are trying to parse Air Force operational cost analyses comparing the two aircraft. Many on Capitol Hill consider the analysis inconsistent and confusing.

"Frankly, it's been a dizzying six weeks going through these various numbers, and unfortunately it leaves me with the feeling that you're trying to get this analysis to match a budget decision as made by the Air Force and, frankly, not based on some very important information," Sen. Robert J. Portman (R), whose home state of Ohio would lose C-27s, said during a Senate hearing. "We'd love to see more than a PowerPoint slide. We'd love to see some consistent analysis."

The C-27 represents just one of a multitude of cost-cutting decisions affecting the Air Guard, which some lawmakers believe was hit with a disproportionate share of the manpower and force structure reductions. Top Pentagon officials are working directly with the Council of Governors, a body President Obama established in January 2010, to devise alternate proposals that may be more palatable to states concerned about losing vital flying missions ranging from the C-27 to A-10 close air support aircraft.

"We are fully committed to the Total Force. We can't do what we do for the nation without our Guard and Reserve components," Donley told defense reporters in April. But "by putting additional capability into the reserve components we'll put additional pressure on the reserve components to participate in the regular rotations that would potentially overstress that force. Since the Guardsmen and Reservists did not sign up for continuous mobilization or to be part of a real robust, active operational tempo, we wanted to make sure we kept both of those in balance," he said.

Officials also note that while USAF's Active Duty force has shrunk since 2005, the Air National Guard has not.

As lawmakers continue to break down the specifics of the Pentagon's budget

proposal for next year, the threat of additional cuts to the Defense Department's accounts looms large. Under the Budget Control Act enacted last year, lawmakers must come up with a proposal to trim at least \$1.2 trillion from the deficit over the next decade. If they fail, they will trigger automatic, across-the-board cuts within discretionary spending accounts.

For DOD, sequestration would mean another \$492 billion slashed from its projected budget, starting in January 2013. Defense officials say they will start planning this summer in earnest for that possibility.

Military and civilian leaders alike are already painting the possibility of additional cuts as catastrophic and dangerous for the armed forces. Defense hawks on Capitol Hill—including House Armed Services Committee Chairman Rep. Howard P. McKeon (R-Calif.) and Sen. John McCain of Arizona, the top Republican on the Senate Armed Services Committee—are trying to overturn the sequestration trigger.

Despite concerns in both parties over the effects of larger and perhaps indiscriminate cuts to defense spending, their efforts have yet to pick up much steam. Many lawmakers want the trigger to remain in place to force both parties to compromise on a long-term deficit-reduction plan.

"We've reached out to a couple of folks, and what we're getting is this business of, 'Well, maybe we should just wait,'" Senate Minority Whip Jon Kyl (R-Ariz.) told reporters.

If the sequestration were to hit the Defense Department, the Air Force would have to revisit modernization plans and rethink spending priorities. All major programs—including the F-35 and the new tanker—would be hit, Donley has said. The fleet, in short, would continue to age while aircraft replacements are pushed further and further into the future.

"To get this far, we have made tough decisions to align, structure, and balance our forces in a way that can meet the new strategic guidance," Donley said. "If substantially more reductions are imposed on DOD, we will have to revisit the new strategy. We cannot afford the risk of a hollow force." ■

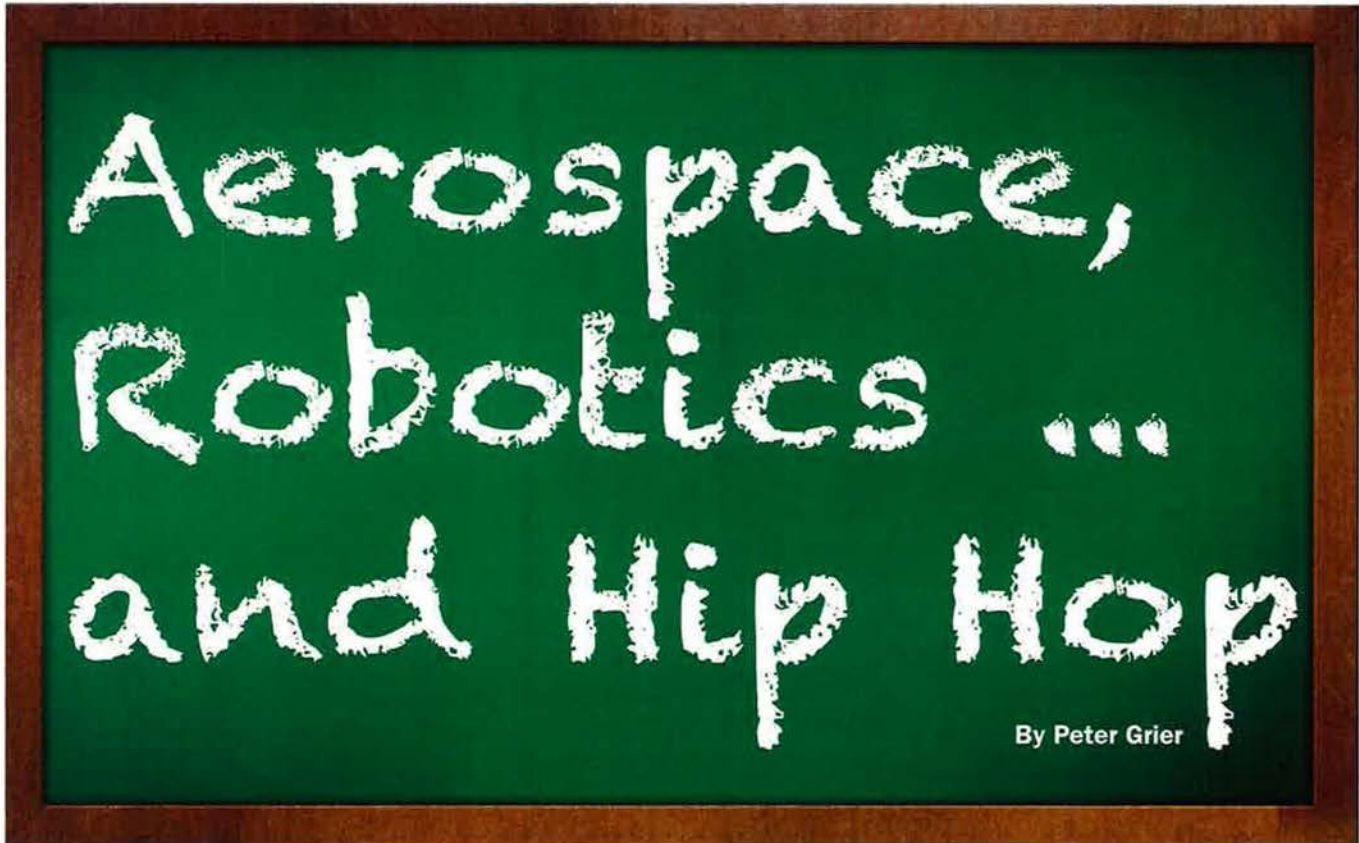
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*Megan Scully is a national security reporter for National Journal in Washington, D.C. Her most recent article for Air Force Magazine, "Nuke Fix, Phase II," appeared in the March 2011 issue.*





**Nancy Hoover, AFA's National Teacher of the Year, uses a multidisciplinary approach to get kids hooked on science, technology, engineering, and math.**



**M**ost teachers might consider rocketry and hip-hop dance as subjects too dissimilar to handle.

Not so Nancy Hoover, a physics teacher and program coordinator from Lloyd C. Bird High School in Chesterfield, Va. For her, watching some kids calculate an apogee and others bust a move is all in a school day's work.

Hoover uses hands-on rocketry projects as learning tools in the classroom. She also sponsors several Team America Rocketry Challenge teams, which design and build models intended to meet specific performance criteria. In 2012, for instance, the contest calls for student rockets to hit an altitude of 800 feet and return a cargo of two intact raw eggs to the ground, with flight duration of 43 to 47 seconds. "It's just like NASA. You have limited time and limited supplies, and you have to launch it over and over," says Hoover.



*After launching model rockets, Nancy Hoover poses with Mallory Pitchford (l) and Thienson Nguyen (c).*

As for dance, Hoover has used the "Cupid Shuffle" as an aid in learning computer programming. She had partici-

pants in her girls-only engineering and math summer camp write a flow chart listing directions for a robot to perform

Photos courtesy of Nancy Hoover

the dance. She also sponsors her school's hip-hop dance club. There is a nice open spot outside her office where four to six students started dancing last year. Then they decided to form a club and asked Hoover whether she would help.

"That's my new hat. They are not engineering kids at all. They just like to dance, so I gave them a chance," says Hoover, who herself once intended to major in music in college.

Hoover uses unique and entertaining teaching methods to engage students in demanding science, technology, engineering, and math (STEM) topics. She's established an aerospace engineering club, runs robotics efforts, and organized Brown Bag Seminars that bring together students, parents, and professionals to help promote STEM careers.

A few years ago, she returned to school to earn a doctorate. For these reasons and more she was named the 2011 Air Force Association National Teacher of the Year. "Dr. Hoover is recognized as an absolutely outstanding and highly regarded instructor known to be driven to the highest levels of achievement for her profession and her students," reads the Virginia state Air Force Association letter nominating her for the award.

Hoover herself says that if she has an educational philosophy, it is to give students problems that require their science knowledge to solve. "I'm really fond of kids making things," she says.

In physics, when dealing with momentum, impulse, and collisions, she always brings up auto crashes as a means of making the subject more real. She also gives students five pieces of paper with which to construct a structure they use to catch an egg dropped from the ceiling. The point is to keep the egg from breaking. For several years she had students design a "sumo wrestler car." They combined batteries, electric engines, and gears into model vehicles that crashed together and pushed competitors out of a ring, as sumo wrestlers do. The students had to consider whether to emphasize torque or speed and how maneuverable their vehicle had to be. "That was cool," she says. "I've also had them make a catapult that was supposed to hit a target on demand."

She has used catapults as the foundation for interdisciplinary lessons, as well. After students finish designing a catapult with their physics and engineering skills, Hoover has them research the impact of history on catapult design—and the impact on history of catapults. The result is a comprehensive written report.



*The Girls in Engineering, Mathematics, and Science (GEMS) camp has been so popular that Hoover is considering running two sessions per summer.*

"This collaborative inquiry approach to learning is so effective and is being duplicated throughout the school," wrote Lloyd C. Bird High School Principal Beth N. Teigen in a letter to the AFA Teacher of the Year selection committee.

Hoover believes her greatest contribution to STEM education lies in helping students see the practical ways that the concepts they learn apply to real life. No information has to be memorized when kids see how it works in the daily world, she says.

#### **Late to the Classroom**

"Whereas it might be easier to simply tell students facts or theories, getting them to uncover this knowledge for themselves, anchoring it to a new experience or their current knowledge, exemplifies teaching for me," wrote Hoover in a letter submitted to the AFA award committee.

Nancy R. Hoover came to the profession of education in an atypical roundabout way. She did not become a teacher until she had spent years at other endeavors, including raising her two boys. She loved singing and the piano when in high school and once planned on becoming a music teacher. Thus she took few advanced math and science classes. When she arrived at college, however, she decided to major in forestry and wildlife. She says she cannot explain that choice, but that at the time it seemed like a good idea.

"What was I thinking?" Hoover reflects today.

Her university major forced her to take math and science classes she had avoided, in order to perfect such skills as surveying and calculating the number of board feet in a stand of trees. This exposure to

science piqued her interest. Eventually she switched career goals and trained to become a medical laboratory technician. "I worked in a hospital lab and I really enjoyed it," she says.

As part of her lab duties, Hoover worked with students from a local community college. She taught them some practical skills and in doing so realized how much she still had the old teaching bug. This time, however, she wanted to teach science, not music. Then she took a long break to start and raise a family. In the 1990s she went back to school to earn teaching degrees. In 1996 she began her career as a science instructor, teaching 8th grade in Chesterfield.

"I started teaching at the age of 40 with a lot of life experience under my belt," Hoover says. It was a time when teaching was in transition, with Virginia instituting state standards of learning. Classes were emphasizing hands-on inquiry-based methods. Hoover embraced this change, seeing it as something that mirrored much of what she'd done in her own career to that point. She moved to Lloyd C. Bird High School as a physics instructor in 2000. She has been there ever since. Today she is the school's Specialty Center Coordinator for the Governor's Career and Technical Academy for Engineering Studies.

The academy is a specialty school within the larger high school. Students have to apply to get in. Sixty percent of its graduates go on to university engineering schools. Hoover still teaches two classes: independent study and junior engineering seminar.

"I am kind of like an uber department chair," she says.



**At summer camp, students spend a week on robotics, another on rocketry, and (here) end the session by launching their model rockets.**

Hoover's interaction with students is not bound by the hours of the classroom school day, however. Much of her impact comes from involvement with clubs, camps, and other extracurricular activities. Rocketry is only part of it. Hoover sponsors her school's First Robotics and VEX Robotics teams.

First Robotics is a challenging activity where school teams of up to 10 compete head-to-head in various robotics tasks, as they would if they played varsity sports. VEX is "not as intense in terms of complexity. ... It is something that kids can pretty much do on their own," says Hoover.

For both robotics enterprises, Hoover has recruited local engineers who serve as mentors. She teaches the students involved to act like a corporation, drawing up bylaws, electing officers, and so forth. The students compose letters to firms soliciting financial and technical help.

She has established a training program for other Central Virginia teachers interested in helping their students with robotics programs. "Hoover is personally available as a resource for any area teacher who needs her assistance with robotics instruction," says the letter from AFA Virginia's Leigh Wade Chapter, nominating her for the teacher award.

Then there is GEMS—Girls in Engineering, Mathematics, and Science—a summer camp that Hoover established and continues to help run.

GEMS had its genesis in Hoover's perception that the number of girls in her classes was not growing. The gender split in the school's engineering program was about 80 to 20, male to female. "In general, in engineering, women are underrepresented," says Hoover.

She responded by putting together a two-week program and lined up foundation and school system money to help pay for it. In her first year, 2010, she thought she would have to beat the bushes to get girls to apply. She was wrong. GEMS had more than 200 applicants for 28 spots. The first week, they did robotics. The second week, they did rocketry. Camp ended with a successful rocket launch.

### **I Just Really Like School**

Most girls preferred the robotics, Hoover says. She is considering doing two one-week camps in coming years, instead of one two-week session, in order to double the number of girls who get a chance to participate. "This year we're toying with maybe an aerospace theme," she says.

There are some signs that GEMS is having an impact on the school year. Currently, applications for Hoover's engineering program are up 10 percent. "We hope [GEMS] becomes a model we can replicate," she says. "You don't need upper body strength to do engineering. Girls bring a different skill set that just makes the team stronger."

As for aerospace in general, Hoover designed and developed an aerospace curriculum to broaden her school's engineering offerings. (An aerospace engineer now teaches that class, using Hoover's lesson plans.) And she helped found yet another extracurricular effort: the first-ever AFA high school aerospace club. Working closely with the Leigh Wade Chapter, she

and a colleague found space and funds for a dozen kids who are interested in the subject to meet twice a month.

"Their latest project is they are looking to Skype with a NASA engineer," says Hoover.

The local AFA chapter members, Hoover says, "are amazing men and women. They are so supportive of education. They were looking for an avenue to get into the school and do something, and they have."

Hoover always knew she wanted to earn a doctorate. After a decade of teaching, she went back and earned the degree, graduating from Virginia Commonwealth University in 2009 with a Ph.D. in educational leadership.

"I just really like school," she says.

If she has a professional goal, it may be to get as many of her students as possible to feel the same way.

"My favorite moments as a teacher are when kids enter my classroom and are excited to tell me how they recognized a physics concept we discussed in class in their everyday life. When that happens, I smile because I know I taught them—and they learned something," Hoover wrote in her AFA National Teacher of the Year application.

She added that today, science and engineering teachers face the particular challenge of training students in fields of inquiry that themselves change year by year. In essence, teachers are preparing kids for future employment in fields that may not yet exist.

In this situation, teaching an accepted body of codified knowledge is not enough. Teachers must push students to learn for themselves.

"We must be about the business of teaching critical thinking, problem-solving, and effective communication to prepare them for their future," Hoover wrote.

The nation may face daunting challenges, from energy needs to cyber security threats, but the answers to those tests are likely sitting in US classrooms today.

"Educators are developing and implementing effective STEM curricula in classrooms around the country, and it is imperative that the business and professional communities join educators in preparing our students for jobs, technology, and innovations that have not even been thought of yet." Hoover concludes. ■

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# THEY CALLED IT STAR WARS

The critics sneered at it, but the Soviets weren't so sure.

By John T. Correll

Staff illustration by Zaur Eylarbekov

**P**resident Ronald Reagan surprised friend and foe alike with what came to be known as the “Star Wars speech” on March 23, 1983. It was a short insert added to the end of an otherwise routine presidential address on the defense program.

“What if free people could live secure in the knowledge that their security did not rest upon the threat of instant US retaliation to deter a Soviet attack, that we could intercept and destroy strategic ballistic missiles before they reached our soil or that of our allies?” Reagan asked.

He called on the nation’s scientists “to give us the means of rendering these nuclear weapons impotent and obsolete” and announced a long-term research and development program with the “ultimate goal of eliminating the threat posed by strategic nuclear missiles,” a formidable task “that may not be accomplished before the end of this century.”

The next day, Sen. Edward M. Kennedy (D-Mass.) called it “misleading Red Scare tactics and reckless ‘Star Wars’ schemes.”

The “Star Wars” label stuck, even after the program was named the Strategic Defense Initiative.

SDI was developed through political channels with minimal input from the Department of Defense. Most scientists and technocrats, in and out of government, regarded it as far-fetched. Ridicule from the academic community and the news media set the tone for the clash that followed.

Thirty years later, it is difficult to separate the history of SDI from partisan interpretation, which accounts for much of what has been written about it. Reagan’s enemies portray him as a simpleton and SDI as a fantasy. Reagan’s admirers hold SDI to have been a masterstroke, pivotal in ending the Cold War.

SDI concurrently challenged two mainstays of Cold War strategy—mutual deterrence and arms control—both of which sought to contain and manage the nuclear standoff but did not offer any hope of eliminating it.

## Loss of Faith

SDI is usually depicted as a bolt out of the blue, but it did not begin from scratch. The Pentagon had been engaged in ballistic missile defense since the 1950s. Among the successes was an Army Nike-Zeus rocket that intercepted a warhead launched by a Titan missile. The Sentinel anti-ballistic missile system to protect US cities was canceled in 1969 in favor of the Safeguard ABM designed to defend US Minuteman missile silos.

By then, the scientific community and most of DOD had lost faith in ABM solutions because of the technical difficulties and potential destabilization of the arms race. In 1965, Secretary of Defense Robert S. McNamara embraced the strategy of MAD, or Mutual Assured Destruction, which was a bargain basement version of deterrence.

The US retreated from the previous goal of strategic superiority and instead sought nuclear parity with the Soviet Union. This was to be achieved through policies of détente and arms control. The SALT I agreement froze strategic ballistic missile numbers at existing levels and the ABM treaty—negotiated as part of SALT—limited each side to two fixed ground-based defense sites. Arms control treaties did not slow, much less stop, the Soviets, who swept past parity to superiority in ICBMs.

According to oft-told tales, Reagan got his idea for SDI from an Alfred Hitchcock movie, “Torn Curtain,” or perhaps from a visit in 1979 to North American Air Defense Command at Cheyenne Mountain AFS, Colo., where he supposedly learned for the first time that the US had no defense against ballistic missiles.

In fact, Reagan had been interested in ballistic missile defense since the 1960s. When he was governor of California, he received an ABM orientation at Lawrence Livermore National Laboratory near San Francisco at the invitation of physicist Edward Teller, father of the hydrogen bomb and a strong ABM advocate. Caspar W. Weinberger, who was with him in California, said that back then Reagan spoke regularly “about how a defensive system could indeed inhibit,

and ultimately operate to prevent, further development of more nuclear weapons.” Reagan assailed MAD during the 1976 presidential election campaign and again in a speech to the Republican National Convention.

Reagan did not understand the science of missile defense and the quality of the advice he was getting was spotty—but he was not a newcomer to the issue, nor was he as clueless as his detractors claimed.

### High Frontier

SDI broke sharply from old-style missile defense in which incoming warheads were shot down by rockets from the ground. By the 1980s, ABM advocates were pushing various space-based solutions. The most exotic proposal was Teller’s vision of an X-Ray laser powered by the explosion of a nuclear device in space.

The leading prophet of the new approach was retired Army Lt. Gen. Daniel O. Graham, former director of the Defense Intelligence Agency, who called for battle stations in space, launching kinetic weapons that would destroy their targets by collision. In 1981, Graham and industrialist Karl R. Bendetsen set up an organization called the High Frontier Panel that subsequently moved under the institutional umbrella of the conserva-

tive Heritage Foundation. High Frontier conceived of 432 satellites or orbiting “space trucks,” each with 50 miniature homing devices to intercept ballistic missiles in the post-boost phase. Teller joined forces with High Frontier, even though his ideas differed from Graham’s.

Pentagon analysts did not think much of High Frontier’s agenda, declaring the underlying technology to be “one view graph deep” and “unencumbered by practical engineering considerations or the laws of physics.” There was also apprehension that the proposal might weaken support for such strategic force modernization programs as the Air Force’s Peacekeeper ICBM and the Navy’s Trident SLBM.

However, High Frontier had access to the White House through some of its politically prominent members. At the invitation of Edwin Meese III, counselor to the President, and George A. Keyworth II, White House science advisor and a protégé of Teller’s, High Frontier made two presentations to Reagan.

In March 1982, Graham laid out his thoughts in “High Frontier: A New

*President Ronald Reagan addresses the nation from the Oval Office on March 23, 1983. The SDI portion of his speech, added at the last minute, provoked strong reactions from the press, foreign leaders, the scientific community, and the nation.*



White House photo



ITAR-TASS photo

**President Reagan meets Soviet Premier Mikhail Gorbachev in Reykjavik, Iceland, in 1986. The two leaders very nearly agreed to eliminate all strategic ballistic missiles by 1997—the thought of which left US defense strategists aghast.**

National Strategy,” published by the Heritage Foundation. “I think it is the propitious time for the Administration to cut across the parade ground and get in front of the parade we are creating,” he said.

By then, fissures had developed among partners of High Frontier, but it did not matter. Reagan had taken possession of the concept. Keyworth set up a special panel of the White House Science Council to evaluate the possibilities. Its recommendations were lukewarm and Reagan added them to the rest of the advice.

Few senior administration officials knew about the new strategy until just before Reagan delivered the “Star Wars” speech on national television. He had, however, discussed the general idea with Secretary of Defense Weinberger and the Joint Chiefs of Staff.

### Reagan’s SDI

The speech insert was crafted by Robert C. McFarlane, the deputy national security advisor, with science advisor Keyworth looking over his shoulder. Reagan reworked the draft in his own handwriting. Secretary of State George P. Shultz and a few others managed to tone it down, but not by much.

For a while, the program was called “Defense Against Ballistic Missiles” before it was named “the Strategic Defense Initiative” in a presidential directive in January 1984.

Reagan never explained his vision of SDI in any detail, and he described it in different ways at different times. In his memoirs, he said, “I never viewed SDI as an impenetrable shield.” However, he told visitors to the White House in 1985 that SDI “may soon be able to protect our nation and our allies from ballistic missiles, just as a roof protects us from the rain.”

He frequently returned to his original theme, declaring that SDI would render nuclear weapons obsolete and form “a shield that could prevent nuclear weapons from reaching their targets.”

Sometimes he said emphatically SDI was not an add-on to traditional strategy. “We’re not discussing a concept just to enhance deterrence,” he said. The goal was not disrupting a Soviet first strike on US missile fields. “Our research is aimed at finding a way of protecting people, not missiles,” he said. On the other hand, he also said that SDI would free us from “exclusive reliance” on conventional deterrence and he once called it “an insurance policy that the Soviets will live up to arms reduction agreements.”

Within the Cabinet, Weinberger was the most enthusiastic cheerleader for SDI and Shultz the most frequent critic. Weinberger, Shultz said, “continued to urge the President to take steps beyond what was remotely feasible on SDI” and that “Weinberger’s zeal for SDI, which far surpassed our present ability

to deploy, had needlessly stirred up a potentially devastating resistance to the entire SDI program.”

SDI moved into a new phase with creation of the Strategic Defense Initiative Organization in the Pentagon in April 1984. Air Force Lt. Gen. James A. Abrahamson, the director, reported to the undersecretary of defense. Thereafter, the main spokesman for SDI was Abrahamson, not Reagan.

Abrahamson rounded off the sharp edges of SDI, which began to sound less and less like the original version. SDI would be in addition to—not instead of—deterrence, which remained the “fundamental policy.”

SDI would not be leakproof, an “Astrodome over the United States.” It would begin as a technical feasibility study with hopes of reaching full-scale engineering in the 1990s and deployment around 2000.

At first, directed energy weapons—lasers, or particle beam devices—looked more promising than kinetic weapons, but that changed as the study progressed. Kinetic energy projectiles, which did their damage by impact, emerged as the weapons of choice.

The first of these to come to prominence was “Smart Rocks,” small rockets housed in orbiting satellite “garages” that could detect a missile launch and calculate a collision trajectory. It was superseded by “Brilliant Pebbles,” in which the projectiles were smarter and smaller. The Pebbles did not need a garage to do their thinking for them.

“Under this program, a large number of very small satellites would be placed in space—perhaps several thousand in all,” Weinberger said. “Each of those satellites would hold one small interceptor, probably weighing no more than 20 pounds. On alert, the satellites would open their heat-seeking eyes, locate enemy satellites from thousands of miles away, fire their own rocket motors, and crash into their ballistic missile targets.”

SDI’s reliance on space-borne systems did not set well with the Army, which had been the leader when ballistic missile defense was a ground-based mission. Now the Air Force was moving to the forefront.

### Reykjavik

The Russians were also disturbed. “The Soviets were particularly vehement about space-based defenses,” Weinberger said. “They at least hinted that they would let us deploy ground-

based defenses if we agreed to ban all weapons from space.”

Soviet leaders took SDI seriously and worried about it. Yuri Andropov called it a plot to disarm the Soviet Union. Politburo meeting minutes surfacing years later revealed that Mikhail Gorbachev was obsessed with SDI.

Because of his “Rearm America” program, amplified by SDI, Reagan went to the October 1986 summit conference at Reykjavik, Iceland, in an enhanced bargaining position.

To the amazement of onlookers, Reagan and Gorbachev came close to agreeing to eliminate all strategic ballistic missiles by 1996. The deal fell through only because Reagan refused to meet Gorbachev’s demand to confine SDI “to the laboratory.”

Defense strategists were aghast. “In Western strategy the nuclear deterrent remains the ultimate and indispensable reality,” said former Secretary of Defense James R. Schlesinger. “Yet at Reykjavik the President was prepared to negotiate it away almost heedlessly. By contrast, the Strategic Defense Initiative was treated and continues to be treated as if it were already a reality (‘the key to a world without nuclear weapons’) instead of a collection of technical experiments and distant hopes.” Schlesinger’s judgment was that “Reykjavik represented a near disaster from which we were fortunate to escape.”

Brent Scowcroft, former national security advisor, took a similar view. “We dodged a bullet,” he said. “That’s the one good thing about SDI: It kept an agreement from being made.”

Columnist Charles Krauthammer disagreed. “The Cold War was won in 1986 at Reykjavik,” he said. “It kept American missile defense alive and made Gorbachev understand that nothing would stand in its way. The United States under Reagan was prepared to press its massive technological and economic advantage over the Soviet Union to achieve strategic superiority. Failing that, the United States would simply bleed the Soviets dry in any strategic competition.”

For Gorbachev, SDI trumped all else. He left Reykjavik in a weakened position. Reagan was phenomenally lucky. The US strategic deterrent survived the summit, Reagan’s advantage in negotiating with Gorbachev increased, and public approval of SDI soared to 73 percent.

“If this project is as big a waste of time and money as some have claimed, why have the Soviets been involved

in strategic defense themselves for so long, and why are they so anxious that we stop?” Reagan asked.

In Reagan’s second term, SDI encountered fierce headwinds. Funding was cut severely as the government struggled to meet the budget ceilings directed by the Gramm-Rudman-Hollings deficit reduction act.

ABM advocates feared the bureaucracy was slow-rolling SDI with the intention of killing it off once Reagan left office. Aided by supporters in both houses of Congress, advocates called for early deployment of SDI, beginning with whatever increments of the program were technologically mature. The Senate Armed Services Committee directed the Pentagon to look at “stand alone” elements that might be ready in short term, including defense of troops and allies abroad against tactical ballistic missiles.

### SDI Driving Technology

Reagan did not want SDI split up into increments. “I know there are those who are getting a bit antsy,” he said, “but to deploy systems of limited effectiveness now would deter limited funds—or divert them—and delay our main research.”

Another problem centered on Brilliant Pebbles. It was undeniably a space weapon and thus presumed to be prohibited under the ABM treaty, which would have to be reinterpreted or abrogated before the system could

proceed. The Administration argued that the treaty was ambiguous, leaving open the possibility of emerging “ABM systems based on other physical principles.”

Weinberger and other officials wanted a “broad” rather than “narrow” interpretation, claiming that the treaty exclusion would apply to kinetic SDI weapons. Congress did not agree and blocked funds for any SDI tests that violated the traditional interpretation of the treaty.

SDI had its moments. In one demonstration, a Delta rocket upper stage rushed and rammed another Delta upper stage in near-Earth orbit. The Air Force chief scientist acknowledged SDI was driving the technology for space sensors, space communications, and other areas important to the armed forces.

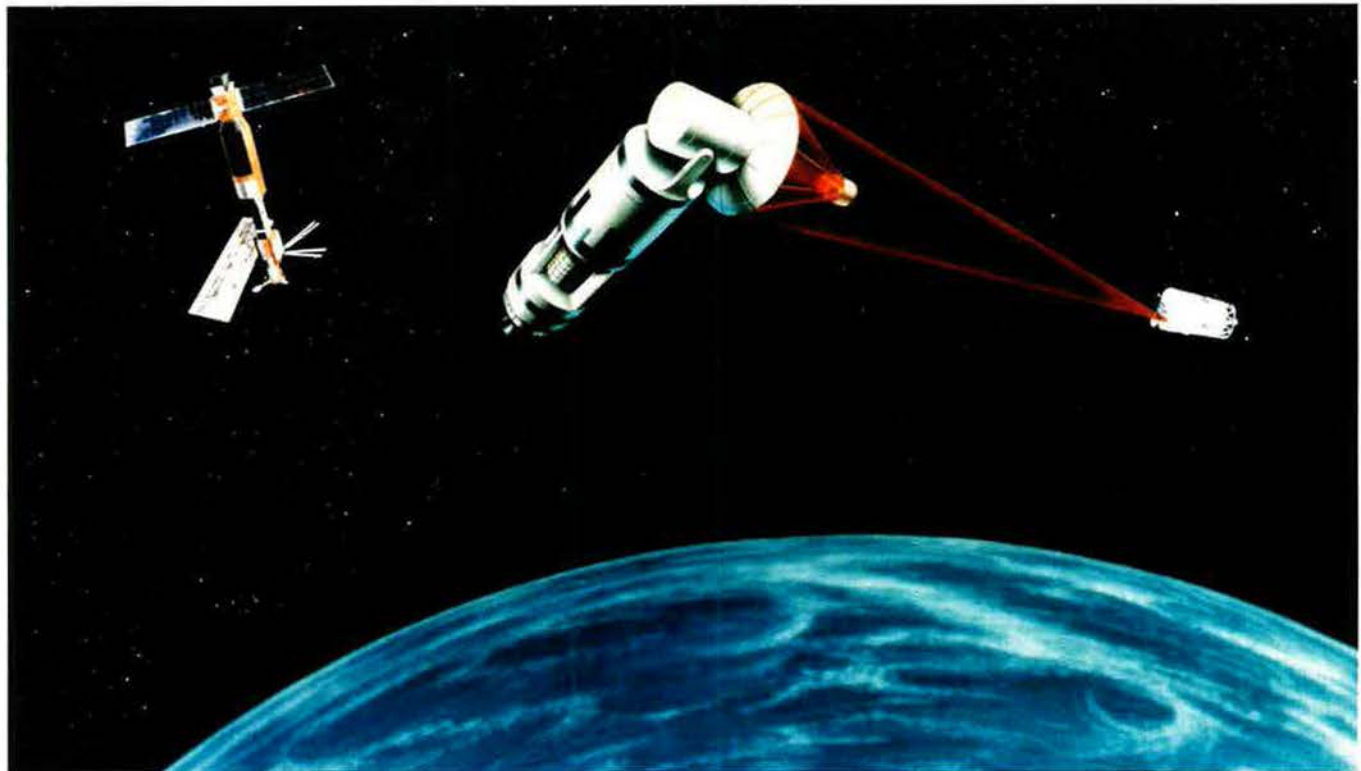
However, time was running out for SDI as originally scoped, mainly because the Cold War was ending. In his State of the Union address in 1991, President George H. W. Bush redefined SDI to include and emphasize theater missile defense. His program was dubbed “Star Wars Lite.”

### The Lingering Legacy

In 1993, the Clinton Administration downgraded SDI, renamed it “Ballistic Missile Defense,” and reassigned it to a lower organizational level in the Pentagon. Brilliant Pebbles was canceled and the Administration promised to abide by the narrow interpretation of the ABM treaty.



Reagan, surrounded (from left) by Gen. Robert Herres, vice chairman of the Joint Chiefs of Staff, Vice President George Bush, and Secretary of Defense Caspar Weinberger, holds up a bumper sticker to show support for SDI during a 1987 meeting with the Joint Chiefs.



USAF illustration

At a news conference, Secretary of Defense Les Aspin declared jubilantly that, “Today we are here to observe another point of passage, which is the end of the ‘Star Wars’ era.”

Ballistic Missile Defense made something of a comeback in the late 1990s when North Korea fired a Taepo Dong missile 1,000 miles across Japan into the Pacific Ocean and the Clinton Administration became concerned about the acquisition of missiles by rogue nations. In 1999, the National Missile Defense Act called for the defense of US territory against limited ballistic missile attack. The United States withdrew from the ABM treaty in 2002.

Today, US ballistic missile defense consists mainly of ground-based interceptor missiles in Alaska and California and the Navy’s ship-based Aegis missiles. The Obama Administration in 2009 canceled ABM defense sites in Eastern Europe and in 2012 shuffled the Air Force’s Airborne Laser off into organizational oblivion after it shot down a ballistic missile in a boost phase during a demonstration.

It’s not much, but ballistic missile defense has managed to outlast not only the USSR and the Cold War but also the ABM treaty and the Arms Control and Disarmament Agency, which was disbanded in 1999. Strategic nuclear deterrence has persisted as well, although the numbers of weapons and delivery systems have diminished considerably.

In all, the United States spent about \$30 billion on SDI. In 1993, Abrahamson and Henry F. Cooper, the last director of SDI, published an accounting for the funding. Of the total, 24.3 percent went for kinetic energy programs, 26.1 percent for sensor programs, 22.7 for directed energy programs, 16.4 percent for systems analysis, integration, and analysis, and 9.5 percent for other work. Much of this would have been spent anyway, pursuing the same technologies elsewhere in the Department of Defense, they said.

Abrahamson and Cooper noted that in January 1990, the Five Year Defense Plan was reduced by \$167 billion as a result of the ending of the Cold War. To the extent that SDI was a factor in bringing that about, the nation got a good return on its investment.

### Always a Long Shot

Looking back with 30 years of hindsight, there are valid points on both sides of the issue. Reagan exaggerated the feasibility of SDI, and it is true that he did not understand the science. But his opponents skip over the fact that numerous persons with full scientific credentials believed in BMD and SDI. As for exaggeration, there were plenty of others—arms control enthusiasts, for example—who overpromised by a wide margin.

Funding and momentum for SDI slackened within three years of Rea-

*An artist's conception of a space laser satellite defense system.*

gan’s speech. “I am convinced that if we could have secured adequate funding from the Congress, we would have been able to deploy the first phase of an effective defense system by 1993,” Weinberger said.

SDI was always a long shot, but Reagan acknowledged this. In the Star Wars speech, he laid out a long-range goal, presented as a hope. It might be compared to President Kennedy’s proposal in May 1961 to put a man on the moon by the end of the decade. That statement was 20 days after Alan Shepard’s suborbital flight in Freedom 7, in which the capsule reached a maximum altitude of 116 miles. Neither Kennedy nor anyone else understood the science and technology of a moon landing.

In later years, George Shultz, whose State Department had often sought to temper enthusiasm for SDI, speculated on why Reagan’s programs frequently worked out better than the critics predicted.

“Well, maybe he was a lot smarter than most people thought,” Shultz said. ■

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The North Vietnamese forces massed, and that opened them up to attack from US airpower.



USAF photo

# LINEBACKER I

By Rebecca Grant

**F**ORTY years ago, the nation relied on airpower to halt North Vietnam's biggest conventional invasion of the Vietnam War. This was Linebacker I.

At the time, few expected such a test. It was 1972, the year the US got out of Vietnam and handed off defense to South Vietnamese forces. From a peak of more than 500,000 forces in country in 1968, the US had reduced troops to 156,000 by January 1972, pulling 179,000 in 1971 alone. Plans called for dropping to 67,000 by July.

President Richard M. Nixon called the policy "Vietnamization." Behind the scenes his Administration conducted peace talks in Paris aimed at getting

both the US and the North out of South Vietnam and leaving the country intact. Part of the deal was a pledge to return with air and naval power if needed.

America's grand strategy was changing, too, and geopolitical shifts would figure in the timing of the North Vietnamese attack. Nixon visited China from Feb. 21 to 28, 1972, and the famous Moscow Summit that for a time melted the Cold War into détente was scheduled for May 1972.

Hanoi took note. The North had not achieved its goal of unifying Vietnam under a communist government. Superpower rapprochement threatened the support for the regime. A successful attack to split South Vietnam would upend the situation

and put Hanoi in a much more powerful position. The so-called Easter Offensive launched on March 30, 1972.

The invasion was not spontaneous. Gen. Vo Nguyen Giap had rearmed the North in the years since the failed Tet Offensive of 1968. A force of three divisions, with about 30,000 men and 200 Soviet T-54 tanks, crossed the demilitarized zone. Within a few days, attacks began along three fronts, mounted from over the border in Laos. The plan called for a rapid victory to split South Vietnam into three parts and give the North control of Saigon, capital of the South.

"The North Vietnamese knew from their experience that they could not win at the conference table what they had not

gained on the battlefield,” wrote Nguyen Tien Hung and Jerrold L. Schecter in the 1986 book *The Palace File*.

Giap wanted to take advantage of the drawdown of American forces. Giap also doubted that his southern opponents—known as the Army of the Republic of Vietnam (ARVN)—would provide strong resistance, given their recent poor performance in an aborted invasion of Laos. Whatever gains Giap’s forces made would be useful bargaining chips.

“The crucial factor that finally tipped the balance was President Nixon’s visit to Peking, which made the Politburo in Hanoi doubt that China would continue to support them as it had before,” Giap’s biographer Peter G. MacDonald confirmed.

### Expeditionary Airpower

To counter Giap’s initiative, the first task was to move fighters back into theater as fast as possible. Contingency plans called for bringing in Air Force, Navy, and Marine Corps aircraft to augment the South Vietnamese defenders. But the plan was untried.

Nobody knew whether airpower could swing back into a theater in time to deny enemy objectives.

“If anybody had told me ... that you could take a fighter wing out of Holloman Air Force Base, New Mexico, and have it overseas in less than a week and have it flying in combat, I’d have said, ‘You’re nuts!’” said Gen. Lucius D. Clay Jr., who was commander of Pacific Air Forces during Linebacker I.

The USAF rapid deployment was dubbed Constant Guard. In actions during phase one, beginning April 5, 38 C-141 flights in a 72-hour period brought personnel and cargo into Thailand. F-105s from McConnell AFB, Kan., flew to Korat AB, Thailand.

The first wave of 18 F-4Es from Seymour Johnson AFB, N.C., arrived on April 11, and another 18 followed a day later. Phase two of Constant Guard dispatched another 36 F-4s from Homestead AFB, Fla., and Eglin AFB, Fla., in the first week of May.

In Constant Guard III, 72 F-4s were sent from Holloman to Takhli AB, Thailand.

Bombers responded, too. In Strategic Air Command’s Bullet Shot operations, some 120 B-52s deployed to Guam and Thailand between April and June. Tankers in theater rose from 30 to 114. Between

April 1 and May 24 the number of strike aircraft the US Air Force had available for operations in Southeast Asia went from 375 to 625; by the end of July, it was nearly 900, noted historian Eduard Mark.

“I think this exercise has really proved that the Air Force has grown with the times. It shows our flexibility to go anywhere in the world and do the job assigned,” Clay noted.

The Marines and Navy also rushed forces to the theater. Three squadrons of Marine F-4s deployed to Da Nang in South Vietnam in early April. The Navy had two carriers on station when the offensive began. Three more arrived in early April, a fifth received orders to deploy to Southeast Asia, and a sixth came on April 30.

### Giap’s Plan of Attack

Meanwhile, the three-pronged attack was unfolding.

- **Military Region I:** The Easter Offensive began here with a thrust by two divisions and three regiments toward Quang Tri. Another division attacked from the west, toward Hue. In this region, ARVN troops retreated, until a new military commander rallied the defenses. The crucial point became the defense of the My Chanh river.

- **Military Region II:** On April 1, 1972, North Vietnamese forces attacked in the central highlands, toward Kontum and Pleiku. The showdown came with the defense of Kontum.

- **Military Region III:** The attack in MR III was pointed toward potential capture of Saigon. On April 2, the North Vietnamese struck toward the main road to Saigon. They took initial objectives, and then heavy fighting concentrated around the town of An Loc.

In all regions, Giap counted on a few significant advantages. One was the use of dry roads to supply forces via Laos. April promised low ceilings—to shield forces from tactical aircraft. The offensive was also the first to employ Soviet tanks in great numbers. According to Giap’s biographer, the new factor giving him hope for a breakthrough was availability of Russian T-54 and T-72 tanks.

It was not to be. Linebacker I, as it was eventually called, “would halt the invasion and so devastate North Vietnam’s military capabilities that Hanoi would be compelled to negotiate seriously for the first time since peace talks began in 1968,” wrote historian Earl H. Tilford Jr. in his book *Setup*.

As the new wealth of expeditionary airpower flowed back to Thailand’s bases,





An F-111 prepares to depart for Takhli AB, Thailand, in 1972 to support Linebacker.

Washington widened the war. In 1968, President Lyndon B. Johnson had stopped bombing the North on the condition that North Vietnamese forces did not attack below the DMZ. Giap's invasion broke the agreement.

On April 2, US aircraft were authorized to bomb the North for the first time since 1968. Nixon told his advisors on April 4: "Let's get that weather cleared up. The bastards have never been bombed like they're going to be bombed this time, but you've got to have [the] weather."

Operation Freedom Train from April 6 to May 9 attempted to interdict supplies and railyards supporting Giap's offensive. On May 1, 1972, after a fruitless meeting with North Vietnamese diplomats, Nixon upped the ante again, deciding to break the invasion.

Nixon expanded the operation and gave it the new code name Linebacker. He was determined "to go for broke," he told his National Security Advisor Henry A. Kissinger.

US aircraft could now attack nearly anywhere across North Vietnam. Authorization for attacks on Hanoi and the mining of Haiphong Harbor came on May 8. At the same time, Nixon reiterated a 1971 proposal for a cease-fire.

But pressure on the North was not the only point. Battlefield airpower was a mainstay, providing fires support to ground forces and resupplying the besieged garrison at An Loc in Military Region III. Despite all the power brought to bear on Hanoi and Haiphong, the South Vietnamese had to hold their ground, Nixon noted.

Air control and coordination were the first tasks. In Military Region I, the air environment could be difficult: The North had moved SA-2s into the region. On Feb. 17, North Vietnam fired 81 SA-2s, taking out three F-4s. In April, fliers reported the SA-7 operational in the

South. These SAMs would eventually claim several forward air controllers (FACs) and attack aircraft.

On the ground, the campaign demanded close work between US advisors, airmen, and their South Vietnamese counterparts.

"By 1972, there were very few US ALOs [air liaison officers] still in theater," wrote USAF Lt. Col. Matthew C. Brand in a 2007 master's thesis for the US Army Command and General Staff College. Hence most of the terminal air control was provided by airborne FACs, or FAC-As.

Could US airpower halt the attack in Military Region I? For weeks the battle hung in the balance. Forces crossed the DMZ, moving south, and also attacked to the east, past the former firebase at Khe Sanh. The objective was the ancient city of Hue. Between the North and Hue lay the towns of Dong Ha and Quang Tri, along a rail and road line leading directly to Hue.

At one point, Giap's forces overran 12 fire-control bases, leaving only US Navy surface gunfire and joint aircraft to support defenders. The offensive resumed on April 27, in bad weather. Dong Ha fell the next day and on April 29, four North Vietnamese divisions, about 40,000 men, advanced on Quang Tri.

In a night action, US Army's 18th Cavalry vehicles held a bridge on the north side of the city, while air strikes destroyed all five enemy tanks attacking the bridge. Then on May 1, the ARVN evacuated Quang Tri, leaving equipment strewn along the road to Hue.

After the debacle at Quang Tri, a new ARVN commander took over. Lt. Gen. Ngo Quang Truong used the first week of May to set up a new defensive line at the My Chanh river, south of Quang Tri, a third of the distance to Hue. Truong also called for air interdiction against

North Vietnamese forces pressing toward Hue. Truong tasked air to hit 130 mm artillery, tanks, smaller artillery, and trucks. In three days, fighters dropped 45 bridges between the DMZ and Truong's line at the My Chanh.

The new tactic of attacking tanks with laser guided bombs helped hold the line. One FAC watched in amazement as the two F-4s he called lased and plinked a T-54 and a PT-76 a mile from the town of My Chanh. Attack aircraft, fighters, and gunships tallied more than 70 percent of the tanks hit in Vietnam in April and May 1972.

By May 13, Truong's forces were making limited counterattacks. B-52s and fighters struck ahead of the advancing ground forces. The turning point came between May 20 and May 29, 1972. The North launched a final offensive, crossing the My Chanh in several places. But with air support, Truong's outnumbered defenders held the line. Tactical air destroyed 18 tanks. The last North Vietnamese forces retreated back across the My Chanh on May 29.

The battle for MRI was an air campaign in itself. Some 18,000 sorties were flown in MR I from April through June 1972. In late June, Truong's forces shifted to the attack, heading north to retake Quang Tri. The strongest of Giap's offensive drives had been halted and turned back.

### Military Regions II and III

The attacks in Military Regions II and III relied just as heavily on airpower in many forms. In Military Region II, Giap's objectives included the city of



Gen. Lucius Clay Jr., commander of Pacific Air Forces during Linebacker I.

Pleiku, scene of fighting much earlier in the war.

Giap's forces again made early gains, including the capture of a vital airfield at Dak To. South Vietnamese forces fell back to make a stand in the city of Kontum.

North Vietnamese forces cut Highway 14 north of Pleiku on April 24, leaving "the defenders of Kontum wholly isolated except by air during more than two months of heavy and close fighting," wrote the authors of a USAF monograph, "Airpower and the 1972 Spring Invasion."

C-130s and South Vietnamese Air Force aircraft delivered fuel, ammunition, and rice. Night operations helped, but several C-123s and other aircraft were lost at Kontum airfield due to enemy fire. In late May and June, airdrop became the primary means of resupply.

Air also became the only source of mobile long-range offensive firepower for the defenders. Helicopter gunships and tactical aircraft helped break up a major attack on May 14. Army helicopters eventually claimed 11 T-54 kills around Kontum with tube launched, optically tracked, wire guided (TOW) missiles, while USAF crews claimed 15 tank kills through May 18.

On May 26, Kontum came under heavy shelling, closing the airstrip. B-52s, fixed wing gunships, and tactical air counterattacked. In May alone, the B-52s flew nearly 1,000 sorties in MR II. PACAF concluded "the effect of air on the daily ground situation had been significant," according to the USAF monograph. Air helped the defenders hold Kontum, counterattacked enemy concentrations, and denied the ability to gain additional territory.

The defense of An Loc—just 60 miles from Saigon—dominated the battle in Military Region III. Some 20,000 military and civilian personnel were trapped there. With Giap's forces holding Highway 13 south of the city, An Loc was cut off.

In the first two weeks of April, tactical aircraft flew 2,500 sorties in MR III, mostly around Loc Ninh, which fell, and An Loc, which held. Now An Loc emerged as the key to preventing Giap's forces from pushing down Highway 13 to Saigon.

B-52s conducted close air support. According to the USAF monograph, Army Brig. Gen. John R. McGiffert III described the B-52s as "the most effective weapon we have been able to muster." He explained that the threat of heavy bombers forced the enemy to



**A USAF SAM hunter-killer group including two F-4Es and three F-105Gs takes turns refueling from a KC-135 during a Linebacker mission.**

break up into smaller units, and when they massed they paid a terrible toll.

Gunships worked with US Army advisors to target buildings and streets with precise, heavy fire and to attack North Vietnamese troops penetrating the city. During the battle, the garrison of ARVN defenders and their American advisors, including two Ranger battalions, relied on air-dropped supplies.

The last North Vietnamese troops were driven out of An Loc on June 12 and the siege lifted on June 18. By the end of June 1972, ARVN forces had returned to the offensive in all three military regions. Giap's plan had failed.

"Tactical air support was directly instrumental in each of the three main campaigns within South Vietnam, first blunting and then breaking the communist momentum," concluded the USAF monograph.

An Air Force Historical Studies Office fact sheet summed up the operational outcome: "Nixon's use of airpower to disrupt supply lines and kill the enemy on the battlefield stopped the offensive and helped drive the enemy back a short distance without a reintroduction of the ground forces he had withdrawn from the South." Only 43,000 American airmen and support personnel remained by the time of the offensive.

Linebacker's airpower halted the invasion.

### Lessons of Linebacker I

Linebacker was a breakthrough in advanced air attack technology and in the overall control of the campaign.

US Air Force and Navy aircraft had considerable success against mobile North Vietnamese forces, including tanks. At critical battles such as the siege of An Loc, gunships, attack helicopters,

fighters, and B-52s all destroyed tanks on the move.

While political oversight was tight, Nixon's guidelines made airpower more effective by removing many of the operational restraints that dogged Rolling Thunder years before.

An Air Force report found, "The prevailing authority to strike almost any valid military target during Linebacker was in sharp contrast to the extensive and vacillating restrictions in existence during Rolling Thunder" operations, the 1965-1968 campaign over North Vietnam. Attacks pushed to within 30 miles of the Chinese border, and later to just 15 miles. Only a few areas and targets in Hanoi remained off limits in Linebacker I.

Nixon and aides approved a master target list then left decisions on strikes to theater commanders.

Linebacker I clearly also benefited from the North's shift to sustained ground combat with large mechanized forces. This required a much greater logistical effort than guerilla warfare and opened up the supply lines to aerial interdiction.

The sheer weight of US airpower made the biggest impression.

In fact, Linebacker I planted the seeds of success in future campaigns and became the template for the strategy of swinging airpower to halt and deny enemy ground force objectives. That strategy remains at the center of US policy in 2012.

Giap himself summed it up best. Although he would eventually capture the South in 1975, he gave grudging acknowledgement to the role of airpower in battles.

"The American Air Force is a very powerful air force," he told an interviewer 10 years after the battle. "Naturally, that air force had an influence on the battlefield. It was a great trump card." ■

*Rebecca Grant is president of IRIS Independent Research. Her most recent articles for Air Force Magazine were "Refueling the RPAs" and "Stacked Up Over Anaconda" in the March issue.*

By Frances McKenney, Assistant Managing Editor

## Doolittle Raiders: 70th Reunion

Air Force Association Chairman of the Board S. Sanford Schlitt attended the Doolittle Tokyo Raiders reunion in Dayton, Ohio, in April.

With four days of events centered around the National Museum of the US Air Force, four surviving Doolittle Raiders marked the 70th anniversary of their World War II mission to bomb the Japanese home islands. Then-Lt. Col. Jimmy Doolittle led the raid on April 18, 1942.

Richard E. Cole, Thomas C. Griffin, Edward J. Saylor, and David J. Thatcher took part in the reunion. The fifth survivor, Robert L. Hite, was not in good enough health to attend.

The raid on Tokyo and other targets in Japan involved 16 B-25s, launched from the aircraft carrier *Hornet*. Without enough fuel to return to the ship, 15 B-25s crash-landed in China or their crews bailed out. The 16th landed in the Soviet Union. The raid boosted US morale because it had reached the heart of Japan and put the enemy on the defensive for the first time since Pearl Harbor.

As part of this year's commemoration, 20 vintage B-25 Mitchells performed a flyover above the museum.

Along with Schlitt, other special guests at this reunion included Gen. Gary L. North, the Pacific Air Forces commander, and Lt. Gen. Richard Y. Newton III, the Air Force assistant vice chief of staff.

Doolittle Tokyo Raider reunions have taken place since December 1946, when the group first gathered to celebrate Doolittle's birthday.

## Warrior On Wheels

Until AFA showed up, MSgt. Christopher Aguilera shot hoops from a borrowed wheelchair.

Then in April, Kevin R. Lewis from Virginia's **Donald W. Steele Sr. Memorial Chapter** and Kip L. Hansen from the **Nation's Capital Chapter** of Washington, D.C., presented a sports wheelchair to Aguilera in Colorado Springs, Colo., along with Brian Binn of the local **Lance P. Sijan Chapter**.



AFA Board Chairman Sandy Schlitt (standing, at right) applauds during a B-25 flyover at the Doolittle Tokyo Raiders reunion. Four Raiders seated (l-r) are Thomas Griffin, David Thatcher, Richard Cole, and Edward Saylor. Gen. Gary North (l) and Lt. Gen. Richard Newton stand next to Schlitt. Robert Hite could not attend due to illness.

The next week, Aguilera used his new wheels to help the Air Force team earn a bronze medal in wheelchair basketball at the Warrior Games 2012 in Colorado Springs.

Aguilera led the Air Force basketball team in its first game, scoring 10 points in a 41-to-14 rout of US Special Operations Command. He later earned bronze medals in shot put and discus competitions and as a member of the USAF sitting volleyball team.

An Air Force recovery care coordinator at Nellis AFB, Nev., first brought Aguilera to AFA's attention.

The association had launched the Wounded Airman program earlier this year to help airmen who return to the US, as they recover at medical facilities and transition back to active duty or civilian life. The Steele and Nation's Capital Chapters were among three groups chosen to pilot the program.

AFA matched them with Aguilera because the two Washington-area chapters had already rounded up funding for Wounded Airman efforts from the charitable foundation of DRS Technolo-

gies. Lewis is VP of aviation programs for the defense technologies company, and Hansen was its VP of government relations.

Between the two chapters and an AFA headquarters donation, the wheelchair's \$3,000 cost was covered. Lewis describes it as lightweight, with special casters to prevent it from tipping over, and no arm rests to get in the way.

Aguilera "was pretty overwhelmed" when he received the wheelchair, said Lewis. "He said, 'This means so much to me.'"

## Awards on TV

A Twin Cities ABC-affiliate TV station covered a **Gen. E. W. Rawlings Chapter** banquet in Minnesota this March, where airmen were among the nearly two dozen award winners.

AFA Board Chairman S. Sanford Schlitt served as guest speaker for the annual event that focuses on the 133rd Airlift Wing, 934th Airlift Wing, Civil Air Patrol, and ROTC and JROTC groups in the Minneapolis-St. Paul area.

Airmen who received awards at the Friday night dinner were: 133rd AW personnel SrA. Alyson Loftus, TSgt. Joshua Uhl, MSgt. Jace Erickson,

More photos at <http://www.airforce-magazine.com>, in "AFA National Report"



*Justin Faiferlick (left), AFA Vice Chairman of the Board for Field Operations, chats with Northwest Iowa CAP cadets. He had just presented an AFA Outstanding CAP Cadet Award to Isaac Wachholz, who stands next to him.*

and SMSgt. Kurt Huver and 934th AW members SrA. Zachary Allen, TSgt. Dan Kuehn, SMSgt. Scott Anderson, and Capt. Leo Moreno.

Headed by Jonathan E. Powell, the chapter also named Larry Brockshus, from Park High School in Cottage Grove as its 2012 Teacher of the Year.

The school's senior aerospace science instructor and an active chapter member, the retired lieutenant colonel had not been forewarned of this award, reported Minnesota State President Victor Seavers. Surprising Brockshus added fun to the evening, Seavers said.

TV station KSTP posted its video clip from the awards banquet at: [kstp.com/article/stories/S2562238.shtml?cat=0](http://kstp.com/article/stories/S2562238.shtml?cat=0).

**Congressman Attends Celebration**

North Dakota's US Rep. Rick Berg told the **Gen. David C. Jones Chapter** that the airmen at Minot Air Force Base help ensure the nation's defense and are its best assets.

Nearly 300 people attended the chapter's Commander's Choice Awards Banquet where the first-term Republican spoke in April.

This 31st annual dinner, carried out with support from the chapter's Community Partners, took place at a hotel in the city and put airmen from Minot in the spotlight. Several of them—selected by commanders to represent each squadron and group at the base's 5th Bomb Wing and 91st Missile Wing—received awards. So did AFJROTC and CAP cadets.

Two students at Minot High School received AFA citations as recognition for their acceptance into the Air Force Academy. Miles Way, a cadet in Minot High School's AFJROTC unit, and fellow student Abby Bierschbach will join the academy's Class of 2016.

The chapter named retired CMSgt. Clark Culbertson as its Teacher of the Year. The aerospace science instruc-

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tor for Minot High School, Culbertson served in the Air Force for 30 years, mostly in aircraft maintenance.

Berg joined Chapter President Ken Fox in presenting awards.

How did the chapter land a US Representative as its banquet speaker? Two chapter leaders hatched the idea: Turns out, James Simons, who is also the state president, takes an active role in politics. Chapter President Fox, wearing his other hat as mayor of a small town outside Minot, has worked on economic issues with Berg's local liaison. Between these connections, Simons and Fox brought the Congressman to their chapter podium.

#### Florida Drill: Big Haul for Belleview

In March, the annual Florida AFA AFJROTC Drill Competition pitted 14 teams from around the state against each other, vying for the top honor, Best of Meet.

At the end of the day, cadets from Belleview High School earned the three-foot-high trophy—and 10 others.

"The big winner," Florida Region President Michael Emig called the unit. The Belleview High School website showed far less restraint, proclaiming the cadets "State Champs," using 14 exclamation points for emphasis.

Cadets Jonathan Vann and Anthony Beczo accepted the trophy from Emig.

## AFA Conventions

June 9	<b>North Carolina State Convention</b> , Fayetteville, N.C.
July 13-14	<b>Oklahoma State Convention</b> , Oklahoma City
July 20-22	<b>Florida State Convention</b> , Eglin AFB, Fla.
July 20-22	<b>Texas State Convention</b> , Greenville, Tex.
Sept. 15-16	<b>AFA National Convention</b> , National Harbor, Md.
Sept. 17-19	<b>AFA Air &amp; Space Conference</b> , National Harbor, Md.

Their senior aerospace science instructor, retired Col. Paul H. Calvert, belongs to the **Red Tail Memorial Chapter** of Ocala.

The drill meet took place at the University of South Florida in Tampa, with AFROTC cadets conducting and judging the event.

Among the many AFA officials on hand were John Timothy Brock and the competition's announcer William A. Yucuis, both from the **Central Florida Chapter**, Ransom Meriam from the **Gold Coast Chapter**, Lawrence Belge from the **Falcon Chapter**, **Miami-Homestead Chapter** President Rodrigo J. Huete, and Dann Mattiza from the **Hurlburt Chapter**.

#### West Virginia Drill: Three-State Meet

Cadets from three states gathered in West Virginia for the **Chuck Yeager Chapter's** 16th annual AFJROTC drill

competition, and for the out-of-staters it was well worth the trip.

The McDowell Intermediate High School cadets from Erie, Pa., took home the first place Overall Champion trophy and top honors in four of the seven categories of competition.

A morning announcement at the school a few days later congratulated the team and pointed out that they had raised more than \$2,000 just to be able to attend the meet.

Another team from Pennsylvania, representing Pine-Richland High School in Gibsonsia, earned a first place trophy in the inspection team category.

Two teams from Ohio—Springboro High School in Springboro and Knox County Career Center in Mount Vernon—completed the out-of-state sweep, with first place wins for advanced unarmed drill and advanced color guard, respectively.

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The South Charleston High School cadets received the West Virginia Grand Champion Traveling Trophy.

The chapter provided all awards, and AFA Central East Region President Scott Van Cleef helped present them.

**On Exhibit**

The Italian city of Salerno opened an exhibit featuring memorabilia from a late member of the **San Jacinto (Tex.) Chapter**, the *Houston Chronicle* reported in April.

According to the newspaper, Salerno's state archive put on display some photos, military orders, telegrams, and pieces of the B-17 that Kemp F. Martin had been shot down in as a World War II navigator.

Martin bailed out of *C Batt* during an August 1943 bombing mission to Foggia. Though captured, he eventually escaped to Allied lines, completed his Air Force career, and became a businessman. The retired lieutenant colonel died in July 2008.

The next year, an Italian volunteer group found wreckage of what they determined to be Martin's airplane.

R. H. Kjar, San Jacinto Chapter communications VP, says that the chapter provided the *Chronicle* with most of the background material for its feature article on Martin, announcing the Italian exhibit.

**More Chapter News**

■ Rick T. Johnson, president of the **Golden Triangle Chapter** in Mississippi, attended the dining-out for the University of Mississippi's AFROTC Det. 430 in April. He presented Casey Rains with an AFA Outstanding Cadet Award and reports that she plans to begin an Air Force career in public affairs next year. They undoubtedly had much to talk about: Johnson is chief of public affairs at the 14th Flying Training Wing, Columbus AFB, Miss., and had first met Rains in February, when the "Ole Miss" cadets toured the base.

■ Retired USAF Col. Joe Kinego, a command pilot with more than 4,500 flying hours, spoke at the April meeting of the **Tidewater Chapter** in Norfolk, Va. Forty members and guests turned out for the dinner. Kinego flew more than 900 hours in the SR-71 and more than 400 in RF-4Cs in the Vietnam War. Among his assignments before retiring in 1994, Kinego commanded the 1st Strategic Reconnaissance Squadron at Beale AFB, Calif., and the 319th Bomb Wing at Grand Forks AFB, N.D. Also during the meeting, the chapter named Leonard Carson as its Teacher of the Year. He is a career and technology education instructor at Deep Creek High School in Chesapeake, Va.

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**2nd Bomb Gp Assn.** Sept. 12-15 at the DoubleTree Suites in Omaha, NE. **Contact:** Loy Dickinson, 16685 Cielo Ct., Parker, CO 80134 (720-851-9663 or 602-402-7194) (loy@denvertest.com).

**6th BG, Tinian.** Oct. 4-7 in Charleston, SC. **Contacts:** Larry Dananay (724-845-2932) (beagle22b07@yahoo.com) or Lori Forsman (loriforsman@aol.com).

**8th Tactical Fighter Wg.** Oct. 10-14 in Fort Worth, TX. **Contact:** Pete Nash (480-223-2351) (8threunion@cox.net).

**13th Tactical Bomb Sq,** Ubon AB, Thailand (1970-1972). Oct. 12-15 in Fort Walton Beach, FL. **Contact:** C.J. Brown, 905 Holbrook Cir., Fort Walton Beach, FL 32547 (850-226-6948) (charley6272@yahoo.com).

**325th Fighter Gp (WWII).** Aug. 15-19 in Camarillo, CA. **Contact:** John Mier (firemier4@sbcglobal.net).

**435th OMS Enroute Maintenance Gp.** Oct. 10-13, 2013, in San Antonio. **Contact:** Stanley Miller, 7213 Avila Dr.,

Fayetteville, NC 28314 (stansvets@gmail.com or flymiller@mindspring.com).

**6147th Tactical Control Gp.** Aug. 28-Sept. 2 in Dayton, OH. **Contact:** Tony Pascale (601-544-9248) (tony\_pascale@yahoo.com).

**AF Security Forces Assn.** Sept. 6-9 in Dallas. **Contact:** Jerry Bullock, 818 Willow Creek Cir., San Marcos, TX 78666 (1-888-250-9876) (jerry.bullock193@gmail.com).

**Air Rescue Assn.** Oct. 17-21 in Chattanooga, TN. **Contacts:** Al Gailey, 1591 Pine Lakes Ranch Dr., Cascade, ID 83611 (208-382-6395 or 208-630-3509) (gagailey@live.com), Ken Pribyla (703-619-1385) (kprib@verizon.net), Sandy Gonzalez (407-834-0105) (sgonzalez2@cfl.rr.com).

**B-47 Stratojet.** Nov. 1-3 in Tucson, AZ. **Contact:** Bill Clark, 65709 E. Rocky Terrace Dr., Tucson, AZ 85739 (520-825-4242) (clark3wl@yahoo.com).

**B-66 Destroyer Assn,** all models and crew members. Oct. 3-7 in Tucson, AZ. **Contact:** Don Ferris, 9200 E 30th St., Tucson, AZ 85710 (520-298-3302) (dferris8@cox.net).

**Distinguished Flying Cross Society.** Aug. 19-23 at the Seattle Airport Marriott Hotel in Seattle. **Contact:** Reunion Brat (360-663-2521) (thereunionbrat@hotmail.com).

**Pilot Class 49-A.** Nov. 13-15 in Fort Walton Beach, FL. **Contact:** Tom Whitlock, 209 Natures Trail, Fort Walton Beach, FL 32548 (850-864-2088) (camelot2@cox.net).

**Torrejon AB, Spain** (all years). Aug. 30-Sept. 3 in Washington, DC. **Contacts:** Burnethel Sanford (951-739-0202) (mizbs3492@msn.com) or Mattie Grant (951-323-2185) (ezlivngran@aol.com).

**UPT 71-01,** instructor pilots welcome. Oct. 4-7 at Columbus AFB, MS. **Contact:** Tom Bowman, 60 Dogwood Rd., Morris Plains, NJ 07950 (973-326-9156) (bowman\_07950@yahoo.com).



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## E-3 Sentry



USAF's E-3 Airborne Warning and Control System, the greatest force multiplier in military history, is the nervous system of US airpower. With its distinctive, pancake-shaped radar dome, the Boeing-built aircraft projects power without provocation, as it is unarmed. It manages the air battle, providing broad air surveillance to track airborne friend and foe and communications systems to direct air defense and precision air attack. Because of its success, the E-3 is often imitated but never equaled.

The Sentry is based on a Boeing 707-320B airframe. The 30-foot-wide, six-foot-thick radar dome houses a Doppler radar system for surveillance of air, sea, and land. It can reach out 335 miles to track moving airborne objects and 200 miles to detect objects on land or sea. The radar offers air commanders a potent "look down" capability, with the power to identify and track enemy and friendly low-flying aircraft by eliminating ground "clutter" that confuses other radar systems. The

AN/APY radar sorts aircraft and provides vector, while onboard personnel use advanced computer, navigation, and communication systems for tasks that range from guiding support aircraft to monitoring inbound hostile aircraft.

USAF built 34 E-3s (32 now in service), but the AWACS has been acquired by others around the world. NATO, as an alliance, bought 18 (17 now in service). As for individual nations, Britain has seven, France four, and Saudi Arabia five. The E-3 has served in a near-continuous role in every US air operation since it was deployed in 1991 in Desert Shield. It proved invaluable in the Gulf War, Allied Force, Enduring Freedom, and Iraqi Freedom, as well as Operations Northern Watch and Southern Watch and the NATO operation in Libya. The E-3 has also supported many humanitarian operations.

—Walter J. Boyne

**This aircraft:** E-3B Sentry Airborne Warning and Control System—#71-1407—as it looked in March 2005 when assigned to the 960th Airborne Air Control Squadron, Tinker AFB, Okla.



### In Brief

Designed, built by Boeing and Westinghouse ★ first flight Oct. 31, 1975 ★ crew of four and 13-19 mission specialists ★ number built 68 [US, NATO, allies] ★ radar AN/APY-1 or AN/APY-2 ★ no armament ★ **Specific to E-3A:** four Pratt & Whitney TF33-PW-100 turbofan engines ★ max speed 530 mph ★ cruise speed 360 mph ★ range (unrefueled) 4,600 mi ★ weight (loaded) 347,000 lb ★ span 145 ft 9 in ★ length 152 ft 11 in ★ height 41 ft 4 in (radome mounted 11 ft above fuselage).

### Famous Fliers

**Notable:** Many, including Andy Deckard, Mike Hostage, James Jones, Pete Karjanis, James Kowalski, Ben Robinson, Lori Robinson, Joe Rossacci, John Williams.

### Interesting Facts

Nicknamed "frisbee" by airmen ★ able to carry out—unrefueled—eight-hour mission profile ★ recorded, via computers, the entire Gulf War air campaign, a historic first ★ designed with two bail-out chutes (one forward, one aft) but one deleted as cost-cutting measure ★ replaced EC-121 Warning Star aircraft ★ can increase range and on-station time with air refueling and use of onboard crew rest area ★ uses Boeing 767 airframe for Japanese variant ★ assisted in 38 of the 41 coalition air-to-air kills in the Gulf War ★ suffered a catastrophic crash in 1995, killing 24 crew members, after engines ingested Canada Geese on takeoff.



One of two Sentry EC-137D prototypes rolls out of the Boeing factory in 1972. This airplane received all improvements and upgrades and became a full-fledged E-3 AWACS. In fact, it is represented in the illustration on this page.



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