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# AIR FORCE

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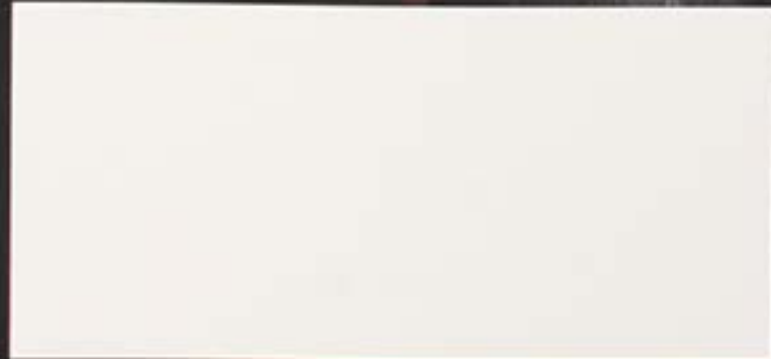


## Southwest Asia Power Shift

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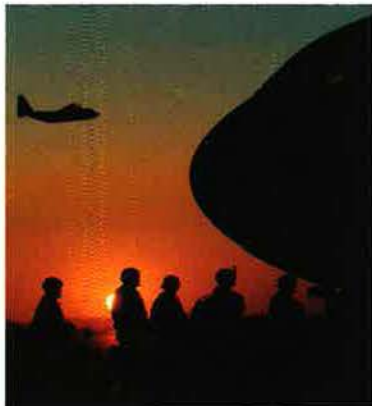




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**About the cover:** Soldiers board a C-17 in Iraq. See "Southwest Asia Power Shift," p. 32. USAF photo by TSgt. Erik Gudmundson.

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## Recasting the Air Force

**D**ISSATISFIED with the recent direction of the Air Force, Gen. Norton A. Schwartz, the service Chief of Staff, has begun charting a new path. He discussed some of its principal features during a series of public statements over the past few weeks.

It is an impressive body of thought—clear, coherent, and defensible. With his selection as Chief last June, in the wake of a leadership shakeup, General Schwartz became the authoritative voice on Air Force matters, so his statements offer the best preview of likely coming events.

He wants an air arm with broader and more-balanced capabilities, integrated far more tightly into the joint force. Unlike some who swing wildly at service “next-war-itis,” he surveys threats and programs fully, not in isolated pieces.

The general spoke at length to a Feb. 17 meeting of the Defense Writers Group in Washington, D.C., and in a more limited fashion to the National Defense Industrial Association, also in Washington. The Chief laid out some key force-defining principles. Among them:

**Balance.** General Schwartz noted, “Clearly, there is a need” for USAF to build strength “in the irregular warfare area”—with wars in Iraq and Afghanistan as guideposts—even at the expense of conventional forces. One case in point: intelligence-surveillance-reconnaissance. Today, USAF can fly 34 UAV orbits over a region, but in 2011, the number will be 50—“a major commitment,” he says. USAF will also offer support, training, and advice to irregular war “partners” overseas. “It’s fundamentally a question of balance,” said the General.

**Jointness.** General Schwartz vowed to support US ground forces in today’s wars with “whatever is needed, whatever it takes,” adding that, in the past, some airmen had a different view. The remark seemed to align the Chief with Secretary of Defense Robert M. Gates’ persistent criticism of the Air Force.

**Fighters.** For years, USAF has stated a need for 381 F-22 fighters—enough for 10 squadrons (one for each air expeditionary force) plus backup and training jet aircraft. Gen-

eral Schwartz has approved a lower number, said by insiders to be about 240. It seems that General Schwartz used a new metric. “The question is, and has always been, the size of the major combat operations that are contemplated [and] their simultaneity,” said the Chief—not the rotational need. “What was a low-risk number at 381 is a moderate-risk number now,” he claimed.

**Budgets.** USAF has often warned of a \$20-billion-a-year gap between its true needs and its actual budget.

### In recent weeks, the Chief of Staff laid out some key, force-defining principles.

General Schwartz indicated that there will be no more such warnings. “If we want something, we’re going to pay for it” with allocated funds, he said. He added, however, that “we will certainly not be timid about making the case for what we think is needed.”

**Troops.** The push to cut end strength—today, about 330,000—is dead. “We were headed to 316,000” airmen, noted General Schwartz, but “we’re going to end up at about 332,000—maybe a little bit higher.” Even that may be too low; according to the Chief, the Air Force could make a case for 350,000 troops, but “we ain’t going to get there.” To man the most critical areas, USAF will shift airmen from missions of less demand. He expects there will be “some friction associated with that.” The Chief didn’t specify which missions would suffer losses of personnel.

**Space.** The Air Force needs to review the wisdom of building “bigger and more complex” space systems, said the Chief. It could be that USAF could build a less-formidable type for theater war purposes, while continuing to construct huge and expensive ones for long-lasting strategic purposes. As for space acquisition authorities—which the Pentagon took away from USAF—the General noted, “We certainly believe [that those authorities] should migrate back to the Air Force,” and that he will continue to press for it.

**“Theology.”** General Schwartz made it clear that he sees no point in interservice quarrels about which branch will, or will not, have control of certain systems or missions. In recent years, USAF resisted Army moves to acquire and operate small airlifters and medium-to-high-altitude UAVs. General Schwartz said he was “not threatened” by the Army’s actions, so long as they contribute to the welfare of the joint force. “This is a versatility issue, not an ownership issue,” said he. “We have to get off of these theological debates.”

These and similar future statements will at some point begin to change the public’s view of the Air Force, and even the service’s self-image.

The remarks are not comprehensive. Even so, however, the Chief’s words, taken together, go some way toward fulfilling the classic definition of doctrine—a clear statement of an organization’s fundamental principles and purposes.

There are some shaky spots in General Schwartz’s plan. As he acknowledges, his reduction in the proposed F-22 force will bring more risk. And that’s assuming the Pentagon goes along with buying any more Raptors, which is no sure thing.

The Chief offers no obvious solution to the dangers of operating an ancient and weakening fleet of aircraft—bombers, fighters, tankers, airlifters, airborne battle management types, and helicopters.

What if the other services’ embrace of larger and larger air fleets gets out of hand? That could lead to inefficiencies and confusion with respect to the control of aircraft in combat operations.

General Schwartz freely acknowledges that his effort to change the service will bring some pain, and that many fail to see the need for such a shift. He rejects this as a reason for inaction.

“In the real world,” he maintains, “truth changes because circumstances and assumptions and so on change. I don’t think it’s a signal of weakness. ... On the contrary, I think it’s a sign of a healthy institution that we’re willing to revisit long-held beliefs, no matter how central to our ethos they may be.” ■





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## Chilton on "The Cyber Menace"

As always, I enjoyed the March edition of *Air Force Magazine*. What a great publication to keep us all informed of the news and issues concerning the world's greatest Air Force.

With anticipation, I read the article by Dr. Rebecca Grant, "The Cyber Menace" [p. 24], because cyberspace is a critical domain to our US military, and as you know, the United States Strategic Command is the combatant command charged with the defense of our .mil and .smil domains.

There was one item in the article that did not accurately portray the recent changes to the two components that support USSTRATCOM and our nation's military networks. The article stated that "the NSA director is in charge of US Strategic Command's Joint Task Force for Global Network Operations." In fact, the commander of USSTRATCOM's Joint Functional Component Command-Network Warfare (who also is dual-hatted as NSA's director) is in charge of USSTRATCOM's Joint Task Force for Global Network Operations. While a subtle nuance, this reflects the broad capacity of STRATCOM to better integrate its mission areas, both network warfare and defense of the global information grid, under a single commander. The changes that better align the NW and GNO relationships will, in the long run, help USSTRATCOM better execute the defense and offense activities to protect our military's networks.

Thanks for your help in clarifying this important fact. Keep up the great work keeping our nation informed about some very vital issues.

Gen. Kevin P. Chilton,  
Commander  
US Strategic Command  
Offutt AFB, Neb.

## The Nuclear Force Revival

Thank you for publishing the article regarding "The Nuclear Force Revival," February 2009 [p. 24]. As a 20-year missileer, it was good to know the specific steps the Air Force is taking to beef up the nuclear operations, maintenance, and sustainment issues. It's important that our taxpayers understand the stringent requirements that our airmen are entrusted with.

I beg to differ on one point, however. On p. 30, under the heading of "More To Come," there is an error. The article references the activation of the A10 office on the Air Staff. The error as written states, "Creation of the office elevated nuclear matters to the highest levels of the Air Force, replacing the post-Cold War organizational construct in which no general officers across the Air Force occupied themselves daily with nuclear issues."

On Dec. 1, 1996, I was privileged to help stand up the Directorate of Nuclear and Counterproliferation (AF/XON). Maj. Gen. Thomas H. Neary was the first director and he did a magnificent job of making sure the Pentagon could pass the "Yellow Pages" test regarding having an office designated to handle any and all Air Force nuclear matters. These were USAF nuclear missile and bomber issues that General Neary worked on a daily basis. That was his charter.

AF/XON was later deactivated, which proved to be a mistake. I applaud USAF leadership for establishing the A10 office and I have no doubt that Maj. Gen. [C.] Donald Alston will do a great job. He knows his nuclear stuff.

I am concerned that the nuclear experience and expertise that the Air Force yearns for simply isn't there. I believe we're going to have to grow our nuclear expertise (at least on the missile side of the house). For approximately 25-plus years, the Air Force wanted missileers to also get space experience. We did everything we could to move missileers into the space field. Air Force personnel boards also selected field grade space officers for command assignments at

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missile wings-groups-squadrons, and in many cases, they had never pulled nuclear alert or maintained a nuclear weapon. While some were successful, it was unfair to put them in a culture where nuclear surety is paramount. I'm not saying these space officers were not capable of the leadership challenge, but rather, nuclear operations, maintenance, and security procedures are a different breed and require years of experience before assuming command of a nuclear unit.

Col. Mike Lehnertz,  
USAF (Ret.)  
Colorado Springs, Colo.

■ *Lehnertz is correct about the AF/XON organization, but as he stated, the office did not endure. Nor did it stem the continued dilution of focus on the nuclear mission. As the Schlesinger Panel on DOD Nuclear Weapons Management wrote in September 2008, "The seniority level of individuals who are accountable within the enterprise and who concentrate day to day on nuclear deterrence has been reduced: General officers and members of the senior executive service have been replaced with colonels and midlevel civilians." This, of course, has changed, with the creation of the Air Staff's Strategic Deterrence and Nuclear Integration Office.—Michael C. Sirak*

### 12 Miles High, Changing Course

Thanks for the newsworthy article on the status of the greatest reconnaissance aircraft ever flown, the U-2. [See "12 Miles High, Changing Course," February, p. 32.] Yes, I am very delighted to see the real story of the unique capabilities of the U-2, which at this point is overshadowed by none. I had the not-so-pleasant experience, while working at Intelligence Center Pacific, 1984-88, of seeing the SR-71 not being supported by the Intelligence Community and the operational commands, resulting in its quick demise and, in my mind, premature reliance on overhead systems.

I also remember attending an international air show many years ago, where the U-2 overshadowed unmanned vehicles on the viewing ramp, such as the Global Hawk, and the words of a U-2 pilot briefer who politely said, "You think one of these is going to take over our mission anytime soon, you are mistaken." Yes, I am pleased that USAF realizes the great value of this platform, has updated it to the most advanced U-2S configuration, and, even though it has been on the chopping block several times, [is] keeping the Intelligence Community from "looking through a soda straw" for the targets. [The U-2] remains unsurpassed in feeding the

operational commands with state-of-the-art intelligence products.

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

### Stealth's Midwest

Rebecca Grant's recent article, "The Murky Future of Stealth," (February) [p. 52], clearly hit the target. She highlighted many of the key players that made stealth a reality. I just wanted to add one more piece of information to her story—Dr. William J. Perry [Secretary of Defense at the time] was not only a big fan of stealth—he was the primary reason that the B-2 was successful in Kosovo in 1999. Let me explain.

Back in 1995, when I had the pleasure of taking him for a B-2 flight, he asked about the JDAM integration schedule for the B-2. At that time, I informed him that the B-2 was far down the list for JDAM integration with Air Force and Navy front-line fighters at the head of the line.

After his successful B-2 flight, Dr. Perry returned to the Pentagon and directed the Air Force to revisit the JDAM deployment schedule and put the B-2 first on their list for JDAM integration. The Air Force ultimately followed his guidance and the B-2 became the first platform to carry and release JDAMs in combat. If it had not been for Dr. Perry's intervention in 1995, the B-2 may have sat out the Kosovo affair (without a precision weapon to deliver), and who knows how damaging that might have been to the stealth story?

I just wanted to make sure that Dr. Perry got some recognition for this insightful and visionary decision.

Col. Tony Imondi,  
USAF (Ret.)  
San Antonio

### The Right Booster

[Regarding the February article "The Flying Tomato Can," p. 66], paragraph six on p. 68 states, "The ASAT's first stage was a modified Boeing anti-radiation missile."

The first stage was a Boeing AGM-69A SRAM booster, which is clearly evident in the picture on p. 67. The unique tri-fin flight-control actuator assembly (FCAA) with phenolic fins is evident under the enlarged fins of the ASAT.

Lt. Col. David J. Wallace,  
USAF (Ret.)  
Kokomo, Ind.

### They Wanted Wings

An aircraft in the photograph featured on p. 71 of Walter Boyne's article, "They Wanted Wings" (February) [p. 70], was identified as a North American AT-6 Texan. A careful perusal of the photograph will reveal that the aircraft is in

fact a North American BT-14, which was a fixed landing gear basic trainer. Note the fairings over the landing gear struts.

Joseph G. Handelman  
Annapolis, Md.

Walter Boyne's excellent story in the February issue concerning aviation cadets missed an excellent opportunity to mention the staff sergeant pilot program that coincided with the cadet expansion program. In 1941-42, approximately 2,500 enlisted personnel were screened into the pilot training program, underwent the same discipline, ground schools, and flying training as the cadets but graduated as staff sergeant pilots. In December 1942, most were commissioned to the rank of flight officer, but by then, they were involved in all aspects of the Army Air Forces flying operations. Many modern day pilots may not be aware of the contributions of "we few," who also wanted wings and took the only route that was possible to reach the goal. I would hope that Mr. Boyne would do a similar story on staff sergeant pilots and their accomplishments.

Lt. Col. David D. Campbell,  
USAF (Ret.)  
Cincinnati

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### Needed: UAV Pilots

Only two months after retiring as an Air Force pilot, I was not surprised to receive an e-mail asking me to re-enter active duty to help fill a shortfall in ISR pilots. Your article about the incredible work done by Reaper and Predator pilots and sensor operators ("UAV Pilots," January) [p. 34] aptly describes the current shortage of pilots and the scramble to plug up those weapon systems. The MC-12W Liberty ISR aircraft will generate yet another levy from a much-reduced pool of available pilots.

It is ironic that this is the third time I have been offered a return to active duty. I separated in 1992 during the first post-Cold War drawdown and was asked twice, in 1995 and again in 1997, to come back. I accepted the second offer and served 10 years (and eight deployments to Southwest Asia) before I reached mandatory retirement last November. Despite the current offer, I have chosen to continue serving my country as a civilian pilot instructor on the JCA/C-27J program. It makes little sense for retirees or separatees to return to active duty and consciously leave their family for a position that offers only one guarantee: six-month deployments with a one-to-one deploy-dwell time.

The sad fact is that the current crisis in pilot manning cannot be blamed on

airline hiring or a 9/11-style event. OEF and OIF have been ongoing for over seven years, yet it took a change in Air Force leadership to drive home USAF's lack of support for the warfighter. Those of us who shook our heads at PBD-720 and force shaping to fund certain high-dollar weapon systems now marvel at a personnel system that once again is displaying 20-20 hindsight. While serving a 179-day deployment last year as an air advisor to the Afghan Air Corps, I noted that most of my colleagues were deferred majors like myself, all serving one more deployment before mandatory retirement. We all gave it our best, filling a delicate and demanding role, and now we are all civilians.

The exception was our Canadian armed forces helicopter pilot who casually told us how their system allows a major-equivalent to serve much longer than our system allows.

I fully commend the young warriors who are making a difference flying or supporting the increasingly vital UAV fleet. But I also fear we are sending the next wave into the fight with minimal training simply to fill an "orbit." I only wish the OV-10 Bronco I flew as a lieutenant was still available to contradict the one F-16 pilot who lamented "manned weapons systems simply do not offer the same persistence." What the Air Force really needs is persistence, not just in ISR assets, but also

in rated officer management. Those who go "outside the wire" deserve that benefit.

Maj. William K. Fiedler,  
USAF (Ret.)  
Waco, Tex.

### John Young's View

I would like to take an opportunity to comment on the article "The John Young View," in the January 2009 issue of *Air Force Magazine*, particularly his comments related to combat search and rescue (CSAR) [p. 51].

As a recently retired airman who spent 20 of my 26 years associated with combat rescue and special operations rotary wing aviation, I think this is very insightful of how the current senior leadership at OSD thinks and feels about USAF and CSAR in particular.

Mr. Young correctly states that there are lots of different forces that could conduct a personnel recovery (PR) mission, but I think he's missing some key points. None of our sister services train to and posture their assets to conduct the PR mission. They either don't have the capability to go deep into enemy territory in poor weather or illumination or they take too long to plan and execute the mission. None of this is bad; it's just the way it is.

The enemy has proven it will kill our isolated personnel when captured, and then use the remains for propaganda

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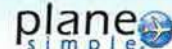
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purposes. So, I'm not sure Mr. Young wants to take the additional risk of leaving any injured or isolated soldier, sailor, airmen, marine, or civilian on the battlefield for too long while the combined force air component commander cobbles together a force to plan the event and then execute the pickup. This could take hours or days with a force that doesn't train to execute the PR mission. I'm afraid Mr. Young is setting DOD up for exactly this scenario if he decides to kill any effort for a force dedicated to PR.

Additionally, a force dedicated to PR provides our operational commanders and the Secretary of Defense a myriad of tailorable and scalable operational capabilities to respond to any crisis in both wartime and peace.

That being said, I don't think USAF is doing a great job at getting our PR story out to the DOD senior leadership. We must do a better job in that arena, and we are getting there, in that USAF is redefining what we mean by CSAR. We are in the process of doing that with a new functional concept for personnel recovery (currently in draft form and in bottom-line review). The document states that "with the advent of today's War on Terror and the continuing emphasis on our ability to conduct major combat operations, ... a new strategic emphasis is placed on reducing the varying degrees of operational and political risks that stem from captivity and hostage situations. ... Consequently, USAF's rescue force has evolved beyond the traditional images of recovering downed combat aircrew or rescuing special operations forces isolated behind enemy lines. Rescue is now a highly adaptable resource with the ability to mitigate the operational and political cost created when isolated personnel are exploited by an adversary to gain propaganda, gain intelligence value, or to restrict our physical freedom of action or maneuver.

"This makes USAF rescue forces a key component of the US government's 'whole of government' approach to addressing a pressing need for rescue ... before, during, and after a crisis situation/event involving isolated personnel—an approach now referred to as 'personnel recovery.' ... Therefore, to further unify and synchronize the USAF vision, message, and approach to PR as a USAF core function, and better prepare and present a rescue force that far exceeds any other DOD component's ability to conduct PR across the full spectrum of military activities, this functional concept describes how the USAF develops, organizes, and sustains a highly skilled, adaptable, flexible,

tailorable, and multifunctional collection of operational capabilities designed and integrated with others to rescue anyone, anywhere, at any time."

I've had a chance to review this draft, and it is exactly what we need to ensure America has a highly trained force capable of timely rescue of isolated personnel, whatever the situation. It will also ensure that USAF "CSAR" will continue to remain relevant in today's fight.

Air Force CSAR personnel are highly trained to conduct the deep recovery in higher threat environments while conducting some of the planning on the fly. And when postured correctly (like we are in the current fight), the PR recovery force will normally launch within 15 minutes of notification of an injured or isolated person. I firmly believe that the USAF PR force is keeping more of our Army and Marine brothers and sisters from dying on the battlefield because we can execute this critical mission at a moment's notice.

We don't delegate other important military missions to whatever force happens to be in the area unless they are specifically trained in conducting those missions. Personnel recovery should be no different.

Col. Michael Korcheck,  
USAF (Ret.)  
Nellis AFB, Nev.

#### Cold War Assets

As the Air Force public affairs officer at Beale AFB, Calif., in charge of highlighting the SR-71 return to flight—and, sadly, the re-retirement of the still unsurpassed Blackbird, I wanted to thank you for the "Cold War From on High" article in the January 2009 issue [p. 38]. I did want to point out that the caption of the main photo of the SR-71 #971 on p.39 is incorrect. The caption identifies it as a photo of the SR-71 over the Sierra Nevada Mountains in the 1980s. That photo was actually shot on the same flight as the shot you featured on the cover. I coordinated the flight where [the photographer] took the U-2 photo over Beale on p. 39. SR-71 #971 was one of the SR-71s brought back from retirement and was accepted by the 9th Reconnaissance Wing.

I'm very proud to have been associated, even in a small way, with the proud program and lucky to have worked with the aircraft that was my favorite since I was a young boy. It is still remarkable to me how such a marvel was created in that era.

Maj. Wilson Camelo,  
USAFR  
Westover ARB, Mass.

#### Six Phases: More Comments

In her article entitled "The Six Phases of Airpower" [January, p. 46], Rebecca Grant argues: "Some may still plead the case that a 'low-tech' or 'right-tech' aircraft should be developed and fielded by the Air Force and sold to foreign partners. The main reasons cited are to reduce cost and provide tailored capability. Rarely contemplated is what those American or allied aircrews would do given the sudden introduction of an SA-6 into the battlespace—much less those S-300s in Venezuela."

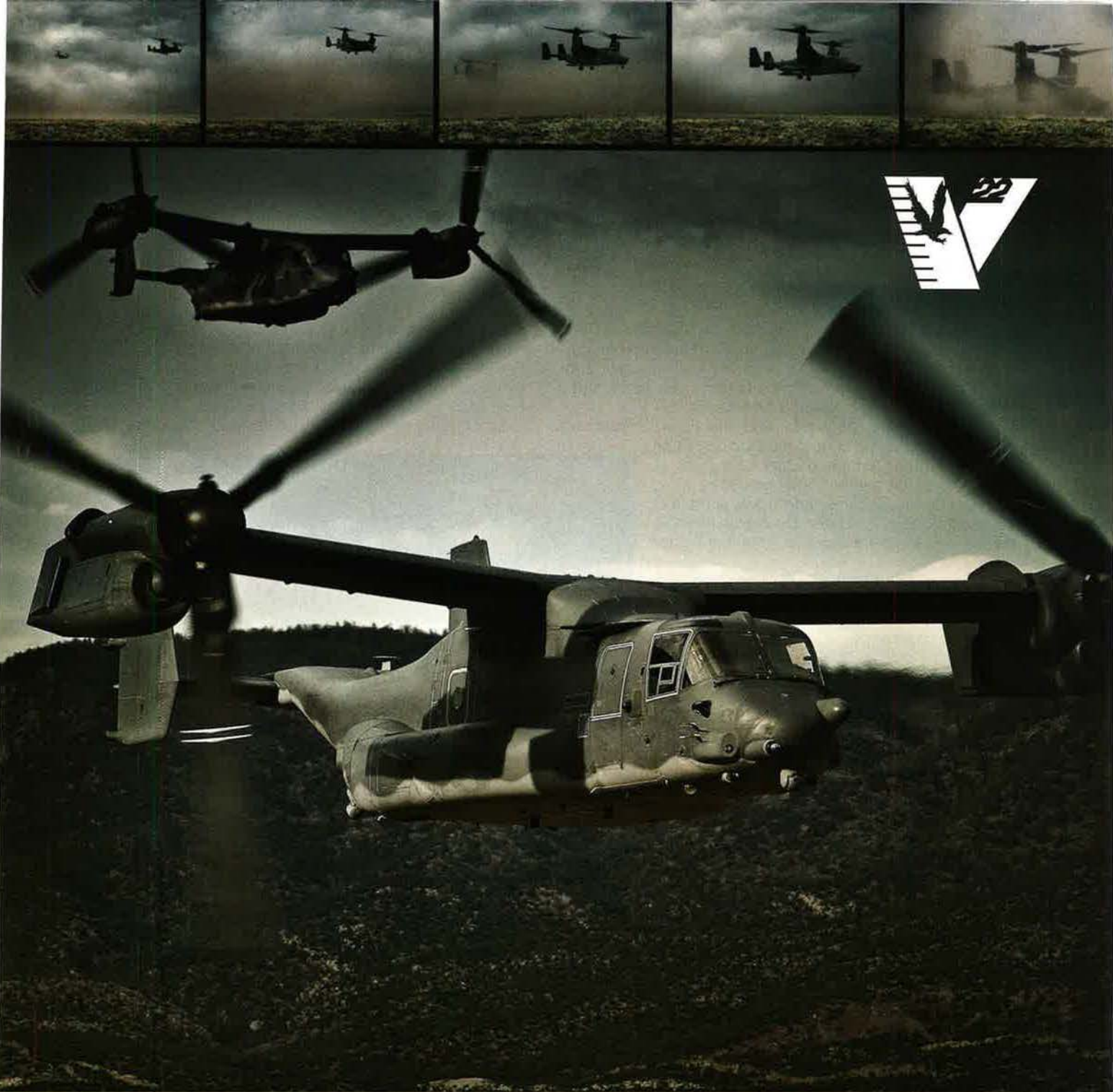
Grant is correct. The heart of the argument does not center on technology but on cost vs. survivability. However, she seems to overlook possible long-term benefits of fielding a right-tech ground attack aircraft for Phase IV operations. Fighters like the F-16, F-15E, and A-10, in addition to the KC-10s and KC-135s that support them, currently fly missions in the CENTCOM area of operations at triple the average sortie duration typically flown during training. Flying \$50 million fighters with operating costs in excess of \$6,000 per hour to hunt down insurgents driving \$2,000 pickup trucks on terrain dominated by a permissive air environment doesn't make sense. We must invest in the recapitalization of our fighter fleet while simultaneously preserving the health of existing aircraft until we can produce a strategically significant force of F-22s and F-35s.

Fielding an aircraft combining lower purchase prices and hourly operating costs with excellent close air support capability in order to take on the lion's share of work in Phase IV operations may be one way to accomplish this goal. The savings garnered from the lower hourly operating costs alone would quickly pay for several squadrons of these right-tech, low-cost aircraft.

In addition, due to the resulting reduced annual contingency requirements, the retirement timelines for existing fighters could be pushed back in order to accommodate realistic acquisition timelines for new F-22s and F-35s. In the case of a limited number of SA-6 or S-300 systems appearing in the battlespace during Phase IV operations, USAF would obviously turn to a more survivable force package to regain air dominance. However, the risks associated with this short-term scenario do not outweigh the benefits of preserving the backbone of the fighter force.

Maj. Steven J. Tittel,  
USAF  
Ft. Leavenworth, Kan.





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# Washington Watch

By John A. Tirpak, Executive Editor

## Stressful, but unsolved; New tricks with old SAMs; Four percent debate ....

### The Speed of Need

When a Missouri Air National Guard F-15 broke in half during a November 2007 training mission, the resulting crash sent shock waves through the Air Force. No one was immediately sure why the fighter's structure had failed.

Its age—more than 25 years—and relentless hard maneuvering were suspected contributing factors. To be safe, Air Combat Command chief Gen. John D. W. Corley ordered the F-15 fleet grounded. Most of it was idled for months, and many pilots lost their certification in the Eagle. During the interval, America was largely without its front-line fighter force.

The cause was finally found, and Corley let the Eagles fly again. Stress had indeed felled the fighter, though the failed part was found to have been made improperly.

Solving the puzzle, though, raised disturbing questions about whether F-15s could fly another 20 years, as the Air Force was expecting them to do. If they couldn't, the loss of the F-15 would throw the service's whole fighter plan into question. That plan—still in force—would see some fourth generation F-15s retained well into the 2020s, substituting for fifth generation F-22s that are needed but not budgeted.

Corley, in a March 2008 press conference, said he was "desperate" for hard information about the health of the F-15 force. It was announced that a fleet-representative F-15 would be put through a torture test at Wright-Patterson AFB, Ohio, to see how many years the Eagles really had left in them. The answers were to be available around now—to inform the Pentagon's choices about how many F-22s and F-35s it should buy.

Unfortunately, the stress test, upon which so many answers hinge, has yet to be performed. Air Force Materiel Command explained that funding to start the test fell out of the Fiscal 2009 budget. It's supposed to be in the Fiscal 2010 budget. A contract could be awarded this summer, and work could start in the fall.

The answers won't be quick in coming. It will take time to select an F-15 for the test, then put it through depot maintenance to correct its aches and pains—corrosion, structural defects, etc.—to make it a truly "representative" test article. All the dangerous parts, such as fluids and explosive charges in the ejection seat, must be removed, and the aircraft must be taken apart, fitted with instrumentation, and put back together again.

It will also take time to build and calibrate the Full Scale Fatigue Stress Test rig, with all of its wires and levers that will bend the airframe, subjecting it to the same forces it would receive in years of operation. At best possible speed, the test itself will start in October 2011 and wrap up around December of 2014.

A spokesperson for Corley said that ACC and AFMC will work together to "elevate the priority of this effort." The command couldn't say why it's apparently not a priority now.

In the meantime, the Air Force will get some F-15 data on which to base its choices, but not right away. Two "high time" F-15s—both a one- and a two-seat model with more than average hours flown—will be taken from the boneyard at Davis-Monthan AFB, Ariz., and torn apart. This will be done to look for any obvious safety issues and to examine whether



USAF Photo by MSgt. Cecilio Ricardo

*How much stress? Nobody knows.*

any particular parts have only "limited durability" remaining, the ACC spokeswoman reported.

The data obtained will in turn feed the building of revised F-15 computer models. The teardowns will take place this year and the refined computer models are supposed to be ready in 2010, a year after the critical choices regarding the F-15, F-22, and F-35 have been made.

Asked in mid-February about the pacing of the test, Chief of Staff Gen. Norton A. Schwartz told reporters in Washington that "the stress test takes time, and we'll be doing that in good faith. We'll no doubt discover those things that we need to know."

### Old SAMs, New Tricks

Anyone who thinks the Air Force will only be challenged by new air defense systems exported from Russia and China—the so-called "double-digit SAMs"—had better think twice. Economical upgrades are giving digital, jam-resistant teeth to obsolete but ubiquitous 1960s-era surface-to-air missiles around the world. Upgraded SAMs are also being made more mobile—a quality USAF leaders found particularly vexing in both Iraq and Serbia.

Air Power Australia, which describes itself as an "independent defense think tank" said in a January paper that "hybridization" of old SAMs with new components such as advanced radars is "occurring on a larger scale than previously appreciated" and is an issue receiving "little attention in the West." Soviet-era air defense systems are evolving rapidly.





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The upgrades make sense for many nations, APA said. Rather than buy all-new systems such as the S-300, which is Russia's most advanced export air defense system, users of old SA-3, SA-5/6, SA-8, and SA-11 systems can retain and extend the service lives "of often large inventories of equipment, and large war stocks of missile rounds."

Upgrades being offered and installed by Belarus and Ukraine, as well as Russia and China, include "increasing radar performance, jam resistance, and track capabilities, and some examples improving either mobility of the system or the kinematic range of the missiles." The APA went on that "it is worth considering that many thousands of such systems" were exported by Russia during the Cold War, to clients ranging from Warsaw Pact nations and other allies to those "being courted or influenced by the Soviets."

China, which license-built many of these systems, and which is manufacturing its own variant of the S-300, has "maintained its own market for indigenous and cloned Soviet missiles and radars."

The APA defined four classes of such hybridization upgrades. Class 1 it defined as simple replacement of old analog equipment and mechanical components "no longer supportable" with new ones. This level of upgrade simply restores the original capabilities of the system, but extends its service life. Thus, some SAMs thought to be out of commission might be put back in service.

A Class 2 upgrade APA defined as having all the characteristics of Class 1, but with replacement of "key functional components," such as radar receivers, transmitters, and signal and data processors, with "modern digital equivalents." At this level, jam resistance is increased, as well as radar detection range. Still, the system might retain "many of the electronic vulnerabilities of the original."

A Class 3 upgrade would be one that makes a previously static system mobile, either by putting it on new trailers or rebuilding it as a group of self-propelled units. The ready availability of geolocation systems, such as GPS or Glonass, means that SAMs can rapidly move and accurately recalibrate, giving missiles a better ability to triangulate their prey. An inability to find and destroy all of Serbia's mobile SAMs in Operation Allied Force was faulted for some aircraft losses in that conflict, and in Deliberate Force.

A Class 4 upgrade the APA defined as a hybridized system pairing "an entirely new engagement radar, and often a new acquisition radar," with older missiles, sometimes enhanced with new guidance packages, motors, or other tweaks.

An example would be the SA-5 missile system, which Navy EA-6B Prowler electronic warfare aircraft were able to "render ... unusable" in skirmishes with Libyan air defenses in the 1980s. In a hybridized system, where the SA-5 is paired with components of the SA-20/21, the Prowler would be "ineffective" in jamming digital radar, APA claimed. Both Syria and Iran have access to such a hybrid. It is "a good case study of what is achievable for modest development investment," APA asserted.

Such a combination "allows Russia to provide a counter-ISR [intelligence-surveillance-reconnaissance] capability to nations that they may not trust with the most advanced weapons such as the SA-21 40N6 missile, currently in test."

Likewise, some frequency-hopping radars being offered as upgrades by China will represent "an entirely different proposition" versus "the legacy article, in terms of its engagement envelope, tactical mobility, and resistance to jamming."

APA concluded by saying that hybridization of integrated air defense systems is likely to expand, as holders of old gear "seek to exploit their sunk investments" and as "vastly better capabilities of new-technology phased array engage-

ment radars" become available and "manufacturers of radar equipment seek to expand their markets."

### The Four Percent Solution

Congress in late February had begun considering a joint resolution that would peg US defense budgets to a minimum of four percent of gross domestic product each year for 10 years. This marked the second time in the past two years that such a resolution had been offered.

The resolution was co-sponsored by Rep. Trent Franks (R-Ariz.) and Sen. James M. Inhofe (R-Okla.). A similar move initiated last year found sympathizers but no traction on Capitol Hill.

Four percent of the 2008 GDP of \$14.3 trillion equates to roughly \$575 billion. The sponsors of the bill would not include in the calculation any supplemental funds covering war costs.

Going to a level of four percent of GDP for defense was suggested several years ago by then-Air Force Chief of Staff Gen. T. Michael Moseley. More recently, it has been championed by Adm. Michael G. Mullen, Chairman of the Joint Chiefs of Staff.

As recently as November, Mullen told reporters at a press conference that four percent of GDP "should be a floor, given the challenges that we have."

Mullen added that he was trying to trigger a debate about national defense spending, and that four percent "seems about right," adding, "I'm not hung up on four percent, but I think having our national security investment correct, in the times in which we're living, is absolutely critical."

Inhofe's version of the resolution, offered to the Senate Armed Services Committee on Feb. 12, noted that the demands on US forces have increased even as the size of the force decreased, and that "the nation cannot continue to commit the armed forces with other assignments around the world without funds needed to carry out the missions they are assigned."

The resolution ticked off a litany of signs that US defense has grown thinner, noting that the Navy fielded 276 ships in 2007, after reaching a high of 568 ships in the late 1980s. Air Force fighter wing equivalents have "dropped from 37 at the time of Operation Desert Storm to 20, and the average age of Air Force aircraft has risen from nine years in 1973 to 24 years by 2007."

The Air Force procurement budget, Inhofe pointed out, "has been cut by almost half between Fiscal Year 1985 and Fiscal Year 2006," in constant 2008 dollars. By the same measure, the Air Force's research, development, test, and evaluation budget "is projected to drop by half between Fiscal Year 2006 and Fiscal Year 2012."

The overall defense budget, Inhofe said, would fall to 3.2 percent of GDP under the roadmap that the Bush Administration had handed off to President Barack Obama.

A level of four percent would still compare as cheap when measured against historical lows and highs, Inhofe said, and would be "almost a full percentage point lower than the 'hollow force' era following the Vietnam War." Without it, the nation will be "unable to equip, train, and modernize a full-spectrum force to preserve America's security."

Including the cost of operations in Iraq and Afghanistan, the Pentagon is already spending more than four percent of GDP. However, war costs are funded out of separate supplemental spending bills which aren't supposed to finance the routine upgrade or replacement of worn-out or obsolete equipment.

Moreover, a larger and larger portion of basic defense spending has been going toward pay, retirement, and health care, while procurement of actual things—vehicles, aircraft, ships, etc.—has been on a long downward trend. ■



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## Airman Killed in Afghanistan

SSgt. Timothy P. Davis, 28, died Feb. 20 near Bagram, Afghanistan, of wounds suffered when his vehicle was attacked with an improvised explosive device.

Davis, of Aberdeen, Wash., had deployed to Afghanistan from the 23rd Special Tactics Squadron, Hurlburt Field, Fla.

## Wyatt Takes Over Air Guard

Lt. Gen. Harry M. Wyatt III was promoted during a ceremony Feb. 2 in the Pentagon and formally took the leadership reins of the Air National Guard.

Air Force Chief of Staff Gen. Norton A. Schwartz and USAF Gen. Craig R. McKinley, chief of the National Guard Bureau, pinned on the third star. "I'm humbled to be here and ready to roll up my sleeves and get to work," said Wyatt, who previously served as the adjutant general of the Oklahoma National Guard.

Then-President George W. Bush nominated Wyatt for the post last November to replace McKinley, who took over the NGB that same month. The Senate confirmed Wyatt in December.

## USAF, Army Chiefs Meet

Air Force Chief of Staff Gen. Norton A. Schwartz met with his Army counterpart, Gen. George W. Casey Jr., Feb. 10 in the Pentagon for a day of meetings to discuss areas of mutual interest such as the command and control of unmanned aerial vehicles and integrating and de-conflicting air and ground munitions and platforms.

Schwartz said he was "particularly pleased" with the outcomes of the discussion at the Army-hosted event on how the Air Force can better provide liaison personnel to work with Army brigade combat teams and other formations. The Air Force will continue to

USAF photo by SRA Benjamin Wilson

★ screenshot



## CMSAF Rodney McKinley To Retire This June

After 30 years of service, CMSAF Rodney J. McKinley will retire this summer, Chief of Staff Gen. Norton A. Schwartz announced at the Air Force Association's Air Warfare Symposium in February. McKinley has made "monumental contributions" to the service and the welfare of the enlisted force, Schwartz added.

The key to the continued success of the Air Force is to recognize extraordinary efforts in simple acts, the service's top enlisted airman told the symposium crowd.

McKinley recalled his years of service, of visiting squadrons across the service. "I love aircraft, I'm in aircraft maintenance, and I love my F-4s, I love my A-10s," McKinley said. The Air Force's success in executing its missions is "not about just aircraft. It's about our airmen." McKinley spoke with pride of the efforts to improve the ways the Air Force tracks wounded airmen who return home from battle, to expand child care initiatives and better living quarters, and initiatives to better educate the force. In the past two years alone, he noted, more than 18,000 airmen have graduated from the Community College of the Air Force.

McKinley said seemingly small outreach efforts can have a major impact on the enlisted corps. He recalled how a gate guard's greeting one cold night at Eielson Air Force Base in Alaska made the difference to a young airman who was leaving the base to attempt suicide. The simple person-to-person greeting of, "Please be careful as you go out on these dangerous roads tonight because we want you to come back home safely," inspired the airman to turn her car around and seek out counseling.

"It's the little things," McKinley said. "Leadership and success are about relationships and how you treat people. ... So please as you go out there, care about your airmen, make sure they know you care."

McKinley's formal retirement ceremony is planned for June 30.

—Marc V. Schanz



adapt to build trust and interoperability with the land service, he said.

Casey reiterated the successes of the two services working together today and said efforts will continue to make them "an even more effective team across the spectrum of conflict."

#### **B-52H Drawdown Completed**

The Air Force in late January completed the drawdown of the B-52H fleet to 76 aircraft by completing the movement of 17 airframes from Louisiana, North

Dakota, and Texas to Davis-Monthan AFB, Ariz., for placement in recallable storage with the 309th Aerospace Maintenance and Regeneration Group.

This phaseout began in July 2008. Of the 17 aircraft, nine came from the 5th Bomb Wing at Minot AFB, N.D., six from the 2nd BW at Barksdale AFB, La., and two from Sheppard AFB, Tex., according to Air Combat Command.

Early last year, the service had intended to retire 18 B-52s from the then 94-aircraft fleet, but with the subsequent

crash of a B-52 in July 2008 off the coast of Guam, one of the airframes originally identified for retirement has been kept in service.

#### **Global Outreach Advances**

Bruce S. Lemkin, deputy undersecretary of the Air Force for international affairs, announced Feb. 5 that USAF's leadership had approved the Air Force Global Partnership Strategy and the International Space Engagement Strategy, the two approaches that will drive the



*USAF Amn. Samantha Allred, part of USAF security forces, practices sighting her M240B machine gun at Incirlik Air Base in southern Turkey. Allred and fellow members of the 39th Security Forces Squadron were patrolling the flight line at Incirlik, one of USAF's most important foreign bases. It is near trouble spots such as Iraq, Lebanon, and Iran, and boasts a 10,000-foot main runway and 9,000-foot alternate runway. Incirlik is also the site of United States Air Forces in Europe's largest weapons storage area.*

**03.09.2009**



USAF photo by Jason Mirro



**It's Got Versatility:** Contractors at Dover AFB, Del., direct an Army M88A2 HERCULES heavy equipment recovery vehicle into a C-17 Globemaster III. The C-17 is the most flexible of USAF's heavy lifters, and can deliver troops and all types of cargo to main operating bases or directly to forward operating locations.

service's outreach efforts with allies and friendly nations' militaries.

The AFGPS, unveiled in May 2008, will provide the guidance for how the service organizes, trains, and equips itself so that it is able to establish mutually beneficial partnerships and interoperable capabilities, and increase the capacity of partner nations to provide for their own security.

The space strategy supports AFGPS by prioritizing the Air Force's efforts and focusing limited resources for space cooperation and partnerships, said Lemkin.

**Air Force Ups C-17 Order**

The Air Force awarded Boeing a \$2.95 billion contract Feb. 6 for 15 C-17 Globemaster III airlifters, bringing USAF's total order to 205 aircraft. As of late February, the company had delivered 183 of them.

Boeing's C-17 spokesman Jerry Drelling said the new order will keep C-17s coming off the company's production line in Long Beach, Calif., until at least August 2010. While senior Air Force officials have stated that they do not intend to seek additional C-17s beyond 205, support for the aircraft remains strong in Congress, and Boeing is spending its own money to preserve the option for the Air Force to buy 15 more, Jean Chamberlin, Boeing's vice president for mobility programs, said Feb. 17.

Boeing is also currently building C-17s for NATO and Qatar, and says nations including India, Japan, Kuwait, Oman, Saudi Arabia, Singapore, and the United Arab Emirates have expressed an interest in the aircraft.

**Malmstrom Fuel Plant Nixed**

The Air Force on Jan. 29 called off its quest to establish a coal-to-liquid fuel conversion plant at Malmstrom AFB, Mont., saying an examination of proposals showed that they "are not viable." It also cited "possible conflicts" with the mission of the base's 341st Missile Wing, which operates Minuteman III ICBMs.

Having a CTL plant at Malmstrom—to be built and run by a private developer—was a part of USAF's broader strategy to

wean the service off foreign sources of energy by utilizing a synthetic blend of aviation fuel that can be derived in part from coal, of which the US has a great abundance.

The concept may not be totally dead since the state of Alaska is looking at Eielson Air Force Base as the potential home for a CTL plant. But that option is being driven by Alaska and "has not been brought to the Air Force for consideration," said USAF spokesman Gary Strasburg.

**Eglin F-35 Plan Affirmed**

The Air Force will base an initial batch of 59 F-35s at Eglin AFB, Fla., and begin construction to establish the Joint Strike Fighter Initial Joint Training Site there, per BRAC 2005 guidance, according to a record of decision signed Feb. 5.

This decision allows the Air Force to move the joint-international schoolhouse forward, albeit partly. Due to concerns voiced last year by some residents of Valparaiso, Fla., over the F-35's noise levels, USAF has deferred a determination on whether to beddown additional aircraft—reaching a total of 107—until it completes a supplemental environmental impact statement by September 2010.

The first F-35 is scheduled to touch down at Eglin in March 2010, and aircraft will continue arriving through 2014. The ROD also imposes temporary operational restrictions on the aircraft to avoid and mitigate noise.

USAF photo by SrA Jason Epley



**Dark Shadows:** Tactical air control party trainees with Det. 3, 342nd Training Squadron, conduct a nighttime "raid" during their final field training exercise at Eglin AFB, Fla. TACP training includes learning to use portable communications devices, radio language skills, day and night foot navigation, vehicle navigation, convoy training, and small unit tactics.





USAF photo by MSGI Kevin J. Gruenewald

**Stenner: Reserve Is “Strategic”**

Lt. Gen. Charles E. Stenner Jr., chief of the Air Force Reserve, said Feb. 2 that while the military’s reserve components are a critical part of the operational force, they must preserve their traditional role as a strategic reserve force.

“It is what we are about,” he said during a speech at the Reserve Officers Association midwinter conference in Washington, D.C. “We have been and continue to be required as a strategic reserve, period.”

Stenner said abandoning that role to become just an operational force would mean a loss in the “depth that we as a nation need to ensure that we cover all types of contingencies,” whether they are homeland defense missions or major combat operations around

the world. “You won’t do that without strategic depth,” he said.

**Dover Gets First C-5M Lifter**

Dover AFB, Del., took delivery of the first of its C-5M Super Galaxy transports Feb. 9 with the arrival of *Spirit of Global Reach* from Lockheed Martin’s facility in Marietta, Ga. Gen. Arthur J. Lichte, head of Air Mobility Command, flew the aircraft to Dover.

This is the first of three C-5Ms that Dover will receive for operational testing, which is scheduled to commence in August. The C-5M model features new avionics, engines, and reliability improvements for better performance and maintainability.

Lockheed Martin is upgrading a total of 52 of the Air Force’s 111 C-5s to the

**Over the Deep Blue Sea: Two F-22 pilots maneuver their Raptors over the Pacific Ocean during a theater security mission. Twelve Raptors from Elmendorf AFB, Alaska, are deployed to Andersen AFB, Guam, as part of USAF’s continuing force posture adjustments, intended to address worldwide requirements.**

M-model configuration by 2016. The Dover aircraft was one of the first three C-5s to be upgraded for use in developmental testing, which concluded in August 2008.

**Good Conduct Medal Is Back**

USAF reactivated the Air Force Good Conduct Medal, as of Feb. 11, and will award it retroactively to airmen who qualify, going back to the decoration’s suspension in 2006. The reinstated medal will be presented to all airmen who accumulate three years of good conduct.

“We’re going to make it so that there was never a gap,” Lt. Gen. Richard Y. Newton III, deputy chief of staff for manpower and personnel on the Air Staff, told reporters in the Pentagon that day.

CMSAF Rodney J. McKinley, a key player in medal’s reinstatement, said the 2005 decision to cancel it came from the belief that all airmen are expected to exhibit good behavior at all times, making the award a bit redundant. But the move had “unintended consequences,” he said, as it raised the ire of many retirees and was perceived as a slight to the enlisted corps.

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## DOD Stands Pat With Service Roles and Missions

The Department of Defense instituted no major changes to the responsibilities of each service based on the findings of its Quadrennial Roles and Missions Review Report, released Jan. 29.

In fact, DOD endorsed the services' existing roles and missions in the report, known as the QRM for short, albeit with renewed commitments to seek better joint synergy and less duplication of effort.

For example, the review determined that the services are "appropriately aligned" for intratheater airlift. Letting both the Air Force and Army operate fleets of C-27J transports offers the most value to the joint force of all options considered, which ranged from having the Air Force operate all C-27Js to the Army having exclusive ownership, the report said.

Nonetheless, based on the lessons of recent operations, DOD is instituting some changes to ensure that Air Force C-27Js can conduct Army direct support missions when requested, and Army C-27Js can be fully integrated into a common-user airlift system when available, stated the report.

Similarly, the review found that "it is appropriate" for each service to develop, acquire, and operate unmanned aerial vehicles, but more needs to be done to increase interoperability of UAV capabilities.

The review also affirmed that cyberspace operations are a joint mission, with each service having a role, thereby quashing any notion that the Air Force might emerge as the lead player in this realm.

One major area cited for improvement is improving DOD's "soft power" capabilities in support of national efforts to rebuild countries after conflict and establish or restore rule of law, the report said. There were also calls to do more to institutionalize irregular warfare across the department.

The roles and missions review is now required by law to take place every four years as a precursor to the Pentagon's broader Quadrennial Defense Review.

## ANG Units Pass Nuke Test

The 121st Air Refueling Wing and 155th ARW of the Ohio and Nebraska Air National Guards, respectively, received passing marks on their nuclear operational readiness inspections concluded in February by an Air Mobility Command inspector general team.

In addition to their daily aerial refueling tasks, the two Air Guard KC-135 wings are among the mobility units charged under AMC's Prime Nuclear Airlift Force mission with transporting nuclear weapons.

The active duty 62nd Air Mobility Wing at McChord AFB, Wash., passed a nuclear surety inspection in January. And, after coming up short in its NSI last fall, the 341st Missile Wing at Malmstrom AFB, Mont., successfully passed a five-day retest held in early February.

## Murtha Pushes KC-X Dual Buy

Rep. John P. Murtha (D-Pa.), chairman of the House Appropriations de-

**Welcome to Kandahar: Capt. Don Rolleg flies a C-130 Hercules above the rough Afghanistan landscape. Rolleg is assigned to the 772nd Expeditionary Airlift Squadron, which was activated at Kandahar Airfield, Afghanistan, in March.**



USAF photo by SSgt. James L. Harper Jr.



### Operation Iraqi Freedom—Iraq

#### Casualties

By March 19, a total of 4,261 Americans had died in Operation Iraqi Freedom. The total includes 4,250 troops and 11 Department of Defense civilians. Of these deaths, 3,425 were killed in action with the enemy while 836 died in noncombat incidents.

There have been 31,131 troops wounded in action during Operation Iraqi Freedom. This number includes 17,433 who were wounded and returned to duty within 72 hours and 13,698 who were unable to return to duty quickly.

#### Iraqis Fly First Night-Vision Mission

The aircrew of an Iraqi UH-1H Huey helicopter with the Iraqi Air Force's 2nd Squadron on Feb. 8 flew the first all-Iraqi night-vision mission from Taji Air Base, representing another milestone for the fledgling air arm.

"This gives the Iraqi Air Force a night operation capability that was previously nonexistent," said US Air Force Capt. Kevin Burns, a pilot advisor with the 721st Air Expeditionary Advisor Squadron that has been training the Iraqis.

The IqAF first acquired night-vision goggles in June 2008 and began night training on US OH-58 Kiowa helicopters on loan from the Iowa National Guard.

#### Rivet Joint Fleet Reaches Milestone

The Air Force's fleet of RC-135 Rivet Joint surveillance aircraft on Feb. 6 eclipsed 7,000 combat missions supporting US Central Command in Iraq, Afghanistan, and the Horn of Africa.

"Seven thousand missions is a big deal for us," said Lt. Col. Tom Nicholson, commander of the 763rd Expeditionary Reconnaissance Squadron, a Rivet Joint unit that operates from an air base in Southwest Asia.

Rivet Joints have flown continually in the CENTCOM area of responsibility since August 1990 under Desert Shield, the run-up to the first Gulf War. During this span, it is estimated that Rivet Joint aircraft have accumulated more than 50,000 combat hours there.

Nicholson said that the Rivet Joint's mission has changed over the years from a strategic focus to a tactical information focus.

### Operation Enduring Freedom—Afghanistan

#### Casualties

By March 19, a total of 663 Americans had died in Operation Enduring Freedom. The total includes 662 troops and one Department of Defense civilian. Of these deaths, 443 were killed in action with the enemy while 220 died in noncombat incidents.

There have been 2,725 troops wounded in action during OEF. This number includes 960 who were wounded and returned to duty within 72 hours and 1,765 who were unable to return to duty quickly.

#### Airpower Strikes at Militants

A coalition air strike Feb. 15 targeted a group of nine militants near the village of Darya-ye-Morghab in Badghis Province near Turkmenistan, including Mullah Dastighir, the Taliban leader in the area.

After confirming the exact location of the militants, coalition forces attacked the enemy compound with a precision air strike, destroying a building and killing the militants inside, according to US Forces-Afghanistan.

Dastighir was responsible for an increase in violence in Badghis, including attacks against Afghan and coalition forces.

#### C-17 Makes Emergency Landing at Bagram

A C-17 Globemaster III transport landed Jan. 30 at Bagram AB, Afghanistan, with none of its landing gear fully extended, causing a small fire and disrupting the air field's operations for several days, Air Forces Central officials said. There were no injuries to the aircrew.

It took a group of more than 120 airmen, Department of Defense civilians, and contractors two days to remove the crippled C-17 from the runway. They used a large crane and six giant airbags to lift the aircraft high enough so that its landing gear could be extended. The team then rolled the aircraft off the runway.

fense subcommittee, said Feb. 16 he remains convinced that the dual-buy strategy of allocating work both to Boeing and Northrop Grumman is the only means to push ahead with the Air Force's protest-plagued KC-X tanker program.

Murtha said a dual buy, admittedly more expensive up front, would provide the tankers more quickly and, in essence, provide "a stimulus package in itself" for the troubled US economy, reported the *Seattle Post-Intelligencer*. He made the comments during a visit to Boeing's aircraft production facility near Seattle, echoing what he said in late January during a tour of the proposed Northrop Grumman-EADS tanker production site in Mobile, Ala.

While Murtha champions a dual buy, Pentagon officials remain adamantly against it and instead continue to support a winner-take-all scenario.

#### Stabilizer Trim Felled B-52

An improper stabilizer trim setting caused the crash of a B-52H Stratofortress bomber near Guam last July, killing all six airmen aboard, an Air Force accident investigation board reported Feb. 13.

Brig. Gen. Mark A. Barrett, commander of the 1st Fighter Wing at Langley AFB, Va., and president of the AIB, told reporters the trim was set between four to five degrees nose down when the bomber crashed. He judged that it was most likely a mechanical malfunction, but couldn't absolutely rule out pilot error.

That the aircraft was at low altitude and in a descending turn when the problem manifested, coupled with the crew's "late recognition" of what was happening, were contributing factors, he said. The wreckage, in 12,000 feet of water, couldn't be fully salvaged, but analysis of some recovered stabilizer parts confirmed what the AIB deduced from computer modeling and simulations.

#### Air Sovereignty Alert at Risk

Eleven of the 18 sites across the nation at which the Air Force maintains fighter aircraft on 24-hour alert to protect US airspace "could be without viable aircraft by 2020," if their legacy F-15s and F-16s are not replaced within the next few years, the Government Accountability Office warned in a Jan. 27 report.

Also disconcerting was GAO's assessment that the Air National Guard and active duty units at 14 of these sites will have to suspend air sovereignty alert operations for some time between 2010 and 2020, as their legacy aircraft reach the end of their service life or as they transition to new fighters.

While it may not solve the issue, GAO said formally elevating ASA to a steady-



## Senior Staff Changes

**RETIREMENT:** Maj. Gen. Darryl A. Scott.

**NOMINATIONS:** To be ANG Major General: Donald A. Haught, Thomas J. Haynes, Craig D. McCord, Robert M. Stonestreet, Edward W. Tonini, Francis A. Turley. To be ANG Brigadier General: Margaret H. Bair, James H. Bartlett, Jorge R. Cantres, Sandra L. Carlson, Stephen D. Cotter, James T. Daugherty, Gretchen S. Dunkelberger, Robert A. Hamrick, Chris R. Helstad, Cecil J. Hensel Jr., Frank D. Landes, Robert L. Leeker, Rickie B. Mattson, Maureen McCarthy, John E. McCoy, James K. McLaughlin, John W. Merritt, Thomas R. Schiess, Rodger F. Seidel, Glenn K. Thompson, Dean L. Winslow, William M. Ziegler.

**CHANGES:** Brig. Gen. Jonathan D. George, from Principal Asst. Dep. Administrator for Mil. Application, Dep. Administrator for Defense Prgms., Natl. Nuclear Security Administration, Dep. of Energy, Washington, D.C., to Dir., Strategic Capabilities Policy, NSC, Washington, D.C. ... Brig. Gen. Garrett Harencak, from Cmdr., 509th BW, ACC, Whiteman AFB, Mo., to Principal Asst. Dep. Administrator for Mil. Application, Dep. Administrator for Defense Prgms., Natl. Nuclear Security Administration, Dep. of Energy, Washington, D.C. ... Brig. Gen. Craig S. Olson, from Vice Cmdr., ASC, AFMC, Wright-Patterson AFB, Ohio, to Chief, Office of Security Cooperation, Multinational Security Transition Command-Iraq, CENTCOM, Baghdad, Iraq.

**SENIOR EXECUTIVE SERVICE RETIREMENT:** Ronald C. Ritter.

**SES CHANGES:** Eric W. Crabtree, to Cmdr., 4th AF, AFRC, March ARB, Calif. ... Gail P. Forest, to Assoc. Dir., Air Platforms, AF Research Lab., AFMC, Wright-Patterson AFB, Ohio ... Patrick A. McVay, to Dir., Jt. Exercises & Tng., STRATCOM, Offutt AFB, Neb. ... Charles E. Milam, to Dir., Svcs., DCS, Manpower & Personnel, USAF, Pentagon ... Arthur J. Myers, to Principal Dir., Mil. Community & Family Policy, Office of the USD (Personnel & Readiness), Pentagon ... James T. Ruboor, to Cmdr., 22nd AF, AFRC, Dobbins ARB, Ga. ... Kevin E. Williams, to Dep. Dir., Studies & Analyses, Assessments, & Lessons Learned, USAF, Pentagon.

**COMMAND CHIEF MASTER SERGEANT CHANGE:** Christopher Muncy, to Command CMSgt., ANG, Arlington, Va. ■

state mission may help to alleviate some of the personnel and equipment issues facing the units that are consistently executing the mission today in addition to their expeditionary rotations.

### Griffiss Cleanup Progresses

After more than two decades and \$138 million spent, the Air Force said Feb. 9 it has successfully cleaned up many of the potentially hazardous waste sites at the former Griffiss AFB, N.Y., a former Strategic Air Command B-52 bomber base near Rome.

It said this is prompting the EPA to consider the removal of more than 2,900 of 3,552 acres of land that was formerly a part of Griffiss from the agency's national priorities list for remediation. The base has been on the NPL since 1987.

"This moment marks a high point for the base, the community, and the Air Force," said Robert Moore, director of the Air Force Real Property Agency. Griffiss closed in 1995 after BRAC 1993.

### Satellite Clones Eyed

The Air Force announced in January that it intends to potentially double its planned fleet of six Wideband Global Satcom satellites by pursuing the "pro-

duction of up to six clone WGS satellites and associated ground equipment."

The clones would have communications capabilities "that are equivalent" to the WGS spacecraft, the service said. Launch of the first clone satellite is required within five years of the initial authorization to procure long-lead material.

Already the first of the six Boeing-built WGS communications satellites in the current program of record is on orbit and operational. WGS-2 was expected to go into space in March.

### Arizona Wins Luke Case

A Maricopa County Superior Court judge took the state of Arizona's side over the county in a dispute over land use around Luke Air Force Base, reported the *Arizona Republic* Feb. 12.

Arizona Attorney General Terry Goddard, who filed the lawsuit to protect Luke from potential residential encroachment generated by building permits issued by Maricopa County, said Feb. 10, "This is a victory for the state, but more importantly for the West Valley communities that depend on Luke and for the dedicated airmen training there."

Arizona considers Luke a finalist in the running to operate as a training facility for the new F-35 Lightning II stealth fighter aircraft. Goddard said he will "continue to fight" to make Luke a home of the F-35 and "extend the base's mission for another 40 to 50 years."

### USAF Reaches Out to Nigeria

An Air Force contingent traveled to Nigeria for 10 days in mid-January to meet with senior officials, including the Minister of Defense and Chief of Air Staff, for discussions on improving the safety and security features of the African nation's air domain.

The trip was one of the numerous activities that 17th Air Force, the air component of US Africa Command, has under way to bolster the capacity of African partner nations to help promote stability on the vast continent.

Among the activities, the USAF group assessed the state of the Nigerian Air Force's mostly grounded C-130 fleet for possible reconstitution and exchanged



*Eddy, a military working dog from McChord AFB, Wash., shows his teeth during an urban terrain training session at the Air Force Phoenix Warrior Training Course. Phoenix Warrior is a confidence building exercise, and participation enables handlers to better control and trust their dogs during deployments.*

USAF photo by SSgt. Paul R. Evans





ideas on search and rescue with senior Nigerian civil authorities.

**Airmen Receive Bronze Star Medals**

MSgt. William Geiger Jr. of the 78th Logistics Readiness Squadron at Robins AFB, Ga., received a Bronze Star

Medal with Valor Device for his actions as a convoy commander in Iraq, the Air Force announced in January. It was his second Bronze Star Medal during his three consecutive tours in Iraq.

Geiger was awarded the medal, with valor device, for a 14-hour mission

**Check Under the Hood:** SrA. Jessica De Casper, with the 379th Expeditionary Security Forces Squadron, closely inspects the engine compartment on a truck before allowing the truck and driver entry onto an air base in South-west Asia. Base security is a complex mission for security forces personnel deployed to the theater.

**Barksdale Reservists To Lead B-52 Training**

Air Force Reserve Command's 93rd Bomb Squadron at Barksdale AFB, La., is assuming the lead for B-52H training, in a shift under way in the B-52 fleet. Currently a combat-coded unit, the 93rd BS is transitioning to the B-52 formal training unit (FTU), or schoolhouse, according to Col. Edmund D. Walker, commander of the AFRC's 917th Wing, the bomb squadron's parent unit.

Assigning the B-52 schoolhouse mission to the Reserve unit is "a good fit" because its members, like Reservist airmen across the Air Force, bring much experience and stability to their USAF jobs, said Walker.

"We've found that in the flying training unit business, [having a Reserve unit in charge] has worked out really well," said Walker. Already the 917th Wing's other flying unit, the 47th Fighter Squadron, operates one of the Air Force's two A-10 schoolhouses.

Under the changes to the 93rd BS, its aircraft complement will grow from eight to 16 by around this summer, with the new assets transferring over from Barksdale's active duty 2nd Bomb Wing, said Walker.

The 2nd BW's 11th BS, the current B-52 FTU, will become an active associate to the 93rd BS. It will no longer operate its own aircraft. Instead, its aircrews will work in the schoolhouse under the operational direction of the 93rd BS.

On the maintenance side, airmen of the 2nd BW will work under the Reserve wing's maintenance group to keep the training aircraft flying.

Walker said the transition to the FTU has been in the works for about two years and isn't directly related to the creation of Air Force Global Strike Command, the new nuclear-centric major command, although both are occurring at around the same time.

Rounding out the moves, Walker said Reservist aircrews will form a Reserve associate with the 2nd BW. They will participate in the conventional and the nuclear-related activities of the active duty wing, including deployments.

during which his convoy came under attack seven times by Iraqi insurgents. All of the convoy vehicles successfully reached their destination.

Also earning Bronze Star Medals for their actions in Afghanistan were: Lt. Col. Bradley Fishel of the 311th Human Systems Wing at Brooks City-Base, Tex.; Lt. Col. David Poage of the 81st Training Wing at Keesler AFB, Miss.; Capt. Timothy Harrelson of the 35th Medical Operations Squadron at Misawa AB, Japan; and TSgt. Phoebus Lazaridis of the 8th Air Support Operations Squadron at Aviano AB, Italy.

Receiving Bronze Star Medals for activities in Iraq were MSgt. Anthony Blackmon of the 28th Civil Engineer Squadron at Ellsworth AFB, S.D.; and SSgt. Brian Boisselle of Edwards AFB, Calif.

**World War II Airman Gets DSC**

On Feb. 2, Walter T. Holmes, a B-24 pilot with the 44th Bomb Group, received a Distinguished Service Cross during a ceremony at Barksdale AFB, La., for his participation in the bombing raids on the Ploesti oil refinery in Romania in August 1943. A review by



## Satellites Collide in Space

An inactive Russian military satellite and functioning Iridium commercial communications satellite collided in low Earth orbit Feb. 10 about 498 miles over Siberia, with both being obliterated and strewing a large amount of debris in space.

The incident was the first time that two large intact satellites smashed into one another on orbit. As of late February, the Department of Defense was still formulating where the debris would settle, and if debris pieces posed a danger to other satellites. And NASA scientists were determining whether the debris might pose a danger to the planned space shuttle mission in May to repair the Hubble Space Telescope.

The incident led to calls for more international cooperation to do more to prevent similar events.

"I'd like to be able to find a way, not only with Russia, but with other nations to make sure that our exchange of data is more complete," said Marine Corps Gen. James E. Cartwright, vice chairman of the Joint Chiefs of Staff, Feb. 12 at a Space Enterprise Council-sponsored event in Washington, D.C. "We would be remiss to not take advantage of this [event] and turn it into good."

Cartwright said it would be a long time before the debris field re-enters the atmosphere since the collision occurred at a sufficiently high altitude. "My worry is that debris field is going to be up there for a lot of years, so we're going to have to play a little bit of 'dodgeball' for many tens of years coming," he said.

"The good news," he continued, "is once it's stabilized, it's relatively predictable. The bad news is it's a large area." If certain orbital areas are no longer considered safe, both the commercial and national security communities would face financial costs and mission impacts, he said.

US officials acknowledged that there are limits on the United States' ability to track every orbiting man-made object and compute potential collisions.

Board for Correction of Military Records upgraded Holmes' Silver Star to a DSC just two days prior to his 90th birthday.

### Cobra Dane Returns to USAF

The Missile Defense Agency on Feb. 19 announced that it was transferring the Cobra Dane phased-array radar at Shemya, Alaska, to the Air Force.

MDA has used the upgraded Cobra Dane for ballistic missile defense operations since 2004, but the radar still retains its intelligence data collection and space tracking capabilities.

The Air Force now will maintain Cobra Dane, including the hardware that supports the missile defense mission, and operate the radar to provide

intelligence, space surveillance, and missile defense.

### Guard Lauds Global Partners

The National Guard's State Partnership Program is a valuable tool for forging international military-to-military relationships that can help world governments prevent and better respond to global calamities, said Air Force Gen. Craig R. McKinley, chief of the National Guard Bureau.

Speaking to international students Feb. 5 at the George C. Marshall European Center for European Security Studies, in Garmisch-Partenkirchen, Germany, McKinley noted that "integrated efforts" between governments are vital. "You start by preventing the things that can go wrong, and you start preventing by meeting and sharing ideas with people," he said.

McKinley cited an existing partnership between the California National Guard and Ukraine as an example of the value of such an exchange. Just last November, Ukrainian officials shared ideas on dealing with floods with their California hosts during an emergency response training exercise.

### Extended Red Flag Tested

The US Air Force Air Warfare Center added an extra week to its Red Flag 09-3 air combat training exercise that started Feb. 23 at Nellis AFB, Nev., to test the feasibility and effectiveness of focusing some of the training on close air support and combat search and rescue scenarios.

"The additional training will better prepare our airmen for combat operations in Afghanistan, Iraq, and other

## News Notes

- The Senate on Feb. 11 confirmed William J. Lynn III to be deputy secretary of defense by a vote of 93 to four. The former top Raytheon lobbyist replaced Gordon England in the Pentagon's No. 2 post.

- The Air Force Inspection Agency at Kirtland AFB, N.M., hosted the inaugural training course for nuclear surety inspectors Feb. 2-6. The course is designed to standardize all NSI training and certification.

- Maj. Gen. Bradley A. Heithold on Feb. 11 assumed command of the Air Force Intelligence, Surveillance, and Reconnaissance Agency at Lackland AFB, Tex. He succeeded then-Maj. Gen. John C. Koziol, now a lieutenant general tapped to be a deputy undersecretary of defense for intelligence.

- Flight engineer MSgt. Terence Jackson, deployed to Southwest Asia operations from the 305th Air Mobility Wing at

McGuire AFB, N.J., reached 10,000 flying hours Jan. 23.

- Maj. Gen. Michael C. Gould was nominated Feb. 2 to receive a third star to be the next Air Force Academy superintendent. If confirmed by the Senate, he would replace Lt. Gen. John F. Regni, who has led the academy since October 2005 and is retiring.

- Lt. Col. Edward Vaughan, the Air National Guard's former deputy director of safety, was inducted into the Air Force Safety Hall of Fame at Maxwell AFB, Ala., Feb. 6.

- The first F-35 Lightning II stealth fighters destined for basing at Shaw AFB, S.C., will start arriving in 2017. Lt. Gen. Gary L. North, commander of Shaw's 9th Air Force and Air Forces Central, told local residents in January.

- Lt. Col. Robert Novotny, commander of the 67th Fighter Squadron at Kadena

AB, Japan, surpassed 2,000 flying hours in the F-15 during a training sortie on Feb. 12.

- The Air Force in February named SSgt. Brett Pragle, with the 27th Special Operations Security Forces Squadron at Cannon AFB, N.M., as the outstanding security forces support staff airman of 2008.

- The Department of Defense's Operationally Responsive Space Office at Kirtland AFB, N.M., in January announced its intent to co-locate a rapid small-satellite assembly facility, dubbed the "Chile Works," on the base.

- Boeing said Feb. 5 it had received a four-year, \$49 million contract from the Air Force Research Laboratory for Phase II work on the technology that will enable unmanned aerial vehicles to rendezvous autonomously with tanker aircraft and refuel. ■



locations around the world,” said Maj. Keith Lowman, Red Flag 09-3 team chief. Red Flag has been traditionally two-week-long events.

Participating aircraft included Air Force F-22, F-15, F-16, and A-10 fighters and attack aircraft and Navy F-18 fighters, as well as British Tornados and Australian F-111s. They were supported by a variety of combat search and rescue, command and control, intelligence-surveillance-reconnaissance platforms, and aerial refuelers.

### ANG Firefighting Upgraded

The new variant of the Modular Airborne Firefighting System (MAFFS) has been approved for operational use on the C-130J transports of the California Air National Guard’s 146th Airlift Wing at Channel Islands ANG Station.

The wing, the first to be cleared to use MAFFS II, had two units at its disposal, giving California a big boost in overhead firefighting capability in time for the state’s coming wildfire season. California hasn’t had a MAFFS capability since 2006.

Compared to the previous version, MAFFS II is considered more effective and efficient. The system drops an orange-colored mixture of fire retardant and water to keep fires from spreading. Two other Air Guard airlift wings and one Air Force Reserve Command unit will also get the new system.

### Obituaries

■ Harry J. Hillaker, 89, a long-time aeronautical engineer with General Dynamics who is considered to be the “father of the F-16,” died Feb. 8 at his home in Fort Worth, Tex. Hillaker led the GD design team that worked with a group of Pentagon insiders—including then-Maj. John R. Boyd—that later became known as the “Fighter Mafia.” They molded a collection of ideas, theories, and concepts into what became the F-16, one of the most successful fighter programs in history. The F-16 first flew in January 1974. Hillaker, born in Flint, Mich., retired from GD in 1985. He also worked on the B-36, B-58, and F-111 aircraft programs.

■ Retired Lt. Col. Robert G. Ferry, 85, who flew a record-setting nonstop solo helicopter flight from California to Florida in April 1966, died Jan. 15 of natural causes at his home in Lake San Marcos, Calif. He made the 2,213-mile flight in a Hughes YOH-6A light observation helicopter from Culver City, Calif., to Ormond Beach, Fla., in 15 hours and eight minutes. His record still stands. Ferry, born in Minneapolis, flew helicopter missions during the Korean War and then was a test pilot at Edwards AFB, Calif. He later worked for Hughes Aircraft as chief test pilot. ■

## CMSAF Paul W. Airey, 1923-2009



Retired CMSAF Paul W. Airey, first Chief Master Sergeant of the Air Force and leader of the team that developed the Air Force enlisted promotion system still in use today, died March 11 in Panama City, Fla.

A World War II veteran and prisoner of war in the conflict, Airey helped define the role and duties of the Chief Master Sergeant of the Air Force, and sharply enhanced the educational opportunities and professionalism of the USAF enlisted force.

A native of New Bedford, Mass., Airey left high school to enlist in the military in 1942. He meant to join the Navy, but was put off by that service, and enlisted in the Army Air Forces instead. He wound up drawing duty as a radioman and gunner on B-24 Liberators.

Airey first went to North Africa, and then Italy, racking up 28 combat missions. In July 1944, in a raid against oil refineries near Vienna, Austria, Airey’s B-24 was hit by flak. He parachuted safely but was captured, and spent the rest of the war as a POW. He was first interned at Stalag Luft IV, a POW camp near the Baltic Sea, but as the war drew to a close, Airey and 6,000 other POWs were force-marched 400 miles to a camp near Berlin. He was liberated by British troops in May 1945.

After a 90-day recuperation leave, Airey re-enlisted in the Air Force, a decision he had actually made while a POW. He served six years at Scott Field, Ill., as a radio instructor. As noncommissioned officer in charge of communications at Naha AB, Okinawa, Japan, Airey drew notice by solving a vexing problem—the corrosion of radio gear in the hot, humid climate. Although Airey himself said he merely found and applied an existing procedure, he was decorated for his initiative, which saved millions of dollars worth of equipment.

Returning from Okinawa in 1953, Airey served as first sergeant at Scott, and then at four other bases during the next 14 years.

In 1966, the Air Force acceded to Congressional urging to create a top enlisted position, to match similar posts in the Army and Navy. The person chosen would advise service leadership on the “morale, welfare, and career opportunities of the enlisted men and women,” according to a House bill. Airey was one of three finalists; he got the job in April 1967.

Although there was opposition to creating Airey’s new job, he told an interviewer that Chief of Staff Gen. John P. McConnell—rumored to be among the opponents—told him to “run with it,” and became a huge supporter of Airey’s efforts.

Airey fought efforts to turn the job into a kind of inspector general, focusing on communicating enlisted issues to the top of the USAF command chain. Airey also recognized that the way to turn around a long-standing retention problem was to fix the service’s enlisted promotion system. He and a team of specialists devised the Weighted Airman Promotion System, still used today.

Airey worked with the head of Air University to create a Senior NCO Academy, to provide more sophisticated leadership and management training than was then available at individual commands. Airey later said that the enlisted airman of today is better educated and holds more degrees than the officers did in World War II.

On a visit to Europe, Airey discovered that unscrupulous lenders were charging airmen exorbitant interest on loans. His highlighting of this problem led to the establishment of credit unions in Europe for all US personnel there.

Airey’s term as Chief Master Sergeant of the Air Force ended in July 1969, but he served another year in order to complete 30 years of service. Subsequently, all his successors have retired directly from the job.

In retirement, Airey served as a regional director of the Air Force Sergeants Association, and as a chapter president of the Air Force Association. He received AFA’s Lifetime Achievement Award in 2007. He also served on the board of trustees for both the Airmen Memorial Museum, the Air University Foundation, and the Air Force Memorial Foundation. A quote from Airey is among those engraved at the Air Force Memorial, saying that he sees in airmen “dedication, determination, loyalty, and valor.”

Chief of Staff Gen. Norton A. Schwartz said Airey was a leader with “vision well ahead of his time. His legacy lives today in the truly professional enlisted force we have serving our nation, and for that, we owe him a debt of gratitude.”

—John A. Tirpak



## The Promise and Perils of Foreign Bases

In crises past, the Air Force usually has managed to gain adequate access to overseas bases. This has sometimes entailed building relationships with nations that are decidedly nondemocratic. Often, the access is—for lack of a more delicate word—bought.

Some say the US should avoid dealing with dictators or other unsavory regimes. Sometimes there is no alternative. Even so, there is no doubt that danger comes attached to such deals. Recent events show the risk in such arrangements-of-convenience. Every several years, it seems, USAF's Central Asian basing scheme gets a shake-up.

In 2001, the US needed bases near Afghanistan—at the time perhaps the least accessible corner of the world. Karshi-Khanabad (K2) Air Base in Uzbekistan and Manas AB, Kyrgyzstan, soon became vital logistical hubs for Operation Enduring Freedom.

In 2005, Uzbekistan kicked out the Air Force after the US criticized the hard-line Uzbek government for a deadly attack on protestors in the town of Andijon.

Sensing a golden opportunity, the government of Kyrgyzstan responded by promptly renegotiating its deal with the US, achieving a massive increase in the "aid package" the US paid for use of Manas.

This year, the same Kyrgyz government jumped in a different direction. It chose to evict the US military from Manas, but only after securing a larger financial aid package from Russia. The Air Force was ordered to vacate the premises by August.

However, the Pentagon has already secured access to new rail routes into Afghanistan. They pass through ... Uzbekistan.

What lessons can we draw from this?

Reliable overseas bases are generally integrated into a stable host-nation's society. Most large, permanent bases in Britain, Japan, Germany, Italy, and even Kuwait generate relatively little controversy. The bases contribute to the local economies, avoiding placing undue burdens on the local population, and receive approval from credible host governments.

A significant shift in any one of these factors can place Air Force access at risk.

Economic integration is required to build a pro-base constituency. In the case of Manas, this never happened. The base arrangement was widely criticized in Kyrgyzstan for its failure to provide significant economic benefit.

Large bases in heavily populated areas create their own set of stresses. Installations on Okinawa and in downtown Seoul are in heavily populated areas, often breeding clashes and discontent. It is no coincidence that Japan and South Korea are paying billions of dollars from their own budgets to relocate many US troops.

The fall of a government into instability can be another major warning sign. Coups, revolutions, and even democratization trigger problems; foreign bases often are seen as illegitimate legacies of a discredited regime.

This has caused problems for the Air Force in locations as diverse as the Philippines (where the US was tight with dictator Ferdinand Marcos) and Spain (where Francisco Franco provided the US several bases). In both cases, popular revulsion later led to the closing of key facilities.

The Defense Department has for the past eight years sought to diversify its basing options, in an attempt to move beyond a base structure created by World War II and the Cold War to better reflect the needs of the Global War on Terror. This requires temporary "lily pad" bases in Eastern Europe and Africa, and semipermanent facilities in South and Central Asia.

Washington actually has been playing this kind of hand for some 30 years. In the wake of the fall of the shah of Iran in early 1979, the Pentagon found itself bereft of bases in the Persian Gulf region. It quickly negotiated agreements giving US forces temporary

access to facilities in Oman, Egypt, Saudi Arabia, and Qatar. These were austere facilities, located well away from population centers, and used only rarely.

The US often has no choice but to pay for basing rights, but this sometimes ends in financial brinkmanship that benefits no one.

The eruption of Mount Pinatubo in 1991 made it easy for the Air Force to walk away from Clark Air Base after Manila sought an increase in rent payments to \$1.2 billion per year.

Turkey's decision in 2003 to refuse US Army access to open a northern front in the Iraq war arose from a major miscalculation. Seeking more than \$6 billion in cash, "the Turkish government and its military thought that Washington had little choice but to give Ankara whatever it asked for," wrote Kent E. Calder in his 2007 book, *Embattled Garrisons*.

When K2 closed down, neighboring Kyrgyzstan promptly sought a 100-fold increase in rent at Manas—what Calder refers to as "bazaar politics."

Basing decisions are not strictly monetary. Some commentators compare the current struggle for influence and access to the so-called "Great Game," staged by the British empire and Imperial Russia in 19th century Central Asia.

As Manas and K2 have shown, "rent a base" facilities are useful in the short term, but of questionable long-term reliability. Planners should keep the need for flexibility in mind as they seek out new bases in tumultuous regions. ■



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More information: <http://www.defenselink.mil/news/news-article.aspx?id=53168>





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More innovation will be required, said top Air Force leaders at AFA's Air Warfare Symposium in Orlando.

# The Air Force Accepts More Risk

By John A. Tirpak, Executive Editor

**A** profound austerity in the coming years will bring pain throughout the Air Force, and programs that survive are likely to be low-risk projects with broad application to a wide variety of missions.

Priority will go to technologies that support the wars in Iraq and Afghanistan or provide obvious joint capabilities, while many programs seen as “niche” or those not filling a near-term need will probably have a tough time staying

funded. In other words, they probably will be killed.

Such was the grim assessment delivered by top USAF leaders at the Air Force Association's annual Air Warfare Symposium, held in late February in Orlando, Fla.

At the time of the symposium, many aspects of the Fiscal 2010 defense budget had yet to be worked out. Though unable to be specific in many cases, the leaders nevertheless identified some

of those programs they thought were assured of continued spending.

Among them: intelligence-surveillance-reconnaissance programs, nuclear activities, airlift, a replacement tanker, and the F-35 fighter.

In almost all areas, though, the service will likely have to accept more risk, Air Force Secretary Michael B. Donley said.

Still, USAF leaders offered the hopeful observation that enforced austerity





USAF photo by SSGT. Samuel Rogers

At Langley AFB, Va., SrA. Ryan Rogers marshals an F-15 piloted by Capt. Matt Bruckner.

will compel the service to come up with imaginative solutions to fill the gaps.

"This is a time for us to be innovative, ... to think broadly and recognize that ... austerity has been the mother of invention in many instances," Chief of Staff Gen. Norton A. Schwartz said in a press conference. The Air Force should not feel "threatened by this ... but rather see this as an opportunity." The Air Force will gladly accept "good ideas

no matter where they come from."

Donley asserted that the fiscal situation doesn't spell doom for the Air Force.

"Just because we're going to have more constraints on the fiscal front does not mean that we should give in to the idea that we are somehow out of airspeed and altitude," he said. "The Air Force's mission will continue, ... and we can develop new concepts of

operation for how to put combinations of capabilities that we have with whatever resources are available, to the best possible use."

The symposium theme was "Cross-Domain Integration: Warfare in the 21st Century."

Schwartz and Donley pledged continued commitment and funds to revitalizing the nuclear mission, although they declined to say for certain whether a new bomber still figures in service plans. Donley told reporters that the Air Force would look at new programs and what "comes after" them to see if the service could reasonably skip a generation and move on to "leapfrog technologies."

### Multitrole Weapons

Even if new programs dwindle, the Air Force can squeeze more capability and effectiveness out of what it has, leaders said, particularly by integrating its own systems with those of the other services. A renewed emphasis on collaboration with allies is also in store, as international partners trade up to new capabilities.

The world economic downturn is certainly a part of the analysis of "capability, and even intent," of potential adversaries, Schwartz said, but isn't a factor in budget deliberations now ongoing. The details of the Fiscal 2010 budget are expected to be released later this month.

To a degree never before demanded, Air Force systems will have to be multitrole-capable, Schwartz said.

"I think we're long past the point where we can have single-mission ... capabilities," he noted. Possible exceptions might include unmanned aerial vehicles and nuclear systems, but broadly, Air Force programs will have to be useful across a range of scenarios, able to "swing from high-end, general-purpose applications to lower-end irregular warfare," Schwartz explained.

Conversely, in buying systems, Schwartz also said the days of requirements creep—the effort to make every system "all-seeing, all-doing, any customer"—must come to an end.

"The demand signal must be tempered," he asserted, "and perhaps in this environment, there will be more willingness to do that."

In his address to the symposium, Schwartz said the Air Force's "contribution to the joint fight will likely depend upon the idea of integrated domain con-





An Air Force Reserve KC-135 tanker prepares to offload fuel. With USAF's KC-135Es grounded, the R models are being even more heavily tasked.

tol, an idea broader than simply freedom of action across airspace and cyberspace, land, and maritime." Integrating its efforts in air, space, and cyberspace can, with modest investment, provide the Air Force with far more power, he said.

The key will be command and control of capabilities in each domain, Schwartz said, in concert with other services and allies, to achieve control "at the time

and place of strategic importance." This approach will make best use of "our inherent Air Force attributes of speed, range, and flexibility in air, space, and cyberspace."

Providing "scalable" command and control will be USAF's stock in trade, from the smallest humanitarian relief mission to the largest theater war, Schwartz asserted.

**C**yper and nuclear forces are areas of rising interest for the Air National Guard and Air Force Reserve Command, according to panelists discussing the future of the two Total Air Force.

Cyber security certainly has attracted much Guard interest. The ANG director, Lt. Gen. Harry M. Wyatt III, said his component has good participation from leading computer and communications companies. The Guard can't compete with the civilian salaries offered, but he noted that the desire to serve is a strong recruiting tool, and he noted one Maryland Air Guardsman has a "seven-figure" salary at his regular job, and provides invaluable expertise for the Air Force's cyber efforts. He represents an asset that USAF probably could "never train to and never pay for."

Lt. Gen. Charles E. Stenner Jr., head of the Air Force Reserve, said his component is already involved with the nuclear bomber mission, and he would like to see it expand, although "where we get the resources to do that will remain to be seen." Possibly, "we'll ... take some risk in other areas, or maybe there will be some additional manpower."

Be on the lookout for a widening of Air Reserve Components' participation in almost all aspects of the USAF mission. Referring to this idea as Total Force Integration, Part II, Wyatt said he and Stenner will be working to get the Guard and Reserve to collaborate more directly, rather than just through the active force. There may be some rough spots because the two components have different cultures, but they will be worked out, Wyatt

predicted. Details will be coming soon, he added, but he suggested the TFI II will represent rethinking "the construct of the entire United States Air Force." It will include something called "embedded associates," about which he didn't elaborate.

Stenner said the Individual Mobilization Augmentee program—in which individual reservists volunteer to augment a short-handed staff—has been a huge success. He's got a stack of requests for "2,200 additional IMAs on top of what we've got right now."

Schwartz, formerly head of US Transportation Command, professed that a replacement tanker remains the Air Force's highest priority, as it is for his successor in the TRANSCOM job, Air Force Gen. Duncan J. McNabb. However, an acquisition strategy has yet to be formulated on how to buy a new tanker without running into the political landmines that doomed the KC-X program last year. Donley said he hopes to have the program "back on track" this spring, with a contract award by early 2010.

The Air Force is committed to revitalizing its nuclear programs, said USAF Gen. Kevin P. Chilton, the commander of US Strategic Command, and is making solid progress in that regard. Since last year, when USAF was told to re-emphasize its stewardship of nuclear forces, Chilton said, strides have been made in toughening up inspections, broadening the scope of nuclear exercises, and in getting general officers to volunteer for roles in the nuclear mission.

### Nuclear Trigger Locks

However, Chilton reiterated his unease with the fact that the US still does not have a plan to modernize its nuclear warhead arsenal.

"Of all the declared nuclear-powered nations in the world, the United States ... is the only one that is not currently

The reserves can help pay for the Air Force's needed modernization, Stenner said. He explained that the reserve component submits an unfunded requirements list to Congress alongside the one presented by the Air Force. This National Guard and Reserve Equipment Appropriation—or NGREA—gets separate funding from Congress.

The fund "gets us those defensive systems and gets us those precision

## Nukes and Cyber-War Grab Guard and Reserve

engagement pieces ... for the mission sets that will allow us to take the equipment that we have and get it to the war quicker," Stenner said.

His No. 1 priority is providing operational forces to the war effort while "maintaining that strategic reserve." To keep AFRC healthy, Stenner said, he is focused on preserving the health of the "reserve triad" of members, their families, and employers, each element of which needs support if the reserve is to work.

Maj. Gen. James W. Graves, assistant to the Joint Chiefs of Staff for reserve



undertaking a modernization program for [its] weapons. This is something we must address," Chilton said, adding that he believes it will be a central issue in the upcoming Nuclear Posture Review.

Chilton was asked to comment on a White House Web site statement that the US aims to take nuclear weapons off a "hair trigger." Chilton said the analogy is flawed. A hair trigger, Chilton said, implies a drawn, loaded gun aimed at an enemy, where a slippery finger could create terrible consequences. Rather, the nuclear arsenal is more like a holstered gun with two trigger locks, requiring two people to unlock it.

The nuclear arsenal is "on alert," but is safe, Chilton summed up. He said he saw no value in reducing its readiness any further. Carrying the analogy, he said a lower alert level would be like "taking the gun apart and mailing it to different parts of the country. Is that the posture we want to be in?"

In the NPR, Chilton said, the key questions to answer will be, "Why do we have a deterrent, and who are we trying to deter?"

Air Combat Command has crafted a new plan to guide its choices under the new austerity. Gen. John D. W. Corley, ACC chief, detailed his new strategic plan for the combat air forces (CAF), saying it sets conceptual priorities for the years

matters, said the Air Force continues to be the model for DOD's Guard and Reserve forces, and is the most integrated of the services in this regard. The Air Force "sets the standard for total force integration ... and interoperability." To remain the standard, the reserve needs to maintain an appropriate and steady level of readiness. The other services tend to have cycles of "starvation and gluttony in terms of resources and training."

Where the reserve could improve, he said, is by making it easier to go in and out of the reserves, with less paperwork and more recognition for expertise gained in the civilian world. It could also follow the Navy's lead in moving reservists around the force to broaden their expertise, rather than keeping them in a single function their entire reserve career.

Graves also praised the Air Force for not making the same mistake the other services did, by putting all of some capabilities into the reserve.

"They were terrible predictors of the future," he said, "because those became exactly the capabilities that were needed in some other component for some other cause."



USAF photo by SSgt. Samuel Moore

**Gen. Norton Schwartz, Chief of Staff, talks with airmen in Afghanistan. Schwartz said that USAF seeks "good ideas no matter where they come from."**

to come. It's a strategy that will involve some inherent risk, he warned. "We've got to get it right," he said, adding, "We have to know where we're going."

The CAF strategy calls for providing dissuasion and deterrence, decision superiority, freedom of action, and persistent pressure, Corley explained.

Dissuasion and deterrence, he said, has to do with maintaining forces powerful enough to discourage adversaries from challenging US interests or attacking the US outright. Decision superiority will mean having such comprehensive knowledge of what's happening in the battlespace that US commanders can decide and act correctly before an enemy can. Freedom of action he defined as having the ability to control air, space, and cyberspace such that US forces can operate in any domain they please without having it taken away from their control. Persistent pressure, Corley said, ranges from the enemy knowing he is being scrutinized around the clock to keeping up a constant attack or threat of attack.

The CAF strategic plan connects to the national strategy, Corley said. It is a well-developed and sound path to guide in the face of turbulence, which includes an aging force, uncertainties of funding, the war on terrorism, and advancing technologies among peers or near-peers. He added that "turbulence can sharpen our skills ... and demands that we focus, and it helps frame our expectations."

Corley added that this is a good time to remind the nation why it needs an

Air Force in the first place. Airlift and air support are not justification enough, he said, and "it is unlikely that [the Air Force] would have been born" to serve just those missions.

Rather, Corley said the nation needs air-minded professionals to "sustain a full-spectrum force" that encourages innovation, "stimulates science and technology, and strengthens partners around the globe." The air and space instrument offers alternatives to force-on-force conflict, while working interdependently with other national capabilities, Corley said.

Air Education and Training Command will have to be quick to develop new training programs, if it's to keep up with the accelerating pace of technological and mission change, Gen. Stephen R. Lorenz, AETC commander, told symposium attendees. Although AETC does its job well, he said, it needs to be "responsive, in a very swift time" to design courses for pop-up missions. Good examples are the inclusion of additional weeks of ground combat skills training for basic airmen who previously would not have received it, and the Air Advisor program, "started basically from nothing," Lorenz said.

While AETC does not need to own these ad hoc programs, it can establish the overall structure of them, Lorenz said.

The Air Force "pulled" 100 pilot candidates from its Specialized Undergraduate Pilot Training program and diverted them to unmanned aircraft tracks, and Lorenz said it's working well. The pilots



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**A brand-new MQ-1 Predator drone from Joint Base Balad, Iraq, takes to the sky for the first time Feb. 13. Top officials say flexible systems such as Predator will receive funding priority.**

are “all volunteers, ... [and] they’re excited” about the program.

### We Owe Them Better

Lorenz said distance learning is being pursued as a way to provide greater professional military education opportunities even to airmen in combat zones, and cyber training will have to step up as well.

Deferring the replacement of large portions of the flying Air Force will mean more upgrades and service life enhancements, but they’ll have to come faster, Air Force Materiel Command chief Gen. Donald J. Hoffman said in a panel discussion.

Hoffman said he wants to speed up the amount of time it takes to get improvements out of the lab and into the hands of the fighting force. Part of the way to do that is to move aggressively to replace people leaving the acquisition field, he said, and to add people where possible. The AFMC civilian workforce is heavy with those either already eligible for retirement or rapidly approaching that point.

In an interview, Hoffman said he ideally wants to get equipment upgrades “in and out” within a future years defense program. To take longer, he said, is to court more problems, because vendors go out of business, or upgrades become overtaken by new technology. Toward that end, it may be necessary to “break up” upgrades into more manageable chunks, he said. Smaller programs are easier to afford and allow more of the fleet to be in a standard configura-

tion, which helps with training and logistics.

Upgrades are taking so long, in fact, that it’s becoming almost impossible to achieve a common configuration within any fleet. There will likely be com-



**The F-22, such as this one taking flight from Elmendorf AFB, Alaska, is no longer a “new” system. The first Raptors are already a decade old.**

monality “within a wing, or a block” of evolution, but probably not across an entire inventory.

Having just returned from a tour of the Southwest Asia war zone, Hoffman said that airmen are to be admired for their ability to improvise and jury-rig solutions to problems.

“MacGyver is alive and well,” Hoffman told the attendees, referring to the resourceful TV secret agent who could make ingenious gizmos seemingly from chewing gum and batteries. Hoffman

reported seeing cockpits crisscrossed by wires and a bewildering array of laptop computers and other gadgets. These ad hoc approaches to obtaining better situational awareness are creative, he said, but shouldn’t be necessary.

“We owe them better,” he said.

It isn’t appreciated how old some of USAF’s aircraft are, Hoffman said in an interview. He noted that the oldest serving F-22s—the newest airplanes in the inventory—are already a decade old, and were built for about an 8,000-hour service life. That means AFMC is already having to start planning how the Raptor’s service life can be extended. It’s not an easy task, as the F-22 is the first multirole stealth fighter to reach this status, and its fine-tolerance composite body can’t be replaced with sheet metal as legacy fighters were. To slow the aging process, Hoffman reported, the F-22 training syllabus was changed about a year ago to reduce the amount of heavy-G dogfight maneuvering the pilots do, thus reducing strain on the structure.

Hoffman said that the aging-aircraft issue is in stark evidence at depots, which are finding all sorts of “surprises” in the ways that old airplanes find new ways to

break, and which can’t be predicted by computer models.

Our depots are “geriatric hospitals,” he said. “The patients are coming in sicker and sicker every time.”

The new austerity will force tough choices in the coming years, Schwartz said, but he noted that “regardless of the resource constraints, ... thinking is still free. Austerity is not our enemy. The inability to think creatively and ask hard, perhaps uncomfortable questions: That’s our enemy.” ■





**At AFA's Orlando Symposium, top officers sketched out a future of heavy Air Force operations.**

# Southwest Asia Power Shift

**By Marc V. Schanz, Associate Editor**

**A** rush of events has propelled the Air Force into a new phase of the war on terrorism. The struggle in Iraq appears to be shifting course. At the same time, the fight in Afghanistan has begun escalating. Each of these developments is creating difficult new situations for airmen.

In both Southwest Asian nations, much hard work lies ahead, said some of the many USAF senior leaders who

gathered at the Air Force Association's 2009 Air Warfare Symposium, held in Orlando, Fla., in late February.

President Obama has ordered a buildup of forces in Afghanistan, including a big infusion of personnel and equipment as well as new infrastructure.

"We are obviously ... in a growth period" in Afghanistan, said Lt. Gen. Gary L. North, who is US Central Command's combined force air component commander. "So, for the next two or

three years, this increase will define our US Air Force requirements."

Statistics gathered by US Air Forces Central (AFCENT) show that, of 28,000 airmen currently deployed to the Central Command area of responsibility, 5,000 are based in Afghanistan—and an estimated 1,500 more are expected to arrive in conjunction with the new force expansion.

The Afghanistan buildup will affect the rest of the expeditionary Air Force





USAF photo by SSgt. Aaron Allmon

as well, as units in both the Pacific and Europe are tied closely to deployments in and out of Southwest Asia.

“We feed the fight,” said Gen. Roger A. Brady, commander of US Air Forces in Europe. “We have, of our eight ... fighter squadrons in Europe, ... at least two of them downrange at any one time.”

For 250 days in 2008, USAFE had at least one fighter squadron (and usually two) deployed to the CENTCOM region. Several bases in Europe, including Ramstein AB, Germany, and Lajes Field in the Portuguese Azores are critical hubs to the mobility network connecting forces in Southwest Asia to the US.

As a good portion of USAFE forces are already in the mix in Iraq and Afghanistan, a challenge remains in fleshing out other emerging missions at the same time. For example, Brady said Ramstein-based 17th Air Force, US Africa Command’s air component, is finding it difficult getting the right rated expertise in place.

Four C-130 aircraft are currently assigned to the numbered air force,

*Left: Two F-15Es carry out a mission over Afghanistan. Below: Soldiers line up to board a C-130H Hercules at Bagram Airfield, Afghanistan.*



USAF photo by SSgt. Rachel Martinez





USAF photo by SSgt. Jeremy T. Lock

**Combat controllers train for clandestine, covert, or low-visibility missions in the Afghanistan desert.**

which “probably doesn’t do it for the continent of Africa,” he said.

For now, 17th Air Force is getting the forces it needs from other commands. For all its importance, Africa is not at the top of the priority queue, however.

Afghanistan, Air Force leaders said, is where American combat power is now being focused. Last year, close air support sorties in Afghanistan surpassed those in Iraq for the first time since at least 2003, according to AFCENT statistics.

Sortie requirements have exploded 170 percent, and requests for weapons delivery (usually for close air support) have nearly doubled between 2006 and 2008.

Due to its size—more than 251,700 square miles of mountains, deserts, and valleys—intelligence-surveillance-reconnaissance capabilities have proved to be the critical capabilities in Afghanistan for a range of operations. Ground force commanders will routinely “go out and hook up with the people flying our Predators, and they will walk through the details of how they want to conduct activities on a target,” said Lt. Gen. Donald C. Wurster, commander of Air Force Special Operations Command.

Predators and Reapers allow commanders to destroy a target, label objectives, and decide what needs to be ignored or watched. Fully a third of AFSOC’s UAV processing, exploitation, and dissemination activities are pushed forward—working directly

with the in-country battlefield commanders—so airmen understand the battle rhythm, how the troops on the ground think, and what they want. When the airmen return to the States, he said, they have a unique perspective about how their mission fits into the whole operation.

### Project Liberty

The demands for full-motion video and other sensors have spurred the Air Force to deploy the MC-12 this spring. The MC-12 is the product of Project Liberty—the effort to meet the soaring ISR requirements with an easily deployable, off-the-shelf

aircraft. Twin-engine King Air 350 aircraft will be loaded with sensors to meet some of the requirements for ISR which will likely increase with the force buildup in Afghanistan. The manned MC-12s will also be able to operate in high wind and during icing conditions—something Predators and Reapers cannot do, North said.

All fighters, bombers, and UAVs operated by the Air Force in theater now have the ability to “stare” and perform ISR missions with a targeting pod or an infrared or electro-optical sensor. Each of these aircraft has the capability to downlink data, and the ability to distribute information down to individuals in the field—a joint terminal attack controller or special operator—who can see exactly what a pilot or sensor operator is seeing overhead.

AFCENT planners are looking to shift Predator and Reaper capabilities from Iraq to Afghanistan over the coming months. The improved security situation in Iraq has allowed the Air Force to shift resources to Afghanistan.

To assist with the troop buildup, more tactical airlift such as C-130s will also be sent into Afghanistan. Airlift and air infrastructure will be critical to the buildup, Air Mobility Command’s Gen. Arthur J. Lichte noted.

Supplying fuel will be difficult in Afghanistan, Lichte said. Equipment can be moved in easily enough, but the ability to sustain operations hinges on having fuel available where aircraft and vehicles are based.



USAF photo by SSgt. Aaron Allmon

**A USAF B-1B from the 34th Expeditionary Squadron patrols the sky over Afghanistan.**



AMC wants to reduce the time and improve the velocity of its mobility efforts for Afghanistan, Lichte added.

Strategic airlifters such as USAF's C-17s are already moving new Mine-Resistant Ambush-Protected vehicles directly into Afghanistan to get them to the troops who need them as quickly as possible. More MRAPs will be delivered by sea.

Mobility aircraft had already brought 600 relocatable buildings—just a first batch—as of late February, Lichte added. AMC is “moving forward, trying to improve every one of the locations that we operate at or through in Afghanistan,” he said.

Because of these kinds of world-spanning operations, the service views acquisition of a replacement tanker as its highest priority. Lichte said AMC has scrubbed down the putative 800 requirements in the tanker project to a figure that is “an order of magnitude” smaller, in hopes that less complexity will make the project easier to bid on and easier to award.

Lichte reaffirmed that the Air Force opposes buying two models of tankers for the aerial refueling mission.

The Solomonic solution suggested by many on Capitol Hill is to split the tanker buy between Boeing and Northrop Grumman-led proposals, but Lichte said the two-aircraft approach is manageable if Congress insists—and provides the extra money it would require.

Time is running out on the KC-135, however, Lichte said. Citing a 2001 KC-135 Economic Service Life Study which has proved remarkably accurate in predicting the challenges in keeping the old tanker flying, Lichte projected that AMC will likely have to start “re-skinning” the fleet within seven years. This requires an extremely expensive remanufacturing process that will sharply increase the usual \$7 million cost to put a KC-135 through depot—but it won't buy the type any additional capability.

USAF must also focus on operations targeting threats before they mature—so-called “Phase Zero” operations. “Imagine if, five years before [9/11], we knew that enemy terrorists working from some ungoverned sanctuary intended to strike the United States in the manner in which they did,” Wurster said.

“The question then is, for the next five years, what would the Air Force do about it?” A little bit of American

USAF photo by SSgt. Samuel Morse



**Lt. Gen. Gary North, commander of US Air Forces Central, greets airmen with the 755th Expeditionary Civil Engineer Squadron at Bagram.**

influence matters a whole lot if it's in the right place at the right time, he said.

Across the Pacific, this approach has worked wonders, said Gen. Carrol H. Chandler, commander of Pacific Air Forces. “We're in Phase Zero every day in the Pacific Theater. You simply cannot surge engagement.”

As an example, he pointed to the success of the C-17 in humanitarian operations across the Pacific.

### Revolutionary Capabilities

“The C-17 has paid huge dividends for us,” said Chandler, noting that he had sent the airlifters to China twice in 2008—once during fierce snowstorms in February and again after the Sichuan earthquake in May.

“We've had two Chinese general officers, one a ground force fellow and the other an airman, into our headquarters, and they will tell you that they will never forget what the United States did for them in terms of humanitarian assistance and disaster relief,” Chandler said.

“The second statement or question they ask is, and how did you do that so quickly? Which is something I don't mind them puzzling about, quite frankly,” he added. The Air Force's demonstrated responsiveness causes China to “think a little bit about how they do business.”

The Air Force is showing its responsiveness daily in Iraq and Afghanistan, and from counterinsurgency operations to close air support, today's combat Air

Force is being retooled and reshaped almost in real time, said Dr. Rebecca Grant, a senior fellow at the Lexington Institute as well as director of the Mitchell Institute in Washington, D.C. Grant's special report for the Mitchell Institute, “Airpower in Afghanistan,” was released during the symposium.

“A lot of the innovation that is so close to the core of what the Air Force does is taking place in Afghanistan,” she said.

A host of revolutionary capabilities have been tested there just in the last few years—from the development of the Joint Precision Airdrop System, the use of Remotely Operated Video Enhanced Receiver (ROVER) technology in calling in close air support, or the veritable explosion of ISR needs—particularly for full-motion video assets such as the Predator and Reaper. “There seem to be changes month to month, week to week,” Grant added.

The Air Force is already moving, along with the other services, to prepare the battlefield for the expanding mission in Afghanistan, North said. AF-CENT planners are building up some of the in-country aerial port facilities, such as the large hubs at Bagram Air Base and Kandahar Airfield, and are moving USAF civil engineers from Iraq to Afghanistan to prepare for the influx of US troops.

“As we look at where these forces will be deployed to employ, they've got to have infrastructure,” he said. This includes not just air infrastructure,





USAF photo by SSgt. Samuel Morse

**Three MQ-1 Predator UAVs are ready for launch in a hangar at a base in southern Afghanistan.**

but secure overland routes from the north and south of Afghanistan. “Having multiple lines of approach as we discuss the buildup is very important,” North added.

Complicating the buildup is the looming loss of Manas Air Base in Kyrgyzstan, a major refueling hub and the primary through-point for troops headed into Afghanistan. CENTCOM is looking at a “variety of options” for redeploying the airlift and tanker capabilities based there, should the US lose access to the facility. “We’ve got until August to figure this out,” North said.

The mission is not all about air-breathers, however. “We start with those whirling satellites overhead, one of which times the entire world these days and that’s our GPS satellites,” North said of space capabilities. Space dominance gives the Air Force the precision, surveillance, and communication capabilities vital to the fight in both Iraq and Afghanistan.

Gen. C. Robert Kehler, head of Air Force Space Command, emphasized the need for space situational awareness. This was brought back to the forefront after a February collision in orbit between a deactivated Russian satellite and an active commercial communications satellite. The unexpected smashup in space created a wide debris field in orbit.

Inadequate space situational awareness is troubling because many space-based capabilities are perilously thin. Gen. Kevin P. Chilton, commander

of US Strategic Command, said he’s unhappy about the fact that the nation has grown accustomed to “the mind-set of just-in-time resupply of critical on-orbit constellations” of early warning and communication systems.

“We have almost gotten to the point where we are counting on ... 100 percent launch success,” a standard that is probably impossible to sustain. If even one launch fails, there would be “a critical gap in what this nation needs” for warning, surveillance, or communications, Chilton warned.

### **An Unpredictable Threat**

There’s some redundancy in on-orbit capability, he said, but the issue must be considered now, because “managing to a gap is not the way to go ... having the ability to [endure] a launch failure is something that we should very much consider as we look to the future.”

Kehler mentioned another priority that was prominent with several top officials—the stand-up of the Air Force’s cyber warfare mission through AFSPC’s 24th Air Force.

The cyber domain is the new frontier in irregular warfare, and the US had better get up to speed on it, Kehler said. “We are going to have to counter irregular warfare tactics in space and cyberspace,” he said.

The threat is unpredictable, constantly changing, and the enemy could be across the street or around the world. The United States has “got to get better at cyber defense,” he said, and the creation of a numbered air force for

cyber operations gives the mission a combat mentality.

“I tell our people, when you come to work, ... you are entering a combat zone, and everyone has to be a defender,” Kehler said. “We don’t have a security forces squadron for cyberspace.”

Despite heightened awareness of the importance of cyber security, the necessary cultural change to go with it hasn’t appeared yet, Chilton said.

“In the cyberspace domain, here are some obvious things: We are under attack. We are behind. We are reactive; we are not proactive. And we, all of us, are making it too easy—too easy—for those who would exploit and attack our networks today.”

Commanders should know their cyber status and devote the same attention to it as to mission capable rates or other “metrics that we look at for logistics and maintenance of our aircraft,” Chilton said. “Commanders should demand reviews of the health and status of their networks.” Without functional, reliable networks, he said, the force will be hamstrung. This is a cultural shift we need to make—all of us.”

The lowest point of entry is all it takes to compromise a network, Chilton noted. He also said that despite the distributed nature of networks, there needs to be “centralized command and control” of cyber defenses. A central C2 needs to be able to look across the network and be aware of defenses at every level, he said.

US Northern Command and North American Aerospace Defense Command know the danger. Gen. Victor E. Renuart, NORTHCOM and NORAD commander, said hackers broke into both his commands’ secure networks in 2008.

The cyberspace threat is indicative of the changing nature of the homeland defense mission, Renuart noted. “One of the challenges we face in our binational command of NORAD is that we’ve expanded our mission set from [the traditional] air domain that we lived in [as] the very first of our missions 50 years ago.”

NORAD must get data and information to national decision-makers of two countries—which makes countering the cyber threat critical.

The Air Force is looking at Air Guardsmen and Reservists who work for private technology companies as likely cyber experts, said Lt. Gen. Harry M. Wyatt III, director of the Air National Guard. ■



The Congressional Research Service makes it clear why today's defense budget seems so tight.

# The Cost of the Force

*"I want to focus on the ... cost side—why things cost as much as they do." So stated Stephen Daggett, specialist in defense policy and budgets with the Congressional Research Service.*

Daggett was referring to the cost of providing national defense, which seemed to be growing more difficult to achieve even though Department of Defense expenditures have risen. Daggett offered his views on the subject at a Feb. 4 hearing of the House Budget Committee.

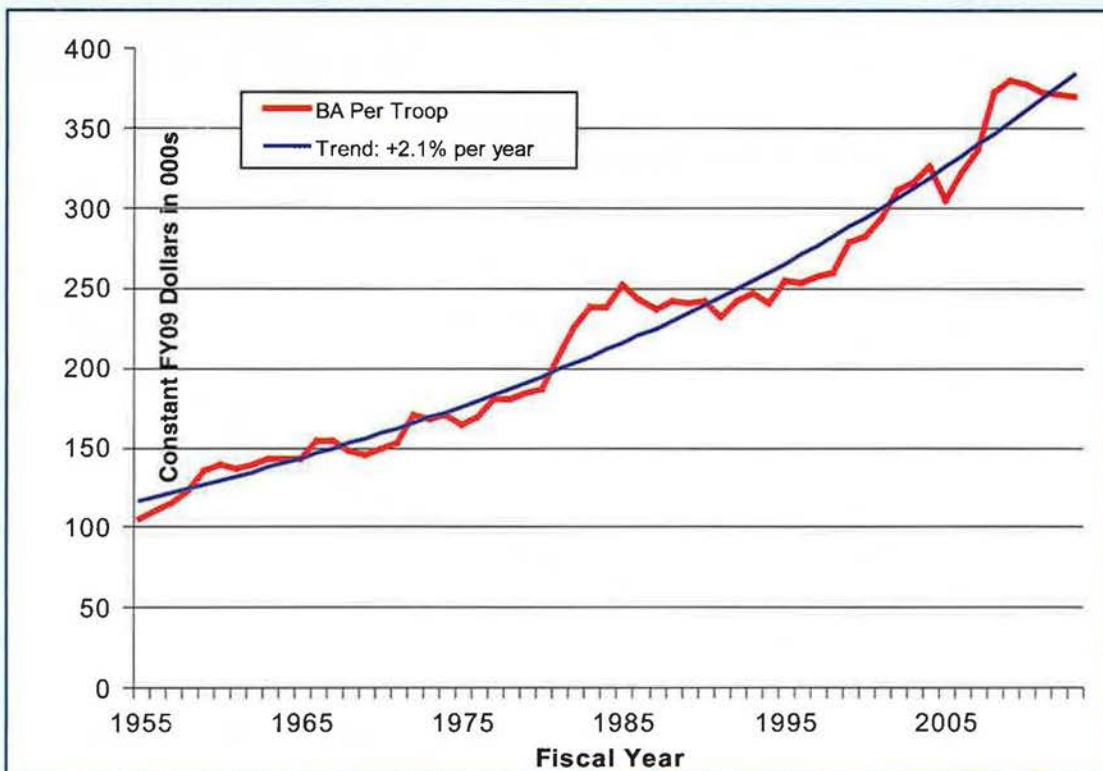
Figures 1 through 3 and text are contained in "The Sustainability of Current Defense Plans" [[http://budget.house.gov/hearings/2009/02.04.2009\\_Daggett\\_Testimony.pdf](http://budget.house.gov/hearings/2009/02.04.2009_Daggett_Testimony.pdf)]. Daggett prepared Figure 4 at the request of this magazine. All figures are base budget only, excluding war-related funding. The effects of inflation have been factored out.

If you track the total DOD budget per active duty troop, excluding war costs, funding has grown by a bit more than two percent per year above inflation on average since the end of the Korean War (Figure 1). In some years, actual budgets were above the trend line, in other years, below it. In Fiscal 2009, the overall DOD base budget, not including war costs, is about eight percent above this historic trend line. ...

Considering just the base defense budget, without including war-related funding, there has been a very large increase in defense spending over the past 10 years. In all, the DOD base budget has grown by 43 percent above inflation since it reached its lowest post-Cold War level in Fiscal 1998. That buildup is about the same as the increase at the end of the Carter and beginning of the Reagan Administrations—which was about 40 percent above inflation from Fiscal 1980 to Fiscal 1985.

If you take all of this together, you come away with the impression that today's defense budget appears, by most historical standards, to be quite robust. But listening to the military services, to defense industry, to defense budget analysts in the think tanks, you get a very different impression—that even now the budget is tight, and that if spending does not continue to climb, planners

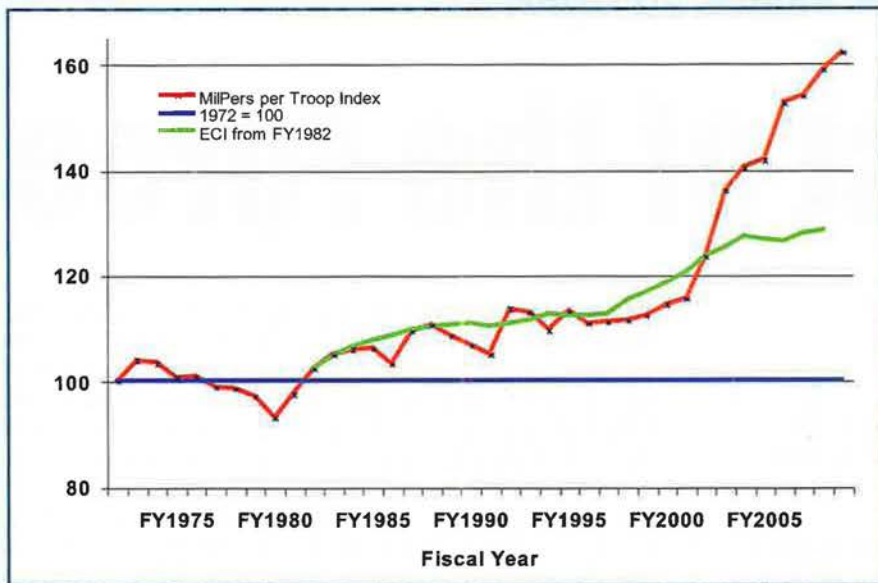
Figure 1: DOD Budget Authority per Active Duty Service Member, Fiscal 1955 to Fiscal 2013



Source: CRS, based on Department of Defense data. FY2009 to FY2013 data reflect projections made in February 2008.  
Notes: Excludes war costs and war-related end strength for FY1990 to FY1992 and for FY2001 and beyond.



**Figure 2: DOD Military Pay and Benefits per Active Duty Service Member, Indexed to Fiscal 1972, Fiscal 1972 to 2009**



Source: CRS, based on Department of Defense data.  
Notes: Excludes war costs and war-related end strength for FY1990 to FY1992 and for FY2001 and beyond. Adjusted for inflation using Consumer Price Index. ECI = Employment Cost Index. FY1972 = inception of the all-volunteer force.

will face tougher and tougher choices. So why the disconnect? CRS' analysis, quite bluntly, is that the budget seems tight because the cost of almost everything we have been doing in defense has been accelerating upward too fast even for growing budgets to keep up.

And what is driving the cost of defense higher? In what follows, I will propose answers to that question, and I will mention each of them at least very briefly. Following that, I will very briefly discuss a couple of themes that emerge from this analysis of defense cost trends.

### Cost of Personnel

The first factor driving up the price of defense is, simply, the growing cost of uniformed military personnel. If you take the amount provided for active duty military personnel in annual defense appropriations bills, exclude supplemental appropriations, adjust for inflation using the Consumer Price Index (CPI), and divide by the number of active duty troops, ... you will find that an average military service member is about 45 percent more expensive ... in Fiscal 2009 than in Fiscal 1998. This does not include the cost of medical care for service members, dependents, and recent retirees, which is financed in the operation and maintenance accounts, and which also has grown substantially. ...

A long-term perspective on the price of military personnel is reflected in Figure 2, which shows the cost of an individual active duty service member indexed to the inception of the all-volunteer force in

1972. In brief, pay and benefits of military personnel declined in the 1970s because annual pay raises didn't keep up with inflation; jumped up in Fiscal 1980 and Fiscal 1981 with catch up pay raises of 11.7 percent and then of 14.3 percent—that is, more than 25 percent over a two-year period; climbed very modestly in the remainder of the 1980s and '90s; and then rocketed up dramatically beginning in about Fiscal 1999.

The main increases over the past 10 years include:

- Congressionally mandated annual pay raises equal to the Employment Cost Index (ECI) plus one-half percent in seven of the last eight years. ...

- Three rounds of "pay table reform," requested by the Defense Department, which provided additional pay raises, sometimes of as much as 10 percent, to middle grades. ...

- Substantial increases over several years ... in the nontaxable Basic Allowance for Housing (BAH), intended to eliminate differences in out-of-pocket on-base and off-base housing costs.

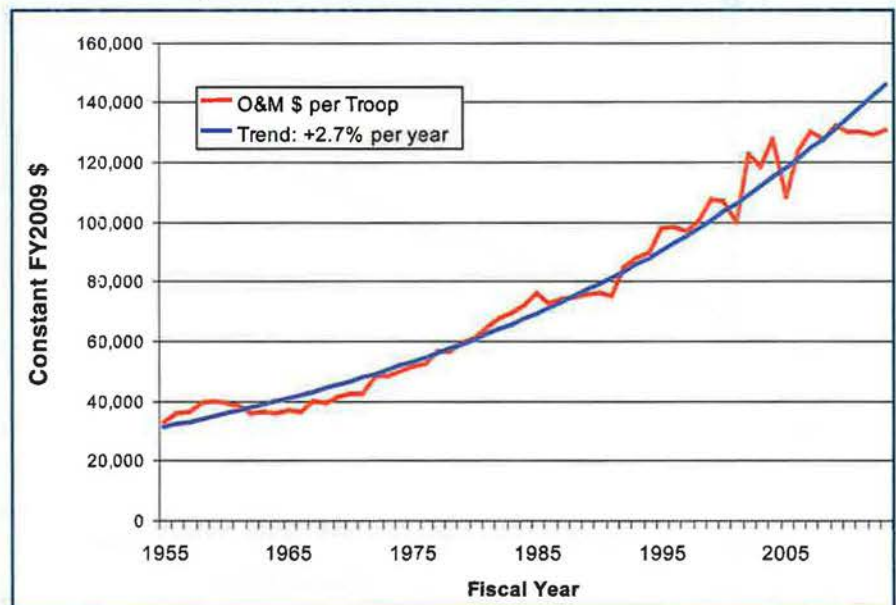
Those increases, along with changes in subsistence pay for officers, bonuses and special pays, and some other things, are reflected in higher take-home paychecks of military personnel. In addition, there have been very large increases in retirement benefits. ...

The purpose of doing this analysis is not to address whether military pay and benefits are adequate or more than adequate or less than adequate. A discussion of that question is certainly important, but it goes way beyond the point I am making. The only purpose of this analysis is to address the issue of budget trade-offs. If only a given amount of money is available for defense, the growing cost of personnel necessarily comes at the expense of something else. ...

### Cost of O&M

A second cost driver is the continued, steady growth of operation and maintenance budgets. If you put together a

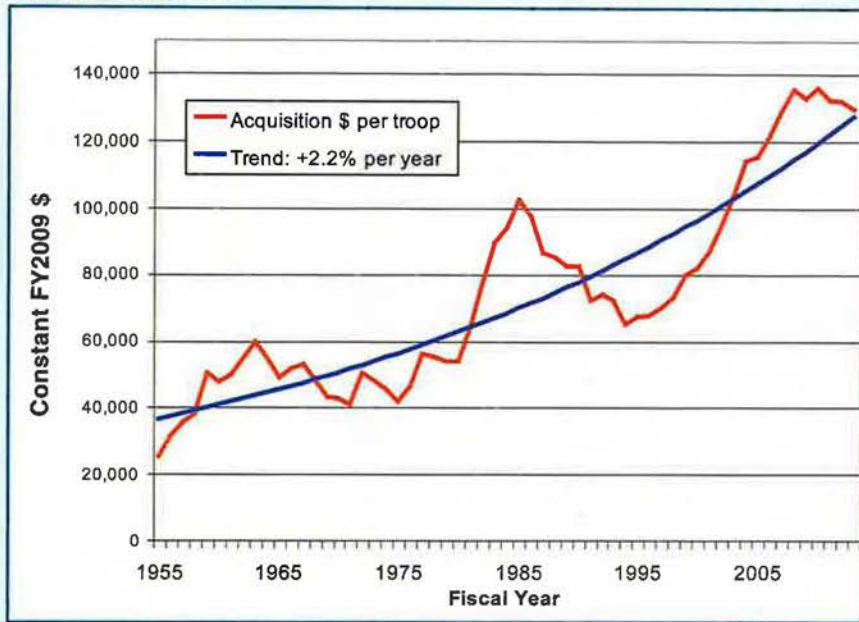
**Figure 3: DOD Operation and Maintenance Funding per Active Duty Service Member, Fiscal 1955 to Fiscal 2013**



Source: CRS, based on Department of Defense data. FY2009 to FY2013 data reflect projections made in February 2008.  
Notes: Excludes war costs and war-related end strength for FY1990 to FY1992 and for FY2001 and beyond.



**Figure 4: DOD Acquisition Funding per Active Duty Service Member, Fiscal 1955 to 2013**



Source: CRS, based on Department of Defense data. FY2009 to FY2013 data reflect projections made in February 2008. Notes: Excludes war costs and war-related end strength for FY1990 to FY1992 and for FY2001 and beyond. Acquisition = procurement + RDT&E.

spreadsheet that shows defense funding back to end of the Korean War, exclude recent war costs, divide annual O&M budgets by the number of active duty troops, and adjust for inflation, you will come up with a trend line that grows by somewhere between 2.5 percent and 3 percent above inflation every year—year after year after year (Figure 3).

It is a bit difficult to analyze why O&M grows at such a relentless, steady pace, because the O&M budget covers all kinds of very different activities. ... There are, however, a few pieces of the picture that collectively explain in very large part why O&M costs keep climbing.

One is that a very large share of the O&M budget goes to pay civilian Department of Defense personnel. In the Fiscal 2009 base budget, civilian pay in the O&M accounts was projected to total \$53 billion, about 30 percent of total O&M funding. While federal civilian pay and benefits have not grown as rapidly as those of uniformed personnel, they have outpaced the growth of inflation—as in most skilled occupations, compensation of federal civilian workers has grown in real terms over time.

Second, the O&M budget includes costs of operating and maintaining major weapon systems. Those costs also appear to have increased faster than base inflation, though the reasons are complicated. Military service officials, particularly in the Air Force, have long

argued that aging equipment becomes progressively more and more expensive to operate and maintain. CBO found some time ago that this was not a major factor in O&M. On the other hand, though it may not add up in itself to a huge amount of money, it may be one of a large number of individually minor factors that should be considered in concert to explain the larger trend.

Most observers also agree that new weapons are typically more expensive to operate and maintain than earlier generations of similar systems. Why this should be the case is very hard to explain. It is certainly at odds with trends in the civilian sector, in which reliability and maintainability of all kinds of goods have improved dramatically—consider automobiles, household appliances, and, especially, consumer electronics (leaving aside battery replacement). It appears, however, that while military developers promise lower operating costs, in the end they choose to pursue advances in performance instead.

Third, the O&M budget includes most of the annual funding for providing medical care to service members, their dependents, and many retirees. ... DOD officials see growing medical costs, which have climbed much faster than overall inflation, as a critical long-term budget issue.

Fourth, and finally, the O&M budget finances operation and repair of military facilities. As the quality of life in the civilian sector improves, defense

facilities also, in general, are expected to keep up, which, in turn, also may drive up costs in real terms. ...

Most importantly, within limited budgets, higher O&M costs will crowd out other things. ... Successive long-term defense plans generally assumed that O&M costs would level off in future years. When they did not, within limited budgets, the Defense Department shifted funds from procurement to cover must-pay O&M bills. Year after year, therefore, planned increases in procurement funding were deferred due to the growth in O&M accounts. ...

### Cost of Weapons

A third cost factor, and one that is a matter of extensive discussion today, is the apparently accelerating pace of intergenerational cost growth in major weapons programs (Figure 4). ...

Examples of very large intergenerational leaps in weapons costs are all around. The F-35 fighter, which is the new “low-end” fighter for the Air Force, is now projected to have a unit flyaway cost of \$83 million each and a total unit acquisition cost of over \$100 million. In Fiscal 1985, the Defense Department procured 150 F-16s fighters, the previous low-end fighter, at a then-year price of \$16 million apiece, which is about \$30 million in Fiscal 2009 prices. In later years, F-16 prices climbed as new models incorporated more and more advanced technology. Still, the leap in costs is dramatic. ...

The growing price of weapons does much to explain why the expense of maintaining even a smaller force structure than in the past has climbed so high. At current prices of major weapon systems, the “steady state” cost of replacing platforms as they reach the end of their planned service lives has become very difficult to afford, even with budgets that exceed previous peaks.

Why this is the case—and what to do about—is a matter that is far beyond the scope of this brief survey. In some cases, at least, cost has been driven up by an attempt to build systems to perform multiple missions with maximum capabilities in every dimension. The DDG-1000, which I cite only because it has been a focus of debate for the past year, and may well be terminated, may be an informative example. ... It is all things to all requirements writers. ... It is now projected to cost between \$3.5 and \$4 billion each, and ... cannot, therefore, be afforded in substantial numbers. ■



# Preparing for

US aircraft of the late 1930s propelled the Army's air arm toward greatness.

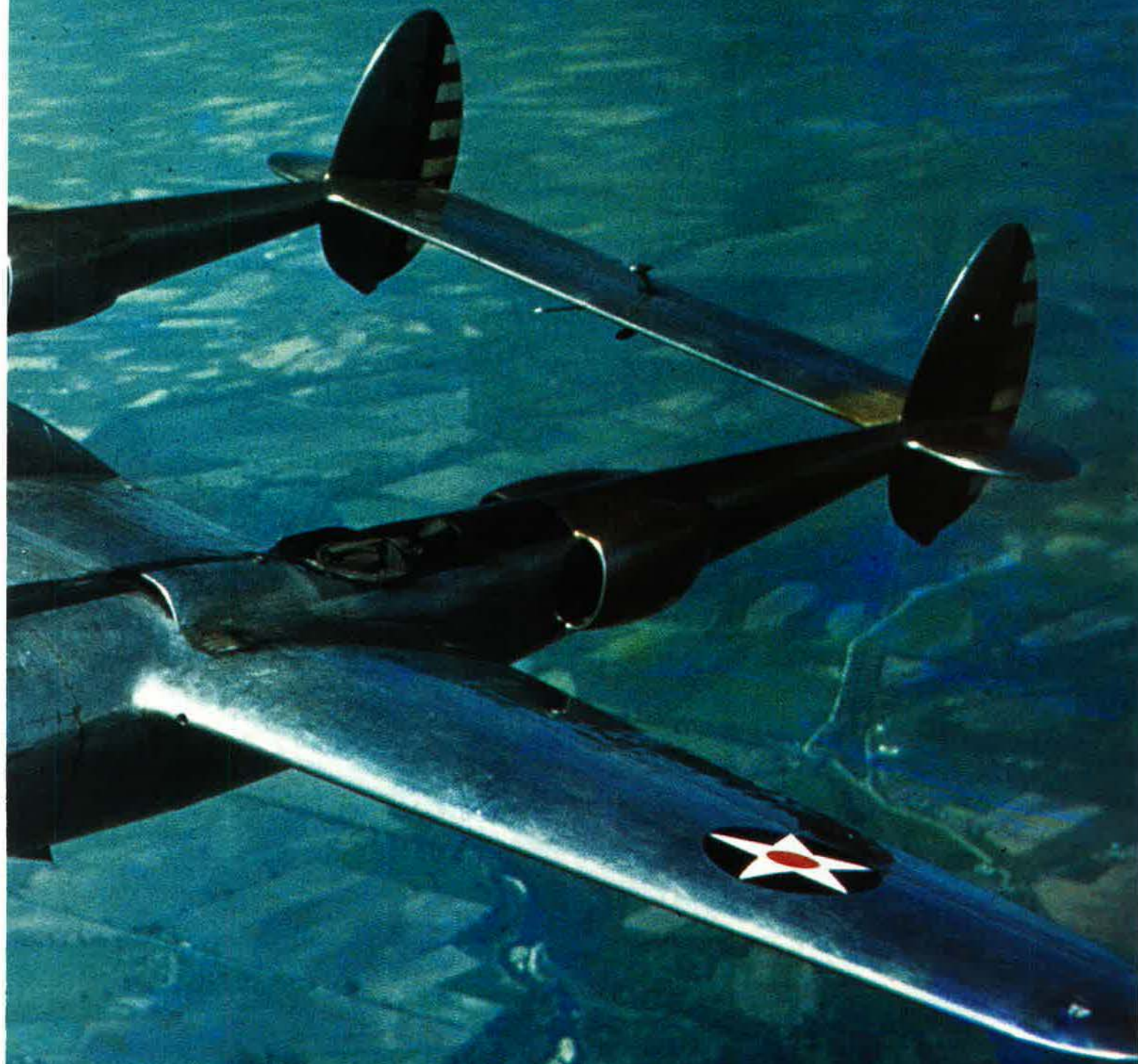
Photos from the National Archives compiled  
by Warren E. Thompson



*A reproduction P-38—YP-38—on a test flight over California in 1941.*

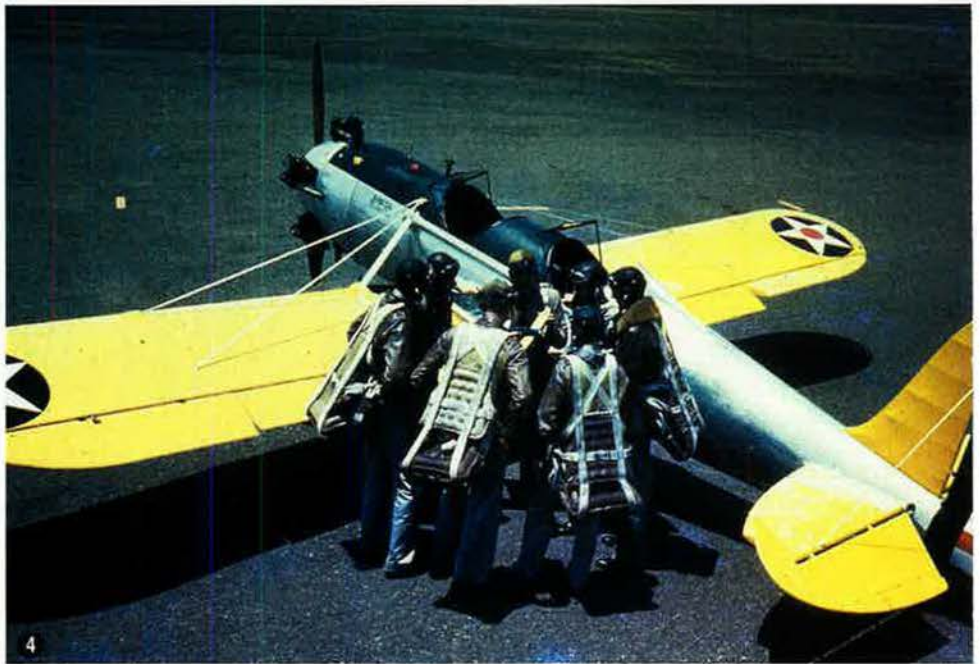


# World War





**I**n the years before World War II, the US slowly built the foundation needed for a massive air effort. The 1920s and 1930s budgets were tight, airmen were scarce, and inventories were small, yet the aviation plans of that era were critical. By the late 1930s, many of the designs that would help create the mighty wartime Army Air Forces were in design or test. Even aircraft no longer state of the art by the time of Pearl Harbor had helped set the stage for the more advanced designs. **11** The North American O-47B was an advanced observation aircraft when introduced in the late 1930s. **12** Vital to efforts in the China-Burma-India Theater was the Curtiss C-46 Commando, flying here in the foreground. The C-46 first was delivered in July 1942.



**13** The Bell Airacuda never went into mass production. Only 13 were produced. **14** Ryan PT-22 Recruits such as this one were Army Air Corps primary pilot trainers. The PT-22 was the Air Corps' first monoplane trainer. **15** First flown in 1938, the P-40 Warhawk was a new-design front-line fighter that later served with distinction with the Flying Tigers. All told, more than 13,000 Warhawks were produced.





*11* Consolidated B-24s, seen here, first flew in 1939 and became operational in 1941. B-24s were more numerous than any other aircraft in Air Force history. *12* US heavy bombers took the war directly to Germany and Japan. Seen here is an early Boeing stab at meeting the requirement for a four-engine bomber. The XB-15 first flew in 1937. *13* The North American B-25 Mitchell bomber first flew in August 1940. Nearly 10,000

were built. The B-25 gained lasting fame for the 1942 Doolittle Raid on the Japanese home islands. *14* The AAF also leaned on proven fighter designs early in the war. The most widely produced fighter of the era was the P-47 Thunderbolt, seen here. *15* In 1939, the Air Corps relied upon the North American BT-14 to train aviation cadets. The two-seat BT-14 had a top speed of 175 miles per hour.



**111** Randolph Field in Texas, dedicated in 1930, became a focal point of World War II pilot training. Randolph still serves as headquarters for Air Education and Training Command. Here, airmen march past a Randolph Field parking area in 1941. The base prepared the instructors needed to train rank-and-file pilots. **121** This lineup showed the breadth of the Air Corps' tactical fighter force just before World War II. Seen here, top to bottom, are the YP-38 Lightning, P-39 Airacobra, P-40 Warhawk, and YP-43 Lancer.



**131** The Douglas A-20 Havoc was a light bomber that entered operational service in early 1941. **141** The Vultee BT-13 Valiant first flew in 1939 and was a mainstay of the Air Corps and Navy flight training programs. **151** The Curtiss Shrike was boldly styled but didn't last. Only 13 of these A-18s were manufactured, and they flew from 1935 to 1940.







*11* The unconventional Grumman XF5F, a design that looked like it could have been inspired by a child's toy airplane, first flew in April 1940. The Skyrocket never went into mass production. *12* Airmen swarm over a Douglas A-20C Havoc as they prep the aircraft for its next mission. *13* Curtiss P-36 Hawk pursuit fighters belonging to the 27th Pursuit Squadron line a parking area at Wright Field, Ohio, in September 1939. *14* Another P-36 Hawk undergoes flight tests near Wright Field. After a first flight in 1935, 245 of the fighters were built for the Air Corps. *15* After first flying in November 1940, the Martin B-26 Marauder was entering squadron service when the US entered World War II. The AAF had procured more than 5,200 Marauders by the end of the war.





111 The C-47 Skytrain was an icon of World War II, but the DC-3 on which it was based first flew back in 1935. More than 10,000 "Gooney Birds" were built. 121 The Grumman F4F Wildcat, first flown in 1937, was used by the Navy to combat the agile Japanese Zeros in the Pacific Theater. 131 This prototype, XF4U-1, led to the speedy F4U Corsair, designed by Vought Aircraft. The Navy, impressed with the aircraft's capability to reach speeds in excess of 400 mph, placed an initial order for almost 600 Corsairs. More than 12,500 would be built before the production line was shut down.



141 A variant of the North American P-51, designated NA-83 Mustang, on a test flight in late 1941 or early 1942. The RAF ordered 300 of the classic fighters. 151 P-36 and P-40 pursuit fighters can be seen among the aircraft on a parking area at Hawaii's Wheeler Field.



Photo from the Garrett Collection





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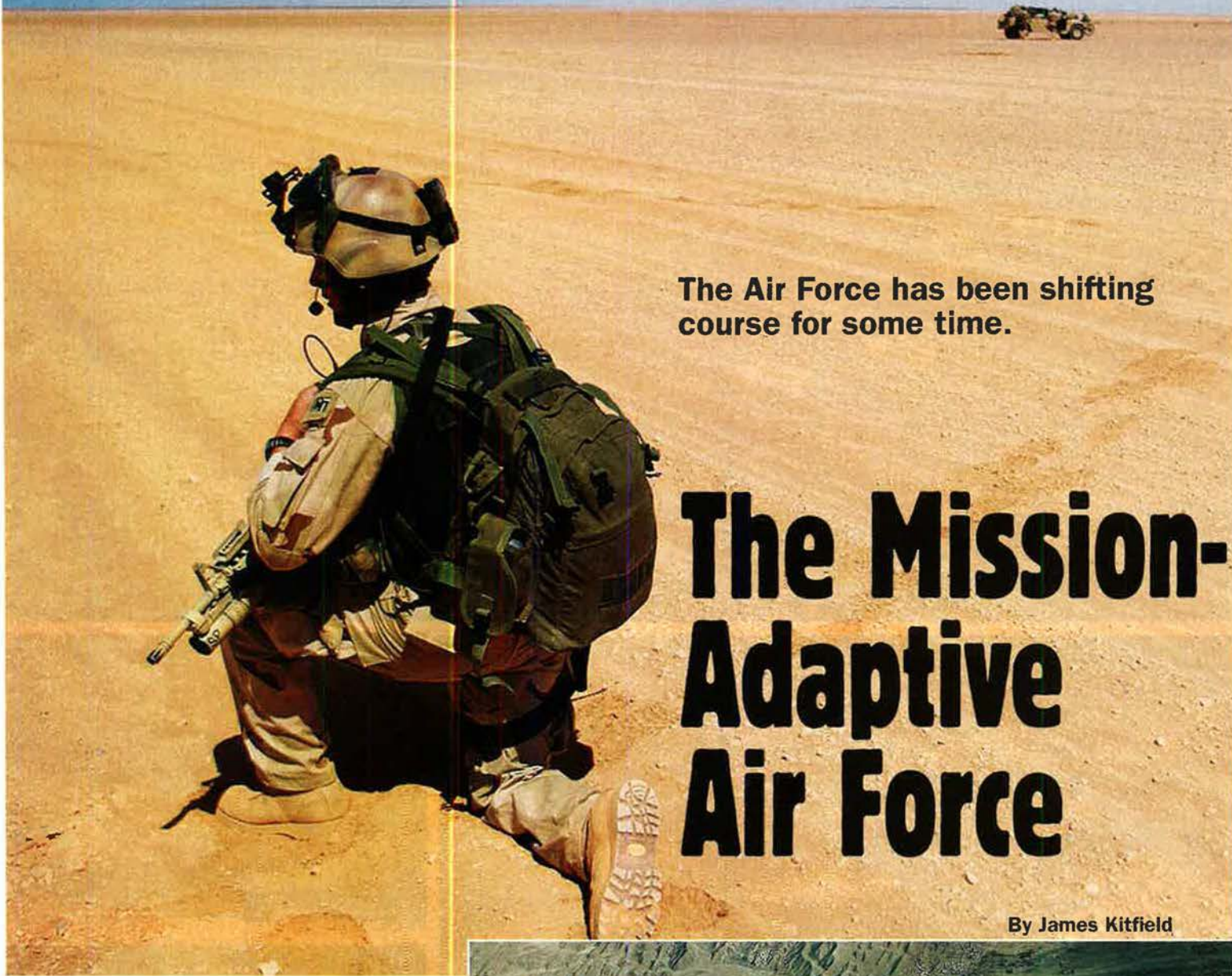


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*11* The legendary B-17 Flying Fortress first flew in July 1935, and B-17s began filling up bomb squadrons in 1938. This particular B-17C was flying out of Wright Field in 1941. *12* Bell cranked out nearly 10,000 P-39 Airacobras such as these. *13* Two airmen compare notes beside a wartime rarity. This light observation aircraft is the Stinson O-49 Vigilant. Just 142 were built. *14* The Bell P-39 saw wide service in the Air Corps. This model is seen during a test flight in early 1941.

Note its midengined design. *15* Aircraft designers began working on building a long-range flying boat in 1935. This Martin XPB2M rolled off the assembly line in 1941, but it was deemed too risky to fly the slow boat over enemy waters. Until the US aircraft industry was able to ramp up with wartime designs and quantities, AAF airmen had to hold their own against the Axis with prewar designs such as these. The airmen and their equipment performed with honor and distinction. ■





The Air Force has been shifting course for some time.

# The Mission-Adaptive Air Force

By James Kitfield

**I**n a recent speech at a special operations conference in Washington, D.C., USAF's top uniformed leader, Gen. Norton A. Schwartz, pledged to better configure the Air Force in order to support American ground forces in combat "whatever is needed, whatever it takes."

Indeed, that transformation—prompted by years of war in Afghanistan and Iraq—has been under way for some time, and has only picked up speed in recent months.

"My commitment to you is that Air Force leaders are listening and will continue to listen," the Air Force's Chief of Staff told his audience on Feb. 11. "We will shape our training and developmental efforts in the officer and NCO ranks to meet the challenges that we face."

The changes are rippling through the service. Virtually no corner has remained untouched.



*Top: A combat controller keeps an eye out for danger during a training mission as the rest of his team sets up an austere runway. Above: An A-10 pilot powers his fighter over the mountains of Afghanistan.*





USAF photo by SSgt. Jeremy T. Locke



USAF photo by A1C Christopher Griffin

*Lt. Col. Geoffrey Barnes preflights an MQ-1 Predator at Ali Base, Iraq. USAF is training a quickly expanding force of UAV operators.*

However, the transformation is glaringly apparent in three training areas—the actions of airmen on the ground, the use of combat airpower in support of ground forces, and the operation of unmanned air vehicles to enhance battlefield awareness.

### Ground-Force Taskings

When USAF Col. Scott Bethel left for Iraq in July of 2004, his predeployment training consisted of a half-day reacquainting himself with a 9 mm handgun at a local firing range. Bethel had been in Iraq only a few weeks when his truck convoy was ambushed by Iraqi insurgents.

“Basically I got all of my real training in that 90-second firefight, copying how the marines around me returned fire,” said Bethel, who is now deputy director of technical training at Air

Education and Training Command at Randolph AFB, Tex.

The day after the ambush, Bethel requisitioned an M-16 assault rifle and took it to the firing range. “That way, I was a little better prepared when my convoy was ambushed a second time two weeks later,” he recounted.

Like many airmen, Bethel knew he had deployed to Iraq with insufficient close-combat skills. The realization that thousands of airmen deploying to war zones must be combat-ready on Day 1 has driven the Air Force to fundamentally reshape its curriculum and training regime.

USAF has modified its two-week, behind-enemy-lines training program called SERE—Survival, Evasion, Resistance, and Escape. Now, airmen deploying to high-risk assignments on the ground undergo a streamlined, four-

day course called Evasion and Conduct After Capture, or ECAC.

“A major catalyst for ECAC was the capture of some British sailors by the Iranians,” said Bethel. “Air Force leaders decided [on ECAC for] deploying airmen so that, God forbid, in a similar situation, they would have training to draw on.”

AETC is also developing an intense, two-week predeployment course that further stresses expeditionary skills for airmen about to leave for a war zone.

“Until about 18 months ago, the combat training airmen received was not consistent, and that was frustrating not only for the deployed airmen but also for the Army or Marine Corps units they sometimes augmented,” said Bethel. USAF’s leadership therefore decided “to create a force that is more standardized in its combat and expeditionary train-





**USAF basic trainees move out on the BEAST course at Lackland AFB, Tex.**

ing, so that, when an airman arrives in theater, no one has to worry whether he has the required skills.”

The wartime standardization begins almost from the first day. USAF recently expanded its Basic Military Training course by two weeks. Basic training was expanded to incorporate the Basic Expeditionary Airman Skills Training (BEAST) exercise, designed to simulate deployment to a forward operating base in the Middle East.

At Lackland AFB, Tex., where BMT is taught, a new BEAST site reflects the gritty reality of an Air Force at war. The facility includes a 1.5-mile improvised explosive device (IED) trail, for instance, where airmen practice spotting roadside bombs.

The BEAST facility also boasts a mock airstrip that airmen learn to secure in the face of simulated air and ground attacks, a nod to the fact that in counterinsurgency warfare, there are no clear battle lines, nor safe rear areas. Everyone is a potential target.

“The Air Force’s focus on the Global War on Terror required a philosophical leap,” said Bethel.

With airmen now “routinely deploying to dangerous war zones and forward areas, the Air Force leadership decided we needed to increase the warrior ethos of the entire force,” he continued. “That required changing our training to emphasize combat and expeditionary skills, and BEAST is a good example of that.”

Airmen deploy to the BEAST facility for a five-day session. There they are issued personal weapons, and required to set up camp in an austere setting.

As part of their combat skills training, they will have to repel an opposing force, conduct combat first aid, and cope with a simulated chemical attack using tear gas.

Though an obvious reflection of a more expeditionary Air Force, BEAST is just one example of the new warrior ethos that is coming to define Air Force training.

For example, airmen coming out of Officer Training School, the Reserve Officer Training Corps, or the Air Force Academy will have already received Air Combatatives Training, a 10-hour block of instruction in hand-to-hand combat techniques. It is adapted from a similar Army program and designed to build confidence and foster teamwork.

**Close Support Operations**

Nowhere has the impact of Iraq and Afghanistan been more evident than in the renewed Air Force emphasis on close air support.

As a direct result of heavy emphasis on close air support missions in counterinsurgency operations, Air Combat Command has added a third week of CAS training to its Red Flag exercises. In addition, ACC has now resurrected Green Flag. This exercise, however, no longer focuses on electronic warfare skills, as in the past. Rather, it has become USAF’s premier CAS training event.

The new Green Flag partners Air Force squadrons directly with Army brigade combat teams preparing to deploy to Iraq or Afghanistan.

“After 9/11, the nature of the wars in Afghanistan and Iraq developed

into counterinsurgencies,” said Maj. Paul Kirmis, director of operations for the 549th Combat Training Squadron, which coordinates Green Flag exercises at Nellis AFB, Nev. “The leadership at Air Combat Command decided we needed to start training to the current fight.”

Counterinsurgency operations put a heavy emphasis not just on CAS, but on armed reconnaissance, efforts to counter dangerous IEDs, intelligence-surveillance-reconnaissance sorties, and convoy escort duties. Nearly all these missions require close operational coordination with Army forces on the ground.

On the vast ranges outside of Nellis Air Force Base, small towns and roads have recently sprouted from the desolate scrub desert. On closer inspection, the villages consist of standard shipping containers arranged in grids to resemble buildings and town squares.

During a recent Red Flag exercise, a joint terminal attack controller hidden in the hills of the range sent the coordinates of one of those “buildings” to a combined air operations center back at Nellis. The CAOC then relayed the information to two F-15E Strike Eagles orbiting overhead.

Within minutes, they were swooping down for a simulated bombing run. In a real world mission, all the participants would know that any snag or misfire in that communications loop could result in a catastrophe.

The new “towns” in the Nellis range, and the heavy emphasis on the close air support mission, are adaptations to urgent combat needs.

While the first two weeks of Red Flag exercises still focus on establishing air superiority, attacking air defenses, and targeting key communications and infrastructure nodes from the air, an additional third week now emphasizes the kinds of close air support missions that pilots and air controllers conduct almost everyday in Afghanistan and Iraq.

“Adding a third week allowed us to cater completely to the mission of providing close air support in an urban environment, which requires precise communication so that the right targets are hit and friendlies are not killed,” said Lt. Col. Paul Johnson, operations director for the 414th (Red Flag) Combat Training Squadron.

The fluid nature of counterinsurgency operations, he said, also puts a premium on flexibility and rapid response times, with aircraft often being tasked and di-





Security forces airmen train on the frigid flight line at Minot AFB, N.D.

rected to moving targets while already armed and in the air.

“As a result of operations downrange in Iraq and Afghanistan, we spend a lot of time at Red Flag now practicing ‘dynamic targeting,’ where aircraft receive bombing coordinates while already on station,” said Johnson. “Compressing that ‘kill chain’ so that we can successfully strike time-sensitive targets is something we work on all the time now.”

On some days, joint strike packages take off from Nellis and veer south toward southern California and the Mojave Desert outside of Barstow. This is the home of the Army’s National Training Center (NTC). As part of Green Flag exercises started in 2006, those strike aircraft will take part in training that experts say has unprecedented focus on close air support of ground forces.

The participating Army brigade combat teams are poised to deploy to Iraq or Afghanistan.

“We have really made great strides in terms of helping US Army commanders exercise their ability to request and coordinate close air support, and to integrate all those moving parts,” said Kirmis. “And when we all get it right, it’s really fantastic to see.”

For instance, the Air Force now runs 20 Green Flag exercises each year. Ten are run out of Nellis in support of Army training at the NTC, and 10 out of Barksdale AFB, La., in support of Army training at the Joint Readiness Training Center (JRTC) at Ft. Polk, La.

The most recent Green Flag West exercise was the largest yet, and in 2008, the 549th Combat Training Squadron at

Nellis coordinated 226 aircraft, 2,571 sorties, and more than 5,800 flying hours for Green Flag.

As part of the exercises, USAF also locates training squadrons directly with Army counterparts at the NTC and the JRTC to coordinate operations and seamlessly embed joint terminal attack controllers with Army ground forces.

Given the multilateral nature of ongoing conflicts, and the heavy participation of NATO forces in Afghanistan in particular, air forces from Britain, France, Belgium, Germany, the Netherlands, and Italy have either participated in Green Flag exercises or plan to do so soon.

Meanwhile, Air Force tactics experts from Nellis and Barksdale travel to Iraq and Afghanistan multiple times each year, returning to brief Green Flag participants on the most up-to-date challenges and rules of engagement in those combat theaters.

“Providing close air support is very complex, and we need to work the communication and coordination aspects really hard in order to provide the ground commander the right set of options,” said Kirmis.

In some situations where the risk of collateral damage is high, he said, the right option might be for the pilot to recommend against bombing. “He might tell the ground commander that it’s better to use his other resources to solve the problem, whether that’s

artillery, helicopters, or even boots on the ground,” said Kirmis.

He said the overall goal of Green Flag is the same as at Red Flag: Give the young pilot or ground-based air controller experience equivalent to the first 10 combat sorties—statistically the most dangerous in terms of both casualties and mistakes.

“With Green Flag, we want to take the young wingmen [who have] never been to war, and put them under combat-like stresses, so they are prepared the very first day they hit that ramp at Bagram,” Kirmis said. “When they get that first call from US troops under fire, at night in bad weather, in a complex urban environment where there are friendlies and neutral civilians in close proximity to bad guys, that young wingman has to be ready.”

### Unmanned Aircraft World

Offering major challenges, too, is the service’s push to make more extensive use of modern unmanned aerial vehicles in irregular warfare. Particularly evident is the rising number of pilots needed for USAF’s burgeoning UAV fleet.

Skyrocketing requests for unmanned aerial vehicle support in Iraq and Afghanistan have dictated that roughly 100 pilot trainees be made available each year directly to train to fly UAVs such as the MQ-1 Predator and MQ-9 Reaper.

Under a new test program, Air Force captains in nonflying military specialties are also being trained as UAV pilots. The first class will graduate from the eight-month course later this year, and if they are successful, AETC intends to expand the program.

The UAV community continues to see refinement. In recent years, when officials “began briefing graduating classes of pilots and explained the need and the capabilities of the unmanned systems, believe it or not, a lot of folks raised their hand and signed up to UAVs on the spot,” said then-Col. Carlton D. Everhart II, at the time AETC’s deputy director of flying training.

As a result, he said, roughly 100 graduates of pilot training each year are now switching to UAVs. “We were pleasantly surprised.”

“As a result of the wars in Iraq and Afghanistan, we’ve definitely had to change how we think about UAV pilots and systems operators as career paths,” said Everhart. ■

*James Kitfield is the defense correspondent for National Journal in Washington, D.C. His most recent article for Air Force Magazine, “The Turk Connection,” appeared in the August 2008 issue.*





An artist's conception of the SBIRS satellite.

**USAF is seeking new ways to get out of the "one-size-fits-all" satellite straitjacket.**

# Downshifting in Space

Illustration by Erik S. Jensen

By Jeremy Singer

**S**pace long has been critical to USAF's intelligence-surveillance-reconnaissance power. Because of this, the Air Force traditionally has sought top-of-the-line ISR space satellites, developed in-house at great cost in time and money.

Now, though, the service has come to realize that some of its space-based ISR could be provided by simpler satellites. USAF is hoping—and planning—to seek "good enough" capabilities that can be fielded faster and possibly at less expense.

The concept is deceptively simple: The military service would concentrate on fielding systems for only the most

demanding and advanced requirements. For lower- and medium-level needs, it might rely on commercial satellite systems.

By addressing a narrower set of goals, USAF could reduce the complexity of its own work in the enormously difficult realm of designing and fielding advanced ISR satellites. Senior Air Force space leaders believe this approach might eliminate the problems inherent in building one-size-fits-all surveillance satellites, and yet still allow USAF to gain the benefits of the most advanced capabilities.

The Air Force is also finding ways to use existing satellites in new ways,

through software upgrades, new purposes for the data the spacecraft provide, and other adjustments.

Finally, some space-based ISR programs that were already well along in their development—such as the Space Based Infrared System—are performing beyond expectations.

It is enormously difficult to develop space-based ISR platforms, but the Air Force's new approach should help mitigate some of the development problems seen over the past decade.

The Air Force recently boosted its ISR capabilities through two new SBIRS payloads carried aboard classified satellites. These early warning spacecraft





*Gen. C. Robert Kehler (l), AFSPC commander, and Col. Steve Tanous, 30th Space Wing commander, at Vandenberg AFB, Calif., site of USAF's western launch range.*

scan the globe looking for ballistic missile launches—a mission important to protect the US homeland and American troops deployed overseas.

USAF has operated Northrop Grumman's Defense Support Program satellites for the early warning mission over the past four decades. The next generation SBIRS was a long time coming, but is already starting to pay dividends.

### Revolutionary Performance

The SBIRS program has been plagued by technical difficulties, driving up its cost by billions of dollars and delaying the launches of the dedicated satellites by at least seven years. Col. Roger W. Teague, commander of the SBIRS Wing at Space and Missile Systems Center in Los Angeles, recognizes this but adds that the payloads in space today are performing better than expected.

"The performance has been revolutionary," said Teague, who noted that the feedback from commanders who have used the data from the sensors has been strongly positive.

Raymond Yelle, command lead for ISR and ballistic missile defense at Air Force Space Command in Colorado Springs, Colo., said ground testing with the sensors indicated that they would be three times as sensitive as their specifications required. This was proved out in the operational trials.

The early warning satellites also monitor for other heat-generating events in

the battlefield and elsewhere around the world. They can spot events as varied as exploding munitions and erupting volcanoes.

This gives the Air Force added confidence that the forthcoming SBIRS satellites will also perform as well on orbit as they have during ground testing.

The SBIRS payloads in space today pass over the Earth in highly elliptical

orbits. The first of two SBIRS payloads, built by Lockheed Martin, was accepted by Air Force Space Command in November following initial checkout and operational trials.

Teague said the second payload is already providing useful data, and he expects Air Force Space Command to formally accept control of that bird in the spring. USAF plans to launch its own, dedicated, SBIRS satellites into geosynchronous orbits beginning in late 2009.

Ultimately, SBIRS will give the military advanced missile warning capabilities that include more accurate determination of an incoming missile's impact point. This can help deployed forces limit the number of troops that need to take precautions to a smaller group actually threatened by the attack. (Protective measures, such as donning gear to protect against chemical and biological weapons can reduce productivity and slow work such as readying aircraft for takeoff.)

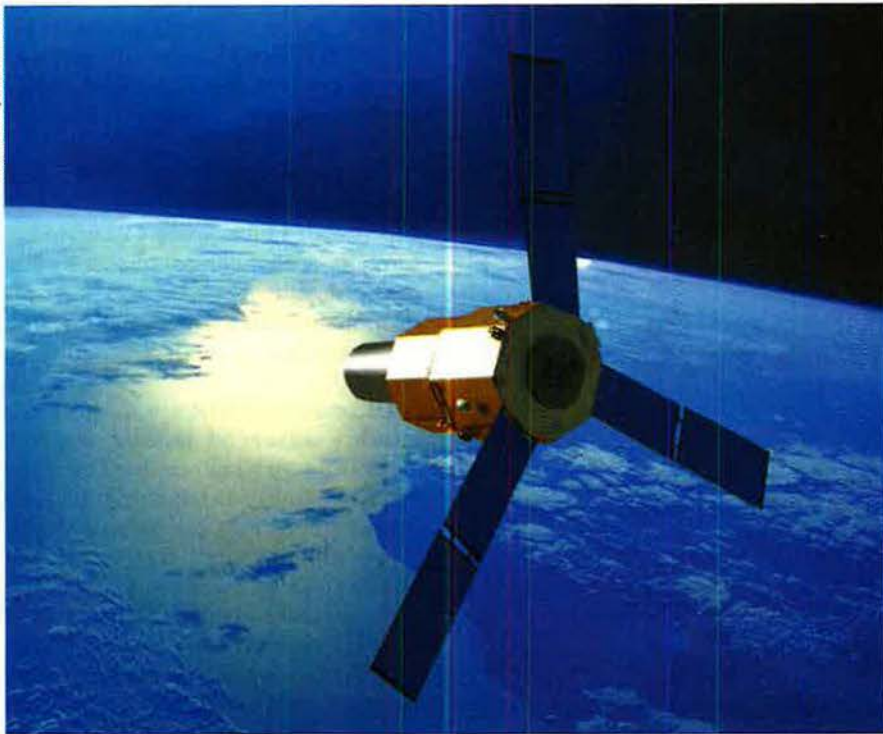
SBIRS also offers improved sensitivity, which can help to spot mobile missile launchers like those used against the United States in Operations Desert Storm and Iraqi Freedom. That sensitivity can look for other things on the battlefield that generate heat, such as enemy tanks or trucks, and is useful for conducting bomb damage assessments.

The SBIRS sensors in space today employ an infrared sensor that scans



*TacSat-2, already in orbit, features a variety of instruments, including a low-power imagery sensor and a signals intelligence payload.*





**An artist's conception of the TacSat-3, which will feature a hyperspectral sensor capable of penetrating enemy efforts to camouflage potential targets.**

the Earth looking for heat-generating events. The dedicated SBIRS satellites that are intended to follow those in orbit today will add a sensor that can stare at particular areas of interest for long periods of time.

Teague said that Gen. C. Robert Kehler, commander of Air Force Space Command, refers to this feature as USAF's first space-based sensor for 24/7 persistent surveillance.

### Leveraging Existing Assets

There is very little that can be said about how the staring sensor will be used for ISR purposes, but the ability to stare continuously at an area of interest, rather than scan the entire visible portion of the Earth, means that the dedicated SBIRS satellites will be able to spot targets—including those that generate less heat—much faster. This is an important improvement for missions such as finding and targeting mobile missile launchers.

Space Command is hoping to further exploit the SBIRS payloads that are on orbit today for battlespace awareness through the Operationally Responsive Space effort, Yelle said.

ORS is intended to find new ways to leverage existing assets to quickly meet urgent needs. The current wars have shown that traditional development cycles are much too slow to respond to emerging battlefield requirements.

In the case of the SBIRS payloads, Space Command would like to develop new software and other capabilities to work with their infrared data, Yelle said. There are "all kind of things"

outside of ballistic missile launches that the Air Force may want to use the infrared sensors to look for, he said.

While roughly half of the ORS missions are ISR-related, responsive space capabilities are still a relatively small piece of the overall Air Force ISR workload. According to Lt. Col. Michael Grieco, deputy for the ORS division at Space Command, ORS' role in providing surveillance capability is already significant and will likely grow over time.

When the ORS effort cannot leverage existing capabilities to meet emerging requirements, it develops satellites that can be launched on short notice.

To avoid the high cost and lengthy development time associated with most major space systems, satellites built under the ORS effort feature relatively mature technology, have a more narrow set of mission requirements, and are designed to operate on orbit for a relatively short period of time.

These parameters may not allow for a satellite as capable as standard systems such as SBIRS, but the Air Force is hoping that they can be good enough to fill in some capability gaps on short notice, or allow the military to reconstitute an existing constellation following an on-orbit failure or deliberate enemy attack.



USAF photo by Duncan Wood

**Kehler has called SBIRS the Air Force's first space-based sensor for 24/7 persistent surveillance.**



Operationally Responsive Space advocates have high hopes for a number of upcoming efforts. ISR efforts under the ORS umbrella include ORS Sat-1, which will be built by Goodrich ISR Systems of Danbury, Conn., and is expected to launch in 2010.

ORS Sat-1, the first satellite developed under the ORS program for operational purposes, will feature an optical sensor based on a design that the company has used on the U-2 surveillance aircraft.

The Air Force is reluctant to talk about the details of ORS Sat-1 publicly, but has acknowledged that the satellite is intended to meet an urgent ISR requirement for US Central Command.

Air Force ISR capabilities could also be boosted by use of the experimental TacSat-3 spacecraft expected to ride into space in 2009. This launch date has already been postponed several times, however, for a variety of factors. These have included difficulty securing funding for the satellite platform and the need for additional work to protect the satellite's sensor from vibration during launch.

TacSat-3 will feature a hyperspectral sensor built by Raytheon Space and Airborne Systems of El Segundo, Calif. This will give the Air Force the opportunity to experiment with the ability to use the vantage point of space to look down and penetrate enemy attempts to camouflage potential targets. The need for this capability emerged on commanders' wish-lists following battles in Kosovo, Afghanistan, and Iraq.

Some of the targets that could be uncovered with hyperspectral imaging include vehicles, buildings, and landmines.

Data from the TacSat-3 experiment will be used as the military weighs the possibility of launching a constellation of satellites with similar sensors. The experimentation is also intended to give commanders the opportunity to try new methods of tasking, processing, exploiting, and disseminating the data.

Once the experimentation with TacSat-3 concludes, the Air Force hopes the spacecraft will be able to do still more. Study work is going on now, investigating other possible uses for the satellite, Grieco said.

The Air Force has already launched one satellite—TacSat-2—under the ORS effort. TacSat-2 featured a variety of instruments, including a low-power imagery sensor that commanders could point at areas of interest and a signals intelligence payload.

## Watching the Weather

The Space Based Infrared System payloads in space today have gathered data on a variety of heat-generating events, including missile launches, wildfires, and volcanoes. During the operational trials, the Air Force discovered that the SBIRS payloads can perform weather monitoring, a mission not envisioned for the program when it began in the late 1990s, said Col. Roger W. Teague, commander of the SBIRS Wing at the Air Force's Space and Missile Systems Center at Los Angeles AFB, Calif.

Weather prediction is an important component of ISR. The weather can be a deciding factor when commanders plan to launch a mission, or perhaps to hold off for several hours. Commanders may even abort missions if severe conditions could interfere with actions such as dropping bombs, said Raymond Yelle, command lead for ISR and ballistic missile defense at Air Force Space Command.

The Air Force operates dedicated satellites for this purpose. The Defense Meteorological Satellite Program constellation was first launched in 1962 and is expected to be replaced in the next decade by the National Polar-orbiting Operational Environmental Satellite System. NPOESS is a joint effort with the National Oceanic and Atmospheric Administration.

In addition to demonstrating the utility of those payloads, TacSat-2 gave the military the chance to begin experimenting with the ability to task the small satellites and receive information within 90 minutes.

The Air Force could ease the ability for commanders to take a closer look at the ground as they prepare for battle by stockpiling ORS satellites and the small rockets needed to launch them in order to be better prepared for urgent needs that may arise.

### Joint Ownership

The Air Force could further develop its space-based ISR muscles in the near term through taking a revised approach in the radar arena.

The Air Force has been working with the National Reconnaissance Office for the past decade in an effort to develop and field the Space Radar satellites, which would offer the ability to maintain surveillance regardless of time of day or weather conditions.

The Space Radar satellites were initially envisioned as a large constellation that could provide continuous tracking of moving targets on the ground as well as high-resolution imagery. However, the concept has been repeatedly scaled back, and little progress has been made in getting the satellites off the ground due to a lack of cooperation between the Air Force and its Intelligence Community partners and a struggle for funding on Capitol Hill. Space Radar, as originally conceived at least, appears to be dead

after Congress eliminated all funding last year.

Fed up spinning its wheels, the Air Force is now looking at ways to achieve at least some of the imagery goals hoped for with Space Radar by 2012 by relying on currently available technology.

This could come through a mix of government-owned satellites and commercial services such as those operated today by foreign partners.

Yelle said Space Command has examined foreign-owned capabilities in response to this directive, including the Canadian Radarsat-2 satellite. Other foreign commercial radar systems that experts say could help the Air Force meet its needs in this area include the German SAR-Lupe satellite constellation.

Space Command is also looking at how a small set of military-owned satellites could be developed to meet the needs of US forces that commercial systems cannot handle, Yelle said.

Whether those satellites would be built in partnership with the National Reconnaissance Office is still under discussion. Alden V. Munson Jr., the director of national intelligence's top acquisition official, recently said, however, that if the Pentagon decides that its needs can be met with a "more modest" capability that lacks "exquisite" resolution, the Intelligence Community will go its own way.

"It's a reasonable conclusion that we have capability, that we're thinking of what to do next, and that we're comfortable with those plans," Munson said. ■

*Jeremy Singer is a Boston-based freelance writer. His most recent article for Air Force Magazine, "Curtain Up on White Space," appeared in the April 2008 issue.*



The aircraft came from Shangri-La, or so the President said.

# Doolittle's Raid

By John T. Correll



**O**n Jan. 10, 1942, Capt. Francis S. Low, an operations officer on the staff of Adm. Ernest J. King, commander in chief of the US Fleet, was at Norfolk, Va., for inspection of the Navy's newest carrier, USS *Hornet*.

As his aircraft prepared to depart for Washington, Low glanced out the window at the outline of a carrier deck that had been painted on the runway to train Navy pilots in short takeoffs and landings. Just then, two Army two-engine bombers swept by, practicing a low-level bombing pass.

Through Low's mind flashed the thought that, if such bombers could take off from a carrier deck, they could bomb Japan.

The United States was still reeling from the attack on Pearl Harbor the month before, and Japan had continued to rack up one victory after another in the Pacific. President Roosevelt wanted a bombing raid on Japan as soon as possible to bolster the nation's morale.

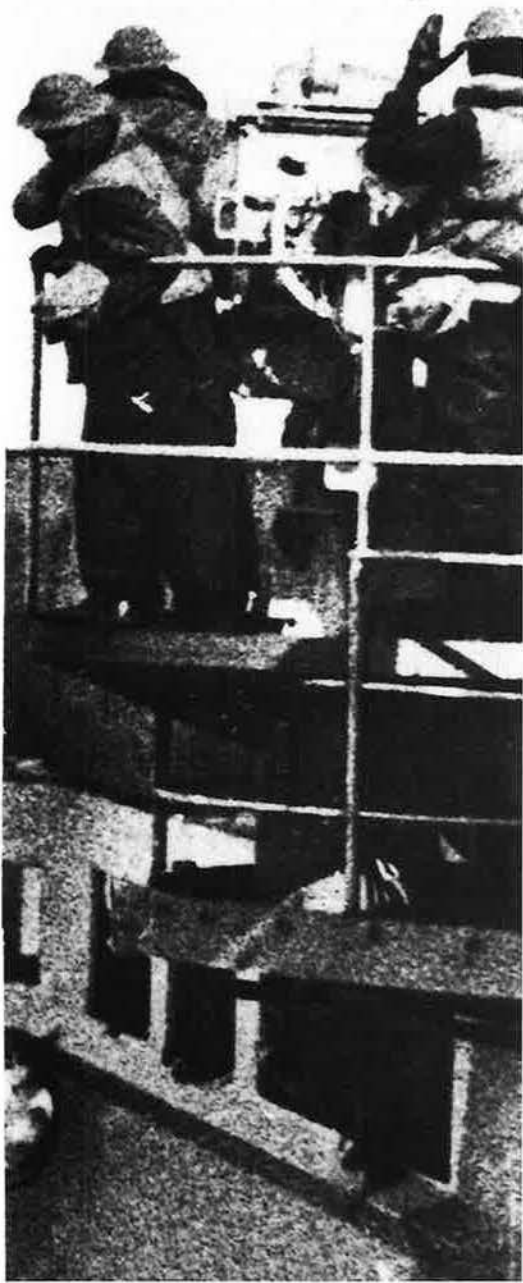
The Navy's carrier-based aircraft couldn't do it. Their operating radius was 300 miles; a carrier could not safely steam that close to Japan. Army bombers,

however, had more range. If they could launch from a carrier deck, then the Navy could sail them within striking distance of the enemy home islands.

Low took his idea to King, who referred it to Lt. Gen. Henry H. "Hap" Arnold, Chief of the Army Air Forces, who agreed. The AAF War Plans Division had been studying the feasibility of launch from a carrier but nothing had yet come of it. Low's proposal was the beginning of the project.

Arnold sent for Lt. Col. Jimmy Doolittle, who was already a famous aviator. In the 1920s, he had won air races, set





**A Doolittle Raider takes off from the flight deck of USS Hornet, headed for Japan.**

aviation records, and was the first pilot to fly an airplane completely on instruments. He left the Air Corps in 1930 but returned to active duty in 1940. Arnold brought him to Washington as his troubleshooter and promoted him to lieutenant colonel.

One of Doolittle's first tasks was to decide which AAF bomber had the potential to fly the mission against Japan. It had to take off within 500 feet, carry

2,000 pounds of bombs, and travel 2,000 miles with a full crew. It also had to roll down a carrier deck without hitting the superstructure of the ship's island.

The wingspread of the Douglas B-23 was too wide. The Martin B-26's takeoff roll was too long. By default, the choice was the North American B-25, a sturdy medium bomber that entered service in 1941.

### **Practice, Practice, Practice**

To be certain the concept would work, two B-25s on Feb. 3, 1942 were loaded onto *Hornet* at Norfolk and taken 100 miles out to sea for a flight test.

An aircraft launching from a carrier gets an extra lift boost from the speed of the ship pushing into the wind. When the pilot of the first B-25, Lt. John E. Fitzgerald, climbed into the cockpit, he saw that "the plane's airspeed indicator showed about 45 miles per hour sitting there," Doolittle said. "This meant he had to accelerate only about 23 miles per hour." The B-25s were up and away without difficulty. They did not carry a combat load of fuel and munitions, but they had demonstrated basic feasibility.

Doolittle's handwritten plan in February 1942 called for the carriers to transport the bombers to within 400 or 500 statute miles of the coast of Japan.

The B-25s would take off at night, bomb Tokyo at dawn, cross the East China Sea, land and refuel in the vicinity of Chuchow in eastern China, and fly on to Chungking. The bombers would then be turned over to new AAF units forming there.

The Chinese and American forces in China and India would be asked to prepare landing fields, pre-position fuel, and set up homing beacons. They would not be given much information in advance. Secrecy was tight: Only five people knew the full plan. There is some question about how much the President was told, but Arnold said in his memoirs that Roosevelt "was kept constantly advised on the details."

The expectation was that no airplane would fly farther than 2,000 miles nonstop, but the B-25s were modified to go 2,400 miles if necessary. The bottom gun turrets were ripped out, along with whatever else Doolittle deemed nonessential, to make room for three extra gas tanks. Each airplane would have 1,141 gallons of fuel, the final 50 gallons carried in five-gallon cans to top off the tanks in flight.

There was no effort to handpick the crews. They were average AAF crews from the 17th Bombardment Group at Columbia, S.C. All were volunteers, told

that it would be a hazardous mission, but the details were not disclosed to them.

They trained at Eglin Field, Fla., March 9-25, with as much secrecy as Doolittle could impose. They practiced short take-off, cross-country flying, night flying, navigation, and low-altitude bombing.

The Navy assigned a carrier pilot from Pensacola, Fla., Lt. Henry L. Miller, to instruct them in carrier techniques. Doolittle, 45 years old, qualified along with the others, a self-imposed condition if he was to lead the mission. If he did not pass, he would fly as copilot instead. He passed.

By the time they left Eglin, the B-25 pilots could take off in 350 feet or less into a 46 mph wind. On March 25, they flew to California to meet *Hornet*, which was waiting for them at Alameda Naval Air Station in San Francisco Bay. Doolittle himself followed the rules of secrecy he had laid down for others. He told his wife only that he would "be out of the country for a while."

*Hornet* steamed out of San Francisco April 2 with 16 Army B-25s clearly visible on the open deck. Fortunately, no security problems came of this. That afternoon, when the ship was well out to sea, Doolittle told the crews what most of them had already guessed, that their destination was Tokyo.

Along with them on *Hornet* was their Navy coach, Hank Miller, who went on to retire as a rear admiral and to be one of the very few individuals named as an honorary Tokyo Raider.

On April 13, *Hornet* and the raiders made rendezvous at sea with Task Force 16, led by Vice Adm. William F. Halsey Jr. from his flagship, the carrier *Enterprise*. Until the bombers launched, Halsey was in command.

The raid was originally set for April 19 but was moved up a day because the Navy was running ahead of schedule. It was undesirable to remain in dangerous waters any longer than necessary. Doolittle spoke to the crews April 17. "If all goes as planned, I'll take off tomorrow afternoon so as to arrive over Tokyo by dusk," he said. "I'll drop incendiaries. The rest of you will take off later and can use my fires as a homing beacon."

However, the Japanese discovered Task Force 16 long before that and Doolittle had to make wholesale changes to the plan. The raiders would bomb Tokyo in the afternoon instead of at night, and they would reach China in darkness rather than daylight.

Unknown to the Americans, the Japanese had a line of radio-equipped picket





**Lt. Col. Jimmy Doolittle (standing, left) and Capt. Marc Mitscher, USS Hornet's commanding officer, with Army Air Forces crew members aboard the carrier.**

boats about 750 miles from the Japanese coast. At 3:10 a.m. April 18, *Enterprise* detected two surface ships and took evasive action. At 6 a.m., a Navy scout airplane spotted what appeared to be a fishing craft. At 7:44 a.m., *Hornet* intercepted a radio transmission from a picket boat reporting "three enemy carriers."

The cruiser *Nashville* sank the picket boat, and at 8 a.m., Halsey ordered *Hornet* to launch the bombers.

The carrier turned into the wind and gathered speed, the bow rising and falling in rough seas. Doolittle, first to take off, positioned his aircraft on two lines painted on the deck, one for the left wheel and one for the nose wheel. If he kept his wheels on the lines, he would clear the carrier island on his right by six feet. Doolittle had 467 feet of deck in front of him. Aided by the carrier's speed of 23 mph and a 35 mph wind blowing across his wings, Doolittle was airborne at 8:20 a.m. with deck to spare.

By the original plan, Doolittle would have gone three hours ahead of the others to mark the targets with firebombs, but Lt. Travis Hoover, in aircraft No. 2, took off five minutes after Doolittle and soon joined up with him. The 16th and last airplane was airborne at 9:19 a.m.

Official records and historical accounts vary on how far the raiders had to fly to reach their targets, but they launched more than 700 miles from the center of Tokyo and almost 10 hours sooner than planned. Doolittle had expected the car-

rier to take the raiders several hundred miles closer to Japan.

#### From All Directions

The strike force consisted of 16 aircraft and 80 airmen. Each B-25 carried a crew of five: pilot, copilot, navigator, bombardier, and engineer-gunner. Nine of the bombardiers were enlisted, including SSgt. Fred A. Braemer on Doolittle's crew. To conserve fuel, the raiders flew toward Japan at slow speeds and at low level.

Meanwhile, the Japanese dispatched aircraft to intercept the carriers. Halsey reversed course and the task force headed east at top speed.

The presumption was that authorities in China would learn of the raid by radio and be ready to receive the raiders earlier than planned. As a backup, Doolittle asked Halsey to send notification once the B-25s were launched.

For reasons never fully explained, Halsey did not send the message: News of the early attack never reached Chuchow.

The Japanese had received the warning from the picket boat but they were not yet alarmed. They knew that US Navy aircraft had to get within 300 miles of Japan to launch a strike and the enemy carrier was not nearly that close.

There had been an air raid drill that morning, and at midday, numerous Japanese military airplanes were in flight over Tokyo, practicing for an upcoming celebration of the emperor's birthday.

It was not immediately clear that Tokyo was under enemy attack. The raid was not a strike by massed airpower as had been the case at Pearl Harbor.

The raider aircraft were spread out over an area 50 miles wide and 150 miles deep and they approached Tokyo from various directions. They carried differing mixes of 500-pound demolition bombs and incendiary bombs, depending on their assigned targets.

Doolittle was first to reach the target. He swept over Tokyo at rooftop level, pulled up to release four incendiary bombs on a factory complex, then dropped to low level again. His first bomb dropped at 12:25 p.m.

Heading out over the western outskirts of Tokyo, Doolittle saw a dozen airplanes lined up at an aircraft plant, but he had no bombs left.

The first 10 raider aircraft struck Tokyo, and the other six hit Yokohama, Nagoya, Kobe, and Osaka. Most of them bombed their primary targets, which included factories, warehouses, mills, industrial plants, and the Tokyo waterfront.

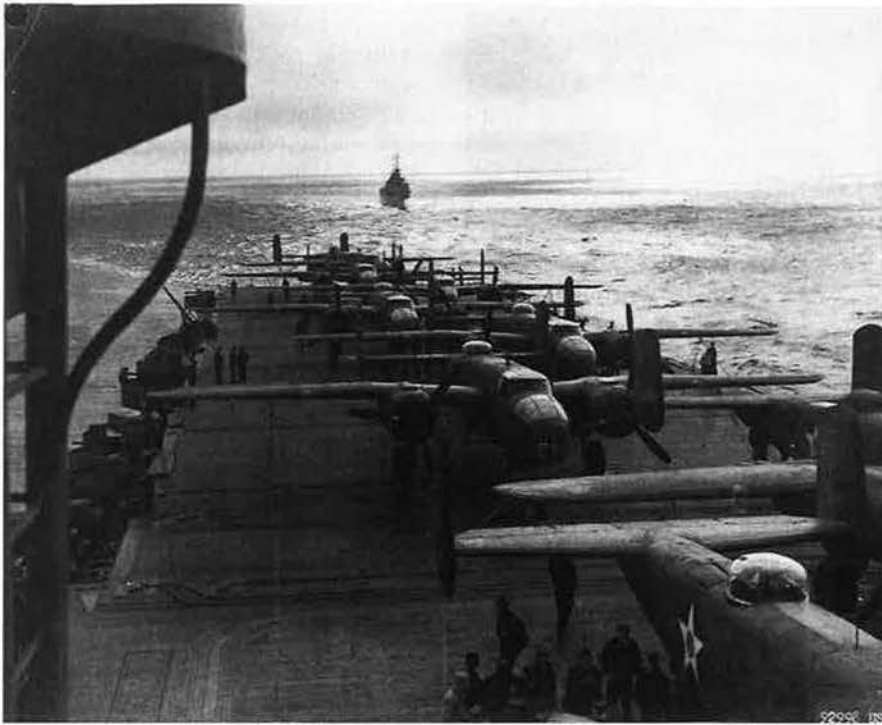
Fires spread quickly because of the flimsy nature of Japanese construction. Big columns of smoke arose from the northeastern part of Tokyo. By the time aircraft No. 10 dropped its bombs, the air defenses were fully aroused, but the Tokyo part of the raid was over.

In absolute military terms, the raid did not do much harm to Imperial Japan, but there was a great psychological effect.

The Japanese claimed to have shot down nine of the raiders. They said the bombers had concentrated on schools and hospitals but did not do much damage except to nonmilitary targets. In actuality, the Japanese knew that they had been taken by surprise and feared that the Americans might strike again, and in greater strength. The Japanese were unnerved enough to retain four Army fighter groups in the home islands even though they were urgently needed in the South Pacific.

In public, Adm. Isoroku Yamamoto, commander in chief of the Imperial Fleet and architect of the Pearl Harbor attack, disparaged Doolittle's "Do-Nothing Raid." However, Yamamoto was more convinced than ever that Japan had to extend its defensive perimeter eastward. The raid helped convince Japanese leaders to attempt to seize Midway, where the Japanese fleet was defeated in June 1942 in a critical carrier battle generally regarded as a turning point in the Pacific war.





**B-25s crowd the flight deck of Hornet en route to the launch area, which was more than 700 miles from the center of Tokyo.**

All 16 aircraft exited Japanese airspace satisfactorily, but the consequences of the premature launch began to catch up with them. Because of the additional distance to fly, the B-25s would have run out of fuel 200 miles short of the coast of China had it not been for a tailwind that pushed them along for seven hours and gave them about 250 extra miles of range. Even so, 15 of the aircraft crashed in China or were ditched near the shore.

Doolittle and several of the others managed to reach Chuchow, about 200 miles south of Shanghai and 70 miles inland. The base was in a narrow valley and landing in the dark was not possible without lights or a homing beacon. Instead, Doolittle said, "When our planes were heard overhead, an air raid warning alarm was sounded and lights were turned off."

Doolittle tried to contact the field but got no answer. Around 9:15 p.m., Doolittle and his crew bailed out north of Chuchow and came down in a rice paddy. They had been in the air for 2,250 miles.

Over the next several weeks, most of the raiders made their way to Chungking and friendly territory. They would not have been able to do so without the help of Chinese all along the way. Most of eastern China was under the control of the Japanese army.

The Japanese sent 53 battalions on a three-month search and reprisal campaign through Chekiang (now Zhejiang) Province, where most of the raiders had landed. They wiped out entire villages,

men, women, and children, killing fully a quarter of a million Chinese.

#### Japanese Claims

Lt. Ted W. Lawson ditched aircraft No. 7 in the East China Sea, a quarter of a mile offshore. His leg was badly injured in the crash and was amputated in China by Lt. Thomas R. White, a physician who volunteered for the mission and flew as a gunner on crew No. 15. Lawson recounted the mission in *Thirty Seconds Over Tokyo*, published in 1943 and later made into a

movie with Spencer Tracy as Doolittle and Van Johnson as Ted Lawson.

The gunner on aircraft No. 3, Cpl. Leland D. Faktor was killed on bailout over China. Two crew members from No. 6 were badly injured and drowned when their aircraft ditched.

The Japanese captured the survivors from aircraft No. 6 and No. 16 and executed the two pilots, Lt. Dean E. Hallmark and Lt. William G. Farrow, and one of the engineer-gunners, Sgt. Harold A. Spatz. Another crew member died in captivity. The remaining four POWs came home at the end of the war.

The only aircraft that did not reach China was No. 8, piloted by Capt. Edward J. York, which had an engine problem and was burning fuel at a ruinous rate. Getting to China was not possible so York landed at a Soviet field near Vladivostok. The Soviets seized the airplane and interned the crew. After 14 months, the airmen finally managed to escape from the USSR by making their way into Iran (or, as it was called then, Persia).

Back in the United States, officials were anxious in the days immediately following the raid. They had heard nothing from Doolittle, and the *New York Times* was quoting the Japanese claim that nine airplanes had been shot down.

In the eternal way of bureaucrats, US officials floated the story to reporters that "such an attack could have been made without direct orders from Washington" and that execution of such a mission "would be the concern chiefly of the Army and Navy officials entrusted with the task of carrying it out."



**President Franklin Roosevelt pins the Medal of Honor on Doolittle's uniform at a White House ceremony.**





Retired Lt. Col. Richard Cole, the copilot on Doolittle's aircraft, pilots a B-25 over Eglin AFB, Fla., during a 2008 re-enactment of the raid.

It was soon learned that the news from Japan was untrue. Reaction of the American public to the raid was overwhelmingly positive.

Roosevelt enjoyed weeks of goodwill as a result of it, and identified himself closely with the mission. At a press conference April 21, Roosevelt vouchsafed that the bombers had come from "our new secret base at Shangri-La." (Shangri-La was an isolated and mystical valley in Tibet in James Hilton's popular novel, *Lost Horizon*, which had been made into a likewise popular movie.)

On April 28, while he was still in China, Doolittle learned that he had been promoted to brigadier general, skipping the grade of colonel. Years before, he had also skipped the grade of captain, leaving the Air Corps in 1930 as a lieutenant and joining the Air Force Reserve as a major.

Doolittle was awarded the Medal of Honor despite his protests that he did not deserve it. It was presented at the White House May 19 with Gen. George C. Marshall, Chief of Staff of the Army, reading the citation and Roosevelt pinning the medal on Doolittle's shirt.

All of the other raiders received the Distinguished Flying Cross. In addition, Lieutenant White, who amputated Lawson's leg, and Cpl. David J. Thatcher, engineer-gunner on Lawson's crew, were awarded the Silver Star for their aid to the wounded.

Official Washington decided that information about the mission should be managed to preserve the boost to the nation's morale and to keep the Japanese guessing.

Doolittle, at the instigation of the War Department, told reporters that none of the airplanes were shot down and "none was damaged to an extent that precluded its proceeding to its destination." That was true so far as it went but left out some basic points.

### National Anger and Pride

It was almost a year before the War Department released "additional details" on April 20, 1943, revealing that one airplane had come down in Soviet territory and that the others had been lost in China. There was some grumbling from the *New York Times* and others about misleading information the year before, but that was instantly forgotten when Roosevelt announced that three of the raiders had been executed by the Japanese. That set off a wave of national anger and fresh pride in what the raiders had accomplished.

Jimmy Doolittle went on to command Twelfth Air Force in North Africa and Fifteenth Air Force in the Mediterranean Theater. In 1944, promoted to lieutenant general, he took command of Eighth Air Force in England and directed the finish of the strategic bombing offensive against Germany. Doolittle was the highest-ranking reserve officer to serve in World War II.

In 1946, he returned to civilian life. Among other achievements, he became the first leader of the newly founded Air Force Association, serving as President

in the period 1946-47 and as Chairman of the Board 1947-49. He retired from the Air Force Reserve as a lieutenant general in 1959, but was advanced to four-star rank on the retired list by Congress in 1985. Doolittle died in 1993.

The carrier *Hornet* took part in the Battle of Midway and the Solomons campaign and earned four battle stars before being sunk by Japanese dive bombers and torpedo airplanes in the Battle of Santa Cruz in the South Pacific in October 1942.

The Navy in 1944 named an aircraft carrier *Shangri-La*. Roosevelt called the new Presidential retreat in the Maryland mountains Shangri-La, but the name was later changed by President Eisenhower to Camp David.

Cpl. Jacob D. DeShazer, bombardier on aircraft No. 16 and prisoner of the Japanese for three years, returned home, went to college, and became a Methodist missionary in Japan for 30 years. In 1950, he gained his most remarkable convert: Mitsuo Fuchida, the former Japanese Navy officer who led the air attacking force against Pearl Harbor in 1941.

In 1958, North American Aviation rebuilt a B-25D to the configuration of the B-25B flown by Doolittle on the raid. The aircraft was donated to the raiders and is currently exhibited at the National Museum of the US Air Force in Dayton, Ohio.

In 2008, seven of the surviving raiders went to Eglin, to take part in a re-enactment of their training there for the raid. Three B-25s provided the aerial part of the re-enactment.

Each year, around April 18, the surviving raiders gather for a reunion. During the event, there is a moment of solemn ritual. Visitors leave the room, silver goblets are brought out, and a toast is drunk "to those who have gone." If a raider has died in the past year, his goblet is turned upside down by a member of his crew. Most of the 80 goblets—stored at the Air Force Museum between reunions—are upside down. When only two raiders remain, they will drink the toast from a bottle of brandy that has accompanied the goblets, unopened, to every reunion since 1960. At the beginning of 2009, nine raiders survive, including Lt. Col. Richard E. Cole, who was Doolittle's copilot on aircraft No. 1. The 2009 reunion will be held in Columbia, S.C., April 17-18. ■

*John T. Correll was editor in chief of Air Force Magazine for 18 years and is now a contributing editor. His most recent article, "The Matterhorn Missions," appeared in the March issue.*



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**Airpower appears to be a mass of contradictions. That perception is right—and wrong.**

# Paradox List

By Phillip S. Meilinger

**A**irpower long has been a realm of paradoxes. This potent military instrument embodies characteristics that may well appear contradictory but turn out to be compatible. Or not.

Over the years, this situation has caused confusion about use and effects of airpower. Airmen have traditionally had a hard time communicating the realities to the American public. That certainly is true today.

Seeing the paradoxes clearly is the essential first step in better explaining the nature of airpower. Thus....

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**PARADOX 1: AIR WAR IS SO HORRIBLE THAT IT CAN BE HUMANIZING.**

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It was in 1909 that Clement Ader, the French aviation pioneer, warned that “the great bombing planes will become veritable terrors!” He saw this as a good thing.

“I am convinced,” Ader went on, “that their awesome power and fear of seeing them appear will provoke salutary reflections among the statesmen and diplomats who are the real dispensers of peace and war.”

From the beginning, people saw both promise and peril in airplanes. Orville Wright once stated that he and his brother thought the flying machine would make war so inadvisable that no government would start one.

The theory was that air warfare would be highly destructive, and leaders, knowing this, would prevent war from breaking out. The corollary was that, if war did occur, airpower would ensure it was over quickly with relatively little loss of life.

This belief was much in vogue after World War I, a conflict in which many millions of soldiers and civilians had died.

Corbis/Bettmann photo



*The German city of Dresden was in ruins after Allied bombing raids virtually flattened the city.*

After war broke out again in Europe in 1939, the use of airpower was indeed awful. Tens of thousands died in Germany and Japan, as well as in Allied cities. What happened? National leaders certainly knew that the airplane could wreak devastation. So, why was war neither deterred nor limited?

The answer is that some individuals—Adolf Hitler, for instance—are simply undeterrable. Suffering of German citizens counted for little in his lunge for power and national grandeur. His mind was made up.

So the threat of airpower did not deter Hitler. Neither did land power or sea power, for that matter.

Airpower did take far fewer lives, however. Of some 60 million persons who died in World War II, perhaps four million—military and civilian—died from air attacks. How did the other 93 percent perish? The old-fashioned way; they were shot, shelled, starved, executed, and so forth.

Airpower also shortened the war in the Pacific. Strategic bombing, culminating in two atomic strikes on Japan, brought the war to an end without American forces having to undertake what would surely have been a bloody invasion of Japan.

In a sense, the coming of the nuclear weapon finally fulfilled the dark para-



dox of the airplane. The threat of an air attack—a nuclear air attack—was too horrible to accept, and it puts steel in today's deterrence posture.

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**PARADOX 2: AIRPOWER IS SO USEFUL YOU DON'T NEED TO USE IT MUCH.**

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This paradox, put in different words, could be interpreted as meaning that, the better we get at fighting through the air, the less air fighting we will have to do.

The first Gulf War in 1991 and the subsequent 12 years of no-fly-zone enforcement over Iraq convinced Saddam Hussein's Air Force leaders that they would be better off avoiding a contest for control of the skies. As a result, not a single Iraqi aircraft even took off to challenge US airpower during the next round of warfare in 2003.

Instead, coalition forces found that Iraq buried fighters in the sand in an attempt to protect them from airpower.

Something similar has happened with respect to the Israeli Air Force. In the June 1967 Arab-Israeli War, IAF's fighters more or less wiped out the Egyptian air arm in the first few hours of the conflict. In the next round of war, in 1973, Egypt and Syria put up a better fight, at least in the early weeks.

However, the 1982 Bekaa Valley War over Lebanon saw the Israelis devastate Syria's Air Force with highly superior weapons and tactics. Today, no Middle East air arm dares to challenge Israel.

Gen. Carl A. Spatz, USAF's first Chief of Staff, once said: "Our problem was, we always made it look too easy." This could be interpreted to mean that airmen never got sufficient credit for their astounding successes. The statement could be taken another way, though—that the enemy really did think it was easy for the Americans, and, as a consequence, gradually gave up trying to oppose them.

In the Gulf War, airpower levied at least 50 percent attrition on all Iraq's front-line divisions. This took place before the coalition began major offensive ground operations. In the end, Iraqi troops were surrendering to newsmen and UAVs.

In the air war over Serbia in 1999—NATO's Operation Allied Force—the West prevailed over Serbia without having to send a single conventional ground troop into action.

In Afghanistan, US airpower teamed up with a few hundred special operations forces and some irregular Afghan militia



*A military search team retrieves a MiG-25 that had been buried beneath the sands of the Iraqi desert.*

units to drive the formerly unbeatable Taliban from power, long before significant numbers of regular US Army and Marine Corps troops even arrived in Afghanistan.

All of these historical events suggest yet another corollary: While you might not have to use much airpower, you won't have to use much ground power or sea power, either.

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**PARADOX 3: AIRPOWER LETS YOU SURVIVE BUT MARKS YOU AS A COWARD.**

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Another name for this one might be the "you're not fighting fair" paradox. This misguided desire for a *mano a mano* fight is prime foolishness.

Recall that during the air operations over Serbia in 1999, NATO crews, when dropping their precision weapons, often remained above 15,000 feet altitude, above the effective reach of anti-aircraft artillery. Despite the fact that such altitudes made the delivery of precision guided munitions more accurate, some foolishly claimed that such tactics were somehow unsportsmanlike because they made it difficult for the Serbs to strike back at the airmen.

That's precisely the point—and the paradox. When you're that good, you don't have to get into a direct fight with the foe.

The thrust of the critics' argument seems to be that an American asymmetric advantage is unfair, and that the

Air Force should give the bad guys a chance to draw blood.

Do pilots have to die to make it a just war? According to various pundits, the answer is "yes." They assume that war is not legitimate at all unless it features a ground force marching shoulder to shoulder to "close with and destroy" the enemy, with airmen putting themselves in an analogous position.

These views can emerge from some unexpected quarters:

Jeffrey Record, a member of the Air War College faculty, wrote an article titled "Gutless Giant." In it, he advanced this rhetorical question: "Was the life of any lone American pilot ... really more valuable than the fate of more than 1,600,000 Kosovar Albanians?" (The connection between the two was obscure, not to say specious, but you get the point.)

Retired Marine Corps Lt. Gen. Bernard E. Trainor, a frequent airpower critic, wrote, "High-tech weaponry permitted pilots to fly high out of harm's way while visiting destruction below." He found it "troubling" that USAF, with its "immaculate" air campaign, demonstrated "the ability to drive an enemy to his knees without shedding a drop of the bomber's blood."

Allied Force was real and dangerous combat. One analysis found aircrews were three times more likely to have been targeted and attacked by surface-





AP photo

*An F-117 Nighthawk burns after being shot down during Operation Allied Force.*

to-air missiles than was the case in Desert Storm.

More to the point: Bloodshed, or the lack thereof, is not the measure of justice in war. It just seems that way to “boots on the ground” devotees.

**PARADOX 4: AIRPOWER’S DOMINANCE OF CONVENTIONAL WAR LEADS TO UNCONVENTIONAL WAR.**

Put simply, US dominance in air and space power makes it more likely that the US will not have to use that power in a conventional sense, because there won’t be any foe. Adversaries have been conditioned to avoid American strengths, and airpower ranks first among these.

Consequently, just as nuclear weapons deterred war and held conflict to the conventional level after World War II, so too has US air supremacy mostly deterred big, high-intensity war and held it to the unconventional or irregular level.

Paradoxically, USAF has limited its own combat opportunities with its excellence. (On the other hand, defense planners would be wise to remember that conventional war may indeed become an attractive option for future adversaries—as soon as the US stops preparing for it.)

Secretary of Defense Robert M. Gates thinks the Pentagon can ease off on building conventional power—air-

power foremost. He says, “I firmly believe” US forces are “much more likely” to face irregular foes.

Senior uniformed leaders see what may be described as the “least-likely-war fallacy” at work here. This means a failure to understand that some wars become “least likely” for a reason—the US has made itself so powerful that no one dares to mount a challenge.

Even Gates’ own national defense strategy, published last June, concedes that US conventional dominance is what has forced foes into irregular

war in the first place. That is hardly an argument for soft-pedaling your dominance.

“US dominance in conventional warfare,” it notes, “has given prospective adversaries, particularly nonstate actors and their state sponsors, strong motivation to adopt asymmetric methods to counter our advantages.”

**PARADOX 5: AIRPOWER’S IMPORTANCE CAN’T BE PROVED TO BE IMPORTANT.**

It has always been an article of faith for airmen that airpower is an inherently offensive weapon that can have direct and immediate effects at the strategic level of war. It is presumed that strategic attacks will have significant effects, but quantifying these effects is difficult.

Effects-based operations (EBO) is the relatively new name that airmen have bestowed on what they have always claimed they were conducting in their strategic operations.

Trying to quantify these effects to the satisfaction of skeptics has been difficult. This was apparent first in World War II and lingered through Korea, Vietnam, Desert Storm, Allied Force, Enduring Freedom, and Iraqi Freedom.

In essence, analysts can survey the battlefield and count tank carcasses, but determining what effect that destruction had on the enemy’s strategic plans and capabilities was a harder nut to crack.

Determining what impact that destruction had on the mind of enemy leaders was even more difficult.



*President Lyndon Johnson, center, and top aides ponder a map of Vietnam in 1968.*





Led by a B-66 Destroyer, four F-105s bomb a military target on the southern panhandle of North Vietnam in 1966.

Planners are getting better at this. Analytical tools are now able to accurately model and measure the effect of strikes on complex economic and infrastructural systems.

Naturally, the naysayers remain. Many ground officers reject EBO, preferring instead the Clausewitzian-based attrition model that demands bloody, force-on-force slugfests.

**PARADOX 6: AIRPOWER'S GREATEST WEAKNESS IS ITS GREATEST STRENGTH.**

The inability to hold ground—often considered airpower's greatest weakness—is actually one of its greatest strengths. The occupation of enemy territory—the alleged *sine qua non* of ground forces—is often too provocative and too risky to be a useful tool of foreign policy.

In Vietnam, for example, the Army suggested to President Johnson on

several occasions that US ground forces invade and occupy North Vietnam. Johnson rejected this advice because he feared such a move was too dangerous: It might induce Chinese intervention, as had occurred in Korea in late 1950.

Instead, and paradoxically, Johnson chose to rely on airpower—although admittedly in a dismally slipshod, inadequate fashion. He did so precisely because of airpower's alleged greatest weakness, its inability to hold ground.

Similarly, at the outset of Allied Force in Kosovo in 1999, President Clinton and NATO leaders stated flatly that ground troops would not be used. This was partly due to political opposition within the alliance itself

and partly because of warnings from Russia. Airpower again was chosen because of its alleged "weakness."

Whatever one's view of the morality and usefulness of the war in Iraq, there is no denying the cost—politically, financially, and in blood—of putting ground troops in harm's way. It is not coincidence that our greatest military successes of the past 20 years—those that achieved our political objectives with a minute loss of life—were those that did not require the extensive use of conventional US ground forces.

This isn't always the case, but it is true often enough to support another corollary: If you seek a strong military result, don't try to occupy ground.

**PARADOX 7: AIRPOWER'S DECENTRALIZED NATURE INDUCES CENTRALIZED MICROMANAGEMENT.**

It is difficult for senior commanders who are not on the scene to intervene significantly in tactical ground operations. With airpower, however, things are different.

Micromanagement of an air campaign reached its apogee in Vietnam. Officials in Washington regularly picked targets half a world away. President Johnson allegedly boasted of his control over airmen: "I won't let those Air Force generals bomb the smallest outhouse ... without checking with me."

How was Johnson able to carry out micromanagement on such a gargantuan scale?

The answer is that airplanes might well take off and head out in one direction to conduct a particular strike mission, then receive en route orders to change course and go do something else, such as return to base.

The specific targets they strike can be vetted in the Pentagon or the White House, in real time, using airborne and space-based sensor platforms, allowing senior military and civilian leaders to intervene in air operations at the lowest tactical level imaginable.

As one colleague of the author put it when turning an old aphorism on its head: "Flexibility may be the key to airpower, but more importantly, airpower is the key to flexibility."

Certainly, politicians have found it to be the key to their ability to give flexible orders. ■

*Phillip S. Meilinger is a freelance writer living near Chicago. He is a retired Air Force command pilot with a doctorate in military history. His most recent article for Air Force Magazine was "Counterinsurgency from Above," in the July 2008 issue.*



## His Mind Is Made Up

"Even if it performs as promised, it's a dog. And it won't perform as promised."—**Winslow Wheeler, Center for Defense Information airpower critic, on the F-35 Lightning II, San Diego Union-Tribune, Feb. 3.**

## This Is a Chicken Outfit

"Chicken Parts as Jet Fuel? Pond Scum? It's Possible."—**Headline, USA Today, Jan. 27.**

## Ample and Untapped

"On account of Iraq and Afghanistan, we would be hard pressed at this time to launch another major ground operation. But elsewhere in the world, the United States has ample and untapped combat power in our naval and air forces, with the capacity to defeat any adversary that committed an act of aggression—whether in the Persian Gulf, on the Korean Peninsula, or in the Taiwan Strait. The risk from these types of scenarios cannot be ignored, but it is a manageable one in the short-to midterm."—**Secretary of Defense Robert M. Gates, Senate Armed Services Committee, Jan. 27.**

## The Robots Take Over

"Humankind is starting to lose its 5,000-year monopoly on war."—**Peter Singer, 21st Century Defense Initiative, Brookings Institution, Norfolk Virginian-Pilot, Jan. 27.**

## Sounds Like Vietnam

"The strategic situation in Afghanistan is that we cannot lose there as long as we maintain a major military presence. (There currently are about 47,000 allied troops in Afghanistan, of whom 31,000 are American.) But we cannot win so long as al Qaeda and the Taliban have sanctuary in Pakistan. This sounds an awful lot like Vietnam during the Johnson Administration, where US troops won every battle they fought, but could not win the war because our political leadership was unwilling to strike decisive blows at the North Vietnamese homeland or at its camps in Laos and Cambodia."—**Jack Kelly, former marine and Green Beret, deputy assistant secretary of the Air Force in the 1980s, now a newspaper columnist, Pittsburgh Post-Gazette, Feb. 1.**

## Stock Futures

"After investors punish defense stocks for a few weeks, it will become obvious that owning General Dynamics or Raytheon shares at a reduced rate of growth is still much more attractive than holding Dupont or Ford in the current economic environment—or buying Treasury bills at zero interest."—**Loren B. Thompson, Lexington Institute, Feb. 3.**

## Only Place to Cut

"We have got to face the reality that there're going to be reductions somewhere in the defense budget. We don't want to shortchange personnel. We've got to fight the current wars we're in. And so we've got to look at the future and we've got to make savings there."—**Senate Armed Services Committee Chairman Carl Levin (D-Mich.), National Journal's Congress Daily, Jan. 30.**

## Middle of the Map

"I was down in Australia a couple of years ago. And I was with their joint staff. And they were giving me a briefing of how Australia viewed the world. ... And the second or third slide came up. And it was a slide that showed Australia in the middle of the slide. And I'd never seen a slide that didn't have the United States in the middle. And up in the right-hand corner, this little dot was the United States of America. And I was reminded then and have tried not to forget that it's important that we look at problems through other people's eyes, not just our own."—**Adm. Michael G. Mullen, Chairman of the Joint Chiefs of Staff, Washington Post, Feb. 9.**

## Proclamation

"Bush's 'War' on Terror Comes to a Sudden End."—**Front page headline, Washington Post, Jan. 23.**

## Long-Range Strike Priority

"The *sine qua non* for the next LRSS [long-range strike system] should be the capability to persist in defended airspace, day or night, long enough to deal with time-sensitive targets."—**Barry D. Watts, "The Case for Long-Range Strike: 21st Century Scenarios," Center for Strategic and Budgetary Assessments, Feb. 3.**

## Last Draftee Still Serving

"I'm a relic. Most of them [young soldiers] are surprised I'm still breathing because in their minds, I'm older than dirt. But they're even more surprised when they find out this dinosaur can still move around pretty quick."—**Jefrey J. Mellinger, Army Materiel Command command sergeant major, last American drafted into the military on April 18, 1972, Time, Feb. 7.**

## Golf Shot in Space

"Starting in Los Angeles, hit the golf ball toward St. Andrews [in Scotland]. It has to go straight into the cup. And the cup is moving."—**Charles Elachi, director of Jet Propulsion Laboratory, comparing the challenge of getting a spaceship to Mars and bringing it to rest in a specific region on the surface, Washington Post, Feb. 11.**

## Round Dials

"Today I sat in the cockpits of three or four different aircraft, and these are vintage aircraft. They have steam-driven gauges and round dials. The great airmen over here operating these weapons systems and sustaining these systems are keeping them in the air, but we, as a nation, owe them better, and better does exist out there. That takes resources, that takes modernization, and that's our challenge right now."—**Gen. Donald J. Hoffman, Air Force Materiel Command commander, visiting bases in Southwest Asia, Air Force Print News, Feb. 9.**

## Wars and Options

"Preparing only for what appears now to be the most likely conflict—the Long War option—may very well make conventional war *more* likely in the future. In addition, the ability of the US to advance its global interests requires that [we] maintain command of the global commons: sea, air, and space. The Long War option is not sustainable without such control. Future warfare is likely to be hybrid in character, possessing interlocking elements of both conventional and irregular warfare."—**Mackubin Thomas Owens, Naval War College professor and editor of Orbis, journal of the Foreign Policy Research Institute, Wall Street Journal op-ed, Jan. 27.**



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**Four decades ago in Montana, an invisible hand—or something—guided a pilotless F-106 to a perfect landing.**



# “Gary, You Better Get Back In It!”

By Peter Grier

Photo via [www.f-106deltadart.com](http://www.f-106deltadart.com)

**I**n the Cold War Gallery of the National Museum of the US Air Force, one comes across a sleek F-106 interceptor from a long-gone era. Its outward appearance is not unusual. True, it is a sharp-featured, delta-wing beauty, but that is how all of the USAF “Sixes” looked.

However, this particular F-106 possesses a history that is truly extraordinary. That is because this Delta Dart once lost its pilot yet still managed to land itself safely.

This is no joke. During a Feb. 2, 1970 training mission that originated at Malmstrom AFB, Mont., F-106A #58-0787 suddenly entered an uncontrollable flat spin, and its pilot was forced to eject.

Rather than plunge into a frozen field, however, the aircraft suddenly recovered. Sans pilot, it eventually made a gentle belly landing on open land near Big

Sandy, Mont. Relatively gentle, in any case. The landing was smooth enough that its jet engine was still running when a local law enforcement officer arrived on the scene.

After repairs, No. 58-0787 served several more years in California and New York before eventually finding its way to the museum at Wright-Patterson AFB, Ohio, in 1986.

By all rights, this “Six” should have ended its days as shards of metal scattered over a square mile or so of the northern Great Plains. Instead, it sits amidst other military aircraft from a time of great tension between superpowers, reminding visitors that aircraft with the speed and range to intercept Soviet manned bombers were once an integral part of US national security.

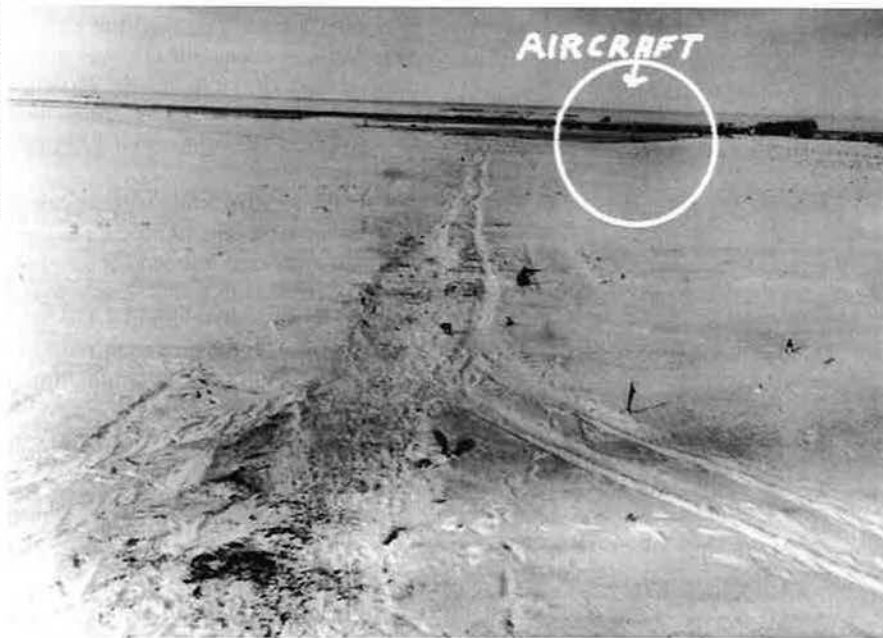
The F-106 was one of the star performers of the first generation of true supersonic USAF fighters, the famed “Century

Series” that included the North American F-100, McDonnell F-101, Convair F-102, Lockheed F-104, Republic F-105, and Convair F-106.

The F-106 was a derivative of the F-102 Delta Dagger, which had a troubled development and never seemed to quite live up to the Air Force’s expectations for performance. Originally dubbed the F-102B, the F-106 eventually received its own designation and its official nickname, Delta Dart. To most who flew it and worked on it, however, it was simply the “Six.”

Perhaps the most significant basic difference between the F-102 and the F-106 was in fuselage shape. The Delta Dagger had a somewhat bulky cross section. The Six, by contrast, had a slim, aerodynamically advanced area-rule fuselage, whose pointy cigar shape helped minimize drag-inducing shock waves at supersonic speeds.





**Left: The famous F-106 lies in the snowy field where it landed. Above: A track in the snow shows the path the Dart took as it slid across a frozen field.**

The F-106 also featured a more powerful Pratt & Whitney J75 after-burning turbojet. Almost from its first flight in December 1956, the aircraft showed that it would easily meet the Air Force's requirements for a speed of Mach 1.9 and ceiling of 57,000 feet.

"Finally, by the end of the '50s, the US Air Force had the long sought after 'ultimate interceptor' it had anticipated in the late '40s," wrote Christopher T. Carey, a historian at the McClellan Aviation Museum (now Aerospace Museum of California), in his online history of F-106 development.

The need for such an interceptor was obvious to US defense officials, who were watching with concern the Soviet Union's development of faster, long-range nuclear bombers. The Six's job would be to run down such intruders, if necessary, and then destroy them with an atomic weapon of its own, a Genie nuclear-tipped rocket.

This blunderbuss approach to air defense was necessary because precision air-to-air weapons had yet to be invented. Instead, F-106 pilots were to launch their Genie toward the target with a characteristic looping motion, then flee, to get as far away as possible prior to detonation.

When it first entered the Air Force inventory, flying the F-106 was a revelation. Maximum speed was Mach 2.31 at 42,431 feet. "Ask any pilot who has piloted the Six, and he will quite readily tell you that it was one of the best aircraft he has ever flown," wrote Carey.

Handling the delta wing felt much the same as handling more conventional designs. Plus, the delta wing gave more agility at low and intermediate speeds.

Pitch responsiveness was feather light. The F-106's reaction as it came close to stalling was predictable, beginning with light buffeting and then progressing to worse things. At that point, any increase in angle of attack would lead to severe oscillation and, in all likelihood, a flat spin.

### Two-vs.-One Training

Like any high-performance aircraft, the Six could cause serious trouble for a pilot who pushed its flight envelope. And the Six had some inherent problems as well.

"Despite the level of sophistication found in the F-106A Delta Dart in its service life, it was regarded by the US Air Force as having the 'greatest mission-task loaded cockpit' among [the] types flown in the '70s," wrote Carey. "Despite being an excellent aircraft to fly, it required a competent and proficient pilot to wring every bit of its excellence out of it."

Originally, the mission that February day nearly four decades ago was to be a two vs. two air combat training flight, featuring four F-106s from the 71st Fighter Interceptor Squadron at Malmstrom. One aircraft subsequently aborted from the mission when its drag chute deployed on the ramp. So the day's training activity became a "two vs. one" fight.

The "one" on this eventful day was Tom Curtis. The "two" were 1st Lt. Gary Foust and Maj. Jim Lowe.

The sides split up, each proceeding to their end of the training air space—about a 20-mile separation. Then they turned into each other, so they would pass head on, with a thousand-foot separation between them.

The rules of engagement were that neither Curtis, nor Foust and Lowe, could try to gain an advantage until they blew past each other. Then the fight would be on.

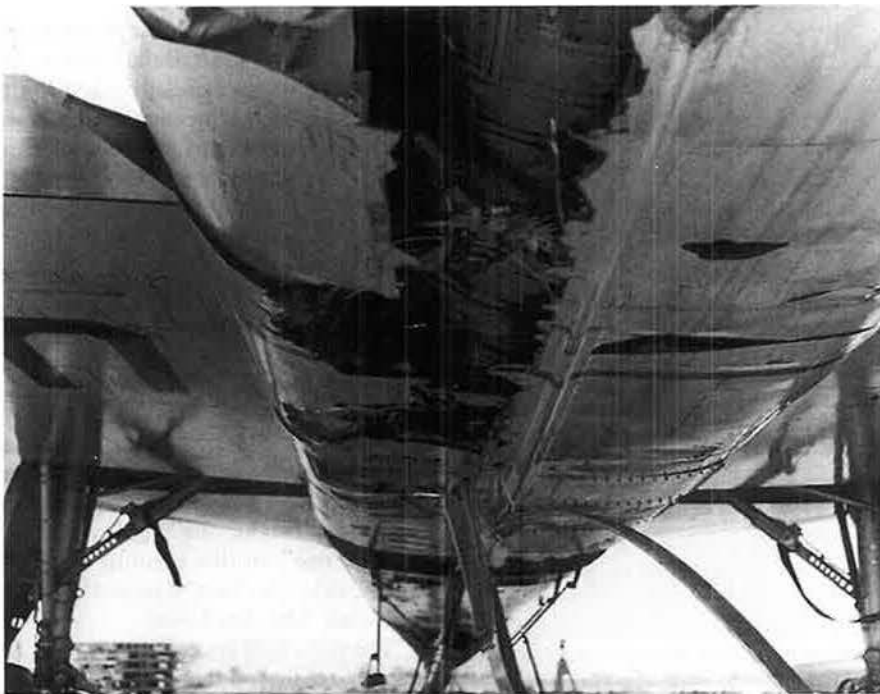
The point of the exercise was to outmaneuver one's opponent, and gain a valid firing position. "Of course, this was a big ego thing, who was the winner, etc.," said Curtis in his recollection of the incident found at the Web site [www.f-106deltaart.com](http://www.f-106deltaart.com). "I figured I could handle Gary pretty easy, but I did not trust Jimmy."

So Curtis came at his opponents in full afterburner, doing Mach 1.9 when



**Two F-106s form up during a late 1960s interceptor mission.**





**The undercarriage of the F-106 was damaged in the landing near Big Sandy, Mont. It could have been a lot worse.**

they passed. Then he took his opponents straight up to 38,000 feet.

"We got into a vertical rolling scissors. I gave him a high-G rudder reversal," said Curtis, referring to Foust. "He tried to stay with me, [but] that's when he lost it." Foust's Delta Dart began to spin out of control.

Foust experienced post-stall gyration, a situation in which an aircraft can roll left and right and suddenly swap ends. His attempts to regain control failed, and the fighter went into a flat spin at 35,000 feet, according to a 1978 article in the Oneida County, N.Y., *Mohawk Flyer* (The fighter was by then in service at nearby Griffiss AFB, N.Y.). Usually, that kind of situation is unrecoverable.

"The aircraft looked like the pitot tube was stationary, with the aircraft rotating around it," said Curtis. "Very flat" and slowly rotating.

Foust rode the aircraft down to 15,000 feet, all the while trying spin recovery procedures without success. Lowe, an instructor pilot, followed behind until the aircraft had descended to as low as 12,000 feet.

"Eject your drag chute," Lowe instructed, according to the *Mohawk Flyer*. The newspaper went on to say that "the idea didn't work," and that "the chute flapped in the air and wrapped itself around the plane's tail."

It was time to eject. By this time, though, Foust had gone through many recovery procedures. One of these was to actuate the take-off trim button, which

trimmed all control surfaces to a take-off setting. The trim settings for a landing were similar.

### Two Safe Landings

"When Gary ejected, the aircraft was trimmed wings-level for about 175 knots [200 mph], a very nice glide setting," said Curtis.

So, when Foust finally ejected—miracle of miracles—the Six recovered and headed off straight and level toward the horizon. Perhaps it was the change in balance, or the force of the ejector seat against the fuselage, or the change in aerodynamics caused by the ejection process.

Whatever it was, Lowe is said to have yelled into his radio, "Gary, you better get back in it!"

At that point, all that Foust could do was watch as his fighter flew off, without him.

Gary Foust, dangling from his parachute ropes, landed safely in a mountainous area and was brought out later by locals on snowmobiles. This, after all, was February in Montana.

As the fighter neared the ground, it stayed level and made what is described as an approach for a perfect landing in a snowy field, sans landing gear.

The F-106 wasn't safe yet, however.

"Skidding across the snow, the aircraft veered around a rock pile that was sitting in the middle of the field," the *Mohawk Flyer* reported. "The -106 finally stopped near the end of the field, about 400 yards from a paved road."

A local law enforcement officer called Malmstrom to report that he had come upon a fighter that was on the ground, pilotless, and still running. Even the radar scope was still operating. The lawman wanted to know how to turn off the engine. Someone at the base told him to just let it run out of fuel.

The engine continued to run for one hour and 45 minutes.

The landing did a bit of damage to the fighter's underside, ripping open an ugly gash several yards long. The wings, in contrast, were fine.

In time, a team of technicians from the Sacramento Air Logistics Center at McClellan AFB, Calif., came to the site and partially disassembled the Six. They trucked the pieces to a nearby rail line, loaded it onto a flatcar, and shipped the whole thing to California. There, Air Force workers repaired it and returned it to active service.

The F-106's final service was with the 49th Fighter Interceptor Squadron, at Griffiss—the last active Air Force F-106 unit.

By the 1970s, the USSR's increasing reliance on intercontinental ballistic missiles for its nuclear deterrence had lessened the US need for speedy interceptors such as the F-106. In the end, the Delta Dart did not serve in Vietnam, nor did it ever fire a shot in anger. The F-15 began replacing it in 1972, with the Sixes typically being passed along to Air National Guard units. The last F-106 that remained in Air Force service was retired in 1988.

Convair produced about 340 of the fighters for the Air Force. Starting in the late 1980s, about 230 of the surviving airframes were converted into QF-106 drone configuration and used for target practice. Thus the last of the pure air defense interceptors was relegated to aerospace history.


On at least one occasion, however, the F-106 proved that it was an aircraft that didn't even need a pilot. The fighter that somehow accidentally righted itself and landed on its own—wheels up—is now a museum piece. Rightly so. ■

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*Peter Grier, a Washington editor for the Christian Science Monitor, is a longtime defense correspondent and a contributing editor to Air Force Magazine. His most recent article, "The Flying Tomato Can," appeared in the February issue.*



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# Action in Congress

By Tom Philpott, Contributing Editor

## The next health care struggle; Targeting Redux; Glitches in the GI Bill ....

### Tricare Battle Lines Drawn

Raising Tricare fees for retirees is still a popular idea among budget analysts and some key military leaders. Rep. Chet Edwards (D-Tex.) and Rep. Walter Jones Jr. (R-N.C.) want to ensure these fees don't rise, especially as the Obama Administration begins working to reduce the federal deficit.

Edwards and Jones reintroduced the Military Retirees Health Care Protection Act (HR 816) Feb. 3 and within a day had 29 co-sponsors. The bill would prohibit any increases in Tricare premiums, deductibles, or co-pays for medical, dental, or pharmacy benefits for another year.

It would express the "sense of Congress" that the nation and the Department of Defense have incurred health benefit obligations for military retirees that exceed any obligation that corporate employers have to their civilian employees.

Finally, the bill would advise defense officials that they have other options to contain health care costs "that do not disadvantage beneficiaries," and they should go down those paths rather than seek "large fee increases."

"I hope the new Administration will not request the same premium increases as the last [one did], but this legislation will allow us to remove any temptation," Edwards said in unveiling his bill. "We cannot attract the best and brightest to fight our war on terrorism in the years ahead if they see us breaking faith with those who served in years past."

Adm. Michael G. Mullen, Chairman of the Joint Chiefs of Staff, said he continues to support higher Tricare fees for working-age military retirees, noting that the fees have been frozen since they were first set in 1995. "We need to do that," Mullen said, to keep personnel costs in balance with other parts of the budget. "It's a given, as far as I'm concerned."

### Redux Bonus: Repeal or Educate

The Military Coalition, a consortium of 35 military and veterans associations, which includes the Air Force Association, urged the House Armed Services Committee in late February to support repeal of the \$30,000 Redux bonus.



Edwards: Find other ways to balance the budget.

Known formally as the Career Status Bonus, it is offered to careerists in their 15th year of uniformed service if they agree to accept a less valuable retirement plan when they complete 20 or more years of service.

According to revised data from the Air Force Personnel Center, 30 percent of enlisted airmen and four percent of officers offered the bonus last year took the cash and moved under a reduced retirement system.

Financial advisors say it's usually an unwise choice. But thousands of personnel still are enticed by the money to pay off debts, buy a car, qualify for a home mortgage, or make their own investments.

Last year, the Center for Naval Analyses estimated that an E-7 retiring at age 38 after 20 years of service forfeits, on average, \$344,400 in lifetime retired pay by taking the Redux bonus.

The coalition advised lawmakers that accepting the bonus is equivalent to taking out a 24 percent annual mortgage on that money. For officers, it's like a 35 percent lifetime mortgage rate.

After 20 years of service, the better High-3 retirement plan provides an immediate annuity equal to 50 percent of average basic pay over a member's three highest income years. Redux pays 40 percent for 20 years.

This disparity in retired pay narrows with each year served beyond 20, so that, after 30 years' service, a Redux or High-3 member both receive 75 percent of high-three basic pay as they retire. However, the High-3 annuity is fully protected from inflation with yearly cost-of-living adjustments that match changes to the Consumer Price Index (CPI). COLAs for Redux retirees, on the other hand, are set at CPI minus one full percentage point.

Redux retirees get a one-time catch-up raise at 62. So, for a year, their retired pay is equal to that of High-3 peers. But then the Redux COLA caps continue for the rest of a retiree's life.

The Air Force enlisted take rate is higher than that of the Navy or Marine Corps. Army data on Redux take rates were not available.

If Congress can't find dollars to repeal the Redux bonus, the coalition is asking lawmakers at least to force the services to do a better job advising careerists on the long-term financial impact of accepting the bonus.

### GI Bill for Online Students

As the Department of Veterans Affairs prepared final regulations for implementing the Post-9/11 GI Bill this August, lawmakers and veterans' groups have found weaknesses or

Corbis photo by Sonya Hebert/Dallas Morning News



glitches in the complex program that they want Congress to address.

A number of technical amendments will be proposed. But Rep. Bob Filner (D-Calif.), chairman of the House Veterans' Affairs Committee, seeks a substantial change—to allow full GI Bill benefits for online degree programs. As is, he said, the law discourages veterans from pursuing degrees online.

The new education benefit, when it begins Aug. 1, will provide three types of payments. One covers tuition and fees at any college or university up to a maximum set to match charges at the most expensive state-run school in the same state.

If students take enough courses to exceed the status of "half-time" students, they also receive a monthly living allowance equal to military basic allowance for housing (BAH), paid nearest the school, for pay grade E-5.

Students also will receive up to \$1,000 a year to cover the cost of books, supplies, equipment, or other educational costs.

Online students are eligible only for tuition and fee reimbursements, not the living allowance or the stipend for books. It was a compromise worked out with the Bush Administration after VA officials raised the prospect of online students being enticed to enroll at schools in the highest cost areas in order to land big living allowances which are set based on school location.

Filner has introduced a bill (HR 950) that would allow full GI Bill benefits to online students, not just to those taking classroom courses. The bill would remove a requirement that to receive full benefits, students must have at least one class a semester on campus.

The living allowance is paid to students who are more than "half-time" students which usually means three courses or more per semester. That won't change under Filner's bill. The bill, as written, still lacks many details on how this change would be designed and executed.

### VA Health Funding

House and Senate VA committee chairmen, backed by most veterans service organizations, have reintroduced legislation that provides advance funding of VA health care budgets so hospitals and clinics no longer are forced to cut services while Congress plays politics each fall with the annual appropriations process.

The new VA Secretary, retired Gen. Eric K. Shinseki, the former Army Chief of Staff, doesn't support the proposal. Shinseki believes more timely action on budgets, by the Administration and by Congress, is all that is needed to avoid



AP photo by M. Spencer Green

*Shinseki wants Congress to move fast on budgets.*

those troublesome budget shortfalls at VA health facilities.

In 19 of the last 22 years, Congress has failed to pass a VA funding bill before the start of the new fiscal year. Sen. Daniel K. Akaka (D-Hawaii) and Filner, chairmen of the VA committees, said they back an initiative developed by veterans' service organizations, that would shift VA health care to advanced funding, in effect, a two-year funding cycle.

The Veterans Health Care Budget Reform and Transparency Act (HR 1016, S 423), first introduced last year, would put VA health care under an advance appropriation schedule. If it were in effect already, Congress this year would be passing a VA health budget to take effect in Fiscal 2011, a year ahead of schedule. The idea is to end funding delays that force hospitals and clinics to defer maintenance and freeze hiring as they operate for months under a "continuing resolution" instead of new budgets that reflect inflation and new program spending.

Part two of the reform package would keep funding levels for VA health care sufficient and transparent. VA would be directed to use a new budget modeling system it developed that very accurately projects the per capita cost of providing health care to its enrolled patient population. Any future budgets submitted either would have to be sufficient to provide care to all current enrollees or would have to explain why it is short of the mark.

Though President Obama campaigned on full funding of the VA budget, Shinseki didn't embrace the advance funding initiative during his first appearance before Congress as VA Secretary.

"My preference would be for a timely budget, and I'll assure you I'll do my

part," he said. Shinseki recalled that, as Army Chief of Staff, "I lived with continuing resolutions and I know full well the impact that they bring." If as VA Secretary he sees health care budgets that can't get passed on time, then "other options" will be weighed, Shinseki said.

### Priority 8 Enrollees

Thanks to an initiative from Edwards last year, VA is set to open its health care system in July to 265,000 more veterans who now fall in Priority Group 8—those with no service connected injuries and incomes that exceed poverty levels as set by the government.

Enrollment means access to care at VA clinics and hospitals in return for modest co-payments and deep discounts on VA prescription drugs.

Priority 8 veterans have been barred from enrolling in VA health care since January 2003. To partially lift that ban, Edwards got some \$350 million added to the VA budget last year. That will allow VA to raise by 10 percent the income thresholds that define Priority 8 veterans so that about a quarter of a million veterans now barred by income will be able to enroll.

Veterans who applied for enrollment on or after Jan. 1 this year, and were rejected as Priority 8 veterans, need not reapply. Their applications, which already show 2008 incomes, will be reconsidered. If they fall under new higher income thresholds, their enrollment will be approved and they will be notified.

Applicants denied enrollment as Priority 8 veterans before 2009 will have to reapply so VA officials can see their income information for 2008.

More details on enrollment expansion are available online at [www.va.gov/healtheligibility](http://www.va.gov/healtheligibility) or by calling 1-877-222-VETS (8387). ■



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# AFA National Report

natrep@afa.org

By Frances McKenney, Assistant Managing Editor

## Twenty-five Years of Florida Galas

The Air Force Gala in Orlando, Fla., celebrated its 25th anniversary in February.

Hosted by the **Central Florida Chapter**, which organized the first formal banquet and ball in 1984, the black-tie event serves as the culmination for the Air Force Association's Air Warfare Symposium and Technology Exposition.

In looking back at the past two-and-a-half decades of Florida galas, Chapter President James E. Callahan told the audience that the tradition started with Norman J. Abramson. Chapter president at the time, Abramson urged AFA to hold a tactical air warfare symposium in Orlando.

He was backed by Martin H. Harris, who became the association's National President that year. (He went on to serve as Chairman of the Board, 1986-88.) Together with chapter member Nancy Blue, the group mustered support from USAF commanders and a small number of companies whose products were associated with Tactical Air Command. This laid the foundation for the symposium and expo that drew more than 800 visitors, this year.

During awards presentations at the 25th anniversary gala, nine people who had a hand in establishing the annual event were named Jimmy Doolittle or H. H. Arnold Fellows: John H. Combs, James L. DeRose, Richard A. Ortega, Robert E. Ceruti, Tommy G. Harrison, Ralph D. Heath, Bryan B. Paul, Abramson, and Harris.

Callahan noted that the chapter is "dedicated to aerospace education" and over the years has raised \$2.5 million for educational programs at all levels. He also pointed out that the chapter's support for the Air Force Memorial now totals \$220,000.

Among the honored guests at the 25th anniversary gala were Secretary of the Air Force Michael B. Donley, Air Force Chief of Staff Gen. Norton A. Schwartz, CMSAF Rodney J. McKinley, and the dean of the air attaché corps, Australian Air Commodore David Steele.

## AFA on Capitol Hill

AFA officials made House calls—and Senate calls—in February, introducing



*This year, the Central Florida Chapter raised \$65,000 for AFA's aerospace education programs. Presenting the donation at the Air Force Gala in Orlando in February are (l-r): Tommy Harrison, gala chairman; Sandy Schlitt, AFA's Vice Chairman of the Board for Aerospace Education; Joe Sutter, AFA Chairman of the Board; and James Callahan, chapter president. The chapter also donated \$10,000 to the Air Force Memorial Foundation, this year.*



*AFA Board Chairman Joe Sutter (right) met with Kentucky Republican Rep. Brett Guthrie (left) while making office calls to new lawmakers on Capitol Hill. In the 111th Congress, 25 percent of Senators and 22 percent of House members have military experience.*



themselves to freshmen members of the 111th Congress.

AFA Chairman of the Board Joseph E. Sutter was scheduled to meet 19 Senators and Representatives or their military legislative aides. James R. Lauducci, AFA's Vice Chairman of the Board for Field Operations, and Michael M. Dunn, President-Chief Executive Officer, each made a similar number of office calls over the course of three days on the Hill.

During his visits, Sutter explained AFA's overall mission and its value as an independent resource for members of Congress. He spoke about the need to recapitalize USAF's aging aircraft fleet, particularly replacing the KC-135 tanker and HH-60 combat search and rescue helicopter, and the importance of continuing production of the F-22.

In turn, the members and professional staffers had nearly as many questions for Sutter. They asked about the location of the new Air Force Global Strike Command and 24th Air Force. They sought more information on Air Force units in their districts. They were interested in USAF's renewed emphasis on the nuclear mission.

Four of the freshmen legislators whom Sutter met have a military background: Rep. John Fleming (R-La.) as a former Navy medical officer; Rep. Brett Guthrie (R-Ky.) in the Army reserve; Rep. Phil Roe (R-Tenn.) in the Army Medical Corps; and Rep. Tom Rooney (R-Fla.) in the Army JAG Corps. Fleming and Rooney are members of the House Armed Services Committee.

Sutter also sat down with Sen. Mike Johanns (R-Neb.), Rep. Tom Perriello (D-Va.), and Rep. James Marshall (D-Ga.), a three-term Congressman, HASC member, and co-chairman of the Air Force Caucus.

Sutter said afterward that making early contact on Capitol Hill was vital. "Fewer members of Congress have any military experience," he said, "and often their staff person working defense issues is young, new, and eager for information."

### On the Local Level

The **Tennessee Valley Chapter's** experience underscores Sutter's point.

In Huntsville, Ala., in February, Chapter President Frederick Driesbach visited with the staff at the office of newly elected US Rep. Parker Griffith (D). Driesbach spent a half-hour explaining the chapter's role to staffer Jayne Murray.

A few days later, Griffith's lead local staff member, Jim McCamy, telephoned and asked to be included on future

chapter mailings. Griffith served in the Army reserve in the 1970s.

### Merit Badge

The **John W. DeMilly Jr. Chapter** and the 482nd Fighter Wing at Homestead ARB, Fla., helped a group of Boy Scouts earn their aviation merit badges in January.

The chapter proposed the idea, and its president, Ramon E. de Arrigunaga, coordinated the project with the local Boy Scouts council and the Air Force Reserve Command wing, headed by chapter member Col. William B. Binger.

Thirty-eight scouts and two dozen chaperones gathered on a Saturday morning at the air reserve base, welcomed by CMSgt. Clarence S. Tears Jr. He is the command chief master sergeant for the 482nd FW and also the chapter's vice president.

De Arrigunaga, a retired USAF pilot, taught the class, covering everything from a brief history of aviation to the basics of flight and navigation. The scouts then created posters showing a Cessna 172's instrument panel. For a second hands-on activity, they assembled balsa wood model gliders and experimented with wing placement. This exercise drove home the principles of weight and balance, de Arrigunaga said later.

The scouts visited the base's control tower and also checked out the cockpit of an F-16 set up for static display by the 482nd Maintenance Group. Chapter member Col. Melvin J. Giddings Jr. is the group commander. The youngsters clambered up onto a maintenance stand, set up alongside the aircraft. Once level with the cockpit, they had a chance to talk to the F-16's pilot, Lt. Col. John Poor, the 93rd Fighter Squadron's acting commander.

At the end of the visit, the scouts took an open-book exam to qualify for their merit badges.

De Arrigunaga said the visitors and airmen-volunteers enjoyed the day so much that wing commander Binger agreed to host—perhaps quarterly—more groups of scouts studying for the aviation badge.

### Honor in Our State

At the January meeting of the **Lewis E. Lyle Chapter**, Arkansas State President Jerry Reichenbach delivered a history lesson on the Medal of Honor.

By profession a librarian for the Lockheed Martin C-130J program at Little Rock Air Force Base, Reichenbach has a deep interest in military history. Chapter Secretary Morris D. Cash reported that for the meeting,

Reichenbach delivered a PowerPoint presentation on the medal's background, including photos of many recipients, highlighting those with ties to the state.

Twenty-four awardees were born in Arkansas or had their medal credited to the state either because they moved to or enlisted from there. Three served in the Navy, three in the Marine Corps, and the rest were soldiers.

Among the high-profile MOH awardees with Arkansas ties: Gen. of the Army Douglas MacArthur, born in Little Rock. Another World War II-era recipient was Maurice L. Britt, nicknamed "Footsie," an Arkansas Razorback and Detroit Lions football player. He became the state's lieutenant governor (1967-70). Nick D. Bacon, the son of Caraway, Ark., sharecroppers, earned his MOH during a second tour of duty in the Vietnam War. He went on to become the state's director of veterans affairs and is one of two living MOH recipients with ties to Arkansas.

Reichenbach included information on Air Force awardees such as Sgt. Maynard H. Smith who, as Reichenbach tells it, had to be rounded up from kitchen-police duty when it came time for his Medal of Honor presentation.

### Bank on It

The **Tidewater Chapter (Va.)** and AFJROTC cadets from a local high school together raised more than \$600 for Operation Homefront, a nonprofit organization that helps military personnel.

The drive to raise the money got under way at Grassfield High School in Chesapeake, Va., where chapter member Gordon R. Strong is the senior aerospace science instructor. Cadets from two classes took turns taking home what they called a "bank"—a cardboard cylinder, just over a foot long, decorated with Operation Homefront stickers. Over a six-week period, they collected donations, returning the bank every school day.

"We always have a number of cadets who are very active in all the activities, but everyone from the two classes wanted to take the bank home," said Strong, who is also the chapter's aerospace education VP. "Every day, someone wanted it."

Based in San Antonio, Operation Homefront provides emergency assistance and morale-boosting goods and services to troops, their families, and injured service members. It has some 30 chapters nationwide.

At the AFA Tidewater Chapter dinner meeting in February, the Grassfield cadets presented a check for \$455





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to Carol Berg, head of the Hampton Roads Chapter of Operation Homefront. William M. Cuthriell, Tidewater Chapter president, presented another check for \$200 on behalf of his group.

#### In Sync

Maj. Gen. Ralph J. Jodice II, commander of Air Force District Washington, was keynote speaker for the annual awards luncheon of the **Thomas W. Anthony Chapter (Md.)**.

He presented an overview of AFDW, as well as a description of the Air Force's top issues. He told the audience at the Andrews Air Force Base club that USAF's goals and AFA's mission were—in the words of the base newspaper, *Capital Flyer*—"in sync with each other."

Among the awards featured at the luncheon, Charles C. Thompson IV received the AFA Medal of Merit for outstanding service, presented by Maryland State President Robert B. Rot and Chapter President Charles X. Suraci Jr. Thompson was the chapter's aerospace education VP. Joseph Hardy and Chapter Treasurer Thomas Bass shared honors as the chapter's 2008 Member of the Year.

#### More Chapter News

- In Vermont, the **Green Mountain**

**Chapter** featured an Eighth Air Force B-17 pilot as its February luncheon speaker. J. Francis Angier, a Vermont farmboy, enlisted in 1942 and two years later, at age 21, was shot down during an attack on Hamburg, Germany. He spent seven months as a POW in Poland and near Munich. In postwar years, he continued farming and served in the Army National Guard and Air National Guard, retiring as a major. "A few minutes with Francis," said Chapter President Joel A. Clark, "and you quickly realize that he exemplifies the best of the 'Greatest Generation.'"

■ The **Roanoke Chapter** organized the latest Virginia state meeting, attended by nine chapters in February. State President Jeffrey L. Platte of the **Langley Chapter** presided over the day-long business session, with participation from two dozen chapter representatives. The Roanoke Chapter, headed by James H. McGuire, hosted the evening's dinner program, featuring Brig. Gen. Charles W. Lyon as guest speaker. He spoke about his experiences as the 379th Air Expeditionary Wing commander in Southwest Asia, where he was deployed until last July. He is now director for joint integration in the Office of the Deputy Chief of Staff for Operations, Plans, and Requirements. Among the nearly 80 guests at the dinner were cadets from three

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## AFA National Report

high schools, Virginia Tech, and Virginia Military Institute.

■ For a second year, the **Gold Coast Chapter (Fla.)** sponsored a Wreaths Across America ceremony at the Department of Veterans Affairs South Florida National Cemetery in Lake Worth. On Dec. 13, more than 350 such wreath-laying ceremonies to honor veterans took place simultaneously in cemeteries nationwide. The tradition was started in 1992 by the Worcester Wreath Co. of Maine. In south Florida, chapter members Virginia Knudsen and Virginia Montalvo coordinated the ceremony. ■

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### AFA Conventions

May 8-9	South Carolina State Convention, Charleston, S.C.
May 13-15	New Jersey State Convention, Atlantic City, N.J.
May 28-30	California State Convention, March ARB, Calif.
June 5-6	Oklahoma State Convention, Enid, Okla.
June 13	Virginia State Convention, Richmond, Va.
July 10-11	Florida State Convention, Jacksonville, Fla.
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## Reunions

[reunions@afa.org](mailto:reunions@afa.org)

**18th FIS.** July 23-26 in Grand Forks, ND. **Contacts:** Bob Renner ([afbcbbr@aol.com](mailto:afbcbbr@aol.com)) or Jim Sidebottom ([sidebottoj@hotmail.com](mailto:sidebottoj@hotmail.com)).

**AAC pilot classes (WWII).** Sept. 10-13 in Tucson, AZ. **Contact:** Stan Yost, 13671 Ovenbird Dr., Fort Myers, FL 33908 (239-466-1473).

**Doolittle Raiders.** April 15-19 in Columbia, SC. **Contact:** [www.celebrate-freecomfoundation.org](http://www.celebrate-freecomfoundation.org).

**Operation Halyard AAF veterans.** June 17-21 in St. Joseph, MI. **Contact:** Don Alsbro (269-925-7176) ([dealsbro@sbcglobal.net](mailto:dealsbro@sbcglobal.net)).

**Pilot Class 55-U/56-A.** Sept 24-26 at the Nativo Lodge, Albuquerque, NM. **Contact:** Gerald Buster (505-994-0882) ([geraldbuster@mac.com](mailto:geraldbuster@mac.com)).

**RRVA and Nampows.** April 15-19 at the Town & Country Resort Hotel & Convention Center in San Diego. **Contact:** [www.militaryreunionplanners.com/rrva](http://www.militaryreunionplanners.com/rrva).

Seeking **40th FS and 40th Flight Test Sq** members for a reunion in Fort Walton Beach, FL, in October. **Contact:** Bill Highfield, 706 Watering Hole Pass, Williamson, GA 30292 (770-229-4297) ([reddevil40@bellsouth.net](mailto:reddevil40@bellsouth.net)).

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



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# Airpower Classics

Artwork by Zaur Eylanbekov

## Fw 190 Würger



Germany's Fw 190 Würger ("Shrike") was designed as a backup for the Messerschmitt Bf 109, the handsome Focke-Wulf-designed fighter proved superior to its stablemate in most respects. True, a few top aces to the end preferred the Bf 109 because of its high-altitude capabilities, yet the Fw 190 was generally a far better weapon for the general run of German pilots. It is widely regarded as the Luftwaffe's best World War II fighter.

Designer Kurt Tank was forced by circumstances to use BMW's 801 radial power plant, a round engine with relatively high drag. Tank overcame this weakness by close attention to aerodynamic detail. The Fw 190's wide-track landing gear was a great advantage, too; landing the airplane was far safer than bringing down the accident-prone Bf 109. These and other factors soon were paying

dividends. Entering combat in 1941, the Fw 190 quickly mastered the RAF's Spitfire, until then the top air superiority fighter in the war. It was fast and had a tremendous rate of roll. On the Western Front, the Fw 190 gave Germany local air superiority. It did well against the Allies' August 1942 Dieppe raid and was useful in "tip-and-run" raids on Britain. On the Russian front, thousands of specially designed attack versions with improved armor and armament were effective in close air support.

The so-called "Eutcher Bird" was shown to be a versatile classic, capable of dogfighting, reconnaissance, torpedo-dropping, and more. The Würger, especially the long-nosed "190D" version, remained a dangerous opponent until the last day of the war.

—Walter J. Boyne

**This aircraft:** Fw 190 A-5, flown by Walter Nowotny, as it looked in October 1943 when deployed to the Eastern Front. Nowotny scored his 250th victory while piloting this aircraft.



**This captured Fw 190G-3 was photographed during a USAAF flight test.**

### In Brief

Designed by Focke-Wulf ★ built by Focke-Wulf, AGO, Arado, Fieseler, Mimetall, Norddeutsche Dornier, others ★ first flight June 1, 1939 ★ crew of one ★ number built 20,051 ★ **Specific to Fw 190 A-8:** one BMW 801 radial piston engine ★ armament (typical) two 13 mm machine guns, four 20 mm cannons, range of bombs, rockets ★ max speed 408 mph ★ cruise speed 298 mph ★ max range 500 mi ★ weight (loaded) 10,800 lb ★ span 34 ft 5 in ★ length 29 ft 1 in ★ height 13 ft.

### Famous Fliers

**Notable Aces:** Heinz Baer, Kurt Buhligen, Walther Dahl, Adolf Galland, Hermann Graf, Hans Hahn, Hajo Herrmann, Otto Kittel, Heinz Lange, Egon Mayer, Wilhelm Moritz, Joachim Muncheberg, Gerhard Schopfel, Walter Nowotny, Walter Oesau, Josef Priller, Hans-Ulrich Rudel, Erich Rudorffer.

### Interesting Facts

Designed to have liquid-cooled engine ★ almost canceled as result of technical problems ★ mistakenly landed by German pilot on RAF airfield ★ built in nine major models ★ covered German battleships in 1942 "Channel Dash" ★ used by Germany, Turkey, Romania, Hungary during the war, France and Soviet Union after the war ★ nicknamed Cavalry Horse, Butcher Bird, Dora, Kangaroo.



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