April 2012/$5

Journal of the Air Force Association

AIR FORCE MAGAZINE

USAF's 10-Year Plan

Seeking a Total Force Balance

Laser Horizons

With the JTACs

GovX Welcomes AFA Members

GOVX

Amazing Deals Exclusively for our Military and Government Customers

Visit: GovX.com/AFA

SPECTACULAR SAVINGS!

UP TO 70% OFF POPULAR BRANDS AND TACTICAL GEAR

NOT AVAILABLE TO PUBLIC

- Shop popular brands for you and your family.
- Shop for a range of premium tactical gear.
- Never Pay Retail Again! You won't find prices lower anywhere!
- AFA members granted special, instant registration.
- Outstanding personal customer service – we actually give you our phone number!

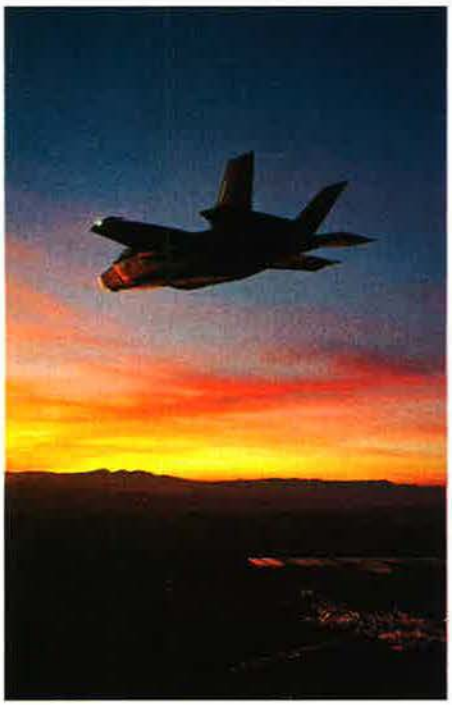
SHOP NOW! GovX.com/AFA

GovX.com | 7817 Ivanhoe Ave. Suite 102 | La Jolla, CA 92037 | 888-468-5511 | Info@GovX.com

Journal of the Air Force Association
AIR FORCE MAGAZINE

April 2012, Vol. 95, No. 4

FEATURES



About the cover: F-35 AF-6 on the first night flight for the aircraft type. See "A 10-Year Plan," p. 22. Lockheed Martin photo by Tom Reynolds.

Journal of the Air Force Association
AIR FORCE MAGAZINE

DEPARTMENTS

AIR FORCE Magazine (ISSN 0730-6784) April 2012 (Vol. 95, No. 4) is published monthly by the Air Force Association, 1501 Lee Highway, Arlington, VA 22209-1198. Phone (703) 247-5800. Periodical postage paid at Arlington, Va., and additional mailing offices. **Membership Rate:** $45 per year; $110 for three-year membership. **Life Membership (nonrefundable):** $600 single payment, $630 extended payments. **Subscription Rate:** $45 per year; $29 per year additional for postage to foreign addresses (except Canada and Mexico, which are $10 per year additional). Regular issues $5 each. USAF Almanac issue $8 each. **Change of address** requires four weeks' notice. Please include mailing label. **POSTMASTER:** Send changes of address to Air Force Association, 1501 Lee Highway, Arlington, VA 22209-1198. Publisher assumes no responsibility for unsolicited material. Trademark registered by Air Force Association.

Air Force Association
1501 Lee Highway • Arlington, VA 22209-1198

Telephone: (703) 247-5800
Toll-free: (800) 727-3337
Press 1 *if you know your party's extension.*
Press 2 *for Membership.*
Press 3 *for Insurance and other Member Benefit programs.*
Or *stay on the line for an operator to direct your call.*
Fax: (703) 247-5853
Internet: http://www.afa.org/

E-Mail Addresses

Field Services ..... **fldsvcs@afa.org**
Government Relations ..... **grl@afa.org**
Industry Relations ..... **irl@afa.org**
Events ..... **events@afa.org**
Membership ..... **membership@afa.org**
Insurance/Member Benefits ..... **services@afavba.org**
Policy & Communications (news media) ..... **polcom@afa.org**
CyberPatriot ..... **info@uscyberpatriot.org**

Magazine

Advertising ..... **bturner@afa.org**
AFA National Report ..... **natrep@afa.org**
Editorial Offices ..... **afmag@afa.org**
Letters to Editor Column ..... **letters@afa.org**

Air Force Memorial Foundation .. **afmf@afa.org**

For individual staff members
first initial, last name, @afa.org
(example: jdoe@afa.org)

AFA's Mission

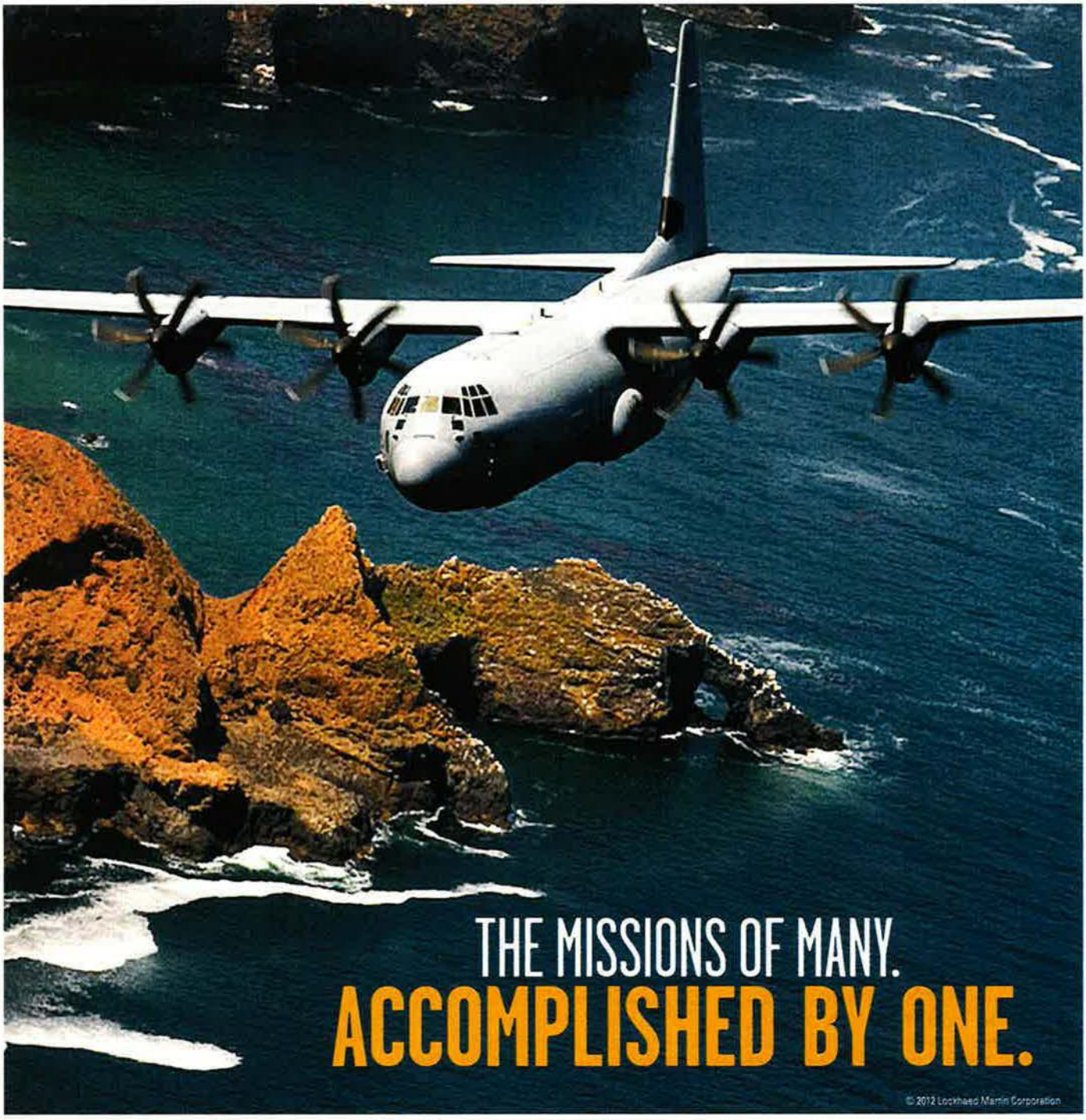
Our mission is to promote a dominant United States Air Force and a strong national defense and to honor airmen and our Air Force heritage. To accomplish this, we:

Educate the public on the critical need for unmatched aerospace power and a technically superior workforce to ensure US national security.

Advocate for aerospace power and STEM education.

Support the Total Air Force family and promote aerospace education.

BPA Circulation audited by Business Publication Audit



THIS IS HOW | C-130

The world's most flexible airlifter. Aerial resupply and refueling. Firefighting. Weather reconnaissance. Electronic warfare. Special operations. Multi-mission tasks. An assortment of roll-on/roll-off solutions. With such a wide array of capabilities, the C-130 guarantees flexibility like no other aircraft. Whether it's maritime patrol, search and rescue or other unforeseen challenges, the C-130 stands ready. Preparation for a variety of missions is all a question of how. And it is the how that Lockheed Martin delivers.

www.lockheedmartin.com/c130

LOCKHEED MARTIN

Editorial

By Adam J. Hebert, Editor in Chief

Exiting Afghanistan

March 16, 2012, Washington, D.C.

The war in Afghanistan is an uphill struggle. More than 10 years after the US invasion, the war is as violent as ever. The enemy now is the Taliban, which harbored al Qaeda until 2001 and brutalized the Afghan population then as today.

Some 1,900 US troops have died in Operation Enduring Freedom over the past decade, the vast majority of them on Afghan soil. Nearly 500 American deaths have come in the past year, and the mission costs the US $10 billion every month.

In the United States, Enduring Freedom has long been portrayed as the "good war," but the people of Afghanistan do not fully agree with that assessment. Tension between the Afghans and the US and NATO forces in their country are at an all-time high.

The US, NATO, and international organizations have been working to improve Afghanistan's future for a decade now. They have protected Afghan citizens at tremendous human cost, built schools, bridges, and other critical infrastructure, and poured billions of dollars into the country. Despite this, vast swathes of Afghanistan's population view the Westerners with suspicion, hostility, and outright hatred.

In February, US troops at Bagram Air Base inadvertently burned several Korans seized from prisoners. The Korans were confiscated because they had been marked up with extremist messages, but were mistakenly hauled away as trash. The Afghan contractors who discovered the partially burned Korans in the base's burn pit promptly took them off base and began a violent protest.

This desecration of the Muslim holy book was a major mistake, but was an accident and not a deliberate affront to Islam or the Afghan people. President Obama quickly apologized.

Outrage immediately spread around Afghanistan, and 30 Afghans and six Americans were soon killed in a series of reprisal attacks. Two of the US troops were reportedly shot in the back of their heads by Afghan security forces as the Americans sat at their desks in an Afghan ministry.

It gets even worse, unfortunately, and the US is not without blame.

In March, an Army sergeant allegedly went on a reprehensible killing spree. He murdered 16 innocent Afghan civilians, including nine children and three women, then set some of the bodies on fire.

This was almost certainly the work of a lone psychopath, but every tragedy like this reaches far beyond those immediately affected. The Taliban now have two new events tailor-made for their false narrative: the story that the US is an occupying force out to destroy Islam. US officials have long acknowledged they cannot "kill their way to victory," but the US is clearly not winning the battle for hearts and minds either.

Enduring Freedom's original goals have been accomplished.

The Taliban has had little trouble recruiting generation after generation of insurgents over the past decade. Part of the responsibility for this must be borne by the Afghan people. The Taliban mercilessly ruled Afghanistan for five years, destroyed education, women's rights, and the economy and imposed the world's harshest Islamic sharia law. Since the US and NATO arrived, the Taliban has waged a nonstop terror and intimidation campaign and has caused the vast majority of all civilian injuries and deaths.

Despite all this, the Afghan people never fully turned on the Taliban or forced them from the country.

The US and NATO cannot provide freedom and security to the Afghan people if they are not willing to be equal partners in the effort. Ultimately, Afghanistan must decide whether it favors peace or extremism. The two cannot exist side by side.

Large US ground forces have worn out their welcome. They present tempting targets for insurgents and cede many advantages to the enemy in combat. America's greatest military advantages lie elsewhere, such as in dominant airpower and surveillance and reconnaissance systems.

The administration has already announced plans to transition to an advise-and-train role next year and to withdraw the vast majority of US forces by the end of 2014. A force of 100,000 American troops at the end of 2011 will decline to 68,000 this fall.

The US has tried to prepare Afghanistan's security forces to take over defensive responsibilities when the bulk of the Western forces leave.

Afghan forces may not be ready by the end of this year. They may not be ready by the end of 2014. They may never be ready—and it is hard to discern exactly what will be accomplished in year 13 of this effort. A deadline may ultimately be what compels the Afghan security forces to step up to their responsibilities.

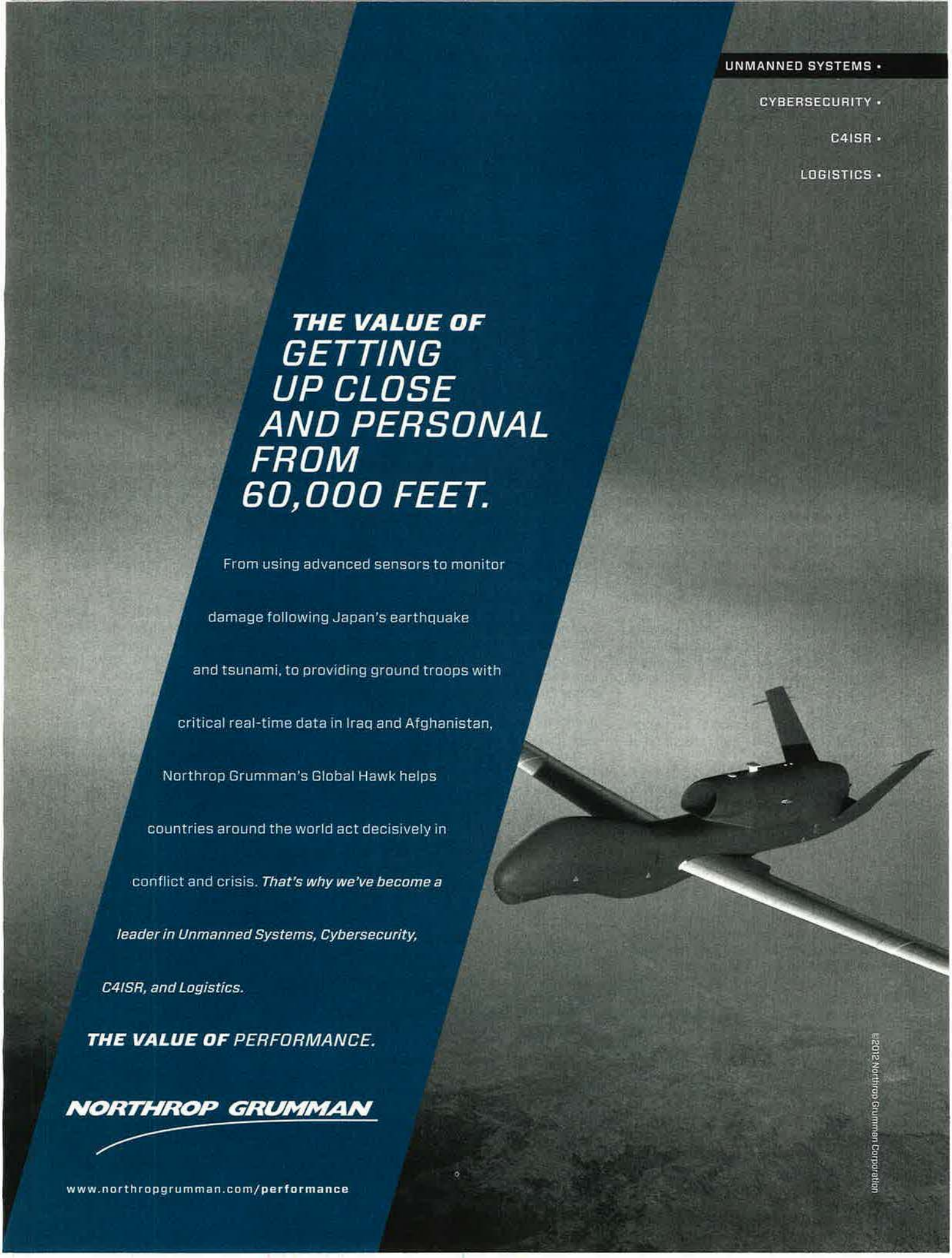
It is time for the administration to seriously re-evaluate what the US can accomplish in Afghanistan. The bulk of the regular combat forces should be brought home as soon as possible—the troops are leaving regardless, and the quicker they depart, the fewer American lives will be lost.

The US cannot remain heavily committed in Afghanistan simply because the Taliban have not been completely wiped out or because terrorists may return. Responding to every worst-case "what if" scenario would suck the US into endless wars in an ever-expanding number of locations. It is much wiser to remain vigilant and strategically target true threats to the United States.

Enduring Freedom's original goals have been accomplished: Afghanistan is as secure as it will get for the foreseeable future; the al Qaeda terrorists and Osama bin Laden are dead or on the run; the Taliban are out of power. The US does not need tens of thousands of regular ground troops in Afghanistan to protect what it has accomplished.

A much-smaller contingent of special operations forces and intelligence experts, backstopped by airpower, is a better long-term mix for Afghanistan. Special operators, remotely piloted aircraft, Air Force mobility and strike assets, and good intelligence can help Afghanistan's government keep the Taliban on the run and monitor and kill terrorists.

For the United States, a large conventional force in Afghanistan has become counterproductive. ■


UNMANNED SYSTEMS •
CYBERSECURITY •
C4ISR •
LOGISTICS •
THE VALUE OF
GETTING
UP CLOSE
AND PERSONAL
FROM
60,000 FEET.
From using advanced sensors to monitor damage following Japan's earthquake and tsunami, to providing ground troops with critical real-time data in Iraq and Afghanistan, Northrop Grumman's Global Hawk helps countries around the world act decisively in conflict and crisis. That's why we've become a leader in Unmanned Systems, Cybersecurity, C4ISR, and Logistics.
THE VALUE OF PERFORMANCE.
NORTHROP GRUMMAN
www.northropgrumman.com/performance
©2012 Northrop Grumman Corporation

Letters

letters@afa.org

Bean Counters Win, Again

"The Last Raptor" article shows not only the continuing historical disregard of reality but the disregard also of those who in the future must pay for it, possibly with their blood *[February, p. 36].*

I cannot speak for other former fighter pilots, but I do speak for myself as one. The Cadillac of World War II fighters was the P-51. The fact that it, or something comparable, was not developed and fielded earlier was the [result] of political decisions taking precedence over reality.

The last-Raptor decision was made without any honest allocation of possible missions. [It was] an effort to paint the picture as the mission assigners [wanted it to be], rather than reality.

Should the US need more Raptors, they will not be available, and again, [the US] will pay for this intentional avoidance of reality with the lives of Americans called on to pay the bill.

Too bad we do not now have any generals such as Ronald R. Fogleman (Chief of Staff, 1994-1997) to stand up for reality.

The bean counters always seem to win the decisions, but never admit to their mistakes, even though these bring on the deaths of other Americans later.

Lt. Col. Wallace H. Little,
USAF (Ret.)
Marshall, Tex.

A World Full of Kooks

I just received my February *Air Force* Magazine and felt I must comment on "Washington Watch" *[p. 8]* and the "Editorial" *["Beyond the Ground Wars," p. 4].*

My summary of the second paragraph [in "Washington Watch"] is as follows: Wars are winding down, we have a financial crisis, so decimate the ground forces as there will be no more wars of this type until 2015. Throughout this article, which states our ground forces will be shrunk by tens of thousands, are the following comments:

- Must be able to fight more than one war at a time.
- US military will not become a hollow force—readiness will be protected.
- Pace and timing of changes will be organized so that they can surge, regenerate, and mobilize capabilities as needed for any contingency.
- Hallmarks of the strategy and its implementation will be reversibility and ability to quickly mobilize.

I would like someone to show me how ground forces can be significantly reduced and support the above tasks.

The editorial gives a more balanced evaluation of this new strategy; however, in my opinion, both articles favor [it] without considering the historical truths. Remember, we didn't anticipate the current wars or their lengths, either.

Sizing our ground forces based on the country's financial mess (self-inflicted) and not on our national objectives is the wrong approach. What this strategy is saying is, "Here's your budget, size your force accordingly, and by the way, assume there will be no more ground wars."

After reading these two articles, I'm glad I'm 78 and won't be around to see this strategy fail.

The world is full of kooks like those in [North] Korea, Syria, and Iran, to name a few places, but not to worry; let's just cut our ground forces, be nice to the rest of the world, and hope for the best. Who knows? Someday maybe China and Russia [will] vote with us on the Security Council.

Col. Constantine Evgenides,
USAF (Ret.)
O'Fallon, Ill.

The Long Haul

The article by Mr. Correll was a welcome sight *["The Scourge of the Zeppelins," February, p. 88].*

The Graf Zeppelin did make 590 flights. One was a 7,000-mile leg from Berlin to Tokyo during her around-the-world trip [which also] was the first passenger flight across the Pacific from Tokyo to the US. In total, the Graf Zeppelin logged 17,178 hours in the air and over one million miles, crossing the Atlantic Ocean 144 times, carrying 16,000 passengers, accident free—a pretty good record for the 1930s.

Today USAF and the Army are building new airships, and Lockheed Martin, Boeing, Aeros, and Northrop Grumman all have new airships either flying or under construction. Not to be left out, the Zeppelin Corp. has been flying passengers for the past several years in their new Zeppelin NT airships.

Goodyear has ordered three Zeppelin NTs to replace their fleet of blimps, to be assembled in an Akron, Ohio, hangar. The Zeppelin NT is a semirigid airship with an internal frame, therefore not a blimp.

Roy P. Gibbens
Meridian, Miss.

Flying the Commander in Chief

I am an Army retiree but I spent nineteen-and-a-half years of my career in Army aviation, so I enjoy reading about aviation—especially helicopters—no matter what the service publication *["The Saga of Marine One," February, p. 70].*

I noticed one omission from the article. Under the heading, "An Eisenhower-Era Practice," there was no mention that the United States Army provided the very first helicopter service to the President of the United States. I was stationed at Fort Belvoir, Va., 1957-1958, and I worked at Davison Army Airfield. That is where the Presidential Flight Detachment was located. The aircraft were H-34s. The detachment commander and Presidential helicopter pilot was Army Lieutenant Colonel Howell. He had been the company commander of the 4th Transportation Company (light helicopter), a company of H-34s, at

Do you have a comment about a current article in the magazine? Write to "Letters," *Air Force* Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. (E-mail: letters@afa.org.) Letters should be concise and timely. We cannot acknowledge receipt of letters. We reserve the right to condense letters. Letters without name and city/base and state are not acceptable.—THE EDITORS

Lawson Army Airfield, Fort Benning, Ga. One of the detachment's H-34s is now in the Army Aviation Museum at Fort Rucker, Ala., and it has Colonel Howell's name stenciled below the right side cockpit window.

Lawrence Cutting
New London, Ohio

Fix It Now

I believe the statistics used in this [article] are bogus *["An Air Force War on Sexual Assault," January, p. 42].* Even if the statistics are 50 percent correct, they are an indictment of our Air Force leadership.

I am so incensed about this, I don't know what to do. Maybe castration is the punishment that should be meted out. I know there will be a hue and cry over that suggested punishment, but in my mind it is appropriate. We should take the gloves off and fix this problem now and immediately!

During my career I was wing commander, base commander, director of operations, squadron commander, and flight commander. Never in my Air Force officer career did I hear about a rape or sexual assault, and I informed my commands on a weekly basis that I had zero tolerance for any act of prejudice or sexual harassment or assault. Once, I had a deputy who was arrested for flashing. He lost his security clearance that day, was court-martialed, and found guilty. I had a lieutenant reported by his girlfriend for having vandalized her car after an argument. Again, he lost his security clearance and was referred to the SJA for appropriate action.

I had a grandmother, mother, four aunts, four sisters, four daughters, five granddaughters, and numerous nieces and women friends. I believe all have suffered from gender discrimination, but not rape (one was assaulted).

These statistics say we have a war on women in our Air Force. For a fact, this report says our Air Force women have a greater chance of being raped or sexually assaulted than were the chances of a B-52 being lost over Hanoi in December 1973—think about that! Unacceptable! Fix it now.

Brig. Gen. Gerald E. McIlmoyle, USAF (Ret.)
Venice, Fla.

It's a *Secret*, Son!

I thoroughly enjoyed Walter Boyne's article on the trials and tribulations of the B-29 in 1943-1944 *["The B-29's Battle of Kansas," February, p. 94].* It brought back memories of when my father, Col. Carlisle L. "Lisle" Ferris, commanded the B-24 transition school at what later became Carswell Air Force Base in Fort Worth. We were the only family on the base, and at 14 my favorite pastime was watching the endless stream of B-24s practicing touch and goes.

One day a much larger aircraft entered the pattern, smoking heavily from its No. 3 engine. I biked down to the flight line just as this huge airplane rolled to a stop. The crew told me it was a B-29.

I paced off the aircraft wingspan and length while studying it thoroughly. Then I bicycled back to our quarters to draw 1/72nd plans for the bird. Forgetting a few details, I rode back to the now heavily guarded B-29, circled it, and returned to finish the drawings. I built that B-29 model in late 1943 and painted it olive drab. It had to have been one of the few flyable XB-29s. When I showed it to my dad, he exploded, grabbed it from my hands, took it to his office, and locked it in his safe! I had built a *secret* aircraft.

Measuring it today, I find that I am one-quarter inch off in 1/72nd scale for the 142-foot wingspan I had paced off almost 70 years ago.

The photo below shows the pine XB-29 model and three other examples I built at that time.

Keith Ferris
Morris Plains, N.J.

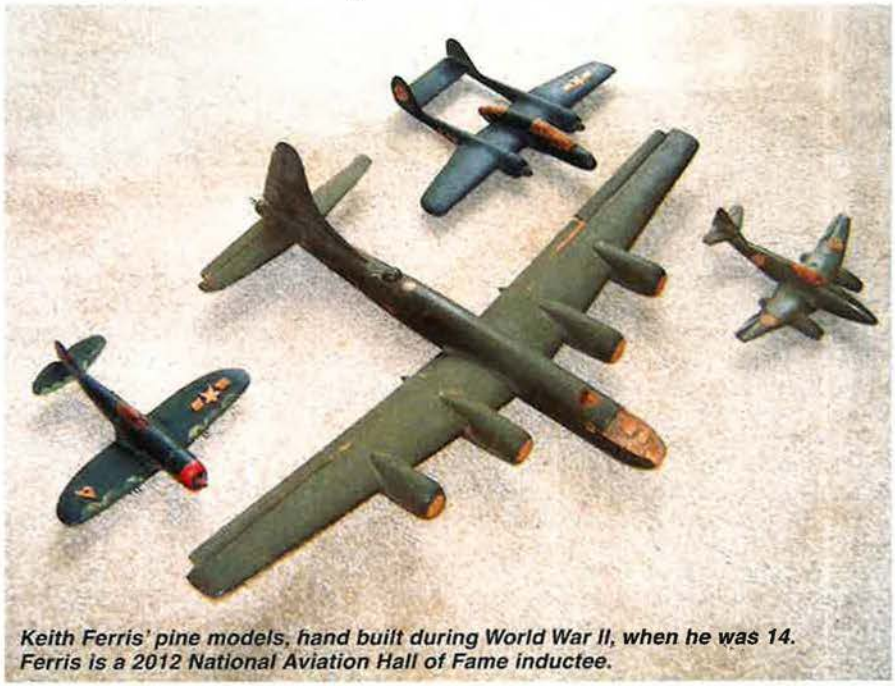
Behind the Mirror

Richard Halloran's article "Return to Vietnam" *[January, p. 60],* regarding US-Vietnam relations, was extremely interesting and well-written. Sadly, it was incomplete, as it does not address the dark and sinister treatment of Vietnam's own people, especially the Montagnards, who live mostly in the highlands. The Montagnards were our friends and allies during the Vietnam conflict, a relationship that continues today.

Vietnam's appalling human rights record blatantly ignores agreements it signed at the end of the Southeast Asia conflict. In spite of Vietnam's documented disregard for human rights, as evidenced by religious persecution, destruction of churches and villages, beatings, false imprisonment, confiscation of property, torture, and executions, the US "normalized" relations and supported Vietnam's entry into the World Trade Organization. Approximately 90 percent of Montagnards are Christians, a fact that does not put them in good standing with the government. Vietnam's subsequent behavior has been confirmed as slow genocide aimed toward the eradication of the Montagnard people, their culture, and religion.

The present Montagnard population in Vietnam is estimated to be 600,000, with another 10,000 in the US, primarily in North Carolina. They have suffered the brunt of prolonged persecution by the government of Vietnam. The approximate time remaining for the survival of the Montagnard people in Vietnam is 17 years.

Our organization, Save the Montagnard People, Inc. (STMP), is a 501-3(C) advocacy and relief group consisting of civilian, active duty, and retired military members. We have continuously monitored Vietnam's treatment of the Montagnards for several decades. We attempt to promote public awareness and appropriate actions to save the Montagnards. We have shared information and discussed Vietnam's atrocious human



Keith Ferris' pine models, hand built during World War II, when he was 14. Ferris is a 2012 National Aviation Hall of Fame inductee.

rights record with members of the US Senate and House of Representatives, US State Department, United Nations High Commissioner for Refugees, [and many more organizations].

Behind the "one-way mirror" of Vietnam is a cruel and sinister world. To quote some of the statements contained in the article: "The US has been cultivating allies and friends, including Vietnam" and "US relations with Vietnam are growing."

But should these relations be paid for by abandonment and suffering of the Montagnards? Encourage the Vietnam government to observe human rights equally for all its citizens.

Sam Todaro
Greensboro, N.C.

B-52 Tail Gunners' Guns

Mr. Gary L. Holtman's letter, March 2012 issue, is confusing the A3A Fire Control System with the MD5 Fire Control System *["Letters," p. 9]*. The A3A had quad .50-caliber machine guns, while the MD5 system had the two 20 mm cannons. The MD5 was a two radar equipped, single electrically powered General Electric turret from the single radar, B-36 and B-47 tail turrets. It had left and right radar antennas, which were labeled No. 1 and No. 2 radar systems. The A3A, MD9, and ASG15 systems all used the hydraulically driven Arma Bosch turret.

I was an AFSC 32350G fire control systems mechanic in the 95th Armament and Electronics Maintenance Squadron at Biggs AFB, Tex., and worked on B-52Bs in the early 60s. We had eight MD5 and eight A3A equipped aircraft. Like Mr. Holtman, I also became an aircrewman, but as a loadmaster on C-130As and Es, retiring in 1994.

MSgt. Carrol A. Steffen,
USAF (Ret.)
Minneapolis

I have been retired from USAF for over 30 years, yet I hold a fond place in my memories for the gunners I flew with in SAC. We were the defensive team, gunner, and EWO. There are stories about gunners that should be told.

My introduction to combat crew status was my first encounter with a gunner. He was formerly an enlisted electronic warfare crew member. At the time of his conversion there was an uproar about whether to give these electronic warfare crew members a commission or to make them flight officers. The Air Force wanted it to be one way and SAC the other. MSgt. Gerry Gray remained enlisted and became a gunner. Another was MSgt. George Stropek who had been a ball turret gunner on a B-17G. Staff Sergeant Stropek's airplane was shot down on Feb. 22, 1944, near Wesel, Germany, while on a mission to bomb an Me-109 plant. He survived bailout and spent some time as a POW before WWII ended.

There are more stories, all worthy of telling. One gunner penciled this in the B-52D tail compartment: "2,400 hours as a B-52D gunner equals 100 days in solitary confinement." They served honorably.

James Bradley
Westmoreland, Kan.

Send in the Band

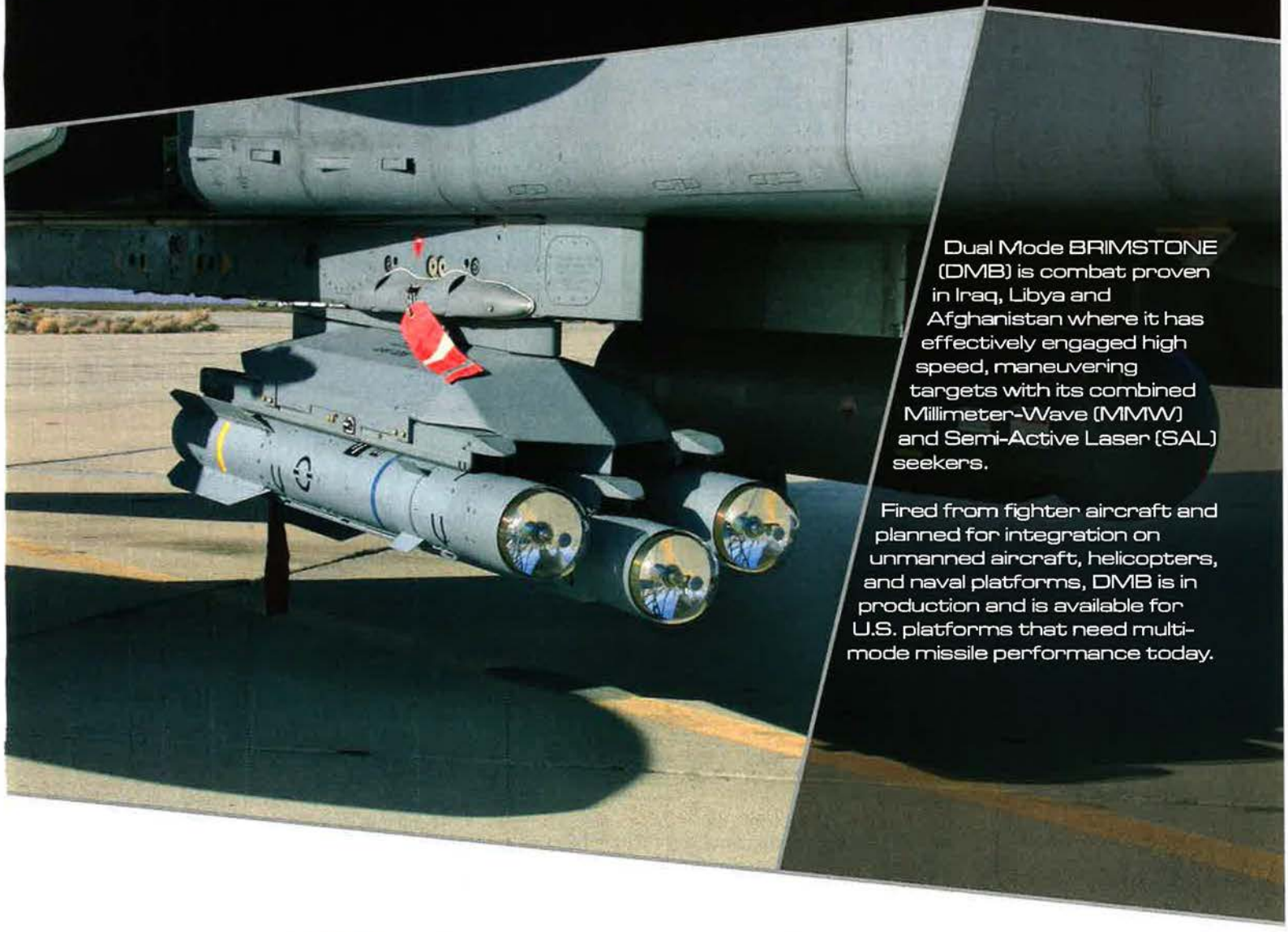
I was somewhat (though not totally) surprised by the subtitle "Huh?" in the "Verbatim" section of your February magazine *[p. 28]*, regarding US Navy Lt. Cmdr. Dwaine Whitham's assertion that military bands are a soft power projection.

Whitham is absolutely correct! [The author], like so many others, fails to recognize the vital role that our military bands play in our national defense. No, they do not carry the power of a F-22, but as Whitham astutely pointed out, they are a soft power projection to the world—i.e., many countries struggle to field a strong military [yet] the United States has ample resources to not only field a vast array of lethal weapons systems, they also have the resources to field world-class bands. As the former group superintendent for the Air Force Band I can assure you that does not go unnoticed by other countries.

CMSgt. John J. Pavey Jr.,
USAF (Ret.)
Sylva, N.C.

MBDA's Combat Proven Dual Mode BRIMSTONE Missile

Available for U.S. platforms today



Dual Mode BRIMSTONE (DMB) is combat proven in Iraq, Libya and Afghanistan where it has effectively engaged high speed, maneuvering targets with its combined Millimeter-Wave (MMW) and Semi-Active Laser (SAL) seekers.

Fired from fighter aircraft and planned for integration on unmanned aircraft, helicopters, and naval platforms, DMB is in production and is available for U.S. platforms that need multi-mode missile performance today.

Lock on to MBDA Solutions

Contact:
sales@mbda-us.com
703-387-7137
www.mbdainc.com

MBDA
MISSILE SYSTEMS

Washington Watch

By John A. Tirpak, Executive Editor

Hollow force avoidance; Another acquisition snafu? C-27J was the last to go; BRAC again; China's investment ....

A TOTAL FORCE FOR THE LONG TERM

In the Fiscal 2013 budget request, the Air National Guard and Air Force Reserve were cut more deeply, in percentage terms, than the active force. That was a deliberate move on USAF's part, said Air Force Chief of Staff Gen. Norton A. Schwartz.

In previous rounds of post-Cold War budget slashing, active forces were the ones cut the most. As a result, the nonstop operating tempo of the last 10 to 20 years has been harder on the active duty than on the Air Reserve Component.

Schwartz, speaking with reporters in February, said most of the choices made for the 2013 budget were based on avoiding a "hollow force," meaning he wants to ensure that whatever forces USAF fields are ready, well-trained, and properly equipped. Maintaining more force structure on the books than the service can provide resources for is unhealthy for morale and retention because troops will hear the service boast of its prowess but "know differently."

The personnel choices in the budget were made so members of all components "can see themselves in these jobs for the long term," without fear of being overdeployed or unable to live up to the billing of the world's best Air Force, Schwartz said.

"If Congress decides not to proceed with some or all of our recommendations," Schwartz said, "it is a zero-sum game," and cuts will have to be made elsewhere.

"The thing that I lose sleep over," he continued, is if Congress insists on an approach of 'keep what you've got, but do it on less money'—that is the quickest way to a hollow force I know. I don't think anyone wants that."

He asserted that if Congress rejects USAF's approach, fine, but the alternative "needs to be something that's equivalent in terms of capability and cost." Schwartz then added, "And I must tell you: I know how hard it was to do this. I'd like to see what others propose that's any easier."

HELL TO PAY

Schwartz expressed his "profound disappointment" over what appeared to be yet another acquisition snafu, this time pertaining to the Light Air Support system, which USAF is acquiring for the Afghan Air Force so it can provide its own troops with close air support after the US withdraws from that country.

The Air Force at first ruled that Hawker Beechcraft's bid would not be considered—a decision the company legally protested—then awarded the contract to Sierra Nevada. However, the Air Force discovered documentation of the source selection "didn't meet standards," Schwartz explained in a Feb. 29 Washington, D.C., meeting with defense reporters.

USAF on March 2 set aside that source selection. Schwartz announced that Gen. Donald J. Hoffman, commander of Air Force Materiel Command, had launched an inquiry into the affair.

Asked if this was evidence the Air Force really hadn't gotten its act together since the excruciating missteps involved with replacing USAF's KC-135 tankers, Schwartz maintained that the "second tanker go-around" went well. But on the Light Air Support aircraft, "candidly, ... if in fact we did not execute this source selection according to standards, it will be a profound disappointment."

USAF photo by Jim Varhegyi

Schwartz: Accountability is key.

He said the Air Force has "labored diligently, I think, to improve our acquisition process ... in terms of human capital, in terms of the expertise associated with this." If the Air Force "fumbled" the deal, then, yes, "we obviously haven't arrived at the point where we are consistently providing the level of acquisition excellence that's expected."

He added, "There's no way to put a happy face on this" and said that if it turns out the problem was not due to some "innocent mistake," then "there will be hell to pay."

Hoffman's review should "help us to better understand if there are still systemic issues involved." Schwartz acknowledged, "The stakes are high. Believe me, we know that." Not only could USAF suffer damage to its reputation but the Afghan military needs the capability.

And how can the Air Force avoid such hitches in the future? "Work our asses off," Schwartz said. "Hold people accountable for standards of performance."

The service is now under the gun to get the program redone swiftly, he said.

"We have to move quickly to execute the program with a new solicitation and source selection in order to get it done before the funds expire" at the end of Fiscal 2013.

"If we are going to thin out our presence in Afghanistan," he said, it's important the Afghan Army have a close air support platform. Aside from the "embarrassment to us as an Air Force, it's the fact that we're letting our teammates down. So we will work with all dispatch ... to try to recover this again as Congress permits."

THE LAST TO GO

The decision to terminate the C-27J and take the existing aircraft out of the force was a hard one but a choice that exemplified why the Air Force must be allowed to close some bases, Schwartz said.

"The C-27J is not a cheap airplane. It's a fine machine, and I wish we could have kept it. It was the last thing that went" in the Fiscal 2013 budget deliberation, Schwartz said. However, the Pentagon's cost-estimating shop determined that over 25 years, the C-27J would cost $308 million per aircraft to operate,

versus $209 million apiece for the C-130J and $185 million each for the C-130H.

"Some of that had to do with the basing approach we took: Four airplanes here, four airplanes there," he said. The C-27J was to populate the Air National Guard for use both in Stateside emergencies as well as overseas contingencies, but no base was slated to have more than a quartet of the small airlifters.

"If we put all the airplanes at one place, ... the differential would have been less," Schwartz said. Clustering aircraft at fewer operating locations means less ground support equipment, simulators, and other gear is needed, and there's less overhead to spread among the limited number of airplanes.

Basing is one of the aspects of life-cycle costs over which USAF has some control, he said. It's a consideration USAF will have to apply to the F-35 fighter.

"If ... you choose to base at fewer locations and have larger squadrons—24, 30, perhaps 36 aircraft per squadron—there are considerable savings and efficiencies associated with that," he asserted. Whereas original plans would have put F-35s at more than 40 bases, "we're pressing down on that," and current plans will locate the fighter "in the low 30s" of bases. Pending future decisions on squadron size, "it could go well lower."

Much has been made about estimates pegging the F-35's 50-year life-cycle operating costs at more than a trillion dollars; Schwartz said such far-flung projections are of "limited value." However, they did "trigger additional scrutiny of those factors that we control," such as basing.

Another cost-saving measure under consideration is a changing view of contractor logistics support.

"It is expensive," Schwartz said, and the model for the F-35 is contractor logistics support, but "that may change." Other costs USAF can control: "how much aviation you do versus simulation, how you manage your maintenance accounts." And of course, basing: "how concentrated it is and the efficiencies you get from economies of scale."

CALLING FOR BRAC

On the subject of necessary efficiencies, Schwartz said flatly that "base closure, as opposed to base realignment, is needed." The Chief said he is "not presuming the outcome" of a proposed two rounds of base closure and realignment, but additional Air Force closures in new BRAC rounds are "only good business practice."

After the last BRAC round in 2005 the Air Force was still left with too much infrastructure, and no major bases closed, Schwartz said. Now that the force is contracting even more, USAF will have still fewer assets to spread around the existing base structure.

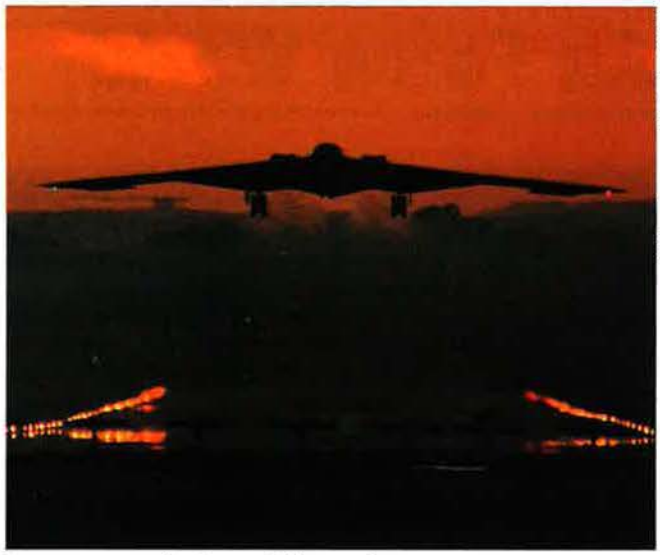
"I'm not one who would propose going to zero management reserve on this," he said. "And not everything's driven by cost." Air sovereignty alert missions, he noted, must be done by bases all over the country; it's not a function that can be consolidated at one location.

However, if there is another BRAC, "it will not be like 2005. This will be about not realigning things ... but it will be about eliminating excess infrastructure." The Administration has proposed two new base closure rounds, in 2013 and 2015, but the proposal has met with a tepid response in Congress.

IRAN, CHINA, AND LONG-RANGE STRIKE

The United States has lots of military options for dealing with Iran's nuclear ambitions, should it come to that, and the diplomatic crisis over the Persian bomb is a perfect example of why the country needs a new long-range strike aircraft, according to Schwartz.

In his wide-ranging discussion with defense reporters, Schwartz was asked about USAF's capabilities to attack Iran's nuclear program, which is located deep in hardened facilities nested within rings of substantial air defenses.



Northrop Grumman photo by Alan Radecki

Long-range strike keeps China on its toes.

Calling such a mission a "grand hypothetical," Schwartz noted that the Massive Ordnance Penetrator, a 30,000-pound munition designed to penetrate hardened, deeply buried targets, is "operational," and "you wouldn't want to be there if we used it." A stealthy B-2 bomber can carry two MOPs.

Moreover, "we have capabilities that apply in a variety of contexts to contingencies that might unfold in the [Persian] Gulf and the Asia-Pacific, or elsewhere," Schwartz said.

Nevertheless, he added, "we're not sitting on our hands," and the Air Force is working to refine and improve the MOP.

"It goes without saying that strike is about physics. And the deeper you go, the harder it gets," he observed. But the MOP is "not an inconsequential capability."

However, Schwartz said, "there's a tendency, I think, for all of us to go tactical too quickly and worry about weaponeering." The larger issue is one of policy, he said, and USAF's obligation is to provide options to the President. With regard to Iran's nuclear program, "we have done that," he said, adding that he believes Marine Corps Gen. James N. Mattis, head of US Central Command, is "satisfied that we have been as forthcoming and imaginative as possible from our perch." The Air Force and all the services would "each contribute what we are prepared to." Other, nonmilitary, options are available from other branches of government, he noted.

Schwartz said Iran and China both illustrate the value of maintaining a credible long-range strike capability.

"I'll tell you why we need a bomber," Schwartz said, asking rhetorically, "Do you think that the Chinese have established one of the world's best air defense environments in their eastern provinces just to invest their national treasure?" Iran has done the same thing around "certain locations in their country" for good reason, he said.

"I would say they're not doing this for the fun of it. They're doing this because they have a sense of vulnerability." And what conveys that sense of vulnerability? "One of those things is long-range strike. And that is an asset that the United States of America should not concede. That's why the long-range strike bomber is relevant and will continue to be relevant."

Long-range strike is not just about Iran and China, Schwartz continued. Many air forces and ground defenses are improving around the world, "which is why I argue ... we too need to improve. Being static is not the place America wants to be."

However, Schwartz said the new bomber will have to come in on budget, or else "we don't get a program." That direction was laid down when then-Defense Secretary Robert M. Gates gave the program its go-ahead, and "that guidance still pertains," Schwartz said. "I get it. Loud and clear." ■

Air Force World

By Aaron M. U. Church, Associate Editor

Airman Killed in Afghanistan

Lt. Col. John Darin Loftis, 44, of Paducah, Ky., was killed in an insurgent attack on the Afghan Interior Ministry in Kabul, Feb. 25, according to the Defense Department.

Assigned to the Air Force Special Operations School at Hurlburt Field, Fla., Loftis was serving with the 866th Air Expeditionary Squadron in Kabul when a gunman shot him.

Loftis was one of two US military officers killed in the attack on the ministry that was seen as retribution for the accidental burning of several copies of the Koran at Bagram Airfield. Also killed was Army Maj. Robert J. Marchanti II.

Fluent in Pashto, Loftis was the chief plans advisor for the AfPak Hands program, which trains US service personnel in Afghan and Pakistani culture and language.

Djibouti Crash Kills Four Airmen

Four airmen assigned to Hurlburt Field, Fla., were killed in the crash of a U-28 intelligence-surveillance-reconnaissance aircraft near Camp Lemonnier in Djibouti on Feb. 18.

Capt. Ryan P. Hall, 30, of Colorado Springs, Colo.; Capt. Nicholas S. Whitlock, 29, of Newnan, Ga.; 1st Lt. Justin J. Wilkens, 26, of Bend, Ore.; and SrA. Julian S. Scholten, 26, of Upper Marlboro, Md., died in the crash, the Defense Department said. They were returning from an Operation Enduring Freedom mission.

Hall, a U-28 pilot, was assigned to the 319th Special Operations Squadron. Whitlock, also a U-28 pilot, and Wilkens, a combat systems officer, were members of the 34th SOS. Scholten, a mission systems operator, served with the 25th Intelligence Squadron.

The Air Force is investigating the cause of the accident.

Locklear Takes PACOM Reins

Adm. Samuel J. Locklear III became commander of US Pacific Command on March 9. He succeeds Adm. Robert F. Willard, who had held the command since October 2009.

Locklear previously commanded US Naval Forces Europe, where he had been assigned since October 2010.

Rewinged Warthog

Boeing and the Air Force recently rolled out the first rewinged A-10C ground-attack aircraft in a ceremony at Hill AFB, Utah.

"This enhanced wing assembly will give the A-10 new strength and a new

USAF photo by MSgt. Sean Mitchell

Budget-Strategy Mismatch

The Pentagon's Fiscal 2013 budget request doesn't match the new national defense strategy, which emphasizes air- and sea power rather than land forces, according to Todd Harrison, a senior fellow at the Center for Budgetary and Strategic Assessments.

"If you look at [Fiscal] '12 to '13," the Army, Navy, and Marine Corps all gain, while "the Air Force goes down," Harrison said in an address at a Feb. 17 Mitchell Institute for Airpower Studies presentation.

Air Force-specific "blue" funding—excluding money passed to other defense and intelligence agencies—actually declines three percent in the Fiscal 2013 budget proposal. At the same time, Army-specific funding rises four percentage points, while Marine Corps funding effectively rises by one percent.

Unlike the Air Force, ground services are funding personnel costs through the overseas contingency budgets instead of their baseline budget. As a result, they manage to maintain high personnel levels even as USAF has been forced to cut end strength.

That "saves" the Army $4 billion and the Marines $1 billion respectively, said Harrison.

While USAF paid the price up front, the other branches will find it difficult to maintain force levels "when we are no longer in combat operations," said Harrison.

foundation for its continued service into 2040," said Mark Bass, Boeing's maintenance, modifications, and upgrades vice president, in a company news release.

Boeing is under contract to deliver 233 wing sets to the Air Force through 2018. The company is producing the wings at its facility in Macon, Ga.

The kits are supplied to Ogden Air Logistics Center at Hill for installation on those A-10s in the fleet with comparatively thin-skin wings that have been prone to cracks in the past.

The Feb. 15 rollout followed the Air Force's proposal earlier in the month to eliminate five A-10 squadrons from the Fiscal 2013 budget.

"We're reducing 102 A-10s" but "there are still going to be 246 A-10s left in the inventory," Chief of Staff Gen. Norton A. Schwartz said at a Pentagon briefing in early February.

Balking at BRAC

Members of the Senate Armed Services Committee are concerned about the two new rounds of Base Realignment and Closure proposed by the Obama Administration for 2013 and 2015.

"I have serious questions whether we save any money from a BRAC process," Sen. Kelly Ayotte (R-N.H.) said during a Feb. 14 hearing.

Sen. James M. Inhofe (R-Okla.) said he would oppose more rounds of BRAC, arguing that the US military is already being reduced "to an unacceptable level."

Defense Secretary Leon E. Panetta, testifying at the hearing, told the Senators

03.14.2012

An HC-130 King and an HH-60 Pave Hawk, both from the Air National Guard, JB Elmendorf-Richardson, Alaska, practice refueling maneuvers. These aircraft and their crews perform combat search and rescue missions and have been heavily tasked to support operations worldwide.

USAF photo by MSgt. Jeremy Lock

Flying Leaner, Greener: *An F-16 from the 180th Fighter Wing, Toledo Express Arpt., Ohio, undergoes preflight checks before taking off with a 50-50 blend of conventional and biofuels. A pair of Ohio Air National Guard F-16s successfully switched between a biofuel blend and standard JP-8 fuel in midflight for the first time during a training drill in February. Running on a mix of camelina-derived biofuel and JP-8, they rendezvoused with a KC-135, taking on a load of standard JP-8 fuel. After completing the sortie, the pair returned to base, topping off again with the biofuel blend for the next sortie, showing that they could seamlessly switch between the fuel types.*

that as a former Congressman whose district had been affected by a base closure, "I recognize how controversial this process is for members and for constituencies." However, he insisted that in his opinion BRAC "is the only effective way to achieve needed infrastructure savings."

Sen. Lindsey O. Graham (R-S.C.) voiced support for consolidation, saying, "It's appropriate to consider another round" of BRAC.

F-16 Refresher

The Air Force requested both a service life extension and upgrade for 350 F-16s in its Fiscal 2013 budget request.

Aimed at keeping the fleet viable until F-35s enter service in strength, the service life extension program would include a "full-scale durability test and structural modifications to add eight to 10 years of service life to each airframe," according to USAF's budget overview, released in February.

A further Combat Avionics Programmed Extension Suite will be added to a select number of SLEP airframes and would modernize those F-16s with a more capable active electronically scanned array radar, new cockpit display, data link enhancements, and an improved defensive suite.

Notional plans call for an initial contract for 30 SLEP kits in March 2016, followed by a second contract for 48 additional kits in January 2018.

The F-16 SLEP effort would be a "depot-level upgrade program," according to a USAF spokeswoman.

The Air Force announced it plans to SLEP a portion of its F-16 fleet in 2017; airframes receiving the CAPES improvements would re-enter service in 2018.

18-Hole Nuclear Tee Off

In the first full year of the New START nuclear weapons agreement, the US and Russia each completed 18 on-site nuclear inspections—the maximum permitted under the treaty.

USAF photo by TSgt. Arian Nead

In the Hot Pit: *Airmen with the 380th Expeditionary Logistics Readiness Squadron help perform a "hot pit" refueling on an F-15 Eagle on a flight line in Southwest Asia. During a hot pit refueling, the aircraft is fueled while the engines are still running, to reduce ground time and get the aircraft quickly back up for another mission.*

Since New START entered into force in February 2011, the two countries also exchanged 1,800 notifications through the treaty's risk-reduction centers, according to a summary issued by the State Department.

To enhance stability and trust, the US notified Russian counterparts "every time a heavy bomber ... moved out of its home country for more than 24 hours," as required by the rules, the Feb. 5 news release noted.

The Air Force exhibited a B-2A stealth bomber for the Russian delegation and conducted a one-time demonstration of the denuclearized B-1B bomber.

In exchange, Russia gave US observers their first look at the RS-24 mobile ICBM system, which can deploy independent warheads on several different targets.

USAF photo by SrA. Melanie Holochwost

Not Such a Bad Guy: *This "suicide bomber" is actually TSgt. Derrik Morris, a 332nd Expeditionary Security Forces Squadron noncommissioned officer in charge of a security escort team in Southwest Asia. Morris, aided by an interpreter and his 332nd ESFS team, led the training of host nation airmen in how to respond to unconventional, deadly threats.*

Slimming USAFE

The Air Force is inactivating two Europe-based squadrons as part of the Pentagon's posture change emphasizing Asia and the Middle East.

The 81st Fighter Squadron at Spangdahlem AB, Germany—an A-10C unit—and the 603rd Air Control Squadron, based at Aviano AB, Italy, will get the axe, according to a Pentagon's Feb. 16 announcement. Despite losing the 81st FS, Spangdahlem will still be home to F-16s and retain its flying mission.

Overall, the US is reducing its footprint in Europe from roughly 80,000 troops to a new level of some 70,000 by 2017. Army forces will account for a significant part of the drawdown, with the inactivation of two Germany-based infantry brigades (the 170th and 172nd) as well as V Corps headquarters in Wiesbaden.

Pentagon officials announced the cuts the same day Defense Secretary Leon E. Panetta met with German Defense Minister Thomas de Maizière in Washington, D.C.

Radar Re-up

The B-1B Lancer strike radar upgrade successfully completed operational flight and ground trials at Dyess AFB, Tex., in February, paving the way for fleetwide upgrades.

The Reliability and Maintainability Improvement Program—which replaces the Lancer's radar transmitter, receiver, processing computer, and software—promises to greatly improve the aircraft serviceability and mission readiness, according to testers at Dyess.

"The existing B-1 radar system is more than 20 years old and has not had a hardware upgrade since it was initially fielded in 1985," said SSgt. Trevor Helm, B-1 crew chief with Dyess' 337th Test and Evaluation Squadron. "Prior to RMIP, we were losing a lot of time by having to continuously replace parts on the radar system," he said.

The "RMIP increases the mean time between failures of the current radar system by nine times that amount, significantly increasing B-1 aircraft availability," added Lt. Col. George Holland, 337th TES commander.

B-1Bs at Dyess and Ellsworth AFB, S.D., were due to begin receiving the upgrades in March.

F-35 Commencing at Eglin

At the end of February, the F-35A strike fighter was finally cleared to begin initial operations with the 33rd Fighter Wing at Eglin AFB, Fla.

"The Air Force, [F-35] Program Office, and other stakeholders have painstakingly followed established risk-acceptance and -mitigation processes to ensure the F-35A is ready," said Gen. Donald J. Hoffman, head of Air Force Materiel Command.

"This is an important step for the F-35A," he continued. Qualified pilots at Eglin, which is home to the joint F-35 schoolhouse, are now able to conduct "unmonitored flights" to gain familiarity with the aircraft, as well as iron out new maintenance and logistics infrastructure for the Lightning II.

Initial F-35A flights "will be limited, scripted, [and] conducted within the restrictions and stipulations of the MFR [military flight release]," stated an Aeronautical Systems Center news release.

ASC officials at Wright-Patterson AFB, Ohio, issued a military flight release for the Air Force variant Feb. 28.

Senior service officials said that Eglin-area orientation flights, with test pilots at the controls, were to begin in early March.

Police Presence

NATO member states have agreed to extend their Baltic air policing mission, providing fighter cover to member states Estonia, Latvia, and Lithuania beyond 2014. The decision was made at a February summit in Brussels.

Index to Advertisers

Recruiting Marine Hueys for USAF

The Air Force wants to acquire three UH-1N helicopters from Marine Corps stocks to replace operational losses from its own Huey fleet, said Lt. Gen. James M. Kowalski, head of Air Force Global Strike Command.

The three helicopters would replace Hueys lost in accidents over the past few years—one each from AFGSC, Air Education and Training Command, and Air Force District of Washington, Kowalski said.

"We're watching them as they go through depot to see what shape they're in," Kowalski told reporters at the Air Force Association's Air Warfare Symposium in Orlando, Fla., earlier this year.

A program to replace the aircraft with brand-new machines was cut from USAF's budget, which is why the service is looking for other ways to replace the helos to meet missile field security needs, said Kowalski. Hueys at the Air Force's three ICBM bases recently began standing continuous 24-hour security-response alert, he noted.

Given current crew and asset constraints, however, only one helo—rather than the three required to carry a full security-response team—sits alert at any one time, said Kowalski.

To stretch the life of the Huey fleet, "we've taken a look at upgrading the cockpits, looking at night vision compatibility," and safety improvements, he said.

Because the Baltic NATO states lack fighter assets of their own, 14 Alliance air forces deploy fighters to Siauliai AB, Lithuania, on a rotating basis. Begun after the Baltic states joined the Alliance in 2004, the fighter rotations were extended through 2014 by an agreement two years ago. NATO members, however, left the most recent commitment open-ended.

"I warmly welcome today's decision by the North Atlantic Council to further authorize NATO air policing in the Baltic States with a continuous presence of fighters," NATO Secretary General Anders Fogh Rassmussen said Feb. 8.

"This mission continues to demonstrate the Alliance's commitment to collective defense and solidarity for all its members."

F-16s of the Royal Danish Air Force handed the mission off to F-4 Phantoms of the German Luftwaffe, which arrived on a four-month deployment to Siauliai, Jan. 4.

Hurry Up And Wait

Replacing the T-38 trainer must take a back seat to more pressing Air Force procurement needs, according to Air Education and Training Command boss Gen. Edward A. Rice Jr.

Rice said he's comfortable with the service's Fiscal 2013 budget request that pushes initial operations with the new trainer, dubbed T-X, out to 2020.

"We've got some other things on the plate that are very important to us," such as the F-35, KC-46, and future long-range bomber, Rice told reporters at the Air Force Association's Air Warfare Symposium in Orlando, Fla., Feb. 23.

"We have looked very closely at the [T-38] airframe and I'm comfortable that we've got space here to make this T-X decision without running into a situation where the airframe is going to become a problem," he explained.

He said, however, that the Air Force is still committed to a T-38 replacement. "It's not a matter of if we get it, it's a matter of when, and we've got to find the right place and time to put it into the overall budget priorities," he added.

F-15 Crash a Mystery

Investigators were unable to pinpoint the cause of an F-15C crash on a sortie over the Nevada Test and Training Range last October, according to Air Combat Command.

"Given the limited evidence available, the [accident investigation board] president was unable to determine a mishap cause by clear and convincing evidence," stated the investigators' report, released at the end of February.

Assigned to Nellis AFB, Nev., the F-15 was on a single-ship test sortie on Oct. 24, 2011. Recovering from a high-G evasive maneuver, the aircraft entered a flat spin. When engines and flight-control inputs failed to recover the aircraft, the pilot lowered the undercarriage in accordance with procedures, regaining control at about 4,000 feet above the ground.

Attempting to regain flight speed, the pilot applied full power in "an aggressive recovery." The aircraft stalled again at just 1,400 feet altitude, compelling the pilot to eject.

The pilot wasn't seriously injured, but the Eagle was destroyed, crashing on unoccupied federal land some 85 miles northwest of Nellis.

Long-Range Rescue

Two California Air National Guard HH-60G Pave Hawks recently rescued an ailing sailor from a vessel some 200 miles off the California coast.

Taking off from Moffett Federal Airfield northwest of San Jose, Calif., the 129th Rescue Wing helicopters were accompanied by an MC-130P tanker.

Recovering a 54-year-old man suffering from stroke-like symptoms, the

Lockheed Martin photo by Paul Weatherman

On the Wing: *An F-35A flew the type's first external weapons test mission at Edwards AFB, Calif., Feb. 16. The test aircraft carried two air-to-air AIM-9X missiles on outboard wing stations and internally hauled two 2,000-pound GBU-31 guided bombs and two advanced medium range AIM-120 air-to-air missiles.*

Operation Enduring Freedom

Casualties

By March 15, a total of 1,900 Americans had died in Operation Enduring Freedom. The total includes 1,897 troops and three Department of Defense civilians. Of these deaths, 1,500 were killed in action with the enemy while 400 died in noncombat incidents.

There have been 15,460 troops wounded in action during OEF.

CAS Shuffle

The Air Force recently reshuffled close air support assets in Afghanistan to meet the anticipated demands of ground forces in the coming months.

Air Force Reserve Command A-10s of the 303rd Expeditionary Fighter Squadron operating in southern Afghanistan out of Kandahar traded bases with Air National Guard F-16s of the 451st Expeditionary Fighter Squadron at Bagram Airfield in the north.

"This movement postures close air support to best support the campaign plans in the long and short term," said Col. Kevin Blanchard, vice commander of the 451st Air Expeditionary Wing at Kandahar Airfield.

"The reset should provide the regional commanders the best air assets for the environment and operations each commander will encounter," added Blanchard.

In addition to aircraft, the two units moved a combined 900 personnel and 438 units of cargo without missing a single combat sortie request.

10K Bone

A B-1 Lancer with the 379th Air Expeditionary Wing flew the type's 10,000th combat mission on a recent sortie over Afghanistan.

Flying from an air base in Southwest Asia, the aircraft reached the fleet milestone on Feb. 26, less than 14 years after the type's combat debut in Operation Desert Fox over Iraq in December 1998, according to wing officials.

"After launching the first combat sortie, I never thought I would have the opportunity to participate in the 10,000th," said SMSgt. Deidre Nickolson-Edie, who prepped aircraft for both historic flights.

"It's a testament to our airmen who train day in and day out to continue to ensure that we are able to fly such a diverse and always-evolving weapon system," she added.

The B-1 entered service in 1985 and has been in nearly continuous combat for the past 10 years. Originally designed to carry nuclear weapons, it has become a platform that carries only conventional munitions.

The 21 Spartans

The Army wants to find a way to keep C-27J Spartan transports already acquired by the Air Force in service supporting ground troops in the field, said Army Chief of Staff Gen. Raymond T. Odierno.

While USAF is planning to divest the aircraft, Odierno said the few C-27s already deployed to Afghanistan will remain in country supporting ground forces until congressional and defense officials decide the aircraft's final fate.

The Army's fleet of C-23 Sherpas, used for supplying bases and ferrying parts, "are old [and] no longer effective," meaning the service is loathe to sink money into needed upgrades, said Odierno.

Instead, "I'd like to keep the C-27s that we've already purchased" perhaps even adding a few additional airframes to replace the Sherpa fleet. "We haven't purchased that many, and that's the problem," Odierno said. The Air Force planned to acquire a total of only 38 airframes. So far, the Air National Guard has received more than 20, intended for use providing direct support to Army units in the field.

Instead of the C-27J, the Air Force says it will use more-capable C-130s for combat resupply missions.

Guardsmen evacuated the victim from the container ship MCS Beijing, flying him to a hospital in San Jose, Feb. 4.

Although the ship was far out to sea, "the Coast Guard knew they could depend on our specialized capability" to reach the victim, said Col. Steven J. Butow, 129th RQW commander. "This is a prime example of how the 129th and California National Guard [are] ready to support civilian authorities at a moment's notice," he added.

The mission was the 948th recorded "save" for Moffett aircrew and para-rescuemen.

Eagle Rebuild

Craftsmen completed the painstaking rebuild of an F-15E Strike Eagle at Robins AFB, Ga. It had been severely damaged by an in-flight fire during a training sortie near Shaw AFB, S.C., in August 2010.

Completely replacing the aircraft's aft fuselage, technicians at Robins modified the aircraft's structure to accept the standard engines used on F-15s at Seymour Johnson AFB, N.C., the aircraft's home base.

"The actual scope of what we did to this aircraft is tremendous," said Ed Fuller, Robins' 561st Aircraft Maintenance Squadron project manager. "It was an incredible effort by a lot of people," he added. "We saved the Air Force from the loss of an aircraft."

The aircraft, which had arrived at Robins on a flatbed truck, flew to Seymour Johnson under its own power on Feb. 3.

Cockpit Fog

Fog inside the cockpit caused an F-16C to overshoot the runway at an air show last July, an Air Combat Command accident investigation board concluded in February.

The Alabama Air National Guard aircraft was on final approach to Wittman Regional Airport, south of Oshkosh, Wis., when the air-conditioning system malfunctioned, fogging up the canopy and blocking the pilot's external view.

The pilot, assigned to the 100th Fighter Squadron, followed proper defogging procedures, but was unable to clear the windscreen.

Unable to judge the aircraft's angle of attack, the pilot touched down without deploying the airbrakes, leaving inadequate stopping distance upon rollout.

To ensure the crowd's safety, the pilot stayed with the aircraft, overrunning the 8,000-foot runway by 300 feet. Neither the pilot nor any bystanders were injured, but damage to the aircraft in the July 28 mishap was an estimated $5.4 million.

Polish Partnering

Air Force F-16s and C-130s will begin regular training rotations to Poland later this year, with the creation of a Poland Aviation Detachment.

Tasked to "strengthen our working relationship" with the Polish Air Force, the detachment's permanent staff of 10 will manage some four USAF C-130 and F-16 rotations each year, according to the Air Force budget documents. Poland flies both the F-16 Block 50 fighter and C-130E airlifter.

The memorandum of understanding signed last June also notes the possibility that fifth generation aircraft, such as the F-22, could deploy to the country.

Both US Air Forces in Europe and Stateside units will send aircraft to the Polish Air Force's 32nd Tactical Air Base near Łask in central Poland.

New and Improved Viper

Lockheed Martin has unveiled a revamped version of its F-16 multirole fighter, introducing the Fighting Falcon's latest incarnation—the F-16V—at the Singapore Air Show. The "V" denotes Viper, a name that F-16 pilots themselves have bestowed on the fighter.

The improved version features an active electronically scanned array radar and an upgraded mission computer. Several cockpit improvements have been made as well, the changes based on operator experience from USAF and international customers, according to Lockheed Martin's release announcing the variant.

"We believe this F-16V will satisfy our customers' emerging requirements and prepare them to better interoperate with ... fifth generation fighters," said George Standridge, Lockheed Martin Aeronautics vice president for business development.

While the F-16V configuration is an option for new production jets, elements of the improvements are available as upgrades to earlier-model F-16s, according to the company.

Lockheed Martin touts the V configuration as "an innovative solution to affordably retrofit" AESA radar to existing F-16s.

Senior Staff Changes

RETIREMENT: Maj. Gen. Duane A. **Jones.**

NOMINATIONS: To be Lieutenant General: Craig A. **Franklin. To be ANG Brigadier General:** Robert T. **Brooks Jr.,** Michael A. **Meyer. To be AFRC Major General:** Gary M. **Batinich,** Richard S. **Haddad,** Robert M. **Haire,** Robert G. **Kenny,** Michael D. **Kim,** Mark A. **Kyle,** Kevin E. **Pottinger,** Robert D. **Rego,** George F. **Williams. To be AFRC Brigadier General:** Jeffrey K. **Barnson,** Abel **Barrientes,** Kimberly A. **Crider,** Theron G. **Davis,** Christopher L. **Eddy,** Lyman L. **Edwards,** Richard M. **Erikson,** John C. **Flournoy Jr.,** Kathryn J. **Johnson,** Harris J. **Kline,** Kenneth D. **Lewis Jr.,** Vincent M. **Mancuso,** Udo K. **McGregor,** Eric S. **Overturf,** Karen A. **Rizzuti,** Vincent M. **Saroni,** James P. **Scanlan.**

CHANGES: Lt. Gen. Michael J. **Basla,** from Vice Cmdr., AFSPC, Peterson AFB, Colo., to Chief, Info. Dominance & Chief Info. Officer, OSAF, Pentagon ... Maj. Gen. Samuel D. **Cox,** from Dir., Strategy, Policy, Prgms., & Log., TRANSCOM, Scott AFB, Ill., to Dir., Ops. & Plans, TRANSCOM, Scott AFB, Ill. ... Lt.. Gen. (sel.) Craig A. **Franklin,** from Vice Dir., Jt. Staff, Pentagon, to Cmdr., 3rd AF, USAFE, Ramstein AB, Germany ... Lt. Gen. (sel.) John E. **Hyten,** from Dir., Space Prgms., Office of the Asst. SECAF, Acq., Pentagon, to Vice Cmdr., AFSPC, Peterson AFB, Colo. ... Maj. Gen. (sel.) Michael J. **Kingsley,** from Cmdr., 23rd AF, AFSOC, Hurlburt Field, Fla., to Vice Cmdr., AFSOC, Hurlburt Field, Fla. ... Brig. Gen. Timothy J. **Leahy,** from Dir., Knowledge & Futures, SOCOM, MacDill AFB, Fla., to Cmdr., 23rd AF, AFSOC, Hurlburt Field, Fla. ... Maj. Gen. Otis G. **Mannon,** from Vice Cmdr., AFSOC, Hurlburt Field, Fla., to C/S, AFRICOM, Stuttgart, Germany ... Brig. Gen. Jeffrey R. **McDaniels,** from Dep. Dir., Ops., DCS, Ops., P&R, USAF, Pentagon, to Dep. Dir., Ops., Natl. Jt. Ops. & Intel. Center, Ops. Team 1, Jt. Staff, Pentagon ... Lt. Gen. Stephen P. **Mueller,** from Vice Cmdr., USAFE, Ramstein AB, Germany, to Inspector General of the AF, OSAF, Pentagon ... Maj. Gen. Margaret H. **Woodward,** from Cmdr., 17th AF (Air Forces Africa), USAFE, Ramstein AB, Germany, to Spec. Asst. to the DCS, Ops., P&R, USAF, Pentagon.

SENIOR EXECUTIVE SERVICE CHANGES: John T. **Manclark,** to Spec. Asst. to the DCS, Ops., P&R, USAF, Pentagon ... Ricky L. **Peters,** to Dir., Test & Eval., USAF, Pentagon ... Daniel R. **Sitterly,** to Dep. Dir., AF Staff, USAF, Pentagon. ▪

Mortuary Penance

The Air Force will change its mortuary practices at Dover AFB, Del., based on recommendations of an independent government panel, Air Force Secretary Michael B. Donley announced in February.

The Defense Health Board panel, chaired by retired Army Gen. John P. Abizaid, recommended granting full Uniform Code of Military Justice authority to Dover's mortuary affairs commander. Donley said USAF will comply, calling the measure "an essential tool in maintaining command discipline" and needed to prevent future lapses in a mission where the service has a "solemn obligation ... to its flawless execution."

Defense Secretary Leon E. Panetta appointed the panel after reports surfaced last year that mortuary officials at Dover had inappropriately managed and disposed of the remains of fallen service members prior to 2008.

Though the Air Force took initial corrective action based on its own internal investigation at the time, the measures implemented as a result of the independent review go much further.

The Air Force will establish a new command structure led by a general officer to oversee Air Force Mortuary Affairs Operations, in addition to "strongly" endorsing an external periodic inspection system, said Donley.

In addition, leaders support the idea of a permanent board of "outside professionals" to validate mortuary practices at the base.

The panel also alleged new evidence that the cremated remains of 9/11 victims had been disposed of in Virginia landfills as well—a charge Donley said was "new information" to the service.

The next day, Chief of Staff Gen. Norton A. Schwartz told reporters that USAF turned up paperwork showing the service since 2002 followed Pentagon directives for disposition of human remains. He said that while Dover may have handled remains from the Pentagon attack of 9/11, there was no evidence to suggest it had been involved with remains from New York City or Pennsylvania.

Slow Lightning

Over the next five years, the F-35 strike fighter program will be reduced by roughly $15.1 billion, according to the Future Years Defense Program released in January.

The Defense Department will delay procurement of 179 aircraft originally slated for delivery to USAF, the Navy, and the Marine Corps from Fiscal 2013 to Fiscal 2017, said Robert F. Hale, DOD's comptroller.

The program remains one of the Pentagon's largest, however, budgeted for $8.9 billion in Fiscal 2013 alone.

The purpose of the delay is to allow testing and final development to catch up to production, Hale said at a Pentagon budget briefing in February. Despite previous delays and restructuring, there is still more "concurrency"—meaning development and testing in tandem with production—than Pentagon leaders are comfortable with, said Hale.

Italy Trims F-35 Buy

Italy's defense ministry is cutting F-35 strike fighter procurement by nearly a third, from 131 to 90 aircraft.

"It's a significant reduction that

is coherent with our need to reduce spending," Defense Minister Giampaolo Di Paola told a joint meeting of Italy's legislative bodies in mid-February.

One of the original F-35 development partners, Italy had agreed to a $19.9 billion purchase of 69 F-35A conventional takeoff and landing aircraft and 62 F-35B short takeoff and vertical landing variants.

Italy's announcement closely follows the Pentagon's decision to postpone ordering 179 aircraft between Fiscal 2013 and 2017 to allow more time for F-35 testing before significantly ramping up aircraft production.

Di Paola didn't specify how the cuts will be apportioned between the two variants Italy has on order.

New to the X-Files

Air Force Research Lab officials have revealed a new "X-Plane"—the remotely piloted X-56A Multi-Utility Technology Test Bed, jointly developed with NASA and Lockheed Martin.

The experimental twin-turbojet aircraft, which features quick-change wings, will be used by AFRL to investigate control problems associated with lightweight, highly efficient wing designs.

Experiments with the X-56 will aid in developing high-aspect-ratio wing technology that the Air Force could apply in future transport and remotely piloted aircraft designs.

The X-56A's initial wingspan is 28 feet, and the aircraft weighs just 480 pounds.

The design incorporates an additional dorsal mounting pylon to facilitate adding a third engine or alternate wing designs.

Initial flights exploring gust loading and aerodynamic flutter are slated to begin this summer, said officials.

Following Air Force research, the test bed is slated to go to NASA's Dryden Flight Research Center in California for continued experimentation.

Boneyard Laser

The Air Force's YAL-1A Airborne Laser Test Bed flew one last time on Feb. 14, making a ferry trip from Edwards AFB, Calif., to the Davis-Monthan AFB, Ariz., "Boneyard."

The modified Boeing 747-400, which is configured to shoot down boosting ballistic missiles, began testing at Edwards in December 2002. It was equipped with several lasers, including a high-power chemical laser that fired from a nose turret.

Trials culminated with the successful shootdown of both a solid-fueled rocket and liquid-fueled missile in February 2010, "proving the viability of directed energy for missile defense," said Lt. Col. Jeff Warmka, director of the ALTB Combined Test Force.

"All the things we did in this program were new and firsts for the Air Force," said John Wong, director of engineering for the Combined Test Force.

MQ-X Shelved

The Air Force isn't pursuing an advanced remotely piloted aircraft to perform intelligence-surveillance-reconnaissance missions in contested airspace, its top ISR officer reported.

Lt. Gen. Larry D. James, deputy chief of staff for ISR, said USAF has shelved plans for the MQ-X, a stealthy midaltitude RPA. Service officials saw the aircraft as a successor to the MQ-9 for missions in defended areas where the Reaper can't survive.

"At this point, we don't see a need ... to invest in MQ-X," James said at an *Aviation Week*-sponsored event in Arlington Va.

***Coping With the Aussies:** A USAF KC-135 refuels an F-16 over the Pacific Ocean during Exercise Cope North in February. Royal Australian Air Force fighters and AWACS aircraft participated in the exercise for the first time, at Andersen AFB, Guam. They joined Japan Air Self-Defense Force and USAF fighters flying air combat drills against F-16 aggressors from Eielson AFB, Alaska. More than 1,000 airmen from the three countries participated in the two-week exercise.*

USAF photo by SrA. Asha Kin

USSAF photo by SrA. Jerilyn Quintanilla

Right Then, Carry On: ***SrA. Dominique Walker, 100th Security Forces Squadron, carries a squadron mate using the fireman's carry technique while training at Stanford Training Area, Norfolk, England. During the simulated deployment mission, the airman being carried was "injured" in the left leg and unable to move without help. The training built team cohesion and communications skills.***

Instead, USAF will spend Fiscal 2013 observing "what plays out" with the Navy's Unmanned Carrier-Launched Airborne Surveillance and Strike—or UCLASS—RPA, said James.

USAF has purchased for testing a single General Atomics Predator C Avenger—a stealthy, jet-powered RPA in the Reaper class—but the service has "no intention to press that forward" as a Reaper replacement, said James.

Instead, USAF will continue procuring the MQ-9 at a rate of 28 aircraft per year until it can field 65 combat air patrols with a surge capacity of 85 "orbits," James said.

Although Air Force officials have emphasized that the MQ-9 is not survivable in contested airspace, James claimed "we can upgrade the Reaper if we need to."

Nuclear Directorate

The acquisition and care of the Air Force's entire nuclear arsenal is now the responsibility of a newly minted Nuclear Capabilities Directorate at Kirtland AFB, N.M.

Organized under Air Force Nuclear Weapons Center at Kirtland, the NCD directly oversees the purchase and sustainment of nuclear reentry vehicles, cruise missiles, and free-fall bombs, in addition to nuclear support equipment.

Officials simultaneously inactivated the 498th Nuclear Systems Wing, which previously oversaw many of these tasks, transferring its responsibilities to the NCD, under the Air Force's overhaul of the nuclear force structure and oversight.

"We owe this wing and its people a great debt of gratitude and thanks for what they accomplished in the transformation of the nuclear enterprise," said Brig. Gen. Garrett Harencak, AFNWC commander, unveiling the directorate's new insignia Jan. 27.

Lockheed Delivers 250th Super Herk

Lockheed Martin delivered the 250th C-130J Super Hercules from the production line at Marietta, Ga., to its new home at Dyess AFB, Tex., the company announced.

The Super Herk went to the 317th Airlift Group on Feb. 16, exactly one week after a C-130J became the first new airframe to join the group's 39th Airlift Squadron on base.

"Since the J model was first introduced, it has been the workhorse of airlift worldwide. This milestone is a testament to the hard work and dedication of the C-130 enterprise," said Lorraine Martin, then Lockheed Martin's vice president for C-130 programs.

Dyess' new bird is the second of 11 airframes Lockheed Martin is slated to deliver to the Texas base this year.

Upon receiving the 28th and final C-130J in 2013, Dyess will host the world's largest C-130J force, according to the company.

Onward With AFNet

AFNet, the service's single, centrally administered computer network, has successfully expanded to 48 installations, including 34 main operating bases, 13 geographically separated units, and Air Force Reserve Command's headquarters.

"For years, cyberspace systems and capabilities were acquired via ad hoc methods by individual units, and by the time we made our first moves toward a single Air Force network, we were dealing with a security nightmare," said Air Force Space Command boss Lt. Gen. Michael J. Basla. AFNet is "designed to address this issue."

"Today, the AFNet migration is our No. 1 cyberspace initiative," he said at the Air Force Association's Air Warfare Symposium in Orlando, Fla., in February.

With more than 187,000 users already transitioned to AFNet, the result is a "much more defensible construct," he said.

Shifting to AFNet are Barksdale AFB, La.; Laughlin AFB, Tex.; Osan AB, South Korea; Yokota AB, Japan; and Vance AFB, Okla. All other Air Force locations worldwide are expected to complete the transition in 2013, Basla said. ■

BEECHCRAFT AT-6 LIGHT ATTACK

Capable. Affordable. Sustainable. Interoperable.

THE FIRST AND ONLY FIXED-WING AIRCRAFT TO LAUNCH LASER GUIDED ROCKETS.

BUILDING PARTNERSHIP CAPACITY
▶ HawkerBeechcraft.com

THE MOST CAPABLE, AFFORDABLE, SUSTAINABLE AND INTEROPERABLE LIGHT ATTACK AND ARMED RECONNAISSANCE PLATFORM IN THE WORLD TODAY.

The Beechcraft AT-6 delivers a robust, purpose-built Light Attack and Armed Reconnaissance solution available at a fraction of the acquisition, sustainability and training costs of other aircraft. The AT-6 offers a solution that leverages prior investment in the U.S. Air Force's T-6, A-10C, and MC-12W platforms, programs and people. This solution also provides a full suite of synchronized ground based training capabilities and an established global logistics infrastructure. The AT-6 is the best solution to meet the crosscutting needs of austere counterinsurgency and building partnership capacity missions around the world. The AT-6 is the only U.S.-built solution in a world where unpredictability is commonplace and flexibility is critical.

Capable. Affordable. Sustainable. Interoperable.

Call +1.316.676.0800

Beechcraft

To meet tough budget targets and a new national strategy, Air Force decade ahead in planning the 2013 budget.

A 10-Year Plan

By John A. Tirpak, Executive Editor

F-35s Nos. AF-2, AF-3, and AF-4 soar over the countryside on a test flight. USAF officials say the F-35 offers capabilities crucial to the future force.

leaders looked a

Lockheed Martin photo by Darin Russell

The austerity shaping the Air Force today will likely persist, compelling potentially even tougher "tough choices" and severely limiting the service's future options. However, there are basic capabilities that simply can't be deferred if the US is to continue to field the world's best Air Force.

Such was the message delivered in late February by USAF's top leaders at the Air Force Association's Air Warfare Symposium, held in Orlando, Fla. Their remarks, coming just a couple of weeks after release of the Fiscal 2013 defense budget request, explained the thinking behind the numbers, and they urged members of the broader USAF family to come together and support the plan, lest the service truly lose capabilities the nation demands.

"This is not a one- or two-year thing," Air Force Secretary Michael B. Donley told reporters during a press conference at the symposium. "It's not even a five-year thing." There will be precious little room for new starts for a decade or more, he said.

The "next 10 years are largely consumed with our efforts to continue" the F-35 fighter, KC-46 tanker, essential new satellites, and a new long-range bomber, Donley said. "We're having to take a risk in other areas" to afford the new programs, he asserted, acknowledging some systems—and a new jet trainer to supplant the 50-year-old T-38, for example—are "unfunded requirements." They are not appearing in the budget for 10 years or more because "we don't see the money today."

To organize the most pressing needs so they can be afforded over time, the Air Force had to look "two FYDPs," or two five-year, Future Years Defense Programs out, Donley continued, which is "five years beyond ... our normal comfort zone."

There's "no question, we are taking risk," he said of the budget, which calls for retiring more than 280 aircraft on top of 250 already ordered to the boneyard in recent years.

"We're leaving behind or restructuring or delaying a number of programs and capabilities that we would otherwise like to retain or proceed with, but the dollars are not there to do that. So we're making tough choices now," he said.

Though there will be "twists and turns in the next 10 years," which may see an improved national economy that may make possible the return of some force structure, personnel, or programs now deemed unaffordable, "we can't predict that," Donley said, and Air Force plans won't assume increased funds.

"We'll keep the seed corn going," Gen. Norton A. Schwartz, Chief of Staff, added to Donley's comments at the same press conference, referring to science and technology funding for advanced concepts. However, expensive new projects beyond the 10-year timeline—such as a sixth generation fighter—won't receive "programmatic definition" until they become pressing needs, he said.

Donley cautioned that fiscal pressures from personnel accounts continue to be a challenge and threaten what modernization is in the spending plan. The percentage of its budget the Air Force spends on operations and maintenance vs. research and development has shifted significantly in just one year. In Fiscal 2012, the ratio was 64 percent to 34 percent, respectively, but in the Fiscal 2013 budget, it's 67 percent to 33 percent. That represents a shift of more than $3.5 billion. The O&M accounts fund things such as flying hours, personnel, and maintenance of aircraft. As the average age of aircraft increases and as personnel costs rise—particularly health care costs—that leaves less for investment in new gear.

As Small as Can Be

In his symposium speech, Schwartz said, "We will need all members of the extended Air Force family to inform and reinforce our efforts" in the weeks and months ahead, as the 2013 budget is debated in Congress. There can be no "splintering of our unity and ... undermining of our shared effort," he added.

"We may not agree with complete unanimity on exactly how to compose a smaller force in every detail, but we can all agree that we must avoid a lesser force."

Schwartz said personnel would not be "the billpayers" in the 2013 budget request, and the positions USAF is eliminating were directly tied to the weapon systems being retired, such as maintainers on C-5A Galaxy transports and A-10 close air support aircraft. He also said the personnel level will now remain stable, "unless there [are] additional [force] structure reductions." The Air Force, he said, is "as small as we can be for the tasks that are inherent" in the new national military strategy.

USAF photo by MSgt Andy Dunaway

The Air Force will perform a service life extension on some 350 F-16s, such as the one shown here.

The service has shrunk by 24,000 active duty personnel since 2004, Donley noted.

However, Schwartz allowed that USAF is, to some degree, subsidizing the other services as they struggle to cope with the drawdown in overseas operations. Following his speech, Schwartz was asked about the shares of the budget the services would receive in Fiscal 2013 and USAF's apparently smaller share.

He replied that it would be "inhumane" to try to separate more than 80,000 Army and Marine Corps troops "in one year." The 2013 budget, he said, is a "snapshot that needs to be taken in a larger context." There is a "glide path," allowing the ground services to shrink their forces through 2017, and that decision demanded some "push arounds" in the overall budget. The Air Force will "have our opportunity to alter that snapshot condition ... as we go forward."

However, as to budget shares and relative importance of service contributions, "I don't think anyone can deny the fact that the new strategic guidance is air- and space- and cyber power friendly. It's undeniable. We'll just have to posture ourselves in an economic and efficient way ... for those requirements."

The Pentagon's Fiscal 2013 budget request asks Congress to authorize two more rounds of Base Realignment and Closure, one in 2013 and one in 2015. Schwartz said BRAC is crucial, because it makes little sense to spend money on "excess" capacity when the service is scrounging money for real, unmet needs.

Gen. Donald J. Hoffman, head of Air Force Materiel Command, said that in some ways the Air Force can't wait for BRAC and is realigning to meet the more urgent need of reducing spending. A major AFMC reorganization announced in November will consolidate his command from 12 centers to five and will cut more than a thousand acquisition management positions in the process.

"We've postured ourselves for efficiency, whether there's a BRAC or not," Hoffman said. There's "no legislation"

Photo by Rick Llinares

A KC-10 tanker undergoes maintenance at JB McGuire-Dix-Lakehurst, N.J. The new KC-46 tanker will dominate USAF budget discussions for at least a decade, and KC-10s will stay in service indefinitely.

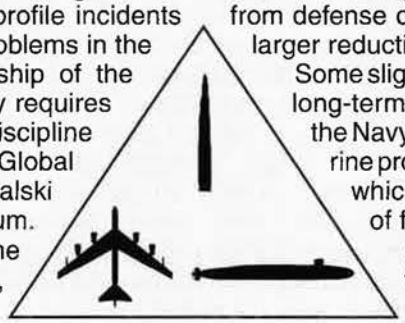
Quality and Quantity Concerns for the Nuclear Triad

Strategic deterrence is vital to the nation's security, and US Strategic Command's traditional missions are evolving significantly to address changing requirements, STRATCOM Gen. C. Robert Kehler said. STRATCOM's work is made increasingly important by the recently released US defense strategy, Kehler noted in February at the Air Force Association's Air Warfare Symposium in Orlando, Fla.

From the cyber realm to countering weapons of mass destruction and defeating threats in anti-access, area-denial scenarios, STRATCOM has a broad and expanding portfolio of global requirements.

Regarding the traditional mission, demands on the strategic triad are beginning to ramp up. All three legs must restructure somewhat as 2010's New START nuclear arms agreement takes effect—and the US needs to simultaneously invest in preserving the vitality of the nuclear deterrent. The US is going to have "to modernize our force, particularly the nuclear deterrent force," Kehler emphasized, even as sharp fiscal limitations loom in the near future.

USAF has worked hard to revitalize its oversight of the nuclear mission after a series of high-profile incidents beginning in 2007 revealed systemic problems in the service's nuclear enterprise. "Stewardship of the most powerful weapons in our inventory requires the highest standards, which demand discipline and expertise at all levels," Air Force Global Strike Command's Lt. Gen. James M. Kowalski said during his speech at the symposium. By unifying the Air Force's share of the nuclear triad under one commander, AFGSC has clear lines of authority and a tight "span of control" over its nuclear inventory today. Global Strike Command oversees USAF's nuclear-capable bombers and ICBMs.



New START limits the US to 1,550 deployed strategic nuclear warheads and 700 deployed delivery systems by February 2018. To help meet the targets, USAF will destroy retired but still-intact B-52Gs, eliminate the remaining silos from previous ICBM drawdowns, and adjust a portion of the B-52H force to carry only conventional munitions.

Speaking to reporters after his speech, Kowalski said USAF intends to convert about 28 B-52Hs to a conventional-only mission and possibly have these airframes feature new capabilities not present in the dual-capable fleet.

Kowalski emphasized that he did not like the idea of a separate cadre of B-52 aircrews that are trained only in one mission and would like to have the conventional bombers spread out across the fleet. "Everyone needs to be trained in all those capabilities," he said. "I have no intent to have a conventional-only squadron."

The US is more secure today because the nation and its Russian counterparts dramatically shrank their nuclear arsenals when the Cold War ended, Kehler asserted. Kowalski echoed the point, noting the US has a "mature relationship" with its Russian counterparts in the strategic forces after years of nuclear arms reduction talks and exchanges.

In 2011, AFGSC hosted 18 Russian inspections as part of the New START agreement, Kowalski noted, and hosted a visit from the Russian Air Force's Chief of Staff, Gen. Alexander N. Zelin, to speak about aspects of the nuclear mission.

The US has gone from a portfolio of some 30,000 nuclear warheads to a projected post-New START limit of 1,550 deployed strategic warheads, he said. "I believe we are more secure today because of this path," he said, and called the post-Cold War reductions an "extraordinary success." But he emphasized he still had to manage the drawdown of nuclear forces to meet New START targets, and then and only then could he entertain serious consideration of further lowering numbers.

Any future force reductions would hinge on what emerges from a new Nuclear Posture Review, what weapons should be included in more negotiations with the Russians, and what the national strategy is in a decade or so.

"Then, we get to numbers," he said.

In the meantime, the Obama Administration, in a drive to seek final approval for New START, promised billions of dollars to update the nuclear weapons complex and the Air Force and Navy nuclear platforms and infrastructure over the next decade. But those pledges were given before the Budget Control Act slashed some $487 billion from defense coffers over the next 10 years, with even larger reductions still a possibility.

Some slight adjustments have already been made to long-term nuclear plans, such as a two-year delay to the Navy's next generation ballistic missile submarine program. There have been other adjustments which are going to be a fact of life, Kehler said of funding for nuclear modernization.

Congress is now debating the modernization profile of the triad, and some members have suggested the robust plans promised under the START process need a close look in the context of the overall budget crunch.

Kowalski emphasized in his speech in Orlando that there is "room for discussion on the right size of the nation's nuclear force," but while some lobby for a rapid drawdown, President Obama has made it clear that as long as nuclear weapons exist, the US will field a safe and secure arsenal. Any drawdown should be done by careful analysis, sensitive to military capabilities, and grounded in shared interests and values and the real-politik of international relations.

Other powers do not necessarily see New START as a waypoint on a road to zero nuclear weapons. Both Russia and China are committed to near-term and long-term modernization of their nuclear forces and have active production lines for their weapons complexes.

"Our nation has enjoyed an extended procurement holiday," Kowalski said, but Russia is updating its strategic bombers, submarines, and some missiles, and China is upgrading its land-based and sea-based nuclear weapons. China is also working on second generation land-based ICBMs, new ballistic missile submarines, and a new heavy road-mobile ICBM capable of holding up to 12 warheads.

"We have lost robustness and diversity," Kowalski cautioned, but the US can achieve its goals of reducing nuclear weapons and managing the risk of a smaller arsenal by properly modernizing the triad.

– Marc V. Schanz

USAF photo by Scott M. Ash

USAF Secretary Michael Donley addressed the need for continued modernization at the Air Force Association's Air Warfare Symposium in Orlando, Fla.

that enjoins the Air Force from slimming down in this way, he added.

There is a concerted effort on AFMC's part to scrutinize all costs and to anticipate and define expenses that previously have simply been paid as a matter of course. The review extends even to "what it means to be an air base," Hoffman said. Bases in remote locations will continue to have a full range of amenities and services for personnel, but places like AFMC's headquarters at Wright-Patterson AFB, Ohio, need not provide perks such as shopping centers, bowling alleys, and movie theaters when civilian versions are available "right outside the gate," Hoffman said.

Donley, in the press conference, said USAF is examining any and all ways it can reduce costs. One area that has come under scrutiny is contractor logistics support, or CLS. Because many new kinds of platforms—such as remotely piloted aircraft—have "come into the force quickly" over the last 10 years to fight the wars in Southwest Asia, the normal steps of creating an organic maintenance capability, training pipeline, or even performing operational test and evaluation were skipped. However, support costs are rising considerably, Donley said, and USAF must check to make sure it's hitting the right balance of CLS and organic support, particularly with major programs such as the F-35.

Schwartz also enjoined industry to "be on board" with USAF's new direction, working with the service to hold down costs "relentlessly" and to design affordability into weapon systems. For its part, he promised the Air Force will strive to "keep schedules on track by stabilizing requirements, matching ambition with actual operational need, and ensuring more discipline" in advancing "appropriately matured technologies." Industry's job will be to "deliver capabilities on cost and on time." Being good stewards of limited taxpayer dollars demands that USAF "avoid procuring unnecessary capability" or paying "handsome financial bonuses to industry for unmet milestones and cost creep."

The F-35 Is Critical

The Air Force, Schwartz said, will soon be smaller than at any time since its inception in 1947.

He also noted that this is a period of transition, financially, for the Air Force and the other services. Now that the Iraq war is over and the US will soon wind down its presence in Afghanistan, USAF will need to migrate some of what it has been funding from the overseas contingency operations budget—the OCO, or "war budget"—back into the "base" budget.

"We are in the process of determining which of those functions that were funded by OCO will endure and therefore whose funding will need to be migrated, at appropriate levels," back to the baseline budget, he said. These include functions that have sprung up during wartime, such as flying remotely piloted aircraft, as well as combat flying hours.

Schwartz said USAF has been "weaning" itself off OCO funds but must make the full transition to an all-base-budget spending scheme by 2014.

ACC Commander Gen. Gilmary M. Hostage III said he will always "trade capacity, as necessary, to maintain capability, to avoid becoming hollow." That notion underlies the decision to field a smaller, but fully funded, force rather than a larger force that lacks for spare parts, training, flying hours, or munitions.

The Air Force has gotten used to operating in permissive airspace where its systems can operate largely unhindered by an enemy. This must change, Hostage said, noting that many potential adversaries are investing heavily in anti-access, area-denial systems. This demands that USAF invest accordingly, he said.

The F-35 is a crucial system the Air Force must have, Hostage said.

Acknowledging delays in the program, he asserted, "We must distinguish between the problems caused by a less-than-perfect acquisition record and our national security requirements." The F-35 offers "critical" capability, and he said he's optimistic—"based upon initial flight tests and comprehensive modeling"—the fighter will meet ACC's needs.

As the provider of combat forces, Hostage said, "I can tell you, I want this system in my arsenal ASAP."

He added that acquiring the F-35 "in sufficient quantities" is not negotiable. The F-35 "can in no way be considered a luxury; it is a national security imperative."

Combining the F-22 and F-35 with a new long-range strike bomber—"another must-do"—will ensure the US sends "a strong strategic message to any potential adversary and [will] have a moderating influence on their strategic decisions."

Hostage warned that with austere budgets it will be "tempting to drastically reduce the number of these big-ticket items. We must resist." The Air Force must continue to field "sufficient numbers to confront regional threats simultaneously, as the new national strategy dictates." Even the best aircraft in the world can't be in two places at a time, and "quantity has a quality all its own."

"If the F-35 is decremented to the levels of another low-density, high-demand fighter platform, our ability to provide sufficient joint airpower will be severely at risk," he said.

It will be a careful balancing act to ensure the right mix of investment in new systems and upgrades to older ones, Hostage asserted.

The majority of ACC's combat aircraft "do not have the ability to operate without significant risk in an advanced threat environment," he acknowledged, but he also said not all potential upgrades will be purchased. A dollar spent on upgrading an old system is a dollar not spent on something new and more capable, he explained. Thus, ACC will pursue "selective modernization" of systems.

"We will likely have to shift away from multiple, incremental improvements and block changes and save those precious dollars for investments in truly game-changing technologies," he said. That means "living longer" with older systems.

Donley reported that the Air Force will probably perform a service life extension on some 350 F-16s.

Answering questions after his speech, Hostage said ACC is doing "due diligence" working with the scientific community on what the "game changers" may be. Among them will be, eventually, a sixth generation fighter to succeed the F-22 and F-35—something ACC is "in the early stages" of exploring.

"My job is to look into that future," Hostage said. However, he is "pushing back" on the concept of suspending technology requirements early in a program to promote affordability and diminish acquisition turbulence. He's nettled by the idea "that I have to freeze a requirement right now because I'm going to buy something in 15 years. That just really frosts my cookies. And I don't think we ought to accept that." These are technologies, he said, that USAF is "just barely able to understand," and it makes little sense to limit them so far in advance.

USAF photo by SrA. Joseph Harwood

C-27Js, such as this one at Mansfield Lahm Arpt., Ohio, were victims of the budget crunch. C-130s will continue to fill the tactical airlift mission.

The Air Force has flattened its organization, such that now there are "lead integrators" for each of the service's 12 core functions. Hostage said he is the lead integrator for five of those: command and control; intelligence, surveillance, and reconnaissance; air superiority; global precision attack; and personnel recovery. He will have to horse-trade funding between those core functions, he said.

The Elephant in the Room

However, "at some point, ... I run out of things to cut. I can only give up so much capacity to gain capability before dwindling inventories make even the best quality less than dominant." Hostage stated that "to remain ... capable, we cannot maintain the status quo and try to do more with less. That will just lead us down the path to a hollow force."

Undeniably, the elephant in the room at the Orlando conference was the specter of sequestration. Unless Congress acts between now and January 2013, the Defense Department will have another half-trillion cut imposed on it, as a result of the Budget Control Act of last year. Speakers at the symposium exhausted their supply of words to describe how ruinous an additional—and haphazard—across-the-board cut would be.

The $487 billion cut embodied in the Fiscal 2013 budget is "manageable," Schwartz said. The sequestration, however, with its "indiscriminate salami slicing" that would break nearly all contracts and hamstring virtually all development, "will send us effectively back to the drawing board" on the strategy, as well as on personnel and force structure, he warned.

"If it comes about, then the strategy will no longer be current," Schwartz said in the press conference.

Defense leaders have made an unprecedented series of presentations, both to the press and to Congress, about how the 2013 budget ties to the new military strategy, Donley said, in hopes that everyone will perceive the danger posed by sequestration.

"Congress now can see the details [of] how difficult it was to get to $487 billion," he said. "It's very clear that an additional $500 billion on top of [present cuts] would have severe consequences for the nation's security."

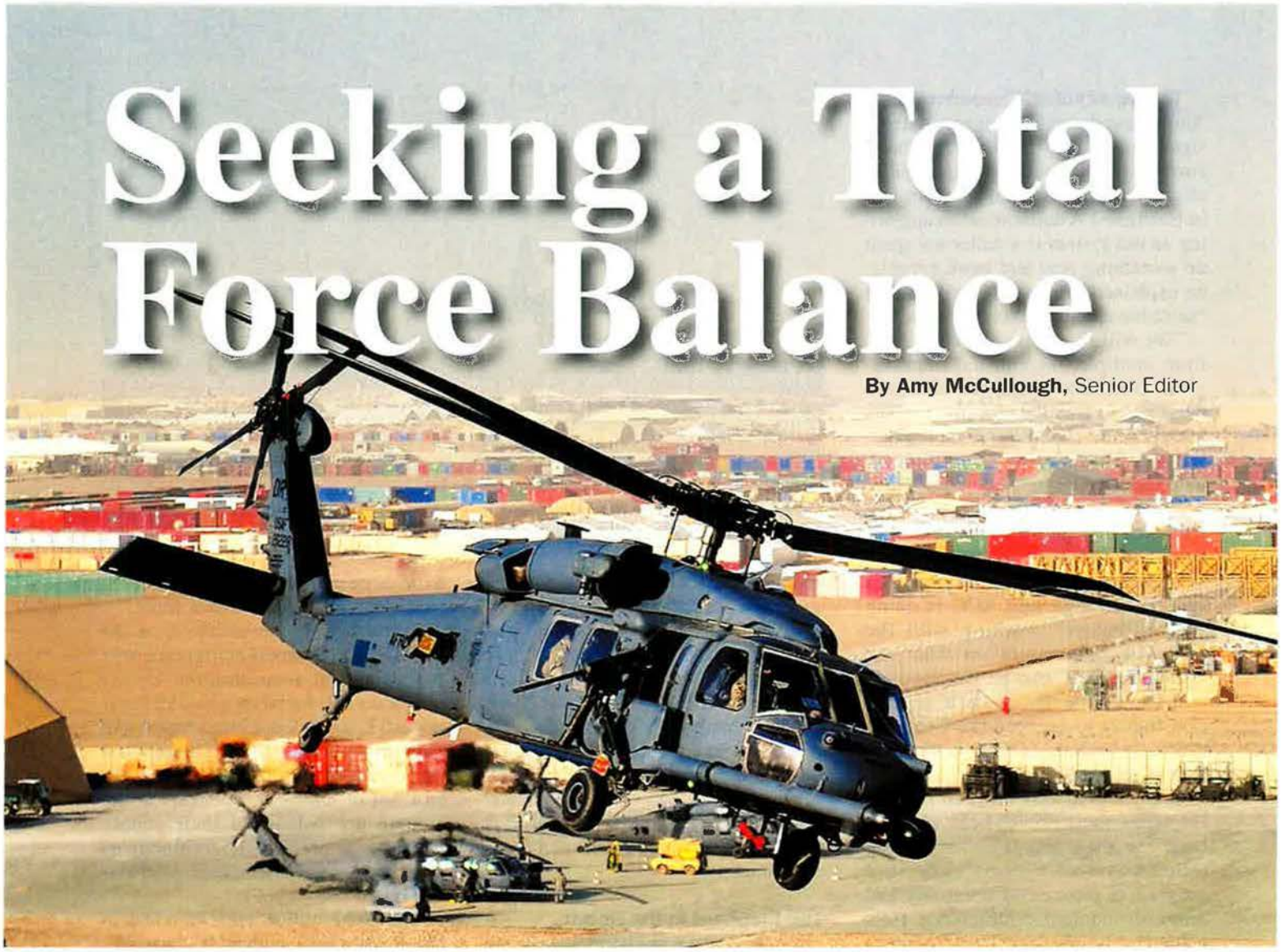
The Air Force is in the midst of a long series of tough choices forced on it. Adding sequestration, said Donley, "would be a disaster." ■

USAF photo by A1C Melissa Goslin

Gen. Norton Schwartz, Air Force Chief of Staff, said at AFA's symposium that the new strategic guidance is air-, and space-, and cyber power friendly.

Seeking a Total Force Balance

By Amy McCullough, Senior Editor



Two decades of continuous military activity in the Middle East have shifted the portion of USAF that resides in the Air National Guard and Air Force Reserve from 25 percent of the Total Force in 1990 to 35 percent today. During the same time period, the proportion of reserve component-owned aircraft also spiked, from 23 percent to 28 percent. These numbers, when compared to requirements, demonstrate that the share of the force resident in the active duty simply can't be cut further without hurting readiness and surge capacity, said Chief of Staff Gen. Norton A. Schwartz at the Air Force Association's Air Warfare Symposium in Orlando, Fla.

But with US forces out of Iraq, a transition under way in Afghanistan, and pressure to drastically reduce defense spending, it is clear something needs to change. "We must restore and maintain an appropriate active-reserve balance that is consistent with current realities and likely future trends," said Schwartz at the February symposium.

With that in mind, the Air Force's Fiscal 2013 budget request looks to retire 286 aircraft—more than 50 percent of which will come from the Air National Guard. It also outlined plans to cut 9,900 personnel, including 3,900 active duty members, 5,100 Guardsmen, and 900 Reservists.

A Changed Model

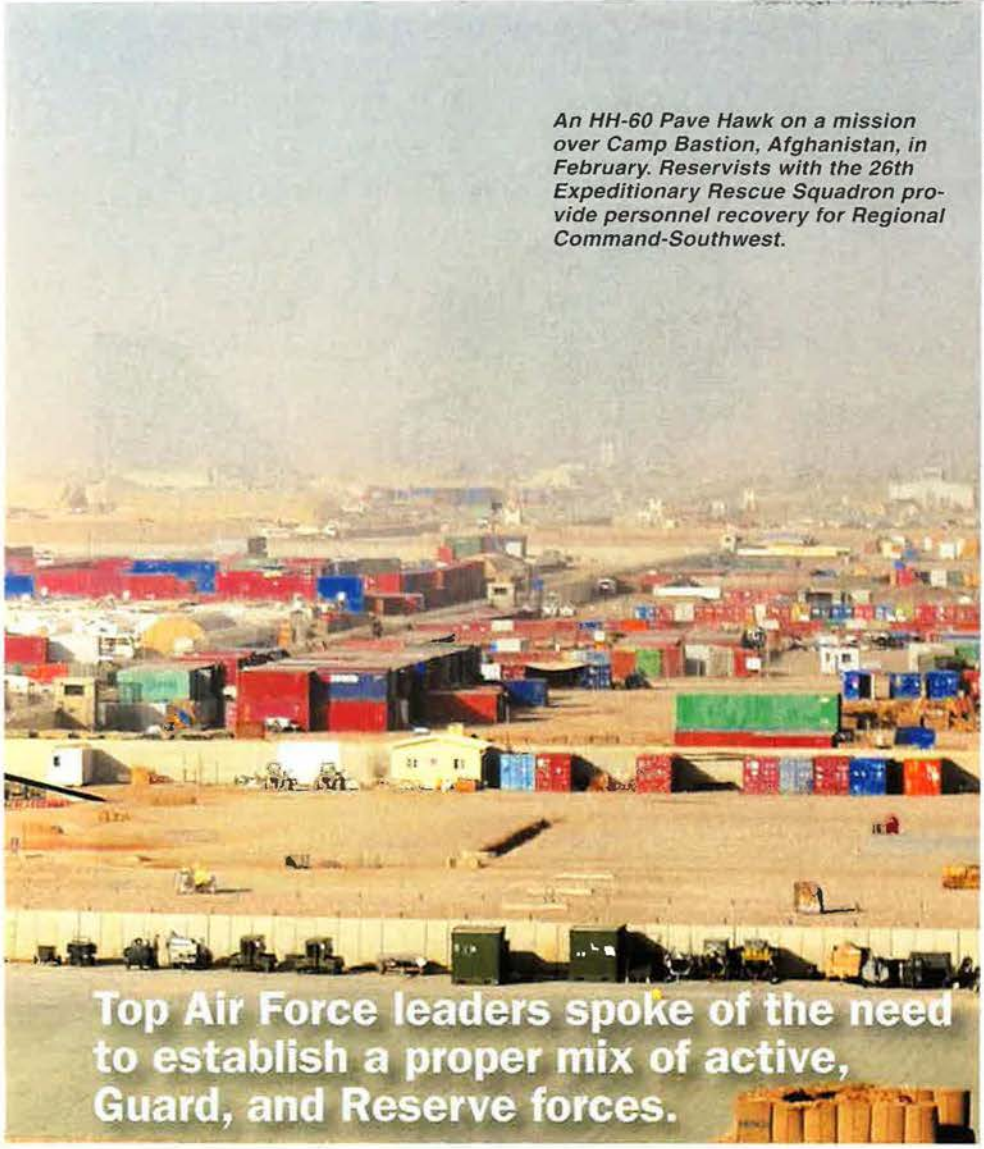
Air Force Reserve Chief Lt. Gen. Charles E. Stenner Jr. said he is not necessarily excited about the challenges that lie ahead but recognizes they will bring new opportunities. He cautioned, though, that a proper and fair rebalance could only occur if mission needs trump the budget axe.

"If you want to go after the budget first, I think you get the wrong answer," he said. "If you want to go after what capability and capacity do we need and what type [of] strategic, operational, rotational, or continuation training we need, we'll get an answer more closely aligned with the requirements that are out there and we'll live within the budget while we do it."

The relative sizes of the Total Force were discussed by several speakers. Gen. Gilmary M. Hostage III, head of Air Combat Command, said that "since the end of the Cold War, Air Force cuts in both combat aircraft and personnel have been disproportionately borne by the active rather than the reserve component," and as a result, the proportion of the force in the reserves is higher than ever.

However, the model for the Guard and Reserve has changed. While once the Air Force was based on "power projection via robust overseas basing," that has shifted to "a model of continuous deployments." Hostage praised the reserve components for repeatedly answering the call, but as employers become increasingly intolerant of extended deployments, "the brunt of these rotational requirements has fallen on our active duty airmen."

As a result, the 2013 budget request makes deeper cuts in the Guard and



An HH-60 Pave Hawk on a mission over Camp Bastion, Afghanistan, in February. Reservists with the 26th Expeditionary Rescue Squadron provide personnel recovery for Regional Command-Southwest.

USAF photo by SrA. Tyler Placie

Top Air Force leaders spoke of the need to establish a proper mix of active, Guard, and Reserve forces.

Reserve to prevent the active duty from reaching a breaking point. Hostage said he has made priorities of keeping the force "resilient" by taking care of airmen and their families but also ensuring the force doesn't become "hollow."

Toward that end, he said, regional commanders will have to tone down their appetites for experts, such as airfield managers, personnel recovery specialists, security forces, and explosive ordnance disposal, contracting, and intelligence personnel, because those career fields are so stressed that frequent deployments leave them "little time to do anything other than train for the next deployment." The Fiscal 2013 request does attempt to soften the blow to the reserve components as much as possible by shifting critical missions, such as intelligence-surveillance-reconnaissance, cyber, and remotely piloted aircraft, from the active duty to the reserves.

For example, the Air Force will stop production and quickly retire the Guard's brand-new C-27J aircraft, which are providing direct support to the Army in Afghanistan today. Schwartz said planners sought to retire entire aircraft types wherever possible, in an effort to save money by eliminating entire logistical, parts, and training support structures. The Spartans, he said, just did not provide any additional capabilities compared to the existing and ubiquitous C-130.

A crew deployed from Pennsylvania ANG's 171st Air Refueling Wing refuels an A-10 over Southwest Asia. The 2013 budget request makes deep cuts in some Guard and Reserve forces.

USAF photo by SSgt. Sara Csurilla

USAF photo by TSgt. Samuel King Jr.

SrA. Gina Esparza from AFRC's 919th Security Forces Squadron fires at moving targets during a prisoner recovery exercise at Duke Field, Fla.

As part of the proposed mitigating efforts, Youngstown Air Reserve Station in Ohio will receive four C-130H2 aircraft. Officials also plan to establish an ISR group at Warfield Air Guard Station in Maryland, to replace its divested C-27s. In addition, the Air Force will move all 42 MC-12 Liberty ISR platforms from the active to the reserve component beginning in Fiscal 2014 and create six additional Predator and Reaper remote split operations elements, according to budget documents.

"As we do the drawdowns laid out in the [President's Budget] 13, we have the challenge of not only accomplishing that rather rapidly, but also we have to transfer into some of the new missions we've been given," said ANG Director Lt. Gen. Harry M. Wyatt III.

"By not doing salami slices to improve budget bogies," the Air Guard will be able to "look at those emerging capabilities that the Air Force expects the ANG to do, divest those capabilities that are subset missions, or are a lower priority, and [dedicate] our resources to those missions we think we will be enduring."

Maj. Gen. Brett T. Williams, director of operations in the Office of the Deputy Chief of Staff for Operations, Plans, and Requirements at the Pentagon, said the Air Force hopes to take advantage of some "tremendous capability" in the Guard and Reserve in new areas, such as ISR and cyber. However, he acknowledged that will require a slight shift in culture for both the military and Congress.

Williams said it can be difficult to explain to politicians who are used to seeing aircraft sitting on the flight lines in their congressional district that a new intelligence group or an RPA mission can be just as vital to national security, if not more so, than the traditional flying mission.

Emotion Is Not Bad

"There is a dynamic there that is hard to work through," said Williams. Indeed, almost every governor and Guard adjutant general immediately came out in opposition to the plan, saying it disproportionately targets the Guard for reductions that will damage their ability to perform their state and national security missions.

The key to all the force structure changes will be maintaining the emotion and passion that fuels debate without creating schisms within the Total Force.

"I've been witness to a number of very emotional discussions. Emotion is not bad; it represents passion. And I can tell you that all of my compatriots in the Air Force Reserve and the Air National Guard are extremely passionate about maintaining this capability and sustaining us for the long haul," said Williams.

Schwartz said even though there

Training in Trying Times

The Air Force hopes to overcome a shrinking pool of training dollars through increased use of virtual reality, simulations, and gaming, said Gen. Edward A. Rice Jr., head of Air Education and Training Command. With fewer flight hours and smaller exercise budgets for training, "we won't have the resources in the future to do business in the same way that we've done it in the past," said Rice in February at AFA's Air Warfare Symposium in Orlando, Fla.

Training resources should prove sufficient—but only if the force begins training in "different" and increasingly virtual ways, he said. Rice believes the sim revolution, while driven by budgetary constraints, holds unique promise for training the new generation of "tech savvy" airmen. Raised on computer games and handheld electronics, today's recruits are "at home with technology," often gleaning more from game-style self-paced learning than from technical manuals.

Rice noted that 63 percent of the active duty force today is part of this "millennial generation" of airmen, whom CMSAF James A. Roy referred to at the symposium as "digital natives."

Young airmen today are both battle-hardened and tech savvy, said Roy in his presentation. They "know new technology, how it works, what it should look like, and how it should interact."

As a result, Air Force efforts such

wasn't always complete agreement, Pentagon leaders worked side by side with the Guard and Reserve to make the necessary tough calls.

That unity was prominently on display in late February, when Schwartz and Air Force Secretary Michael B. Donley traveled to Capitol Hill to discuss the service's budget. Wyatt and Stenner sat directly behind them in a show of support as Donley and Schwartz explained the cuts to the reserve components to the House Armed Services Committee.

"If we go across the river to Congress and people perceive that there are fissures between the active, the Guard, and the Reserve, they are going to take advantage of those and at the end, other people are going to decide the best way for us to structure the force for the long term," said Williams, at the AFA conference, days before the Total Force leadership appeared before Congress.

One way the Air Force intends to shape its own future is through an increased number of associations. There already are 100 Total Force Integration associations that cover a variety of weapon systems, such as F-16s, C-130Js, and MC-12Ws. Associations also are used in functional areas, such as RED HORSE, security forces, and intelligence.

Because such partnerships "have been invaluable," Schwartz said the Air Force will add active associations at all Air Force Reserve Command fighter locations. That means AFRC will own the fighters and oversee the mission, but will work together with active duty counterparts that set up detachments at the Reserve locations.

Forced Marriages

Air Mobility Command also intends to establish additional classic associations. In classic associations, the active duty owns the aircraft and the mission and partners with either the Guard or Reserve. These associations will be established at all future KC-46 units in the continental United States.

"We will continue to explore additional opportunities for associations in order to enhance operational synergies, improve access to aircraft and total rotational capability, add capacity during surge operations at reduced cost, leverage experience and improve retention of valuable human capital—and above all, increase Total Force combat capabilities and effectiveness," said Schwartz at the symposium.

Many of the Air Force's existing associations were created under the 2005 Base Realignment and Closure agreement. Although the "best available information" was used at the time to assemble the partnerships, Wyatt said for the most part they were just "forced marriages." Things have progressed significantly since then, he said, and now both the Guard and the Reserve welcome the new constructs as they attempt to maximize resources and limit costs.

"I think you will continue to see the morphing, or evolving, of these capabilities to get exactly the right maintenance mix, exactly the right operator mix, exactly the right support mix," said Wyatt. There are a lot of opportunities for effectively integrating the active,

as making digital materials available to airmen—and even going as far as replacing mobility aircrews' flight bags with tablet-style computers—have been very successful. The difference can also be seen along the flight line. "We have airmen who are using this equipment, using laptops and other devices, out on the airfield doing aircraft maintenance," Roy said.

To cut costs and keep pace with airmen who "learn very differently than our previous generations," though, the Air Force needs to pick up the pace, specifically targeting greater use of gaming-style tools, added Rice.

Combining technology with the capability of today's airmen, he believes AETC may even be able to cut flight hours needed for undergraduate pilot training. Given the fidelity of the virtual cockpits available today, he believes the number of actual sorties students fly could be "significantly reduced," saving time and expense. With the computing power and graphics already on the market, "this isn't about inventing something new, it's about taking advantage of what is already out there," emphasized Rice.

Even using currently available technology, not every training task demands the same level of sophistication—meaning the Air Force must invest shrewdly and where it counts. AWACS crews and air traffic controllers, for example, may require much less graphical complexity. In many cases, the Air Force must "resist this urge to live on the leading edge," said Rice. "We can't afford to pay for what we don't need," he stressed.

"Simulation is going to be a big part of how we balance the budget," agreed Lt. Gen. Charles E. Stenner Jr., commander of Air Force Reserve Command, in remarks at the symposium.

On the flip side, virtual environments must remain abreast of the "real world" to faithfully provide valuable training. Whether an airman is working at a duty desk or in a combat cockpit, the technology must seamlessly evolve with changes to systems and protocol. "You have to have a system that's completely concurrent and represents whatever the live system is," said Maj. Gen. Brett T. Williams, operations director in the operations, plans, and requirements directorate on the Air Staff.

Advanced developmental weapons such as the F-35 strike fighter have constantly changing specifications, procedures, and capabilities. The F-35 is undergoing development at the same time that aircrew and ground crew training is occurring at Eglin AFB, Fla. This is a steep challenge, admitted Rice. "We're going to have to be very intentional" to keep the virtual training environment realistic and effective, he said.

Training is an enabler and a force enhancer, not an area that can be cut in a misguided effort to save money. In terms of manpower, "we're the smallest Air Force since our inception," said Rice, underscoring that the range of missions—notably in the space and cyber domains—"has not shrunk, and it's increased." In addition to more training in a replicated environment, "each airman now must be able to do more than the airmen of the past"—something he believes is reasonable given the level of talent today's airmen possess.

Airmen are "fully capable of multitasking" and to make the best use of manpower, "we need to take advantage of that," said Rice. A practical example is the recent consolidation of the role of navigator, weapon system operator, and electronic systems operators into a single job. "We've collapsed all that into one training pipeline." Now "one individual can do what three could do in the past," he said.

"When I combine these magnificent young people with all of their capability with new tools, it presents a wonderful opportunity to think differently about how we help them develop as airmen," he added.

If the Air Force hopes to excel in a growing number of missions with fewer resources, airmen will be called upon to take up the slack with broader skills and flexibility—things the service must equip them to deliver, Rice concluded.

—Aaron M. U. Church

USAF photo by MSgt. Jeffrey Allen

North Carolina Air National Guardsmen with a C-130 deployed from the Illinois ANG prepare for a mission at Bagram AB, Afghanistan.

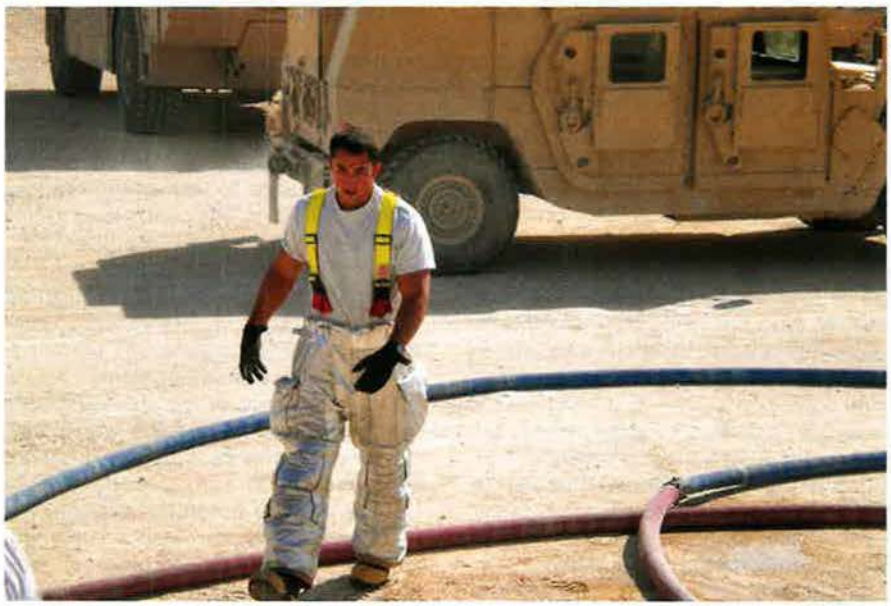
Guard, and Reserve components through associations, he said.

Stenner said unlike before there is no expectation to change cultures just because an association is formed. The only requirement is trust, he added.

"We did some things at Hill [AFB, Utah], where we took airplanes away from the reserve component and said, 'Associate with the active piece. Go forth and prosper; all will be good,' " he said. "It takes some time. It takes a significant amount of time to go through a period of grief because you just lost airplanes, you lost a mission. Things change."

He cited the standup of the F-22 at JB Elmendorf-Richardson, Alaska, as the perfect example of how associations may work in the future. There were no F-22s at Elmendorf before the association stood up, which meant commanders didn't have to worry about blending cultures. Instead, they could start fresh, knowing exactly what the ground rules were and what needed to be done to succeed.

"That, I think, is what we are now doing, ... relooking at everything we've done. We didn't get it all right in every case. We probably got it wrong in every case," said Stenner. "But they are adjusting and adapting and understanding where each other lives and breathes and walks [and] how we all grew up in our separate cultures. There is nothing wrong with that. We need to leverage that, use the strengths of those cultures, and then get on with business."



USAF photo

SrA. Darius Dobbs, a firefighter deployed to Southwest Asia from AFRC's 940th Wing, lays out hoses under the the hot desert sun.

Of the 100 existing Total Force associations, there are only two between the Guard and Reserve. One is at Tinker AFB, Okla., and the other at Niagara Arpt./ARS, N.Y. Though originally doubtful that such pairings could be successful, Stenner said he has been pleasantly surprised at the synergy that has developed.

"It too became a very workable and highly functioning entity because of the experience base that existed at both of those locations, so there may be the opportunity [to do more], but we need to think that through very carefully because the key is, we would both be at the same location, dipping in to the same demographic for the same talent pool."

Schwartz said because of the return on Air Force investments, such as associations, the service is more ready and more capable of meeting surge and rotational requirements.

"There is no doubt—none at all—that our investments in the reserve components were, and remain, smart and essential investments," Schwartz said. ■

Photo by Katsuhiko Tokunaga

An F-22 on the flight line at Kadena AB, Japan.

Raptors for the Long Haul

The Air Force and Lockheed Martin have a plan to make the most of the F-22 fleet. As always, money will be an issue.

By the end of next month, the last F-22 Raptor built—tail No. 4195—should complete final checkout tests, take off from Lockheed Martin's plant at Marietta, Ga., and fly to its new home at JB Elmendorf-Richardson, Alaska. Lt. Col. Paul D. Moga, once Air Combat Command's F-22 demonstration pilot, and now commander of the 525th Fighter Squadron at Elmendorf, will fly it there.

As that last delivery flight takes place, the Air Force will confront a long list of challenges with its fully deployed F-22 fleet. Contentious basing issues seem to have been ironed out, but the F-22 modernization and upgrade budget has been halved, compelling the service to be far more selective about Raptor improvements.

The flying hour program is changing, too, because the fleet is not racking up hours at predicted rates—so much so that fleet managers don't think the F-22 will need a service life extension program. Meanwhile, the Raptor's production tooling is being retained against the chance that defense leaders have guessed wrongly in the new national military strategy and that more F-22s may be needed.

The factors underlying the strategic pivot toward the Middle East and the Pacific, called out in the new military strategy, seem to favor further investment in the F-22. Both regions present a range of medium- to high-end threats, including anti-access, area-denial scenarios (A2/AD) and near-peer military allies.

The F-22's stealth, speed, and lethality make it indispensable for both regions. Defense leaders clearly think so: Raptors have repeatedly deployed to the Middle East and Pacific for training and exercises.

With the new strategy comes a new austerity, however. The Air Force's entire modernization program is at risk, and only a few projects have been walled off from reductions.

Air Force Secretary Michael B. Donley assured Congress in 2009 that while the F-22 buy was being truncated at 187 aircraft, the service would invest some $7 billion into F-22 improvements over the ensuing five years. The menu included everything from data links and connectivity with other aircraft to weapons. As the budget has come under duress, however,

By Marc V. Schanz, Senior Editor

Photo by Katsuhiko Tokunaga

Raptors bank off the coast of Japan. The F-22's stealth, speed, and lethality make it indispensable against threats in the areas emphasized in the new national security strategy—the Pacific and the Middle East.

the dollar value of the F-22 improvement program has plummeted. In recent months, senior officials have said it will be just $3.5 billion over the Future Years Defense Program.

In January, an Air Force spokeswoman said the service expects to have the results of a "should-cost" analysis of the F-22 program by October. Then-Air Force acquisition executive David M. Van Buren first announced the review in June 2011, when he confirmed F-22 investment would decline by about $3 billion, due to the deferral of some content, such as the data links.

Some ACC officials, however, think the $3.5 billion number itself is probably unrealistic, especially in light of the planned USAF force reductions and spending guidance from Congress. In Fiscal 2013, $808.4 million is requested by USAF for the F-22 program, down from $916.4 million in Fiscal 2012. The money is slated for key upgrades and improved maintainability and reliability projects.

Maj. Russell Hall, ACC F-22 program element monitor, said the next budget—the Fiscal 2014 plan—is already making its way through the approval process and should include many F-22 upgrade efforts. However, the improvement program has shaken down to a few discrete groupings.

The Increment 3.1 upgrade for the F-22 fleet began fielding and undergoing evaluation last fall and includes ground-mapping synthetic aperture radar modes, electronic attack capabilities, electromagnetic emitter locators, and integration work with the GBU-39 Small Diameter Bomb.

The next phase—Increment 3.2—is now split into two parts, with the first to come in Fiscal 2014 and the second by Fiscal 2017, Hall noted. Increment 3.2 Alpha "is on track. ... It's a good news story," he said, noting the "Alpha" part of the upgrade is primarily software driven.

Beyond Traditional Roles

The second part, 3.2 Bravo, will cost more, Hall noted. It includes a suite of improvements to targeting, jamming resistance, and ground collision avoidance electronics and full compatibility with advanced AIM-120D AMRAAM and AIM-9X air-to-air missiles.

"We're looking at aircraft being modified with 3.2 Bravo in the 2017 timeframe," he said, but that date has slipped. "It used to be 2012, [then] 2013, 2014, [but] it's been funding realities and changing budget targets."

The content of future "3.3" Raptor upgrades is still being hashed out. Among the leading candidates are side-mounted active electronically scanned array (AESA) radar and helmet-mounted cueing systems. Much will depend on out-years funding and the results of the should-cost review, which is ongoing.

More immediately, all tails in the F-22 fleet after Lot 3 will be brought up to the same Block 30/35 configuration—essentially with all the capability resident on the last one off the line. The earlier aircraft, called Block 20, were used for test and are now the designated training aircraft. Although they have combat capability if needed in a pinch, they will not be brought up to the Block 30/35 configuration. However, all F-22s will be tracked by tail number and receive tailored depot maintenance to ensure they live out their full planned lives, and then some.

Asked if the F-22 will need expanded data links, Hall said, "The short answer is yes," since these connections will permit the Raptor to better gather, process, and pass along valuable intelligence, surveillance, and reconnaissance.

As the Pentagon and Air Force emphasize capabilities to deal with anti-access, area-denial threats, the Raptor appears to be headed for a future where it will be asked to perform beyond its traditional role of air dominance.

However, Hall offered the caveat that "the F-22's mission is currently air dominance. It is not an ISR platform. But it has unique attributes in its integrated sensor suite, which allows it to get closer [to an A2/AD fight] than a JSTARS," for example.

Specifically, in high-threat scenarios, Raptors are uniquely able to gather electronic intelligence (Elint), and the Air Force wants to improve ways for the fleet to distribute that information through a network.

"We are looking at different things that we could do to enhance our ability to pass that Elint data to organizations that can process it," Hall added. The bottom line is still funding. Data links for the combat-coded fleet are being explored; they would need to connect fifth generation sensor data to fourth generation platforms. Today, the F-22 cannot transmit much of its vast sensor take.

Air Combat Command, in a statement, said that it remains "committed to maintaining air superiority with fifth generation fighter capabilities." Maneuverability, survivability, advanced avionics systems, multirole capabilities, and stealth offer national leadership the ability to hold "any target at risk anywhere in the globe," ACC added.

Over the next year and a half, the Raptor fleet will consolidate at just four main locations, as Holloman AFB, N.M., loses both its Raptor squadrons and transforms into an F-16 training hub.

By the end of 2013, the last remaining F-22s at Holloman will move to Tyndall AFB, Fla., where two full squadrons will operate—one combat-coded and one for the training schoolhouse, explained Hall. The combat-coded fleet will by then have bedded down with two squadrons each at JB Langley-Eustis, Va., and Elmendorf and one at JB Pearl Harbor-Hickam, Hawaii (the Air National Guard's 199th FS, which will partner with the active duty 19th FS in an active associate arrangement). This setup, service officials say, will save on infrastructure and operational costs.

ACC planners have examined the possibility of a service life extension program (SLEP) for the fleet in the Raptor's out-years, but so far deem it unnecessary. The F-22 was designed for an 8,000-hour service life; options for a SLEP that would get the Raptor to 10,000 or 12,000 hours have been explored, Hall said, but the cost would be high.

"We don't think we are going to need to go there, based off current use and flying," he said.

Because of the limited number of F-22s and anticipation they would have to train frequently and be a central element in most exercises, Raptor managers worried that the type would be worn out before its time. They began to take steps to reduce Raptor hours; these included supplementing pilots' reduced F-22 time with flying hours in a T-38 companion trainer as well as heavier simulator use and other substitutes.

USAF photo by MSgt. Carlos Claudio

L-r: SSgt. Greg Wills, A1C Darby Ryan, and SSgt. Christopher Stacklin inspect a universal ammunition loading system for a Raptor at JB Langley-Eustis, Va.

The 75 Percent Solution

However, due to funding realities and other factors, this approach is somewhat old news now, Hall noted.

"That was certainly valid thinking, ... but the reality is ... we are not achieving those hours that we thought we would," he said. As operations and maintenance budgets have tightened, so have flying hours. While this has driven greater simulator use, it's no longer for the sake of reducing hours on the aircraft.

Moreover, the F-22s were grounded for several months last year as engineers grappled with a purported problem in the fighter's onboard oxygen-generating system. The grounding lasted so long that pilots lost their proficiency in the type. While there was a surge in flying once the Raptor was cleared to fly again, the hours not flown have effectively extended the aircraft's operational life.

The delivery of Raptor 4195 also spells the end of a massive technological and industrial enterprise.

The Advanced Tactical Fighter program was launched in the mid-1980s and saw two industrial teams compete in a flyoff that pitted the Lockheed, General Dynamics, and Boeing YF-22 against the Northrop and McDonnell Douglas YF-23. The Lockheed-led team was selected in 1991.

At program peak, between 2004 and 2005, about 900 Lockheed Martin employees worked the company's Marietta F-22 line, according to Jeff Babione, Lockheed Martin F-22 program manager. A further 5,000 workers performed primary fabrication and assembly at locations across the country, he noted, and thousands more worked for subcontractors.

Early on, the F-22 program was intended to yield 750 fighters; at that, it would have replaced F-15s, F-15Es, and F-117s. However, the size of the buy dwindled until, in 2009, with no peer competitor fighter revealed, the Raptor line was capped at 187 aircraft. Then-Defense Secretary Robert M. Gates derided the F-22 as an "exquisite" capability in an era when the US could only afford a "75 percent solution."

Air Force officials previously acknowledged a need, based on numerous studies, for 381 F-22s, but acceded to Gates' insistence on a more affordable program and a shift in emphasis to the more multirole F-35. In doing so, they also admitted, however, that the absence of 200 Raptors from their plans would be a calculated risk for the nation's military strategy at the time, which called for forces able to conduct two wars simultaneously.

In a June 2009 letter to Sen. Saxby Chambliss (R-Ga.), then-head of Air Combat Command Gen. John D. W. Corley said that while 381 Raptors would deliver a tailorable package of air superiority to combatant commanders, a fleet of 187—in his opinion—would put execution of the current military strategy at "high risk" in the near to medium term.

Since then, the Air Force has retired some 250 tactical fighters from its fleet and has requested the retirement of a

further 120. The emphasis on multirole aircraft is one of the reasons why senior USAF leadership strenuously defends the F-35 in public statements, noting its fifth generation attributes make it the only feasible partner for the F-22 against advanced threats.

DOD's most recent national security strategy also largely abandoned the need to fight and win two nearly simultaneous major theater wars. A less intensive strategy of winning in one location while holding the line in another is expected to be less resource intensive.

Many of the F-22 workers have now migrated to other programs, on the company's F-16 line, its C-5 upgrade work, and F-35 assembly in Fort Worth, Tex., Babione noted. The F-35, despite its protracted development, enjoys vigorous congressional support, and Pentagon leaders recognize the fighter is the sole fifth generation option for the continued modernization of American military fighters.

The Raptor has left a strong legacy of lessons learned, Babione said. Because the F-22 was the first fifth gen fighter, "we pioneered some skills that were never done before, and that has been good for the assemblers to go work [on the] F-35."

The F-22 proved a pathfinder in stealth coatings and technology over the years, he noted, and on how to design and build a fifth gen aircraft.

"It's a great skill in high demand," he said. While Lockheed Martin needs the knowledge gained on the F-22 to make the F-35 a success, the Air Force needs the workers' skills to help maintain the F-22 fleet's low observable coatings. This work will likely continue for years to come.

The F-22 program office at ACC emphasizes that the Raptor's maturation is not dependent on the F-35's progress.

"The F-22 ... is completely independent of the F-35 program," Hall said, noting that the incremental upgrades and modernization path slated to run into the 2020s have been in place for years, dating to when the Raptor roadmap was devised. He also observed there won't be another fifth generation aircraft in the fleet for quite a while.

"The F-22 is going to fill a gap in this decade," Hall said. It is "ready ... and ... capable of it." The F-22 will bear a heavy burden in achieving air dominance and takedowns of strategic air defenses, which the current configuration can accomplish. Air Force officials appear to agree, pointing out that the two fighters are complementary, but while each is optimized for their respective air-to-air or air-to-ground missions, both have "multirole capability," an ACC spokesperson said.

In addition to capability enhancements, Lockheed Martin emphasizes maintainability.

"We have continued to focus, from first to last, on increasing the reliability of the aircraft," Babione said of the difference between earlier Raptors and the later models. The ease of sustainability and maintainability of the F-22 steadily improved to the end of the line, and he noted the program office and USAF continued to upgrade maintenance practices on subsystems, generators, avionics, hydraulics, and other components.

"The [standard] requirement is that the mean time between maintenance is three hours or greater," Babione said, adding the last aircraft from the line have regularly exceeded this benchmark—and some are well above it.

There are some persistent maintenance issues, but USAF and Lockheed Martin officials believe they are well-understood and progress is being made. ACC officials noted the F-22 is no longer experiencing large sections of low observable (LO) coatings stripping from the canopy in-flight. The current LO system mean time between replacement is some 250 flight hours, according to ACC, but a new system is due in the fleet this year and will raise this number to around 400 hours.

Resiliency of the LO-coated canopy is another issue; the requirement states a mean time between replacement of about 800 flight hours, but ACC states technology to support external transparency on high-performance aircraft is "not available at this time." There are enough canopy spares available for peacetime and contingency operations, an ACC spokesperson said.

Still Relevant

While the line has ended, the Air Force has pointedly invested in preserving the infrastructure and tooling, which has steadily been disassembled over the last year and a half, Babione noted.

Lockheed Martin has identified some 30,000 tools USAF and the company would like to preserve, not only at Marietta but also among suppliers. Tools from the Marietta facility are being stowed away—shipped to the Sierra Army Depot in California—in a process concluding around June, Babione said. Components are being cataloged and tagged with RFID (radio frequency ID) indicators, he said, and hours of video interviews have been conducted with mechanics and workers to record valuable information on how to fabricate some of the Raptor's parts.

"All you have to say is, 'I want to build a wing skin' [and] the tools you need ... are in [a certain container]," he explained. Even components that have never been fixed are being itemized and cataloged.

The effort and expense is indicative of how much USAF wants to preserve the option to ramp up the capability in the future, for unforeseen circumstances—called "reversibility" by senior USAF and Pentagon officials.

The Raptor's future is still being updated and tweaked, as planners in the Pentagon scrub budgets for savings. However, the fighter's relevance seems mainly undiminished, given that USAF seeks to trade force size for quality.

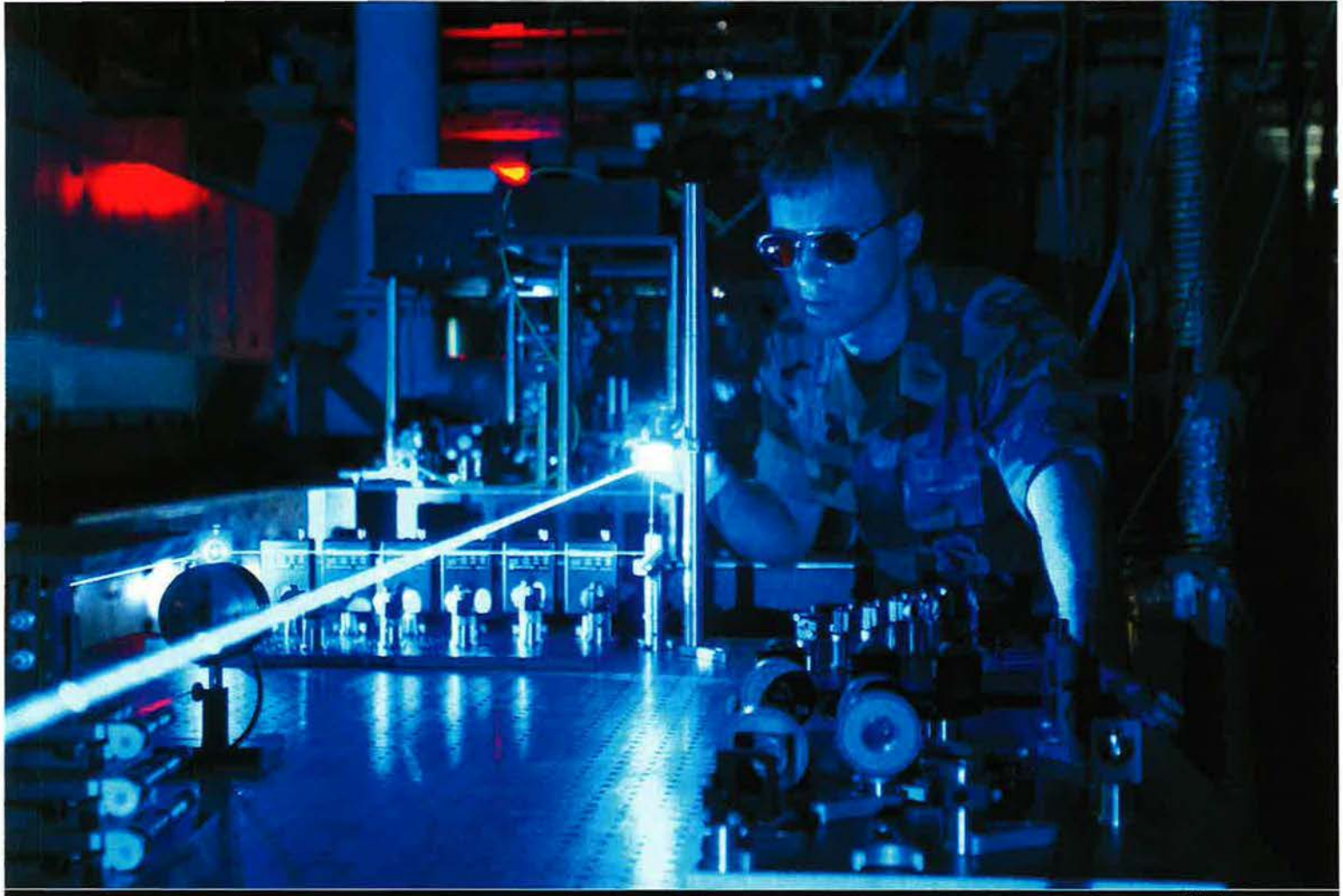
While the F-22 has been a star in exercises where it has racked up a hugely lopsided number of air-to-air victories, a cloud hangs over its horizon in the form of an unresolved technological glitch. The fleetwide grounding was due to an apparent problem in the onboard oxygen-generating system (OBOGS). A number of F-22 pilots reported problems that suggested some degree of oxygen deprivation.

The bleed air system which drives the OBOGS was also a contributing factor to the November 2010 crash of an F-22 in Alaska that claimed the life of the pilot.

A series of investigations into both the crash and the larger oxygen-supply issue has not provided much clarity. The F-22 fleet was ultimately cleared to resume flight with additional safety precautions even though there was no definitive resolution of the problem.

The final Air Force accident investigation report on the Alaska crash laid blame on the pilot for not reacting quickly to air supply problems, but acknowledged equipment failures as well. The Pentagon inspector general, in a rare action, decided in February to review the accident board report and conclusions.

That wasn't the only study of the problem still ongoing at press time. In late February, USAF officials said the Air Force Scientific Advisory Board task force did not find a "smoking gun," but the service will implement a series of fixes. Foremost among them, a backup oxygen system will be reinstalled (the initial system was axed years ago in a weight-cutting drill during development), software fixes will be applied, and new oxygen sensors installed. The final report from the SAB task force was expected in March. ■



AFRL photo

Laser Horizons

Functional laser weapons are just five years away. Advocates hope that won't always be the case.

By John A. Tirpak, Executive Editor

The Air Force has been working on airborne laser weapons for more than 40 years, but a fielded system remains elusive. Experts also warn that the US does not enjoy a commanding lead in laser research. And the Air Force's flagship laser weapon program, the Airborne Laser (later called the Airborne Laser Testbed) was terminated late last year and is now being dismantled.

Still, service and industry experts predict there is plenty of reason for realistic optimism. Operational laser systems that can perform a variety of destructive missions are not too far off, these experts insist, but they will likely be complementary to USAF's kinetic weapon inventory, not a substitute for it.

The Airborne Laser was to be the prototype for a small fleet of aircraft that would fly outside enemy borders, ready to shoot down any boosting ballistic missiles.

The ABL project lasted 16 years and cost more than $5 billion. In the end, a series of tests proved the 747-based system could, in fact, spot, track, lase, and destroy a ballistic missile target at beyond visual range, but it was deemed by Pentagon leaders too expensive and impractical to progress to an operational system.

Another program, the Advanced Tactical Laser, mounted on a C-130 transport, proved a laser system could be effective against certain ground targets, such as antennae and light vehicles. It too has been shelved.

Both the ABL and ATL used chemical lasers, which, though able to produce high power in the megawatt class, proved cumbersome to operate because of the large quantities of chemicals consumed and the extensive and heavy plumbing they required.

The developers are well aware of a perception that laser weapons are science projects and point to significant developments and new approaches. For airborne applications, the Air Force has shifted its attention to solid-state, electric, or fiber lasers, depending only on electricity that can be generated from an aircraft's engines.

However, unlike the megawatt-class chemical lasers, the other types are currently limited to a lesser punch, having

produced up to 150 kilowatts' worth of laser power. These levels are considered tactically relevant, though, and prospects are good that power can be increased in the future.

The ABL was not a dead end with no payoff, according to Lt. Gen. Ellen M. Pawlikowski, commander of USAF's Space and Missile Systems Center at Los Angeles AFB, Calif. Pawlikowski was previously the ABL program director for five years and later oversaw the program as commander of the Air Force Research Laboratory.

"We learned a lot" with the ABL, Pawlikowski observed, particularly with regard to pointing and directing lasers and handling them safely. The ABL was also a hothouse of development that encompassed everything from thermal management to packaging to software. None of that will go to waste, she said.

"The whole ability to keep the laser beam on the spot that you want to fire at was nontrivial," Pawlikowski asserted, noting that the front end of the ABL involved "over a hundred different optics pieces that all were unique."

Other key enabling results from ABL included learning "the effects of the atmosphere, the turbulence, and ... the effect that had on the laser beam." The ABL demonstrated it could gauge and compensate for atmospheric turbulence so that the beam would remain coherent and focused over long distances.

Another ABL by-product was "lethality measurements," Pawlikowski said.

"We explored the effect of the [chemical oxygen-iodine laser] on lots of different materials, so that we could understand just how effective that laser could be," she said. Studies were done on reflective and nonreflective surfaces of various thicknesses and materials to calculate their vulnerability to laser fire.

The various disciplines necessary to get the ABL to successfully shoot down ballistic missiles will be applied to the next generation of laser weapons, she said.

"Directed energy and laser weapons will have game-changing capability in the future of combat operations," said Col. Joseph M. Skaja Jr., head of electronic warfare and directed energy requirements for Air Combat Command. "Unfortunately, they aren't ready for prime time yet."

ACC's priorities for lasers will be in their applications to "survivability, our situational awareness, and our lethality," Skaja said. The command is also looking for various effects on the sensors of the munitions that would be launched against Air Force aircraft, he added, entailing "blinding" sensors or otherwise affecting them to make weapons ineffective.

Lasers will be able to enhance situational awareness by providing information about other aircraft, Skaja said, offering an ability to scan an enemy and determine an aircraft type at a distance. Eventually, USAF will field a radar-type laser, which will allow for ground mapping and targeting without emitting radio frequency energy—a plus for remaining stealthy.

The Air Force is thinking about lasers that could deliver destructive force on enemy aircraft or even on ground targets, but Skaja said those capabilities are not near-term.

Crawl, Walk, Run

With the demise of the ABL, the new Air Force flagship laser program is called the Demonstrator Laser Weapon System, or DLWS. It is a collaborative effort of the AFRL and DARPA, the Defense Advanced Research Projects Agency. The demonstrator will be "a lead-in to future laser applications on aircraft," Skaja said.

The DLWS is "just the laser," not a packaging concept, which will come later, he said. It is a solid-state laser in the 150 kw class.

"Once we get the laser capabilities where we want, we'll have to get the size, weight, and power issues to determine which aircraft it will fit. Obviously, it's easier on a large aircraft, than to miniaturize everything and put it on a smaller aircraft." That is the sequence the development process will take. After ground testing, the DLWS will be packaged and mounted on a B-1 bomber, though it is not the objective platform for the capability.

Long term, the Air Force is eyeing a system that could be mounted in a pod, then hung on a variety of platforms ranging from small remotely piloted aircraft all the way up to bombers. However, no provision is being made in any USAF airplanes for this goal.

"There are currently no plans to plumb a laser system onto the F-35" fighter, for example, Skaja said. "We are still very much in the 'crawl' stage of the 'crawl, walk, run' profile laser path. ... We have to put a laser on an aircraft to make it work before we could even hope to miniaturize it to put it on a fighter-size aircraft."

Northrop Grumman, however, has suggested that the F-35B version could be adapted to a laser weapon platform, according to Dan Wildt, vice president of the company's directed energy systems division.

Wildt said the space behind the cockpit occupied by the F-35B's lift fan—which allows for short takeoffs and vertical landings—could be filled with a laser.

Considerable power could be supplied by the aircraft's F135 engine, he said. The engine generates more than 40,000 pounds of thrust and power would be supplied "off the drive shaft," which normally connects the F135 to the lift fan, making for a ready-made laser platform, Wildt said. The proposal is, for now, company-funded.

Fiber lasers would be a natural for a fighter application, he added. They generate low-wattage power but can be bundled to deliver more power. Given that fiber lasers are lighter, smaller, and give off far less heat than most other types, "that's probably where fiber lasers will find their niche," he predicted.

The big technology push with fiber lasers is to get them to function "coherently," Wildt said, meaning they all produce at the same wavelength and in a way that multiplies their power. Conceptually, this can be seen in how a single powerful flashlight generates more intense illumination than a dozen weak flashlights all focused on the same spot.

Skaja said the B-1 demonstration should take place in the next few years, and USAF doesn't have a definitive timeline.

Although the Air Force has not "ruled out" the use of chemical lasers in a future airborne system, the technology's current cost, weight, and complexity make it a low priority for the near future, Skaja said.

That's not to say that chemical lasers won't have significant possibilities within the next decade. Pawlikowski noted that in a ground-based application, where weight and size are far less of an issue than they are on aircraft, megawatt-class chemical lasers could be highly useful in a ballistic missile defense system or for air base defense.

Air Force budgets for operational laser weapons will be small for a while, Skaja said, as technologies shake out and the art of the possible is determined.

"We are heavily involved in developing the right programs with our science and technology partners to make sure that our priorities are being pursued by the research labs," he said. Not a lot is budgeted in programs of record, but ACC is ensuring its priorities are known by AFRL and DARPA, so "they can invest their research money appropriately," he added.

A snide joke circulates through the laser weapon community: Laser weap-

Boeing photo

The Advanced Tactical Laser system aircraft—a modified C-130 transport—proved a laser system could be effective against certain ground targets, but has been shelved.

ons are only five years away—and always will be.

Skaja chuckled at the joke and admitted in the past, there have been some promises on laser capability, notably with the ABL and its probable service dates that "kept slipping and slipping," and as a result, skepticism mounted.

"One of my jobs" at ACC, he said, "is to make sure we temper the laser zealots with the reality of when a laser will be applicable on an airplane. There is a huge difference between making a laser work and making a laser work on an airplane."

Though he believes the Air Force will get there, "we have to not overpromise either the time frame or the capability. We have to let the technology develop appropriately."

He added that he doesn't believe the Pentagon or Air Force leaders are "overexpecting things" in the laser realm. "They want the laser and directed energy capabilities to move forward, and I think we've got a good plan and the senior leadership has been involved in the plan we've developed."

Wildt, however, took some minor umbrage with the five-years joke. In the past, there have been a number of laser weapons that could have been deployed, he said, but weren't, either because of expense or because of the lure of a cheaper, better, or more compact system just over the technological horizon. "Sometimes, 'better' is the enemy of 'good enough,'" he asserted.

Northrop Grumman has been involved with programs such as the Tactical High Energy Laser, or THEL, which demonstrated shootdowns of mortars and Katyusha rockets. The program worked in coordination with Israel, which suffers attacks from such weapons. It was never fielded.

Two Broad Tasks

The company has also demonstrated an ability to shoot lasers from moving ships, against bobbing, "Zodiac"-style assault boats, inflicting damage—and at long range. Such an application would be valuable in the Persian Gulf today, he noted.

"These are not 'Star Trek' weapons. These are very real," Wildt said. "They're here ... and we think lasers offer a cost savings" because they require only the cost of electricity, and in more powerful versions that can be land- or sea-based, can substitute for the development of other projectiles that don't have to be developed, bought, or replenished.

"The question is, when will a user or operator say, 'I'm going to pick this one,' and take it across what is known in our circles as the 'S&T valley of death' and deploy this? ... We believe the technology is ready."

Michael Rinn, vice president of Boeing's directed energy systems group, noted that lasers are not taking an unusually long time to offer practical, operational capability, when compared with other technologies.

"In fairness," he said, "everybody likes to poke ABL because it took 12 years and in the end it was a demonstrator" that's now dead.

But Rinn noted the Navy's Aegis program started in the 1970s and is only now mature, and the F-22 fighter is only now fully delivered, when its genesis can be traced back to 1984.

"So, ... directed energy is not really that different from these advancing technologies like stealth" and has been developed "on much smaller budgets."

Pawlikowski said the five-years joke is probably accurate, at least for now. However, "I think we're making progress in getting closer to being within that five years."

She said that two broad tasks remain to be accomplished in the realm of laser weapons. "We still need to explore what are the real applications" for the technology, to define the target set it can most effectively be used against. "We have to be realistic in terms of what kind of damage a laser can do, firing out of an airplane. That has to be married up with how much power you can get out of a laser on an airplane. And I believe that, at best, we are at least five years away from being able to marry those two up," she added.

She is optimistic about a hybrid laser—specifically, the Diode-Pumped Alkali Laser (DPAL) system, which uses a combination of electrical and chemical laser generation—that can generate 100 kw power levels. There are useful applications at that power, she said. Such a system might just be within five years of operation.

Pawlikowski believes the key breakthrough in laser weapons would be the development of a far more efficient laser. Today's systems typically generate just 15 percent laser power and 85 percent heat. That means power output is weak relative to input and creates a lot of heat that has to be gotten rid of.

A doubling of efficiency—to 30 or 40 percent—would be "huge," she said. "That would cut back on my thermal problems. ... That's a critical area that I think we need to continue investing in," she said.

Asked whether the US is leading the field in laser technology, Pawlikowski warned the US should not assume scientific superiority.

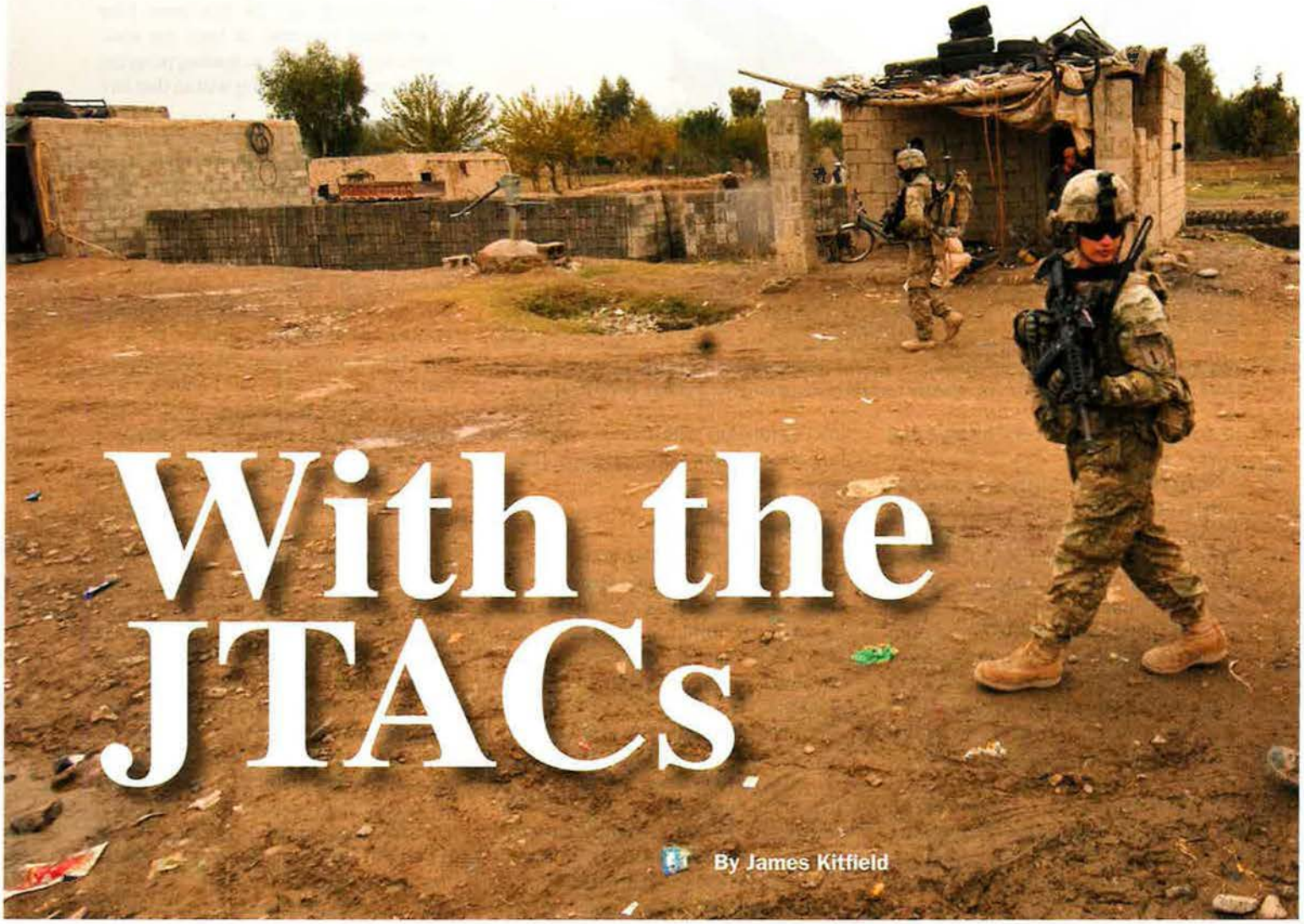
"The rest of the world is catching up, and in some cases, maybe they are ... a little bit ahead," she acknowledged.

The money "hurdle" necessary to leap in order to do groundbreaking work in lasers is "not as extreme as it was." The US has also trained scientists and engineers from all over the world who have gone back to their own countries, she noted.

Pawlikowski sees more leveling in terms of technological advantages the US has over other countries in the future.

"I don't think directed energy is less so than any others." ■

USAF's joint terminal attack controllers have helped transform counterinsurgency operations.



With the JTACs

By James Kitfield

On a recent foot patrol in Khost province, Task Force Duke soldiers fanned out, weapons at the ready. The patrol passed through a landscape of striking beauty, picking its way through freshly plowed fields and adobe villages in a valley ringed by towering mountains.

The aroma of burning goat dung and hay—the mixture used for cooking fires by local tribes—hung in the air.

Hard by the mountainous border with Pakistan, Khost province also held out the possibility of considerable menace. Only a half-day march away was the Pakistani city of Miranshah, home to the Haqqani network, the most indiscriminately ruthless of the insurgent groups that fight under the Taliban banner.

The Haqqanis have roving "death squads" in the area that are responsible for at least 35 assassinations and public executions in the province since last summer. Victims have included government officials, tribal leaders, and villagers suspected of collaborating with US or Afghan forces.

Recently, video in the possession of a captured insurgent showed 10 beheaded bodies laid along a road.

Enemy IED attacks also are at an all-time high in this area of NATO's Regional Command-East. However, US troops discover 70 percent of the IEDs before they explode, thanks in large part to intelligence gathered from residents by patrols like this one.

As the patrol approached a village of adobe buildings and rutted, dirt streets, battery commander Capt. Luke Hudspeth, of the 1st Infantry Division's 1st Battalion, 6th Field Artillery, called out to one of the troops.

"Hey, I want you to stay close to me," Hudspeth told SrA. Brian Walters, an airman with joint terminal attack controller qualification.

With his standard issue camouflage uniform and M4 rifle, Walters was indistinguishable from the other troops. On closer inspection, however, Walters carried a different equipment load, including a multiband radio; binoculars with built-in laser designators; a "small wearable computer" optimized for digitally coordinating close air support; a handheld GPS receiver; and a Rover (Remotely Operated Video Enhanced Receiver) to transmit full-motion video from aircraft to the troops on the ground.

Hudspeth wanted his Air Force JTAC close for one simple reason: Walters was his direct conduit to a level of air and

Photo by James Kitfield

Army Capt. Luke Hudspeth (l) speaks with SrA. Brian Walters, the JTAC (with patch), during a foot patrol in Khost province, Afghanistan. Hudspeth said the intelligence-surveillance-reconnaissance capabilities Air Force JTACs bring are crucial to successful ground operations.

space support that until a few years ago would have only been accessible to a major headquarters. If the unit felt threatened, Walters might call in a B-1 bomber to do a supersonic flyby at 5,000 feet—an intimidation tactic he had already used to good effect on an earlier mission in Afghanistan.

Walters could also download full-motion video from an MQ-1 Predator aircraft flying overhead, literally allowing the Army commander to see around the corners of the village up ahead.

If the patrol was attacked, Walters would direct close air support, deconflict various aircraft such as Army helicopter gunships and Air Force F-16s and F-15s, and even choose the munitions to be delivered that best matched the situation on the ground and the classified rules of engagement. All of these capabilities make Air Force JTACs very popular among Army infantrymen.

"No ground force commander will ever say 'no' to having a JTAC come with him into the field, because they absolutely change how we can operate," explained Hudspeth. "And it's not just the firepower they can call on. The ISR capabilities they bring are crucial, as is the potential intimidation factor. If I ask a JTAC to bring a helicopter or aircraft on station, then I know nobody's going to shoot at me, because the enemy is very aware of our airpower capabilities. It definitely sends a powerful message to anyone in the area with bad intent that you better think twice before messing with us."

At dusk the patrol walked down a narrow side street in the village, and Hudspeth knocked on the door of a nondescript house. Through an interpreter, he asked to speak with the owner, a senior commander in the Afghan border police. Night gathered and fog pooled in the foothills as Hudspeth, Walters, and a few other soldiers sat with a handful of Afghan men, talking about the Taliban's evolving tactics in the region.

At one point one of the Afghans noticed Walters' handheld GPS. After its purpose was explained, the man asked for the coordinates of the spot where they were all sitting. Hudspeth was immediately suspicious.

"Why would he want to know that?" Hudspeth asked, before quietly instructing Walters to give the wrong coordinates. It was one more reminder of the power of technology in modern counterinsurgency warfare, where something as innocuous as a GPS coordinate can prove a lifeline or a death sentence.

Airpower and Counterinsurgency

Though most people could not pick them out of an Army lineup, JTACs are one of the most visible manifestations of an unprecedented fusion of airpower and ground forces that has fundamentally transformed how the US military conducts counterinsurgency (COIN) operations.

Despite the conventional wisdom that COIN operations in Afghanistan are an infantryman's war, the nature of a conflict where even identifying the enemy is a constant challenge has actually driven closer coordination between the Air Force and Army. So much so, on certain high-risk missions Army commanders would hesitate to proceed without the kinds of capabilities JTACs represent.

"One of the transformations that has occurred over the past decade of conflict is that to an unprecedented degree the Air Force has tailored our forces specifically to meet the needs of ground force commanders, and to adopt their metrics of success rather than our own measures of efficiency," said Maj. Gen. Tod D. Wolters, commander, 9th Air and Space Expeditionary Task Force-Afghanistan and deputy commander-air, US Forces-

USAF photo by TSgt. Hank Hoegen

Maj. Gen. Tod Wolters (r), deputy commander for air, US Forces-Afghanistan, greets Capt. Jared Eros at the Transit Center at Manas, Kyrgyzstan. Wolters said JTACs increase the ground commanders' familiarity with air and space capabilities.

Photo by James Kitfield

Walters (l) and USAF SSgt. Patrick Harrower (r) in Khost province. There are currently 160 JTACs in Afghanistan.

Afghanistan. "One of the major ways we've increased ground commanders' familiarity with air and space forces is through the work of our JTACs."

The Air Force has 160 of its roughly 600 JTACs deployed to Afghanistan, Wolters noted, and was committed to increasing the total number in Air Force ranks to 1,000 JTACs by 2014, he said at Bagram AB, Afghanistan. This has a significant cost in training and equipment.

A JTAC will spend at least two years in training to become fluent in the intricacies of close air support, ISR, and infantry tactics. They are in such high demand, the Air Force has offered $70,000 reenlistment bonuses to keep JTACs in uniform.

"We're doing that specifically because the ground force commanders told us they need JTACs to be successful in this counterinsurgency battlespace," said Wolters. "So we've focused like a laser on giving them that capability."

Wolters noted that counterinsurgency operations put a premium on the kinds of capabilities that only the Air Force can deliver, often with the help of JTACs. Just identifying the enemy in a conflict where guerillas wear no uniform and seek to blend in with the populace requires persistent surveillance of the type revolutionized by remotely piloted aircraft such as the Predator and MQ-9 Reaper.

Persistent surveillance is also critical for clearing routes of IEDs by catching the enemy in the act of placing the devices.

The US must limit collateral damage and civilian casualties to deny insurgents the support of the public. JTACs help here, too, by calling in precision strikes and tailoring munitions to the situation.

"Zero fratricide is the standard," said Capt. Don Huggins, air liaison officer for Task Force Duke. "Because my JTACs are trained in munitions effects, they can choose the bomb that gets the job done with the least amount of collateral damage."

Understanding the Pattern

The nightly raids and manhunts for insurgent leaders and high-value terrorists also involve a host of Air Force ISR platforms, from RPAs, MC-12 Liberty turboprops, and RC-135 Rivet Joint electronic intercept aircraft, to U-2 high-altitude reconnaissance aircraft. Such missions often require the expertise of JTACs or their Air Force Special Operations Command counterparts, combat controllers.

"ISR is just critical in this kind of fight, where so much effort goes into tracking the bad guys, making sure they are indeed the bad guys, understanding their 'pattern of life,'" said Wolters. When necessary, the JTACs will coordinate an attack "with maximum precision and minimum collateral damage."

For so many years the missing element in being able to do that effectively was full-motion video. "Having that unblinking 'eye in the sky' often gives us 100 percent certainty that the target is indeed an enemy," Wolters said. It also gives soldiers the ability to see over the next hill, "which is why there is now a tremendous appetite on the part of ground commanders for the full-motion aerial video that JTACs can access."

In the operations center at Forward Operating Base Salerno in Khost province, that tight integration of airpower and ground operations was on vivid display. Flat-panel screens streamed real-time video from drones to Huggins, an F-16 pilot who commands a team of JTACs attached to Task Force Duke.

Recently, Huggins and his JTAC team coordinated air assets in support of the task force's Operation Knife Edge, a major offensive aimed directly at the Haqqani network.

After higher NATO headquarters flooded RC-East with "intelligence assets"—a preponderance of them Air Force ISR platforms—Task Force Duke was able to determine that the Haqqani network planned to rotate its commanders inside Afghanistan at the end of last year's fighting season.

When the Haqqani insurgent commanders prepared to return across the border to Pakistan, Task Force Duke was ready with Knife Edge. Launched in October, the operation deployed roughly 37,000 US, coalition, and Afghan forces along the border to block insurgent exfiltration routes, establish checkpoints, and conduct house-to-house searches.

"Operation Knife Edge was definitely the most complex operation I've been involved in, because over four days we ended up coordinating more than 1,000 air sorties," said Huggins at FOB Salerno.

"The airspace was really saturated," he said. "And my JTACs were the guys on the ground acting as air traffic controllers, deconflicting all those aircraft by altitude, timing, and geography, even as [soldiers] were yelling for bombs on target."

Deploying JTACs with ground units also allows the Air Force to react much quicker to "troops in contact" calls. "A JTAC can relay situational awareness directly to the pilots in the air in Air Force shorthand they can quickly understand, which really speeds up the decision-making cycle," Huggins explained. "That's not bad for JTACs [who] are often senior airmen who are too young to legally drink."

Task Force Duke's operations center displayed the results of that close air-ground coordination. Video screens showed the photos of captured Haqqani leaders and their links to the network of insurgents. Knife Edge killed or captured roughly 200 insurgents.

Army Col. Christopher R. Toner, the commander of Task Force Duke, argued that the increase in intelligence assets and resources and close coordination

USAF photo by Capt. Brandon Cyr

An F-16 from the New Jersey Air National Guard over Afghanistan. JTACs can call in F-15s, F-16s, Army helicopters, and other air assets to support ground forces during missions in Afghanistan.

between air and ground forces proved decisive in Knife Edge.

"The surge in intelligence assets during Knife Edge came at a time when senior Haqqani leaders were moving across my battlespace and trying to cross the border back into Pakistan at the end of the fighting season," he said in an interview. "Our agility allowed us to really take advantage of that opportunity."

Tactical Patience

Indeed, as the close air-ground coordination epitomized by JTACs increasingly becomes the "new normal," it is fundamentally changing the US military's concepts of operation in counterinsurgency. Ground commanders who once instinctively reached for their own indirect fire support from artillery and mortar batteries, for instance, are increasingly comfortable calling on USAF precision strike capabilities.

"On my last deployment to Afghanistan we were being attacked every day by insurgents in Kandahar, and for the first month or so the ground commander instinctively shot back with mortars and rockets," said USAF MSgt. Wesley Bloechle, a JTAC attached to Task Force Duke. "After I carefully explained the capabilities I had in terms of calling in precision guided munitions, and he saw the results in taking out insurgents, I ended up dropping 172,000 pounds of munitions in just six months. That really made an impression on the Army guys."

The integration of advanced ISR has had an equally dramatic effect on the ground. "Having eyes in the sky is no longer just a phrase, it's a reality with our full-motion video downlinks like Rover, and every Army company commander in the field now both wants and expects it," said TSgt. Nate Pugh, an Air Force ISR liaison officer at RC-East. "That capability alone has probably increased situational awareness on the ground tenfold, and it has contributed to saving the lives of US soldiers. What ground force commander wouldn't want that kind of force multiplier?"

On their current deployment, a number of JTACs who have deployed to Afghanistan on earlier rotations have noticed a further evolution as intelligence-driven, targeted operations increasingly become the norm.

"I've been coming to Afghanistan for 10 years, and on my first deployment I spent a lot of time just driving around a lot of unchartered territory in this country pretty aimlessly," Pugh said. "Now it's nice to see that our operations have become much more mission-oriented, deliberate, and focused."

Photo by James Kitfield

Hudspeth speaks with civilians in Khost province. JTACs help US forces gain the support of locals by putting bombs exactly where they are needed.

SSgt. Steven Tamburo, another JTAC attached to Task Force Duke, is on his fifth deployment to Afghanistan. "Early on, our ground operations were much more linear, and the attitude was almost that we were taking this area by brute force," he said. Partly because of the importance now placed on avoiding civilian casualties, the mindset has changed. "Every mission now is preplanned and focused on going after certain groups or individuals, and there's a lot more tactical patience."

When a unit with a JTAC gets into contact, he said, the instinct is no longer to immediately try and flank the enemy at considerable risk. "Rather, the standard is now to pin the enemy down with suppression fire and call in airpower to destroy him, which is pretty effective," said Tamburo. "These days if a JTAC is not available to coordinate close air support for a major operation, there's also a good chance the Army will wait until one is available."

As the conflict in Afghanistan winds down toward a 2014 deadline to transition combat operations to Afghan security forces, the challenge will be to capture and institutionalize those hard lessons from a decade of counterinsurgency warfare. "Our airmen, soldiers, sailors, and marines have in many cases been joined at the hip in this fight and understand now that they are much more effective and lethal when they work together," said Wolters.

"Coupled with advances in technology, that's made them the best force I've ever seen. It really is a game changer," he said.

The military today "is much smarter [about] pausing for a millisecond to reach for the most effective arrow as opposed to just grabbing the one you are most comfortable with," Wolters noted. When operations in Afghanistan do wrap up, the Air Force and Army seek to leverage this generation of operators who have made joint air-ground operations second nature, and not let the integrated skills fall by the wayside. ■

James Kitfield is the defense correspondent for National Journal *in Washington, D.C. His most recent article for* Air Force *Magazine, "To The Top of Takur Gar," appeared in the July 2011 issue.*

Verbatim

verbatim@afa.org

By Robert S. Dudney

Readiness Over Size

"We made a deliberate decision to avoid a 'hollow force' by prioritizing readiness over force structure. A smaller, ready force is preferable to a larger force that is ill-prepared because it lacks adequate resources."***—Gen. Norton A. Schwartz, Air Force Chief of Staff, remarks on release of new USAF force structure changes, March 6.***

Cleared for "Lethal Force"

"Given the nature of how terrorists act and where they tend to hide, it may not always be feasible to capture a United States citizen terrorist who presents an imminent threat of violent attack. In that case, our government has the clear authority to defend the United States with lethal force. ... Some have argued that the President is required to get permission from a federal court before taking action against a United States citizen who is a senior operational leader of al Qaeda or associated forces. This is simply not accurate. 'Due process' and 'judicial process' are not one and the same, particularly when it comes to national security. The Constitution guarantees due process, not judicial process."***—Attorney General Eric H. Holder Jr., remarks to Northwestern University law school, Chicago, March 5.***

Beyond Containment

"I do not have a policy of containment. I have a policy to prevent Iran from obtaining a nuclear weapon. And as I've made clear time and again during the course of my presidency, I will not hesitate to use force when it is necessary to defend the United States and its interests."***—President Barack Obama, address to annual policy conference of the American Israel Public Affairs Committee, Washington, D.C., March 4.***

Good Questions

"If there is no weapons program, what does Iran have to hide? If there is no nuclear weapons program, why are they putting their nuclear centrifuges deep underground?"***—Secretary of State Hillary Rodham Clinton, testimony to House Appropriations subcommittee, Feb. 29.***

One View of Nukes ...

"It seems to me, if we end up with 500 nuclear weapons and 'Country A' has a couple hundred, ... all the incentive in the world is for them to catch us, because it's not that far and not that hard for them to do."***—Rep. Mac Thornberry (R-Tex.), commenting on reports that the Obama Administration was eyeing an 80 percent cut in US nuclear weapons, at hearing of the House Armed Services Committee, Feb. 15.***

... and Another from Putin

"We should not tempt anyone by allowing ourselves to be weak. We will, under no circumstances, surrender our strategic deterrent capability. Indeed, we will strengthen it."***—Vladimir Putin, now Russian President-elect, in an article titled "Being Strong," ForeignPolicy.com, Feb. 21.***

Ask Him About the Holocaust

"Ever since I was a national Diet representative, I have said [repeatedly] there was no [Nanjing] massacre that resulted in murders of several hundred thousands of people. We need to talk about this publicly without hesitation, instead of behind the scenes."***—Takashi Kawamura, mayor of Japanese city of Nagoya, on the subject of the Japanese Army's 1937-1938 murder of as many as 300,000 in the captured Chinese city of Nanjing, quoted in*** **Wall Street Journal,** ***Feb. 23.***

Genetic Disorder

"After every war, we've brought down our military so we're not ready for the next time we're attacked. It's kind of our DNA. I have a real problem with that. ... Why take 50 percent of the savings out of 20 percent of the budget? You know, we need to get to where the real problem is. The Defense Department is not the problem."***—Rep. Howard P. McKeon (R-Calif.), chairman of the House Armed Services Committee, remarks on C-SPAN's "Newsmakers," March 4.***

Thanks. We Feel Much Better Now

"You can see that we have 1.3 billion people with a large land [area] and a long coastline, but our outlays on defense are quite low compared to other major countries. China's limited military power is for the sake of preserving national sovereignty, security, and territorial integrity. Fundamentally, it constitutes no threat to other countries."***—Li Zhaoxing, spokesman for China's Parliament, remarks to a news conference at the National People's Congress, quoted by Reuters.com, March 4.***

To Apologize ...

"Why wouldn't we [apologize to Afghanistan]? This is the central word of God for them. Why wouldn't we? We didn't do it on purpose but we should apologize, and we did."***—Marine Corps Gen. John R. Allen, US commander in Afghanistan, commenting on US apology for inadvertently burning Korans, "ABC World News," March 5.***

... or Not To Apologize?

"We've made an enormous contribution to help the [Afghan] people. ... For us to be apologizing at a time like this is something which is very difficult for the American people to countenance."***—Republican presidential candidate Mitt Romney, remarks on "Fox News Sunday," Feb. 26.***

We Get Eyeballs

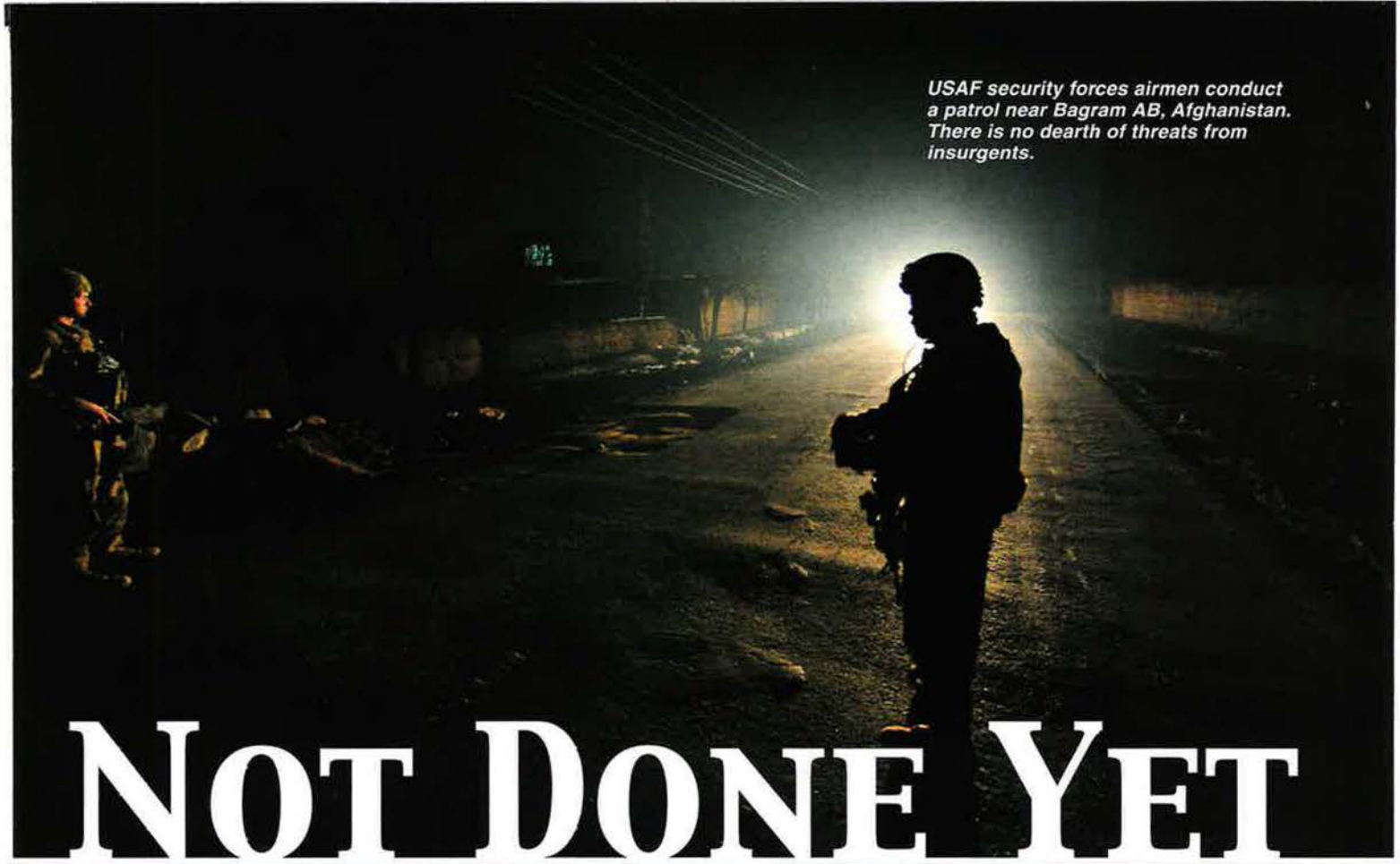
"The Pentagon has what Hollywood wants, which is ships and planes and helicopters and personnel. And Hollywood has what the Pentagon wants, which is eyeballs. It's product placement."***—David L. Robb, author of Operation Hollywood, a book about connections between the Pentagon and the movie industry,*** **Washington Post,** ***Feb. 25.***

Syrian Gas

"The growing breakdown of order and security in Syria could place its significant stockpiles of poison gases and operational chemical weapons at risk. ... In the event of a regime collapse, it is difficult to overstate the danger these weapons could pose to allies and US forces in the region if they fall into the wrong hands."***—Sen. Susan Collins (R-Maine), Sen. Kirsten Gillibrand (D-N.Y.), and Sen. Jeanne Shaheen (D-N.H.), letter to Secretary of State Hillary Rodham Clinton, Feb. 17.***

But Not Often

"While we pursue perfection, we sometimes fall short, and when we do we will take corrective action."***—Secretary of the Air Force Michael B. Donley, commenting on USAF's decision to set aside its award of a contract for light attack aircraft,*** **Wall Street Journal,** ***Feb. 29.***



USAF security forces airmen conduct a patrol near Bagram AB, Afghanistan. There is no dearth of threats from insurgents.

NOT DONE YET

AFCENT is applying its lessons from Iraq and Afghanistan to the rest of the Middle East.

USAF photo by TSgt. DeNoris A. Mickle

By Amy McCullough, Senior Editor

THE war in Iraq is over and Afghanistan is winding down. But with Iran likely on the verge of nuclear weapons and threatening to close the Strait of Hormuz, al Qaeda weak but still threatening, the "Arab Spring," unrest in Pakistan, and perpetual Arab-Israeli tension, US Air Forces Central will likely be very busy for the foreseeable future.

In fact, the air component footprint in Afghanistan will probably increase as operations evolve, just as forces in Iraq ramped up, then stabilized, before rapidly drawing down last year, according to Lt. Gen. David L. Goldfein, AFCENT commander.

In a late January interview, Goldfein said his biggest challenge today is to "posture this air component so I can provide more top cover" as ground forces depart, while simultaneously trying to "maintain the momentum of combat operations."

It's been a long, tough fight in both Iraq and Afghanistan, but Col. Claude Tudor, who commanded the 368th Expeditionary Air Support Operations Group until its inactivation in mid-December, said he hopes military planners can learn from both the mistakes and accomplishments in Iraq. The withdrawal from Iraq, completed weeks ahead of the Dec. 31, 2011, deadline, was one of the largest and most complex US military logistical endeavors since World War II.

All the Lanes of Movement

One potential lesson learned is the advent of "flying JTACs," or airmen with joint terminal attack controller qualifications, who are normally embedded with ground units. As the US division in northern Iraq began to redeploy last March, commanders began placing JTACs in overhead aircraft while continuing to embed others with Army units below, said Tudor. The idea was to offer extra protection to ground troops by providing redundant capability in case a convoy was attacked and communications were disrupted.

"It's a nondoctrinal way of looking at it," said Tudor, interviewed in Kuwait hours before the final US convoy—and its multilayered command and control architecture—rolled across the border into that country, marking the official end to the war in Iraq.

Similarly, the air support operations center in Iraq adopted a "larger operational and strategic level perspective," another idea not found in the current doctrine that could be useful in Afghanistan.

"There are a lot of things out there they can look at to help expedite [the withdrawal] and provide that airman's perspective into the fight," said Tudor. He added, "We've created a lot of lessons learned that we are hoping the men and women in Afghanistan will look at" as they get closer to finishing the mission.

Some senior military leaders wondered whether Afghanistan's rough, mountainous terrain would compel a ground-only departure, which would be a significant change from the Iraq model. Others predicted airpower will play a much larger role in Afghanistan, but Goldfein said he expects to utilize "all the lanes of movement" as US forces leave.

"I don't actually see this being a [primarily] air movement," he said. "I think it will be multimodal."

USAF photo by MSgt. Cecilio Ricardo

Lt. Gen. David Goldfein (c), Lt. Col. Richard Goodlett (l), and Maj. Gen. Russell Handy (r) on the flight line at al Asad AB, Iraq, during Operation Iraqi Freedom. Goldfein recently identified five priorities to carry AFCENT into the future.

Regardless of how that transition plays out, the US and the Middle East are moving into a new era—one where the US is committed to supporting its allies but hopes not to have to engage in multiple, simultaneous wars within the same area of operations.

Goldfein has laid out five priorities that will carry AFCENT into the future. The first is decisive airpower. The second is regional defense.

"We are responsible for pulling it all together," he said, emphasizing that AFCENT must coordinate Navy movements, Army air defenses, Air Force command, control, and cyber capabilities, "and coalition Gulf partners."

The third objective—"defining the base"—may prove more challenging. Goldfein said this term refers not only to physical bases sprinkled throughout the Middle East, but also US communication networks and the link architecture required to operate those networks.

However, the growth of Iran's anti-access, area-denial capabilities threaten long-held assumptions about how the Air Force will operate in the Middle East. The US may no longer "enjoy unfettered access to close-in bases [and] US battle networks [that] would remain intact and secure," according to Mark A. Gunzinger, a senior fellow at the Center for Strategic and Budgetary Assessments, a Washington, D.C.-based think tank.

In a recent CSBA white paper, "Outside-In: Operating From Range to Defeat Iran's Anti-Access and Area-Denial Threats," Gunzinger asserts that the US needs to develop a new Persian Gulf-region operational concept. This concept would assume close-in basing "may not be available, all operating domains will be contested, and Iran may threaten terror and [weapons of mass destruction] attacks, including the use of nuclear weapons, to deter or prevent a successful US military intervention in the Persian Gulf."

Here To Stay

However, Goldfein said the US continually re-evaluates its strategy, noting the dynamic nature of the region.

"I don't think we ever stop and get complacent," he said.

Goldfein's fourth priority—engagement—also could be complicated by Iran. Gunzinger wrote that whenever possible, "Iran will seek to avoid direct confrontation with the US military" by bullying neighboring countries into denying the US permission to stage operations from their soil. He also noted, "The populations, governments, and much of the wealth of the region are remarkably concentrated in a handful of urban areas within range of Iran's ballistic missiles."

Regional partners are always assessing the costs and benefits of partnering with the US, Goldfein said, but as he travels the area, he emphasizes the message that America is there to stay.

He pointed out that USAF has produced air tasking orders and flown over

Iraq for more than two decades, while the US Navy has been based in Bahrain since 1948.

Still, the members of the Gulf Cooperation Council—Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates—are closely monitoring US and Iranian interactions. They are especially watching over the Strait of Hormuz, where escalating tensions have actually had "an incredibly strong coalescing effect" in the region as the Gulf countries partner together "to counter what they see as improper behavior" from Iran, said Goldfein.

"We've been able to make some significant strides and improvements in our regional strategy and our interoperability," he said. "The region is as closely connected and tied today as it's ever been."

However, there are a lot of uncertainties. For example, it's unclear whether Kuwait will be used simply as a transit point for troops (as the Kuwaiti Defense Minister said in November) or whether the US presence will settle back to levels seen before Operation Iraqi Freedom. A completely new relationship may also develop.

USAF photo by SSgt. Greg Biondo

An A-10 over Afghanistan, ready to refuel, jockeys into position under a KC-10 Extender. Analysts say that soon the US may no longer enjoy unfettered access to close-in bases in the Middle East.

Why the Middle East Counts

A new national military strategy, unveiled at the Pentagon early this year, holds out the Middle East as one of the key areas where the US must continue to engage and maintain a presence.

Defense Secretary Leon E. Panetta said the US is at a "strategic turning point," and the time is ripe for a reassessment of US relations with the region.

According to the strategy, which guides Pentagon planning and budgeting through 2020, "regime changes, as well as tensions within and among states under pressure to reform, introduce uncertainty for the future."

However, "they also may result in governments that, over the long term, are more responsive to the legitimate aspirations of their people and are more stable and reliable partners of the United States."

The new strategy acknowledges an "increasingly complex set of challenges" and places "a premium" on a continued US presence "in and around" the Middle East. Moreover, the so-called Arab Awakening, which swept through the region last year, "presents both strategic opportunities and challenges," according to the strategy.

"That's in discussion, and really, that's going to be Kuwait's decision," said Goldfein. "We are guests in each of these countries where we are based. How we operate and what we do there is, at the end of the day, up to them to decide."

Various press reports have suggested an additional 15,000 US troops will deploy to Kuwait to stabilize the region after the Iraq withdrawl and to act as a response force if necessary. However, Goldfein said that number sounded "a little large."

Shaping a Partnership

Whatever influx of troops there has been in Kuwait has been mostly soldiers, working to inspect, clean, marshal, and ship residual equipment home from Iraq. Goldfein said the amount of material still to be dealt with is "significant."

The US also is still "resetting" its relationship with Iraq under a new diplomatically led effort. A very small contingent of US troops—less than 200—remain in theater under the Office of Security Cooperation-Iraq, a subset of the US Embassy in Baghdad. Its mission is to help build Iraq's military through the foreign military sales program and to continue advising and assisting the Iraqi military and its leaders.

Staff Lt. Gen. Anwar Hamad Amin, commander of the Iraqi Air Force, said the end of combat operations in Iraq simply marked the beginning of a new long-term partnership with the US.

"In my opinion, I think the 31st of this month is not [the] last day [to work]," Anwar said in December 2011.

"That is [the] last day for the American withdrawal here in Iraq, but I think ... 2012 ... will start [a] new relationship between us," Anwar said during a briefing for Iraqi and American media in Baghdad.

Maj. Gen. Russell J. Handy, the senior Air Force leader in Iraq from August 2010 until the last troops left in December, said at the same briefing that he hopes as part of that new relationship, the US and Iraq will participate in exercises similar to those conducted with other Middle Eastern nations.

"I think there is still much discussion to be had on exactly what that partnership will look like. As a minimum, we'll have a large US embassy in Iraq. We will continue to have advisors, such as you see here among us today, partnering with the government of Iraq, specifically the Iraqi Air Force," said Handy.

"What our two governments need to continue to discuss is what other things we may do, such as exercises and training events and those types of things. ... I'm sure General Anwar shares that hope that we can continue to talk about that and continue to improve those types of opportunities."

Goldfein said he foresees a "slow but gradual" buildup to where "Iraq is a full partner in all the exercises we currently have throughout the region." Moreover, the first opportunity could be happening "fairly soon," he said, though he cautioned there are many levels of exercises. The first such engagement could be basic, such as a group of Iraqis traveling to a base for training, or a small team of US advisors conducting a limited and specific exercise with the Iraqis.

Finally, he said, preparation will be key for any future engagement within US Central Command.

"What I tell my airmen across AFCENT is, I don't know what's coming next, but I do know I have until now and then to prepare for it," said Goldfein. ■

A Lancer's Long Day

By Aaron M. U. Church, Associate Editor

Bone 21 worked with embattled JTACs to successfully neutralize a hot spot, save numerous lives, and destroy an enemy command post.

USN photo by Lt. Marques Jackson

Sporadic gunfire echoed in the darkness throughout the night as TSgt. Douglas Bowers, a USAF joint terminal attack controller (JTAC), and an advance patrol of the Army's 101st Airborne Division secured a supply route for a combat logistics patrol coming through the mountains of northeast Afghanistan.

Near the Pakistan border, as daylight broke over the approaching combat logistics patrol, bullets snapped past Bowers' perch overlooking the valley. With the resupply route anything but secure, Bowers' job—as a tactical air control party specialist with JTAC qualification—was coordinating air support and overwatch of soldiers of the 1st Brigade Combat Team.

The situation was about to get messy.

Meanwhile, the bomber crew of Bone 21 was heading for a preplanned support mission nearby. The crew was settling in for its six-hour transit into Afghan airspace from their forward base elsewhere in the Middle East.

The B-1B Lancer crew, deployed with the 9th Bomb Squadron from Dyess AFB, Tex., had three or four such assignments each mission—often jetting the breadth of Afghanistan in a single sortie. Arriving in country, the crew checked in with its assigned JTAC for an updated brief. Not far away, Bowers' situation was quickly deteriorating.

"As the combat logistics patrol moved up to our location, they were taking heavy contact along the main supply route along with our observation post," Bowers later explained.

From their position overlooking the column, Bowers and SrA. Abel Arriola, another JTAC, were taking machine gun fire and called on several F-15Es for support. Hidden in crags and dense vegetation on the ridges surrounding the patrols, the insurgents were im-

possible to pinpoint and too dispersed for the Strike Eagle's weapons to have much effect.

Worse still, the enemy quickly caught on that Bowers and Arriola were coordinating the strikes and focused a torrent of fire on them. "We were the focal point for controlling that area and providing overwatch," Bowers said, "so they were trying to tie us up so that we couldn't provide support."

Unable to aid the supply column, and hunkered under a hail of fire, Bowers made a desperate call for heavier support. Conveniently nearby, Bone 21 was hurriedly retasked and broke off to assist.

"The initial picture that [we] got was that there were about three or four enemy firing points that they were using to shoot at the friendly forces in the area," said Capt. Thomas E. Metzger, Bone 21's offensive weapons system officer. Taking the handoff from the F-15Es, Capt. Kevin T. Johnson, the B-1 pilot, knew that the Strike Eagles "had run the course and done great work, but it got to the point where we had to put a lot of weapons down in several different areas."

With three bomb bays loaded with precision weapons, "this was something that we uniquely had the capability to do."

On the radio with Bowers, Metzger scanned the Lancer's Sniper targeting pod over the areas that Bowers suspected insurgents were firing from. "Initially getting a look at the ridgeline, it was kind of like looking at the Matterhorn; it was a really steep face—lots of trees, lots of rocks—very rugged terrain, so we weren't able to pick out individuals in that area, but [Bowers] had correlated this area where he wanted weapons," explained Metzger.

Metzger spaced the bombs evenly along the ridge.

"Their first attack ceased that engagement so that we could focus on

A B-1 Lancer is paced by an F/A-18F Super Hornet after a close air support mission in Afghanistan.

Boeing photo

The insurgents were too dispersed for the F-15s to have much effect. The crew of Bone 21 had heavier firepower, though.

the guys down in the valley," recounted Bowers. "We got the attacks off quickly on that enemy fighting position due to the speed of the B-1 ... covering the area we needed."

Bone 21 released several Joint Direct Attack Munitions and spent the next 15 minutes unsuccessfully attempting to locate enemy firing positions hidden in several caves. Blocked by the jagged terrain, the Sniper pod had no luck pinpointing a target, so Bowers took the lead. "We had eyes-on from the ground. They [the insurgents] were setting up fighting positions. ... There were three to four in two groups ... on the high ground," he said.

Trapped Under Fire

Talking the B-1 onto a narrow rift between two mountain peaks, Bowers requested that Bone 21 seal the entry to a series of caves. Running in at roughly 0.7 Mach, Bone 21 streaked along the rift, loosing a pair of 500-pound JDAMs that detonated at the bottom of the gulley, just missing the slopes on either side of the target line. The strike was perfectly executed.

"All day long, we had to factor in the direction that we're dropping these weapons because the typical effect ... in sheer terrain is something called clatter," explained Johnson. Sometimes weapons "get blocked by the mountain they're trying to strike."

The jagged terrain demanded constant awareness, as the bomber pulled away from the target. Even at 20,000 feet, "some of those mountains literally go up a couple of thousand feet [above] the altitude that we're flying at," said Johnson. In this terrain, utilizing the B-1's swept-wing show of force—stunning the enemy with a full-afterburning transonic pass—is a no-go. Contending with mountain peaks, a Lancer is "almost at that show-of-force altitude the entire time" anyway, admitted Johnson.

On the ground, the logistics train stopped dead. Trapped under machine

USAF photo by Jet Fabara

A Sniper pod on a B-1B's fuselage. Bone 21's WSOs could see the telltale flashes of gunfire and puffs of smoke from mortars, showing them where to lay the bombs.

gun fire and occasional mortar attack, friendly casualties were lying in the open.

"Obviously you can't medevac casualties when there's an ongoing enemy engagement," said Bowers, so the air and ground forces had to determine the best way to calm the situation.

Some 400 yards up the mountain, an enemy fighter had the men locked in his machine gun's firing zone. "They really don't have anywhere to go and there's no real ability to shoot back up at the mountains [because] they don't really know where these attacks are coming from," said Johnson of the pinned-down forces on the ground. "All they know is that they can't get out of that situation."

Metzger panned the Sniper pod's infrared eye along the slope, following prompts from Bowers below. Peering at the screen, Metzger and Capt. Craig J. Steffek—Bone 21's defensive weapons system officer—suddenly spotted the telltale glimmer of muzzle flashes, then a puff of smoke from a mortar. This was the first time the airmen spotted projectiles coming off the mountainside and the ridgeline into the friendly positions, said Metzger.

Photo via Capt. Kevin Johnson

Photo via TSgt. Douglas Bowers

Above, the crew of Bone 21, l-r: Capt. Thomas Metzger, Capt. Kevin Johnson, Capt. Craig Steffek, and Capt. Andrew Long. Left: TSgt. Douglas Bowers, the JTAC on the ground.

The WSOs determined the location's coordinates and sent live imagery to Bowers. Following on his remotely operated video enhanced receiver, Bowers confirmed the ridgeline and the target.

Steffek selected a tight grouping, mixing 500-pound GBU-38s with larger 2,000-pound GBU-31s. Banking to the right to keep the Sniper pod on target, the WSOs confirmed detonation.

The effect was immediate. Pulling away from the target "everything had stopped, which is usually a good indication," said Capt. Andrew F. Long, mission copilot. With the bomb detonations echoing in the background, Steffek could hear the troops near Bowers' radio cheering the blasts. "That's a unique feeling—a reassurance for us the aircrew," he said.

Three-and-a-half hours after Bone 21 arrived, "we were actually about to be done for the day," said Long, even though the aircraft was capable of loitering for almost six hours over the battlefield. A flight of F-16s was inbound to relieve the bomber.

But Bone 21 was not through. Locked in another all-day fight, at what had become a routine hot spot, other ground forces were pinned down not far from Bowers' post and still within his area of responsibility.

"The situation was pretty dire up there," said Johnson.

The enemy had set up fighting positions along a roughly 175-yard ridgeline, and the ground commander requested that Bowers call in a bomb strike across the entire span. Knowing this was "something that the F-16s are definitely not going to be able to do, unless they launch an entire squadron," Bone 21 addressed the tasking, delivering half the bomber's remaining payload in a single precision pass.

Bad Guys on the Ridgeline

"With all of those weapons going off near simultaneously," the string of JDAMs shattered the mountaintop, decimating trees, rocks, and insurgents alike, reported Long. "I was a fairly new pilot, but I think most guys would say it was one of the bigger strikes they'd seen."

For the troops, "that was a very decisive moment," said Bowers. The strike saved lives on the ground and allowed the troops to regroup. With the enemy now in disarray, it was finally possible to medevac the wounded to safety, said Bowers.

Darkness was settling in the valleys, and despite the B-1's huge fuel load, Bone 21 was approaching "bingo fuel," when her crew had to turn for home.

Bone 21 checked the area for any signs the enemy was still preparing for a counterattack overnight. Bowers requested a single fly-past of a

USAF photo by TSgt. Michael Boquette

Bone 21 called it a day after six hours in the fight over Afghanistan, putting a world of hurt on a hot spot in the mountains. The total mission, from takeoff to landing, lasted nearly 18 hours.

specific small bunker—thought to be a command node—that he and his fellow JTACs had been keeping a close eye on. "We went back up there and we were looking at this target, and again like usual we didn't see anyone up there," said Long. The only indications of human presence on the mountaintop were a few parapets—possibly mortar pits.

Long said that just as they were about to head for home, "we see someone come out of the ridgeline."

He knew that on a cold November night in the mountains, anyone hardy enough to venture out is "most likely up to no good." As several more men emerged on the mountaintop, the bomber crew waited for word from Bowers about "what to do with these guys," said Long. After conferring with intelligence, Bowers said over the radio, "Yep, these guys are bad and we want you to strike this location."

With fuel dwindling, Bone 21's crew went into action once again. "We start setting up this bomb run. We're selecting our weapons and about to execute on the top of this mountain, and the guys start moving ... faster than we'd be able to drop a bomb on them," said Long. (This problem has since been remedied by adding Laser JDAMs to the Lancer's arsenal.)

Bowers asked the bomber crew to track the men, to see where they would go. By this time, Bone 21 was about to need an emergency tanker just to make it home.

Suddenly, a building appeared in Metzger's viewfinder. The group was heading straight for it. "You don't find compounds up in this area. ... There should not be a building," said Johnson, stressing the importance of the find.

One Strike, One Chance

As more people converged on the building, Bone 21's situation turned critical.

While awaiting intelligence confirmation from Bowers, Johnson received a call saying a severe thunderstorm was moving over the Mideast airfield they had launched from. Johnson was ordered to carry extra fuel back in case the crew needed to divert or practice several landing approaches in the "bare-minimum" weather conditions at the base. What this meant, of course, was that there was even less fuel available for the battle over the Afghan mountains.

"We've got a one-strike, one-chance kind of situation to actually hit these guys at the one time they're vulnerable," as they moved to the compound, asserted Johnson. "We literally tell the [JTAC], 'Hey, listen, we have one more spin over this area and we're going home because we're going to run out of fuel.'"

Johnson called for an emergency tanker as the WSOs input strike parameters into the bombing computer—just in case an attack confirmation came in the nick of time. As Bone 21 banked homeward, Bowers confirmed the target as hostile.

"From the intel confirmation to when the weapons actually came off the jet was about 30 to 45 seconds—definitely the fastest strike I've ever been a part of, when it comes to confirmation to actually weapons off the jet," said Johnson.

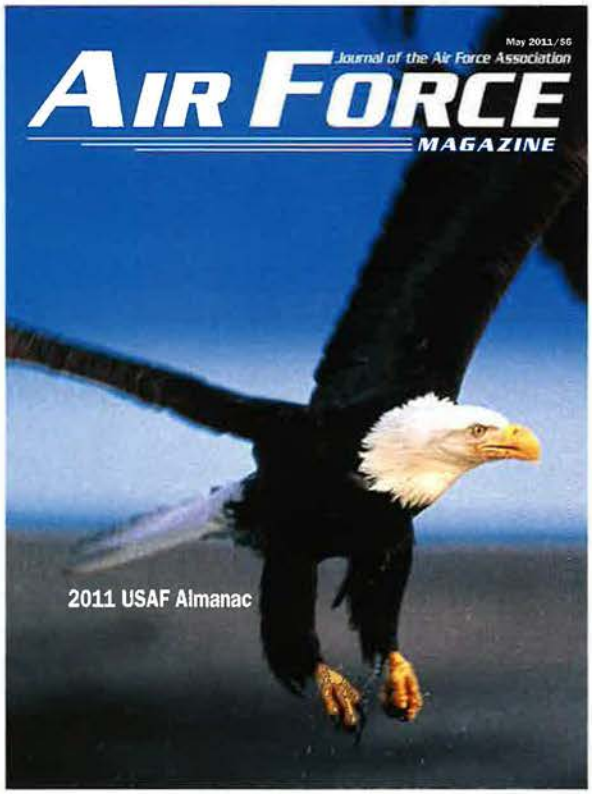
After a mad dash to rendezvous with the tanker, the crew could finally reflect. In more than six hours over Afghanistan, Bone 21 successfully opened resupply to the forward operating base, neutralized a perennial hot spot, saved numerous lives, and destroyed the command post controlling enemy attacks in the area. "The hurt that we put on them that day was very significant and it contributed to decreased enemy activity from that point on," summed up Bowers.

Bone 21 was named the Air Force's 2010 bomber crew of the year for the November 2010 mission and was honored last September with the Air Force Association's Gen. Curtis E. LeMay Award. ■

2012 US AIR FORCE ALMANAC

AIR FORCE MAGAZINE'S USAF ALMANAC DELIVERS. . .

- For airpower professionals, the definitive, most comprehensive, "Must-Have" resource reference, for the entire year.
- Bonus circulation by request of thousands; copies for USAF General Officers, selected DOD executives, Congressional members, and White House officials.
- A reference work with a full year's shelf life



EDITORIAL FEATURES INCLUDE:

- Every major USAF Command at a glance
- All the latest USAF facts and figures
- Gallery of Air Force Weapons and Equipment
- Guide to Air Force Installations Worldwide

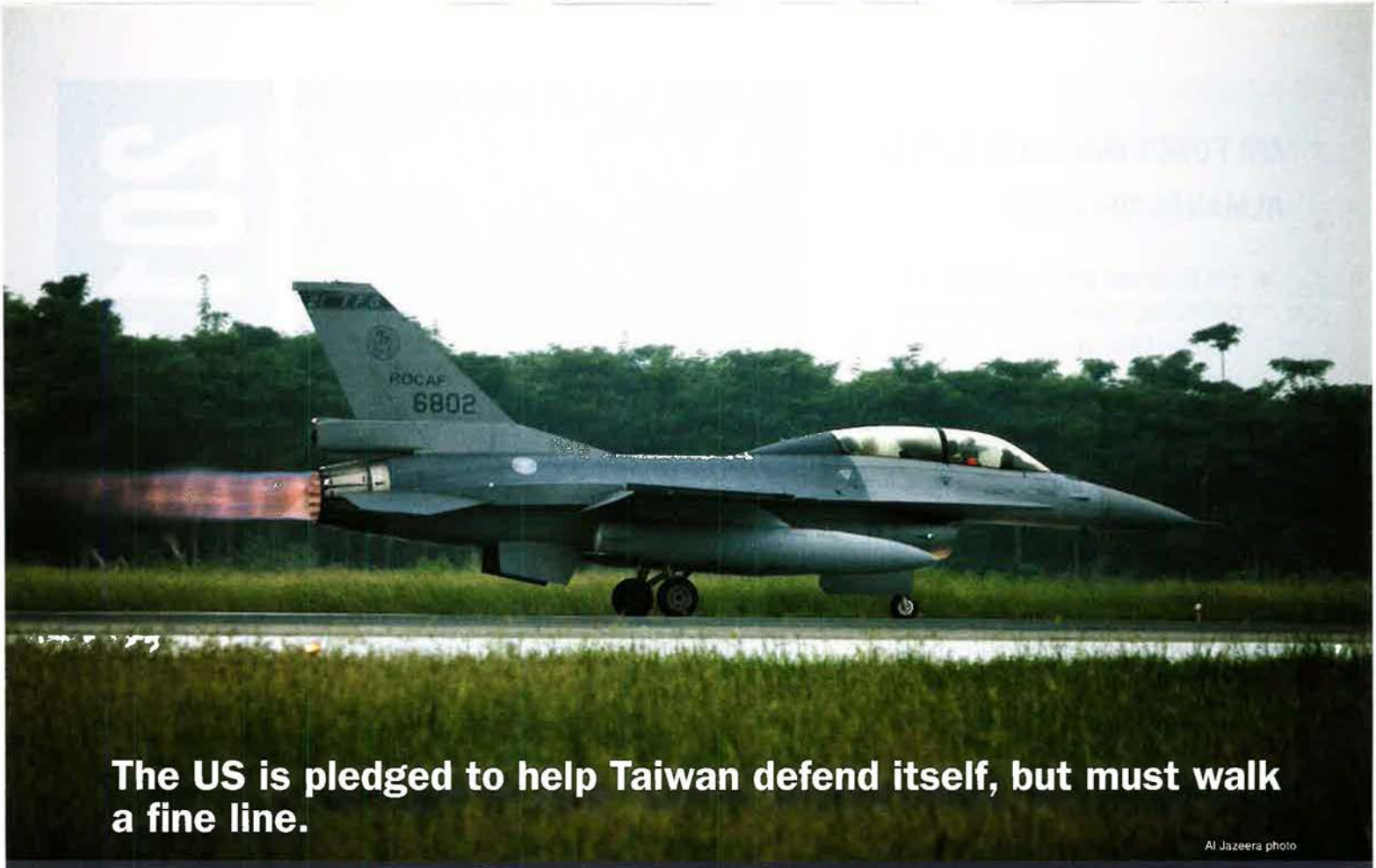
AIR FORCE MAGAZINE REACHES:

- More than 6,000 decision-makers in the DC metro area
- 30,000+ USAF personnel
- More than 8,000 leaders in aerospace industries
- International aerospace and defense dignitaries

Take advantage of this outstanding and unique marketing opportunity with your company's advertising message

Journal of the Air Force Association
AIR FORCE
MAGAZINE

Advertising inquiries: Bill Turner | (703) 247-5820 | bturner@afa.org



The US is pledged to help Taiwan defend itself, but must walk a fine line.

Al Jazeera photo

The US, Taiwan, and China's Long Shadow

By Richard Halloran

USAF photo by SrA. Tracie Forte

For about 15 years after the US canceled its security treaty with Taiwan and withdrew a military advisory group from Taipei, relative quiet prevailed across the 100-mile-wide Taiwan Strait, separating the island from China's mainland. Then, in 1995, the People's Republic of China fired missiles into waters near Taiwan to warn President Lee Teng-hui to cease seeking international recognition for Taiwan.

A year later, the PRC fired another barrage of missiles in an attempt to influence an election in Taiwan.

With President Clinton's approval, Adm. Joseph W. Prueher, then commander of US Pacific Command, deployed two aircraft carrier battle

groups—*Independence* and *Nimitz*—to the waters east of Taiwan. The Chinese backed off, but the experience kicked plans to modernize the People's Liberation Army, which comprises all of China's forces, into high gear. The communist leadership used funds from economic reforms started 20 years earlier to pay for the military expansion.

On the US side, PACOM officers got to work rewriting war plans, and annual arms sales to Taiwan jumped from $153 million in 1990 to $1.87 billion in 2000 and $6.49 billion in 2010. The most recent package, worth $5.85 billion, was announced in September 2011.

"The United States has long had a strong and effective military relationship with Taiwan's defense forces that involves training and high-level meetings, as well as consultations on key security issues," Kurt M. Campbell, assistant secretary of state for East Asian and Pacific Affairs, said in written testimony for the House Foreign Affairs Committee in October.

Thanks to that US assistance, Taiwan "can ensure that it develops a well-trained, motivated, effectively equipped, and modernized fighting force that will contribute to the maintenance of peace and to a durable deterrent" enabling it "to resist intimidation and coercion and engage with the mainland with continued confidence," Campbell said.

But if an increasingly aggressive China attacks the self-governing island, the Taiwanese will inevitably look to the US for help. "We need to strengthen our defenses to hold off an invader long enough to make it easier for the Americans to come in," a former Taiwanese diplomat said.

The Taiwan Relations Act (TRA) of 1979 governs US dealings with Taiwan. The act was passed by Congress after President Jimmy Carter switched US diplomatic recognition from Taiwan to the PRC and abrogated the security treaty with Taiwan. The TRA requires the US to "make available to Taiwan such defense articles and defense services" needed to "maintain a sufficient self-defense capability."

The President and Congress will determine whether "threats to Taiwan or dangers to United States interests" warrant US intervention "in accordance with constitutional processes," states the TRA.

Despite this act, the US does not have normal diplomatic relations with Taiwan. US interests are represented in Taipei by the American Institute in Taiwan (AIT), a quasi-embassy staffed by some 500 State Department diplomats and employees who are given nondiplomatic titles, such as director instead of ambassador. In comparison, the US has 950 diplomats and employees in its embassy in Beijing.

Above left: A Taiwan Air Force F-16 takes off from Chiayi Air Base. The US has sold 150 of the fighters to the island nation. Left: Lt. Col. TaiCheng Chang, a 21st FS instructor pilot, fields questions about the Taiwanese Air Force while at Luke AFB, Ariz.

USAF photo by Osakabe Yasuo

CMSAF James Roy addresses airmen at Yokota AB, Japan. Roy has briefed Taiwanese officials several times on how the US nurtures a professional noncommissioned officer corps.

Powerful Army

The US also lacks a security treaty with Taiwan such as those underlying military exchanges with South Korea, Japan, the Philippines, Thailand, and Australia.

To avoid provoking Chinese propagandists, US diplomats and officers prefer to keep a low profile on issues involving Taiwan.

Military attaches posted to AIT wear civilian clothes and have innocuous titles. One point of contention with some visiting Americans is that unlike US embassies everywhere else, AIT does not fly an American flag.

When CMSAF James A. Roy was the senior enlisted leader at US Pacific Command in Hawaii, he flew to Taiwan three times between 2007 and 2009 to brief senior Taiwanese officials on how the US nurtures a professional noncommissioned officer corps. Roy—now Chief Master Sergeant of the Air Force—also explained how American forces recruit young men and women, which was intended to help Taiwan's transition from a conscripted to a volunteer force by 2015.

In 2009, retired Adm. Timothy J. Keating flew to Taiwan, shortly after completing assignment as PACOM commander, for a full week of discussions with President Ma Ying-jeou, senior officials in the Ministry of National Defense, and top officers of Taiwan's services. He traveled around Taiwan inspecting command centers, ships, airfields, and training sites, then reported back to his successor at Pacific Command, Adm. Robert F. Willard. "Taiwan has a lot of old weapons and equipment, but they do well with what they've got," Keating told PACOM staff officers.

Last summer, a US Marine Corps team of marksmen with one officer and five enlisted men fresh from Afghanistan went from a Scout Sniper Platoon at Camp Pendleton, Calif., to Taiwan for three weeks to work with Taiwanese marines, special operations troops, and police teams. The marines urged the Taiwanese marksmen to expand their operations to include reconnaissance and adjusting artillery fire. The marines also demonstrated how marksmen fight in urban terrain.

The US Army's contacts with Taiwan's Army fall largely under a program called Lu Wei, which means "Powerful Army." The Army's Pacific commander, Lt. Gen. Francis J. Wiercinski, like other American general and flag offi-

USA photo by Jane Armstrong

In 2008, US Army Maj. Gen. James Barclay speaks with Taiwan Army Lt. Gen. Tieh-Ming Liao at Fort Rucker, Ala., about training for Taiwanese helicopter pilots.

cers on active duty, is restricted by the State Department from visiting Taiwan, so senior Taiwanese officers travel to his headquarters in Honolulu. In turn, Wiercinski sends colonels to Taiwan each year to plan the Lu Wei agenda. "We discuss what professional armies do," Wiercinski said.

In those discussions, American and Taiwanese soldiers each describe how their army operates. American officers, for instance, have drawn on their experiences in Afghanistan to explain tactics for countering improvised explosive devices. Like Roy, they have sought to help Taiwan set up a recruiting service to support the planned volunteer force and have emphasized the merits of a strong NCO corps.

Overall, the Navy's contacts with the small Taiwanese Navy seem limited. Even so, an American officer said: "These contacts go on all the time. At the top level, we have broad and deep discussions in a regular dialogue both here and in Taipei. There's a whole lot more to this relationship than just arms sales."

"None of this is covert," said one officer, "but we do try to keep it discreet." Because of those political sensitivities, many American and Taiwanese officers were reluctant to be identified when interviewed for this article. The Ministry of National Defense declined to make an official available for a background discussion but others were willing to meet privately.

Beijing officials often assert that American dealings with Taiwan are the biggest obstacle to good Sino-US relations. They object, sometimes harshly in public or in private meetings with American officials, to all US ties to Taiwan.

They consider Taiwan to be a province of China that should be incorporated into the PRC. The regime in Beijing, led by President Hu Jintao, rages against what it charges is foreign interference in the domestic affairs of China—overlooking the preference of large majorities in Taiwan that have repeatedly told pollsters they wish to remain separate from the PRC.

PLA leaders, who have recently tended to ignore guidance from China's political leaders, have been especially vehement on the question of Taiwan's future. They have said repeatedly that China will use force if necessary to prevent Taiwan from declaring outright independence.

Many of today's US-Taiwan programs were started in the 1990s and 2000s. Taiwan's F-16 pilots began training at Luke AFB, Ariz., in 1997, an arrangement that was extended for five years in 2011. Helicopter pilots are trained at Fort Rucker, Ala.

Officers from Taiwan attend the Army, Navy, Marine Corps, and Air Force war colleges, as well as the Asia-Pacific Center for Security Studies in Honolulu. Younger personnel go to US artillery, armor, and signal schools.

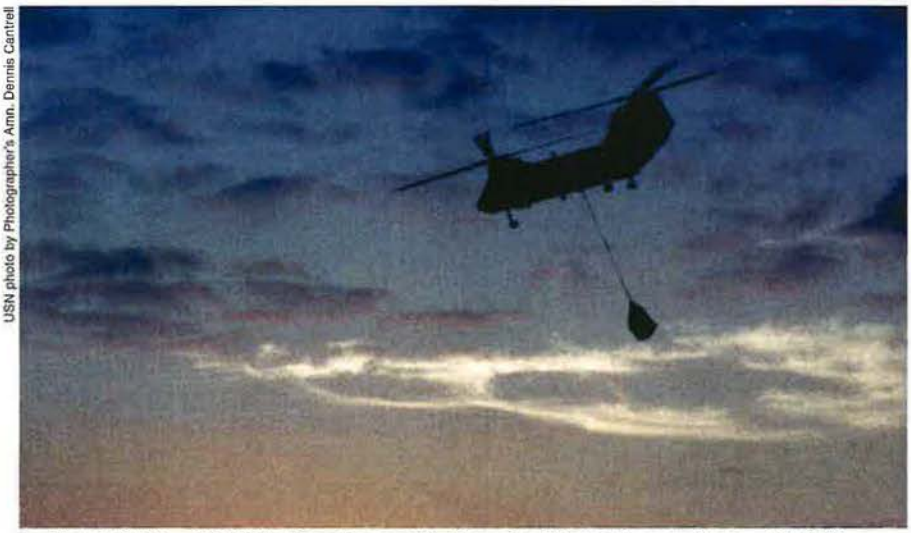
Taiwanese and American units don't train together but "observers" from Taiwan watch US exercises in the states. Retired American senior officers and serving middle grade officers do the same in Taiwan, particularly in a large annual exercise known as Han Kuang, which consists of command post exercises for leaders and field training exercises for troops.

Pentagon officials began annual meetings in 1997 with representatives from the MND at Monterey, Calif.; that gathering has gotten so large that at least one participant suggested it be limited.

The US-Taiwan Business Council continues to promote arms sales. A hotline was set up between the Pentagon and the MND in 2002, according to the Congressional Research Service. Whenever an American company sells weapons or equipment, technicians go to Taiwan to train the Taiwanese to maintain those products. "They need to know more than how the on-off switch works," said a US official.

USAF photo by TSgt. Oscar Samaniego

Col. Igor Gardner (l), 17th Training Group commander, and TSgt. Dean Minett, an international-student instructor, cut the ribbon on a new classroom in 2005 at Goodfellow AFB, Tex., as students from Taiwan, Kuwait, and Lithuania look on.



USN photo by Photographer's Amn. Dennis Cantrell

In March 1996, a CH-46 helicopter conducts replenishment operations with USS Independence near Taiwan. The carrier was part of a show of force in the waters there after China fired missiles into the Taiwan Strait.

On the other hand, political sensitivities have led to several restrictions, mainly at the insistence of the State Department. US officers visiting Taiwan from PACOM or Washington must travel in civilian clothes and carry civilian, rather than government, passports.

In public, American officials are required to subscribe to a "one China policy" even though no one knows quite what that means. American warships do not make port calls in Taiwan and military aircraft do not land there except on humanitarian missions. US and Taiwanese officers do not discuss operational plans for meeting a contingency initiated by China. Sometimes, American military people must scramble to make sure visitors from Taiwan and China don't bump into each other when they are in Honolulu at the same time.

Still, Americans are not satisfied with certain aspects of Taiwan's defenses. The armed forces are handicapped by lack of room to maneuver on their crowded island. Their leaders show little flexibility in operations, the military not having been in the field since Generalissimo Chiang Kai-shek was driven off the mainland in 1949. And some Americans doubt that Taiwan will set up a volunteer force on schedule.

Perhaps most important, American officials worry that whatever they tell Taiwan's MND will leak to Beijing. "We're just never sure how good their security is," said an official who has dealt with the ministry.

Some also question whether the Taiwanese are willing to do what is necessary to defend themselves. US officials point to President Ma's military budget, which has hovered just above two percent of gross national product despite his promise to raise it to three percent. The US, in comparison, spends about four percent of GNP on military power.

Taiwan's Defense Ministry also is seen as stodgy, hidebound, and politicized.

On the equipment side, however, the quality of weapons and equipment sold to Taiwan has improved. Many items sent to the island are the same as those used by the US, including 150 F-16 fighters; four old but serviceable destroyers; 1,800 Stinger missiles; 30 Apache and 60 Black Hawk helicopters; and 444 Patriot Advanced Capability (PAC-3) antimissile defense systems.

Between 2000 and 2010, Taiwan was among the top recipients of US arms sales along with Israel, Egypt, and Saudi Arabia, according to CRS. As one officer said: "The F-16s get all the public attention, but it's not just airplanes we send them."

Some of that attention has been controversial. Taiwan, which has bought F-16A/Bs, asked for more advanced F-16C/D models in the 2011 package.

The Obama Administration decided, instead, to upgrade Taiwan's existing models, arguing that the retrofit would make them almost as capable as American F-16C/D variants.

US officials contended the upgrades would keep the F-16A/Bs in service rather than mothballed. Congressional supporters of Taiwan, though, voiced a suspicion that the Administration had pulled its punches to avoid provoking the Chinese, who have broken off military exchanges when they were peeved. Some US officials said the question of selling F-16C/Ds to Taiwan later was left open, while Taiwanese officials have floated in the press a possibility that they might instead ask for the new F-35s.

The Obama Administration implicitly recognizes the Taiwanese government's legitimacy, and US officials assert that Taiwan's security could be enhanced if the island's political leaders would acquire the vision to establish a qualitative edge. President Ma, who was re-elected in January, told a visiting delegation from the US-Taiwan Business Council he would seek improved relations with the US. He then told an audience at the MND that Taiwan should forge a small but strong military force.

Quoting the teachings about deterrence from Sun Tzu, the Chinese strategist of 2,500 years ago, President Ma said: "The highest form of generalship is to balk the enemy's plans."

When Assistant Secretary of Defense for Asia and Pacific Security Affairs Wallace C. Gregson was still in office, he cautioned, "Taiwan will never again have the luxury of relying on quantitative advantages over the PRC. Instead Taiwan must look to its qualitative advantages through focusing on innovation and asymmetry."

For innovation, he said, Taiwan "must focus on building a talented and educated corps of junior officers and noncommissioned officers." Gregson recognized that the island's geography and urbanization restricted the space available for training. That limitation could be mitigated with computers, he said, that will "allow you to simulate operations with real ships at sea and fighters in the air."

Gregson concluded that while Taiwan could not outspend the PRC, by prioritizing its budgets, "Taiwan can begin to shift the cost ratio of defense in its favor." He cautioned, "True and lasting security cannot be achieved simply by purchasing the next gleaming piece of advanced hardware." ■

Richard Halloran, formerly a New York Times *foreign correspondent in Asia and military correspondent in Washington, D.C., is a freelance writer based in Honolulu. His most recent article for* Air Force *Magazine, "A Revolution for China's Air Force," appeared in the February issue.*

Air Strike at Osirak

Rumors have been circulating for years that Israel was getting ready to launch a pre-emptive attack on Iran's emerging nuclear weapons capability. The speculation intensified as Iran prepared to move its uranium enrichment plant into a hardened mountain bunker. Iran continued to resist diplomatic and economic pressures to cease its quest for an atomic bomb.

In February, Israel warned that the window of opportunity for a successful military operation was closing, and an attack could not be delayed much longer if it was to be done at all. News reports said the Pentagon believed Israel might attack as early as April.

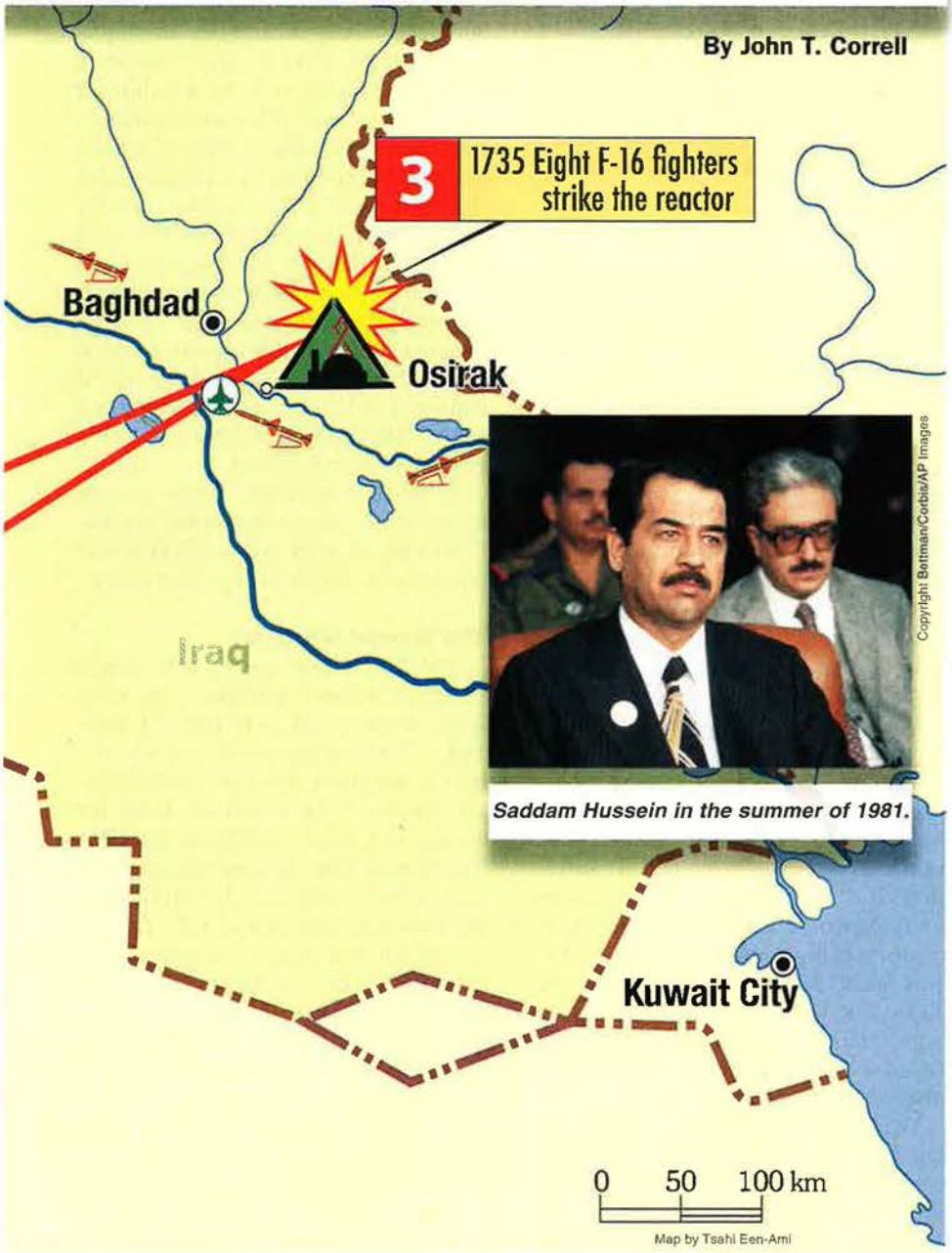
There were inevitable comparisons to a situation with marked similarities 30 years ago, when the Israeli Air Force wiped out a nuclear reactor in Iraq just before it was to be activated. This is the story of the air strike at Osirak.

In the fall of 1980, Israeli military intelligence reported that the Osirak nuclear reactor, 12 miles southeast of Baghdad, would become operational between July and November of 1981. Iraqi dictator Saddam Hussein had no need for a reactor for electric power production or other peaceful purposes; Iraqi oil reserves were ranked sixth in the world.

What Saddam really wanted from the reactor was the spent atomic fuel, from which plutonium could be extracted to manufacture the core of an implosion-

Iraq's nuclear reactor was about to go hot. If the Israelis were going to take action, it had to be soon.

By John T. Correll



Copyright Bettman/Corbis/AP Images

Saddam Hussein in the summer of 1981.

style atomic bomb. The target for his bomb would be Israel.

If Israel was going to act, it had to be soon. Once the reactor was in operation and "hot"—fueled with uranium—a bombing attack would spread radioactive fallout across Baghdad.

Saddam's Reactor

Saddam had gotten his reactor from France, which had also been the source of Israel's nuclear technology in the 1950s. Since then, the French had made a policy switch and sought to improve relations with the Arab world. In the wake of severe gasoline shortages in the United States and Western Europe following the Arab oil embargo of 1973-1974, France was eager to obtain a secure supply of oil.

When Iraq came shopping for a nuclear reactor, France found the offer of oil at favorable prices too good to pass up. Potential profit from weapons sales was another consideration. In 1975, the French agreed to sell Iraq a 70-megawatt Osiris reactor and a low-grade one-megawatt Isis training reactor. Italy, with similar motivations, agreed to provide a plant to reprocess the nuclear fuel and separate the plutonium.

In 1976, work began on a nuclear complex at al Tuwaitha, near a bend in the Tigris River. The French name for the large reactor was "Osirak," combining "Osiris" and "Iraq." Saddam and the Iraqi leaders renamed the reactors Tammuz I and II, after Tammuz 17 (July 17), the date of their takeover in 1958 from the previous regime. Outside of Iraq, both the large reactor and the nuclear complex continued to be known as Osirak.

In 1978, France agreed to Iraq's demands for highly enriched uranium, suitable for military purposes, to fuel the reactors, refusing an Israeli appeal to substitute lower grade "caramel" fuel. In April 1979, two reactor cores were destroyed by sabotage in France, just before they were to be shipped to Iraq. This set the project back by six months; many blamed the Israeli intelligence agency Mossad.

The small Isis/Tammuz II reactor was activated in February 1980. In June

Below: The first Israelis trained on American F-16s were (l-r) Maj. Dubi Yaffe, Lt. Col. Zeev Raz, Capt. Haggai Katz, and Capt. Yisrael Shaphir. All told, 12 Israeli pilots trained at Hill AFB, Utah. Left: The route taken into Iraq by the F-16 strike force that took out the Osirak nuclear site. Raz flew as the mission leader.

Photo via Tsahi Ben-Ami

Photo via Tsahi Ben-Ami

An F-16 is fueled just before taking off on the Osirak raid—called Operation Opera by the Israelis.

1980, the first shipment of enriched uranium arrived in Iraq.

Israel appealed to France and Italy to cut off assistance and sought support without much result from the US and others, as Saddam Hussein was not yet the international pariah he would become after the invasion of Kuwait in 1990.

Even the United States, Israel's greatest ally, was somewhat favorably disposed toward Saddam, who went to war with Iran in September 1980. The US regarded Iran, which had recently held 52 Americans hostage for more than a year, as its main enemy in the area. Bucking the trend, CIA director William J. Casey gave Israel almost unlimited access to imagery of al Tuwaitha from the US KH-11 reconnaissance satellite.

The International Atomic Energy Agency reported that the Iraqi reactor was not being used for military purposes. However, IAEA inspections were patently worthless. Inspected nations could veto visits from inspectors they did not like, and Soviets and Hungarians did all inspections in Iraq. Further, inspected nations could choose which facilities to show. In the Osirak case, inspectors were not permitted to see the Italian reprocessing lab.

Plan of Attack

Menachem Begin, the hard-line prime minister of Israel, believed the Osirak reactor had to be eliminated, but faced divided opinion in his own Cabinet. Among those against a military attack was the defense minister, Ezer Weizman, and Labor Party leader Shimon Peres—a former defense minister and challenger to Begin in the upcoming June 1981 election. The opponents feared even a successful strike would only postpone the problem and would have a disastrous effect on Israel in international public opinion.

Begin's principal supporters were Ariel Sharon, retired general and war hero, and at the time agriculture minister in Begin's Cabinet, Foreign Minister Yitzhak Shamir, Lt. Gen. Rafael Eitan, Chief of Staff of Israeli armed forces, and Maj. Gen. David Ivry, commander of the Israeli Air Force.

Weizman resigned, and Begin took over the defense ministry portfolio himself.

In July 1980, Israel raised the issue of the Iraqi reactor in public and warned that Israel would react to the threat. The decision to strike was made in secret by Begin and the Cabinet in October 1980.

Tentative planning to destroy the reactor had begun in 1978. One possible model was Israel's long-distance Entebbe raid that rescued captives held in Uganda in 1976, but that approach—requiring ground action and large numbers of troops and big, slow-moving aircraft—was scratched as too complicated and risky. The US disaster, Desert One, in April 1980, when an Entebbe-style effort failed to free hostages in Tehran, was also taken into account.

Osirak would be an air operation. It was more than 600 miles to the nuclear complex at al Tuwaitha, with the adversarial nations of Saudi Arabia and Jordan in between. The IAF had never flown a mission at that range. Most of its aircraft could not carry a full bomb load that far without refueling en route, and refueling would increase the danger of discovery or intercept.

The aircraft chosen for the job became available by chance. Israel had F-16s on order from the United States with delivery due in 1982. However, Israel leapt at an offer to buy F-16s earlier when a sale to Iran was canceled when the Shah was overthrown. These aircraft began arriving in July 1980, and Israel had 53 of them on hand at the time of the Osirak mission.

The speed and small size of the F-16 limited its vulnerability to enemy fire. With internal fuel capacity plus centerline and wing tanks, the F-16 could go the distance without refueling.

Israel had precision guided munitions, but "smart" weapons introduced complications, such as the effects of weather and the requirement to fly a stabilized pattern for delivery. Planners decided to keep the mission simple. They calculated that eight bombs directly on target would destroy it, and that 16 well-aimed gravity bombs dropped at low level would have a 99 percent probability of success.

The F-16's superb computerized bomb sighting system supported the decision to conduct the attack with conventional gravity bombs. The strike force would consist of eight F-16s, each carrying two Mk 84 2,000-pound bombs, with F-15s flying air cover for them.

A 60-foot concrete dome several inches thick covered the Osirak reactor. Delivered as planned, a 2,000-pound bomb could punch through that easily.

The Special Squadron

The F-16s were assigned to a new squadron formed at Ramat David Air Base, north of Tel Aviv in the Jezreel Valley. The squadron commander and base commander was Col. Iftach Spector, revered in the Israeli Air Force for having shot down 15 MiGs in the 1973 Yom Kippur War. (Spector was not a hero in the eyes of everyone. In 1967, he led the squadron that strafed USS *Liberty* in international waters, supposedly by mistake, killing 34 Americans during the Six-Day War.)

Twelve Israeli pilots trained in F-16s at Hill AFB, Utah, prior to delivery of the first aircraft. Back in Israel they flew low-level, long-distance exercises. They were not told the mission they were training for, but it was easy to guess.

The marginally competent Iranian Air Force made the first attempt to destroy the Osirak reactor, in September 1980. Two F-4s attacked with rockets and guns, but did little damage. Saddam sent word that the nuclear effort was directed against "the Zionist foe," not Iran.

Crews to carry out the Israeli attack were hand-picked by Eitan and Ivry. The strike force F-16s were grouped into two flights of four. Lt. Col. Zeev Raz would head the mission and fly the lead aircraft and Lt. Col. Amir Nachumi would lead the second flight.

Training was well under way when Spector decided he wanted to fly on the mission. Ivry turned him down,

Four of the Israeli F-16s line up before takeoff. The strike force comprised eight airplanes, in two flights of four.

Photos via Tsahi Ben-Ami

but Spector appealed to Eitan, who supported him.

Spector replaced one of the junior pilots on the team, and flew some F-16 missions from Ramat David, but did not receive the full training.

Raz remained mission leader. Spector would fly as Nachumi's wingman, putting him sixth in order on the bomb run.

The strike would be on a Sunday, based on an assumption—erroneous as it turned out—that the French and Italian technicians would be taking their day of rest. The F-16s would attack from west to east, late in the day, with the setting sun at their backs.

The raid was initially scheduled for May 17, but canceled on an appeal from Peres, who urged Begin to wait until after the upcoming French elections. Socialist Francois Mitterand, likely to be the new president of France, had assured his friend Peres that he would "excise the Iraqi reactor of its military potential." After the elections, however, President Mitterand sadly concluded that he was bound to abide by the previous agreement with Iraq.

Begin, furious, rescheduled the strike for Sunday, June 7. Peres led Begin in the public opinion polls. Figuring he would lose the election, Begin believed that removal of the Osirak reactor, critical to the security of Israel, must be accomplished before the reluctant Peres took office.

The F-16s and F-15s deployed to Etzion Air Base on the Sinai Peninsula, from where the attack would be launched. Security was tight. Telephone lines from the base, except for a few for official use, were cut off. Ground crews and technicians were not told what the mission was.

The eight F-16s were heavily laden for the attack. Each carried two Mk 84 bombs, two AIM-9L Sidewinder missiles, a 300-gallon centerline fuel tank, and two 370-gallon wing tanks. They rolled down the runway and struggled into the air at 3:55 p.m., which was 4:55 p.m. in Iraq.

80 Seconds Over Osirak

King Hussein of Jordan, aboard his yacht in the Gulf of Aqaba, saw the F-16s pass by, headed east. Hussein, a pilot himself, recognized what they were. He sent a warning message to Iraq, but it was never received by anyone in authority.

The F-16s and F-15s did not follow a straight line to the target. Their dogleg course was plotted to best avoid detection by Jordanian radar to the north and the Saudi E-3 Airborne Warning and Control System operating to the south. They maintained radio silence, flying on the Saudi side of the border at 360 knots (414 mph) and about 150 feet above the desert floor.

Shortly before crossing into Iraq, about 55 minutes into the flight, they dropped their wing tanks, which was risky with bombs mounted alongside on the wings, to lighten their load and improve their range.

The initial point for the attack, critical to the approach, was supposedly an unmistakable terrain feature, an island in the middle of a lake. Recent rains had covered the island with water, however, and Raz missed it momentarily, putting his calculations slightly off.

Fifty miles out, the F-15 escorts broke away and climbed to 25,000 feet to fly patrol and provide air cover. The strike force had been briefed to expect challenge from Iraqi air defenses after they crossed the Euphrates, but there was none. The Israelis turned northeast toward the target.

The nuclear complex came into view ahead on the banks of the Tigris. It was a quarter-mile square, the white concrete dome of the Osirak facility in the middle, with the Italian lab, the Isis reactor, and various shops and buildings off to the side.

The F-16s released their flares and chaff to confuse heat-seeking missiles and radar.

Four miles from the target, the F-16s climbed sharply to 5,000 feet. The tactic was to dive from altitude on the target at a speed of more than 600 mph at a 35-degree angle, releasing the bombs at high velocity from 3,500 feet. The bombs were fuzed with just enough delay to punch through the concrete dome to the reactor before exploding.

Because of the glitch at the initial point, Raz began his dive late and had to loop around to realign with the target. This meant his wingman, Maj. Amos Yadlin, bombed first, with Raz dropping second. The other F-16s followed close behind.

The F-16s swooped down on the Osirak complex at 6:35 p.m. Iraqi time. From first bomb to last, only 80 seconds elapsed. Smoke and flames rose into the air as 14 of the 16 bombs hit inside the dome and destroyed the reactor. The two bombs that missed were both dropped by Spector. The Isis reactor and the Italian lab were not damaged.

The attack caught the air defense gunners flat-footed. They were in the cafeteria for supper, the radars shut down and cold. The defenders got a few shots off at the last of the F-16s,

After the successful raid, one of the pilots had this mission symbol painted underneath the cockpit of his F-16.

IAEA, via Tsahi Ben-Ami

The former site of the Osirak nuclear reactor building was photographed during Desert Storm. The reactor was located next to the narrow smokestack in the far center of the photograph.

but they were shooting wildly and manually, without radar or computers. Attempting to pick off the diving F-16s, the gunners raked their own forces across the way.

As the F-16s came off the target, they broke left and made a fast departure from al Tuwaitha before climbing to altitude to rendezvous with the F-15s. After verifying that they had taken no losses, Raz led them on a beeline southwest to the Saudi border and then across Jordan to Etzion. They met no resistance on the way home and landed at Etzion just after 7 p.m.

They had been in the air for three hours and 10 minutes.

Contrary to expectation, the foreign technicians had taken the Muslim Sabbath on Friday as their day off, but most of them had already left work when the attack happened on Sunday. One French technician was killed. Reports of Iraqi deaths ranged from zero to 10, and the low-shooting Iraqi gunners inflicted some of the casualties.

Saddam ordered the execution of the air defense zone commander and all officers in his command over the rank of major. Twenty-three other officers and pilots were sent to prison.

Outrage at the UN

Iraq and France complained bitterly. The Soviet Union and other nations chimed in. A *New York Times* editorial stated, "Israel's sneak attack on a French-built nuclear reactor near Baghdad was an act of inexcusable and short-sighted aggression."

In the immediate aftermath, the US suspended deliveries of F-16s to Israel "for the time being." However, President Reagan soon announced, "There is no fundamental re-evaluation of the United States' relationship with Israel, nor does the United States government anticipate any change."

UN Secretary-General Kurt Waldheim of Austria denounced the Osirak attack as a "clear contravention of international law." In 1976, he had likewise assailed the Israeli raid to rescue its hostages in Entebbe. Waldheim's credibility on the subject of Israel took a nose dive when it was later revealed he had been a Nazi party member in World War II, serving in German units that executed partisans and sent Jews to death camps.

Jeane J. Kirkpatrick, US delegate to the UN, said the "diplomatic means available to Israel had not been exhausted," and the UN Security Council "strongly condemned" Israel's destruction of the reactor in a unanimous vote.

William Safire reached a different conclusion in a *New York Times* column. He declared that the Osirak strike "has enabled the rest of the world to indulge in an orgy of hypocrisy." Elimination of the reactor was to the benefit of all, he wrote, including the Arab world, which had feared domination by a nuclear-armed Iraq.

Begin's political fortunes rebounded. His Likud party won the June election and he remained prime minister until October 1983, when Yitzhak Shamir, who had staunchly supported him in the Osirak crisis, succeeded him.

Much of the international anger toward Israel soon faded. F-16 deliveries to Israel resumed Sept. 1, and France declined to sell Iraq a replacement for the destroyed reactor.

In time, the world had reason to be glad Saddam did not have nuclear weapons. Even his Arab neighbors joined the coalition against Iraq when he invaded Kuwait in 1990.

During the 1991 Gulf War, coalition forces destroyed what was left of the al Tuwaitha complex. After the war, US Defense Secretary Richard Cheney told Ivry the Osirak operation had "made our job much easier in Desert Storm."

Sequels

Years later, Israel carried out a preemptive attack against another nuclear site, but this time the world paid much less attention. In 2007, Israel and the US were aware of a nuclear reactor—and probably a nuclear weapons program—under development in Syria with North Korean assistance. That September, Israeli F-15s and F-16s destroyed the facility using Maverick missiles and 500-pound bombs.

News reports of the attack said the most likely targets were "weapons caches" supporting missile attacks on Israel. Syria, not eager to acknowledge it was working on nuclear weapons, said only that Israel had bombed a building "related to the military." More than a month later, US officials said the target was a partially constructed nuclear reactor. No other Arab nation criticized the raid, and the main international complaint came from North Korea.

Iran's nuclear program, known to the public since 2002, has been of greater substance and concern. Although the first target for an Iranian atomic bomb would be Israel, such a weapon would also be a threat to Europe and the United States.

The US itself has considered a military option against Iran's nuclear weapons program, and such a response was still under discussion in recent months. Meanwhile, diplomatic efforts bogged down in the face of Iran's defiance.

In September 2009, the US disclosed that Iran had carved a nuclear facility out of a mountain near Qom, 100 miles southwest of Tehran. This January, Iran acknowledged it had begun uranium enrichment there.

Israeli Defense Minister Ehud Barak warned Feb. 2 that if Iran proceeded with its nuclear program, the window of opportunity for a military operation was closing.

"Whoever says 'later' may find that later is too late," he said. ■

John T. Correll was editor in chief of Air Force *Magazine for 18 years and is now a contributor. His most recent article, "The Man From Thud Ridge" appeared in the March issue.*

Chart Page Special

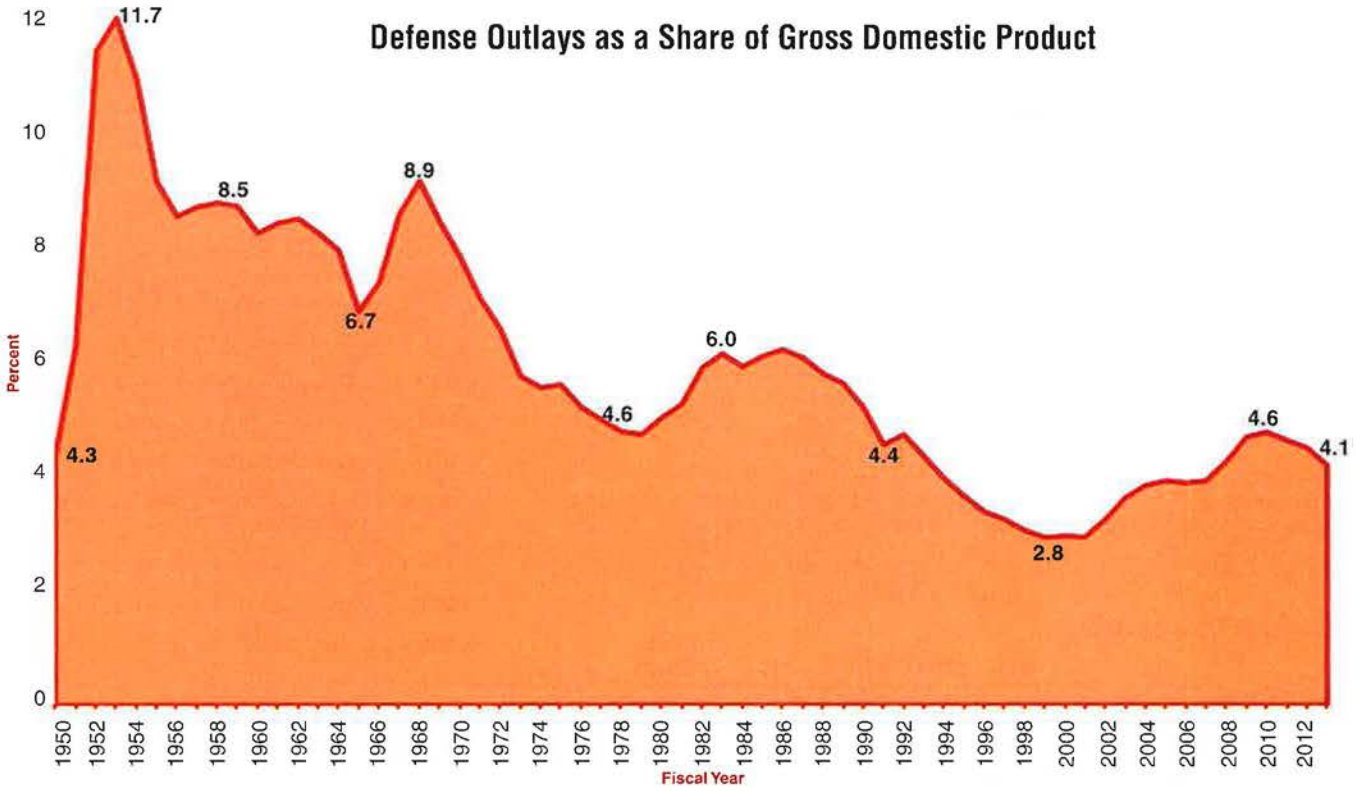
Defense Budget at a Glance

President Obama on Feb. 13 presented Congress a DOD budget request for Fiscal 2013. It seeks $525.4 billion in budget authority not including war costs and $613.9 billion in BA counting war costs. Funding most often is stated in BA—the value of new obligations DOD can incur. (Some are paid in future years.) Figures can also be expressed in outlays—actual checks written in a given year. "Current dollars" include inflation. With "constant dollars," inflation has been factored out. Charts address only the Defense Department program.

Defense Budget Authority

($ billions)

	2011	2012	2013	Planned 2014	2015	2016	2017
No War Costs, Current Dollars	$528.2	$530.6	$525.4	$533.6	$545.9	$555.9	$567.3
No War Costs, Constant FY 2013 Dollars	$543.6	$538.6	$525.4	$525.6	$527.5	$527.0	$527.5
With War Costs, Current Dollars	$687.0	$645.7	$613.9	$577.8	$590.1	$600.1	$611.5
With War Costs, Constant FY 2013 Dollars	$707.1	$655.4	$613.9	$569.1	$570.2	$568.9	$568.6



Defense Outlays

($ billions)

	2011	2012	2013	Planned 2014	2015	2016	2017
Current Dollars	673.9	683.0	666.2	565.7	539.2	544.9	555.7
Constant FY 2013 Dollars	693.6	693.2	666.2	557.2	521.0	516.5	516.8

Service Shares

(Budget authority in billions of constant FY 2013 dollars)

	2011	2012	2013	2014	2015	2016	2017
Dollars							
Air Force	149.6	147.1	140.1	140.3	140.8	140.7	140.9
Army	140.2	135.9	134.6	134.6	135.0	134.9	135.1
Navy/Marine Corps	160.6	159.2	155.9	156.1	156.7	156.5	156.7
Defense agencies	93.3	96.4	94.9	95.1	95.5	95.4	95.5
Total	543.6	538.6	525.4	525.6	527.5	527.0	527.5
Percentages							
Air Force	27.5%	27.3%	26.7%	26.7%	26.7%	26.7%	26.7%
Army	25.8%	25.2%	25.6%	25.6%	25.6%	25.6%	25.6%
Navy/Marine Corps	29.5%	29.6%	29.7%	29.7%	29.7%	29.7%	29.7%
Defense agencies	17.2%	17.9%	18.1%	18.1%	18.1%	18.1%	18.1%

Note: USAF shares above include non-Blue funding. FY 2014-17 estimates based on FY 2013 shares.

USAF's Blue-only share

Dollars	123.1	120.8	110.1
Percentages	22.6%	22.4%	21.0%

Note: USAF budget includes Blue, dollars for programs actually managed by USAF, and non-Blue, dollars USAF does not manage but that simply pass through USAF's accounts, such as some intelligence and space-related funding.

Cutting the Pie: Who Gets What

(Budget authority in billions of constant FY 2013 dollars)

	2011	2012	2013	2014	2015	2016	2017
Military personnel	141.8	143.9	135.1	135.2	135.6	135.5	135.7
O&M	199.8	200.2	208.8	208.9	209.6	209.4	209.7
Procurement	105.1	106.1	98.8	98.8	99.2	99.1	99.2
RDT&E	77.5	72.5	69.4	69.4	69.7	69.6	69.7
Military construction	15.2	11.6	9.6	9.6	9.6	9.6	9.6
Family housing	1.9	1.7	1.7	1.7	1.7	1.7	1.7
Other	2.5	2.6	2.1	2.1	2.1	2.1	2.1
Total	543.6	538.6	525.4	525.6	527.5	527.0	527.5

Note: FY 2014-17 estimates are based on FY 2013 shares.

Manpower

(End strength in thousands)

	1990	2000	2011	Est. 2012	Est. 2013	Change 1990-2011
Total active duty	2,065	1,384	1,425	1,423	1,401	-640
Air Force	535	356	333	333	329	-202
Army	751	482	566	562	552	-185
Navy	582	373	325	326	323	-257
Marine Corps	197	173	201	202	197	4
Selected reserves	1,128	865	848	847	837	-280
Civilians (FTE)	997	660	771	764	757	-226

Operational Training Rates

	1990	2000	2010	2011	Est. 2012	Est. 2013
Air Force						
Flying hours per crew per month, fighter/attack aircraft	19.5	17.2	19.4	17.7	11.0	12.0
Army						
Flying hours per tactical crew per month	14.2	12.7	12.0	12.3	10.4	11.6
Annual tank miles (FSTM)	800	669	427	411	334 (635)	573 (1,249)
Navy						
Flying hours per tactical crew per month	23.9	20.9	16.6	22.6	18.1	18.8
Ship steaming days per quarter						
Deployed fleet	54.2	50.5	58.0	58.0	58.0	58.0
Nondeployed fleet	28.1	28.0	24.0	24.0	24.0	24.0

Acronyms

AEHF	Advanced Extremely High Frequency
AFRC	Air Force Reserve Command
AMRAAM	Advanced Medium-Range Air-to-Air Missile
ANG	Air National Guard
AWACS	Airborne Warning and Control System
BCT	Brigade Combat Team
BUR	Bottom-Up Review
CVLSP	Common Vertical Lift Support Platform
DCGS	Distributed Common Ground System
DMSP	Defense Meteorological Satellite Program
EELV	Evolved Expendable Launch Vehicle
FSTM	Full Spectrum Training Mile
FTE	Full-Time Equivalent
FWE	Fighter Wing Equivalent
GPS	Global Positioning System
Helo	Helicopter
JASSM	Joint Air-to-Surface Standoff Missile
JDAM	Joint Direct Attack Munition
JSTARS	Joint Surveillance Target Attack Radar System
MEF	Marine Expeditionary Force
NPOESS	National Polar-orbiting Operational Environmental Satellite System
O&M	Operation and Maintenance
ORS	Operationally Responsive Space
PAA	Primary Aircraft Authorized
QDR	Quadrennial Defense Review
RDT&E	Research, Development, Test, and Evaluation
SATCOM	Satellite Communications
SBIRS	Space Based Infrared System
SDB	Small Diameter Bomb
Sigint	Signals Intelligence
SOF	Special Operations Forces
UAV	Unmanned Aerial Vehicle

Major USAF Programs RDT&E

(Current million dollars)

	Program	2011	2012	2013
Bombers	B-1B	33.1	33.0	16.3
	B-2	244.7	280.3	317.0
	B-52	129.9	93.8	53.2
	Long-range strike	192.8	294.9	291.7
Fighter/Attack	A-10	5.5	11.1	13.5
	F-15	0.0	0.0	0.0
	F-15E	201.0	194.8	192.7
	F-16	125.4	131.1	190.3
	F-22A	493.5	571.3	511.8
	F-35	931.6	1,397.9	1,218.4
Helos	CVLSP	4.0	5.4	0.0
	HH-60M	11.9	11.1	123.2
ICBM	Minuteman III	133.6	217.7	280.1
ISR/BM/C3	Airborne Recon Systems	243.2	103.9	96.8
	Airborne Sigint Enterprise	159.5	108.3	129.1
	Air & Space Ops Center	89.9	120.7	76.3
	DCGS	94.3	85.7	88.0
	E-3 AWACS	201.8	117.9	65.2
	E-4	12.1	4.9	4.2
	E-8 JSTARS	162.8	74.0	24.2
	EC-130 Compass Call	20.0	18.5	12.1
	Endurance UAV	65.8	45.9	21.0
	MQ-1 Predator	42.8	11.6	9.1
	MQ-9 Reaper	136.7	126.7	148.0
	RQ-4 Global Hawk	218.9	340.6	236.3
Mobility	C-5	55.1	12.9	35.1
	C-17	156.9	93.8	99.2
	C-27J	17.9	27.1	0.0
	C-130	42.1	6.5	5.0
	C-130J	25.9	39.5	30.7
	KC-10	41.5	30.9	24.0
	KC-46	538.9	877.1	1,815.6
	KC-135	19.9	6.2	0.0
Munitions	AGM-158A JASSM	19.3	5.8	8.0
	AIM-9X Sidewinder	5.8	8.0	8.2
	AIM-120 AMRAAM	60.8	77.8	87.0
	GBU-31/32/38 JDAM	0.0	0.0	0.0
	GBU-39 SDB	100.0	132.9	143.0
	Hellfire	0.0	0.0	0.0
Space	AEHF	385.0	397.5	229.2
	Counterspace systems	38.0	31.6	28.8
	Cyberspace	20.3	3.0	73.2
	DMSP	0.0	0.0	0.0
	EELV	53.8	14.5	8.0
	GPS	155.8	131.8	126.5
	GPS III	817.2	835.6	704.9
	Joint Space Ops Center	98.7	80.4	54.7
	MilSatCom	298.7	236.6	107.2
	NPOESS	173.0	43.0	0.0
	ORS	125.0	110.4	0.0
	SBIRS	523.8	621.6	448.6
	Space control technology	63.3	44.6	25.1
	Spacelift range system	9.3	9.9	8.8
	Space situation awareness	359.6	270.2	286.8
	Wideband Global SATCOM	74.9	12.7	12.0
SOF	AC-130J	0.0	0.0	0.0
	CV-22	17.7	13.2	28.0
	HC/MC-130	15.0	22.1	19.0
	MC-12W	0.0	0.0	20.0

Major USAF Programs Procurement

(Current million dollars)

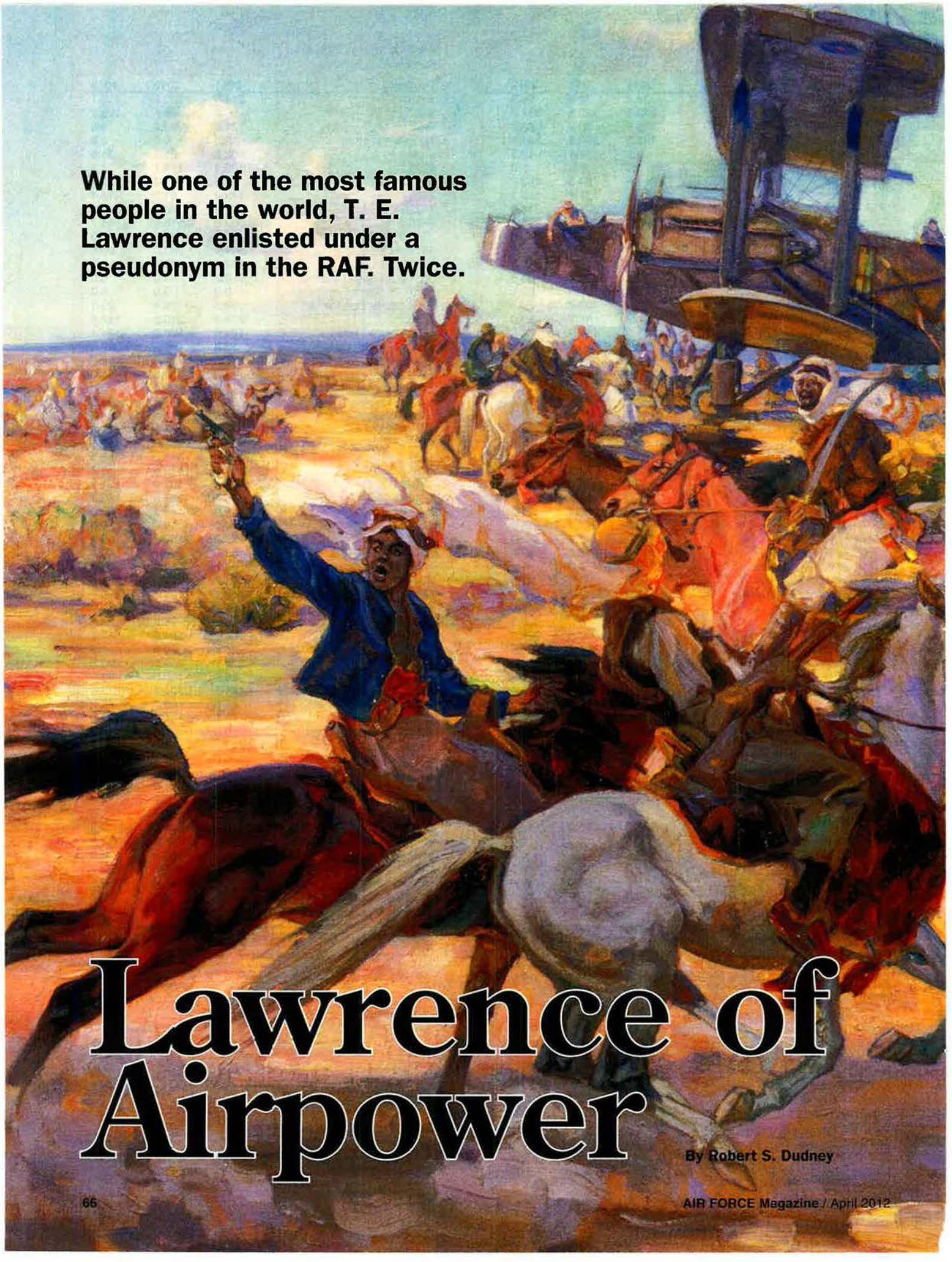
Program	2011	2012	2013
B-1B	214.5	202.8	150.7
B-2	60.6	80.4	129.9
B-52	21.0	93.9	9.8
Long-range strike	0.0	0.0	0.0
A-10	202.8	55.0	95.0
F-15	133.3	114.7	35.3
F-15E	85.3	99.3	100.0
F-16	178.9	61.3	15.4
F-22A	592.5	336.2	283.9
F-35	4,302.2	3,518.6	3,565.7
CVLSP	0.0	52.8	0.0
HH-60M	591.4	203.0	86.8
Minuteman III	132.3	125.7	54.8
Airborne Recon Systems	0.0	0.0	0.0
Airborne Sigint Enterprise	0.0	0.0	0.0
Air & Space Ops Center	38.3	15.4	33.9
DCGS	275.1	215.2	142.9
E-3 AWACS	194.0	135.0	193.1
E-4	43.9	57.8	47.6
E-8 JSTARS	6.3	22.6	59.3
EC-130 Compass Call	111.0	302.3	64.0
Endurance UAV	0.0	0.0	0.0
MQ-1 Predator	20.1	161.3	30.9
MQ-9 Reaper	853.6	944.2	885.4
RQ-4 Global Hawk	777.2	484.6	95.9
C-5	949.7	1,035.6	1,127.6
C-17	485.2	513.3	386.8
C-27J	349.3	479.9	0.0
C-130	479.4	462.3	111.1
C-130J	549.4	252.5	138.9
KC-10	16.8	15.5	60.0
KC-46	0.0	0.0	0.0
KC-135	37.2	64.6	60.1
AGM-158A JASSM	168.2	236.2	240.4
AIM-9X Sidewinder	64.2	88.8	88.0
AIM-120 AMRAAM	346.4	202.2	229.6
GBU-31/32/38 JDAM	346.4	127.3	155.8
GBU-39 SDB	119.2	19.8	47.0
Hellfire	90.6	75.8	82.0
AEHF	256.9	551.5	557.2
Counterspace systems	26.9	20.6	21.0
Cyberspace	257.8	264.8	293.5
DMSP	86.4	100.0	89.0
EELV	1,144.5	1,701.7	1,679.9
GPS	69.5	109.7	60.2
GPS III	0.0	514.1	492.9
Joint Space Ops Center	0.0	0.0	0.0
MilSatCom	188.2	36.5	47.6
NPOESS	0.0	0.0	0.0
ORS	0.0	0.0	0.0
SBIRS	963.6	374.5	501.4
Space control technology	0.0	0.0	0.0
Spacelift range system	103.2	125.0	109.6
Space situation awareness	0.0	0.0	0.0
Wideband Global SATCOM	559.3	792.9	36.8
AC-130J	9.9	128.5	164.0
CV-22	490.0	374.6	333.1
HC/MC-130	790.8	1,000.0	554.1
MC-12W	15.9	34.1	17.1

Historical Force Structure

	Cold War Base 1990	1990 Base Force	1993 BUR Plan	1997 QDR Goal	2002 Defense Budget
Air Force					
Active FWEs	24	15	13	12+	12+
ANG/AFRC FWEs	12	11	7	8	7+
Army					
Active divisions	18	12	10	10	10
Army National Guard	10	8	8	8	8
Navy					
Active Aircraft Carriers	15	12	11	11	12
Reserve Aircraft Carrier	1	1	1	1	0
Active Air Wings	13	11	10	10	10
Reserve Air Wings	2	2	1	1	1
Marine Corps					
Active MEFs	3	3	3	3	3
Marine Reserve Air Wing	1	1	1	1	1

Current Force Structure

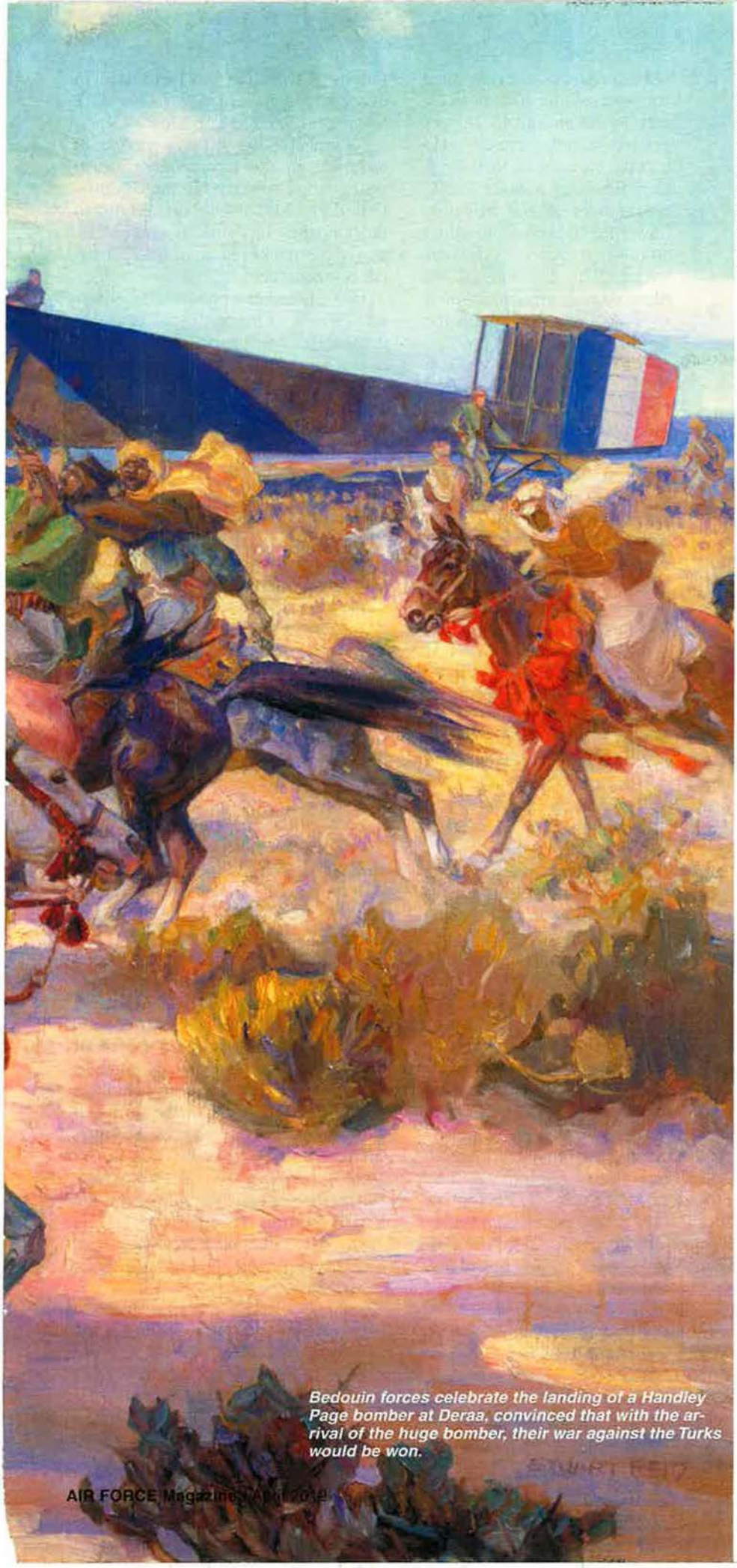
	2009	2010	2011	Est. 2012	Est. 2013
Air Force					
Active PAA strike aircraft	1,281	1,077	1,173	1,183	1,169
ANG PAA strike aircraft	462	429	446	414	339
AFRC PAA strike aircraft	104	98	105	105	87
Army					
Active BCTs	44	45	45	45	45
ARNG BCTs	28	28	28	28	28
Navy					
Aircraft Carriers	11	11	11	11	10
Active Air Wings	10	10	10	10	10
Reserve Air Wings	1	1	1	1	1
Marine Corps					
Active MEFs	3	3	3	3	3
Marine Reserve Air Wing	1	1	1	1	1



While one of the most famous people in the world, T. E. Lawrence enlisted under a pseudonym in the RAF. Twice.

Lawrence of Airpower

By Robert S. Dudney



Bedouin forces celebrate the landing of a Handley Page bomber at Deraa, convinced that with the arrival of the huge bomber, their war against the Turks would be won.

By Stuart Reid, via the Imperial War Museum

T. E. Lawrence as an Army officer in 1915.

In the epic film "Lawrence of Arabia," the title character, having left his desert war and gone back to England, is killed in a motorcycle accident. The implication is that T. E. Lawrence died young, soon after the Arab Revolt ended in 1918.

Contrary to the Hollywood tale, the real Thomas Edward Lawrence lived for 17 more years, until 1935. Moreover, the legendary figure known as Lawrence of Arabia passed most of those years as an enlisted man in the Royal Air Force, under assumed names. The world-famous Colonel Lawrence, sick of celebrity, joined the RAF in 1922 under the alias John Hume Ross (A/C2 No. 352087) and again in 1925 as T. E. Shaw (A/C2 No. 338171). There he stayed until the final weeks of his life.

Most of Lawrence's biographers give limited attention to this period and focus on the earlier exploits of the young, glamorous, Oxford-educated officer as he led Bedouin tribesmen against the Ottoman Empire in 1916-1918. Yet Lawrence's life after Arabia is remarkable, too. One of recent history's most charismatic figures, laboring in anonymity, made important contributions to Britain's airpower and did so from the lowly enlisted ranks.

Lawrence's involvement in airpower long preceded his RAF tours. The public knows him as an Englishman in flowing white robes and riding a camel, leading sweeping attacks across the desert. Yet

Lawrence in 1917, near Aqaba, the site of his most famous victory.

Lawrence always was bound up with military aviation.

His attraction to airpower first emerged in 1915, when he worked in British army intelligence in Cairo. In his recent book, *Hero,* Michael Korda reports that the young Lawrence pioneered aerial photography for mapmaking and intelligence. According to Korda, "He devised his own system of laying out aerial photographs in a grid pattern to use them as the basis for a map and taught pilots how to take the pictures he needed." Lawrence served as liaison between Royal Flying Corps photographers and surveying teams. He took part in experiments in early 1915. When his ideas were successfully tested at Gallipoli, aerial surveying soon came into widespread use.

In 1916, Lawrence entered the field as British Army liaison to the army of Sharif Hussein of Mecca. He soon began to make heavy use of aviation. Lawrence focused on ways to incorporate British aircraft (and armored cars) into his tactics. He became an innovator in what military men now refer to as "combined operations." Lawrence swiftly integrated British pilots and their aircraft into his hit-and-run campaigns using horses, camels, and infantry.

Historians assert Lawrence was one of the first military men to use aircraft to support ground assaults directly. He had the backing of then-Brig. Gen. Geoffrey Salmond, RFC commander in the Mideast. Lawrence became a committed airpower proponent. As he later wrote, "The war showed me that a combination of armored cars and aircraft could rule the desert."

Air reconnaissance was one key to the revolt's most famous victory—at Aqaba. Lawrence's official biographer, Jeremy Wilson, says that in 1916, while in Cairo, Lawrence extensively studied air photos of Aqaba, a port town guarded by Turkish naval guns. A year later Lawrence boldly seized the fortress from its landward side, using his detailed knowledge of surrounding terrain.

At Um el Surab, in what is now Jordan, his force built an airstrip for a huge Handley Page bomber. Its arrival caused a "wild-eyed Bedouin" to ride off announcing he had seen "the biggest aeroplane in the world." As Korda notes, "Even the most skeptical tribesmen were now convinced that the Turks were done for."

Hot Air, Aeroplanes, and Arabs

Lawrence, by war's end, was operating his own small air force east of the Jordan River. He controlled "X flight," airplanes devoted to specific missions. These included bombing Turkish rail lines, taking aerial photos, and raiding Turkish positions. Lawrence even learned to fly; he had pilot friends and took the controls while airborne. He claimed he had 2,000 flying hours. He told the war historian, B. H. Liddell Hart, he made only one landing, in which he tore off the aircraft's undercarriage.

Lawrence was much impressed by an RAF attack on Sept. 21, 1918. The Turkish 7th Army was caught fleeing east toward the Jordan. "For four hours," said Lawrence, "our aeroplanes replaced one another in series above the doomed columns: Nine tons of small bombs or grenades and 50,000 rounds [of small-arms ammunition] were rained upon them."

He went on, "When the smoke had cleared it was seen that the organization of the enemy had melted away. They were a dispersed horde of trembling individuals, hiding for their lives in every fold of the vast hills. ... The RAF lost four killed. The Turks lost a corps."

Lawrence used his knowledge of airpower in the immediate postwar years, when he served in the Colonial Office as a Mideast expert. He did so most openly in connection with the newly created kingdom of Iraq, a British protectorate.

In 1921, Lawrence advised his minister—Winston Churchill—to "hand over defense [of Iraq] to the RAF instead of the Army." His wartime experience proved to him that a handful of aircraft could control tribal forces, allowing London to avoid bloody ground-force operations. Air Chief Marshal Hugh Trenchard, the RAF chief, supported him on this.

According to Lawrence biographer H. Montgomery Hyde, "The new policy [was] somewhat contemptuously described by Sir Henry Wilson, the chief of the Imperial General Staff, as one of 'hot air, aeroplanes, and Arabs.'" Despite this boots-on-the-ground view, Churchill accepted the "air policing" plan.

"From its creation in 1921 to ... World War II, Iraq was a proving ground for Lawrence's visionary ideas about airpower," Korda writes. "For several decades the principal RAF base at Habbaniya, outside Baghdad, was one of the largest military airfields in the world."

In 1922, Lawrence's life took a strange turn. He moved decisively to abandon fame, fortune, and career, become a humble RAF aircraftman, and simply vanish.

In January 1922, Lawrence opened secret negotiations to enlist under an assumed name. In July, a reluctant Churchill approved Lawrence's plan. Trenchard, by that time a friend of Lawrence's, insisted that he enter as an officer, but Lawrence refused. To Lawrence, a colonel in the Army, it was the enlisted ranks or nothing. Trenchard finally gave in. On Aug. 30, 1922, Lawrence, using the alias John Hume Ross, presented himself at the RAF recruiting office, Covent Garden.

He failed the medical exam, had no birth certificate, and aroused great suspicion.

There was never a doubt he would get in, though. A top Air Ministry official (who was in on the secret) told the recruiting officer to get "Ross" into the RAF "or you'll get your bowler hat"—RAF-speak for "you will be discharged." Within hours, Lawrence/Ross was officially sworn into the RAF.

Why did Col. T. E. Lawrence, World War I's greatest hero, chuck it all and become Aircraftman 2nd Class Ross? Lawrence gave various explanations. He told Trenchard he wanted to write a book about the RAF. When another officer asked why he joined, Lawrence said, "I think I had a mental breakdown, sir." At other times, he said he liked the camaraderie or that he simply didn't know. Others had psychological explanations. The author Robert Graves, Lawrence's friend and biographer, said the hero had come to regard his part in the Arab revolt as dishonorable, and he wished to avoid further publicity and praise.

"There was a tendency among Lawrence's contemporaries to see his decision to shed his rank and join the RAF as a form of penance, but he always denied that," notes Korda. "His service in the RAF, once he was past recruit training, would prove to be the happiest time of his [adult] life."

Lawrence of Arabia, now known as A/C2 Ross, was posted to an air training depot at RAF Uxbridge, near London. "Ross"—33 years old, five feet and five inches tall, with highborn speech and manners—was an odd recruit. He had contempt for parade drill, endless inspections, and physical training.

For all that, Lawrence survived basic and was posted in November 1922 to the service school of photography at RAF Farnborough. He tapped friends in high places to gain early entry to the basic course but otherwise was a model student. Later, a base officer recalled, "Nothing about him suggested that here was the most amazing aircraftman ever to join the RAF."

A Desolate Abomination

The "Ross" fiction, however, was soon exposed. On Dec. 27, 1922, the *Daily Express* splashed the story on the front page. The headline read, "Lawrence of Arabia," after which came, "Famous War Hero Becomes a Private." Soon, Farnborough was besieged by reporters and photographers, generating an unprecedented media feeding frenzy.

"By 1923," Korda wrote, "Lawrence was Britain's most famous war hero and a media celebrity on a scale that until then had been unimagined. It was as if Princess Diana had vanished from her home and had been discovered by the press enlisted in the ranks of the RAF as Aircraftwoman Spencer, doing drill, washing her own undies, living in a hut with a dozen or more other airwomen."

The RAF decided the publicity was bad for discipline. Ross was summarily discharged. Lawrence quickly enlisted in the Royal Tank Corps, hoping he could parlay this into a quick transfer back to the RAF. He took a new name, 7875698 Private T. E. Shaw, arriving at RTC Depot, Bovington, on March 23, 1923.

Lawrence loathed each of his 29 months in khaki. "The Army," he said, "is muck, stink, a desolate abomination." In 1924 and 1925, he pressed high-level friends, including Trenchard, to get him back in the RAF. As of mid-1925, he had had no luck. Wilson, the official biographer, reports "Lawrence's mental state was now deteriorating rapidly and he had begun to think that ... re-entry into the RAF would be the only future worth living for."

In June 1925, a despondent Lawrence sent a letter that its recipient interpreted as a suicide threat. Fearing a huge scandal if Britain's great war hero were to kill himself, Prime Minister Stanley Baldwin intervened.

In August 1925, Army Private T. E. Shaw joined (or rejoined?) the RAF as 338171 AC/2 Shaw.

The next 10 years featured long stretches of quiet, punctuated by massive bursts of "Colonel Lawrence" publicity. Lawrence was posted to RAF Cranwell, home of RAF Cadet College, where officer candidates trained. He was in B flight, an aircraft hand on six aircraft used for training. Virtually everyone knew Aircraftman Shaw's identity, but no one made a big deal of it. In late 1926, the Cranwell posting drew to an end, partly because of a fresh wave of publicity and partly because the RAF required an airman to serve overseas, in India, Egypt, or Iraq.

Lawrence drew India. On Jan. 7, 1927, he arrived at the RAF's depot in Karachi (now part of Pakistan, created in the 1947 partition of British India). For the next 17 months, he served quietly as a clerk in the Engine Repair Section. Then, in March 1927, Lawrence's memoir, *Revolt in the Desert,* was published, creating new press stories about the missing hero. His commanding officer found out the truth and suspected Lawrence was spying on him. Lawrence acquired a transfer elsewhere.

That place was RAF Miranshah, a remote base on the border with Afghanistan. Miranshah was home to one squadron, five officers, 25 airmen, and 700 Indian scouts. Lawrence arrived in late May 1928 and was given simple clerical duties. His peace and quiet didn't last long. By September, the British press was printing fictional reports about the mysterious Colonel Lawrence, claiming that he was spying in Afghanistan.

Aircraftman T. E. Shaw (Lawrence) at RAF Miranshah, India.

In late 1928, the top blew off. The spark was an uprising of Afghanistan's Shinwari tribe against King Amanullah in Kabul. At this tense moment, the sensationalist *Empire News* "revealed" that Lawrence had crossed the border, met the king, and disappeared into "the wild hills of Afghanistan" disguised as "a holy man," attempting to raise a pro-Amanullah army. It was total fiction, but the tales of covert action stirred fierce anti-British sentiment. An alarmed foreign secretary, Austen Chamberlain, found Lawrence's presence in India to be, as he described it, "very inconvenient."

"Great Mystery of Colonel Lawrence: Simple Aircraftman, or What?" was the question posed by a London newspaper. Lawrence had become radioactive. The RAF pulled him out of India on Jan. 8, 1929, and sent him home. Air Ministry leaders considered sacking Lawrence again, as in 1923. They finally decided to assign their troublesome airman, in March 1929, to RAF Cattewater, a seaplane base near Plymouth on the English Channel. At Cattewater (soon renamed RAF Mount Batten), Lawrence began working with seaplanes, launches, and speedboats. He embarked on a new career in the design, construction, and operation of the RAF's high-speed rescue sea craft.

Shaw (Lawrence) in the uniform of an enlisted RAF aircraftman.

He was self-taught. Lawrence, respected now for his marine knowledge, was invited to write the official handbook for the RAF ST 200-class speedboats. Korda writes, "The handbook remains today perhaps the most concise and most instructive technical manual ever published." It was in use until after World War II.

By March 1933, however, Lawrence had been returned to regular airman duties at Mount Batten. This bored him, and on March 6, he requested a discharge. When the story leaked, a strange furor ensued. Everyone, including senior government officials, assumed Lawrence had been fired. Very high-level inquiries came down on an uncomfortable RAF. Did Lawrence, they asked, have any complaint about his treatment? Lawrence reported he had no complaint and would stay if given something worthwhile to do. Within days, he was posted to the RAF Marine Aircraft Experimental Establishment at RAF Felixstowe. By April 28, he was happily on the job.

For Lawrence, the years 1933 and 1934 were the busiest of his service life. He spent little time at Felixstowe, traveling often to RAF-affiliated boatyards, inspecting equipment. In November 1934, he moved to RAF Bridlington, on the North Sea—his final posting. He supervised the winter overhaul of 10 boats, a great deal of work for the time alloted, but he did it.

On Feb. 25, 1935, Lawrence presented himself to Pilot Officer F. J. Manning, his commander, for an exit interview. They chatted, Manning signed the discharge form, and Lawrence left the RAF.

He did so with considerable regret, as Lawrence wrote to Air Chief Marshal Edward Ellington, the RAF head. His letter said, in part: "I've been at home in the ranks and well and happy. ... If you still keep that old file about me, will you please close it with this note which says how sadly I am going? The RAF has been more than my profession." Barely two months later, Lawrence suffered massive injuries in a motorcycle crash. He never came out of a coma and died on May 19—not as a hero who perished tragically young but as a middle-aged "ranker" whose final years were amazingly productive.

A Separate Debt

The list of his achievements in those years is an impressive one.

- Lawrence completed the book on the RAF, first mentioned in 1922; *The Mint* memorialized his training days at Uxbridge (it was not published until 1955.) *Seven Pillars of Wisdom,* his classic account of the Arab Revolt, came out in 1926. *Revolt in the Desert,* an abridgement, hit the next year. He completed an acclaimed translation of Homer's *Odyssey.* All this he did while serving in the ranks.
- Even while doing an airman's work, Lawrence socialized and corresponded with an astounding number of notable political and artistic figures, including George Bernard Shaw, Robert Graves, Nancy Astor, Thomas Hardy, Noel Coward, E. M. Forster, Siegfried Sassoon, William Butler Yeats, John Buchan, and of course, Trenchard, Churchill, and Liddell Hart.
- Acting behind the scenes, he wrote detailed letters to Trenchard, pushing needed reforms. These caused the abandonment of petty requirements such as polished bayonets, spurs, swagger sticks, and puttees. His actions reduced kit inspections to one a month and ended the demand for airmen to button the top two buttons of a coat. In India, he went bareheaded, proving there was no need for pith helmets. These changes delighted airmen.
- He was instrumental in persuading Parliament to abolish use of the death penalty for cowardice in battle.
- He set up the "Seven Pillars Trust," assigning to it the copyright and substantial income from *Revolt in the Desert.* The trust paid thousands of pounds into funds to educate the children of fallen RAF officers. After his death the trust was renamed the Lawrence of Arabia Educational Fund. It still exists.
- Lawrence, the world's most experienced practitioner of irregular warfare, wrote extensively to Trenchard with advice on how to deal with tribal-warrior incursions and attacks in Jordan and Iraq. This was at least in part responsible for Britain's relative success against insurgencies.
- He used powerful contacts to expose the cause of the crash of an RAF Iris III seaplane, with multiple deaths. The senior officer on board was unqualified to fly the airplane but regulations gave him the right to take the controls, which he did. Lawrence provided facts for the newspapers and testified at an inquiry. As a result, the RAF ruled that a pilot would be in complete command of an aircraft, and no higher-ranking officer could take over.
- He helped construct what became the RAF's Air Sea Rescue Service. He worked on revolutionary designs for RAF rescue boats which, as Lawrence noted, "have three times the speed of their predecessors, less weight, less cost, more room, more safety, more seaworthiness." They were put to great use in 1940, rescuing RAF pilots downed over the English Channel during the Battle of Britain.

Lawrence never escaped his own glamorous past, but his life in the ranks drew this 1936 tribute from Churchill: "He saw as clearly as anyone the vision of airpower and all that it would mean in traffic and war. ... He felt that in living the life of a private in the Royal Air Force he would dignify that honorable calling and help to attract all that is keenest in our youthful manhood to the sphere where it is most urgently needed. For this service and example, ... we owe him a separate debt. It was in itself a princely gift." ■

Robert S. Dudney is a former editor in chief of Air Force *Magazine (2002-2010). His most recent article was "Rescue in Space" in the January issue.*

AIR FORCE ASSOCIATION

Professional Development

AIR FORCE ASSOCIATION'S
AIR&SPACE CONFERENCE
AND TECHNOLOGY EXPOSITION
2012

SEPTEMBER 17-19, 2012 | GAYLORD NATIONAL HOTEL
NATIONAL HARBOR, MD

AIR FORCE ASSOCIATION'S
GLOBAL WARFARE SYMPOSIUM

November 15 - 16, 2012
Hyatt Regency Century Plaza
Los Angeles, CA

AIR FORCE ASSOCIATION'S ANNUAL
AIR WARFARE SYMPOSIUM
AND TECHNOLOGY EXPOSITION

FEBRUARY 21-22, 2013
ROSEN SHINGLE CREEK RESORT ,ORLANDO, FL

CYBERFUTURES
CONFERENCE
AND TECHNOLOGY EXPOSITION

MARCH 14-15, 2013
GAYLORD NATIONAL RESORT
NATIONAL HARBOR, MD

For additional information visit us at www.afa.org

AFA National Leaders

NATIONAL OFFICERS

BOARD CHAIRMAN

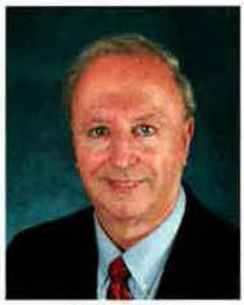
S. Sanford Schlitt
Sarasota, Fla.

VICE CHAIRMAN, FIELD OPERATIONS

Justin M. Faiferlick
Fort Dodge, Iowa

VICE CHAIRMAN, AEROSPACE EDUCATION

George K. Muellner
Huntington Beach, Calif.



SECRETARY

Edward W. Garland
San Antonio

TREASURER

Leonard R. Vernamonti
Clinton, Miss.

NATIONAL DIRECTORS

John T. Brock
Oviedo, Fla.

John D. W. Corley
Union Hall, Va.

Robert W. Drewes
Park City, Utah

Angela Dupont
Haverhill, Mass.

Rick Hartle
Layton, Utah

Wayne R. Kauffman
Agoura, Calif.

Larry A. Lawson
Southlake, Tex.

William R. Looney III
Garden Ridge, Tex.

Rodney J. McKinley
Edmond, Okla.

Donald R. Michels
Lawrenceville, Ga.

John F. Phillips
Reston, Va.

Donald Taylor
San Antonio

Marvin L. Tooman
West Des Moines, Iowa

Stephen G. Wood
Reston, Va.

DIRECTORS EMERITUS

L. Boyd Anderson
Ogden, Utah

R. Donald Anderson
Poquoson, Va.

David L. Blankenship
Tulsa, Okla.

Bonnie B. Callahan
Winter Garden, Fla.

Dan Callahan
Centerville, Ga.

George H. Chabbott
Dover, Del.

Stephen P. "Pat" Condon
Ogden, Utah

O. R. "Ollie" Crawford
San Antonio

William D. Croom Jr.
San Antonio

Julie Curlin
Tampa, Fla.

Jon R Donnelly
Richmond, Va.

George M. Douglas
Colorado Springs, Colo.

Michael J. Dugan
Dillon, Colo.

Charles G. Durazo
Yuma, Ariz.

Samuel M. Gardner
Garden City, Kan.

Don C. Garrison
Easley, S.C.

Richard B. Goetze Jr.
Arlington, Va.

Emlyn I. Griffith
Rome, N.Y.

Donald J. Harlin
LaGrange, Ga.

Martin H. Harris
Montverde, Fla.

Monroe W. Hatch Jr.*
Clifton, Va.

Dan Hendrickson
Port Angeles, Wash.

Harold F. Henneke
Nashville, Ind

Victoria W. Hunnicutt
Gray, Ga.

Leonard W. Isabelle
Lakeport, Calif.

David C. Jones
Potomac Falls, Va.

James M. Keck
San Antonio

Thomas J. Kemp
Crowley, Tex.

Robert E. Largent
Harrison, Ark.

Hans Mark
Austin, Tex.

Robert T. Marsh
Falls Church, Va.

William V. McBride
San Antonio

James M. McCoy
Bellevue, Neb.

Thomas J. McKee
Fairfax Station, Va.

Charles A. Nelson
Sioux Falls, S.D.

Ellis T. Nottingham
Arlington, Va.

Donald L. Peterson*
Fairfax Station, Va.

John J. Politi
Fair Oaks Ranch, Tex.

Jack C. Price
Pleasant View, Utah

Victor Seavers
Eagan, Minn.

Mary Ann Seibel-Porto
Las Vegas

John A. Shaud*
Prattville, Ala.

James E. "Red" Smith
Princeton, N.C.

R. E. "Gene" Smith
West Point, Miss.

Loren J. Spencer
Arlington, Va.

Jack H. Steed
Warner Robins, Ga.

Robert G. Stein
Colorado Springs, Colo.

Mary Anne Thompson
South Yarmouth, Mass.

Walter G. Vartan
Chicago

A. A. West
Williamsburg, Va.

Mark J. Worrick
Denver

Charles P. Zimkas Jr.
Colorado Springs, Colo.

*Executive Director (President-CEO) Emeritus

EX OFFICIO

Joseph E. Sutter
Former Board Chairman
Knoxville, Tenn.

Michael M. Dunn
President-CEO
Air Force Association
Arlington, Va.

William J. Dendinger
National Chaplain
Grand Island, Neb.

Pierce Roberts
National Commander
Arnold Air Society
Clemson, S.C.

AFA National Report

natrep@afa.org

By Frances McKenney, Assistant Managing Editor

Air Force Gala at Orlando

Air Force research and development endeavors drew the spotlight at the **Central Florida Chapter's** 28th annual Air Force Gala.

The gala served as the culmination of the Air Warfare Symposium and Technology Exposition in Orlando, Fla., Feb. 23 to 24.

Gala Chairman John Timothy Brock opened the black-tie event by introducing special guests, including Air Force Chief of Staff Gen. Norton A. Schwartz, and Air Force Association officials: Chairman of the Board S. Sanford Schlitt, Vice Chairman of the Board for Field Operations Justin M. Faiferlick, and Vice Chairman of the Board for Aerospace Education George K. Muellner.

As the gala's master of ceremonies, Chapter President Michael J. Liquori led the tribute to Air Force R&D personnel and their partners in industry and academia.

The chapter bestowed its highest honor that evening on Hans M. Mark, designating him an H. H. Arnold Fellow. Mark is a former Secretary of the Air Force (1979-1981) and had "an unparalleled impact on Air Force research and development," Liquori told the audience. After serving as USAF's top civilian leader, Mark became NASA's deputy administrator and then DOD's director of defense research and engineering. He returned to the University of Texas at Austin in 2001 and is an aerospace engineering professor.

The chapter designated several R&D groups as Jimmy Doolittle Fellows, recognizing their pioneering work in low observable technology, precision navigation, human performance improvement, and guided munitions.

Recipients represented the Air Force Research Laboratory, Ohio State University, Lockheed Martin, the Air Force Institute of Technology, Northrop Grumman, Charles River Analytics, Draper Laboratory, Raytheon, and the Air Force Scientific Advisory Board.

The gala raised $10,000 for the Air Force Memorial Foundation and $65,000 for AFA's aerospace education efforts. The chapter's total contribution to aerospace education programs nationwide, over 28 years, comes to more than $2.5 million.

AFA at Orlando

Photos by Dan Higgins

AFA Board Chairman Sandy Schlitt (right) welcomes Air Force Chief of Staff Gen. Norton Schwartz to the podium on the first day of the Air Warfare Symposium in Orlando, Fla.

At the symposium's tech expo, John Timothy Brock (left) catches up with AFA's Vice Chairman of the Board for Field Operations Justin Faiferlick and Iowa State President Deann Faiferlick. Brock is chairman of Central Florida Chapter's gala at Orlando.

More photos at http://www.airforce-magazine.com, in "AFA National Report"

A Preview

On Jan. 26, the Defense Secretary announced specific ways DOD would reduce its budget. On Jan. 27, the USAF Chief of Staff announced strategic choices and priorities. But down in Montgomery, Ala., the **Montgomery Chapter** had already gotten a sneak preview of all this.

Two days before, Air Force Chief of Staff Gen. Norton A. Schwartz had addressed a luncheon meeting of the chapter. "He talked about national strategy [and] shared insights on future reductions in defense spending and the logic used to identify Air Force systems that would be eliminated," reported Chapter President Larry Carter.

The mayor of Montgomery, Todd Strange, turned out for this full-house chapter gathering, as did Alabama State President James E. Dotherow.

According to the local newspaper, *The Montgomery Advertiser,* Schwartz also spoke to the Air War College and to the Air Command and Staff College students during his visit to Montgomery.

On Blended Wing: A Student Project

Engineering student Christopher M. Handy turned to AFA when seeking funding for his senior design project at Rutgers. The **Thomas B. McGuire Jr. Chapter** and AFA New Jersey were among those responding with donations—and for good reasons.

First, Handy belongs to AFA through the Arnold Air Society, a professional honorary service organization affiliated with the association.

Second, he and a group of six other students wanted to build a scale model of a blended wing aircraft. It's the future of commercial aircraft, transports, and tankers, Handy wrote in the project proposal he sent to the McGuire Chapter last summer.

The chapter—led by Capt. Jennifer Condon-Pracht—donated $250, while the state AFA organization kicked in $500.

Last fall, Handy's team made a blended wing mockup, with a one-foot wingspan, of arts and crafts foam. In January, they began working on a version mostly of fiberglass and carbon fiber. The final model will have a five-foot wingspan, Handy said.

His team expects to submit the blended wing model aircraft to the Rutgers School of Engineering's Senior Design Exhibition next month.

Shifting Shapes: More on Wings

Turns out wings interested a Florida middle-school student, too: For his entry in a regional science fair, Cristos G. Nikitopoulos of Haile Middle School in Bradenton investigated how wing shape affects the distance a glider can travel.

His "Shifting Shapes" project for the Lockheed Martin Manatee Regional Science and Engineering Fair impressed officials from the **Sarasota-Manatee Chapter.**

So did an entry from Jack W. Bailey of Lakewood Ranch High School, also in Bradenton. Bailey looked into how nose cone shapes affect a rocket's altitude.

These projects were among more than 270 entered in the science and engineering competition that took place in January during the county fair at Palmetto, Fla.

Fifty science professionals judged the exhibits and interviewed the students. The Sarasota-Manatee Chapter singled out aeronautical- and space-themed projects for AFA recognition.

Chapter President Michael Richardson presented Nikitopoulos and Bailey each with an AFA Certificate of Achievement, AFA Achievement Medal, the *Smithsonian Atlas of Space Exploration* book, and Air Force promotional items.

On behalf of the Air Force, the chapter gave Honorable Mention awards to Haley Weltzen of Haile Middle School and Stephen Lindsay of Braden River High School.

Service Is the Rent We Pay

The **Tarheel Chapter** in North Carolina and local AFROTC cadets arranged for a small tent to be set up, to ward off the rain threatening an outdoor ceremony for a Community Partner.

But, said Chapter Secretary Joyce W. Feuerstein, "the rainy weather broke just as the program began and held off until after the presentation."

Cadets from the University of North Carolina, Chapel Hill, and North Carolina State University performed the January ceremony, displaying and folding a US flag that had flown over the Air Force Memorial. They then presented the flag to Chioma Ugwa, owner of a Morrisville pharmacy, to thank her for supporting chapter activities.

One example of her involvement: the cowboy-themed hoedown held last fall. Ugwa, who is a native of Nigeria, not only paid for the dance's disc jockey but attended the event with her family.

Chapter President Patrick H. Yanke took part in the recent flag ceremony for Ugwa, observed by a crowd of photo-taking onlookers standing outside the pharmacy. State President Louis A. Emond posted photos from the event on AFA's Facebook page.

Afterward, Ugwa wrote to the chapter: "When I was growing up, my parents taught me that service is the rent we pay for the space we occupy on God's Earth." She said this lesson led her to become a pharmacist and to support organizations such as AFA.

AFA Conventions

April 20-21	**Ohio State Convention,** Dayton, Ohio
May 10-12	**California State Convention,** Palm Springs, Calif.
May 11-12	**Tennessee State Convention,** Chattanooga, Tenn.
Sept. 15-16	**AFA National Convention,** National Harbor, Md.
Sept. 17-19	**AFA Air & Space Conference,** National Harbor, Md.

Awards at Andrews

The **Thomas W. Anthony Chapter** awards luncheon at JB Andrews, Md., in January featured Maj. Gen. Darren W. McDew, the Air Force District of Washington commander, as guest speaker.

The chapter established a Presentation Fellowship in the name of McDew and his wife, Evelyn, and at the luncheon gave them a plaque commemorating the occasion. The fellowship makes possible future donations—targeted for aerospace education—in the name of the McDews. The McDews' fellowship recognized their support of the USAF community, particularly the base's Airman's Attic, a thrift shop for junior enlisted personnel.

During the luncheon's awards ceremony, the chapter named James Warren as 2011 Maryland State Teacher of the Year. Though recently retired, he had been nominated for the honor because of his work as aerospace science instructor at Gwynn Park High School in Brandywine, Md. The retired chief master sergeant had sponsored a regional drill competition and helped start the CyberPatriot team at the school. He continued to mentor the team this fall, as it competed in the national high school-level cyber defense contest. A county Board of Education member, Henry P. Armwood Jr., joined in presenting the teaching award to Warren.

Among other honors at the luncheon: Scott Van Cleef, AFA's Central East Region president, presented an AFA regional Certificate of Appreciation to Chapter Secretary Cheryl A. Nagel.

More Chapter News

■ In February, **Thomas W. Anthony Chapter** President John Huggins attended the JB Andrews, Md., Airman Leadership School graduation to pres-

At a Thomas W. Anthony Chapter luncheon, Maj. Gen. Darren McDew presents chapter member Col. Kenneth Rizer with a President's Award. Next to Rizer are Chapter President John Huggins and, at far right, Maryland State President Joseph Hardy.

ent the Academic Achievement Award to SrA. Kayla Miller. The chapter helps sponsor the award, presented by the Andrews Federal Credit Union. Miller also received an AFA membership and Certificate of Achievement from Huggins.

■ Since AFA Board Chairman S. Sanford Schlitt was in Tucson, Ariz., for a conference, local AFA field leaders hosted a dinner for him. Among the guests were one of Schlitt's predecessors, George M. Douglas, who served as AFA President and Board Chairman, 1975 to 1979. Other guests included: Arizona State President Ross B. Lampert, **Tucson Chapter** President James I. Wheeler, **Cochise Chapter** President George L. Castle from Sierra Vista, Ariz., and former AFA Board Member Michael Peters. ■

Reunions

reunions@afa.org

9th Air Force Assn. May 24-25 in Columbia, SC. **Contact:** Fern Mann, 5001 Scheibler Rd., #B-1, Memphis, TN 38128 (901-388-4477) (866-740-8777) (cmann1525@aol.com).

12th Tactical Fighter Wg (Vietnam), **12th Bomb Wg** (WWII), **12th Fighter Escort Wg** (Korea). Sept. 27-30 in Seattle. **Contact:** E.J. Sherwood (480-396-4681) (el.sherwood.biz@cox.net).

38th BW/66th Tactical Recon Wg (1953-58), Laon AB, France. Aug. 22-26 at the Holiday Inn Airport in Little Rock, AR. **Contact:** Lewis Holt (501-843-9363).

42nd BW (1960s), Loring AFB, ME. Sept. 20-23, in Dayton, OH. **Contact:** P. Maul, 4605 Bobolink Dr., Castle Rock, CO 80109 (303-688-0967) (pablomaul@aol.com).

95th Bomb Gp Memorials Foundation. Aug. 29-Sept. 3 at the Hyatt Regency at the Arcade in Cleveland. **Contact:** Brad Petrella (440-937-9663) (reunions@95thbg.org).

504th BG (1945), Tinian. Sept. 5-9 in Minneapolis. **Contact:** Kaz Barcynski (252-637-0587) (mskb134@gmail.com).

526th Fighter Sq, Ramstein AB, Germany. Sept. 13-16. **Contact:** Bobby Gunter (479-474-1756) (bwgunter@cox.net).

6911th Radio Gp Mobile. Sept. 13-18 in Allentown, PA. **Contact:** Keith Butt, 13729 Wesley Dr., Logan, OH 43138 (740-380-3631) (kbutt007@frognet.net).

Air Force Weather Assn, including Army and all wars and conflicts. Aug. 1-5 at the Doubletree Hotel in Omaha, NE. **Contact:** Kevin Lavin (434-296-2832) (airweaassn@aol.com).

Battle of the Bulge veterans. Sept. 26-30 in New Orleans. **Contact:** Doris Davis (650-654-0101) (doris@battleofthebulge.org).

Pedro Rescue Helicopter Assn, all who served with the HH-43, including rescue firefighters, medics, pararescue-jumpers, and air rescue. June 14-17 at the DoubleTree Suites-Seattle Airport in Seattle. **Contact:** Len Shults, 3708 Duquesne Dr., Montgomery, AL 36109 (334-273-9804) (lebompa@charter.net).

Pilot Tng Class 56-H. May 8-12 in Colorado Springs, CO. **Contact:** T. McHugh, 3591 Eastmoor Dr., Dayton, OH 45431 (937-429-3382) (tbmch@sbcglobal.net).

UPT 73-01, Vance AFB, OK. Aug. 24-26 in Colorado Springs, CO. **Contact:** R. V. Reynolds, 1629 Applewood Dr., Beavercreek, OH 45434 (937-313-4735) (reynolrv@gmail.com).

Shepherds Grove, England (1950s). Sept. 20-24 in Branson, MO. **Contact:** Willie Miller (miller-wmiller35@hotmail.com).

US Army Air Corps Pilot Classes of WWII. Sept. 3-9 in Dallas. **Contact:** Stan Yost, 13671 Ovenbird Dr., Fort Myers, FL 33908 (239-466-1473). ▪

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

AFA Field Contacts

Central East Region

Region President

Scott Van Cleef
3287 Springwood Rd., Fincastle, VA 24090 (540) 473-8681 (spvancleef@gmail.com).

State Contact

DELAWARE: Scott Van Cleef, 3287 Springwood Rd., Fincastle, VA 24090 (540) 473-8681 (spvancleef@gmail.com).
DISTRICT OF COLUMBIA: Kevin Jackson, 13107 Jordans Endeavor Dr., Bowie, MD 20720 (301) 262-7893 (kevin.jackson@atk.com).
MARYLAND: Joe Hardy, 5807 Barnes Dr., Clinton, MD 20735 (301) 856-4349 (ajhardy2@verizon.net).
VIRGINIA: Peter Jones, 2 Stafford Ct., Potomac Falls, VA 20165 (240) 994-0332 (peter@thejonesfamily.org).
WEST VIRGINIA: John Pfalzgraf, 1906 Foley Ave., Parkersburg, WV 26104 (304) 485-4105 (pfalj@suddenlink.net).

Far West Region

Region President

Richard Taubinger
12 Century Ct., Roseville, CA 95678 (916) 771-3639 (richardtaubinger@comcast.net).

State Contact

CALIFORNIA: Rex Moen, 20915 Oak St., #8, Tehachapi, CA 93561 (661) 834-9207 (rexmoen@yahoo.com).
HAWAII: Nora Ruebrook, 808 Ahua St., Suite 26, Honolulu, HI 96819 (808) 596-2448 (nora@omegahub.tv).

Florida Region

Region President

Michael Emig
5928 SW 59th Ln., Ocala, FL 34474 (352) 854-8328 (mhemig46@aol.com).

State Contact

FLORIDA: Michael Emig, 5928 SW 59th Ln., Ocala, FL 34474 (352) 854-8328 (mhemig46@aol.com).

Great Lakes Region

Region President

William Grider
135 Kirk Dr. W, Indianapolis, IN 46234 (765) 455-1971 (billgrider@sbcglobal.net).

State Contact

INDIANA: Paul Lyons, 4211 Fieldbrook Pass, Fort Wayne, IN 46815 (260) 402-5886 (paul.lyons@wfadvisors.com).
KENTUCKY: Jack Giralico, 7913 Brush Ln., Louisville, KY 40291 (502) 445-7524 (jack@giralico.com).
MICHIGAN: Bill Day, 199 Charlotte St., Bad Axe, MI 48413 (989) 975-0280 (freelance3@comcast.net).
OHIO: Kent Owsley, PMB 176, 3195 Dayton-Xenia Rd., Ste. 900, Beavercreek, OH 45434 (937) 427-2259 (kentowsley@member.afa.org).

Midwest Region

Region President

Michael Cook
3204 Rahn Blvd., Bellevue, NE 68123 (402) 232-8044 (michael.cook@cox.net).

State Contact

ILLINOIS: Ron Westholm, 3280 Rockwell Cir., Mundelein, IL 60060 (630) 253-0212 (westholm@att.net).
IOWA: Deann Faiferlick, 344 Country Club Dr., Fort Dodge, IA 50501 (515) 302-0077 (jmfdaf1@yahoo.com).
KANSAS: Gregg Moser, 617 W 5th St., Holton, KS 66436 (785) 364-2446 (greggamoser@aol.com).
MISSOURI: Fred Niblock, 808 Laurel Dr., Warrensburg, MO 64093 (660) 429-1775 (niblockf@charter.net).
NEBRASKA: John Daly, 1401 Reeve Dr., Papillion, NE 68046 (402) 699-8989 (dalyj@cox.net).

New England Region

Region President

Bob Wilkinson
85 Washington St., Plainville, MA 02762 (508) 243-5211 (bwilkinson@naisp.net).

State Contact

CONNECTICUT: William Forthofer, 206 Imperial Dr., Glastonbury, CT 06033 (860) 659-9369 (william.forthofer@pw.utc.com).
MAINE: Bob Wilkinson, 85 Washington St., Plainville, MA 02762 (508) 243-5211 (bwilkinson@naisp.net).
MASSACHUSETTS: Brendan Simison, 31 Luscombe Ln., Sandwich, MA 02563 (508) 968-4167 (brendan.simison@ang.af.mil).
NEW HAMPSHIRE: Kevin Grady, 140 Hackett Hill Rd., Hooksett, NH 03106 (603) 268-0942 (jaws15@hotmail.com).
RHODE ISLAND: Bob Wilkinson, 85 Washington St., Plainville, MA 02762 (508) 243-5211 (bwilkinson@naisp.net).
VERMONT: Joel Clark, 434 Maquan Shore Rd., Swanton, VT 05488 (802) 660-5219 (theswan7@comcast.net).

North Central Region

Region President

Ron Garcia
1600 University Ave. W, Minot, ND 58703 (701) 839-5423 (trinidad.ron@gmail.com).

State Contact

MINNESOTA: Vic Seavers, 4489 Lakeshore Ter., Eagan, MN 55122 (651) 688-2269 (elavics@aol.com).
MONTANA: Ron Garcia, 1600 University Ave. W, Minot, ND 58703 (701) 839-5423 (trinidad.ron@gmail.com).
NORTH DAKOTA: Jim Simons, 908 Village Ave. SE, Minot, ND 58701 (701) 839-6669 (minotranger@min.midco.net).
SOUTH DAKOTA: Ronald Mielke, 4833 Sunflower Trail, Sioux Falls, SD 57108 (605) 359-7630 (mielkerw@teamtsp.com).
WISCONSIN: Victor Johnson, 6535 Northwestern Ave., Racine, WI 54306 (262) 886-9077 (racine.vic.kathy@gmail.com).

Northeast Region

Region President

Eric Taylor
806 Cullen Ln., West Grove, PA 19390 (484) 667-8221 (ylekot1@aol.com).

State Contact

NEW JERSEY: Howard Leach, 11 Beech Dr., Morris Plains, NJ 07950 (973) 540-1383 (h.leach@ieee.org).
NEW YORK: Maxine Rauch, 2286 Bellport Ave., Wantagh, NY 11793 (516) 826-9844 (javahit@aol.com).
PENNSYLVANIA: Bob Rutledge, 2131 Sunshine Ave., Johnstown, PA 15905 (814) 255-7137 (rcr@atlanticbb.net).

Northwest Region

Region President

Rick Sine
5743 Old Woods Ln., Bainbridge Island, WA 98110 (206) 334-5050 (ricksine1@msn.com).

State Contact

ALASKA: Harry Cook, 3400 White Spruce Dr., North Pole, AK 99705 (907) 488-0120 (hcook@mosquitonet.com).
IDAHO: Roger Fogleman, P.O. Box 1213, Mountain Home, ID 83647 (208) 599-4013 (rfogleman@msn.com).
OREGON: Mary Mayer, 2520 NE 58th Ave., Portland, OR 97213 (310) 897-1902 (maryjmayer@yahoo.com).
WASHINGTON: Fran McGregor, P.O. Box 7664, Covington, WA 98042 (253) 202-7304 (celticms@comcast.net).

Rocky Mountain Region

Region President

Gayle White
905 Shadow Mountain Dr., Monument, CO 80132 (719) 574-0200 (gayleconsulting@aol.com).

State Contact

COLORADO: Tom Cavalli, 6916 Lakenheath Ln., Colorado Springs, CO 80908 (719) 495-7525 (tom.cavalli@earthlink.net).
UTAH: Walter Saeger, 1106 E 2625 N, Layton, UT 84040 (801) 771-3257 (saegerw@battelle.com).
WYOMING: Irene Johnigan, 503 Notre Dame Ct., Cheyenne, WY 82009 (307) 632-9465 (irenejohnigan@bresnan.net).

South Central Region

Region President

Thomas Gwaltney
401 Wiltshire Dr., Montgomery, AL 36117 (334) 277-0671 (twgwaltney@bellsouth.net).

State Contact

ALABAMA: Skip Dotherow, 3618 Bankhead Ave., Montgomery, AL 36111 (334) 284-2153 (dotherowf4c@yahoo.com).
ARKANSAS: Jerry Reichenbach, 501 Brewer St., Jacksonville, AR 72076 (501) 837-7092 (jreichenbach@comcast.net).
LOUISIANA: Paul LaFlame, 5412 Sage Dr., Bossier City, LA 71112 (318) 746-9809 (wpnchief@suddenlink.net).
MISSISSIPPI: Carl Nuzzo, 110 Little John Ln., Starkville, MS 39759 (662) 241-6597 (carl@accessibleaviation.com).
TENNESSEE: Jim Mungenast, 805 Embarcadero Dr., Knoxville, TN 37923 (865) 531-5859 (bamaforce73@aol.com).

Southeast Region

Region President

David Klinkicht
514 Shelley Dr., Goldsboro, NC 27534 (919) 751-2890 (davidklinkicht3@bellsouth.net).

State Contact

GEORGIA: Dudley Bluhm, P.O. Box 235, Bolingbroke, GA 31004 (478) 926-7311 (dudley.bluhm@robins.af.mil).
NORTH CAROLINA: Louis Emond, 3100 Golden Horseshoe Cir., #G, Morrisville, NC 27560 (919) 650-1311 (louisemond@member.afa.org).
SOUTH CAROLINA: John Allen, 225 Baldwin Rd., #12, Seneca, SC 29678 (864) 653-7492 (johnallen50@bellsouth.net).

Southwest Region

Region President

Bob Hale
8 Desert Highlands, Henderson, NV 89012 (702) 896-3230 (bobhale@cox.net).

State Contact

ARIZONA: Ross Lampert, 6984 S. Spruce Cir., Hereford, AZ 85615 (520) 378-3607 (afazona@cox.net).
NEVADA: Don Sexton, 2163 Stage Stop Dr., Henderson, NV 89052 (702) 263-0049 (donsexton@cox.net).
NEW MEXICO: Fred Harsany, 1119 Casa Tomas Rd., Albuquerque, NM 87113 (505) 846-5420 (fharsany@comcast.net).

Texoma Region

Region President

Bob Slaughter
309 Hurstview Dr., Hurst, TX 76053 (214) 662-3670 (rslaughter@bellhelicopter.textron.com).

State Contact

OKLAHOMA: Riq Baldwin, 1000 Sheryl Ln., Altus, OK 73521 (580) 477-2710 (riqb@cableone.net).
TEXAS: William Lawson, 4308 Fair Ridge Dr., Aledo, TX 76008 (817) 244-3868 (wlawson5@sbcglobal.net).

Special Assistants Europe

Mike Nishimuta
mike@nishimuta.net
David Gouin
gouind@eucom.mil

Special Assistant Pacific

Vicky Leos
Yleefamily@gmail.com

For information on the Air Force Association, see www.afa.org

ARE YOU TAKING FULL ADVANTAGE OF YOUR AFA BENEFITS?

- Annual Subscription to Air Force Magazine, including the USAF Almanac issue.
- Online access to Air Force Magazine and the Daily Report
- Member discounts on events
- Scholarships
- Group Legal Services
- Dental Insurance
- Discounts on Apple, Dell & Microsoft products
- Car and Truck Rental Discounts
- Travel Savings
- Discounts on prescriptions, vision care, dental and more
- Group Insurance Programs including Life, Accident, Critical Illness and more.
- Identity Protection
- Financial Services
- Resume and Job Search
- Online Degree Tuition Discounts
- And more!

AIR FORCE ASSOCIATION

VBA

AFA VETERAN BENEFITS ASSOCIATION

Visit **WWW.AFAVBA.ORG** for full details.
Or request your Member Benefits Guide - 1-800-291-8480; services@afavba.org

Artwork by Zaur Eylanbekov

Harrier

The Harrier fighter has been revolutionary: the first winged military aircraft that could carry out vertical/short takeoff and landing operations. Over its long service life, the jet has appeared in two generations, operating from land bases and ships at sea, in close support, air superiority, strike, and reconnaissance roles.

Hawker Siddeley began a long development in 1957 with the P.1127. An offshoot—Kestrel—emerged in 1964, leading to Harrier GR.1 in 1966. The GR.1 was ordered by the RAF and US Marine Corps (its designation was AV-8A); then, Royal Navy demand led to a naval Sea Harrier. The second generation comprised the AV-8B Harrier II (a Boeing redevelopment) and GR.7/GR.9 Harrier II (a British Aerospace effort). These new aircraft, like the older ones, equipped the RAF, Royal Navy, and USMC. The Pegasus turbofan engine, with four vectorable nozzles, has continually grown in power. Conventional surfaces are used in normal forward flight, but reaction jets in the nose, wingtips, and tail provide control in vertical flight. Landing gear—wing outriggers, nose gear, and main wheels—has been positioned to avoid interference with jet exhaust.

Britain's first generation Harriers proved highly effective in the 1982 Falklands War with Argentina. Sea Harriers were launched from HMS *Hermes* and HMS *Invincible*. RAF GR.3s also launched from HMS *Hermes* but moved to simple land bases. Harriers flew 1,850 sorties and destroyed more than 20 Argentine aircraft. Second generation types—both US and British—performed well in the later Gulf War, Balkan War, Iraq War, and Afghan War. It is still in front-line US service.

—Walter J. Boyne

This aircraft: Sea Harrier FRS Mk1—*XZ457*—as it looked in May 1982, deployed aboard HMS *Hermes* and bound for the Falkland Islands War.

***A Sea Harrier uses a ski-jump bump while taking off from HMS* Invincible.**

In Brief

Designed by Hawker Siddeley, McDonnell Douglas, BAe ★ built by Hawker Siddeley, Boeing, BAe ★ first flight Aug. 31, 1966 ★ crew of one or two (trainer) ★ number built 824 **Specific to GR.1/GR.3:** one Rolls Royce Bristol Pegasus 103 turbofan engine ★ max speed 735 mph ★ cruise speed 505 mph ★ max range 1,200 mi ★ armament two 30 mm cannons, four AIM-9 missiles ★ load 5,300 lb of rockets, bombs, ASMs ★ weight (max) 25,350 lb ★ span 25 ft 2 in ★ length 46 ft 10 in ★ height 11 ft 11 in.

Famous Fliers

Combat: Nick Richardson, P. T. Squire, Ian Watson. **Other Notables:** Joe Anderson, Bud Baker, Lee Bullard, Bill Chapman, John Farley, Duncan Simpson. **Test Pilots:** Bill Bedford, Hugh Merewether, Thomas Miller, J. J. Tyson.

Interesting Facts

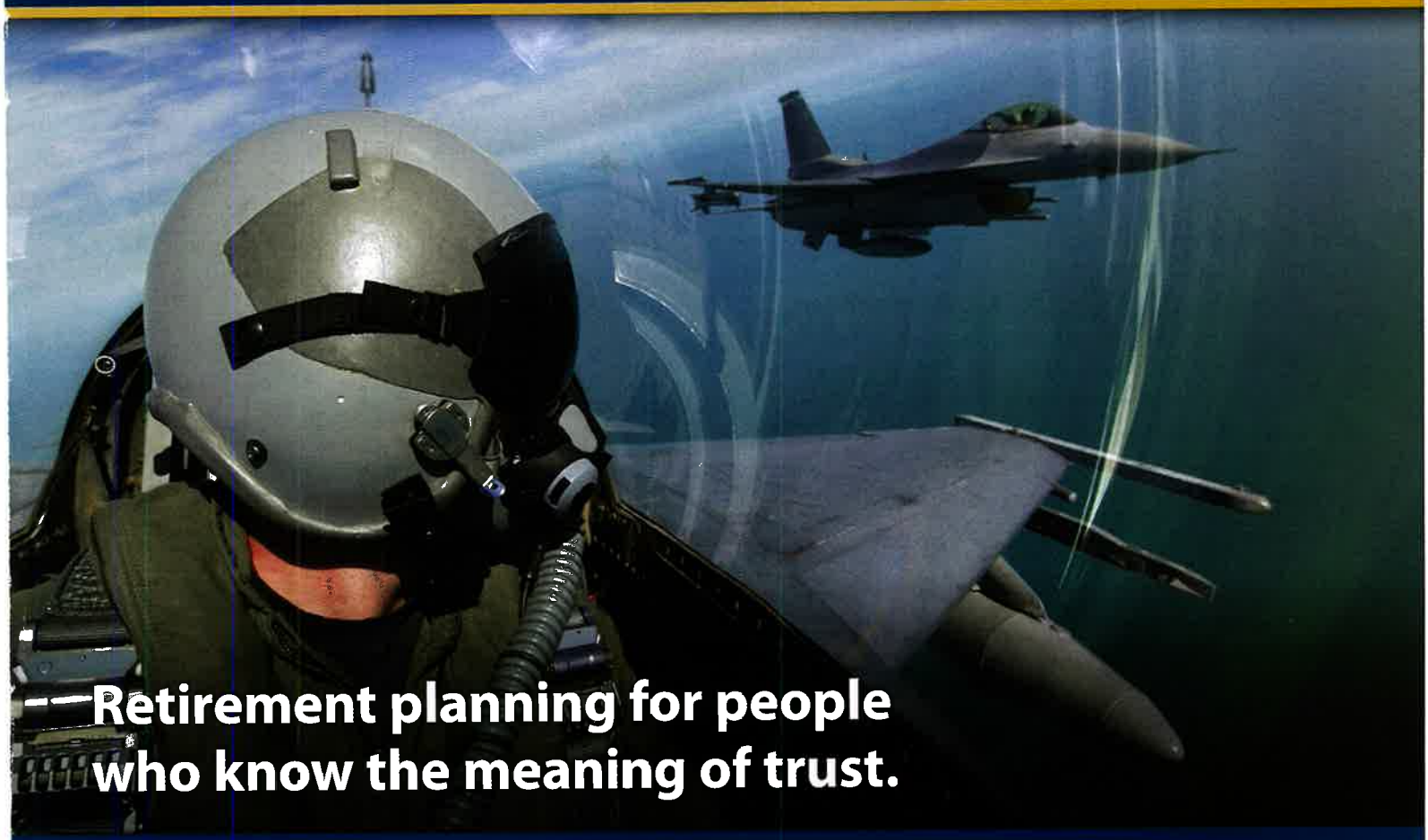
Referred to colloquially as a "jump jet" ★ featured in 1994 film "True Lies" ★ operated by RAF, Royal Navy, USMC, navies of India, Italy, Spain, Thailand ★ used ski-jump bump at end of runway or carrier deck to assist liftoff ★ suffered high accident rate ★ nicknamed "Shar" (for Sea Harrier) ★ saw action in five wars—the Falklands, Persian Gulf, Balkans, Iraq, Afghanistan ★ began as a "high speed helicopter" concept ★ given the name "Matador" for export purposes.


SABR
THE VALUE OF
CHOOSING A
RADAR THAT'S
A PERFECT FIT
FOR THE F-16.
By leveraging F-16 and F-35 radar experience
and commonality, Northrop Grumman's
SABR is the ideal choice for F-16 AESA radar
capability. As the pioneer and sole provider
of F-16 radars for over 35 years, our
industry-leading AESA is the only one
specifically designed for the F-16. Our
family of AESAs' architecture, hardware,
and software commonality maximizes
both performance and cost efficiencies.
That's why we're a leader in radar solutions
from undersea to outer space.
THE VALUE OF PERFORMANCE.
NORTHROP GRUMMAN
www.northropgrumman.com/sabr
©2012 Northrop Grumman Corporation

AIR FORCE ASSOCIATION
AFA VBA
AFA VETERAN BENEFITS ASSOCIATION

USAA®

USAA is proud to be the
Preferred Provider
of Financial Services for
the Air Force Association



Retirement planning for people who know the meaning of trust.

USAA Retirement Planning. Military values. Practical advice.

Now more than ever, it's important to find a provider that shares your military values: service, loyalty, honesty and integrity. These values guide our approach to helping you create the retirement you want. It starts with professional advice from salaried advisors who don't work on commission. When it comes to retirement, our commitment to the military community and their families is without equal.

Get started today.
Talk to a trusted advisor.

usaa.com/afa | 877-618-2473

Insurance Banking Investments Retirement Advice

USAA®

We know what it means to serve.®