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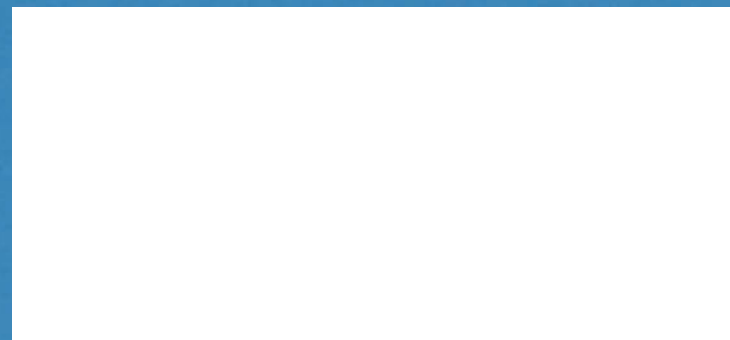
AIR FORCE

JOURNAL OF THE AIR FORCE ASSOCIATION

MAGAZINE

A Force at Razor's Edge

Cyber Menace
Tankers in Unknown Territory
MiG Alley Remembered



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About the cover: An F-22 Raptor in a sharp turn. See "A Force at Razor's Edge," p. 24. Photo by Richard Seaman.

- | | |
|--|--|
| <p>2 Editorial: The Mullen Doctrine
By Robert S. Dudley
<i>The threshold for commitment of forces is lower than it used to be. Now it looks like it will go lower still.</i></p> <p>24 A Force at Razor's Edge
By John A. Tirpak
<i>There will be no margin for error, said senior Air Force leaders at AFA's Air Warfare Symposium.</i></p> <p>30 Airpower On Demand
By Marc V. Schanz
<i>At AFA's Air Warfare Symposium in Orlando, airmen describe incessant requests for what USAF does.</i></p> <p>34 China Turns Up the Heat
By Richard Halloran
<i>The Chinese military is pushing hard into cyber warfare, anti-access weapons, and others means to blunt US advantages.</i></p> <p>38 Battling the Phantom Menace
By Rebecca Grant
<i>USAF's cyberwar-fighting 24th Air Force is up against an anonymous and hard-striking set of foes.</i></p> <p>44 When the U-2 Fell to Earth
By Walter J. Boyne
<i>Fifty years ago, a Soviet missile shot down Francis Gary Powers and his exotic spyplane.</i></p> <p>48 What's Next for Airborne Laser?
By Thomas Duffy
<i>The ABL did everything it was supposed to do. Now, the Pentagon wants to call it quits.</i></p> <p>52 Tankers in Unknown Territory
By Marc V. Schanz
<i>"Nobody's ever flown a modern jet transport for 80 years."</i></p> | <p>56 Commissioned in Hanoi
By Leo K. Thorsness
<i>Art Cormier, Neil Black, and Bill Robinson showed excellence in the POW camps around Hanoi.</i></p> <p>61 MiG Alley
By John T. Correll
<i>The American F-86 Sabres stopped the MiG-15s—and their Russian pilots—at the Yalu.</i></p> <p>65 Chart Page Special: Defense Budget at a Glance
By Tamar A. Mehuron and Heather Lewis</p> <p>68 The Longest Mission
By Charles A. Jones
<i>The crew of the B-29 Double Trouble had some odd moments on a flight fraught with dangers.</i></p> |
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- 4 **Letters**
- 10 **Washington Watch**
- 12 **Air Force World**
- 15 **Index to Advertisers**
- 18 **Senior Staff Changes**
- 22 **Issue Brief**
- 43 **Verbatim**
- 72 **The Keeper File**
- 73 **AFA National Report**
- 76 **Unit Reunions**
- 79 **AFA National Leaders**
- 80 **Airpower Classics**

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The Mullen Doctrine

A KEY issue for the US concerns when, how, and for what America will fight. In October 1984, Secretary of State George P. Shultz famously warned about becoming “the Hamlet of nations,” frozen by uncertainty. He wanted President Reagan to pull the trigger more often, even in murky situations.

This greatly bothered Defense Secretary Caspar Weinberger, who proposed six tests for use of force. Is a vital national interest at stake? Will we commit resources to win? Will we sustain that commitment? Is the objective clear? Can we expect public support? Is force a last resort? The “Weinberger Doctrine” set a high bar for a few years.

Ultimately, though, the Shultz view has prevailed. In the post-Weinberger world, Washington has progressively loosened up on its use of force, at times dispatching US units with undefined or vague objectives. The threshold for commitment of forces is lower than it used to be. Now it looks like it will go lower still.

A new jolt of downward pressure was recently delivered by Adm. Michael G. Mullen, Chairman of the Joint Chiefs of Staff. In March 3 remarks at Kansas State University, the top US officer sketched out a “Mullen Doctrine” of sorts, with three key “principles”:

- “We must not look upon the use of military forces only as a last resort, but as potentially the best, first option.”

- “We must not try to use force only in an overwhelming capacity, but ... in a precise and principled manner.”

- “We must not shrink from the tug of war ... that inevitably plays out between policy-making and strategy execution.”

Where Weinberger counseled caution, Mullen offers enthusiasm; where Weinberger liked decisive power, Mullen demands restraint; where Weinberger wanted military execution of a clear plan, the admiral welcomes a “struggle” between officers and civilians.

Mullen’s concept is not necessarily wrong. The details matter, but that is getting ahead of the story.

Weinberger’s doctrine, unveiled Nov. 28, 1984, was an echo of Vietnam, where US forces got bogged down in a war the nation had no heart to win. On top of that came the 1980 Desert One fiasco and 1983 truck-bomb deaths of 241 US troops in Beirut. Weinberger

and senior officers were determined to prevent recurrences.

The 1990-91 Gulf War met all of Weinberger’s six tests, and proved to be a shining example of how to commit US forces. The then-JCS Chairman, Gen. Colin Powell, was a former Weinberger aide and advocate of his ex-boss’s views. His own set of tests, “the Powell Doctrine,” made “decisive” force a priority.

Toward the end of his 1989-93 tenure, Powell’s view drew fire. Rep. Les Aspin

The threshold for commitment of forces is lower than it used to be. Now it looks like it will go lower still.

(D-Wis.), chairman of House Armed Services Committee, claimed in 1992 that Powell and other military leaders constituted an “All-or-Nothing” school of thought. Building up in reaction, he added, was a “Limited Objectives” school, which saw merit in using force more often for lesser interests.

This was inevitable. In the Weinberger-Powell era, the goal was to deter nuclear war with the Soviet Union. Only a vital interest was worth the risk of escalation. When the USSR collapsed, the risk faded. Also, advanced technology made it easier to use force—especially airpower—with precision and limited risk.

President Clinton came to office in 1993 prepared to make freer use of force. Madeleine Albright, Clinton’s ambassador to the UN, asked Powell: “What’s the point of having this superb military that you’re always talking about if we can’t use it?”

In line with this view, George H. W. Bush’s late 1992 humanitarian mission to Somalia was transformed in 1993 into Bill Clinton’s armed peacekeeping in that chaotic nation. In the end, 18 Army Rangers died pursuing a Somali warlord in Mogadishu, and the US withdrew.

Still, the threshold of combat continued downward through the 1990s, with the US engaging in Haiti and Bosnia and carrying out a spate of symbolic air strikes in Iraq. Advancement of local democracy was cited as a justification for force employment.

President George W. Bush arrived in Washington wishing to halt what he deemed an overuse of US power, only

to end up, after the Sept. 11 terrorist attacks, mounting the largest use of force since Vietnam. In Iraq, Bush’s resort to “preventive war” drove the threshold of combat to new depths.

By one count, the US has committed forces more than 75 times since 1980. Thus, Admiral Mullen’s expansive view on the use of military power seems less like a departure from the norm than it does a recognition of the facts of life.

For all that, the Mullen Doctrine unavoidably raises concerns about employment of military power.

One is the danger of “gradualism,” Vietnam-style. As Mullen correctly observes, “We can, merely by our presence, help alter certain behavior.” It is also true that each actual commitment of Americans to combat carries risk, with its own dynamic. Limited operations can generate pressure to expand in intended ways.

Another concern stems from restrictive rules of engagement—a precondition for “precise” use of force. Mullen concedes US troops in Afghanistan “have concerns” about such restraints on their actions, and “believe they have become more vulnerable.”

In addition, Mullen’s third point wakens echoes of Vietnam, a conflict characterized by political meddling in what should have been military decisions. “Some in the military no doubt would prefer political leadership that lays out a specific strategy and then gets out of the way,” he said, adding his view that this is not possible in today’s wars.

The Mullen Doctrine does little to assist policy-makers struggling with new sets of military threats such as cyberwar and Iran’s quest for nuclear weapons. In such situations, should use of force be a last resort, or an early option? Should any future action be restrained, given the price of failure? Should political influences intrude?

In his 1993 memoir *Turmoil and Triumph*, Shultz had harsh words for Weinberger’s doctrine. “This was the Vietnam Syndrome in spades, carried to an absurd level, and a complete abdication of the duties of leadership.”

Such restraints, whatever their original value, exist no more. We will at length be able to learn the true price of their disappearance. ■



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The Health Care Debate

I believe you overlooked a critical fact in your February editorial on the Obama health care reform plan and its impact on defense spending [*"ObamaCare Vs. Defense," February, p. 2*]. You failed to point out the consequences if we do nothing and maintain the status quo with regard to health care costs in this country. You contend that Washington is on an irresponsible course in pursuing ObamaCare, but I submit that the real irresponsible course on health care is the one that does nothing.

I agree that government estimates on any major program, whether it be health care or a defense system acquisition, are always low-ball figures. The 10-year \$1 trillion estimate for health care reform is very likely no exception. However, no matter what the real number is, the skyrocketing costs of medical care in this country, if left unchecked over that same 10-year period, will make that number look like a bargain. With the rising costs of medical procedures and the way we use them, and the consequent increases in Medicare, Medicaid, and insurance premiums (and emergency room costs for those who can't afford them), we will be confronted with an even tighter squeeze on defense spending.

I am not particularly enthralled with the way Congress is going about health care reform, what with the backroom dealings and the Nebraska exemption. Our legislative representatives, particularly the entrenched ones, always seem to be more interested in getting re-elected than in doing what's right for the country. However, the overall objective of ObamaCare of reining in health care costs and insurance premiums and providing basic coverage at a reasonable cost to all citizens is so important that we will have to live with a less than perfect bill.

Unless you can suggest a viable alternative to ObamaCare, your concern that the "nation is face-to-face with

disarmament by entitlement" will not be alleviated by its defeat.

Lt. Col. Frank Welsh,
USAF (Ret.)
Berwyn, Pa.

Thank you for an excellent editorial outlining the macro implications of excessive government debt and how ObamaCare would further imperil our ability to survive economically with the obvious implications for national defense. I have been frustrated by the positions taken by other Washington-based military organizations and their responses to my comments regarding government spending and debt. ...

The implications for our children and grandchildren are not only how will they pay for the unbelievable debt load but can they continue to enjoy our way of life (and liberty), which can be preserved only with a strong, effective and superior military? The average age of the Air Force airframes, the minimal number of replacements in the pipeline, and the general malaise of the industrial base needed to take us to the next level (both in quantity and quality) is unacceptable.

Lt. Col. Adam G. Haybach,
USAF (Ret)
Marshall, Mich.

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



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To educate the public about the critical role of aerospace power in the defense of our nation.

To advocate aerospace power and a strong national defense.

To support the United States Air Force and the Air Force family and aerospace education.

Your editorial misses an essential point.

We already have the most expensive health "system" in the world, and it is not a very good one at that, despite the incessant propaganda. And it is getting more expensive every day. The President at least is trying to get the costs under control, however ugly the process looks.

You need to support the concept of health reform if you want to protect the defense budget.

Stephen Bigg
Scottsdale, Ariz.

While placing the blame for reduced future military spending on the Congress' feeble attempt to correct our fatally flawed health care system, you fail to note that objective scientific studies tell us that 20,000 Americans die each year due to lack of access to adequate health care.

You fail to mention that high health insurance costs are destroying small business and are the leading cause of personal bankruptcies in our nation. You discount the opinion of "a large plurality of Americans," who told Pew Research Center pollsters that we can ask our allies to take more responsibility for their own security costs. You disparage the Europeans, who have health care systems with universal access, zero personal bankruptcies due to health insurance lapses, and the wisdom to let us spend prodigious amounts of borrowed dollars for their national security. And you forgot to remind your readers that we spend more on defense (or offense, in the case of Iraq) than the next 10 nations put together, including China. We can have both health insurance reform and an adequate defense budget, but our situation is not improved by selective memory or misleading editorials.

Col. Steve Waller,
USAF (Ret.)
Washington, D.C.

The ugly products before Congress are not "ObamaCare" but the typical offspring of the compromises made to bring competing interests together under the intense scrutiny of hospital associations, pharmaceutical companies, insurance companies, device manufacturers, and squabbling physician and allied health care "professionals" fighting for their chunk of the golden egg being laid. The industry which sells drugs, surgical procedures, hospital bed space, laboratory testing, medical equipment, "insurance," and occasional health care is hugely inefficient, vastly overpriced, and focused on treatment rather than prevention and procedures rather than on management. We have

the most expensive medical care in the world with Third-World immunization rates, and Third-World maternal and infant death rates, while a privileged few are being paid or taking millions of dollars for services which would have never been shown to improve health or longevity. The costs of delivering medical services vary by 100 percent from one area of the country to another, with no correlation to the cost of living or other costs in the same areas. Delivery of medical care for most Americans is rationed on the basis of ability to pay rather than on need or the potential for benefit. Our obsession with keeping medical care as a negotiated employee benefit rather than a national responsibility has benefited only those who profiteer from the inflated costs.

Second, our national fiscal crisis cannot be blamed on health care proposals which haven't been enacted. We are having a national debate about the cost of doing business for the first time in almost 10 years. The previous Administration and complacent Congress provided huge tax breaks to the very rich, while waging war and hiding the fiscal effects of the tax cuts (and the costs of protecting our nation) in budgetary tricks and sideshow prescription drug benefits which reaped huge benefits for the pharmaceutical manufacturers that had successfully prevented any attempts at price controls.

The fundamental problem is not so-called social entitlements but a total lack of resolve to face the true cost of governing.

Dr. (Col.) A. Bradley Eisenbrey,
ANG
Grosse Pointe Woods, Mich.

I saw a blatantly political piece that used a completely unfounded hypothetical argument: that is, health care legislation represents an assault on defense spending. In my opinion, this is equivalent to saying my home mortgage is an assault on my grocery bill—I can't ignore one necessity simply because I believe the other necessity is more important (or more expensive).

My company pays a significant amount in health care expenses every year (we are a self-insured company), and I pay a significant amount every year myself through premiums and co-pays. To me, reforming our health care system is both a moral responsibility and an economic necessity (especially for American businesses). When military-related publications like *Air Force Magazine* promote opinions about health care legislation, I think it wise to remember that a significant portion of their readers (active duty and retirees) benefit from a government-funded, reasonably good, reasonably

efficient, and reasonably expensive universal health care system through Tricare.

Brian D. Smith
Dayton, Ohio

To begin with, the national debt is an accumulation of budget deficits, not simply entitlement programs. US debt ballooned 50 percent between 2000 to 2007, growing from \$6 trillion to \$9 trillion because, year after year, the government cut taxes, 52.5 percent of which went to the wealthiest five percent of taxpayers, and increased spending, including unpaid-for wars. The \$700 billion bailout helped the debt grow to \$10.5 trillion by December 2008. The debt is now 83 percent of GDP, up from 51 percent in 1988 (source: US Treasury, "Debt to the Penny," Bureau of Economic Analysis). With regard to the impact of Social Security on the debt, the fact is that the Social Security Trust Fund took in more revenue through payroll taxes leveraged on baby boomers than it needed. However, instead of investing or at least protecting Social Security taxes, the Social Security Trust Fund financed increased current government spending, creating a future Social Security liability. Nonetheless, at about \$18 trillion, that future Social Security liability is about the same as the Bush Administration unfunded Medicare prescription drug benefit enacted in 2006, which is part of an \$89 trillion Medicare liability.

But the problem isn't just Medicare, Medicaid, or government health care spending. The problem is all US health care spending as a national economic competitive issue. To summarize the facts as published by the Congressional Research in 2007, the United States spends more private and government money on health care and gets less for it than any of the 30 democracies in the Organization for Economic Cooperation and Development (OECD), the most economically advanced countries in the world:

- In 2004, at the end of President Bush's first term and after a decade of Republican control of Congress, 15.3 percent of the US economy was devoted to health care, compared with 8.9 percent in the average OECD country and 11.6 percent in second-place Switzerland.

- The US per capita on health care in 2004 was \$6,102— more than double the OECD average and 19.9 percent more than Luxembourg, the second-highest per capita country.

- Among OECD countries in 2004, the United States had shorter-than-

average life expectancy and higher-than-average mortality rates.

- Even putting aside the issue of the uninsured, the U.S. population did not and does have better access to health care than OECD countries.

- Although the United States has shorter wait times for nonemergency surgeries compared to some OECD countries, Americans found it more difficult to make same-day doctor's

appointments when sick and had the most difficulty getting care on nights and weekends. Americans are most likely to delay or forgo treatment because of cost.

The central goal of health care reform is to reduce the projected rising government and private cost of health care while increasing quality and access. Notwithstanding the discredited views of Martin Feldstein referred to by Editor in Chief Robert S. Dudley, the



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Pictured above:
Major General John Barry (U.S. Air Force, retired)
Superintendent, Aurora Public Schools, CO
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CBO, the legitimate arbiter of the cost of health care proposals, has concluded that either the House or Senate health care bill will do this and significantly reduce projected federal deficit.

Victor D. Bras
Woodbridge, Va.

As Gen. "Chappie" James used to say, "Either you're part of the solution, or you're part of the problem." Frankly, you're part of the problem.

To honor the magazine's request to keep Letters to the Editor brief, I won't engage you on the full extent of your faulty logic; I haven't seen such a target-rich environment in quite awhile, though. To be objective, you do have a couple of valid points: 1) The US economy does underwrite our defense capabilities; 2) The "deficit-spending joy ride must end." The Obama Administration has a comprehensive plan to strengthen the economy, including ending the deficit-spending joy ride we experienced in the last decade. And key to strengthening the economy is fixing health care, instead of letting it continue to hamper our growth.

Who cut taxes while increasing spending during the 2001-08 period? What were they thinking? Evidently, they had the same shortsighted view you do—that we can invest more in defense while ignoring the rest of the nation's needs. That's a sure path to America's decline.

Col. James E. Allgood,
USAF (Ret.)
Alexandria, Va.

According to the CBO as recently as Dec. 19, 2009, the current health care reform bills will reduce, not increase, the deficit by over \$100 billion through 2019 (<http://cboblog.cbo.gov/?p=447>). But, even more troubling, a new study published in the December 2009 issue of the *American Journal of Public Health* puts the number of deaths among Americans between the ages of 18 and 64 associated with lack of health insurance at 44,789 a year. This is more than the Marine and Army combat deaths for the entire Vietnam War. These realities demonstrate how you do a profound disservice to those trying to address the health care cost crisis and denial of care for millions of our citizens by indulging in heartless partisan hyperbole.

Lt. Col. Tony Wolusky,
USAF (Ret.)
Colorado Springs, Colo.

The editorial regrettably fuels an increasingly polarized and obstructionist national climate on this issue. It is ironic that military members, arguably benefitting from the one of the

greatest government-provided health care systems, could lobby to deny the reform needed for all Americans to gain greater availability and control of costs for such a fundamental need. Moreover, if we do not face the broken system this country has on health care access and cost, then that will be a national security issue of much greater importance to us and our children than acquisition of another F-22.

Col. John S. Chilstrom,
USAF (Ret.)
Austin, Tex.

Just Cause

The article, "A Small War in Panama" in your December 2009 issue, brought back many memories. Mr. John Correll did a great job summarizing Operation Just Cause. Having flown in the lead aircraft of two F-117s that employed weapons during Operation Just Cause, I would like to comment on a couple of his observations regarding the stealth fighter's participation.

The stealth fighter was not chosen for the mission because of its stealth characteristics. In fact, the pilots who flew the mission never configured their aircraft in "stealth mode." The stealth fighter was chosen, over other aircraft, because we proved to Lt. Gen. Carl Stiner and his war planners that we could hit a designated target at a precise time-over-target (TOT). This demonstration was extremely important for two reasons.

First, there were civilian buildings in the proximity of the barracks at Rio Hato, and they did not want any collateral damage.

Second, we had to deliver the bombs at the exact TOT since the Army Rangers and Marine/Navy SEALs would be jumping into the same location one minute after our second bomb exploded. The aircraft could not be late dropping their bombs!

Originally, two of our targets were the Panama Defense Force (PDF) barracks at Rio Hato. Less than 24 hours before launch, we were told that our mission was no longer to hit the barracks but to drop our bombs in fields short of the barracks in order to "stun and disorient" the PDF. When we arrived at our briefing several hours before takeoff, I was given a photo of a field that was in front of my original target, the PDF barracks.

There was triangle marked over a bush in the center of the field and I was told this was my new target. I immediately asked my commander how I was expected to hit a particular bush in an open field. He told me he didn't care where the bomb landed in the field, just make sure my bomb did not hit within 50 meters of the barracks.

Since a plan rarely goes as briefed, when I got to my target run, I noticed there was a cloud deck obscuring my target (weather had been briefed to be clear with no clouds), so I had to descend below 4,000 feet to get below the cloud deck in order to use the targeting system. This is another area where Mr. Correll's article is not entirely correct. The F-117's equipment did not begin "acting up" while clouds and humidity "played tricks" on the targeting system. As anyone who has ever flown with an infrared targeting system can attest, flying at low altitude in high humidity, like Panama, greatly decreases the range at which targets can be identified. Additionally, the winds during my target run were negligible, so I decided not to switch targets. Therefore, I employed my weapon on my original target, as briefed, and did not "erroneously" bomb my original target. My weapon hit exactly where I aimed, approximately 60 meters from the PDF barracks. Now entered the fog and friction of war! My wingman saw the explosion in his targeting display and mistakenly thinking we had switched targets, keyed his attack off my bomb. This resulted in his bomb hitting 300 yards from his original target. But I must stress, his weapon hit exactly where he aimed at his precise TOT. I take complete responsibility for not being clear regards to which targets we were to hit, but in the end, we accomplished our objective to "stun and disorient" the PDF.

Finally, I would like to make it clear that the F-117 participation was never meant to be made public. However, since the mission became public and there has been some confusion about the role the stealth aircraft played, I just wanted to set the record straight in a few areas. The F-117 stealth fighter performed flawlessly. Although the bomb craters were not both 50 meters from the PDF barracks, the weapons were released and hit exactly where they were aimed.

As Mr. Correll states, "Questions about the F-117 itself were answered conclusively in the Gulf War two years later, where the Nighthawk achieved spectacular accuracy in precision attack."

Maj. Gen. Gregory Feest
Randolph AFB, Tex.

Future Bomber

The debate over the 2018 bomber, as discussed in the January editorial [*"The Obama Bomber," p. 2*], is often cast as a choice between the merits of a manned bomber or unmanned vehicle system. However, this dichotomy may leave out an intriguing third option

of a blended crew complement including virtual crew members. In the interest of full disclosure, I'm an unabashed proponent of manned aircraft, but it would be shortsighted to ignore the virtues of unmanned aircraft and the technology that supports them. I flew the B-1 operationally and the B-2 as a test pilot during the development program. While the B-2 could be easily flown by two pilots during most mission phases, the workload increases dramatically in a dynamic situation calling for defensive action, route changes, and flexible targeting. Add system malfunctions or emergency procedures and the workload could become unmanageable, especially when fatigue begins to creep in midway through a 40-hour mission. A blended crew concept with virtual crew members could take advantage of the best features of manned aircraft and unmanned systems. With the same data link systems which allow Predator and Global Hawk pilots to manage missions from half a world away, the future bomber could include the communications and systems interfaces to allow other crew members to actively participate in the mission without actually being on board. A virtual crew member would be fresh and well-rested as the aircraft enters the combat zone. Since a virtual crew member is not limited to physical presence in the aircraft, he could fly several sorties during a single raid, taking advantage of the tactical insight (target locations and defensive situation) gained from a previous run through the target zone. During the return trip, the virtual crew member could also improve safety by providing an extra set of eyes while one pilot rests to combat the inevitable fatigue.

A blended crew provides the best of both worlds while eliminating many of the costly elements of either manned or unmanned systems. Virtual crewmembers allow the manned portion of the crew to remain small, reducing cockpit size and accommodations and crew training costs. The manned portion of the crew means that many parts of the control system architecture required of an unmanned system (i.e., flight controls) can be eliminated while retaining the benefit of the unmanned portion of the sensor, mission management, and weapons systems. System development and flight test can also be completed faster and more safely with the manned vs. unmanned system. Perhaps most importantly, retaining the manned part of the crew also maintains the critical human element necessary

for unjammable, on-scene situational awareness and decision making and weapons control for nuclear surety. Industry competitors and those responsible for requirements generation would be wise to consider a blended crew for the Next Generation Bomber.

Col. Scott A. Neumann,
USAF (Ret.)
Springfield, Va.

The replacement USAF bomber which we may see in about 25 years (if ever) is often mentioned as being "nuclear capable" or maybe not. Anything is nuclear capable. A C-130 could carry two or three "Little Boy"-size bombs on dollies. Just roll them out the back end. In 1957, I flew a single-engine F-84F on A-bomb training flights. We had LABS (low-altitude bombing system) equipment onboard. The pilot set the gyro settings in the gun bay prior to each flight. Classifying an aircraft as being nuclear capable or not nuclear capable really has no meaning.

Lt. Col. Tom Garcia,
USAF (Ret.)
Las Cruces, N.M.

Rising Risk

John Tirpak provides a cogent outline of the Air Force's fighter force structure dilemma in the February 2010 issue [*"Rising Risk in the Fighter Force,"* p. 24]. Given a cap of 186 F-22s, shifting F-35 delivery rates, and a mitigation strategy that struggles to sustain Reagan-era legacy fleets, he identifies that "the first order of business is to determine how much life is left in the old airplanes," and that, "to that end, USAF is conducting what are called fleet viability boards." On this point, I would like to elaborate.

The Fleet Viability Board was formed in 2003 at the direction of Air Force Secretary James Roche. The FVB's charter is to perform independent technical assessments of legacy weapon systems and provide decision-quality recommendations to the Secretary and Chief of Staff for fleet modernization and recapitalization. The board's independence is important to filter political bias and get straight at the science of the problem of modernizing and sustaining these platforms. An important by-product is the board's contribution to improving the quality of Air Force aviation safety by identifying safety/sustainment issues. In fact, demand for FVB insight resulted in last year's expansion of the organization, increasing assessment throughput nearly threefold.

Which fleets get prioritized for FVB assessment is a corporate decision process. Typically, those capability areas facing major recap decisions, but for which the Air Force needs credible facts about the legacy fleet's remaining life and relevance, become the leading candidates. Catastrophic events, as happened with the 2007 F-15 longeron mishap, can also push fleets to the top of the order.

Each FVB assessment is an objective dive into the weapon system's viability, providing integrated technical analysis and actionable recommendations, which inform senior leaders deliberating the POM (program objective memorandum). Board members integrate operational health, cost of ownership, and availability across various funding options and project viability for 25 years. Its roll-up benchmark, "annual cost per available aircraft," presents a telling comparative metric. Though structural life tends to be first among equals, the board assesses the operational health of all aircraft subsystems, including propulsion, electromechanical, avionics, and offensive/defensive systems against current and future requirements. With numerous weapons systems complete, we can draw some general conclusions about the problem of sustaining legacy fleets. One ironic conclusion in particular that underpins this issue of aging aircraft is that it's not about "age."

The board has observed that historical cost and maintenance data do not support conventional wisdom that age alone—purely the number of birthdays—drives recap justification. Technologic complexity makes new weapon system acquisition and sustainment costs typically worse than modernizing and sustaining legacy fleets, even when those fleets require significant structural life extensions or capability upgrades. In this resource-constrained era, capability requirements offer stronger recap arguments than economics. Legacy fighters, from the P-51 to the F-15, could be kept airworthy regardless of age, but they've become progressively less relevant against advancing threats and technology. Therefore, recapitalization decisions should be based on when legacy fleets will be no longer cost effective compared to the alternative—cost per available aircraft—OR, it is no longer relevant against new requirements. So, while legacy fleets usually can be made viable, more important is at what cost (per available aircraft) and whether

they can be made relevant for handling future challenges.

Lt. Col. Don Russell
Beavercreek, Ohio

A Hero's Hero

I just wanted to drop you a line and let you know that my wife and I greatly enjoyed the article on her uncle, Duane Hackney [*"A Habit of Heroism," January, p. 63*]. I've read his story before, but this was the best. Thanks again.

Larry and Roxanne Clapp
Wesley Chapel, Fla.

Triple Play

Re: Richard Whitcomb's Wasp-waist Delta Dagger: To be concise, the aircraft FC-787 ("top left") is not "the experimental YF-102," but an experimental YF-102A [*"Richard Whitcomb's Triple Play," February, p. 68*].

Joseph R. Bowen
Arlington, Wash.

EW and Austerity

[I] enjoyed your January article on "Electronic Warfare Meets Austerity" [*p. 42*]. In the Obama era of robbing Peter to pay Paul defense budget skimming, a "modest enhancement" approach to address the current and future EW platform deficiency could be the B-1B. Since 25+ "Bones" sit in storage, why not have a low-rate production mod schedule for an EB-1B profile? The B-1B has the range to address the escort jamming mission, the fuel capacity for sustained standoff jamming, and a large airframe with three bomb bays for all the room you need for black boxes, clip-in pods, or an offensive anti-radar capability (AGM-88s). Dash speed and four G maneuverability doesn't hurt, either. Essentially all components are off-the-shelf, and the training overhead is a minimum financial exposure with existing schoolhouses and basing. Also, as the future B-1B mission is phased out, the EB-1B mission is phased in with existing airframes. What say you, boys and girls?

Keith A. Thomas
Lancaster, Calif.

Another Option on the KC-X Tanker?

[I write in regard to the article in "Air Force World: KC-X Requirements Called Sound," February, p. 10.] With money being so tight these days it would be wise for the USAF to relook at how it is spent in such a way that our future is secure.

For instance, take the tanker debate. Air refueling was in its heyday when SAC was the big guy on the block with its 1,000 bombers protecting us day and night throughout the Cold War. The very defined Cold War is over, thanks to the USAF and SAC. We need to move on.

Today's war is different! We are now faced with irregular warfare where unmanned aircraft systems are the new big guy on the block. That's where the money should go.

So, why not convert the 100-plus DC-10/MD-11 aircraft in the Mojave "Boneyard" fleet into KC-10s and meld them into the existing USAF KC-10 [fleet]? Then outsource the refueling to private companies such as Omega Air Refueling. Omega has been refueling USN/USMC aircraft for about seven years using the 50-year-old Boeing 707 (KC-135).

The savings would be enormous in retirement costs alone, that are still being paid out to tanker pilots who retired as far back as 1972. We should look closely as to how we cover our six in light of our new mission!

David Chigos
San Diego

UAV Safety Records

Your February issue had an article touting UAVs as "the" indispensable weapon" [*"The Indispensable Weapon," February, p. 32*] preceding one worrying over the attrition rate of fighter aircraft in the last decade [*"The Aircraft Losses Mount," February, p. 56*]. Curiously, over the same time period, the mishap rate of unpiloted aircraft was 10 times higher than the next highest manned platform (the F-16). That statistic is especially significant considering that UAVs perform far fewer takeoffs and landings per flight hour due to their endurance and begs the question whether any other aircraft with that safety record would still be flying.

The official line is in seemingly every Air Force publication is that unmanned vehicles are the future of military aviation, but few have challenged that assumption based on true costs, liabilities, and capabilities. Factoring in attrition rates, satellite links, and ground control stations, what does a Predator really cost? Furthermore, since GPS and satellite links are relatively easily jammed, what liabilities are we accepting by shifting a large percentage of our inventory to remotely operated vehicles? UAVs certainly have their place as high-endurance ISR platforms complementing manned aircraft such as the MC-12, but when troops are in contact with enemy forces, the inherent latency of satellite-linked robotics makes them much less responsive to the ground component commander than manned aircraft.

Computers are better at calculations, but human beings are better at decision-making, and it turns out that's the biggest component not only of aviation in general, but warfighting in particular. Airmen bring a lot to the fight (wider

field of view, ability to hear LOS and communicate with other piloted aircraft, etc.). No matter how technologically advanced we become, MIRC chat is no substitute for voice, and robots are no substitute for a warrior with the big picture.

Lt. Col. Craig Ziemba,
ANG
Meridian, Miss.

Fighting With Light

Good article [*"Fighting With Light," February, p. 64*]. I first studied lasers with my Stanford professor, Arthur Schawlow, who was one of the inventors. That was in the early 1960s. Then I saw a laser hologram in the late 1960s at the Hughes Malibu Lab (where the first operational laser was demonstrated). In the 1970s, I worked on the Airborne Laser Lab (Hughes did the pointing and tracking, TRW the big laser). It is now 2010. There are no operational laser weapons, but we have had laser pointing devices for a long time. It's been 50 years, but I still believe in lasers. At some point, it will reach a practical payoff, and it will be revolutionary. It took awhile to perfect that steam engine, too.

William Thayer
San Diego

Cataclysm

General
Hap Arnold
and the
Defeat of
Japan

Herman
S. Wolk



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Washington Watch

By John A. Tirpak, Executive Editor

Bad news for the beam; Let airmen be airmen; Reshaping “the bathtub”

ABL Successful, but “Not Practical”

The Airborne Laser’s success in shooting down a ballistic missile was a fine achievement, but the system is impractical for sustained combat use. That was one of the insights offered by the Secretary of the Air Force, Michael B. Donley, and Air Force Chief of Staff, Gen. Norton A. Schwartz, in 2011 budget testimony to Congress.

Other assertions were that the US is hoping to get back 4,000 to 6,000 airmen it has provided to help spell Army and Marine Corps troops abroad; that USAF has a smaller shortage of fighters, now that it has reduced its fighter requirements; and that the Air Force’s reduced force structure will pose only a “moderate risk” to its ability to perform its required missions.

After 16 years of development, the ABL in February targeted and shot down live boosting ballistic missiles—a longtime holy grail of ballistic missile defense. Whereas the Air Force once anticipated a small fleet of ABLs to defend the US, allies, and forward deployed troops from ballistic missiles, such plans have been shelved indefinitely, Schwartz told members of the House Armed Services Committee.

“It was a magnificent technical achievement,” he said, “but the reality is ... that this does not reflect something which is operationally viable.”

The ABL, hosted aboard a 747 crammed with plumbing and chemicals necessary to generate high-wattage laser power, is no longer “queen of the realm” of directed energy, Schwartz told the House panel. The future is “in the area of solid-state [lasers], not chemical-based lasers.”

Solid state offers “the sweet spot” in lasers, Schwartz explained that technology “isn’t as big, isn’t as heavy, doesn’t require exotic chemicals to operate, and, ideally, can be miniaturized so that it can operate, in a variety of aircraft, both large and small.” He said he’s received “indications from our smart folks that this is within the realm of the technological possibility.”

Donley agreed that the ABL has been “tremendously successful,” but is “very expensive, and it is not necessarily representative of the future of the technology.” Donley reported that the Air Force is still trying to figure out “where the directed energy program is going at a strategic level,” but he assured the lawmakers that “we have a robust DE program” and “it’s pretty well-funded.”

Return of the Prodigals?

Since the early 2000s, the Air Force has supplied airmen to be drivers and gunners and to perform many other missions as a relief to overstressed Army and Marine Corps ground forces in Iraq and Afghanistan. With heavy demands on a fixed level of USAF manpower, though, Schwartz wants to get these “in lieu of” airmen back.

In response to questions from Rep. Ike Skelton, the Missouri Democrat who chairs the House panel, he reported that the number of so-called ILOs has declined to about

4,700 personnel—considerably down from a high of more than 6,000 two years ago.

“As Iraq has subsided in terms of strength, so, too, have our joint expeditionary taskings,” he said.

However, USAF will “plus-up in Afghanistan about 2,000 people,” among the 30,000 others in the “surge through



Thousands have ground-force taskings.

the late summer of this year” and some of these will be “nontraditional” taskings—that is, jobs outside the airmen’s usual missions.

The Air Force is happy to do all it can to support the joint effort, Schwartz said. However, “as the Army grows its pool to its final end [strength], and likewise the Marines, we need to make sure that this does not become a habit. That is, they establish their combat support and combat service support in greater numbers, [and] that relieves the Air Force and Navy of these augmentation taskings.”

Schwartz said he “can’t deny” that lending airmen for jobs traditionally performed by Army and Marine troops has an “impact” on the Air Force’s readiness and its overall ability to perform its missions.

“We are not as ready across the board on all of our missions as we would be were this a peacetime setting.” He said that forward deployed forces get first call on funding, people, and equipment, but that, as a result, the readiness of Stateside bases is inadequate and continues to fall.

The Air Force has reduced its combat fighter force by more than three wings’ worth, in part to free up personnel slots that would have gone to flying or maintaining the aircraft for other missions, such as intelligence, surveillance, and reconnaissance. Between 3,500 and 4,000 of the freed-up slots will go to ISR, illustrating that a 4,000 to 6,000 contribution of ILOs represents a huge hit for USAF.

Donley said USAF’s most “stressed” career fields are contracting, explosive ordnance disposal, and terminal attack controllers. Schwartz added other battlefield air-

USAF photo by SSgt. Patrick Dixon

men to that list. However, Donley said that while the weak national economy has helped USAF with recruiting, the service is actually slightly over its end strength numbers and is “trying to manage that down in moderate numbers in the months ahead.”

Falling Fighter Force Structure

The Air Force has in recent years allowed that it faced a chronic and growing shortage of fighters, owing to termination of the F-22 program at 187 aircraft, slower deliveries of the F-35 fighter, and the early retirement of the three-plus wings of older fighters.

Asked by Rep. Frank A. LoBiondo (R-N.J.) to discuss the shortages, particularly as they affect the Air National Guard, Donley said, “This is a ... much smaller problem than it was a couple of years ago. The requirements have changed. The perception of what is required to do this work has been adjusted in the last few years.”

The depth of the fighter “bathtub”—a reference to the projected shape of the fighter inventory curve on a chart, which was level, then curved steeply downward and then upward, and becomes level again—is shallower now because of reduced stated requirements.

Schwartz said the fighter requirement is now just 2,024 aircraft, well below USAF’s stated minimum of 2,250 of just over a year ago. He also said that while the Air Force is now slated to get only 48 new F-35s a year, “we do believe that once we break out of the development phase,” USAF hopes to get 80 per year, “and we’ll be trying to even push that higher.”

Schwartz and Donley said a raft of reports on fighter force structure, investment plans, and how the Air Guard will be included in these plans will all be provided to Congress by the first of this month.

Schwartz told Rep. Howard P. McKeon (R-Calif.), the panel’s ranking member, that he would rate the overall risk of the reduced Air Force inventories as “moderate ... with respect to the reductions in fighter force structure” as well as in ISR.

He added, though, his wish that Congress not add aircraft to the Air Force’s budget—either fourth generation fighters or C-17s—because it needs to move on to new systems.

“Part of moving forward to the next generation platforms is not hanging on too long to legacy force structure,” he asserted. “Part of retooling ourselves to be more relevant to the joint team is growing in some areas, [while] shrinking modestly in others, which we consider to be a ‘moderate risk.’”

Doing it for the Army

With respect to the future of light mobility forces, Schwartz said he believes the Army is now satisfied with the plan for the Air Force to take over the mission to be performed by the C-27J transport.

He said that, in the past, the Army wasn’t “sure their Air Force would be there with them when they needed direct support” but that a recent test in Iraq with C-130Js demonstrated USAF’s commitment.

“We have demonstrated to our Army brothers and sisters, as well as others, that we will be there, we can do this, we will do this ... with a mix of platforms, in this case [C-27s] and [C-130s].” USAF will use whichever aircraft is “optimal” for the mission at hand.

Schwartz said the Air Force is not planning on acquiring more than 38 C-27Js, though many Air Guard units not scheduled to get such aircraft have expressed a desire for them.

With regard to “direct support” to forward ground forces, Schwartz added that the Air Force has sharply increased its use of airdrops.

“Our airdrop requirements have increased sevenfold,” he said, “and that’s how we’re supporting outlying areas in Afghanistan now, ... through precision airdrop of supplies.” He said that 55 percent is food, 35 percent is fuel, and 10 percent is building or barrier materials.

“I believe General Casey [the Army Chief of Staff] ... is comfortable” about USAF’s direct support commitment, Schwartz said. “And if you were to ask [Gen. Raymond T. Odierno, commander of US Forces-Iraq], I think he would tell you that we changed people’s minds. We are going to do this mission to the standard that our teammates expect.”

On Other Fronts ...

■ Schwartz also noted that while the Air Force had asked the senior Pentagon leadership to let it forgo performing



Photo by Piotr Butowski

C-27J plan to satisfy everyone.

the avionics modernization program upgrade on some 221 C-130 aircraft, “the department did not accept that proposal, so 221 aircraft [are] fully funded.”

■ In another cost-avoidance move, Schwartz said that the Air Force and Navy will use the same ground control stations, depot maintenance, and training pipelines for their respective RQ-4 Global Hawk aircraft. “We will do those things that make sense,” Schwartz said, “to ... minimize cost and maximize effectiveness. But I do not think we should overly focus on ownership. That doesn’t take us to the right place.”

■ Donley reported that USAF spends about nine percent of its investment money on space, “only exceeded by the mobility and the global precision strike mission areas.” He said that an Operationally Responsive Space capability—being able to put a payload in orbit on short notice—remains a high priority for the service. He hopes to “get a capability in place by the end of this calendar year.”

■ The Air Force has stepped up its nuclear inspections sharply in the last two years. It has gone from no no-notice inspections between 2005 and 2007 to three in 2008 and eight in 2009. They are coming “more frequently and more invasively,” Schwartz said, “not to make life hard” for the airmen, “but to ensure that we discover where we are not up to par.” It will take years for the Air Force to return to what it considers the right level of competency in the nuclear mission, Schwartz said, allowing that it had slipped in the 15 years after the end of the Cold War, and USAF had “lost the edge.” “Part of it’s institutional, ... part of it is culture,” he said. “This is not a short-term undertaking. This is recreating that culture of excellence, that nonacceptance of deviation in this particular area. And we continue to work on that.” He added, “We kidded ourselves before. We can no longer do that.” ■

Cyber Unit Starts Operations

Twenty-fourth Air Force, USAF's new cyber operations arm, on Jan. 22 was cleared to commence initial operations by Gen. C. Robert Kehler, head of Air Force Space Command. AFSPC oversees the new numbered air force, which is headquartered at Lackland AFB, Tex.

"This is a big day for the United States Air Force," said Kehler. His certification that 24th Air Force had achieved initial operational capability means that the organization is now deemed capable of performing elements of its mission to operate and protect the Air Force's portion of the US military's cyber network.

Maj. Gen. Richard E. Webber, 24th Air Force commander, said, "Cyber mission assurance is a top priority of the Air Force," and his airmen are "well under way" toward that goal.

Mullen: Get New Bomber Right

Defining the Air Force's future long-range strike platform poses a difficult challenge for Pentagon planners, making it prudent to proceed slowly in acquiring the new capability, said Adm. Michael G. Mullen, Chairman of the Joint Chiefs of Staff, Feb. 2.

"We want to get it right," Mullen told the Senate Armed Services Committee while testifying on the Administration's Fiscal 2011 budget proposal. After all, the chosen system would have "a huge impact" on the Air Force's future, he noted. The new bomber is not expected to enter the force until the mid-2020s.

Mullen said previous Pentagon analyses such as that reflected in the 2006 Quadrennial Defense Review that envisioned the new bomber being available around 2018 were "incredibly aggressive." Better, he indicated, is the deliberative process upon which the DOD is now embarked."

Severely Injured Airman Re-enlists

During a special ceremony Feb. 8 at Randolph AFB, Tex., TSgt. Israel Del Toro, who had been severely burned after his vehicle hit an improvised explosive device during a 2005 deployment to Afghanistan, re-enlisted even though he has a 100 percent medical disability

rating. He will train tactical air control party airmen.

Del Toro was burned over 80 percent of his body and remained in a coma for three months, and, if he survived, doctors believed he would not walk again. He endured 120 surgeries, but he not only survived but is also running in 10K races.

He persisted for more than four years to remain in the active duty service. A medical board finally offered the TACP airman two choices: medically retire and train TACP airmen as a civilian or remain in the service, training TACPs. He chose the latter.

C-5M Ends Operational Tests

Officials at Dover AFB, Del., announced Jan. 30 that they had completed operational testing and evaluation of the C-5M Super Galaxy transport aircraft. The OT&E phase comprised nearly four months of missions and demonstrations, with the three C-5M test aircraft amassing about 1,300 flying hours.

The tests included training sorties and wartime surge operations to overseas bases to validate the performance of the upgraded C-5 configuration, which features new engines, avionics, and reliability enhancements.

The test data will be used to inform the Air Force and Office of the Secretary of Defense acquisition officials as they mull future production decisions to complete the C-5 Reliability Enhancement and Re-engining Program for the 52 planned Super Galaxy aircraft. The Air Force is now transitioning the C-5M test aircraft into normal operations.

F-35 Engine War Reheats

Pratt & Whitney announced Feb. 2 that it had delivered the first F135 production version engine for the F-35 Lightning II strike fighter, a "clear demonstration of the maturity of the F135," which has accrued more than 13,000 hours in tests thus far.

Meanwhile, for the fourth consecutive year, the political battle heated up again with the release of the President's budget on Feb. 1 over whether to maintain the General Electric-Rolls Royce F136 engine for the F-35 in addition to the F135.

USAF photo by A1C Brett Clashman



Secretary of Defense Robert M. Gates said Feb. 1 he would “strongly recommend” that President Obama veto any Fiscal 2011 legislation that sustains the F136 engine, arguing the Pentagon cannot afford to mature two engine types and that he has confidence in the F135 design. But the F136 still enjoys strong support on Capitol Hill.

USAF Acquiring New Gunships

The Air Force plans to launch an

initiative in Fiscal 2011 to acquire 16 new gunships based on modified, new-build MC-130J special operations tankers that are outfitted with a “precision strike package” to give them an attack capability.

The Air Force is requesting \$1.6 billion from Fiscal 2011 through 2015 for this buy. These aircraft would increase the size of the Air Force’s highly taxed gunship fleet to 33 aircraft, a net increase of eight, after accounting for

the planned retirement of eight old AC-130Hs.

The first aircraft would be bought in Fiscal 2012, followed by two in Fiscal 2013, five in Fiscal 2014, and the final eight in Fiscal 2015.

Encroachment Pact Reached

The Arizona state government and Arizona’s Maricopa County reached a settlement Feb. 2 to stop the construction of new single-family homes in high-



03.03.2010

This B-1B heavy bomber, trailed by a swirl of heat, dust, and exhaust, takes off from Nellis AFB, Nev., for a training flight. The 146-foot-long Lancer, assigned to the 7th Operations Group at Dyess AFB, Tex., is headed into a mission during Red Flag, the highly realistic combat exercise centered at Nellis and taking in not only USAF units but also those of other US services and those of allies. The sleek, variable-sweep winged B-1B, once a nuclear-armed aircraft, now is dedicated to conventional theater warfare and can carry up to 84 500-pound bombs.

Maj. Gen. Jeanne M. Holm, 1921-2010

Retired Maj. Gen. Jeanne M. Holm, the Air Force's first female brigadier general and, later, the US military's first female major general, died Feb. 15. She was 88.

A native of Portland, Ore., Holm enlisted in the Army in 1942, serving initially as a truck driver, and then, after attending Officer Candidate School, she received a commission in 1943 in the Women's Army Auxiliary Corps. Holm left active duty in 1946, was recalled in 1948 during the Berlin crisis, and, in 1949, transferred to the Air Force.

She served in various personnel and plans assignments at wing, Air Staff, and NATO levels and became the first woman to attend Air Command and Staff School.

Holm served as director of Women in the Air Force on the Air Staff from 1965 to 1973, during which time she was instrumental in policy revisions that greatly expanded job and assignment opportunities for women in USAF. She received the Distinguished Service Medal for her work in this assignment.

In 1973, she became director of the Secretary of the Air Force Personnel Council, in which position she received her second star. She retired in 1975 after some 34 years of total service.

She continued to support military females, including by writing *Women in the Military: An Unfinished Revolution* and by serving in advisory roles in three Administrations.

Among her awards, Holm received the Air Force Association's Lifetime Achievement Award in 2003 and entered the Women in Aviation, International Pioneer Hall of Fame in 2006.

In 2008, Air University named its newly reorganized Officer Accession and Training Schools the Jeanne M. Holm Center for Officer Accessions and Citizen Development.

noise and accident-potential zones near Luke Air Force Base, and, in the process, remove one issue potentially detracting from the base's allure to host future F-35 strike fighters.

The *Arizona Republic* reported Feb. 3 that the agreement was meant to resolve the years-long dispute between the two parties over residential encroachment of the base, which is an important F-16 fighter hub today and is in the running for the F-35 training mission.

The state government had fought in the courts against the construction, while the county had been supporting landowner property rights. Arizona Gov. Jan Brewer (R) stated Feb. 4 that the agreement makes clear that "Arizona stands ready" for the F-35 mission.

B-2 Flies With Synthetic Fuel

In early January, the Air Force conducted a flight demonstration with a

Power Up: A replica of a Wright B Flyer, "Yellow Bird," is readied for flight by crew chief Frank Goeperich (center), fire guard Ken Painter (l), and pilot Don Gum. Volunteers assembled two Flyers at a Centennial of Military Aviation event in March. More than 1,500 aviation enthusiasts attended events at Ft. Sam Houston, Tex.



USAF photo by Lance Cheung

B-2A Spirit stealth bomber running, for the first time ever, on the synthetic fuel blend that the service wants all of its aircraft capable of operating in 2011.

The demonstration involved an operational B-2 flying a training sortie from Whiteman AFB, Mo., according to the Air Force's alternative fuel certification office. This fuel blend is a 50-50 mix of traditional JP-8 jet fuel and synthetic paraffinic kerosene. Pursuing it is one means of reducing US dependence on foreign sources of energy.

As of late February, the Air Force had certified these aircraft for "unrestricted operations" with the SPK blend: the B-1B, B-52H, C-17, C-130J, F-4 (USAF still flies QF-4 target drones), F-15 (Eagles and Strike Eagles), F-22, and T-38. The A-10, C-5, F-16, KC-135, and older C-130s had flown with the fuel blend, but not yet been certified.

AFAFRICA Expands Capability

Seventeenth Air Force (Air Forces Africa) in January took over responsibility for US military missions in African airspace from Air Forces Central, a component of US Central Command.

While 17th Air Force had activated the 617th Air and Space Operations Center in May 2009, the center did not previously have full airspace authority. "Now that we have the lead, we can work in a better partnership with forces operating in Africa," said Maj. Randy Naylor, 617th AOC air tasking order production chief.

AFAFRICA officials said they had to build new policies, procedures, and system requirements that focus not on combat operations, as with AFCENT, but on airlift and intelligence gathering.

Munitions Unit Decertified

After inspections identified deficiencies in performance, Air Force Materiel Command on Jan. 27 decertified the 898th Munitions Squadron at Kirtland AFB, N.M., meaning it was temporarily suspended from conducting its usual nuclear weapons maintenance activities in order to complete corrective actions.

Index to Advertisers

AAI.....	Cover III
Alenia	21
Boeing	3
Broad Academy.....	6
General Atomics	23
Hawker Beechcraft	29
Lockheed Martin	Cover II, 55
Northrop Grumman	41, Cover IV
University of North Texas Press	9
AFA Conferences.....	78
AFA Corporate Membership	75
AFA Resume Service	74
AFA Spotlight On	75
Veterans Benefits Association	77



Last Dance: Capt. David Jones, a pilot assigned to the 777th Expeditionary Airlift, runs a preflight check on a C-130E Hercules at JB Balad, Iraq, before its final combat mission on March 6. The transport completed 47 years of service and racked up more than 33,220 aircraft hours.

Gen. Donald J. Hoffman, AFMC commander, said in a Feb. 9 release that the decertification would give the unit time to identify and implement the necessary changes. It was a tough decision to make, he said, but it shows the Air Force's commitment to excellence in the nuclear enterprise.

The squadron, which falls under Kirtland's 498th Nuclear Systems Wing, must undergo a new nuclear surety inspection before regaining certification to perform its mission. The Air Force Nuclear Weapons Center at Kirtland oversees the wing.

QDR Outlines Irregular Growth

The 2010 Quadrennial Defense Review outlines significant expansion of the Air Force's irregular capabilities in both its general-purpose and special operations forces for tasks including training and assisting foreign partners.

The policy document, issued Feb. 1, tasks the service to expand its regionally oriented contingency response groups so that they "can sustain" their specialized regional and country-specific expertise and "regularly detach experts" to accompany training units deploying abroad.

The Air Force will also field "light mobility" and "light attack aircraft" in general-purpose units to increase partnership activities with a wider range of allied militaries. And starting in Fiscal 2012, Air Force Special Operations Command will double its partnership training capacity with the purchase of light fixed-wing aircraft.

USAF Resumes JASSM Buys

The Air Force on Jan. 20 awarded Lockheed Martin a \$245 million contract for Lot 8 production of the AGM-158 Joint Air-to-Surface Standoff Missile, resuming its buy of the missile after suspending purchases in 2009 due to concerns over the missile's reliability.

The company will build about 160 missiles in baseline and extended-range variants for USAF and foreign military sales customers during this production run. The Lot 8 production contract was made possible via the successful performance of the missile in a series of flight tests in 2009 to verify its reliability.

Concurrent with the disclosure of the contract, Lockheed Martin announced that the JASSM performed well during a Jan. 12 flight test at White Sands Missile Range, N.M. A B-52 bomber released the missile which then "successfully navigated through a preplanned route

Weather Satellite Program Gets Drastic Overhaul

The Obama Administration, as part of its Fiscal 2011 budget submission to Congress, has proposed ending the tri-agency National Polar-orbiting Operational Environmental Satellite System program, or NPOESS, that aimed to build a next generation US civil-military weather-monitoring satellite.

Under the changes, the Department of Defense's activities (led by the Air Force) would be split from those of the Department of Commerce's National Oceanic and Atmospheric Administration, and NASA.

The Air Force would concentrate on the design of a new satellite to meet the needs of the military community for weather observation and forecasting. Conversely, NOAA and NASA would focus on the task deemed by the Administration to be more urgent: fielding a new satellite primarily for climate monitoring.

All the parties would continue to mature a common ground system for these satellites.

The drastic overhaul is meant to place these efforts "on a more sustainable pathway toward success," stated the White House's Office of Science and Technology Policy (OTSP) in a Feb. 1 release.

The restructure came after "conflicting perspectives and priorities" ultimately doomed the joint program's chances of success and saw its costs more than double from \$6.5 billion in 2002 to about \$13.9 billion today, according to OTSP.

These issues have reached the point that NPOESS "cannot be successfully executed with the current management structure, and with the current budget structure," said OTSP.

The Air Force is planning to start its new satellite acquisition effort in the fourth quarter of Fiscal 2011, according to the White House.

Gary E. Payton, deputy undersecretary of the Air Force for space programs, said Feb. 4 the service is working to ensure that the organizational split occurs as smoothly as possible so that nothing disrupts NOAA's and NASA's work on advancing their climate-monitoring satellite.

The Air Force satellite would reside in the so-called early morning orbit for weather monitoring, while the NOAA-NASA spacecraft would operate in the afternoon weather orbit.

sachusetts Air National Guard on Feb. 15 began its air sovereignty alert mission, sitting on 24-hour alert with its new force of 18 F-15 fighters.

The Massachusetts unit, based at Barnes Airport, converted from A-10 ground-attack aircraft to F-15s under changes mandated by BRAC 2005. It shed its last A-10s in 2007 and completed the conversion to the F-15 in January.

The wing replaced the Vermont Air National Guard's 158th Fighter Wing in the ASA role for the Northeast sector of the US. The Vermont unit had flown ASA mission since late 2007. Prior to that, another Massachusetts Air Guard unit—the 102nd Fighter Wing at Otis Air National Guard Base—had the ASA mission for the Northeast sector.

WRALC To Lead C-17 Upkeep

The Air Force announced Jan. 21 that it will establish an integrated program office at Warner Robins Air Logistics Center in Georgia to oversee sustainment of the C-17 Globemaster III airlift fleet starting in Fiscal 2012.

Boeing now leads C-17 logistics support efforts, but will move into a supporting role at that time, said service officials. Similarly, the Oklahoma City Air Logistics Center in Oklahoma will manage work on the F117 propulsion systems for the C-17 with support from engine-maker Pratt & Whitney.

These moves are part of a larger service effort to in-source acquisition

before destroying its intended target," said the company.

Predator Makes Unmanned History

The Air Force made history on two fronts on Jan. 27 when an unarmed Predator unmanned air vehicle took off from an airport near Aguadilla, Puerto Rico, to fly a surveillance mission over earthquake-ravaged Haiti.

This mission marked the first use of the Predator in support of humanitarian-assistance operations. It was also the first time that an UAV operated from an active civilian airport, taking turns on the runway with commercial air traffic, according to Air Force officials.

About 50 airmen and six Predators deployed to Puerto Rico Jan. 18 for the Haiti mission. "Our job is to get the [Predator's] video camera where international aid workers cannot reach to identify people and places most in need," said Maj. Jeff Bright, commander of this Predator detachment.

New Mission for Fighter Wing

The 104th Fighter Wing of the Mas-



3,000 Hours: Lt. Col. John Bunnell, a weapons systems officer and commander of the 494th Expeditionary Fighter Squadron, completed his 3,000th flight hour in an F-15 on Jan. 23 during a mission from Bagram Airfield, Afghanistan. Accumulating those hours took Bunnell 19 years and includes 120 combat sorties and 370 combat flight hours.

USAF photo by SSgt. Richard Williams

The War on Terrorism

Operation Enduring Freedom—Afghanistan

Casualties

By March 15, a total of 1,011 Americans had died in Operation Enduring Freedom. The total includes 1,009 troops and two Department of Defense civilians. Of these deaths, 737 were killed in action with the enemy, while 274 died in noncombat incidents.

There have been 5,190 troops wounded in action during OEF. This number includes 2,223 who were wounded and returned to duty within 72 hours and 2,967 who were unable to return to duty quickly.

Reapers, A-10s Attack Enemy Positions

Operating Feb. 19 over southern Afghanistan's Helmand province, A-10 Thunderbolt II ground-attack platforms and MQ-9A Reaper unmanned air vehicles provided close air support for coalition ground troops operating near Lashkar Gah.

The A-10 pilots strafed insurgents whom they observed attempting to plant improvised explosive devices, killing the insurgents, said Air Forces Central officials.

The MQ-9s fired missiles to take out insurgents who were firing on friendly troops. These Reapers later attacked an enemy sniper's fighting position and enemy personnel who were modifying a compound's walls to create an observation and firing post, according to AFCENT.

Air-drop Test Gauges Surge Capacity

A C-130J transport operating with the 772nd Expeditionary Airlift Squadron from Kandahar Airfield on Jan. 27 dropped 56 containerized delivery systems full of supplies over three different drop zones within Afghanistan, setting a single-day, single-aircraft record for the unit.

This mission was a test to gauge how well the unit will be able to execute greater numbers of airdrops to support the continuing US troop surge in Afghanistan.

As part of the surge, the Army is establishing at Kandahar a CDS rigging facility that will enable CDS bundles to be built and loaded on the C-130Js, vice the aircraft having to fly to Bagram for this.

"We're expecting to see about a 250 percent increase in the number of airdrops we can support here," said Maj. Joe Frampton, a 772nd EAS operations officer.

First Afghan Medical Evacuation Mission

Accompanied by their US Air Force mentors, Afghan National Army Air Corps personnel on Feb. 3 conducted their first rotary-wing medical evacuation mission.

They flew an Afghan national in an Mi-17 helicopter from the Craig Joint Theater Hospital at Bagram Airfield to FOB Lightning, Gardez, for continued care in a local medical facility.

"This is the first step for the Afghans to gain some independence and become part of the coalition," said USAF medic MSgt. Richard Kramer, one of the mentors from the 438th Air Expeditionary Advisory Group.

Operation Iraqi Freedom—Iraq

Casualties

By March 15, a total of 4,386 Americans had died in Operation Iraqi Freedom. The total includes 4,373 troops and 13 Department of Defense civilians. Of these deaths, 3,478 were killed in action with the enemy, while 908 died in noncombat incidents.

There have been 31,716 troops wounded in action during Operation Iraqi Freedom. This number includes 17,789 who were wounded and returned to duty within 72 hours and 13,927 who were unable to return to duty quickly.

C-5M Makes Iraq Debut

A C-5M Super Galaxy transport aircraft flew to Iraq in January, a historic first for the new version of the massive cargo hauler that features new engines, avionics, and reliability enhancements.

"It's satisfying to get the aircraft into the fight," said Lt. Col. Michael Semo, C-5M program office chief and pilot with Air Force Reserve Command's 709th Airlift Squadron at Dover AFB, Del., the aircraft's home.

The C-5M not only delivered more than 85,000 pounds of equipment on short notice, but also arrived back home at Dover well ahead of schedule, said Dover officials.

Once C-5M aircraft are cleared for direct delivery, they will be able to fly straight from Dover to Iraq without stopping en route to refuel, they said.

oversight and could wind up saving \$12 billion over a 30-year period, the officials said. This decision "capitalizes on Air Force and defense private sector expertise," said Debra K. Tune, deputy assistant secretary of the Air Force for logistics.

Recycling TSAT Technologies?

The Air Force will work over the next several years to determine which technologies developed for the now-defunct Transformational Satellite Communications System will be inserted into its existing communications satellite designs and when, said Gary E. Payton, the service's top civilian space official.

Briefing reporters Feb. 4 in Washington, D.C., Payton said "it is more than likely" that the ninth Wideband Global SATCOM spacecraft will be the first satellite in that series to reap the benefits of TSAT technology. Already three WGS satellites are on orbit and six in total have been purchased.

Similarly, Payton said he thinks TSAT technology will probably make its way into the sixth Advanced Extremely High Frequency satellite. AEHF-1 is slated for launch later this year, and four have been ordered.

USAF, Navy Study Cruise Missile

The Navy and the Air Force are cooperatively assessing alternatives for a new joint cruise missile potentially to replace the Air Force's aging AGM-86 Air Launched Cruise Missile that carries a nuclear warhead and has been a part of the US strategic nuclear deterrent since 1982.

According to Air Force budget officials, the new design would have "standoff capability critical to nuclear deterrence." The Air Force's Fiscal 2011 budget proposal earmarks \$3.3 million toward this effort, which is meant to address concerns over ALCM survivability, they said. ALCM is carried on B-52H bombers.

Speaking at a defense conference Jan. 20 in Washington, D.C., Gen. Kevin P. Chilton, head of US Strategic Command, said he thinks development of the ALCM follow-on should commence in the mid-2020s since the current ALCM inventory could be modified to last until about 2030.

BMT Grads Enter UAV Training

The Air Force in January took another major step in institutionalizing its novel enlisted career field for unmanned air vehicle sensor operators by accepting, for the first time, students directly from basic military training into its new training course at Randolph AFB, Tex.

Of the 14 students in this Basic Sensor Operator Training Course, which began Jan. 15, eight came straight from BMT at Lackland AFB, Tex.,

Senior Staff Changes

RETIREMENT: Maj. Gen. Curtis M. **Bedke**.

NOMINATIONS: To be ANG Major General: Samuel C. **Heady**, William E. **Hudson**, Gary T. **Magonigle**, James M. **McCormack**, Alex D. **Roberts**, Gregory J. **Schwab**. **To be ANG Brigadier General:** Carl F. **Bess Jr.**, Gregory J. **Biernacki**, James C. **Blaydon**, Francis X. **Carillo**, Deborah L. **Carter**, Robert F. **Cayton**, William J. **Crisler Jr.**, Gregory L. **Ferguson**, James E. **Fredregill**, Anthony P. **German**, Ann M. **Greenlee**, Mark D. **Hammond**, Richard N. **Harris Jr.**, Mark E. **Jannitto**, Larry R. **Kauffman**, Jon K. **Kelk**, David T. **Kelly**, John E. **Kent**, Donald M. **Lagor**, Michael E. **Loh**, Constance C. **McNabb**, Clayton W. **Moushon**, Phillip E. **Murdock**, John E. **Murphy**, Gerald E. **Otterbein**, Martin J. **Park**, Nicholas S. **Rantis**, Robert L. **Shannon Jr.**, Cassie A. **Strom**, Gregory N. **Stroud**, Thomas A. **Thomas Jr.**, Carol A. **Timmons**, Steven J. **Verhelst**, Tony L. **West**, Robert S. **Williams**, Michael A. **Wobbema**. **To be AFRC Brigadier General:** Robert R. **Redwine**.

CHANGES: Brig. Gen. Norman J. **Brozenick Jr.**, from Asst. Commanding General, Jt. SOCOM, Ft. Bragg, N.C., to Dir., Plans, Prgms., & Assessments, AFSOC, Hurlburt Field, Fla. ... Brig. Gen. Joseph T. **Callahan III**, from Dep. Dir., Politico-Mil. Affairs for Asia, Jt. Staff, Pentagon, to Mil. Dep. Dir., AF Studies & Analyses, Assessments, & Lessons Learned, USAF, Pentagon ... Maj. Gen. John W. **Hesterman III**, from Dep. Dir., Politico-Mil. Affairs for Europe, NATO, & Russia, Jt. Staff, Pentagon, to Dep. Cmdr., AFCENT, CENTCOM, Al Udeid, Qatar ... Maj. Gen. Stephen L. **Hoog**, from Dep. Cmdr., AFCENT, CENTCOM, Al Udeid, Qatar, to Cmdr., 9th AF, ACC, Shaw AFB, S.C. ... Brig. Gen. Michael J. **Kingsley**, from Mil. Dep. Dir., AF Studies & Analyses, Assessments, & Lessons Learned, USAF, Pentagon, to Cmdr., 23rd AF, Hurlburt Field, Fla. ... Brig. Gen. Steven L. **Kwast**, from Cmdr., 455th Air Expeditionary Wg., ACC, Bagram Airfield, Afghanistan, to Dep. Dir., Politico-Mil. Affairs for Europe, NATO, & Russia, Jt. Staff, Pentagon ... Brig. Gen. Eden J. **Murrie**, from Spec. Asst. to the Vice C/S, USAF, Pentagon, to Dir., Leg. Affairs, Office of Leg. Affairs, Natl. Security Staff, White House ... Brig. Gen. Philip M. **Ruhlman**, from Cmdr., 36th Wg., PACAF, Andersen AFB, Guam, to Dir., Manpower, Orgn., & Resources, DCS, Manpower & Personnel, USAF, Pentagon ... Brig. Gen. Marshall B. **Webb**, from Cmdr., 23rd AF, Hurlburt Field, Fla., to Asst. Commanding General, Jt. SOCOM, Ft. Bragg, N.C.

SENIOR EXECUTIVE SERVICE CHANGES: Barbara J. **Barger**, to Acting Dep. Dir., Force Dev., DCS, Manpower & Personnel, USAF, Pentagon ... Daniel E. **Bishop**, to Asst. Dir., Operational Capability Rqmts., DCS, Ops., P&R, USAF, Pentagon ... Timothy K. **Bridges**, to Dep. Asst. Secy., Energy, Env., Safety, & Occupational Health, Office of the Asst. SECDEF for Instl., Env., & Log., Pentagon ... Jer D. **Get**, to Dir., AF Culture, Region, & Language Prgm. Office, DCS, Manpower & Personnel, USAF, Pentagon ... Yvonne **Jackson**, to Dir., AF Ctr. for Sys. Engineering, AFIT, AETC, Wright-Patterson AFB, Ohio ... Michael J. **Janosov**, to Exec. Dir., AFOSI, JB Andrews, Md. ... Ricky L. **Peters**, to Dep. Dir., Test & Evaluation, USAF, Pentagon ... Kathy L. **Watern**, to Assoc. Dep. Asst. Secy., Cost & Economics, Office of the Asst. SECDEF, Financial Mgmt. & Comptroller, Pentagon. ■

joining six students, who have prior Air Force service and are being retrained for this role.

Randolph officials consider the inclusion of fresh BMT graduates "a very big deal" for the ramp-up of BSOT training, said TSgt. Sonny Cohrs, a spokesman for Randolph's 12th Flying Training Wing. This instruction is one of several efforts under way to speed the flow of MQ-1 Predator and MQ-9 Reaper UAV operators.

Wyatt Seeks Steady Funding

Despite the daily tangible contributions of Guardsmen and Reservists to the US military, there is still the danger that tough economic times and scarce resources may drive some elements within the Defense Department toward funding the reserve components as if

they were a second-tier fighting force, warned Lt. Gen. Harry M. Wyatt III, Air National Guard director, Feb. 9 in Washington, D.C.

Speaking at the Reserve Officers Association's national convention, Wyatt said such detrimental "old paradigm" thinking may have been acceptable in the days of the Cold War, but "will no longer serve the best interests of this country," since, today, the reserves are seamlessly integrated into everything that the military does.

Accordingly, he called for ensuring that the reserve force's value is well understood and it is resourced consistent with that.

Missile Defense Test Fails

A major test on Jan. 31 of the US Ballistic Missile Defense System ended unsuccessfully when an interceptor missile failed to destroy a target missile in space over the Pacific Ocean due to a radar malfunction, according to the Missile Defense Agency.

This was the first major test of the BMDS' Ground-based Midcourse Defense element since December 2008. It involved a long-range interceptor missile fired from Vandenberg AFB, Calif., to destroy a ballistic missile target launched from the Kwajalein Atoll in the Pacific. Both missiles launched successfully, but there was no intercept.

The reason, said MDA, was because the Sea-based X-band radar portion of the system "did not perform as expected." MDA said it planned to conduct "an extensive investigation" to find the specific cause. David Altwegg, MDA executive director, said Feb. 1 it would "probably be months" before the problem can be determined.

Growlers To Fill EW Gap

The Navy intends to procure an additional 26 EA-18G Growler electronic



That's One Heavy Lift: USAF crash and recovery teams acted as first responders on March 1 when an Airbus A300 civilian cargo airplane skidded off the runway at Bagram Airfield, Afghanistan. The aircraft's main landing gear collapsed on touchdown. Airmen and soldiers used a 120-ton crane to help clear the runway.

USAF photo by TSgt. Jeremy K. Cross

Custom-Made Airpower

Seventy-five percent of Air National Guard members have served on active duty and have amassed great expertise in their fields, said Air Force Gen. Craig R. McKinley, chief of the National Guard Bureau, at AFA's Air Warfare Symposium in Orlando, Fla. The key to preserving this skill is to allow Guardsmen the same opportunities in education and training as their active duty counterparts, he said.

This, he said, is the key to the success of Air Force integration efforts across all missions.

In the past few years, the ANG and Air Force Reserve Command have undergone a great transition, one caused by the pressures of the Base Realignment and Closure process and other restructuring efforts. Since 2005, ANG Director Lt. Gen. Harry M. Wyatt III said in Orlando, the Guard has shifted 12 of its wings out of the fighter business and into new missions—in some cases, nonflying missions.

These transitions take time. New plans must be put into place, and airmen must acclimate to their new missions and get “back up on the step,” Wyatt said. New associate constructs, with active, Guard, and Reserve units, are crucial to effectively balancing needed capability from fighters to unmanned aircraft.

Turning a Reservist from a part-timer to an expeditionary airman is tough—requiring equal part money and availability. Training programs must take airmen out of basic training and tech schools and put them into extended period tours which develop their skills so they can deploy with the active duty. These efforts pay dividends for the Total Force, however, and get Reservists into the fight quicker. It ensures, among other things, that Reservists are involved in every mission area in the Air Force, said AFRC's chief, Lt. Gen. Charles E. Stenner Jr., also at the symposium.

The reality is, the reserve components are more closely tied to the Total Force than ever before—a result of a recognition that the demands on USAF were increasing at a rate which could not be shouldered by the active duty alone, Wyatt said.

“The Air National Guard that I got in, back in 1977 ... is completely different than the Air National Guard of today,” Wyatt said, noting it took 60 to 90 days back then to get ready for combat.

Today, a unit is trained, equipped, and prepared to be deployed with active duty counterparts within 72 hours.

attack aircraft to mitigate a looming US military capability gap in airborne electronic attack, given factors such as the decision to forego jamming pods on Air Force B-52H bombers.

The sea service plans to buy two of these Growlers in Fiscal 2011 and 24 in 2012. They would populate the four expeditionary Marine Corps EA squadrons that have escorted joint-force strike aircraft into hostile territory for decades, but were scheduled for decommissioning when their EA-6B Prowlers are retired in 2014.

Secretary of Defense Robert M. Gates directed this change to help fill “an imminent EW shortfall” that the combatant commanders have highlighted as one of their top concerns. Previously, the Navy had planned to procure enough Growlers only to support its carrier-based air wings and not serve in expeditionary roles.

Air Guard To Stay at Moffett

The Air Force and NASA have agreed to a 50-year-lease that will allow the California Air National Guard's 129th Rescue Wing to continue using Moffett Field as its base of operations. The wing, which

flies HH-60G Pave Hawk helicopters and MC-130P Combat Shadow tankers, has been there since 1984.

The long-term lease will allow the wing to improve its infrastructure and facilities, “enhancing our mission capability and capacity to respond to natural disasters, emergencies, and worldwide contingencies,” said Col. Amos Bagdasarian, 129th RQW commander.

In a Feb. 3 statement, Rep. Anna G. Eshoo (D-Calif.), in whose district Moffett lies, said: “At long last, the unit known for taking care of others is being taken care of with a permanent home in the heart of Silicon Valley.”

Bronze Star Medals for Airman

TSgt. Christopher Grove, a combat controller with Air Force Special Operations Command's 23rd Special Tactics Squadron at Hurlburt Field, Fla., on Feb. 5 received two Bronze Star Medals, one of them a Bronze Star for valor.

According to the citation recognizing his valor award, Grove, while deployed to Afghanistan, directed air strikes with six 500-pound bombs against enemy forces that were as close as 130 yards from his position.

He continued calling in close air support with 15 insurgents closing on his position, executing his duties with professionalism and calm despite the danger he faced, stated the citation.

Encroachment Demo Launched

The Air Force announced Jan. 28 that Air Force Space Command will lead a servicewide encroachment man-



Mission Preparation: Members of the 18th Munitions Squadron move out during an “Ability to Survive and Operate” course at Kadena AB, Japan. Airmen were trained in mobility protective wear, asset protection, post-attack reconnaissance sweeps, and unidentified explosive ordnance identification and reporting.

USAF photo by TSgt. Rey Ramon

Nuclear Bombers Shift to Global Strike Command

Air Force Global Strike Command on Feb. 1 took responsibility from Air Combat Command for the service's B-2A and B-52H bomber units, which are aligned under 8th Air Force, thereby completing the consolidation of the service's nuclear-capable assets under the new major command.

Lt. Gen. Frank G. Klotz, AFGSC commander, said on the occasion of the bomber transfer that these aircraft "remain critically important" to the US and its global friends and allies in their role as part of the US nuclear deterrent force.

He said the B-52s provide "unique, unmatched standoff capabilities," while the stealthy B-2s have the ability to attack heavily defended targets. Both bomber types also continue to provide important non-nuclear conventional capabilities, he noted.

Eighth Air Force comprises the 2nd Bomb Wing, a B-52 unit at Barksdale, La., the 5th Bomb Wing, another B-52 grouping at Minot AFB, N.D., and the 509th Bomb Wing at Whiteman AFB, Mo., the service's sole B-2 organization.

AFGSC, headquartered at Barksdale, began operations in August 2009. Its creation was one of the changes instituted by the Air Force leadership to reinvigorate the service's nuclear enterprise and restore the quality of its nuclear stewardship after identifying serious deficiencies.

The command now comprises 8th Air Force, also headquartered at Barksdale, and 20th Air Force, overseer of the nation's three Minuteman III ICBM wings: the 90th Missile Wing, at F. E. Warren AFB, Wyo., 91st MW at Minot, and 341st MW at Malmstrom AFB, Mont.

Twentieth Air Force, residing at F. E. Warren, was subsumed in December 2009 in a handover from Air Force Space Command.

Testifying before House lawmakers on Jan. 21, Klotz said Global Strike Command would continue to work "very closely" on bomber-related issues with ACC, which retains control over the conventional-only B-1B bomber force.

ACC continues to be the lead Air Force organization for tasks such as developing combat tactics and planning exercises in which the B-2s and B-52s will participate, he said.

agement initiative, using two AFSPC bases—Buckley in Colorado and Patrick in Florida—as the inaugural facilities for this pilot program.

During a demonstration phase, the bases will identify, communicate, manage, and take action on encroachment issues that may affect their missions,

working from the local to the federal levels. Each base will also develop an installation complex encroachment management action plan, with assistance from an environmental consulting firm.

AFSPC was chosen since it has already established command- and installation-level encroachment prevention committees and leads the service in electromagnetic encroachment planning, said service officials. This choice also fulfills a commitment to former Sen. Kenneth L. Salazar (D) of Colorado to include his state in the pilot program.

Stenner Open To Amending USERRA

Lt. Gen. Charles E. Stenner Jr., Air Force Reserve chief and Air Force Reserve Command commander, said Feb. 9 he is open to re-examining whether to change the current five-year limit on a reservist retaining re-employment rights with an employer under the Uniformed Services Employment and Re-employment Rights Act of 1994.

Speaking at the Reserve Officers Association's national convention in Washington, D.C., Stenner said "the landscape has changed," given the enduring operations in Afghanistan and Iraq and Reservists' support of them every step of the way.

"It's theoretically possible," he later said, that some airmen could exceed the five-year limit, and this situation "may continue for some years." He said he would also favor changes providing their employers with more repeatability, predictability, and sustainability. ■

News Notes

■ The 2009 Lance P. Sijan Air Force Leadership Award winners, announced Jan. 20, are: Lt. Col. Roger A. Sherman (senior officer), Capt. Rachel M. Phillips (junior officer), SMSgt. Jesse D. Schraner (senior enlisted), and SSgt. Gino P. Kahaunaale (junior enlisted).

■ California Gov. Arnold Schwarzenegger (R) on Feb. 2 appointed Air Force Brig. Gen. Mary J. Kight to be adjutant general of the California National Guard. She became the first female to hold this position in California and the nation's first black female AG.

■ Lt. Col. Dave Iverson, 492nd Fighter Squadron commander at RAF Lakenheath, Britain, on Jan. 11 became the only active duty pilot to reach 4,000 flying hours in an F-15E fighter. He did it during a flight from Lakenheath to Lackland AFB, Tex.

■ The first Global Positioning System Block IIF satellite on Feb. 12 traveled on a C-17 transport aircraft from Boeing's satellite assembly facility in El

Segundo, Calif., to Cape Canaveral AFS, Fla., for its scheduled launch into space around May.

■ The Air Force on Feb. 1 merged all of its medical treatment facilities in San Antonio under the 59th Medical Wing (Wilford Hall Medical Center) at Lackland AFB, Tex., as part of the BRAC 2005 moves to form Joint Base San Antonio.

■ Air Force officials announced in January that the service is establishing a flag-level position to oversee the acquisition of its nuclear systems. This official will lead a new program executive office for strategic systems at Kirtland AFB, N.M.

■ The 69th Bomb Squadron at Minot AFB, N.D., the Air Force's newest B-52H bomber unit, in late January received initial certification to perform its strategic mission after undergoing its initial nuclear surety inspection.

■ The courageous actions of MSgt. Alan Andrews and MSgt. Michael

Wingler on Jan. 18 at an air base in Southwest Asia helped save lives and prevent the loss of a B-1B bomber after it made an emergency landing and caught fire.

■ The National Museum of the US Air Force in Dayton, Ohio, on Jan. 25 opened a new exhibit on the MQ-9 Reaper unmanned air vehicle in its Modern Flight Gallery. It is the first permanent public Reaper display.

■ The Federation Aeronautique Internationale on Jan. 19 confirmed the 41 world records claimed during a Sept. 13, 2009 flight of a C-5M Super Galaxy from Dover AFB, Del. The National Aeronautic Association recognized these as US records last October.

■ Air Mobility Command announced Feb. 3 that its investigators concluded that flight crew errors caused a C-21 transport aircraft to depart the end of the runway at Ali Base, Iraq, on Nov. 2, 2009. The C-21 sustained about \$1.8 million in damage. ■

THE RIGHT TOOL FOR THE JOB



The U.S. Air Force already boasts one of the most impressive aircraft fleets on Earth. Adding the C-27J takes this to a new level. The C-27J was designed from the ground up for quick, efficient and flexible transport of personnel, equipment and supplies into remote austere environments. It provides today's aircrews with the capabilities they need to satisfy time-sensitive, mission-critical requirements and safely get the job done. It is the perfect complement to the U.S. Air Force's current fleet and will continue to help the U.S. Air Force effectively support our warfighters abroad and emergency response forces at home.

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Beyond the Blue Budget

In the riotous 1933 film “Duck Soup,” comedian Leonard Marx—better known as “Chico”—dumbfounded actress Margaret Dumont with this penetrating question: “Who ya gonna believe, me or your own eyes?”

The same could be asked about the Air Force budget. Take, for example, the new Fiscal 2011 plan. The Pentagon claims the “base” Air Force budget is \$150 billion, or 33 percent of all spending by the uniformed military services. However, the figure given by the Air Force, which ought to know, is smaller: \$120 billion, a huge difference of \$30 billion.

So, who are you going to believe, the Pentagon, or your own eyes (that is, the Air Force)?

The answer is the Air Force, but knowing why is based on having a clear understanding of what USAF calls “the blue budget.”

The blue budget comprises planned expenditures on airmen, weapons, training, bases, and all of the other programs that USAF actually manages. Total it all up and you get \$120 billion. This is what the Air Force actually costs, as opposed to what the public is told that it costs.

What about that other \$30 billion? It is part of a shell game, pure and simple. Few ever discuss it openly, but one clear public explanation was offered on Jan. 30, 2004 by the then-Pentagon comptroller, Dov S. Zakheim.

“The Air Force ... has a lot of pass-throughs,” said Zakheim. “A lot of intelligence money and space-related money goes into those accounts and literally passes through.” In other words, Zakheim was saying, the money is never touched by Air Force hands.

Six years ago, when Zakheim uttered those words, he was describing a DOD-presented Air Force budget of \$120.5 billion. It was an illusion. Only \$98.5 billion was “blue.” The rest—\$22 billion—really was spent by others. Fully 18 percent of USAF’s alleged topline request was simply “passing through.”

As is clear from the 2011 figures reported earlier, the situation has gotten worse. “Non-Air Force” funding in the Air Force budget now accounts for 20 percent of the entire outlay total.

What constitutes “non-blue” funding?

These accounts include spending for the defense health program, certain special operations activities, and an assortment of unclassified intelligence accounts that actually are managed defensewide or by non-Air Force organizations. Yet these expenditures are “scored” on the Air Force ledger.

It is in the intelligence realm that the Air Force budget really gets distorted. USAF’s breakdown of the non-blue budget shows \$26.2 billion passing through to intelligence programs. This is “OSD-directed spending,” a statement reads, “[comprising] nondiscretionary funds.”

The service did not say why the money is routed through the Air Force instead of passing through various defense agency budgets—or the Park Service budget, for that matter.

The other non-blue accounts are, in the big scheme of things, relatively insignificant. There is \$3.1 billion for health programs and \$1.1 billion for special operations. The other services have comparably small pass-throughs.

This may seem like nothing more than an arcane bookkeeping issue, but it is not. DOD’s method of accounting distorts

budget reality, with the public getting a skewed view of USAF costs. This also complicates service-to-service comparisons.

That fact was amply illustrated by a typical example of press coverage of the new budget, released on Feb. 1. One particular story read: “The military departments historically receive relatively equal portions of the defense budget. The FY11 request maintains that arrangement,

allocating \$143.4 billion to the Army, ... \$160.6 billion to the Navy and Marine Corps, ... and \$150 billion to the Air Force.”

This is pure hogwash. When USAF’s unique intelligence funding is factored out, the real split is not equal at all. It is Navy/Marine Corps 38 percent, Army 33 percent, with the Air Force lagging far behind at 29 percent. The Air Force, far from being the “expensive” armed service, is the least costly.

Compounding the matter is another problem: Even the blue budget contains up to \$30 billion masquerading as Air Force money—but which in reality is money spent on secret programs.

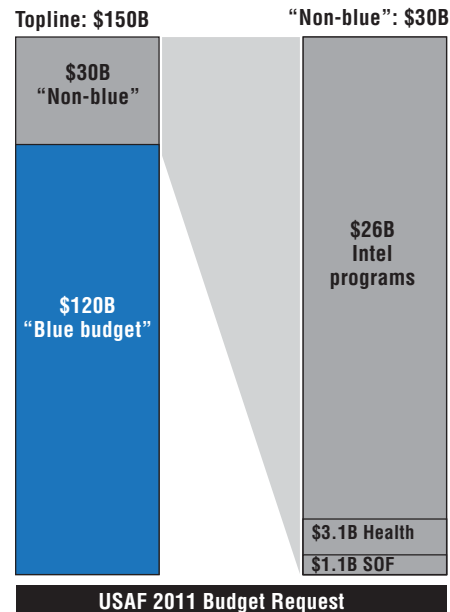
The exact amount, of course, is not publicly available. The overall figure, though, is large. An estimate by the Center for Strategic and Budgetary Assessments claims that USAF’s 2010 budget hid a stunning 80 percent of the Pentagon’s classified funding activities. CSBA estimates \$29 billion of USAF’s blue budget is actually cover for secret programs.

CSBA’s Todd Harrison estimated that “black” programs ate up fully 42 percent of USAF’s total procurement account and 43 percent of research and development accounts.

How did the Air Force wind up shouldering 80 percent of DOD’s classified budget? CSBA explained that USAF’s acquisition budget uniquely contributes funds to a number of intelligence agencies, including the CIA, National Security Agency, and National Reconnaissance Office.

Further, the Air Force is responsible for most command, control, communications, and intelligence functions and assets, such as reconnaissance satellites and satellite launch and control facilities, which tend to be heavily classified programs.

Keep all this in mind when you read—even in this magazine—that the Air Force will be spending \$150 billion next year. There’s a lot of Marx Brothers monkey business in that figure. ■



More information: <http://www.saffm.hq.af.mil/budget>

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There will be no margin for error, said senior Air Force leaders at AFA's Air Warfare Symposium.

A Force at Razor's Edge

By John A. Tirpak, Executive Editor



USAF photo by TSgt. Michael R. Holzworth

In years just ahead, the Air Force will maintain bare minimums of sufficiency in manpower, programs, and systems, and it will stay in that unhappy situation at least until the American economic situation improves.

As a result of this, the service can no longer tolerate programmatic delays. It will cancel nonperformers and will invest mainly in new systems it considers sure things—and relevant—throughout the near- to mid-term.

These were the tough messages delivered in February by top Air Force leaders at AFA's Air Warfare Symposium in Orlando, Fla. Fresh from a two-day meeting of the service's four-star generals, they

Above: F-15 pilots go through preflight checks at Nellis AFB, Nev. Right: SrA. Jason Atwell (r) operates a bomb lift while other airmen ready an AGM-114 Hellfire II missile for a Reaper.

USAF photo by SrA. Nadine Y. Barclay





A KC-10 touches down at a base in Southwest Asia.

described the Air Force as pulling its weight in the ongoing conflicts overseas but fighting a pitched battle against aged equipment, multiplying missions, and slack resources.

"It remains our No. 1 priority to prevail in today's wars," Air Force Secretary Michael B. Donley said in his keynote address. He ranked USAF's top three contributions to the war effort as "projecting US power at great distances through air mobility," closely integrating air forces with ground units, and partnering with other air forces.

As a result, top USAF investment priorities, reflected in the Fiscal 2011 budget request just sent to Congress, are mobility, intelligence-surveillance-reconnaissance, command and control, and "building partner capacity."

Donley said the Air Force "must be able to prioritize [its] requirements," and those things considered not imminently necessary or affordable, or which USAF can rely on other entities to provide, will have to wait. It must "balance [its] capabilities with those of ... joint and coalition partners, and balance risk in a fiscally constrained environment," he said.

The active duty force will remain fixed at 332,000 people, with a further 71,000 in the Air Force Reserve and 107,000 in the Air National Guard. Any newly added missions have to be met within those limits, Donley said.

Moreover, "in the immediate future, I think our major programs are set," Donley said, referring to an aviation investment plan sent to Congress along with the defense budget. "Beyond that, we will have to await an economic recovery [and] assess ... the future of the economy" and

"what level of resources will be provided to defense" in the next four to six years.

Chief of Staff Gen. Norton A. Schwartz, in a press conference during the symposium, said, "This is no longer a time for wishful thinking" about programs that might be created, or success in programs that are having trouble.

An Agile Fleet

Addressing himself to USAF's suppliers, he said, "Tell me what you can do; I expect you to deliver what you promise." The Air Force no longer has the dollars to spend on programs that don't perform or don't yield capabilities across many broad missions, because it doesn't have enough funds to do all the things it should.

"There's no question that our Air Force has been taking risk in infrastructure; our milcon [military construction] programs have been more anemic than we would prefer," Donley told reporters. More importantly, though, "we have been struggling ... with weapon system sustainment and with the readiness of nondeployed forces."

Schwartz told reporters that maintenance checks and inspections are being deferred because equipment and people are needed on the front lines, and because of the "commitment to supporting the folks forward." That means the forward based units get priority for funds.

However, "we cannot do this indefinitely," Schwartz said. "We are getting to the point now where there's very little management reserve on the readiness side [of] the Air Force."

Air Combat Command chief Gen. William M. Fraser III said he's starting to see "a slight decline" in mission capable

rates, but doesn't think it has reached an "alarming" level yet. "We are still putting resources to ... trying to turn those slight trends around," Fraser said.

In his address, Fraser said he's determined that USAF will not return to the patterns of the late 1970s, when the service "created a hollow force with a large but unsustainable inventory that could not deliver." The Air Force has very deliberately chosen instead to operate "a smaller, more capable fleet that is agile and poised to take on any challenge that we may see." This was the thought underlying ACC's proposed early retirement of some 250 fighters, or more than three wings' worth of capability.

"Given the operations we face today, a large hollow force would undermine our nation's strategic goals, and we cannot allow that to happen," Fraser said.

Donley noted that the financial savings of not operating the aircraft are to be put toward boosting the combat power of those that remain—some 2,050 fighters.

He noted that of the 4,100 manpower slots saved by the retirements, 3,600 have already been shifted to "support operations, processing, exploitation, and dissemination of collected intelligence. We're doubling the number of ISR liaison officers assigned to deployed ground forces."

Because funds are so tight, Donley urged Congress not to direct heavy changes in the Air Force budget, asking for the freedom to manage the force

within the funds available, setting priorities and taking risks where the service believes it can live with them.

He specifically asked that Congress not add any further C-17s to the fleet. A soon-to-be-released mobility study, he said, will show that the Air Force still only needs about 300 strategic airlifters. However, with the number of C-17s already delivered or in the pipeline, combined with C-5s that are receiving significant upgrades, USAF will have more than 330 strategic airlifters.

more aircraft into action to support the current surge in Afghanistan. Toward that end, he said, less-critical inspections and repairs are being deferred and some aircraft aren't being inducted into depot to get AMC "through this surge period here, through the summer."

Hoffman said AFMC has pilot programs under way to study how it can break down depot maintenance such that aircraft will come in for shorter stays and be out of service for less time. Typically, Hoffman said, some aircraft

over 10 or 20 or 25 years" is evidence of the fact that "the assets are not cheap, and we don't have all the investment dollars we would like to do that on a more rapid schedule."

The Air Force hopes to award a contract for the tanker this summer. The F-35, though, will be delayed in order to reduce the concurrency of testing and production.

Schwartz forecast that the F-35 could incur a Nunn-McCurdy breach, which indicates cost and schedule have gotten way out of line. The Pentagon indeed declared such a breach in March, and said it had taken dramatic steps to restructure the program. Such an event requires a program to be restructured to live within its base budget, but service leaders didn't know yet how this might happen.

Fraser said that his command is re-examining the requirements necessary to declare initial operating capability on the F-35, scheduled for 2013. However, he will not declare IOC simply to meet "a date." His concern is to have a capability, and he said he will wait until it's ready.

"I'm confident in the restructure that we've recently gone through," Fraser said. "I'm confident in the changes that have been made and with the program that is laid in right now. Now it needs to produce."

Donley was asked if the appearance of the Russian PAK FA fifth generation fighter had caused the Air Force to rethink its plans for the F-22, terminated last fall at 187 aircraft, or the pace of the F-35, or the early retirement of more than three wings of fighters.

"No," Donley said simply.

"We expect aerospace technology to be advancing in all of the developed countries," and Russia is no exception, he said.

"We're already anticipating advanced fighters, advanced air defenses, advanced weapons of all different types to be part of our future that we have to take account for, and we have been doing that."

The aviation investment plan submitted to Congress with the Fiscal 2011 defense budget called for no new airlifters, bombers, or other large aircraft—besides tankers—for at least a decade. Does Donley have concerns about whether the US industrial base can survive a long drought of new programs?

The \$1.5 billion to be invested in advanced stealth, communications, and other enablers—all for the next long-range strike system—has "addressed the issue of industrial base engineering

USAF photo by Capt. Tyler Rennell



USAF and Afghan National Army Air Corps members provide security during a humanitarian mission in Kandahar, Afghanistan.

"We need to be allowed to manage the force to what we think our requirement is and not maintain capacity in excess of the requirement," he told reporters.

The extra aircraft represent "a two-way hit," he added, saying that not only does Congress subtract money from higher USAF priorities to buy the aircraft, but it then forces the service to make other cuts to come up with funds to operate them.

"We have enough in this area, and we need to put the marginal dollars toward other requirements," Donley said. To maintain the fleet it has with funds available, USAF is asking Congress for permission to retire some of the oldest C-5As.

Moreover, the Air Force is rethinking the way it does business to create the effect of more aircraft without buying them. Air Force Materiel Command chief Gen. Donald J. Hoffman said AFMC has been asked to help Air Mobility Command get

sit idle at depots because a problem has been found with them that requires a part, an engineering analysis, or an item not at hand. They remain grounded until the needed item is produced.

Anticipation

In the future, he sees the aircraft moving around more while in depot, going to where the parts or capability exist to fix them, or returning to service with write-ups that require eventual repair but don't affect safety of flight. When the part or engineering fix is ready, they will go back to depot. More work will be done at bases to assess the health of aircraft before they go to depot, so parts and engineering will be ready when they arrive, leading to shorter visits and less downtime.

The top modernization priority for the Air Force is the KC-X tanker, followed closely by the F-35, Donley asserted. The fact that these programs are "extending

talent at the sort of high-end, very sophisticated" technologies, Donley said. While he acknowledged that the long hiatus in new programs may cause the industrial base to dwindle to just one supplier in many key product areas, he observed, "I think we've already been doing that." However, he said the Pentagon's acquisition, technology, and logistics shop is taking a fresh look at industrial base issues.

Both ACC and the newly minted Global Strike Command will have claim on the

seamless transition" in taking over those functions. In separate incidents that came to light in 2007 and 2008, the Air Force was criticized for having lax control over its nuclear parts, but Hoffman said that today every nuclear element—some 400 items, "from control panels in aircraft to relays and switches"—has "a wrapper" around it and is being tracked. When these parts are moved, "there's a very definite process" involved.

"How it gets moved and how it gets received and tracked is now quite different

that no one can remember we've ever done before."

He has gone beyond simply "fill[ing] the empty seats" and is growing AFMC's civilian acquisition workforce "back up to a level where it can properly run programs."

Beyond filling 2,000 vacancies, Hoffman said he has marching orders to bring on "thousands and thousands" of former contractors as USAF employees. He's trying to beat the clock, though: It's been common knowledge for years that most of AFMC's workforce is either retirement-eligible or will be soon. The weak economy has blunted an expected exodus, but Hoffman doesn't want to be caught short by a sudden uptick in retirements, should a more prosperous wind blow.

Training Is Key

He has also abandoned an effort, started a few years back, to organize AFMC by wings, groups, and squadrons. Most of its organizations were too small to make that concept work—leading to, in one case, a one-man squadron—and most of its workforce was civilian. The command has returned to organizing by directorates, Hoffman noted.

The Air Force has given up many training events in order to supply people and machines for the war effort. That can't go on forever, Fraser said.

"We need to make sure we are staying up on the exercises," he said. "Not only the Red Flags [and] Green Flags, but even the local exercises." The training of airmen "is our asymmetric advantage" and gives him confidence that USAF can defeat, for example, the PAK FA.

Fraser said studies are under way to see how much more training can be accomplished with simulators and distributed mission operations, where airmen can participate in a wargame virtually, from a long distance away.

He would like to see exercises recognized more for their contribution to "building partnership capacity," saying that this is exactly what is happening every time USAF forces train with their counterparts in other countries.

Hand in hand with ACC, Air Education and Training Command is conducting a sweeping review of all its training activities, the better to dovetail them with real-world operations, AETC chief Gen. Stephen R. Lorenz reported. The objective is to make airmen better prepared for whatever they will face in the field. Many schools, such as basic

Photo courtesy Sukhoi



The Russian PAK FA takes to the air. USAF officials are confident that American airmen can defeat the fifth generation fighter.

new bomber, but the latter's commander, Lt. Gen. Frank G. Klotz, said his organization will be a forceful advocate for long-range strike capabilities. He told symposium attendees that long-range strike is a fundamental capability the nation expects of its Air Force, and that capability will be fulfilled both by retaining today's bombers for decades to come and with the new system.

Klotz asserted that GSC is "absolutely committed to providing robust and relentless advocacy" for the bomber mission, both conventional and nuclear. He also said that, as long as nuclear weapons are part of the nation's deterrent force, bombers will be part of that deterrent. However, he acknowledged that the B-52 and even B-2A are "aging aircraft" and will pose "significant challenges" to keep modernized and fully capable for their missions.

Hoffman said AFMC, as the logistics side of USAF's nuclear force, has made "a

than what it was two years ago," when the system was flagged for problems.

Hoffman said no one is assuming the nuclear inventory issue has been put to rest.

"I'll always put nuclear No. 1 until somebody tells me to do something different," he said. However, while he called USAF's nuclear weapons of today safe, secure, and reliable, "I cannot project that confidence forward into the future ... unless we do some modernization." The weapons are being sustained for now, but "the pain of that sustainment continues to grow as these things age."

While most speakers were talking about doing with less, Hoffman was able to report that he is bringing in more people. To comply with Air Force, Pentagon, and Congressional directives to enhance the in-house expertise of the acquisition system, Hoffman said he is bringing on new civilian hires "at a rate



An artist's conception of the next generation bomber. Both ACC and Global Strike Command will have claim on the new bomber.

training, have had their courses extended in the last few years, with good result.

Lorenz said his command has added “innovate” to its basic mission of “recruit, train, and educate,” because with new missions emerging on practically a monthly basis, AETC has had to step in again and again to train people for new activities. He noted that the command is in the midst of an experiment to take officers who have not had standard USAF pilot training and teach them to fly remotely piloted aircraft (RPA). The experiment is having some successes, but the course is being adjusted constantly to find the right duration and level of experience for the RPA pilots.

The quality of USAF recruits has never been better, Lorenz said, but the pool of eligible young people on which to draw is dwindling and USAF must work harder to attract and retain new airmen.

Replacing the T-38 trainer will be AETC’s next big acquisition challenge, Lorenz said. The existing fleet is 43 years old and, although new wings and other upgrades have extended the aircraft’s life, he said a new aircraft must be online by 2026.

In fact, AETC is trying to move up its acquisition “a couple of years,” Lorenz said, because teardown analyses have identified “156 single points of failure” on the T-38, and that is too many to risk for more than another 15 years, he said. Likewise, the T-1 Jayhawk will need to be replaced in about the same timeframe, but these acquisitions might be more

manageable with a change in the way specialized undergraduate pilot training is conducted.

Lorenz also said AETC will overhaul the way it recruits and trains battlefield airmen. The current pipeline washes out 86 percent of inductees, he said, and he wonders if it is designed to weed people out or train people for the job.

However, a slightly different note was sounded by CMSAF James A. Roy. Asked in a presentation what worries him, Roy said he would rather have airmen overtrained for the things they might encounter when deployed, rather than risk that they be thrust into a situation for which they are unprepared. He is seeking more training opportunities for airmen with the Army, especially in those locations and in those tasks where airmen will be side by side with their Army brethren in possible combat situations.

Contested Space

More broadly, USAF must “continue to manage” the airmen in its most stressed career fields—mostly battlefield airmen—to make sure they are getting as much relief in their operating tempos as possible, Roy said. There is real danger of burning out airmen who have experienced unremitting one-to-one dwell deployments, or longer.

Battlefield airmen will continue to play a fundamental role in combat operations for the foreseeable future, Schwartz said, as irregular warfare

continues to be one of the Air Force’s main activities.

Fraser said that IW “is not just a part of today’s fight. I contend that it’s going to be an enduring mission, and therefore it’s an ACC priority.”

Toward that end, USAF is seeking to convert new C-130J aircraft into AC-130 gunships, to replace AC-130H-based aircraft that are more than 30 years old. Schwartz said the aircraft will not only have infrared and electro-optical sensors and “a gun of some kind,” but “other kinds of guided munitions capabilities ... that were certainly not available when the H models were originally fielded, or even 20 years later.”

The Air Force will probably seek just 112 new combat search and rescue helicopters to fulfill the capabilities that were to have been supplied by the terminated CSAR-X program which aimed to buy 141 machines. That won’t fix the one-to-one dwell time currently afflicting CSAR practitioners, but, again, funding is limited.

“This is all about choices,” Schwartz told reporters. “I’m not presupposing the outcome, but I don’t want to raise expectations, either.”

In his speech, Schwartz focused on space, and said that the days of the US enjoying a monopoly on space—access to it, unfettered use of space systems for ISR and communications—are over.

“Current realities continue to suggest the inevitability of contested space,” and USAF must prepare for that, he said.

To assure that the Air Force has access to its networks and to the ISR data upon which commanders have come to rely, he said his “foot stomper” was that USAF must invest in other ISR systems—principally RPAs—to make an attack on its space systems less profitable for an enemy. Space-based ISR systems “should at least be, in part, backed up by other systems,” he said.

“They may not be identical” in the products they provide, “but we need to think in a cross-domain way when seeking such resilience.” Further, space systems can be defended by making them so distributed—in the form of much smaller, less costly satellites—that an attempt to take down the system would be fruitless, Schwartz said. Investing in such “smaller, simpler” satellites versus larger, powerful ones will “be the very best approach” in some cases.

“With flattening budgets and what no doubt will be declining purchasing power, these sorts of trade-offs, while difficult, must be considered,” he said. ■

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Airpower on Demand

At AFA's Air Warfare Symposium in Orlando, airmen describe incessant requests for what USAF does.

By Marc V. Schanz, Associate Editor

USAF photo by SrA. Laura Turner

In January, Air Force Gen. Duncan J. McNabb traveled to Afghanistan to help plan a new surge of personnel, equipment, and supplies into that war zone. The commander of US Transportation Command arrived at an important moment. Army Gen. Stanley A. McChrystal, the overall commander, was pushing into action 30,000 troops recently assigned to the Afghan theater.

It was a Monday, and the date was Jan. 11, 2010.

"The next day, Haiti hits," McNabb said during AFA's February Air Warfare Symposium in Orlando, Fla. He was referring to the 7.0 magnitude earthquake that devastated the impoverished Caribbean nation, killing scores of thousands.

The disaster brought a rapid change of plan for America's transportation forces. The new marching order was to press ahead on the surge in Afghanistan and at the same time "do everything you can to take care of Haiti."

Overnight, McNabb's TRANSCOM forces, especially its air mobility elements, had to shift gears. It was spinning up a giant contingency operation for Haiti while in Afghanistan, on the far side of the world, requiring a surge of airlift assets. Without standing down in

Afghanistan at all, it pressed into service other forces for Haiti.

This scenario is emblematic of the range of potential scenarios the Air Force is facing today, McNabb added. "It just shows you how quickly you are going to be asked to do things, and our force needs to be very agile in the ability to do all of those kinds of things."

A Balancing Act

While the US presence in Iraq is diminishing quickly, an enormous challenge in Afghanistan is requiring a great deal of the Air Force's resources and capabilities—particularly intelligence-surveillance-reconnaissance aircraft, airlifters, and aerial refuelers that support a world-circling air bridge.

At the same time, the Haiti effort—a massive, multinational disaster relief operation—reaffirmed to service leaders the fact that operational flexibility is not just a good idea; it is central to the success of American military efforts around the globe.

The balancing act comes at a time when the force is grappling with a flat budget, struggling to recapitalize its aged aircraft fleet, expanding its capabilities to conduct irregular warfare, and dealing

with new challenges such as cyberwar and the spread of stealth technology.

So-called low-intensity conflicts playing out in areas ranging from Northwest Africa to the Horn of Africa through Iraq and on to Afghanistan are dominating the news today. Still, senior leaders were quick to warn against extrapolating too much from today's wars. The debut of the Russian PAK FA stealth fighter prototype in January indicates other nations are seeking to increase their conventional military capabilities, too.

"I think the assumptions that we continue to hear being made, that the kinds of wars that we're going to fight for the future are the wars like we've got now—I have little to no confidence in that," said Gen. Roger A. Brady, head of US Air Forces in Europe.

While the PAK FA's strategic effect is unknown at this point, Brady said, it demonstrates the willingness of other nations to pursue fifth generation technology. "What's important is how do we maintain air dominance," he added. "We must continue to do fifth generation and sixth generation research ... because other people clearly are."

A year after President Obama's initial Afghan reinforcements began arriving,

the country is now the primary focus of US military efforts. Resources from Iraq have been redirected east. A country with tough terrain and “very interesting neighbors,” as McNabb called it, requires a force expansion largely dependent on airpower.

In most wars, the Air Force would carry about 10 percent of its cargo by air, he noted, but in Afghanistan the number has shot up to as high as 30 percent.

Airdrops have expanded with the US presence, McNabb said—often vital to getting supplies to isolated forward operating bases. In 2008, 16.6 million pounds of supplies were airdropped into the country, according to Air Forces Central statistics. As of November 2009, Afghan airdrops spiked to 32.3 million pounds.

The Air Force is still testing new methods of aerial resupply, including a technique called “low-altitude, low-cost” drops, where airlifters fly 265 mph, low-altitude passes during drops and use disposable parachutes so time and energy are not spent cycling them back to units. As of February, three C-130s from Dyess AFB, Tex., have been equipped to carry

out this mission, McNabb said, with more planned.

In addition to a higher cost (about \$3 a pound to move by air, compared to 30 cents a pound by surface, McNabb said), the logistical picture is complicated due to lack of airfields in the massive country. Throughput, as a result, becomes vital—from hubs such as Kandahar and Bagram to forward bases such as Camp Bastion in Helmand province, where throughput increased 400 percent since June of 2008.

Coordination Is Key

Working with Air Forces Central last year, McNabb said, air facilities received more ramp space, matting, and new equipment such as k-loaders and fuel pumps or new parking plans for aircraft to increase flow.

Just as critical as airdrop, the opening of the Northern Distribution Network has eased supply worries. A series of routes through Europe and Central Asia have helped relieve the pressure on Pakistan routes—where 50 percent of Operation Enduring Freedom’s nonlethal cargo travels through.

The unforgiving terrain means airpower is similarly key to combat power, said Lt. Gen. Donald C. Wurster, head of Air Force Special Operations Command. “Just imagine if the United States Army and the Marine Corps were over there trying to ... stabilize an Afghanistan without the airpower we have that gives them ISR overwatch, that gives them mobility by air, ... that gives them on-call strike within minutes of a troops-in-contact scenario,” he said.

Underpinning this power is the Global Positioning System satellites, said Gen. C. Robert Kehler, head of Air Force Space Command. To meet demand, forces in Afghanistan should see improvements in the GPS coverage this spring—as a two-year effort to reposition the constellation is now under way.

Three more GPS satellites are being added to the active set of 24, allowing the coverage to spread out and improve over rough terrain such as in Central Asia. “As soon as you start to move [the satellites], coverage begins to improve,” Kehler added.

Remotely piloted aircraft, such as the Predator and Reaper flown by AFSOC



Above left: Relief supplies are offloaded from a C-17 at Port-au-Prince, Haiti. **Above:** SSgt. Cameron Freeman (r) briefs CMSgt. Mark Villella, AFSOC command chief master sergeant, at Bagram Airfield, Afghanistan.

Nonlethal supplies such as construction material, food, and medicine now transit through the Caucasus and Russia since early 2009, with more than 7,866 containers delivered so far.

airmen, are involved in US and NATO’s most sophisticated efforts to track and target terrorists—“to the degree that they know which buildings they’re talking about,” Wurster added. The fusion

between RPA crews and ground troops make the capability “indispensable,” he said.

Close air support, particularly provided by AFSOC’s fleet of gunships, continues “to daily save lives and take lives in ways that will produce strategic gains,” Wurster said. The Air Force is launching an effort in 2011 to acquire 16 new J-model gunships by 2015—increasing the size of the fleet to 33 aircraft. This will represent a net increase of eight (after eight older gunships are retired).

Coordination is critical in OEF’s coalition of 43 nations—38 of which are European, Brady said. One of USAFE’s most in-demand activities is the training of joint terminal attack controllers—or JTACs—which other than Predators and full-motion video, are the most sought-after capabilities in-theater, he said.

“We’ve got to the point where everyone wants a JTAC; even (provincial reconstruction teams) want a JTAC,” he said.

Earlier this year, USAFE airmen certified Estonian and Latvian JTACs heading to Afghanistan, and plans to double the rate at which the command trains them, beginning this month (going from 72 a year to 144). Through NATO and USAFE efforts, Brady said, the goal is to certify schools from across Europe to train to a set standard sought by US Joint Forces Command.

Just three months before Operation Unified Response, the military’s response to the Haitian earthquake, USAF Gen. Douglas M. Fraser, commander of US Southern Command, visited the country. When he heard the news of the quake he “understood what this could look like.”

Of a nine million person population, three million were directly affected and, as of Feb. 18, more than 200,000 lives were confirmed lost.

The day of the earthquake, Fraser’s deputy, Army Lt. Gen. D. K. Keen, was visiting the US Embassy in Port-au-Prince. Air Force Maj. Kenneth Bourland, visiting Haiti with Keen, was killed in the quake.

“Everybody suffered some consequence,” Fraser said.

Haitian government infrastructure, United Nations personnel, and Fraser’s own troops were affected by the disaster, further complicating response efforts. The total capability of the United States was directed to respond by the President, Fraser said. Joint Task Force-Haiti was established, composed of more than 13,000 personnel on shore and ships and officials and military personnel from 109 nations. At its peak, Jan. 31, the operation numbered around 22,000, Fraser said.

USAF photo by SSGT Manuel J. Martinez



USAF Capt. Dave Paland (l) and Canadian Air Force Capt. Ryan Peters land a C-130J at Bagram Airfield.

On a normal day, Port-au-Prince’s international airport handled 10 to 12 flights a day. With the control tower all but destroyed and the seaport demolished, coordination needed to be restored and capacity greatly expanded.

By Jan. 14, a team of AFSOC combat controllers had parachuted in and set up air traffic control operations on a card table on the airfield. They were followed by TRANSCOM’s Joint Task Force-Port Opening, a small team of airmen and other service members who operated an airfield, moving cargo to staging areas.

Building Connections

Air Force pararescuemen arrived to assist in the grim task of retrieving survivors from pancaked buildings, Wurster said. “We had young pararescuemen three stories down in collapsed structures, laying next to cadavers that were in many cases days old, while they dug out survivors,” he said.

Soon the airport was running almost nonstop, marshaling civilian, military, and contractor flights nearly continuously. On Jan. 16, 65 air missions were recorded, and by Jan. 19, the flow peaked at 160 flights.

“Initially, it was food and water, but over time, the priorities changed,” McNabb said, and the system had to respond accordingly. High-speed transit lanes were established for airlift and rotary lift from sea, with a restored port capacity soon up and running.

Estimates suggested about 250 cargo containers a day would sustain a million people, McNabb said, and without water, 150 containers would still be needed daily. Once figured, the formula was the nut of

the effort. “I told them, ‘Here’s what I need to do,’ and they put all the pieces together and moved very quickly,” Fraser said, singling out Air Mobility Command for bringing “huge amounts of capability on a dime.”

As of Feb. 16, more than 3,283 sorties were recorded into Port-au-Prince airport, carrying more than 17,000 tons of supplies. By Feb. 19, Fraser reported, more than 2.2 million meals were distributed—plus 2.6 million-plus bottles of water.

It wasn’t long before officials were compiling lessons learned.

“It was the last thing I expected to deal with,” Fraser said of Haiti. “Hurricanes, yes; earthquakes, no.” While combatant commands can’t be manned for worst-case scenarios, training and augmentation—drawing in elements of other commands—is critical to success of such an operation. Rather than air-dropping supplies—which is inherently insecure and leads to poor resource distribution—early port opening capabilities were essential. Also proving key were expeditionary air traffic control capabilities, ISR flights to detect the movement of refugees, and balanced logistics to ensure supplies didn’t back up on a runway.

In addition to working with partner nations, Fraser said the effort made huge strides in building connections with civilian agencies and nongovernmental organizations. “In a lot of cases where NGOs were very hesitant to work with the military, they are now working and coming in to find military capacity to work with them, just because of the relationship they have grown on the ground,” he said.

As Haiti proved, new security concerns can emerge in unexpected places. Gen. Victor E. Renuart Jr., commander of NORAD and US Northern Command, highlighted another example: the spike in traffic through increasingly accessible Arctic sea-lanes and the accompanying territorial and resource disputes.

These events are creating “some stress, some competition” in the region, and national leadership—in conjunction with DOD and the State Department—must develop a new strategy which is “more clear” and utilizes lessons from operations in the Antarctic.

Partnership activities between Russia, Canada, Denmark, Norway, and others must be expanded and investments should be made in better communications, command and control, and situational awareness in the far north, Renuart asserted.

The health of forward based fighter forces is a concern for leadership in the Atlantic and Pacific theaters, as the combatant commands in both regions are heavily involved in partnership-building activities—of which the arrival of the F-35 is a critical component.

USAFE and Pacific Air Forces leadership are confident their needs will be met before legacy F-15s and F-16s retire. “I think it’s something that’s agreed,” Brady said, that the Air Force in Europe needs to get F-35s “around the same time the allies get them. It’s important for interoperability, to have a leadership role,” and to develop tactics, techniques, and procedures.

But age is a factor, Brady said, noting F-16s in Europe are already 8,000-hour aircraft. While service life extension

programs are on the table, there are other options to consider to maintain the fleet. “There’s an open question as to whether or not you want to SLEP an 8,000-hour airplane,” Brady said, noting there are younger tails elsewhere in the force structure.

The High-End Competition

While maintaining a healthy fighter force weighs heavily on overseas commanders, “tremendous transformation” is taking place in the capabilities of many of our allies, said Gen. Gary L. North, commander of Pacific Air Forces. Just as USAF led the way toward establishment of a strategic airlift component with C-17s at Papa AB, Hungary, Pacific allies such as the South Korea have thoroughly modernized their military.

The Republic of Korea boasts around 400 modern fighters, including the F-15K and Block 52 F-16s, North said, and the country’s military is on track to assume wartime command of its forces starting in 2012.

“It will allow our forces to be much more flexible, interoperable, and lethal when required,” he added.

Given South Korea’s increasing capabilities, USAF has “several options” regarding the future of Kunsan Air Base, North continued. “I mean, who knows, by 2020 we might not be at Kunsan,” he said. South Korea is modern and robust, and so “it’s hard to tell where we will be in 2020, but we are planning very deliberately for full tour mobilization.”

At the same time, North said, he expects RQ-4 Global Hawk unmanned reconnaissance aircraft to bed down at

Andersen AFB, Guam, by the end of the year. The long-range ISR aircraft will provide valuable intelligence gathering capabilities, as several of the world’s largest armed forces (including Russia, China, India, and North Korea) are all neighbors in the theater.

“Our high-end competition is very good [and] it’s getting better,” North added.

The Air Force’s ability to surge capability when needed, and tailor it to the environment, is critical to success of future operations. The 2010 Quadrennial Defense Review emphasized this point, as it instructed the expansion of light fighter and mobility aircraft capabilities in the general-purpose air force, as well as expanding special operations forces working with foreign militaries.

“What we are trying to achieve with these programs (light mobility and light attack aircraft) is to provide a capacity-building platform and a schoolhouse cadre of aviators and maintainers that are regionally trained,” said North, speaking with reporters. In locations from Africa to South America and the Pacific, you find a lot of decades-old propeller-driven aircraft. “What we see is countries that can’t afford a \$25- to \$50 million fighter can afford an \$8- to \$12 million light attack aircraft,” he noted.

Light support operations—such as aviation foreign internal defense (FID), as conducted by AFSOC’s 6th Special Operations Squadron—are gaining in importance.

“Eighty-five percent of [US Special Operations Command’s] deployed forces go into the CENTCOM [area of responsibility],” said Wurster. “But there are still things to do in other portions of the world.” For AFSOC, building partnership capacity “farther down on the spectrum” is just as critical as activities with European and Asian allies. Building capacity with small air forces in places such as the African Maghreb, Southeast Asia, and the Arabian Peninsula is expanding. Wurster anticipates aviation FID growing to meet demands of any conflict and “pre-conflict” in these areas.

AFSOC’s 6th SOS retains about 200 personnel currently, and is responsible for FID activities across all geographic commands.

Helping allies address security hurdles before they emerge as threats is why activities such as FID are so important, Wurster said.

Most of this type of activity will remain quiet. “I can’t tell you where they are,” Wurster quipped in February. “But they’re places you’ve read about in the paper.” ■



USAF photo by S/A Jonathan Stellen

SSgt. Kevin McCray raises a tow bar to move an F-16 for maintenance at Kunsan AB, South Korea. USAF and the South Korean Air Force are both improving their capabilities on the peninsula.

The Chinese military is pushing hard into cyber warfare, anti-access weapons, and other means to blunt US advantages.

China Turns Up the Heat

By Richard Halloran

A Chinese soldier points to targets at Shenyang training base in China.

DOD photo by SSgt. D. Myles Cullen

About 25 years ago, an American intelligence officer was asked how far the Chinese could project military power. His terse answer: "About as far as their army can walk."

Today, that statement is most assuredly no longer true.

China has accomplished perhaps the most remarkable expansion of military power since the US geared up for World War II. In the last 15 years it has deployed nuclear and conventional missiles that can reach US forces from the western Pacific to Washington, D.C.

China's military is also assembling a set of capabilities designed to avoid or offset traditional US advantages. This is sometimes referred to as a high-end asymmetric threat. Specifically, the Chinese are assembling a cyber apparatus intended to gather intelligence from US telecommunications and, if hostilities erupt, to close down US electronic communications and computers.

Beijing has fielded an array of advanced jet aircraft, anti-aircraft missiles, radar, anti-air and anti-submarine ships, and minelayers intended to deny US air and naval forces access to Chinese skies and waters.

The Chinese have started building a blue-water Navy capable of projecting power toward Alaska, toward Guam and Hawaii, and particularly to patrol the sea-lanes in the South China Sea and the Indian Ocean. This expansion has been fueled by the surging Chinese economy

that has provided double-digit annual increases in Beijing's military budgets.

As Adm. Robert F. Willard, commander of US Pacific Command, testified in January, China has developed "robust power projection capabilities." The buildup of that power, Willard said, calls into ques-

USAF photo by SA. Christopher Bush



A B-52 bomber takes off from Andersen AFB, Guam. USAF keeps a continuous bomber presence on the island to shore up US military power in the Pacific region.

tion Beijing's claim that modernizing the People's Liberation Army, which comprises all of China's armed forces, is only for defense.

A high priority for the PLA is to prepare for a swift conquest of Taiwan and prevent the US from arriving in time to help drive off an invasion.

To accomplish this, the Congressional Research Service said in a recent study, the PLA is assembling a broad array of weapons and seeking to knit them together and to deny US access to the skies and waters around Taiwan. This arsenal includes anti-ship ballistic missiles, anti-ship cruise missiles, land-attack cruise missiles, surface-to-air missiles, mines, aircraft, submarines, and other weapons.

In fact, the right to employ "non-peaceful means" to force reunification is written into Chinese law.

During the 60th anniversary parade for the People's Republic of China on Oct. 1, 2009, new weaponry was prominently displayed. The PLA has more than 1,500 ballistic missiles capable of hitting the island, with more continually being added.

China's failure to explain the goals of its military buildup is a source of frustration for senior US commanders. "Our goal is to understand China's military intentions and capabilities. ... We do need to understand their intent," said Gen. Gary L. North, head of Pacific Air Forces, in a November speech.

Pointing to a potential threat from China, Willard said, "It is critical that we maintain the readiness of our postured forces; continually reinforce our commitment to our allies and partners in the region; and meet each challenge by the [People's Republic of China] in a professional manner that is consistent with international law."

The director of national intelligence, Dennis C. Blair, a retired admiral and PACOM commander from 1999 to 2002, told Congress the People's Liberation Army had acquired missiles "capable of hitting foreign military bases and warships in the western Pacific," where the only foreign bases and warships are American.

Blair said China has improved its "ability to execute an anti-access and area-denial strategy in the western Pacific." This fact is increasingly factored into US military planning in the region, and the 2010 Quadrennial Defense Review made an explicit point to call for greater hardening and redundancy at bases threatened by anti-access capabilities.

To deter China, the US has been shifting the weight of its air and sea power

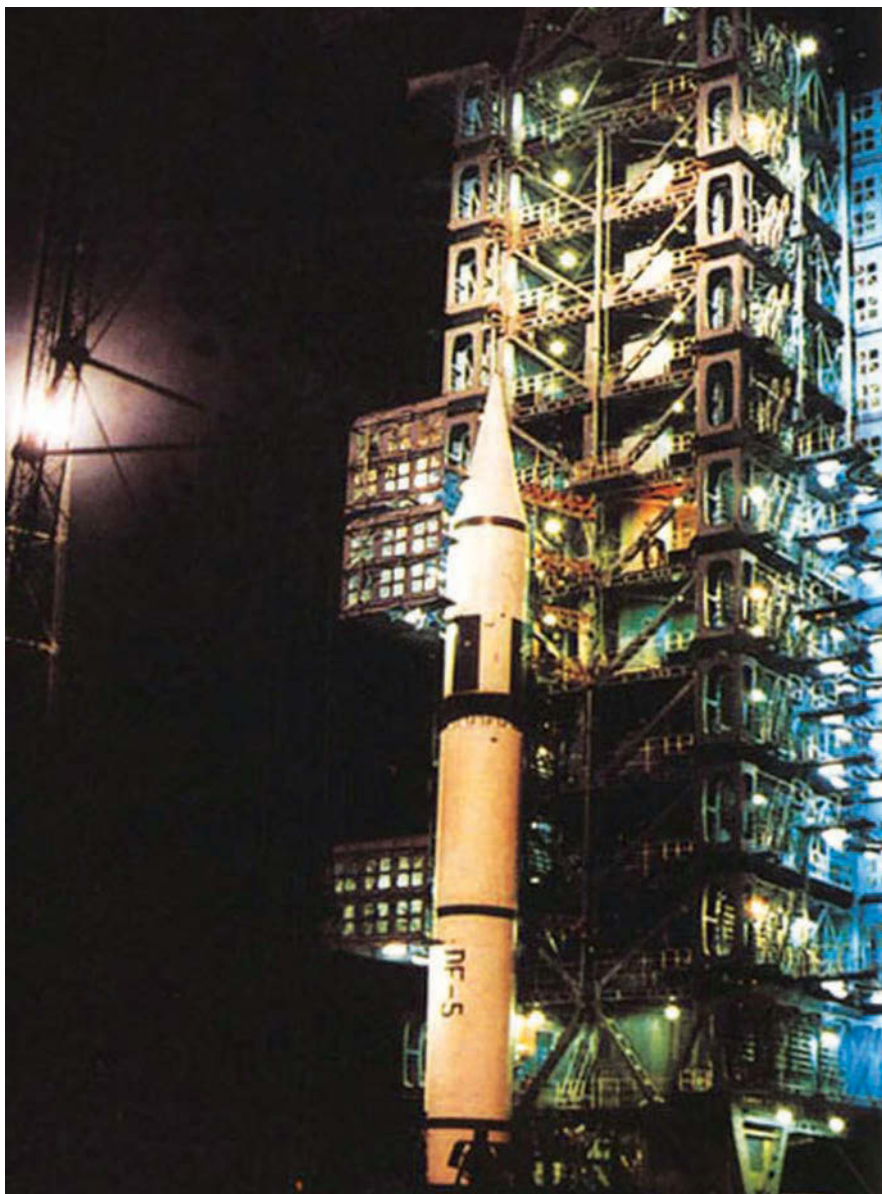


Photo via SinoDefence.com

A Dong Feng intercontinental ballistic missile awaits launch at Taiyuan Missile Test Center. China is investing heavily in new missiles, some of which, like this Dong Feng, can reach the continental US.

from the Atlantic to the Pacific. Six of 11 aircraft carriers and 29 of 52 attack submarines now operate in the PACOM area of responsibility.

The Pentagon has similarly been realigning US forces in South Korea and Japan, particularly on the island of Okinawa, to make them more flexible.

The Air Force maintains a constant bomber presence at Andersen Air Force Base on Guam in the central Pacific, and F-22 Raptors frequently rotate to Guam or Okinawa. The Global Hawk unmanned, long-range, high-altitude reconnaissance aircraft is scheduled to be deployed to Guam before year-end.

Ballistic missile defenses have been successfully tested against simulated North Korean missile launches. As 10 percent of the 300,000 American

soldiers, sailors, marines, and airmen in PACOM have been rotated to Iraq and Afghanistan, they have been temporarily replaced by units from the continental US.

In the PACOM headquarters above Pearl Harbor, China consumes about 30 percent of the staff's time. Willard told reporters, however, that "it would be a mistake to talk about China as an enemy. We need to manage our relations with them."

Willard's predecessor at PACOM, now-retired Adm. Timothy J. Keating, was similarly moderate, saying he was not worried about the Chinese—although he watched them closely.

"The Chinese are behind us," he said. "Unmistakably, they know it. In their words—I'm quoting some of them—



These two F-22 fighters on the ramp at Kadena AB, Japan, deployed from Langley AFB, Va., and were part of an air expeditionary force rotation in the region.

they're 25 years behind us." Then he relented a bit, acknowledging that "I don't know that these differences can be quantified simply in terms of years ahead or behind."

Perhaps the greatest concern is that PLA leaders have grown overconfident of their military capabilities—to a point bordering on arrogance. That, coupled with ignorance of the US armed forces, could cause the Chinese to miscalculate.

PACOM commanders from Adm. Joseph W. Prueher, who dealt with the Chinese when they fired missiles at Taiwan in 1996, through Willard have cautioned the Chinese not to overstep.

Prueher said in a 1998 interview that PACOM need not engage in "breast-beating" about the strength of US military forces. Still, he acknowledged it was occasionally "useful to demonstrate a data point."

Willard is said to have calmly made a similar point to a senior Chinese general during his visit to PACOM last fall. While emphasizing the need for dialogue, Willard asserted that PACOM would continue to operate where it has traditionally, and would protect sea-lanes vital to the US.

To further dialogue, PACOM has eagerly supported military exchanges with China. The communist nation has broken off these exchanges with the US on several occasions, however, most recently after the US at the end of January announced the approval of a \$6.4 billion arms sale to Taiwan that had been languishing for years.

Mao Zedong and the Chinese Communist Party established the PLA in 1927 as the military arm of the party. To this day, the People's Liberation Army owes its allegiance to the party—not to a government.

As a guerrilla army, the PLA fought the Japanese halfheartedly in World War II, saving its strength to drive the Nationalist Chinese out of the mainland

to Taiwan in 1949. The PLA invaded Tibet in 1950, and then fought the US in the Korean War. In addition to limited border clashes with the USSR and India, the PLA invaded Vietnam in 1979 after the country's invasion of Cambodia—but stalled and soon withdrew.

About this time, China's leader, Deng Xiaoping, laid down his "Four Modernizations" in which the armed forces fell behind agriculture, industry, and technology. Since that time, the PLA has generally been quiet—except for being called to violently end the Tiananmen Square uprising in Beijing in 1989.

In the meantime, China's economy raced along and party leaders eventually turned their attention to the PLA. China's President and party general secretary, Hu Jintao, became chairman of the Central Military Commission (CMC) in 2005, and the leaders of the PLA Navy, PLA Air Force, and the Second Artillery (missile forces) were added to what was an Army-dominated CMC. The CMC combines functions similar to those held by the US Joint Chiefs of Staff, the Secretary of Defense, and the National Security Council.

Serious Missiles

For power projection, China has opted for missiles rather than bombers, with the PLAAF now cut to 100 bombers from 500 in 1995. The Second Artillery, formed in 1966, is a separate service within the PLA and serves as a strategic force under the direct command and control of the CMC. It is mainly responsible for deterring other countries from using nuclear weapons, while the conventional missile force is charged with conducting medium- and long-range precision strikes against key strategic and operational targets of the enemy—read: US bases in South Korea, Japan, and Guam.

Sorting through the Chinese missile programs is no easy task. GlobalSe-

curity.org, an independent military research institute, notes the diversity of the missile programs, with complexity compounded by a bewildering array of designations attached to each missile.

Declared Chinese nuclear doctrine precludes launching a first strike. The Chinese have deployed about 1,300 short-range and 600 medium-range ballistic missiles, most with conventional warheads. These could hit US forces in South Korea and in Japan, including Okinawa. Some medium-range missiles could also hit Guam's Andersen Air Force Base.

The Second Artillery has relatively few long-range missiles, but some use solid fuel, are mobile, and can be launched on short notice.

The main nuclear missiles in the Chinese arsenal are the Dong Feng (East Wind) 31, which with a range of 5,000 miles can hit Alaska, Hawaii, and the West Coast, and the Dong Feng 5, with a range of some 8,000 miles, which can hit anywhere in the continental US.

China is now developing a long-range next generation missile, the Dong Feng 41, a solid fueled, mobile missile which can travel 7,400 miles with greater accuracy. Willard reported China is also developing a new submarine-launched ballistic missile, the JL-2, capable of reaching the West Coast of the US.

Significant hardware modernization notwithstanding, a main shortcoming for the PLA today is personnel. A majority of Chinese soldiers, sailors, and airmen have only ninth-grade educations, which barely qualifies them to maintain high-tech equipment. Moreover, the PLA is a conscripted rather than a recruited force, in which young men and women

serve for only two years. This forces Chinese officers to do the work of non-commissioned officers—or even their junior enlisted equivalents in Western armed forces.

The PLA leadership has begun putting greater emphasis on recruiting educated young people, on retention, and on expanding educational programs.

Just as China's missile programs counter the strength the US derives from its global basing presence, the PLA is pursuing other asymmetric capabilities designed to neutralize American military advantages.

"This is a strategy for the weak, not the strong," one China scholar asserted. Even so, the Chinese have US officials worried—especially on the cyber front.

One area where the Chinese have already invested heavily is to secure the people and devices needed to hack into US government, military, and civilian information systems. China is pursuing these cyber attack capabilities not only to disrupt US systems, but also to cause allies to lose confidence in the US security guarantee.

"I'm often asked what keeps me up at night. No. 1 one [is] the cyber threat," said Deputy Secretary of Defense William J. Lynn III. "If we don't maintain our capabilities to defend our networks in the face of an attack, the consequences for our military, and indeed for our whole national security, could be dire."

Officials are reluctant to discuss the cyber threat, as many details of the Chinese capabilities and possible US responses are classified.

The staff of the US-China Economic and Security Review Commission, set up by Congress in 2000, has produced a study of the Chinese operation. The Chinese goal, the report said, "is to establish control of an adversary's information flow and maintain dominance in the battlespace."

The Chinese call this "informationization." It tasks the PLA to attack targets such as intelligence-surveillance-reconnaissance systems with an array of jamming and anti-satellite weapons. The commission's report said computer network tools would be widely employed in the earliest phases of a conflict, and possibly pre-emptively against an enemy's information systems to delay US deployments and reduce effectiveness of troops in the region.

To do this, the PLA is reaching out across a wide swath of the Chinese civilian sector to meet the intensive personnel requirements to support its



Photo via Sincodence.com

A Chinese PLA Air Force Su-30 comes in for a landing. China has large numbers of advanced aircraft, and is developing an indigenous fifth generation fighter.

burgeoning information warfare capabilities, the report states, incorporating people with specialized skills from commercial industry, academia, and possibly select elements of China's hacker community.

China is also likely using its maturing network capabilities to support intelligence collection against the US government and industry. The information gained could benefit a nation's defense industry, space program, high-technology industries, foreign policymakers interested in US leadership thinking on China, and foreign military planners building an intelligence picture that could be exploited in a crisis.

Mysterious Ambitions

When Keating visited China in 2007, a Chinese admiral noted his nation was beginning to build aircraft carriers and suggested that China and the US split the Pacific Ocean. The proposal was for the Chinese Navy to secure the western portion of the Pacific, with the Americans withdrawing to the east.

Keating chuckled, said no thank you, and reaffirmed the US intention to stay in Asia.

Yet while ambitious, building a blue-water Navy may be the least advanced element in China's military expansion.

China bought an unfinished Russian aircraft carrier in 1998 and started renovations in 2002. Willard said he expects the carrier to become operational around 2012, and that it will be used to develop basic carrier skills. China's refurbished carrier displaces 55,000 tons and could take 28 airplanes aboard. Analysis indicates it will be decades before China can build carriers which could compete

with the US Navy's nuclear-powered carriers carrying 85 or more aircraft.

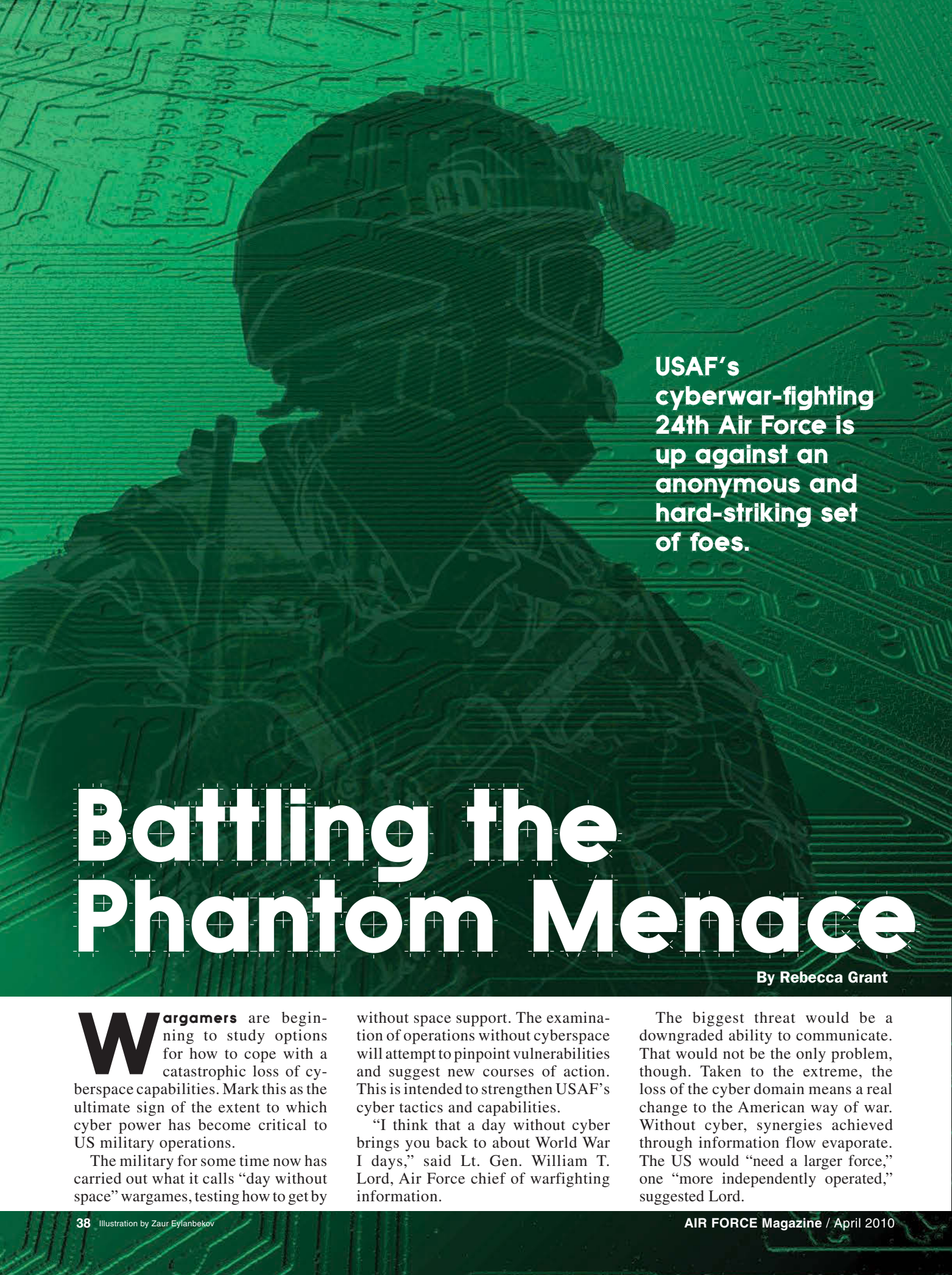
China may be acquiring an aircraft carrier as much for political as military reasons. Many Chinese see Japan and India as rivals with greater sea power; a carrier would help close the gap. China has also proclaimed most of the South China Sea to be its territory. A carrier would back up Beijing's claim, and is seen within the PLA as a way to help defend a lifeline transiting the Strait of Malacca and Indian Ocean.

This sea line is a critical transit channel for oil and raw materials for China's industry. China is building a naval base on Hainan, the island facing the South China Sea, and another in Gwadar, Pakistan, to gain access on the Indian Ocean.

Underwater, the PLA Navy has put to sea 53 attack submarines driven by diesel-electric engines. These were first assigned to coastal defense, but now venture farther out. China has built six nuclear-powered attack submarines which may eventually sail to the South China Sea and the Pacific and Indian Oceans. The Shang class of boats is similar to the Los Angeles class of attack submarine, displacing 6,000 to 7,000 tons and capable of 40 mph.

The Chinese may not have mastered joint operations, however. A gathering of experts on China sponsored by the National Bureau of Asian Research concluded the PLA has not yet acquired the capability to carry out integrated joint operations, for example when PLA anti-aircraft batteries, PLAN ships and aircraft, PLAAF aircraft and radar, and Second Artillery missiles would all be engaged. Coordinating this would be a monumental task. ■

Richard Halloran, formerly a New York Times foreign correspondent in Asia and military correspondent in Washington, D.C., is a freelance writer based in Honolulu. His most recent article for Air Force Magazine, "Bullet Vs. Bullet," appeared in the March 2009 issue.



**USAF's
cyberwar-fighting
24th Air Force is
up against an
anonymous and
hard-striking set
of foes.**

Battling the Phantom Menace

By Rebecca Grant

Wargamers are beginning to study options for how to cope with a catastrophic loss of cyberspace capabilities. Mark this as the ultimate sign of the extent to which cyber power has become critical to US military operations.

The military for some time now has carried out what it calls “day without space” wargames, testing how to get by

without space support. The examination of operations without cyberspace will attempt to pinpoint vulnerabilities and suggest new courses of action. This is intended to strengthen USAF's cyber tactics and capabilities.

“I think that a day without cyber brings you back to about World War I days,” said Lt. Gen. William T. Lord, Air Force chief of warfighting information.

The biggest threat would be a downgraded ability to communicate. That would not be the only problem, though. Taken to the extreme, the loss of the cyber domain means a real change to the American way of war. Without cyber, synergies achieved through information flow evaporate. The US would “need a larger force,” one “more independently operated,” suggested Lord.

An absence of cyberspace dominance would throw airmen back to forms of communication abandoned long ago. Airmen today prefer to communicate through secure Internet-based chat rooms, and yet they still train to use radios. The Air Force stopped teaching Morse code about 10 years ago, noted Lord, but one of the few things that would function after an electromagnetic pulse attack would be HF radio. The Air Force has gotten rid of most of that capability, but not all of it.

More likely are scenarios where major disruptions occur. For example, undersea fiber-optic lines carry significant amounts of information. When a cable is cut by accident, airmen overseas lose cyber capabilities.

"Those cables get [snagged] by commercial vessels' anchors in the Mediterranean, and that can have combat effects if you are pumping information back to the AOR on that fiber-optic cable," said Lord.

The year 2010 marked a milestone for cyberspace operations. In January, 24th Air Force, USAF's cyberspace combat unit, reached initial operational capability. Now, 24th Air Force can step in and use its growing global situation awareness to help reroute traffic when there are disruptions. Diversifying the network helps make sure US forces can continue a mission.

The stand-up of 24th Air Force put in place an entity to watch the Air Force's

global network picture and to provide situation awareness to end users around the world.

Air and space operations centers already have cyber cells and personnel monitoring the networks they rely on. Twenty-fourth Air Force is gradually extending the mission to provide better global cyber situational awareness.

Attacks Inevitable

Two years ago, every Air Force major command ran its own network, and these "had not been developed in a homogenous manner," said Lord, who also serves as USAF's chief information officer. "Now, the rest of the Air Force is taking operational direction on the network" from the commander of 24th Air Force.

A big operational debate concerns Niprnet (for "Nonsecure Internet Protocol Router Network") and Siprnet (for "Secret Internet Protocol Router Network"). The issue is what, exactly, should be placed in the easily accessible Niprnet, and what should move to the security of the Siprnet.

"Siprnet is an almost closed activity," said Lord. "It's hard to get in there unless you are inside the network to start with." He added, "That's not true with the soft, chewy outside of the Niprnet."

The Niprnet, of course, reflects more of the philosophy of the World Wide Web. For airmen, their Niprnet connections host collaborative tools, voice

over Internet protocol, video, and other applications used all the time, which has made the Niprnet a potent tactical resource. "More and more, we're having trouble separating ourselves from Niprnet because we put a lot of mission data on it," said Lord.

"Because there are so many connections to the Niprnet, it's the principal target today," he said.

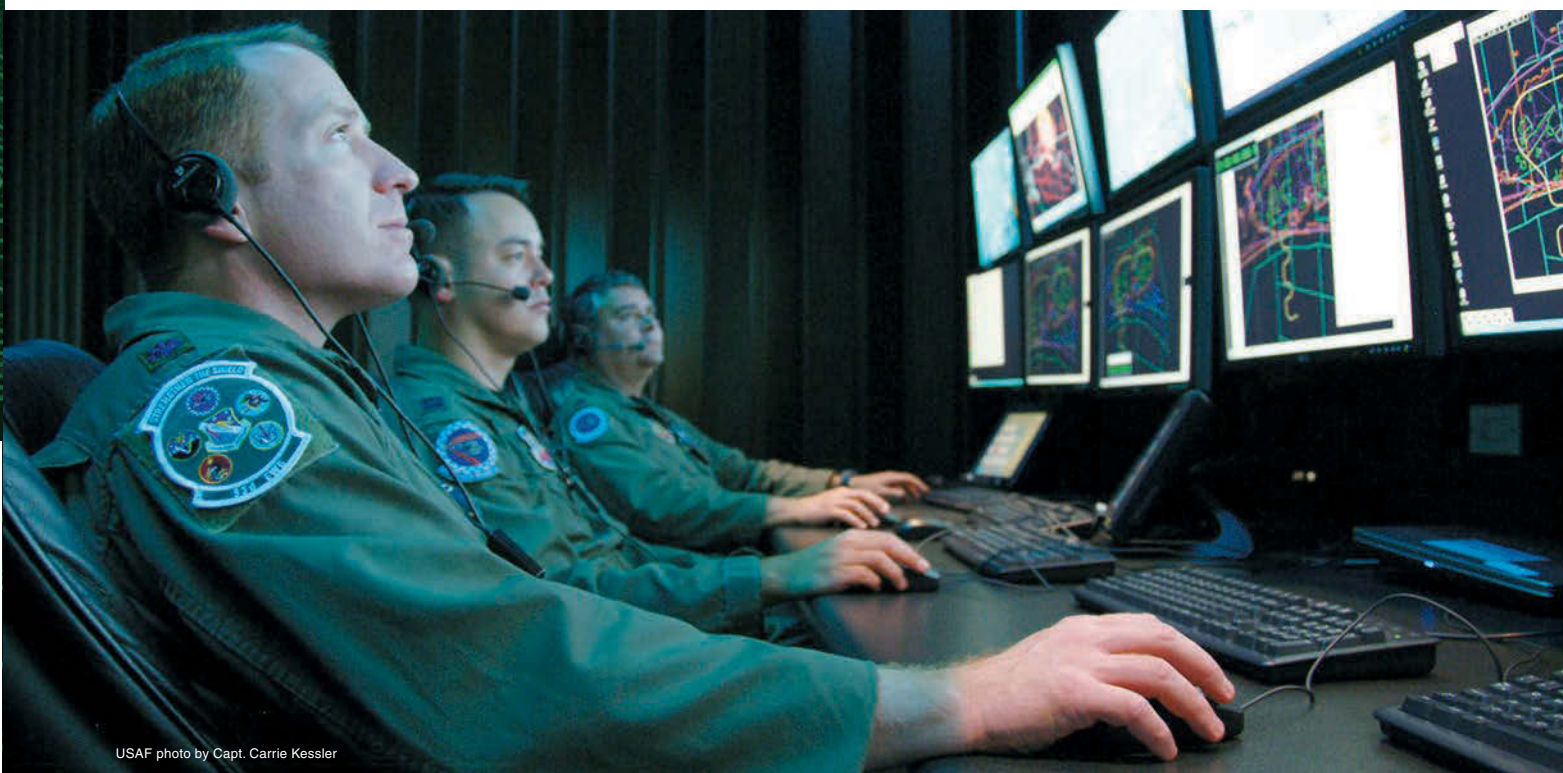
Network slowdowns and breaches have created concerns. "We find a lot of our mission data is now migrating off Niprnet onto the Siprnet because of the protection," said Lord.

Cyberspace operations will have to bridge the tension between ease of use on Niprnet and the greater protection of the Siprnet. While Lord hopes to see a balance preserved, his preference is clear. "There's still too much on the Niprnet." He would "rather see us move more mission data to Siprnet than put money in expanding the size of Niprnet."

Twenty-fourth Air Force is slated to become the Air Force component of US Cyber Command, a subunified, four-star command that will report to US Strategic Command and will be collocated with the National Security Agency at Ft. Meade, Md.

The big question for military cyberspace is when CYBERCOM will officially stand up. Secretary of Defense

Electronic warfare officers monitor mission data during testing at the Central Control Facility at Eglin AFB, Fla.



USAF photo by Capt. Carrie Kessler



TSgt. Alejandro Castillo (l) and A1C Chris Tamblin, both with the 25th Air Support Operation Squadron, undergo field training to become joint terminal attack controllers. JTACs rely on cyberspace for connectivity and accurate data.

Robert M. Gates announced plans for the new command in June 2009. He later nominated Army Lt. Gen. Keith B. Alexander for promotion to take over the command. Late summer 2009 saw a flurry of activity in preparation for an autumn stand-up, but that was delayed.

Deputy Secretary of Defense William J. Lynn III confirmed in January 2010 that CYBERCOM would still go forward to merge leadership of NSA and Cyber Command “into one dual-hatted position.”

According to Lynn, CYBERCOM will:

- Lead the day-to-day defense and protection of all DOD networks.
- Coordinate all DOD network operations providing full spectrum support to military and counterterrorism missions.
- Stand by to support civil authorities and industry partners on an as-needed basis.
- Help develop threat conditions that calibrate defenses.

When activated, CYBERCOM will have three service components, including 24th Air Force, the Navy’s new US Fleet Cyber Command-10th Fleet, and the Army’s Network Enterprise Technology Command.

With the organizational reshuffling complete, attention is shifting to how to enhance and mature capabilities for cyber operations. “We’re relatively mature in the terrestrial, and pretty mature in the space network,” said Lord. “But I think where we have the most work to do is in the airborne networks.”

For airmen, the ability to form a cyberspace net among airborne platforms offers some of the highest payoffs—and the biggest challenges in evolving USAF cyber operations.

Key Criterion

“For us to do our core role of control of the air, we need the ability to operate in cyberspace,” said Col. David T. Fahrenkrug, a cyber expert and F-15 pilot who runs the Chief of Staff’s Strategic Studies Group at the Pentagon. It’s a given that Air Force operators will experience some degree of cyberspace intrusion.

“Any network I now have is going to get attacked or denied,” said Fahrenkrug.

A rule of thumb is the more users and information drawn into the net, the more potential for enemies to work their way in. Most vulnerable are networks that can’t be locked down. Officials maintain that classified networks such as Siprotnet and JWICS (the Joint Worldwide Intelligence Communications System) are rarely if ever breached from the outside because they are guarded under strong encryption keys.

The question is how and when intrusions will impact tactical operations like those on the airborne network. Enemy activity could take many forms. Brute force jamming is one. Injecting false information by capitalizing on digital radio frequency memory techniques is another.

“Maybe you don’t have to go after a high-end platform; you just have to go

after the connectivity of the high-end platform to negate its value,” said Lord. In his view, “this focus on cyber in the Air Force has always been about paying more attention” to vulnerabilities like those the airborne networks could experience.

Senior Air Force leaders meeting with Navy and Marine Corps counterparts to discuss air-sea battle concepts have found themselves focusing on network protection. Yet all agree that defense alone is not enough.

“A fortress mentality will not work in cyber,” said Lynn. “Cyberwar is much more like maneuver warfare,” he added, where “new technologies [will] help us find and neutralize intrusions.”

Fortunately, airmen can draw on long experience in coping with a denied battlespace environment. Green Flag exercises enhanced electronic jamming and force aircrews to find ways to get the job done anyway. “As an air-to-air guy, I had to go into an environment where my radio was jammed, my radar was jammed, and I still have to operate with my wingman to go find the target,” said Fahrenkrug. “That’s an early example of going in a denied cyberspace environment,” he added. Just as airmen developed tactics for dealing with denial of sensors and communications, they are now learning ways to fight through disruptions in the cyberspace domain.

Lord explained that the key criterion is mission execution.

“We’re ensuring mission success in this case by making sure there’s a network available that has as few enemies inside it as possible,” he said. “We know that people will be after those networks in two ways. One is to preclude the use of them,” Lord said.

In that instance, Lord said, “a lot of high-speed automatic rerouting has to occur,” as aircraft move across different parts of the network.

The second form of attack is manipulating data. In this case, connections continue, but data are no longer authentic due to enemy action. As Lord described it, intruders changing data “is quite frankly, more frightening to me, because you make incorrect decisions based on information that has been changed.” Maneuvering among frequencies and duplicating sets of information may help ensure authenticity.

The airborne network consists of platforms from tankers to Predators that share common data links. Crews use



Eyes in the sky for boots on the ground.

www.northropgrumman.com/jointstars

▼ **Joint STARS**

The U.S. Air Force's E-8C Joint Surveillance Target Attack Radar System (Joint STARS) gives our warfighters the edge they need. The wide area surveillance (50,000 square km) and communication interfaces give our troops access to imagery and information on the battlefield, chat capability, and other support when and where it is needed. The Dismount Moving Target Indicator (DMTI) capability can track non-vehicular, slow moving entities — even individuals. Joint STARS aircraft are eyes in the sky protecting our boots on the ground.

them to route information. Of course, aircraft have had communications links in the form of various radios for decades, and more recently, data links such as Link 16 have provided secure, automated data exchange.

What's different with expanding cyberspace operations is that far more users access the airborne network and, increasingly, talk through IP-routed addresses—and do they talk. Chat has become the coin of the realm for executing airborne operations. It's normal practice for an airman in a command center to split his or her screen to follow several chat rooms at once. Each chat room is dedicated, for example, to a single asset such as a Reaper or other ISR platform as it flies its mission. Ground and naval forces mix in, too.

A key airborne example of cyberspace at the extreme tactical level comes from the E-8 Joint Surveillance Target Attack Radar System. Airmen monitor radios, but much has shifted to chat, which links them to joint terminal attack controllers on the ground, other aircraft, and the air and space operations center. Links to intelligence processing facilities back in the United States give airmen access to “high side” intelligence resources, too.

SrA. Jared Johns, a Joint STARS crew member with the 116th Air Control Wing at Robins AFB, Ga., said, “If you miss a radio call, you have to say, ‘Can you say that again?’” With chat, the information is written down, so a glance back at the screen solves the problem. “It’s all logged with time stamps, so everyone knows when that was posted,” he concluded.

Lord confirmed that chat is “an essential combat leverage.” The wide-body air control platforms such as Joint STARS, tankers, and bombers boast a tremendous advantage because the big aircraft have the space, power, and crew to be major network nodes.

Challenges increase at what Lord termed the “outer edges” of the network: aircraft like fighters or Reaper, which are constrained by power and by antenna size. The same restrictions apply to handheld devices for the dismounted soldier and JTACs.

“What we try to do is not pump huge amounts of data but cache things,” so that data can be processed at terrestrial centers.

There’s art to the process, too. Coding and compression techniques help minimize the amount of data which

The Elite

Operational demands are changing the career paths for cyber warriors, too. Plans call for the first undergraduate cyber operations course at Keesler AFB, Miss., to enroll officers in mid-2010. The course will expand from a basic five-week overview to a full 29 weeks.

Students will be drawn from communications, intelligence, space, and some engineering disciplines.

Graduates will flow into one of two specialty tracks: cyber operations and cyber support. The support activities are to “establish, operate, and maintain” the cyber domain. “Defend, exploit, and attack” fill out the other track.

Officers will move back and forth during their career progression, said Lt. Gen. William T. Lord, chief of warfighting information. An assignment in one helps to inform an assignment in the other area.

“Based on a footprint of about 3,000 officers, we think about 150 of them will fall into the initial bailiwick of exploit and attack,” with the preponderance in support skills.

That handful of cyber operators will have heavy responsibility for assuring cross-domain dominance—and for enabling airpower to operate at full potential.

must transit the network. “You don’t update everything; you just update the piece of the picture that changed. You don’t send the entire picture again,” Lord explained.

The Leading-Edge Challenge

Design of the edge devices in airborne platforms matters, too. “We want them to be smaller, have less power, we want them to have smaller antennae,” said Lord, and “you want them to radiate less [radio frequency] energy, etc.” These procedures reduce the electronic footprint and make for a smaller target for enemies to find, jam, or manipulate.

Protection can also be built in. Link 16, the secure communications link, utilizes small terminals installed in everything from fighters to Navy ships.

Protecting the functionality of those links is part of the leading-edge challenge for Air Force cyber operations. Internet protocol-enabling allows access to the network. “As we IP-enable weapons and aircraft,” all of a sudden they are IPs that are flying together and connecting at high speed and then departing,” said Lord. The question then becomes, “How do you offload data? How do you make a network that’s traveling at 1,000, 2,000, or in some cases, 6,000 miles an hour?” asked Lord.

The heightened visibility of the airborne network has bumped up the importance of cyberspace operations across the Air Force. According to

Lord, recognizing the cyberspace network as a critical utility represents a culture shift for the Air Force. “We have for a long time, in my personal opinion, just assumed that connectivity was ubiquitous and it would always be there,” he observed.

In fact, the links may be more vulnerable to intrusion and interference than the platforms.

Of course, not all airborne platforms are equal in their data links or capacity. Airborne gateways are essential to speed and connectivity. An example in operation now is the BACN, or Battlefield Airborne Communications Node, which relies on a handful of high-altitude aircraft such as Bombardier business jet aircraft and RQ-4 Global Hawks to set up an IP-based gateway compatible with longer ranges and multiple users.

Future communications and data links will use more advanced techniques to carry the data on different waveforms with better tactical and cyber properties. Users want more capacity from the future airborne cyberspace networks; they also need secure connections and verifiable authenticity of data.

And the advanced techniques may appear on a suite of legacy and next generation platforms. “What type of platform do you put that network into? Is it an airship type or does it have to be a supersonic, stealth-type platform?” asked Fahrenkrug. The answers are still to be determined. ■

Rebecca Grant is president of IRIS Independent Research. She has written extensively on airpower and serves as director, Mitchell Institute, for AFA. Her most recent article for Air Force Magazine was “The Vanishing Arsenal of Airpower,” which appeared in the January issue.

A Place for Compliance

"There are disciplines, like nuclear business, where there is only one way to do it, and it's the Air Force way. That's not to suggest we want to stifle imagination; far from it. But the reality is that in certain areas, like brain surgery, we want to make sure that it's being done in the best possible way. If there's a better way of doing it, that's fine, but we will get that better way approved before we start to deviate from the Air Force way. The moral is there is a place for compliance in our Air Force."—**Gen. Norton A. Schwartz, Air Force Chief of Staff, at Holloman AFB, N.M., Jan. 27.**

Interservice Transfer?

"General's Opposition to Gay Policy Was Years in the Making."—**Referring to Michael G. Mullen (an admiral, actually, and Chairman of the Joint Chiefs of Staff), New York Times headline, Feb. 4.**

Follow the Breadcrumbs

"Well, I mean, I think, you know, we've been leaving a trail of breadcrumbs, you know, over the past several years in terms of where the Secretary was heading in terms of reforming the defense budget."—**Pentagon press secretary Geoffrey S. Morrell in response to questions about big changes in the defense program, Jan. 27.**

No Popular Wars

"One of the misconceptions around the world is that the American people love war. The truth is, we've never had a popular war. First few years of World War II were popular, but then people began to get impatient as the war dragged on. But there has never been a war that was really popular in America. I mean, just think back to Vietnam and Korea and so on. So, I think, given the challenges and the fact that we've been at war for eight years, the American people have been amazingly patient, amazingly supportive. And of course, the men and women in uniform are unbelievable."—**Secretary of Defense Robert M. Gates, Fox News "On the Record," Feb. 8.**

Not to Worry

"I just don't quite understand why supplies of the S-300 system to Iran trouble you so much. This is purely a

weapon of defense, not attack. This weapon cannot pose any threat to any neighbors, close or distant."—**Anatoly Isaikin, head of the Russian arms export agency Rosoboronexport, on sale of the anti-aircraft missile, known in the West as the SA-20, to Iran, Reuters, Jan. 28.**

Manned Spaceflight Masquerade

"The manned spaceflight program often masquerades as science, but it crowds out real NASA science, which is all done on unmanned missions. ... The only technology for which the manned spaceflight program is well-suited is the technology of keeping people alive in space. And the only demand for that technology is in the manned spaceflight program itself."—**Steven Weinberg, noted physicist and Nobel laureate, University of Texas at Austin, Dallas Morning News, Feb. 5.**

Top Job for Air Force

"Our most important air and space mission is supporting our troops and those of our allies on the front lines."—**Deputy Secretary of Defense William J. Lynn III, Jan. 21.**

The Morphing of Industry

"The aerospace industry has morphed into the defense industry, which since the Cold War has gradually consolidated into a handful of look-alike conglomerates, each capable of making airplanes, ships, satellites, rockets, and missiles, and the electronics needed to operate them. The entrepreneurial engineers and flyboys of the early years, and the swashbuckling executives of the Cold War, have largely given way to button-down corporate managers."—**Steven Pearlstein, Washington Post business columnist, Jan. 8.**

Predator in Haiti

"A person on the ground can open their laptop and watch the video in real time, talk to the pilot, and extend their vision beyond the horizon, over mountains, past roadblocks, and into the regions cut off from support. Our job is to get the RQ-1's video camera where international aid workers cannot reach, to identify people and places most in need."—**Maj. Jeff Bright, commander of an Air Force detachment in Puerto**

Rico flying remotely piloted RQ-1 Predators over Haiti in support of earthquake relief, Air Force News Service, Jan. 27.

Ask Them

"Why aren't you asking why the Japanese didn't have better zoning laws? They built a school right under the runway. What were they thinking?"—**Lt. Gen. Terry G. Robling, US Marine commander on Okinawa, on the problem of an elementary school next to the airfield, Washington Post, Jan. 24.**

Hard Times for the Air Force

"The Air Force also is developing a split personality. It is coming to embrace its small-war role, particularly when it comes to unmanned systems like the Predator. But in almost every other respect, the service has fallen on hard times. The 1990s, the time of Operation Desert Storm and the Kosovo war, look in retrospect like the golden age of airpower. The future looks like a nightmare. The Obama Administration's decision in last year's budget to terminate the F-22 Raptor program, combined with technological and program-management problems with the F-35, raises previously unthinkable questions about the American ability to assert air superiority in a modern defense environment."—**Thomas Donnelly, The Weekly Standard, Feb. 15.**

Short Cycled

"How ... we build the next aircraft carrier or plane that is supposed to last 50 years in a world that turns on 18-month cycles is a huge challenge for the services."—**Marine Corps Gen. James E. Cartwright, vice chairman of the Joint Chiefs of Staff, on keeping up with enemy tactics and technology, DefenseNews.com, Feb. 2.**

Safer Without Saddam

"I think he was a monster. I believe he threatened not just the region, but the world. If I'm asked if I believe we are safer, more secure, that Iraq is better, that our own security is better with Saddam and his two sons out of power, ... then I believe indeed we are."—**Former British Prime Minister Tony Blair, Washington Post, Jan. 30.**



In the 1950s, the Soviet Union loomed as a dangerous competing superpower, able to orbit satellites, brandish nuclear weapons, and possibly lead the world in development of intercontinental bombers and ballistic missiles. Despite furtive attempts to gain information through informants and spies, the United States had virtually no insight into Soviet capabilities or intentions, hidden as they were behind the Iron Curtain.

The perceived nuclear threat affected US security as never before. At the highest levels in the government, it was agreed



CIA photo

Nikita Khrushchev examines the U-2 wreckage in a propaganda photo taken shortly after Powers was captured.

When the U-2 Fell to Earth

Fifty years ago, a Soviet missile shot down Francis Gary Powers and his exotic spyplane.

By Walter J. Boyne

desperate measures, even if internationally illegal, were necessary to gain information. Top US officials decided to use a small band of pilots flying the very advanced Lockheed U-2 aircraft as the point of the reconnaissance spear. At risk to their lives, pilots would break international law by flying over the Soviet Union. Their mission was to gather information deemed absolutely vital by no less a personage than President Dwight D. Eisenhower.

The most famous of these pilots, Francis Gary Powers, became a hero of the first magnitude for his work before he was brought down over the Soviet Union on May 1, 1960, 50 years ago next month. However, Powers was never treated as a

hero until after his death, when he was given belated recognition for his accomplishments.

An Offer USAF Couldn't Refuse

The reconnaissance program Powers and his colleagues served was known by various names, but is usually referred to by its CIA cryptonym Aquatone. Its goal was to create an aircraft that could fly over the Soviet Union at altitudes beyond the reach of interceptors.

Soviet surface-to-air missile capability was not yet seen as a threat. The new aircraft was to be equipped with revolutionary cameras and sensors, so a maximum amount of information could

be obtained during the surreptitious overflights of Soviet territory. The goal was for the aircraft to fly high enough to elude strong Soviet radars. The Air Force was already overflying the USSR in the SENSINT program, but Eisenhower wanted to minimize the use of military aircraft—for such flights could be construed as an act of war.

Only “civilian pilots” would fly in Aquatone. The plan was that, should one be shot down, Washington would describe the flight as a weather-reconnaissance or nuclear-dust-gathering sortie.

The government organizations involved in the birth of the program reached from the White House down to the Pentagon, CIA, and many other agencies. Eisenhower directed the CIA to manage the program and USAF to provide the infrastructure, training, logistics, and pilots.

The US previously obtained information on the Soviet Union with modified versions of standard aircraft, but none had the altitude capability to elude the latest series of Soviet fighters or the imminent threat of SAMs.

The U-2 came about through the audacity and genius of Clarence L. “Kelly” Johnson, who led the famous Lockheed Skunk Works. Johnson was aware that a special team of Air Force advocates had created a requirement for a long-range, high-altitude aircraft to overfly the Soviet Union. It did not disturb Johnson that Lockheed was not invited to the official 1954 USAF competition for this aircraft.

The manufacturers of cameras, lenses, films, sensors, and other vital equipment literally forced quantum leaps in technology to create the mission aircraft. Its designers deliberately sacrificed strength for weight savings to achieve the necessary altitude and range capability.

Johnson’s personality and reputation prevailed when he made an offer the Air Force could not refuse: Six aircraft and their flight test and support for \$22 million. The first aircraft was promised for delivery within eight months, with an operational airplane to be ready within 15 months.

Johnson knew every pound of aircraft reduced range and altitude. He had the Skunk Works shave weight from the structure, making important compromises on both safety and comfort. These included using extremely thin aluminum skin panels, omitting an ejection seat, not pressurizing the cockpit, and creating a unique bicycle-style single main wheel and tail wheel. Droppable outrigger wheels were used for takeoff and wingtip skids for landing. The glider-like aircraft first flew in August 1955.

Free from the usual requirements of a development program, the Aquatone team complemented Lockheed's design and production by creating a secret base in the Nevada desert for test and training. It was called "The Ranch" and was a direct predecessor of "Area 51" lore.

The Aquatone team also established the necessary agreements with sometimes reluctant foreign governments for overseas bases. Pilots were handpicked by a USAF team and subjected to a rigorous physical and psychological screening process similar to one used later by the astronaut program.

Francis Gary Powers was born Aug. 17, 1929. Known as Frank to his friends, he was an aviation cadet and was selected for fighter training before joining Strategic Air Command's 468th Strategic Fighter Squadron at Turner AFB, Ga. There he did so well he was chosen to fly in gunnery competitions.

He began his work for the CIA in 1956, a member of a small group of highly qualified USAF pilots. They volunteered to undertake a mission about which they knew nothing except it was very dangerous.

Powers and his fellow volunteers made tough decisions to participate in Aquatone, resigning their Air Force commissions with the private assurance they could be reinstated with no loss of rank or seniority. They accepted long-term commitments to be away from home and that they could not tell family what they were doing or where they were going.

The irresistible lure for many of the U-2 pilots was the opportunity to fly a brand-new airplane that had spectacular performance but was laden with hazard. Powers and his colleagues soon learned they were to fly this untried and admittedly dangerous aircraft on long, nerve-wracking missions, some over hostile territory.

The first U-2 overflight over hostile territory took place on June 20, 1956 when Carl Overstreet flew from Wiesbaden, Germany, over Czechoslovakia and Poland. On July 4, the second overflight reached Leningrad. The Russian radar immediately tracked both aircraft, rendering useless the flimsy cover stories that the U-2s were conducting weather reconnaissance and atmospheric sampling. Every succeeding overflight was also detected by the Soviet Union, which issued private protests to the United States.

Unwilling to admit it could not prevent the intrusions over its country, the Soviet leadership fumed for the nearly four years following Overstreet's mission. Soviet aircraft and missile designers were driven hard to come up with a means to counter



Gary Powers (r) sits in the dock of the court in Moscow at the start of his August 1960 trial for espionage against the Soviet Union.

the U-2. While no adequate fighter was developed, Petr Grushin at the Lavochkin design bureau led the creation of what became known as the SA-2 Guideline surface-to-air missile system. It was rapidly deployed, even though it had many operational problems and demanded expert attention for its effective use.

One Too Many

The CIA and Lockheed concluded early in the program it would be only one or two years before the Soviet Union produced interceptors and missiles able to shoot the U-2 down.

Powers performed well as both a pilot and navigator. While he originally thought he might undertake the new assignment for a year or two, he, like several of his colleagues, continued to volunteer, year after year, despite the demands, the primitive living conditions at forward bases, and the secrecy of their operations.

Powers was initially assigned to fly out of Incirlik AB, Turkey. He made his first official mission in September 1956, conducting electronic surveillance along the southern border of the Soviet Union. Powers flew many similar missions, careful not to accidentally penetrate the Soviet border. It was exacting work, for the pilot had to navigate by taking fixes using the radio compass.

In one of Powers' early missions, he documented the presence of French and British warships preparing for their aborted invasion of Egypt in the fall of 1956.

In November 1956, Powers became the first U-2 pilot based in Turkey to conduct an overflight of the Soviet Union. The

daring series of overflights brought back conclusive evidence the Soviet Union was shifting its emphasis from bombers to intercontinental ballistic missiles—information of the greatest importance to the United States.

For all of the U-2 pilots, each of the overflights was filled with tension. There was no way of knowing when the Soviets would acquire the weapon needed to shoot them down. As the fourth year of operation approached, concern rose that a U-2 might be lost at any time. Despite this, the CIA failed to prepare an adequate cover story for any captured pilot. The precautions it did take were haphazard and illusory. A small explosive device for destroying some of the vital equipment on board was installed, and pilots were offered the option of carrying a cyanide pill, or later, a curare-dipped needle.

Curiously, what should have been the most daunting aspect of the mission was also the most appealing—the inherent danger of flying a new aircraft on hazardous missions. The U-2 was continually improved, with an ejection seat being retrofitted in 1957.

The danger was real, since by 1958 no less than nine aircraft had been lost in accidents. The causes varied, but the U-2 was so fragile that in one case the jet wash from "buzzing" fighters was sufficient to break it up.

Powers continued to serve, although beset by familial concerns and his own certain knowledge that the law of averages would catch up. As safety officer for his U-2 detachment, he was very aware of the many U-2 accidents involving

everything from electrical power failure to fuel lines.

The Soviets were detecting the U-2s early in their flight path, and an advanced Soviet missile—later known to be an SA-2—was fired at a U-2 over the Siberian coast in 1960. Nonetheless, the CIA obtained approval from President Eisenhower for one more overflight.

It proved to be one too many.

Powers was selected for the flight in the U-2 designated Article 360, which had previously run out of fuel on a mission and been damaged in a belly landing. After a delay waiting for final authorization, he took off early in the morning from Peshawar, Pakistan. His route was to take him across Afghanistan to enter the Soviet Union, then north by northeast to Chelyabinsk and Sverdlovsk, west to Kirov, northwest to Murmansk, around the Scandinavian peninsula, and finally landing in Norway.

Flying at about 70,000 feet, 1,300 miles into the Soviet Union, the U-2's autopilot failed, and Powers made a decision to continue the flight using manual controls—a very demanding task.

With every one of these U-2 missions, the Soviet air defenses were also finding things extremely taxing. From Premier Nikita Khrushchev down, the entire Soviet Union wanted the intruder caught. All air traffic in the Soviet Union was shut down—the U-2's destruction was demanded.

About four hours into the flight, the Soviet efforts paid off when a single SA-2 detonated near enough to the U-2 to blow its tail off. Powers was aware of a huge orange light followed by a violent tumbling as his aircraft soon shook itself apart.

Thrown about the cockpit, Powers was unable to get himself in position to eject. The aircraft had lost half of his altitude when he was finally able to push himself clear of the cockpit to bail out.

Powers was captured as soon as he landed. He was immediately rushed to Moscow.

When Powers became unquestionably overdue, consternation broke out in the United States. CIA Director Allen W. Dulles and Deputy Director of Plans Richard M. Bissell Jr. had assured Eisenhower that no U-2 pilot could survive a shootdown at the design altitude of 70,000 feet.

Cold War politics accelerated after his capture. Khrushchev dumbfounded Washington on May 7 by announcing he had evidence from the airplane and a live pilot.

Khrushchev then embarrassed Eisenhower at a May 1960 summit meeting in Paris. He presented an ultimatum

concerning Powers' flight, stating the Soviets would leave the summit unless Eisenhower condemned the flight as provocative, guaranteed there would be no future flights, and punished the individuals responsible for the operation. Eisenhower agreed only that there would be no future flights, and the summit broke up with Khrushchev convinced he had won a major propaganda coup.

Powers withstood intensive Soviet interrogations in the infamous Lubyanka prison. His trial was a sham, with Roman A. Rudenko, notorious for his role in the purging of Stalin's enemies, as prosecutor.

Inevitably found guilty, Powers was spared the death penalty as a gesture of Soviet "humaneness" but sentenced to a three-year term in the cruel Russian prison system, followed by seven years at hard labor. He then had an 18-month sojourn in filthy Russian prisons in Moscow and Vladimir, enduring a primitive diet and living conditions.

Powers gave away only information he knew to be available already to the Soviets. Ironically, on Aug. 19, 1960, the day the Soviets convicted Powers and sentenced him to prison, the first Corona film capsule was recovered near Hawaii, thus permitting satellite reconnaissance overflight of the USSR to continue from outer space.

A Sour Homecoming

After much negotiation, Powers was returned to his country in February 1962 in a spy exchange for Col. Rudolph Abel.

By all rights, Powers deserved to be decorated at the White House—he had earned the honors. His many previous overflights had gathered incredibly important information, and he had shown his steadfast heroism in withstanding the torments of the Soviet system. Instead, he was badly treated by the government for which he had risked life and freedom.

Powers resented that, upon his return, he was smeared by a rash of ill-founded commentary. Writers and commentators complained righteously that Powers had not blown up his aircraft, not committed suicide, and even that he had managed to survive the Soviet imprisonment.

Far worse were the official positions taken by the very men who had backed



Powers, just hours after his return to the United States in February 1962.

the program, especially the CIA. The pilot had obeyed his orders exactly and defended himself and his country ably while on trial.

The CIA failed to support him publicly or provide an adequate cover story for an event they knew was inevitable—a downed U-2.

Despite his treatment, Powers remained convinced he had done the right thing. Championed by Kelly Johnson, he worked as a test pilot at Lockheed for seven years, and then became a helicopter pilot broadcasting traffic updates in Los Angeles.

Powers died on Aug. 1, 1977 when his helicopter crashed after it ran out of fuel. He was 47.

On the 40th anniversary of his U-2 flight, a ceremony was held at Beale AFB, Calif.—still the home for U-2 operations. Powers' record was praised and his family received several posthumous awards: The Air Force awarded him the Distinguished Flying Cross, the Prisoner of War Medal, and the National Defense Service Medal, while the CIA, then headed by Director George J. Tenet, awarded him the Director's Medal.

The commander of the 9th Reconnaissance Wing, then-Brig. Gen. Kevin P. Chilton, said, "The mind still boggles at what we asked this gentleman and his teammates to do back in the late 1950s—to literally fly over downtown Moscow, alone, unarmed, and unafraid."

Walter J. Boyne, former director of the National Air and Space Museum in Washington, is a retired Air Force colonel and author. He has written more than 600 articles about aviation topics and 40 books, the most recent of which is Hypersonic Thunder. His most recent article for Air Force Magazine, "Silver Bullet Blunder," appeared in the December 2009 issue.

The Airborne Laser prototype platform, a modified Boeing 747, on the flight line.

MDA photo

The ABL did everything it was supposed to do. Now, the Pentagon wants to call it quits.

handed Congress its defense budget for Fiscal 2011, Pentagon officials announced that the Airborne Laser would be shifted out of MDA, which has managed the program since 2002. ABL will be given to the director of defense research and engineering for use as a directed energy test bed.

That move appears to be the final signal that ABL will never see operational use.

MDA officials are now pondering the future of what is now termed the

What' Airbo

On the night of Feb. 11, off the coast of Southern California, the Missile Defense Agency scored a major achievement by destroying a liquid-fueled ballistic missile target in flight. The important part was that it did so using a laser weapon carried onboard a Boeing 747-400 aircraft.

This milestone event constituted the first publicly announced test success for the Airborne Laser (ABL). However, the success was actually the second of its kind within an eight-day period. On Feb. 3, the ABL aircraft was used to destroy

a solid-fueled missile during its boost phase. This test was not announced until ABL was successfully used against the liquid-fueled (Scud-type) target a little more than a week later.

The Boeing-led ABL team won the contract for the multibillion-dollar program nearly 14 years ago. February's test success was the key event toward which the program had been building for years.

However, the successes probably came years too late for a program that was once a top missile defense priority. When the Obama Administration



Airborne Laser Test Bed (ALTB). “Subsequent experiments are in the planning stages pending data analysis from last week’s experiment,” said an MDA spokesman. “There is only a notional schedule with notional objectives at this time.”

The prototype platform used in the two February tests is a modified 747 cargo aircraft that measures approximately 231 feet long with a wingspan of 211 feet. The megawatt-class chemical oxygen iodine laser that gives the ABL its knockout punch comprises six modules carried in the rear of the aircraft. Each module is the size of a large sport utility vehicle.

The aircraft uses six infrared sensors to spot the exhaust from a boosting missile. Once the missile is detected, a lower power, kilowatt-class solid-state laser called the Track Illuminator tracks it and determines an aim point.

A second kilowatt-class solid-state laser, the Beacon Illuminator, measures

atmospheric disturbances. These disturbances are corrected by an adaptive optics system onboard the aircraft allowing the high-energy laser to accurately point and focus on the target.

As seen in the Feb. 11 test, the high-energy laser is fired through a turret (protruding from the front of the aircraft) at the target missile, “heating the boosting ballistic missile to critical structural failure,” MDA said in an announcement. “The entire engagement occurred within two minutes of the target missile launch, while its rocket motors were still thrusting.”

Boost Phase Success

Destroying missiles during their boost phase is important because it means debris and wreckage will fall back down onto enemy territory, not around the intended target.

Less than an hour after the successful shot in February, the ABL Test Bed targeted a second solid-fueled missile.

This time, however, although the target was engaged by the high-energy laser, the test was terminated before the missile actually was destroyed.

Rep. Trent Franks, an Arizona Republican who co-chairs the House Missile Defense Caucus, said he asked the Missile Defense Agency for a briefing on the two successful ABL tests. “That is already in the works,” he said in February. “The challenge is whether it can be an open briefing or closed.”

In 1996, the Air Force awarded the ABL contractor team a \$1.1 billion contract to build a prototype aircraft and attempt a target missile shootdown within five years. The idea of a laser weapon appealed greatly to missile defense supporters who argued that targeting a missile in what is known as the boost phase, as the missile is lifting off and gaining altitude, would be the best way to defeat the threat. The boost phase lasts for approximately 300 seconds—hence the attraction of a speed-of-light weapon.

That five-year goal came and went as the program was plagued with technical issues and rising costs. The Air Force’s original plan for operating the ABL called for seven aircraft dispersed to two combat theaters, three in each location with one additional aircraft that could be used if any aircraft were down for maintenance. The service estimated each ABL would cost between \$1 billion and \$1.5 billion, and that it would take at least two years to roll one off a production line.

Critics seized on the cost of the aircraft—ABL would have been the second most expensive production aircraft behind the B-2 bomber—and a questionable operating concept. Because the ABL would be a slow moving, very large target, USAF planned to have fighter aircraft escort it on missile defense sorties, adding to the operating cost. The Missile Defense Agency in a 2006 report to Congress revealed an operating concept that required “at least three aircraft for a near-continuous single combat air patrol station.”

Additional aircraft “may be required depending on the length of deployment, capabilities of the aircraft available, and whether or not the combatant commander needs near-continuous or continuous coverage,” MDA added. “The specific quantity of operational assets required for deployment periods

s Next for rne Laser?

By Thomas Duffy



MDA photo

A high-energy laser flows through, and is directed by, the ABL's nose turret.

of seven days, 30 days, 90 days, and one year” had not been determined.

The aircraft would also be limited in where they could be used.

The ideal scenario seemed to be that of military action against North Korea. ABL could fly off the coast, away from air defenses, and theoretically target North Korean ballistic missiles as they lifted off the launchpad.

Along with the cost of building each aircraft, ABL requires a large logistics tail. The 2006 MDA report to Congress laid out some requirements for the aircraft to be used operationally. “Normal large-aircraft servicing such as heavy-load ramps and taxiways, 8,000-plus-foot runways, de-icing, aircraft fueling, maintenance stands, and cargo handling equipment are necessary, but may be available for use at an in-theater forward operating area.

“Consideration must be given to space requirements for laser fueling area and laser fuel mixing/storage facilities that would be required to maintain the Airborne Laser refueling requirements.”

The report noted that “properly maintained” fuel could last up to two weeks if not used in a sortie. “The Airborne Laser could maintain an orbit, preventing enemy launches for this duration without resupply as long as no hostilities occur. Once hostilities start, refueling will be necessary.”

In August 2001, Air Force officials upped the program’s cost estimate by

Laser Missile Defense’s Long Road

The Airborne Laser program faces uncertainty, and the technology has already endured a lengthy development program with many starts and stops over several decades.

ABL can actually trace its existence to a 1917 treatise published by Albert Einstein. The famous physicist’s paper laid out the principles for producing a “stimulated” emission of light, according to an official history of the program.

The Eisenhower Administration first began looking at using lasers on the battlefield. Interest accelerated following the 1962 Cuban Missile Crisis when President Kennedy specifically requested research on using lasers to shoot down ballistic missiles in flight.

Through the 1960s, 1970s, and early 1980s, the Air Force invested in research to carry a laser aboard an aircraft and use it to shoot down targets. The service achieved that goal in 1983 when the Airborne Laser Laboratory, a KC-135A fitted with a 100 kilowatt CO2 laser, shot down an AIM-9B Sidewinder missile.

The service followed that up with two more successful tests.

The Airborne Laser Laboratory was considered an experimental aircraft and was retired by the Air Force in 1984. About a decade later, however, the Clinton Administration revived the idea of a flying laser weapon that could shoot down ballistic missiles.

The experience of Saddam Hussein’s Scud attacks on American troops during the first Gulf War played a part in the decision to move ahead with the plan for an Airborne Laser.

50 percent and delayed the schedule by four years. That November, the Defense Department transferred management of the ABL program to the Ballistic Missile Defense Organization, MDA’s predecessor.

Costs rose each succeeding year. According to MDA, the prototype aircraft used for the tests earlier this year carries a \$5 billion-plus price tag.

In 2006, the Bush Administration, struggling with ABL, announced it was

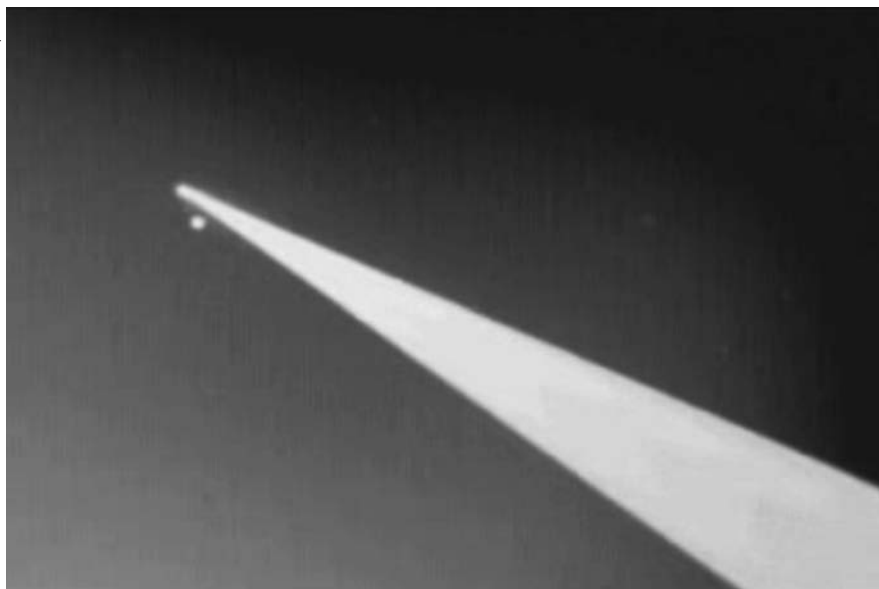
relegating the program to “technology demonstrator” status. The Air Force’s ABL procurement plans were put on hold at that time.

Despite what appears to be a real uphill battle, ABL supporters in Congress plan to keep fighting to keep it alive. Franks will try to change the Obama Administration’s plans as Congress

The ABL, shown here in flight, could carry fuel that would last two weeks.

Boeing photo





A view from the ABL Test Bed aircraft shows the laser beam's path and a piece of missile debris knocked loose by the heat.

considers the Fiscal 2011 defense budget.

"I am going to do everything I can to rally other members of Congress to recognize the amazing achievement that has occurred here with this lethal shootdown," Franks said, adding that he would offer amendments to the defense authorization and appropriations bills.

However, Franks acknowledges that missile defense supporters face big obstacles.

"It's been so discouraging working with members of Congress that either don't have any understanding of the efficacy of this program or have an intrinsic bias against anything to do with missile defense, and this is especially true of the President of the United States," he said. "The good news" is that the successful tests make it "impossible for them with a straight face to suggest that the system can't work."

Franks said he believes the successful tests will "give people like me leverage to go to other members of Congress and help them understand the profound capability of this system and what it represents in our chain of technology for the future. I think lasers will ultimately be to missile defense what the silicon chip was to the computer industry."

In March 2009, Franks and six other House members wrote to Defense Secretary Robert M. Gates to express their worry that the ABL would see its funding cut in the Fiscal 2010 budget. One of the letter signers was Rep. Norman D.

Dicks (D-Wash.), who became chairman of the House Appropriations defense subcommittee following the death of Rep. John P. Murtha (D-Pa.) in February.

Franks said he expects ABL supporters to once again send Gates a letter and ask that the program be reconsidered in light of the two recent tests, but Gates has previously taken a particularly hard line on the program.

Stinging Criticism

When he appeared before the House Appropriations defense subcommittee last year, Gates pulled no punches in his assessment of ABL. "I don't know anybody at the Department of Defense, Mr. Tiahrt, who thinks that this program should, or would, ever be operationally deployed," Gates said in answer to a question posed by Rep. Todd Tiahrt (R-Kan.). "The reality is that you would need a laser something like 20 to 30 times more powerful than the chemical laser in the plane right now to be able to get any distance from the launch site to fire."

Gates continued his stinging criticism of the program. "The ABL would have to orbit inside the borders of Iran in order to be able to try and use its laser to shoot down that missile in the boost phase," he told Tiahrt. "And if you were to operationalize this you would be looking at 10 to 20 747s, at a billion-and-a-half dollars apiece, and \$100 million a year to operate."

There is "nobody in uniform that I know who believes that this is a workable concept," Gates added. "I have kept the first—the prototype—because we do need to continue the research on directed energy and on lasers, and that will be robustly funded because we do need to continue developing a boost-phase capability, but, operationally, this first test, for example, is going to be from a range of 85 miles."

The two recent tests don't seem to have changed Gates' mind any. During a Feb. 18 Pentagon press briefing, Gates' spokesman Geoffrey S. Morrell said the Secretary has never been against the idea of a laser weapon for missile defense. "He had issues with the platform. The [concept of operation] on the platform didn't work," Morrell said.

Asked if ABL carried out the February tests using what would be considered operating power, a Missile Defense Agency spokesman said, "ALTB generated the power necessary to destroy the target missile," adding that the ALTb is a test bed platform only, and not intended for missile defense operations.

DOD spokesman Morrell added that the Obama Administration still believes directed energy systems hold the most promise for boost phase missile defense, and that the Administration was continuing to fund research in that area.

Franks is also not putting full stock in Gates' public comments about ABL. "I hope and believe that [Gates] will have the core commitment to the defense capability of this nation that he will use his highly influential voice to either make sure this program goes forward or to have an equal or better platform. This is the best platform we have."

Even in a time when money for weapon systems is becoming very difficult to come by, Franks sees intense value in ABL. "If this thing shoots down one nuclear missile coming into the United States, it will pay for itself 100 times over and more," he said.

Missile defense supporters feel the decisions being made today about ABL will have long-lasting repercussions. "I've got year-and-a-half-old twins and I want to make sure that they and their contemporaries walk in the sunlight of freedom," Franks said. ■

Thomas Duffy is publisher of Inside Washington Publishers' Defense Group, which includes the InsideDefense.com online news service. This is his first article for Air Force Magazine.



The KC-135 is rolled out at the Boeing plant in 1954. In the background is the KC-97 it replaced.

Tankers in Unknown Territory

By Marc V. Schanz, Associate Editor

“Nobody’s ever flown a modern jet transport for 80 years.”

Despite recent optimism that the Air Force’s KC-X tanker replacement program may be finally moving forward, an operational next generation tanker fleet is years away. The nation’s ability to project power around the world will therefore depend to a tremendous degree on keeping geriatric KC-135 Stratotanker and KC-10 Extender tankers airworthy.

This is a troubling situation, but the Air Force is not taking it lying down. The service is pushing full speed ahead on a variety of initiatives designed to keep its tankers viable until their replacements are ready.

The Total Force currently operates 474 tankers. Air Mobility Command states a need for 520 to 640 replacement tankers. This is tacit acknowledgment that there is already a gap in force structure, so

even when KC-X aircraft begin entering service, existing KC-135s will remain on the job.

As things stand, roughly 236 of the Eisenhower-era KC-135s could remain in the Air Force fleet until 2045.

For Gaddis Gann, tanker health is both a daily and strategic concern. Gann is the chief engineer at Tinker AFB, Okla.’s 827th Aircraft Sustainment Group—the KC-135’s depot, where workers constant-

ly evaluate the airworthiness of the jet aircraft, perform major structural repairs and overhauls, and work up maintenance specifications for the rest of the fleet.

Beefing Up the Schedules

A lot of this is “unknown territory,” he said. “Nobody’s ever flown a modern jet transport for 80 years.”

The need to keep ancient tankers in service has raised difficult sustainment questions which don’t have easy answers, Gann said. When will corrosion set in? Is parts obsolescence manageable? Will components stay healthy?

Most commercial aircraft are sold or replaced every 20 to 30 years, he noted. To keep the tanker fleet viable out to the 2040s, a range of checkups, modernization, replacement efforts, and maintenance practices is in motion to keep the healthiest of the refuelers in the air.

Sustainment officials say they’ve made progress toward keeping aircraft on flight

Keep Them Flying

Modernization of components and fleetwide upgrades are critical to ensuring the tanker fleet will fly in the years ahead. Global Air Traffic Management modifications wrap up on the KC-135R models in Fiscal 2011, and then Block 45 upgrades will get under way. They include new displays, replacement of leftover “steam gauges” in the cockpit, digital panel installations, and other modifications.

Air Mobility Command plans dictate that the fleet will remain in the force until 2045. These Extenders, which have yet to undergo a fleetwide modernization, may require upgraded avionics, particularly for their boom control units.

Skin and corrosion issues will have to be examined around 2020, which will increase parts costs. Another source of concern: The KC-10 fleet is averaging up to 71,000 flying hours a year—much higher than its anticipated 52,000 hours annually when it arrived in the force.

The Air Force’s long-serving tankers will continue to test the maintenance community. The aircraft are so old there is no one solution or problem to tackle.

“It’s the unknowns of the future, ... being able to balance any potential structural issues, particularly cracking, with systems issues,” said Gaddis Gann, chief engineer at the 827th Aircraft Sustainment Group, Tinker AFB, Okla.

He noted the KC-135 fleet could just as easily be grounded for a gear box problem as a structural crack—and his job is to make sure the components which could fail are inspected at the right times.

“[It’s like] you’ve got a 50-year-old car, and you now have to drive it another 35 years,” he said. “There are a lot of things we have to do. ... It’s hard to pinpoint a single challenge.”

No one denies this is a difficult job, but a nation that utilizes airpower around the globe must keep its tankers flying.



Airmen with the 379th Expeditionary Maintenance Squadron replace a landing strut on a KC-135 tanker in Southwest Asia.

lines and out of the shop. Much of the “low hanging fruit” problems with the 135 have been worked out and now depot workers are attacking tougher issues, said Col. Robert Torick Jr., commander of the 827th Aircraft Sustainment Group.

The initial stage of inspection, which Torick called “triage,” is crucial to figuring out what’s wrong from an engineering perspective and to diagnose problems early. At this point, depot workers can move into repairs, buildups, operations checks, and other processes.

Inspection regimes have been beefed up at the unit level, Gann said, so the depot has a better idea of what is wrong with a given airframe by the time it rolls in for its five-year depot checkup.

But parts shortages and obsolescence issues are persistent, difficult to solve problems. “It continues to get worse,” said Col. Douglas Cato, commander of Tinker’s 76th Aircraft Maintenance Group, on solving the “severe” spare parts puzzle. Parts from the “Boneyard” at Davis-Monthan AFB, Ariz., provide some relief, but the replacement pieces don’t always fit.

While the various airframes have common components such as gear boxes or flaps, the big issue is the assembly techniques used in the 1950s. “They did not have laser precision assembly techniques; they were assembled by master mechanics,” Gann said.



F-22 Raptors line up to take on fuel from a KC-135 during a mission over the Pacific Ocean. More than 200 KC-135s could remain in service until 2045.

The net result is that without significant rework, the chance of a structural part from a retired E model fitting one of the R models that remain in service is rare. The additional work required to make components fit in turn raises costs.

As a result, Cato said, the maintenance community is pushing for the Defense Logistics Agency to increase “ship sets” of spare parts on hand before aircraft are disassembled, to better mitigate risk and cut down on maintenance flow times.

Process improvements will also be critical to tanker sustainment, Cato said. The target for the depot is to cut the number of flow days that it takes to move a tanker through the depot from about 200 today to 130 by Fiscal 2012.

“We’re working hard to get there,” he said. In addition to solving parts logistics issues and speeding up technical solutions, Cato said there will be integrated maintenance stands arriving at the depot, which will simplify working around the aircraft. A new facility will also allow more dock space, as Cato said they plan to ramp up from 54 aircraft in service annually this year—with further expansion set for service leadership approval.

Giving maintainers and depot workers the tools they need to solve problems is just as important as improving processes, he added. “I talk about the mechanic being like a surgeon,” Cato said. “Every time the surgeon reaches for an instrument, somebody is slapping it in his hand. It should be the same way when the mechanic reaches for a part. They shouldn’t have to wait for anything.”

To the lay observer, Gann said, it is not apparent that the average KC-135R is a vastly different structure than a typical commercial jetliner. Yet it is. The tankers were assembled before the development

of many modern mechanical engineering processes.

Despite the availability of parts from retired KC-135Es, a fundamental problem for the fleet’s survivability is the difference in construction. Techniques used in manufacturing are not up to spec with modern aircraft, and even sealants must be replaced with better materials in many instances.

Late Finds

What makes fixing tankers so difficult now and depot work so important, Gann noted, is that many components which were never intended to be replaced are now failing—parts buried in hard-to-access parts of the aircraft. “One of our big problems is ‘late finds’ [requiring] structural repairs,” he added.

Depot officials are working with the Air Force Research Laboratory to develop new technologies to evaluate the health of hard-to-access structural components. Many of these are only visible by X-ray or through visual inspection. Catching problems early can prevent them from devouring precious man-hours.

Less time in depot translates to more time in the air, several officials stress. “We’ve tried really hard to identify areas that might be problems,” Gann said, such as wind-break production fittings. Without attention, fittings can loosen and lead to fuel leaks which can lead to unscheduled depot maintenance stops—where an aircraft will arrive at depot for a fix the unit isn’t equipped to handle, he said. Currently, about 15 to 20 tankers arrive at the depot each year for unscheduled fixes. With proper diagnostics, the numbers could come down.

Sustainment of the KC-135 fleet already clocks in at around \$2 billion

a year, said Gen. Arthur J. Lichte, then AMC commander, last fall. Around 2018, the Air Force will look at possibly “re-skinning” the aircraft, putting in new wires, flight controls, and cabling. At this point, costs will rise exponentially, predict most AMC analysts. The cost to sustain the Stratotankers could surpass \$6 billion a year by 2018, based on predictions from past economic service life studies, Lichte said.

Every year of delay in the KC-X program is also a problem, and costs AMC an additional \$55 million through increased maintenance requirements for the legacy tankers and additional time the old aircraft spend out of service.

The primary challenge over the coming years will be structures, stress corrosion, and cracking, Gann said. Stratotankers built in the 1950s were selected for high strength and low weight ratio. These elements were not necessarily related to durability or resistance to corrosion, but they were great for carrying heavy fuel loads. As a result, maintainers and depot workers have been trying to systematically replace certain components, such as fuel bladders, wiring, and flight controls, in an effort to return the parts to original condition. This never-ending work-set doesn’t even address needed modernization efforts.

In an effort to get ahead of the age curve, the KC-135 program office at Tinker is undertaking an aircraft tear-down program between now and Fiscal 2015, Gann said. The effort involves the rigorous disassembly of three KC-135R airframes at the depot over the next several years, taking apart large sections, looking at areas such as wing boxes, the aircraft’s internal components not usually examined in the course of flight line maintenance, and other key points on the aircraft.

While such programs have been undertaken before, this effort is taking a more intensive look inside the aircraft. “Hopefully it will give us an indication of things to come,” he added.

Another key to extending the tanker fleet’s life is good management of the assets, mobility officials contend. Tankers are regularly rotated in and out of areas such as Hawaii and Japan, where the potential for corrosion over time is high if they are overexposed to sea salt.

Even tankers located at training sites, such as Altus AFB, Okla.—where touch-and-go landings are a regular occurrence—are watched closely to make sure the landing gear and components don’t get too heavily taxed, Gann added. ■



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LOCKHEED MARTIN

Art Cormier, Neil Black, and Bill Robinson showed excellence in the POW camps around Hanoi.

In 1967, there was a “unit” of approximately 300 Americans fighting the Vietnam War from within a Hanoi prison. The unit—later named the 4th Allied POW Wing—was located in the drab North Vietnamese capital. Within this unit, every man had the same job: prisoner of war.

All—except three enlisted airmen—were officers, including me. Our job description was to continue fighting for the United States while imprisoned.

The three enlisted airmen were SSgt. Arthur Cormier, Amn. Arthur Neil Black, and SSgt. William A. Robinson.

All were crewmen on helicopters that rescued aircrews from downed aircraft. The three were shot down in 1965.

They were captured, taken prisoner, and ended up in the Hoa Lo prison in Hanoi (the “Hanoi Hilton,” in POW parlance).

POWs were dressed in pajamas, and were usually disheveled as a result of infrequent chances to bathe or shave. Given only two daily meals, and those of poor nutritional value, the POWs were thin. Under these conditions, enlisted men, officers, Air Force, Navy, and Marine Corps all looked about the same.

A general rule, though with multiple exceptions, was that the higher ranking a prisoner was, the more torture he suffered. Art Cormier, Neil Black, and Bill Robinson were among the exceptions. They were tortured like the officer POWs.

A Daring Escape

An idea to do the “right thing”—in the absence of knowledge of specific regulations or rules—was hatched in early 1968.

At that time, the POW officers decided to commission the three enlisted POWs, Cormier, Black, and Robinson. Why? The commissioned men saw these three enlisted men show exceptional heroic qualities.

Until late 1969, most prisoners lived in solitary confinement or in small cells with one or two other POWs. The rules were simple: no noise from any cell. If a prisoner was caught trying to communicate with a POW in the next cell, through the concrete walls, he received a beating—or more.

Most of our torture was for propaganda. The North Vietnamese wanted us to write or make a statement of confession condemning the war. They thrived on the growing anti-war sentiment in the United States, and felt statements from POWs would support that movement.

The North Vietnamese put us in solitary because they believed in the divide-and-conquer theory. They believed that if they could isolate us, they could prevent us from communicating.

Both they and we knew that if the prisoners could communicate, we could organize. If we could organize, we could resist—or at least resist better.

The POWs lived in these conditions until early 1969. Then, some of us were moved into an area that we named the

Commissioned in Hanoi

By Leo K. Thorsness



“Annex.” It was part of the POW camp called the “Zoo,” located a couple of miles southwest of the Hanoi Hilton. The Annex had larger cells holding up to about 10 POWs.

The cells had a high-walled tiny outside area where we could spend a few minutes on most days.

It was from the Annex that Capt. John A. Dramesi and Capt. Edwin L. Atterberry escaped on May 10, 1969.

John and Ed escaped through the roof of the cell in which they lived with several others. They made it over the prison wall.

At daybreak the next day, they could find no cover and were spotted and recaptured. Atterberry was subsequently tortured to death, while Dramesi survived months of torture.

Following that escape, the POWs were taken back into the small Zoo

cells. The systematic and horrendous torture that followed was long-lasting and as severe as any we experienced the entire time we all served as POWs.

Above: An exterior wall at the infamous “Hanoi Hilton” prisoner of war camp in North Vietnam. Below: Just-released POWs celebrate as they leave North Vietnamese airspace aboard a C-141 Starlifter. They would soon be repatriated to the US.





Arthur Cormier is embraced by fellow pararescuemen on his arrival at Scott AFB, Ill., after more than seven years as a POW in North Vietnam.

This was the environment that the officers and enlisted men endured. We served our country and endured torture to our best ability. Over time, we strengthened our solidarity and, in our way, showed leadership in battle.

Our collective memory fades, but it is agreed that the idea to commission the enlisted airmen germinated in Annex cell #3, which held 12 men—eight Air Force and four Navy.

The five Air Force officers were Darrel E. Pyle, Harry D. Monlux, Michael L. Brazelton, Ralph “Tom” Browning, and John L. Borling. The Naval officers were Richard M. Brunhaver, David J. Carey, Read B. Meclary, and James B. Bailey. All were O-2s when they were captured. The Air Force enlisted men were there as well.

By date of rank, Skip Brunhaver was the SRO, or senior ranking officer.

Once the commissioning idea was hatched, it consumed a lot of time—but having a new subject to discuss was refreshing. When the same men are together in the same cell 24 hours a day with no pencils, papers, or books, new subjects are welcome.

All men enthusiastically joined in. The three enlisted airmen found all of this interesting, but appropriately held back from offering opinions.

Conversation often centered on “could it be done?”

A frequent question was, “Skip, what do you think—you are the SRO.” Of the nine officers in the cell, Borling and Browning were Air Force Academy graduates, and Carey and Meclary were Naval Academy graduates.

Brunhaver generally responded with something like, “How in the world do I know? You, John, and Tom are the Air Force graduates. Did you flunk the battlefield commission course?” Brunhaver was never shy when expressing his opinion.

Battlefield Commissions

Borling and Browning did not think the Air Force had had experience or regulations covering battlefield commissions. The Air Force had become a separate service in 1947 and there were no opportunities in Korea for enlisted airmen to receive a battlefield commission. Until Vietnam, the subject simply never came up in the Air Force.

As the conversation heated up, Borling and Browning would turn to Carey and Meclary, their Annapolis counterparts, saying, “The Marines fall under the Navy. Marines have had a lot of battlefield commissions. What do your regulations say?”

Carey once tried to hoodwink the Air Force members. He said, “I recall in our plebe year, we had a course titled ‘History of Battlefield Commissions in Blood and Guts Eyeball Warfare,’” adding that “it was covered under Naval Regulation 291-41-3A.” Carey said it confidently, with a straight face. He turned aside to avoid looking at anyone and then, as if talking to himself, added, “Yes, the more I think about it, I’m sure that was the regulation.”

At best he was believed for maybe 25 seconds before he turned back to the troops with a big grin.

One topic we discussed was whether, if the prisoners went through with their plan, the North Vietnamese would find out that Cormier, Black, and Robinson had become officers. If they found out, would the former enlisted men be tortured more?

This was one time all three enlisted men spoke up, saying, “We have been tortured already; we have nothing to lose.”

After a week of conversation, Brunhaver declared that it was time to decide: “I would like your vote up or down to promote Art, Neil, and Bill to second lieutenants.”

Without hesitation, the other eight officers raised their hands high. Brunhaver looked at Cormier, Black, and Robinson, who felt it was not their position to vote about a battlefield commission for themselves. Brunhaver didn’t accept their deference, and sharply said, “Men, do I get the impression you don’t want to be officers?”

When the three of them realized that Brunhaver truly wanted to know how they felt about being promoted to second lieutenant, the hands of all three shot up.

Brunhaver, as cell SRO, decided it was time to run the commissioning idea by the Annex’s ranking officer, Capt. Konrad W. Trautman. There was a problem, however: how to contact him. In buildings with a common wall—and with time and a rusty nail—a small hole could be drilled from one cell into the next. Drilling a pencil-sized hole took time, but time was something the POWs had plenty of, and the hole could be covered or disguised when not used.

Cells without adjoining walls posed another problem. Fortunately, in the first few days we were in the Annex, we discovered that we could toss a stone from one courtyard to the next.

Tossing a stone with note attached significantly increased the risk of being caught, however.

Bits of red tile roof, ground into powder and mixed with water, can make a faint ink. Blood makes a bold ink, and under the circumstances the POWs were willing to do whatever it took.

Generally, something could be found to write on. Our toilet paper, for example, was large (squares were about 15 inches across), very coarse, and tan-colored. Parts of the sheets were thick and parts had holes; sometimes small wood fibers were embedded in the papers.

It Won't Hurt To Try

We carefully tore the sheets into squares of about three-and-a-half by

where Trautman was imprisoned. He consulted his "staff of eight officers" in cell #5, and, with little discussion, the decision was unanimous.

Trautman returned his answer—"Yes, commission Art, Neil, and Bill"—by airmail to cell #4 and back through the wall hole to cell #3.

The bottom line in all conversations about promoting Cormier, Black, and Robinson from enlisted to officers boiled down to: "It won't hurt to try. The Air Force can sort it out when we get home." Basic to all conversations, however, was the quality of the three enlisted men. All had "kept the faith" in America during four long and brutal years, from 1965 to 1969. All had withstood individual torture, kept their integrity, and served honor-

tution of the United States against all enemies, and take on the obligations without reservation. So help me God.

The oath that was administered was not perfect, but it was close enough under the circumstances.

Never had the oath been taken more seriously—nor, likely, taken in prison pajamas. Cormier, Black, and Robinson each repeated the oath standing at attention and proud. It was a solemn, memorable occasion.



three-and-a-half inches. We did not get much toilet paper, and even if paper was used for a secret note, the receiver recycled it back into toilet paper.

A cryptic note was written, asking for permission to commission Cormier, Black, and Robinson. It was rolled tightly and pushed through a hole from cell #3 to cell #4. This was big news to the POWs in cell #4.

Once cell #4 had it, they glued the note with rice paste to a stone, and airmailed (threw) the note from Yard 4 to Yard 5,

ably in terrible living conditions with inadequate food. Despite all of this, they had kept their dignity intact.

We saw firsthand that these men exhibited heroic qualities in our daily POW battlefield.

With Annex SRO Trautman granting his approval, the day arrived. Although it had been several years since any officers had been sworn in, they collectively reconstructed the oath.

All remembered that you repeat your name and swear to defend the Consti-



Left: Neil Black salutes Maj. Gen. John Gonge (center) and Maj. Gen. Daniel James Jr. (l) on his arrival at Travis AFB, Calif. Above: William Robinson salutes the colors when he disembarks from the C-141.

After commissioning, the officers created an "in-cell Officer Candidate School." Cormier, Black, and Robinson gladly attended, took instructions seriously, and were on their way to becoming fine officers. The courses were taught by the Air Force and

Naval Academy graduates, with the other officers helping out.

Then came the failed Son Tay raid of Nov. 20, 1970. Son Tay was about 23 miles west of Hanoi. The raid was perfectly executed, but when the American rescue troops landed in the POW camp there, the prisoners had already been moved.

Indirectly, however, the mission was a success. The North Vietnamese realized we could be rescued and they moved the prisoners into large cells in the Hanoi Hilton. Treatment started to improve, and living with up to 45 POWs in one cell was a much better arrangement.

Once in the Hilton, we settled into a routine. We now were allowed to talk out loud, and some of the barred windows were not bricked up, meaning we could see the sky.

With between 15 to 45 POWs in a cell, there was a lot of knowledge available, and we began to inventory who knew the most about subjects.

Eventually the POW with the most knowledge about a subject, if willing, began to teach, although it was hard to teach certain subjects like math without pencils or paper.

The last year we were held prisoner, we began to receive some medicine. We really didn't know what ailments the bottle of blue medicine treated, but it was great ink. If we got ahead and had extra toilet paper, with a bamboo pen and blue medicine, we could make class notes.

When the guards found these notes they typically destroyed them, but sometimes they did not mind us having a few math notes or Spanish vocabulary word lists.

At the Hilton—also called Camp Unity by the POWs—the O-5 and O-6 rank prisoners were kept separate from the more junior officers. Col. John P. Flynn was the ranking POW in Unity, and occasionally we were able to get a note to or from him at a “note drop” (small crack) at a common toilet. The toilet itself was, of course, a squat-over-the-hole model.

We were able to tell Flynn about the commissioning ceremony for Cormier, Black, and Robinson, and in his return note he enthusiastically approved.

Flynn made it a personal priority to make the commissions official when he got back to the United States. He also directed the academy graduates to teach a three month “officer” program to Cormier, Black, and Robinson. The word spread throughout Unity, so that

whatever cells they were moved to, their training would follow.

The courses centered on leadership, management, motivation techniques, character development, command decision-making, and one combined course on supply and logistics. It was surprising how many POWs, officers all, listened in while the courses were being taught to the new second lieutenants.

President Nixon sent the B-52s—finally—over Hanoi in December 1972. The bombers came, wave after wave and night after night. The bombing started Dec. 18, and the B-52s, supported by F-105 Wild Weasels and F-4 Phantoms, came every night, except Christmas night, until Dec. 29.

The B-52s were allowed to drop their bombs within 2,000 feet of the Hanoi Hilton. When a string of 72 bombs goes off within 2,000 feet of you, it makes thunderous noise. The plaster falling off the cell ceiling was another good signal, as was seeing SAMs streak into the sky, and hearing the flak from every direction and the sound of many B-52 engines—first in the distance, then slowly getting louder. Combining the visual, audio, and “feel” senses together was the most wonderful experience for the POWs—we had waited years for it to happen.

Forced to the Table

This massive show of strength forced the North Vietnamese to go back to the bargaining table in Paris. Twenty-nine days after the final bomb, on Jan. 27, 1973, Henry Kissinger and Le Duc Tho signed the Paris Peace Accords, officially ending the Vietnam War.

POWs were released in four groups, one group about every 15 days starting in February 1973. The longest-held prisoners were released first. That group included the three new second lieutenants.

After our release, Flynn, by then a brigadier general, and Admiral James B. Stockdale, a former POW, joined forces to push for official recognition of the battlefield commissions that Art Cormier, Neil Black, and Bill Robinson had received. (Cormier asked that his commission be delayed until he was promoted to chief master sergeant.)

Flynn and Stockdale wrote a document explaining the rationale, process, and training for the battlefield com-

missions. They gave their strongest recommendation that the Hanoi commissioning of Cormier, Black, and Robinson be accepted.

Initially, Flynn and Stockdale took their request to the Air Force, since the three enlisted men were all airmen. On first contact, there was resistance by the Air Force because there were no regulations or precedents for USAF battlefield commissions.

Stockdale then unofficially talked to the Navy which, of course, had regulations and ample precedents involving both the Navy and Marine Corps. Soon the Air Force figured a way to be on board, and the battlefield commissions moved up the line. They were accepted and approved through the Secretary of Defense. The Defense Secretary decided, however, to take the request to the White House for final approval.

Nixon was briefed on the 1969 battlefield commissions in the Annex prison in North Vietnam for the three outstanding enlisted men. It was reliably reported Nixon's response to the commissioning request was, “Hell, yes!”

The promotion date was slipped from 1969 to the date of final approval, which was April 9, 1973. Flynn and Col. Fred V. Cherry, outstanding POWs both, administered the oaths of office at Andrews AFB, Md.

After the war, Black, Cormier, and Robinson demonstrated exemplary service as officers. Cormier and Robinson focused on support and maintenance duties. Black went to pilot training and spent many years as a rated officer. All three served honorably with distinction after prison, as they had while they were POWs. Cormier and Robinson retired as captains, while Black retired as a major.

Commissioning the three enlisted POWs in prison was one of the few positive events during those long years. It was the right thing to do for them, and it was the right thing for all of us, even though no one official was looking. We were cut off from our country, our military branches, and our homes. We didn't know how our lives would turn out, but we were—and are—proud to have lived this experience while serving our country during those extraordinarily difficult times. ■

*Leo K. Thorsness is a retired Air Force colonel and Medal of Honor recipient. His book *Surviving Hell: A POW's Journey* was published in 2008. This is his first article for Air Force Magazine.*



"MIG ALLEY" 200 MILES

The American F-86 Sabres stopped the MiG-15s—and their Russian pilots—at the Yalu.

MIG ALLEY

By John T. Correll

USAF photo

In August 1950, a Soviet air division with 122 MiG-15 jet fighters arrived in northeastern China and set up headquarters at Antung on the Yalu River, the dividing line between Chinese Manchuria and North Korea. On Oct. 18, an American RB-29 reconnaissance aircraft spotted 75 fighters on the ramp at Antung, but that did not raise much alarm for Gen. Douglas

MacArthur's United Nations Command or the US Far East Air Forces.

Nor was there any great concern on Nov. 1 when a flight of F-51 Mustangs was intercepted by six MiGs in Chinese markings on the Korean side of the Yalu. The Mustangs escaped without harm. US intelligence thought there were only a few of the MiG-15s, and that they were flown by Chinese and North Korean

pilots. Intelligence was wrong in both assumptions.

MacArthur and his advisors believed that the Korean War was almost over and that they had won. In the brief time since North Korea invaded South Korea on June 25, the battle lines had swung back and forth for the entire length of the peninsula. UN forces, mainly from the United States, had come to the aid of South Korea, but

the first round went to the invaders. By Aug. 5, they had overrun nearly all of Korea. The UN forces, their backs to the sea, held only a small enclave in the southeastern corner, behind a defensive line called the “Pusan Perimeter.”

MacArthur counterattacked with an amphibious landing at Inchon, hundreds of miles behind enemy lines. UN forces broke out of the Pusan Perimeter, recaptured South Korea, and advanced relentlessly into the North.

By late October, they had driven the North Korean army almost to the Chinese border. The North Korean Air Force, a motley collection of obsolete Russian airplanes, was wiped out of existence in the first few weeks by Fifth Air Force, the principal component of FEAF.

FEAF had about 400 combat aircraft at bases in Japan, Okinawa, Guam, and the Philippines. Its best fighter was the F-80 Shooting Star, the oldest jet aircraft in the Air Force, but plenty good when the opposition was cast-off Yak-7s and Yak-11s. In addition, there were propeller-driven F-51s, pulled out of storage and sent to Korea where they could fly from short, unpaved runways.

MacArthur met with President Truman on Wake Island on Oct. 15. He told Truman that North Korean resistance would end by Thanksgiving and that the US Third Infantry Division would be “back in Ft. Benning for Christmas dinner.” He said there was little or no chance of Chinese intervention. Two of the five B-29 bomb groups operating in Korea were sent back home.

MacArthur’s assurances fell apart in late November when a communist Chinese ground force of 300,000 crossed the border to join the North Koreans. Together, the two communist armies had

almost twice as many troops as MacArthur’s UN force of 200,000, half of them South Korean. In effect, the Chinese had taken over the war and they soon stopped the UN offensive cold. MacArthur’s army retreated and did not stop until it was 60 miles southeast of the South Korean capital of Seoul.

The air war was also in reversal. The MiG-15 outclassed everything else in the theater. An F-80 shot down a MiG on Nov. 8. The next day, a B-29 gunner got another one. Despite these successes, it was obvious to all that the swept-wing MiG-15 was the superior airplane by far. It was 100 mph faster than the straight-wing F-80 and outran the Mustangs with ease.

Sabre Vs. MiG

Fifth Air Force caught on quickly that the MiG pilots were not Chinese or Koreans. They were Russians. The Americans caught sight of some of them. US intelligence overheard their radio transmissions. The Russians attempted to communicate, as ordered, in Chinese or Korean but reverted to Russian in the heat of battle. Air forces of the three communist nations were controlled by a joint operations center at Antung, but the Russians were clearly dominant.

It would be another 40 years before either the United States or the Soviet Union admitted publicly the participation of Russian pilots in the Korean War. If the news got out, the US government reasoned, public outrage might lead to a broader—and possibly nuclear—conflict with the Soviet Union.

The point in stopping the MiGs was not the fighter battle in itself. If the MiGs had air superiority south of the Yalu, US B-29 bombers would be unable to operate and UN ground forces,

bases, and supply lines would soon come under air attack.

Fortunately, the US Air Force owned the only fighter in the world that could take on the MiG in even battle. During its development, the North American F-86 Sabre had been switched from a straight-wing design to swept wing, which added 70 mph to its top speed. In 1950, it was flying as an air defense interceptor in the United States. The Air Force rushed a wing of F-86s and a wing of straight-wing F-84 Thunderjets to Korea, where they began combat missions in December.

The MiG-15 and the Sabre were well matched. The MiG, smaller and lighter, had less range, but it was faster and climbed better. On the other hand, it was unstable at high speeds and its pilots were nowhere nearly as good as the Sabre pilots. Neither airplane was optimally armed. The Sabre had six .50 caliber machine guns that could spit out 1,200 shots per minute each, but the rounds were too light to knock down a MiG unless the engagement was close-in. The MiG had three cannons—two 23 mm and one 37 mm—but they fired too slowly for good accuracy against the fast-moving Sabre.

The F-86s got the best of it. By the end of the year, the Sabres had shot down at least eight MiGs, with two more probably destroyed. Only one Sabre had been lost. However, as the UN forces retreated into South Korea, Fifth Air Force lost its forward airfields and had to pull the Sabres back to Japan, where they could not reach the MiG stronghold along the Yalu. In February 1951, the enemy ruled the skies in a wedge-shaped area between the Chongchon and the Yalu that US pilots called “MiG Alley.”

As MacArthur’s ground forces regrouped and pushed northward again, the F-86s and F-84s returned to their Korean bases and resumed operations from there in March. Seoul was recaptured in June 1951, and the US Eighth Army advanced a short distance into North Korea.

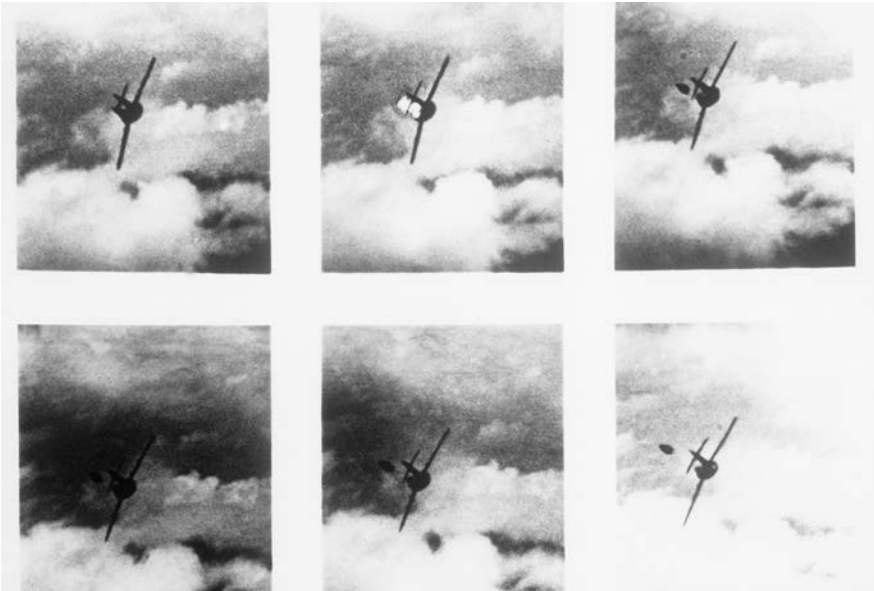
It was about 200 miles to MiG Alley from the Sabre bases at Kimpo and Suwon. Fuel limitations allowed the F-86 to remain in MiG Alley for about 20 minutes, and less if they engaged in combat. Fifth Air Force staggered the missions so the next flight of F-86s arrived before the previous patrol had to depart. Time in the battle area was not a factor for the MiG pilots, who could wait until the F-86s approached before launching from Antung and other Manchurian bases across the river.

As always, the F-86s were outnumbered. In June 1951, the Soviets and

Photo by Robert Lund via Warren Thompson



F-86 Sabres from the 336th Fighter Squadron fly out of Kimpo AB, South Korea, on a MiG hunting mission.



This sequence of photos shows a MiG pilot ejecting from his aircraft after having been hit with crippling fire from an F-86 Sabre.

Chinese had more than 445 MiGs in theater, whereas the US had only 44 Sabres in Korea and another 45 in Japan. Nevertheless, these few squadrons were able to seize air superiority, which the F-86s held continuously to the end of the war. Between December 1950 and July 1951, the Sabres shot down 41 MiGs while losing five of their own.

By then, the headstrong MacArthur had been ousted from command. The strategic priorities for Truman and the Joint Chiefs of Staff were the defense of the United States and Western Europe. They were committed to restoring the independence of South Korea, but they did not want a full-scale land war in Asia. MacArthur argued that the Far East was more important than Europe, insisted on pushing to the Yalu, and wanted to challenge the Chinese. When MacArthur went public with his arguments, Truman fired him on April 9 and replaced him with Gen. Matthew B. Ridgway.

In July 1951, the war entered a new phase. Both sides gave up on the idea of decisive victory and the objective became an armistice on favorable terms. The ground battle line settled into a stalemate near the border between North and South Korea. For the next two years, the goals were to negotiate from a position of strength in the truce talks and to secure advantageous force dispositions and deployments approaching the armistice.

By tacit mutual understanding, neither side pressed the air battle as hard as it could have. To preclude widening the war, US bombers and fighters did not

strike the air bases or supply lines in Manchuria, and the F-86s were forbidden to follow the MiGs across the Yalu, even in "hot pursuit."

Sanctuaries

F-86 pilots violated the prohibition regularly, but only one border crosser—Capt. Dolphin D. Overton III—was ever fully punished for the transgression. It was Overton's bad luck that Swiss observers, crossing Manchuria en route to the peace talks at Panmunjom, saw the dogfight in which Overton was involved, well inside Chinese territory. The Air Force decided to make an example of Overton, stripped him of two Distinguished Flying Crosses, held up credit for five MiGs he had shot down, and sent him home summarily. Overton resigned his commission and his medals were not restored until years later.

The American side had sanctuaries as well. The MiGs did not pursue damaged Sabres over the US-controlled Yellow Sea. MiGs crossed the Yalu to attack Sabres and B-29 bombers in MiG Alley and sometimes farther south. However, aircraft from the Manchurian bases did not bomb or strafe UN installations or personnel, nor did they try to disrupt supply lines from South Korean ports to the battlefield. The United States had sent word through intermediaries that massed attacks on UN forces would lead to attacks on the bases from which the attacks originated. Besides, the Soviets and Chinese did not want to widen the war either.

These constraints did not apply to fighters or bombers operating from bases in North Korea. US airpower had put all

such bases out of business in 1950, but in late 1951, the communist forces began construction of 34 airfields with runways of 5,000 feet or longer. If they succeeded in deploying MiGs to these fields, they could extend the no-man's-land of MiG Alley all the way south to Pyongyang and be in a position to challenge US air superiority over the front lines. There were also about 100 Il-28 jet bombers in the theater, big trouble if they were able to operate with MiG escorts from bases in North Korea.

B-29 bombers, protected by fighter escorts, struck hard at the airfields under construction and the MiGs were not able to stop them. By the end of the year, the base-building effort in North Korea had stopped. In all of North Korea, only two airfields were in operation, Sinuiju (known to the Americans as "Sunny Joe") and Uiju, on the southern side of the Yalu, opposite Antung.

Ironically, the only enemy aircraft to bomb Fifth Air Force bases during the war was "Bedcheck Charlie," a hopelessly obsolete Polikarpov Po-2 wood and fabric biplane that flew so slow (around 80 knots) and low that it was difficult for air defenses to handle. The Bedcheck Charlie name derived from its tendency to show up around midnight. PO-2s visited South Korea almost every night in June 1952, and among the targets bombed was the President's mansion in Seoul. These raids amounted mostly to a nuisance but sometimes did real damage.

In 1952, the enemy air order of battle in the Far East stabilized at about 7,000 aircraft, of which 5,000 were Russian, 2,000 were Chinese, and 270 were North Korean. At peak strength, the communist forces had more than 900 MiGs in the theater. USAF never had more than 150 Sabres there.

The Soviets kept two air divisions on duty in Manchuria, regularly rotating them out as entire units and replacing them with fresh ones. At least 12 Soviet air divisions were rotated through Korea during the war to gain experience and training. The Americans noted a cycle of competence among the MiG pilots, peaking as a division finished its tour. By 1953, the Russians had largely dropped the pretense that they were Chinese or North Koreans and the MiGs often flew openly with Soviet markings. And, as the war stretched on, Chinese and North Korean pilots took on a rising share of the MiG-15 missions.

The MiGs had some good days, but the Sabres had more of them. On June 30, 1953, the Sabres shot down 16 MiGs,



Capt. Joseph McConnell Jr. in the cockpit of his aircraft *Beauteous Butch II*. McConnell became the top US ace in the Korean war. Note the 16 “kill” stars on the fuselage.

the largest number of victories in a single day, although they came close to that total on at least three other occasions. The sighting of enemy aircraft south of MiG Alley became increasingly rare. According to a contemporary joke, soldiers identified any fighter or bomber they saw as a “B-2.” When newcomers asked, “What’s a B-2?” the veterans would answer, “Be too bad if they weren’t ours.”

The B-29s systematically destroyed such industry as existed in North Korea, and the Soviets maintained their numerical advantage in the air only by replacing the MiGs and other aircraft shot down by the Americans. By the end of the war, not a single airfield in North Korea remained in condition for the landing of jet aircraft.

Both sides upgraded their fighter forces. The Soviet Union introduced the MiG-15 “bis” with improved capabilities, and the US deployed the E and F models of the F-86. Dissatisfied with the performance of the Sabre’s machine gun, the Air Force developed a 20 mm cannon to replace it. The war was nearly over before combat testing of the cannon was completed, but the cannon became standard armament for the follow-on F-86H.

When Stalin died March 5, 1953, the Russians shifted their attention to the struggle for succession of power in the Soviet Union. By early May, the Russians had withdrawn from Manchuria and turned the MiGs over to the Chinese and the North Koreans. The communist forces launched their last big ground offensive in June, hoping to establish

new demarcation lines before the truce, but the operation failed for lack of air support. The war ended with the armistice on July 27.

The Numbers

The final score of the F-86 against the MiG-15 has been hashed and rehashed many times. According to the Air Force’s assessment immediately following the war, US fighters overall had shot down 14 enemy aircraft for every USAF aircraft lost in battle. The ratio in MiG Alley was said to be 10-to-1, with the Sabres shooting down 792 MiGs while losing 78 of their own.

“The ratio of victories in air-to-air battles has undergone several revisions over the years,” said Air Force historian William T. Y’Blood in a study commemorating the 50th anniversary of the Korean War. “After the war, the USAF believed it had inflicted a 14-to-1 margin over the communists in the air-to-air battles. The ratio was dropped to 10-to-1 following further studies of the claims. Later studies suggest that a 7-to-1 ratio is a truer indication of these battles.” The Chinese acknowledged losing 224 MiG-15s. The Russians have not revealed their losses, but neither have they disputed the 7-to-1 ratio.

Forty-one American pilots—including one from the Marine Corps and one from the Navy—were aces in the Korean War, shooting down five or more enemy aircraft. Most of the aces

were older airmen, many with experience in World War II. The top ace was Capt. Joseph C. McConnell Jr., with 16 victories. He had been a B-24 navigator during World War II. The 39 USAF aces accounted for almost 40 percent of the Sabre victories. The leading Soviet ace was Capt. Nikolai V. Sutyagin, who claimed 21 American aircraft, including 15 Sabres, shot down.

Navy and Marine fighters had a substantial part in the war, but mostly in air-to-ground missions. Navy and Marine pilots flying the F-9F Panther got a few MiGs, but their airplane was not truly competitive. Some aviators from those services flew as exchange pilots with the Air Force. Among them was a future astronaut, Marine Corps Maj. John H. Glenn, who shot down three MiGs as an F-86 pilot in 1953.

Korea is often thought of as a ground war in which airpower—especially the fighter engagements in MiG Alley, far from the ground battle lines—is regarded as peripheral if not insignificant. In actuality, airpower, both in air-to-ground and air-to-air roles, was of critical strategic importance. Air superiority missions accounted for nine percent of total Air Force sorties. Another 48 percent were interdiction, and 20 percent were close air support. After UN forces held at the Pusan Perimeter and then broke out, Lt. Gen. Walton H. Walker, commander of the US Eighth Army, said, “If it had not been for the air support that we received from the Fifth Air Force, we would not have been able to stay in Korea.”

The engagements in MiG Alley seemed distant because the F-86s kept them that way. Had the enemy been able to deploy MiG-15s and Il-28 bombers farther south, attack the base infrastructure, interdict supply lines, and bring airpower to bear on UN ground forces, the war might have had a different outcome. As it was, UN forces on the ground as well as bombers and transports were able to operate without much concern about enemy air attack.

It is remarkable that the F-86 pilots were able to prevail by a 7-to-1 margin, if not better, over the highly rated MiG-15s which outnumbered them by a wide margin. Moreover, the Sabres held air superiority over nearly all of Korea for the entire war. Not many air forces have ever done better than that. ■

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 Emergence of Smart Bombs,” appeared in the March issue.

Defense Budget at a Glance

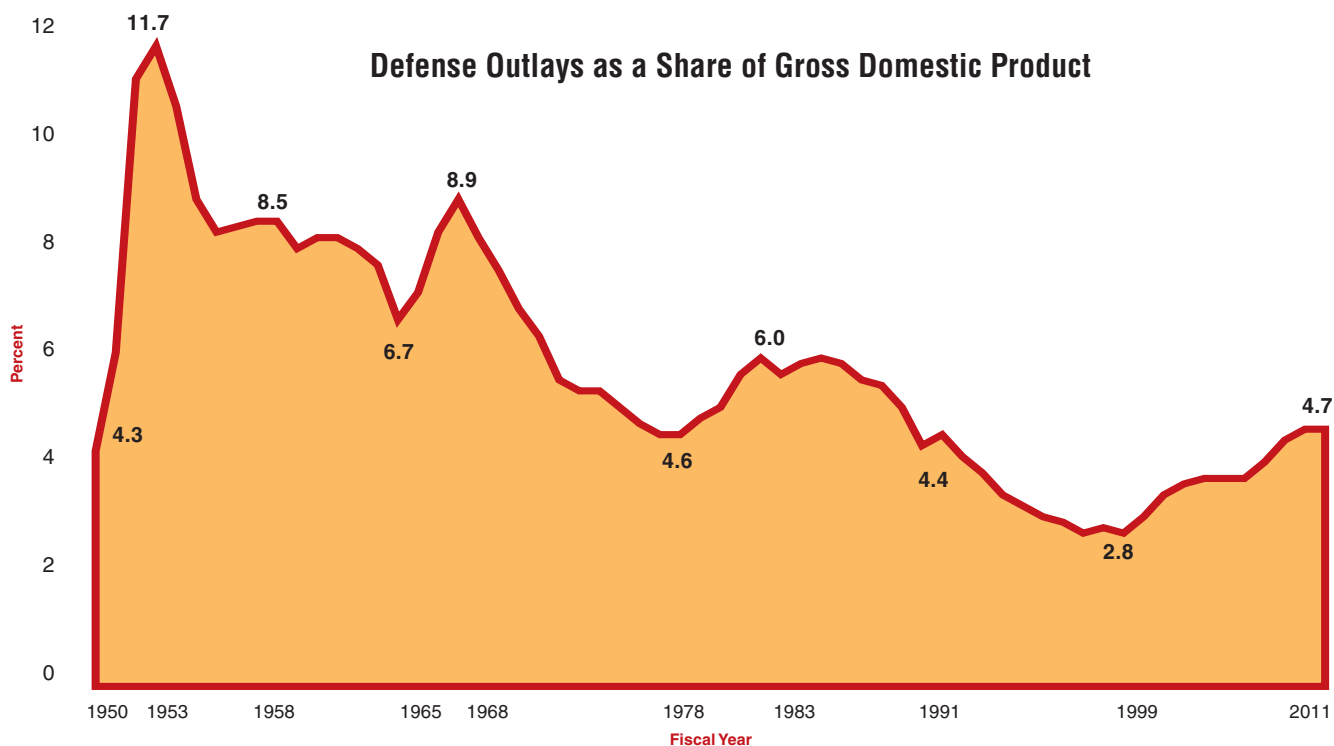
President Obama on Feb. 1 presented a DOD budget request for Fiscal 2011. It seeks \$548.9 billion in budget authority less war costs and \$708.2 billion in BA counting war costs. Funding most often is stated in BA—the value of new obligations DOD can incur. (Some are paid in future

years.) Figures can also be expressed in outlays—actual checks written in a given year. “Current dollars” contain no adjustment for inflation. With “constant dollars,” inflation has been factored out. Charts address only the Defense Department program.

Defense Budget Authority

(\$ billions)

	2009	2010	2011	Planned 2012	2013	2014	2015
No War Costs, Current dollars	\$513.3	\$530.7	\$548.9	\$566.4	\$581.8	\$597.8	\$616.0
No War Costs, Constant FY 2011 dollars	\$532.5	\$537.6	\$548.9	\$559.0	\$567.3	\$576.0	\$586.4
With War Costs, Current dollars	\$658.4	\$660.3	\$708.2	\$616.4	\$631.8	\$647.8	\$666.0
With War Costs, Constant FY 2011 dollars	\$683.0	\$668.9	\$708.2	\$608.4	\$616.1	\$624.1	\$634.0



Defense Outlays

(\$ billions)

	2009	2010	2011	Planned 2012	2013	2014	2015
Current dollars	\$633.8	\$684.4	\$714.4	\$649.3	\$629.7	\$638.5	\$652.8
Constant FY 2011 dollars	\$657.4	\$693.3	\$714.4	\$640.9	\$614.1	\$615.2	\$621.4

Service Shares

(Budget authority in billions of constant FY 2011 dollars)

Dollars	2009	2010	2011	2012	2013	2014	2015
Air Force	\$146.5	\$145.3	\$150.0	\$152.8	\$155.0	\$157.4	\$160.2
Army	144.4	141.5	143.4	146.0	148.2	150.5	153.2
Navy/Marine Corps	152.9	157.8	160.6	163.6	166.0	168.5	171.6
Defense agencies	88.7	93.0	94.9	96.7	98.1	99.6	101.4
Total	532.5	537.6	548.9	559.0	567.3	576.0	586.4
Percentages							
Air Force	27.5%	27.0%	27.3%	27.3%	27.3%	27.3%	27.3%
Army	27.1%	26.3%	26.1%	26.1%	26.1%	26.1%	26.1%
Navy	28.7%	29.4%	29.3%	29.3%	29.3%	29.3%	29.3%
Defense agencies	16.7%	17.3%	17.3%	17.3%	17.3%	17.3%	17.3%

Note: Fiscal 2012-15 are projections based on actual shares for Fiscal 2011.

Cutting the Pie: Who Gets What

(Budget authority in billions of constant FY 2011 dollars)

	2009	2010	2011	2012	2013	2014	2015
Military personnel	\$129.6	\$136.7	\$138.5	\$141.1	\$143.2	\$145.3	\$148.0
O&M	185.8	186.9	200.3	204.0	207.0	210.2	214.0
Procurement	105.5	106.2	112.9	115.0	116.7	118.5	120.6
RDT&E	82.5	81.1	76.1	77.5	78.7	79.9	81.3
Military construction	22.7	21.3	16.9	17.2	17.5	17.7	18.1
Family housing	3.3	2.3	1.8	1.8	1.9	1.9	1.9
Other	3.3	3.1	2.4	2.4	2.5	2.5	2.6
Total	532.5	537.6	548.9	559.0	567.3	576.0	586.4

Note: Fiscal 2012-15 are projections based on actual shares for Fiscal 2011.

Manpower

(End strength in thousands)

	1990	2008	2009	Est. 2010	Est. 2011	Change 1990- 2009
Total active duty	2,065	1,402	1,419	1,425	1,432	-646
Air Force	535	327	333	332	332	-202
Army	751	544	553	562	569	-198
Navy	582	332	329	329	329	-253
Marine Corps	197	199	203	202	202	6
Selected reserves	1,128	838	846	845	846	-282
Civilians (FTE)	997	671	703	720	757	-294

Operational Training Rates

	1990	2000	2008	2009	Est. 2010	Est. 2011
Air Force						
Flying hours per crew per month, fighter/attack aircraft	19.5	17.2	14.4	17.0	14.0	11.4
Army						
Flying hours per tactical crew per month	14.2	12.7	11.6	12.3	12.0	12.3
Annual tank miles	800.0	669.0	459.0	547.0	545.0	583.0
Navy						
Flying hours per tactical crew per month	23.9	20.9	18.3	14.7	19.4	20.1
Ship steaming days per quarter						
Deployed fleet	54.2	50.5	45.0	58.0	58.0	58.0
Nondeployed fleet	28.1	28.0	20.0	24.0	24.0	24.0

Acronyms

AEHF	Advanced Extremely High Frequency
AFRC	Air Force Reserve Command
AMRAAM	Advanced Medium-Range Air-to-Air Missile
ANG	Air National Guard
ARNG BCT	Army National Guard Brigade Combat Team
AWACS	Airborne Warning and Control System
BUR	Bottom-Up Review
CSAR-X	Combat Search and Rescue Replacement Vehicle
CVLSP	Common Vertical Lift Support Platform
DMSP	Defense Meteorological Satellite Program
EELV	Evolved Expendable Launch Vehicle
FTE	Full-Time Equivalent
GPS	Global Positioning System
JASSM	Joint Air-to-Surface Standoff Missile
JDAM	Joint Direct Attack Munition
JPATS	Joint Primary Aircraft Training System
JSF	Joint Strike Fighter
MLV	Medium Launch Vehicle
NPOESS	National Polar-orbiting Operational Environmental Satellite System
O&M	operation and maintenance
QDR	Quadrennial Defense Review
RDT&E	research, development, test, and evaluation
SATCOM	Satellite Communications
SBIRS	Space Based Infrared System
SDB	Small Diameter Bomb
STARS	Surveillance Target Attack Radar System
TSAT	Transformational Satellite
UAV	unmanned aerial vehicle

Major USAF Programs RDT&E

(Current million dollars)

Program		2009	2010	2011
Bombers	B-1B	158.1	178.3	33.2
	B-2	384.2	407.2	260.5
	B-52	39.8	102.3	146.1
	Long-range strike	0.0	0.0	199.0
Fighter/Attack	A-10	4.0	12.2	5.7
	F-15	0.0	0.0	0.0
	F-15E	203.8	320.0	222.7
	F-16C/D	123.7	142.6	129.1
	F-22A	579.7	569.4	576.3
	F-35 (JSF)	1,744.0	2,073.0	884.0
	MQ-1 Predator UAV	38.6	35.2	28.9
	MQ-9 Reaper UAV	57.2	93.1	125.4
Helos	CSAR-X	15.0	15.0	0.0
	CVLSP	3.9	4.0	0.0
	HH-60M	0.0	0.0	0.0
ICBM	Minuteman III ICBM	58.9	128.1	138.6
Rec/C2	E-3 AWACS	122.4	175.5	239.8
	E-8 Joint STARS	97.6	185.6	168.9
	RQ-4 Global Hawk	279.2	317.3	251.3
Space	AEHF satellite	460.4	461.4	351.8
	Counterspace systems	64.3	63.8	40.3
	DMSP satellite	0.0	0.0	0.0
	EELV booster	43.6	46.5	30.2
	GPS satellite	755.4	766.7	826.6
	MilSatCom	277.5	253.8	186.6
	MLV booster	0.0	0.0	0.0
	NPOESS	287.5	386.6	325.5
	SBIRS satellite	542.4	521.2	530.0
	Space situation awareness	211.3	238.4	426.5
SOF	TSAT	428.6	0.0	0.0
	Wideband Global SATCOM	29.5	70.7	36.1
	CV-22 Special Ops	18.0	19.6	18.3
	HC/MC-130	11.3	20.6	15.5
Trainer	MC-12W	0.0	0.0	0.0
	T-6 JPATS	0.0	0.0	0.0
	KC-X tanker	22.6	15.0	863.9
	C-5	110.2	85.3	59.0
Mobility	C-17	0.0	0.0	0.0
	C-27J	16.3	9.4	26.4
	C-130J	25.2	30.0	26.8
	AGM-158A JASSM	32.1	29.5	20.0
Munitions	AIM-9X Sidewinder	5.6	5.9	6.0
	AIM-120 AMRAAM	43.6	50.0	62.9
	GBU-31/32/38 JDAM	0.0	0.0	0.0
	GBU-39 SDB	122.6	155.4	153.5

Major USAF Programs Procurement

(Current million dollars)

Program		2009	2010	2011
Bombers	B-1B	29.9	98.8	208.6
	B-2	346.7	266.6	63.4
	B-52	24.3	61.3	69.1
	Long-range strike	0.0	0.0	0.0
Fighter/Attack	A-10	150.9	261.7	181.8
	F-15	46.4	70.9	159.2
	F-15E	2.8	88.2	143.1
	F-16C/D	373.0	222.8	167.2
	F-22A	322.5	176.7	492.2
	F-35 (JSF)	1,661.0	2,355.0	4,190.9
	Predator UAV	190.5	0.0	0.0
	Reaper UAV	333.0	397.3	911.8
Helos	CSAR-X	0.0	0.0	0.0
	CVLSP	0.0	0.0	0.0
	HH-60M	0.0	95.2	218.4
ICBM	Minuteman III ICBM	320.7	256.9	184.0
Rec/C2	E-3 AWACS	96.2	79.0	195.2
	E-8 Joint STARS	47.0	74.8	176.8
	RQ-4 Global Hawk	710.0	665.9	736.8
Space	AEHF satellite	182.6	1,837.3	246.6
	Counterspace systems	29.1	29.7	27.0
	DMSP satellite	95.8	97.5	88.7
	EELV booster	1,334.3	1,099.0	1,154.0
	GPS satellite	142.0	60.6	194.8
	MilSatCom	105.2	140.7	225.9
	MLV booster	37.7	0.0	0.0
	NPOESS	0.0	3.9	26.3
	SBIRS satellite	1,913.2	467.0	995.5
	Space situation awareness	0.0	0.0	0.0
SOF	TSAT	0.0	0.0	0.0
	Wideband Global SATCOM	51.6	213.4	575.7
	CV-22 Special Ops	421.9	449.6	406.7
	HC/MC-130	1,042.0	511.1	886.8
Trainer	MC-12W	0.0	177.5	10.8
	T-6 JPATS	22.9	15.7	0.0
	KC-X tanker	0.0	0.0	0.0
	C-5	551.8	725.6	980.7
Mobility	C-17	2,488.1	2,580.3	14.3
	C-27J	0.0	318.0	351.2
	C-130J	60.7	459.3	511.3
	AGM-158A JASSM	139.7	52.5	215.8
Munitions	AIM-9X Sidewinder	77.0	78.5	64.5
	AIM-120 AMRAAM	202.7	272.7	355.4
	GBU-31/32/38 JDAM	165.8	190.4	252.6
	GBU-39 SDB	132.8	149.0	134.9

Selected Force Structure

	Cold War Base 1990	1990 Base Force	1993 BUR Plan	1997 QDR Goal	Most Recent Published Plan 2003	2011
Air Force						
Active Fighter Wings	24	15	13	12+	12+	—
AFRC/ANG Fighter Wings	12	11	7	8	7+	—
Fighter Wing Equivalents	—	—	—	—	—	16
Army						
Active Divisions	18	12	10	10	10 ^b	—
Army National Guard/Reserve	10	8 ^a	8	8	8 ^c	—
Active Brigade Combat Teams	—	—	—	—	—	45
ARNG BCTs	—	—	—	—	—	28
Navy						
Active Aircraft Carriers	15	12	11	11	10	11
Reserve Aircraft Carriers	1	1	1	1	1	0
Active Air Wings	13	11	10	10	10	10
Reserve Air Wings	2	2	1	1	1	1
Marine Corps						
Active Marine Expeditionary Forces	3	3	3	3	3	3
Marine Reserve Forces	1	1	1	1	1	1

^a Comprising 34 brigades.

^b Plus two armored cavalry regiments.

^c Plus 16 separate brigades (15 of which are at enhanced readiness levels).



The Longest Mission

The crew of the B-29 *Double Trouble* had some odd moments on a flight fraught with dangers.

By Charles A. Jones

In June 1945, Japanese wartime propaganda broadcasts announced that a lone USAAF B-29 bomber had been shot down over Hokkaido, the northernmost of Japan's main islands. The claims surprised the crew aboard the B-29 *Double Trouble*, which was the lone Superfortress on that particular mission.

Double Trouble had safely returned to its base on Guam after flying what is believed to be the longest nonstop combat mission of World War II. The photoreconnaissance mission, flown over the two-day period of June 25-26,

covered a staggering 4,650 miles and took 23 hours to complete.

This flight was mission No. 15 for a crew that would eventually be credited with 29 combat sorties. Mission 15 was to conduct radar photographic reconnaissance over various cities in northern Japan.

Double Trouble was manned by Crew P-10 in the 39th Bomb Group, 314th Bomb Wing, XXI Bomber Command. Her officers were all lieutenants: aircraft commander 1st Lt. Thomas A. Bell, pilot 2nd Lt. Richard D. Harrison, navigator 2nd Lt. Joseph F. Cal-

laghan, bombardier 1st Lt. Richard D. Baldrige Jr., and radar observer and instrument specialist 2nd Lt. Elmer C. Jones, the author's father. The enlisted crew comprised flight engineer MSgt. George W. Beaver Jr., radio operator SSgt. David Schulman, central fire controller gunner TSgt. John J. Essig, left gunner SSgt. David E. Potters, right gunner SSgt. Ralph W. Johnson, and tail gunner Sgt. Thomas F. Smith Jr.

Diaries were forbidden for security reasons, but tail gunner Smith kept one with two entries concerning the mission. Under a list headed "Important



Photo via Charles Jones

Double Trouble and crew, ready to deploy.

Dates” is, “15th Mission: 6-26-45 Hokkaido! 23 1/2 hrs.”

Smith’s diary indicates that the crew briefed at 2:30 p.m. and departed at 5:05 p.m., flying up “without a hitch—fine weather.”

In light of the ban on diaries, Jones was more discreet, and documented his missions in small handwritten charts on the blank pages of his “G.I.” New Testament. The longest mission was listed as “Radar Photo.”

Jones’ “Mickey Operator’s Flimsy,” which also gave details of the mission, also survives.

For security purposes, the radar and the radar observer were both called “Mickey” (after Mickey Mouse) to conceal from the Japanese the B-29’s capability to bomb by radar, especially at night. Mickey sat just ahead of the tail gunner, but had no window at his station. This confined environment later led Jones to comment, “I was in the war, but I didn’t see the war.”

The “flimsy” was a document prepared for Mickey for each mission. It listed the targets on Hokkaido—the cities of Muroran, Sapporo, and Otaru—and also provided directions and Identification Friend or Foe (IFF) system data. Jones, as Mickey, also had some responsibility for the IFF, to prevent attack by friendly forces.

Lights On

Smith wrote that the crew “got some damned good pictures” but that the camera “screwed up” after the second run. He noted that “Lt. Jones used hand camera—but results aren’t assured.”

P-10 encountered no enemy opposition over Hokkaido, and in fact

was inadvertently welcomed by the Japanese when they flew over the airfield at Sapporo that night.

“The unsuspecting Japanese turned on their landing strip lights as the plane circled their field in preparation for another run on [a] target,” reported *The Blockbuster*, the 39th Bomb Group’s newsletter in Guam, adding that this relieved “the monotony of the trip.”

Jones, who did not see Sapporo’s lights since he was monitoring the radar screen, heard the announcement over the airplane’s intercom that the Sapporo airfield had turned on its landing lights. He suspects that the Japanese—never contemplating B-29 flights so far north over Japan—thought that *Double Trouble* was a Japanese aircraft preparing to land, and thus turned on the landing lights to aid its arrival.

The Sapporo incident provided comic relief for a mission fraught with numerous potential dangers.

As with any mission, *Double Trouble* could have crashed anywhere, anytime. Takeoff and landing mishaps, fighters, anti-aircraft fire, weather,



B-29s line the ramp at North Field, Guam. Double Trouble flew from Guam to Hokkaido, Japan, and back in what was likely World War II’s longest nonstop combat mission.

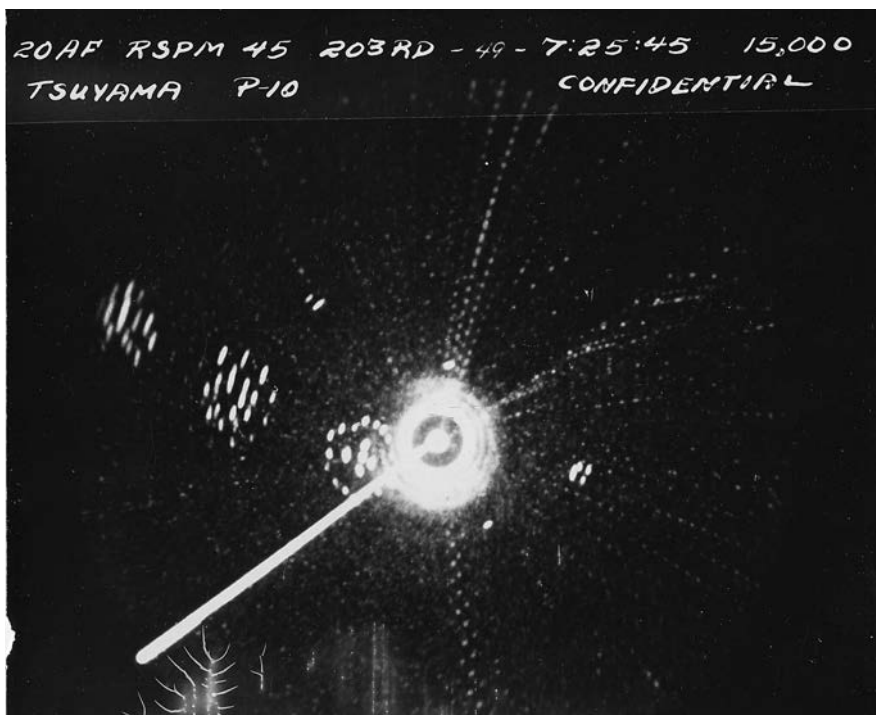


Photo via Charles Jones

This sample radar reconnaissance photo, also taken by Crew P-10, shows ships of the US Third Fleet near Japan.

and mechanical malfunctions—all posed hazards.

Parachuting over water or ditching were other dangers, given the size of the Pacific and the risk involved in hitting the water.

Smith's diary, for instance, noted how the bomb group's Crew 13 had been forced to bail out on a regular formation mission with Col. George W. Mundy, the group commander, aboard. "All got out OK," Smith wrote, but this was partly because "Crew 5 escorted them to a sub." When formations flew missions, ships and subs often lined the flight route to retrieve aviators who ditched or parachuted.

P-10 was on a single-ship mission, would have no such assistance, and as Jones described flying over the Pacific, "Boy, that's a huge place."

The emergency or alternate landing site was in Vladivostok in the USSR. "Fortunately we did not have to go there," said Jones, even before word leaked out in the media that the Soviet Union was detaining American servicemen who diverted to Vladivostok. "Of course, we didn't want to go there because if you got interned there, you never got out."

If the crew had to ditch or parachute over the water, it would be without ship or submarine "lifeguards." Jones put it succinctly: "We were on our own."

With no aerial refueling, P-10 had to be self-sufficient. Jones estimated

that *Double Trouble* had approximately 8,000 gallons of fuel, including three extra tanks in the bomb bay.

While the old saying about safety in numbers was true for formation flying, flying alone paradoxically also provided a measure of safety for the single-ship missions.

Half a Pint of Fuel

"The Japs, while a strange lot by Western standards, are not dumb," stated an account in the language of the day in *Brief*, an official wartime publication of the United States Army Strategic Air Forces. The article explained that single B-29s were conducting photographic reconnaissance missions over Japan to obtain photographs that formations of B-29s could later use when bombing Japan.

The Japanese knew exactly why a single B-29 was overhead. They knew what it was doing, tracked its path, and submitted detailed reports. They also knew that formations of attacking bombers would eventually follow.

Lone bombers therefore benefited from a degree of protection and were not sitting ducks. Not only did the Japanese defenders want to track the aircraft's path, but the Japanese typically did not fire at single aircraft because doing so would reveal their anti-aircraft gun positions.

Two other dangers were fatigue and fuel consumption. Smith felt the

fatigue even while he "enjoyed" the ride. Jones commented on getting "so tired that you can't hardly sleep."

To conserve fuel, the crew flew at "Dear John" speed—197 mph, Smith wrote.

"Dear John" was of course the term for a letter to a service member, ending a romantic relationship. Jones later speculated that Smith, after considering P-10's situation (single ship) and slow speed, knew that if anything went wrong, the mission would end adversely—just as a Dear John letter ended a relationship. "You get a 'Dear John' letter," Jones explained, "and it's all over."

According to the tail gunner's diary, *Double Trouble* eventually landed with just a half-pint of fuel remaining.

The crew was "tired as dogs" by the time it came in at 4:30 p.m. the following day, wrote Smith, but had "a field day over Hokkaido!" At times it "was bright as hell when we were over Jap territory."

"Cities, towns, industrial targets, steel plants," airfields, all were lit up "like Christmas," wrote Smith, who clearly enjoyed the mission. "Circled an airfield as tho [sic] we were back in Kansas! Fun? I never enjoyed myself more. Not one burst of flak—one searchlight, but it went right out. Navigation lights on coast all on! No blackout. Damn fools we are for even going near the place! Made two runs on one city—big as life!"

Double Trouble returned safely, notwithstanding the Japanese announcement that the "lone B-29" had been shot down over Hokkaido.

The crew had "volunteered" for the mission, although Bell, the pilot and aircraft commander, may have volunteered without bothering to consult the other crewmen in the process. P-10 also had a good radar (the AN/APQ-13), which allowed Jones to obtain excellent radar photographs.

The set was not without its problems, however. It was complicated, difficult to operate, and essentially impossible to fix if broken. "I couldn't repair it even if it was on the ground," said Jones.

Radar bombing results from early 1945 were not coming back as effective as expected, so an expert from the Massachusetts Institute of Technology was flown to the Pacific to examine the problem. He flew thousands of miles to Guam, and flew with the bomb group on some missions, but was ultimately

only able to offer a simple “fix” to the radar accuracy problem. He told the radar operators to decrease the “gain” on their radar scopes, thus dimming the target image.

For security reasons, the mission was kept secret until after the Japanese agreed to surrender terms in August 1945.

“It has now been revealed that the B-29 *City of Maywood* [another name for *Double Trouble*] made the longest flight on record,” reported an A2 (intelligence) news summary from XXI Bomber Command on Aug. 23, 1945. The B-29 “flew from Guam to Hokkaido and returned, a distance of 4,650 miles, in a few minutes under 23 hours.”

Four members of Crew P-10 received Distinguished Flying Crosses through General Orders No. 44 of Aug. 25, 1945 for the mission. They were: aircraft commander Bell, navigator Callaghan, flight engineer Beaver, and radar observer Jones.

The DFC citation chronicles the flight, stating that the crew volunteered for “a highly successful reconnaissance mission,” in what it described as “one of the longest combat flights in history.” (Other sources, however, state that it was the longest combat flight in history up to that time.)

“A camera malfunction required that a part of the route be retraced so that pictures could be taken with hand cameras,” read the DFC citation. “In spite of these obstacles, however, photographs of superior quality and great usefulness were obtained. Throughout this exceptionally long flight, there were constantly present with the lone B-29 dangers from hostile fighters and anti-aircraft defenses, weather, and mechanical malfunctions.”

The story of the mission was front-page news for the Sept. 1, 1945 edition of *The Blockbuster*.

It reported that “censorship forbade earlier coverage of this historic nonstop flight, but the honor for it is purely local.” *The Blockbuster* reported that *Double Trouble*’s crew spent three hours, 10 minutes flying over Hokkaido.

A *Stars and Stripes* article noted that the flight distance of 4,650 miles is the same as between New York City and Moscow.

The DFC citation mentioned the actions of three of the recipients specifically. Callaghan was cited for navigation skill that enabled the flight to be flown “exactly as briefed”; Beaver for his management of the



The members of *Double Trouble*’s air and ground crews on Guam. Radar operator Elmer Jones is standing at far left; aircraft commander Thomas Bell stands third from left; and tail gunner Thomas Smith is kneeling at far left.

fuel supply, which had been “closely calculated”; and Jones for obtaining important and much needed reconnaissance photographs.

Long before the lights came on at Sapporo for *Double Trouble*, each of her crew members was highly trained and then assembled to comprise Crew P-10.

The Role of Luck

Although Jones had been drafted into the Army, he wanted no part of ground combat after seeing the movie “All Quiet on the Western Front.” He therefore applied for and was accepted into the aviation cadet program, and was later assigned to navigation training.

Each officer, upon commissioning as a second lieutenant, was assigned to a specific corps or branch within the Army. After graduating from navigation school, Jones was appointed a second lieutenant in the Air Corps of the Army of the United States. He had the military occupational specialty of navigator, and later attained the radar observer MOS.

By way of complex training and certification programs such as this, each airman found himself assigned to Crew P-10.

After the 23-hour mission, two more months and 14 missions passed before

the crew learned about Japan’s August acceptance of surrender terms. They got the news while returning from their 29th and last combat mission.

Under “Important Dates” in Smith’s diary is the note, “Japs Give Up!!!”

The crew’s 30th and last mission was over the battleship *Missouri*, after the surrender ceremonies in Tokyo Bay.

Jones attributes P-10’s survival during 29 long and dangerous combat sorties to Bell’s piloting skills and to the Japanese policy of not shooting at single aircraft. Approximately half of P-10’s missions were single-ship flights.

Jones, as an expert poker player, also acknowledged the role of luck in the “deadly game” of war. “If you won, you were OK,” he later said. “If you lost, you were dead.”

Crew P-10 never assembled for a reunion, and time took its toll. As central fire controller Essig wrote in 2000, “Old P-10 crew is getting smaller every year.”

Today, Jones is P-10’s only survivor—even the aircraft is no more.

Double Trouble was scrapped in 1954, just months before the author was born. A memorandum from the Air Force Museum, responding to an inquiry about its status stated, “Sorry to have to tell you she doesn’t exist anymore.” ■

Charles A. Jones retired from the Marine Corps Reserve as a colonel in 2009, after serving a combination of 28 years on active duty and as a reservist. This is his first article for Air Force Magazine.

The Defense of the Gulf

In late 1979, the US was shaken by Iran's seizure of American hostages and the Soviet invasion of Afghanistan. The latter event in particular was seen as a direct threat to Persian Gulf oil. President Carter, after a period of vacillation, used his 1980 State of the Union speech to lay out an explicit pledge to defend the Gulf by arms. His words: "An attempt by any outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of the United States of America, and such an assault will be repelled by any means necessary, including military force." His pledge was instantly dubbed "the Carter Doctrine," and it has persisted under his successors.

At this moment, massive Soviet troops are attempting to subjugate the fiercely independent and deeply religious people of Afghanistan. ... The Soviet Union has taken a radical and an aggressive new step. It's using its great military power against a relatively defenseless nation. The implications of the Soviet invasion of Afghanistan could pose the most serious threat to the peace since the Second World War. ...

The region which is now threatened by Soviet troops in Afghanistan is of great strategic importance: It contains more than two-thirds of the world's exportable oil. The Soviet effort to dominate Afghanistan has brought Soviet military forces to within 300 miles of the Indian Ocean and close to the Straits of Hormuz, a waterway through which most of the world's oil must flow. The Soviet Union is now attempting to consolidate a strategic position, therefore, that poses a grave threat to the free movement of Middle East oil.

This situation demands careful thought, steady nerves, and resolute action, not only for this year but for many years to come. It demands collective efforts to meet this new threat to security in the Persian Gulf and in Southwest Asia. It demands the participation of all those who rely on oil from the Middle East and who are concerned with global peace and stability. And it demands consultation and close cooperation with countries in the area which might be threatened.

Meeting this challenge will take national will, diplomatic and political wisdom, economic sacrifice, and, of course, military capability. We must call on the best that is in us to preserve the security of this crucial region.

Let our position be absolutely clear: An attempt by any outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of the United States of America, and such an assault will be repelled by any means necessary, including military force.

During the past three years, you have joined with me to improve our own security and the prospects for peace, not only in the vital oil-producing area of the Persian Gulf region but around the world. We've increased annually our real commitment for defense, and we will sustain this increase of effort throughout the Five-Year Defense Program. It's imperative that Congress approve this strong defense budget for 1981, encompassing a five percent real growth in authorizations, without any reduction.

We are also improving our capability to deploy US military forces rapidly to distant areas. We've helped to strengthen NATO and our other alliances, and recently we and other

"The Carter Doctrine"

President James E. Carter Jr.
Address at Joint Session of Congress
The Capitol, Washington, D.C.
Jan. 23, 1980

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

NATO members have decided to develop and to deploy modernized, intermediate-range nuclear forces to meet an unwarranted and increased threat from the nuclear weapons of the Soviet Union. ...

We've increased and strengthened our naval presence in the Indian Ocean, and we are now making arrangements for key naval and air facilities to be used by our forces in the region of Northeast Africa and the Persian Gulf.

We've reconfirmed our 1959 agreement to help Pakistan preserve its independence and its integrity. The United States will take action consistent with our own laws to assist Pakistan in resisting any outside aggression. And I'm asking the Congress specifically to reaffirm this agreement. I'm also working, along with the leaders of other nations, to provide additional military and economic aid for Pakistan. That request will come to you in just a few days.

In the weeks ahead, we will further strengthen political and military ties with other nations in the region. We believe that there are no irreconcilable differences between us and any Islamic nation. We respect the faith of Islam, and we are ready to cooperate with all Moslem countries.

Finally, we are prepared to work with other countries in the region to share a cooperative security framework that respects differing values and political beliefs, yet which enhances the independence, security, and prosperity of all.

All these efforts combined emphasize our dedication to defend and preserve the vital interests of the region and of the nation which we represent and those of our allies in Europe and the Pacific, and also in the parts of the world which have such great strategic importance to us, stretching especially through the Middle East and Southwest Asia. With your help, I will pursue these efforts with vigor and with determination. ■

AFA National Report

natrep@afa.org

By Frances McKenney, Assistant Managing Editor

In the Spotlight at Orlando

The **Central Florida Chapter's** Air Force Gala in Orlando, Fla., paid tribute to the role of USAF aerial reconnaissance, spotlighting some of its pioneers and practitioners.

The 26th annual black-tie affair served as the culmination of the Air Warfare Symposium and Technology Exposition, held Feb. 18-19.

In his remarks to the audience, Chapter President William A. Yucuis defined aerial reconnaissance as "obtaining critical enemy intelligence from above" and described some of the earliest intelligence-gathering efforts by men flying on kites and in balloons.

Short videos highlighted "modern pioneers in innovative aerial reconnaissance": Boeing and the U-2 spyplane's camera developed by the former Hycon Manufacturing Co.; the Ryan remotely piloted vehicle Lightning Bug; Raytheon Intelligence and Information Systems' electronic sensors; the 9th Reconnaissance Wing from Beale AFB, Calif.; L-3 Communications, developer of high-speed data links; and the 55th Wing, Offutt AFB, Neb.

The chapter named representatives from these companies and units as AFA Jimmy Doolittle Fellows. Air Force Vice Chief of Staff Gen. Carrol H. Chandler, gala chairman Tommy G. Harrison, and Yucuis presented these honors.

At the gala, the chapter made a \$10,000 donation to the Air Force Memorial Foundation, raising its total contribution to \$230,000. Yucuis urged the audience to "join us in assuring the Air Force Memorial is maintained in the highest quality as it represents the No. 1 Air Force in the world."

He said that the chapter has contributed more than \$780,000 to AFA's national educational programs, over the past 26 years, for a total of \$2.5 million for educational programs at all levels. The Central Florida Chapter, he said, "is dedicated to aerospace education."

Preserving Veterans' History

For the **Lehigh Valley Chapter** in Pennsylvania, a chapter gathering serves double duty.

The group works with two local organizations to arrange for a veteran to be guest speaker for their joint meetings.



Photo by Dan Higgins

At the Central Florida Chapter's Air Force Gala, Board Chairman Joe Sutter (second from right) joins officials in displaying a check representing the chapter's \$65,000 donation to AFA's aerospace education programs. With him are (l-r): Gala Chairman Tommy Harrison, Vice Chairman of the Board for Aerospace Education Sandy Schlitt, and Central Florida Chapter President William Yucuis.

Chapter members record the presenter's talk, then submit the audio tape to the Library of Congress for its Veterans History Project, a program that preserves wartime memories of veterans.

The January meeting of the chapter and its sister organizations featured Navy veteran Francis J. Ginther. He was a communications technician first class on USS *Pueblo* before the intelligence ship was seized by four North Korean vessels in the Sea of Japan on Jan. 23, 1968.

One crewman died in the attack on the ship; its commanding officer, Cmdr. Lloyd M. Bucher, was among those injured. The 82 crew members and two civilians were POWs until Dec. 22, 1968.

Chapter President Gerald Still said the audience was surprised by several facts in Ginther's presentation: that *Pueblo* had been some 18 miles off the coast of North Korea, in international waters; that the crew was tortured; that Bucher faced a court-martial on his return to the US; and, most of all, that *Pueblo* is a museum today, anchored in the Taedong River at Pyongyang.

Still said about 150 people typically attend one of these veterans' presentations and that the chapter has collected more than 70 oral histories, although not all of them through this meeting-presentation method.

Congress authorized the Veterans History Project in 2000 as an endeavor of the Library of Congress' American Folklife Center. The project involves collecting videos and audio cassettes of interviews conducted by volunteers,

Membership Dues To Increase

On Sept. 13, 2009, AFA convention delegates approved the first association dues increase since 2001. (Previous increases were in 1993 and 1997.) One-year membership will increase to \$45; three-year membership to \$110; and life membership to \$600. The increase will be implemented for all categories on July 1. The delegates also directed a review of the dues structure. The review will begin in 2012.

as well as written items such as original diaries or official military documents.

Still credited several chapter officers with helping him prepare the program every month: Chapter VP Maurice L. Connor, Secretary Gary Weaver, and Veterans Affairs VP Donald J. Graham help line up the guest speakers and handle the logistics. Government Relations VP Paul J. Fiske helps Still prepare the submission to the Library of Congress.

Still noted that the project includes veterans who served in peacetime, too. "We want to get a total history by veterans," he said.

Delayed Enlistment, AFA Opportunity

The **Blue Ridge Chapter** in Asheville, N.C., makes early contact with potential AFA members.

In November, Chapter President Kenneth Walters inaugurated a program to speak to enlistees who are joining the Air Force under the delayed entry program.

Some 40 soon-to-be-recruits jammed into the office of USAF recruiter MSgt. Chad Caden to listen to Walters. A retired chief master sergeant, Walters drew on 26 years of active duty experience and another 24 years of USAF civilian work as the background for his talk about Air Force active duty

and retiree life. He also made a pitch for AFA membership.

Walters said he and Caden, who is based with the 332nd Recruiting Squadron, Nashville, Tenn., came up with the idea of making presentations to this group because the delayed-enlistment recruits meet monthly anyway.

Caden is considering moving the meeting site to an auditorium to accommodate the group's size. His recruiting territory encompasses 17 high schools in nine counties.

Model T-teacher

A Rhode Island science teacher who helped his students outfit a Model T with a fuel cell and plans to design and fly a biodiesel airplane, received the state Teacher of the Year award in December.

Ross K. McCurdy—originally **Metro Rhode Island Chapter's** top educator—was recognized at a Ponaganset High School award ceremony in North Scituate, R.I.

Turning out to honor him were: Deborah A. Gist, the state commissioner of elementary and secondary education; Michael Barnes, the regional school district superintendent; as well as the school's principal, Dennis Kafalas, and

the faculty. State AFA officials on hand were President Robert Wilkinson, Vice President Fred Frostic, Secretary Steven Winsor, and Metro Rhode Island Chapter President Dean A. Plowman.

According to a local newspaper feature article on McCurdy, he served for six years in the Air Force. He once made a cross-country trip in a truck fueled with biodiesel and sometimes plays in a rock and roll band that uses a fuel cell to power their guitars. He has taught with "imagination and flair," the *Valley Breeze* newspaper said.

A Look Back at the A-10

The January meeting of the **Liberty Bell Chapter** in Philadelphia featured an A-10 crew chief as guest speaker and the re-election of the current chapter officers.

MSgt. Dave Barnes, an Air National Guardsman from the 103rd Fighter Squadron, NASJRB Willow Grove, Pa., gave a comprehensive presentation on the Warthog's capabilities, showing photos of the attack aircraft, his fellow airmen, and the unit's deployment to Iraq. Barnes emphasized the teamwork necessary during the deployment, when A-10s from different Stateside units came together to fly missions.

More photos at <http://www.airforce-magazine.com>, in "AFA National Report"

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Chapter President Raymond Hamman said Barnes told the group that his unit was now down to four A-10s and will lose the last four this year. BRAC 2005 targeted Willow Grove for shutdown, and the 103rd's parent unit, the 111th Fighter Wing, is losing its flying mission.

Barnes told the audience that he would miss being called on for A-10 deployments.

Also at the January meeting, Hamman was re-elected as chapter president, John P. Duffin as VP, Eric P. Taylor as secretary, and James A. King Jr. as treasurer.

Thanking the Honor Guards

As it has for the past two years, the **Minuteman Chapter** in Massachusetts

donated funds to help Hanscom Air Force Base carry out its annual banquet for the Patriot Honor Guard and its support units.

Described as "the face of the United States Air Force for many," the unit posts colors at ceremonies and large sports events, but its first priority is rendering honors at military funerals.

Minuteman Chapter Vice President Joseph P. Bisognano Jr. pointed out that Hanscom is the last remaining active duty installation in the region, so the Patriot Honor Guard—based there and manned by 36 active duty volunteers and seven permanent staff members—must cover funeral details in seven New England states and Nova Scotia. Eight other Air National Guard

and Reserve honor guard units pitch in to help.

In 2009, the Patriot Honor Guard performed details at 352 funerals, according to Hanscom's public affairs office. The Guard and Reserve honor guards covered another 1,314.

Bisognano called the unit "one of the real Air Force superstar organizations."

The chapter raised money for its \$500 donation to the Honor Guard Awards Banquet through golf tournaments.

Orientation to Flight

In Arizona, the **Cochise Chapter** sent its Teacher of the Year flying—on an incentive flight in a light airplane provided by a local Civil Air Patrol pilot.

Maura Neill, a science teacher at Joyce Clark Middle School in Sierra Vista, Ariz., and Derrick Neill, a science teacher who just retired from the same school, flew aboard a Cessna 182.

The Air Force auxiliary organization arranges orientation flights for teachers who become CAP Aerospace Education Members. Maura Neill received her membership as part of being named the Cochise Chapter's Teacher of the Year. Her husband, by coincidence, won his incentive flight in a drawing at a teacher workshop last October that was jointly sponsored by the Cochise Chapter and **Tucson Chapter**.



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Cochise Chapter President Ross B. Lampert was at the airport to see them off and followed up with them afterward. They said they were surprised at how much they got to fly the airplane. Under the eye of Doug Henderson, the CAP pilot, Derrick Neill was at the controls for much of the flight out to Bisbee Airport, while Maura Neill handled most of the trip back to Sierra Vista.

State Meeting: North Carolina

In Raleigh, N.C., the **Tarheel Chapter** hosted a state meeting that brought together State President David A. Klin-kicht from the **Scott Berkeley Chapter**; Renee D. Siemiet, president of the **Pope Chapter**; and Norman Melton, the **Cape Fear Chapter** VP, among the attendees.

Also in the audience: AFROTC cadets from North Carolina State University,

who described an upcoming statewide drill meet.

Tarheel President Raymond E. Benson said he led a discussion about AFA chapters donating funds to organizations that help Air Force families. He reported that the Tarheel Chapter afterward donated \$100 to the Family Support Center at Seymour Johnson Air Force Base, as well as \$100 to the USO operation at Raleigh-Durham Airport.

Tarheel Chapter VP Patrick H. Yanke was guest speaker at this meeting.

More Chapter News

■ The February meeting of the **Green Mountain Chapter** in Vermont featured author James L. Nelson. His 15 works include fiction and nonfiction, many covering historical Navy ships, most recently *Benedict Arnold's Navy*. Chapter

President Joel A. Clark reported that the luncheon gathering included members of the Arnold Air Society from Clarkson University in Potsdam, N.Y., and also recognized chapter member James Anderson for his support of the chapter's Teacher of the Year program.

■ In December, the **Altus Chapter** (Okla.) held its annual Community Partner Luncheon, with Craig Seeber, 97th Mission Support Group deputy director, as guest speaker. He presented what Chapter President Richard Baldwin called "an in-depth report" on current and future construction on Altus Air Force Base. Also at the meeting, Red River Federal Credit Union was named Community Partner of the Year, and Sandra J. Foster, a math instructor at Western Oklahoma State College, received the State Teacher of the Year award. ■

Reunions

reunions@afa.org

39th Bomb Gp., all veterans and descendants of the 60th, 61st, 62nd, and Hq. Sqs, and the 314th BW Hq., Guam (1945). June 16-20 at the Maison Dupuy Hotel in New Orleans. **Contacts:** Liz Van Kampen, 5418 Honeysuckle Ln., Oregon, WI 53711 (608-835-0923) (liz.vankampen@sprintprint.com) or Pete Weiler, 3728 Aloha Dr., Sarasota, FL 34232 (941-377-2451) (webmaster@39th.org).

231st Combat Comm. Sq., DCANG. June 12 at JB Andrews, MD. **Contact:** Chip Jackson (703-876-0303) (ajlj.aljm@verizon.net).

485th Tactical Missile Wg. June 10-13 at the Essex Inn in Chicago. **Contact:** Paul Arnsald (708-261-2088) (sgt-paul2004@yahoo.com).

497th Recon Tech Sq (1950-60s). May 14-16 at the SpringHill Suites in Dallas. **Contact:** Neal Masterson (972-527-5327) (neal.masterson@verizon.net).

774th Tactical Airlift Sq Assn. June 25-26 at VFW Post 6837, 1049 Veterans Dr., Abilene, TX. **Contact:** Robbie Robinson (806-470-7034) (wrobin422@yahoo.com).

794th AC&WS, Cape Newenham, Alaska. June 6-12 in Mystic, CT. **Contact:** Art Perron (860-658-9697) (artperron@comcast.com).

Airmen, sailors, and marines stationed at Karamursel AS, Turkey (1957-61). Sept. 19-21 in Myrtle Beach, SC. **Contact:** Pete Johnson (980-328-4150) (pjohnson010@carolina.rr.com).

ArcLight/Young Tiger/Bulletshot, B-52 and KC-125 crews and supporters. Aug. 29-Sept. 3 at El Conquistador in Tucson, AZ. **Contact:** Russ Stephenson, 4625 Broken Lute Way, Ellicott City, MD 21042 (410-740-8024).

B-66 Destroyer Assn., all models, squadrons, aircrews, and support personnel. Sept. 6-10 at the DeSoto Hilton in Savannah, GA. **Contact:** Tom Stack, 271 St. Catherine's Ct., Richmond Hill, GA 31324 (912-727-3799) (tps@coastalnow.net).

C-133 Cargomaster, including all associated with the C-133. May 7-8 at Dover Downs in Dover, DE. **Contact:** Edward Sandstrom, 34772 Frontier Rd., Lewes, DE 19958 (302-644-1414).

Combat Talon. May 20-23 at Fort Walton Beach, FL. **Contacts:** Max (850-543-0475) (850-243-1343) or Papasan (850-609-7904).

Pennsylvania AACS. July 13-15 at the Hampton Inn in DuBois, PA. **Contact:** Ed Rutkowski (814-371-7167).

Pilot Tng Class 53-F, including Greenville, Hondo, and Webb classes. Sept. 16-19 at the Hope Hotel at Wright-Patterson, AFB, OH. **Contact:** Jim Mayton, 2000 Tynne Meadow Ln., Prince George, VA 23875 (804-732-2225) (jjmayton@yahoo.com).

RF-101. June 20-23 at the Four Points Sheraton in Fort Walton Beach, FL. **Contact:** Ray Hinely (850-678-3466) (sailshiloh@aol.com).

SAC Airborne Command Control Assn. Sept. 8-12 in Seattle. **Contact:** Wilton Curtis (804-740-2290) (wcurtis135@aol.com).

Society of CSAR. May 11-15 at Nellis AFB, NV. **Contact:** Gene McCormack (850-283-2071 or DSN 523-2071) (gen-ema@knology.net). ■

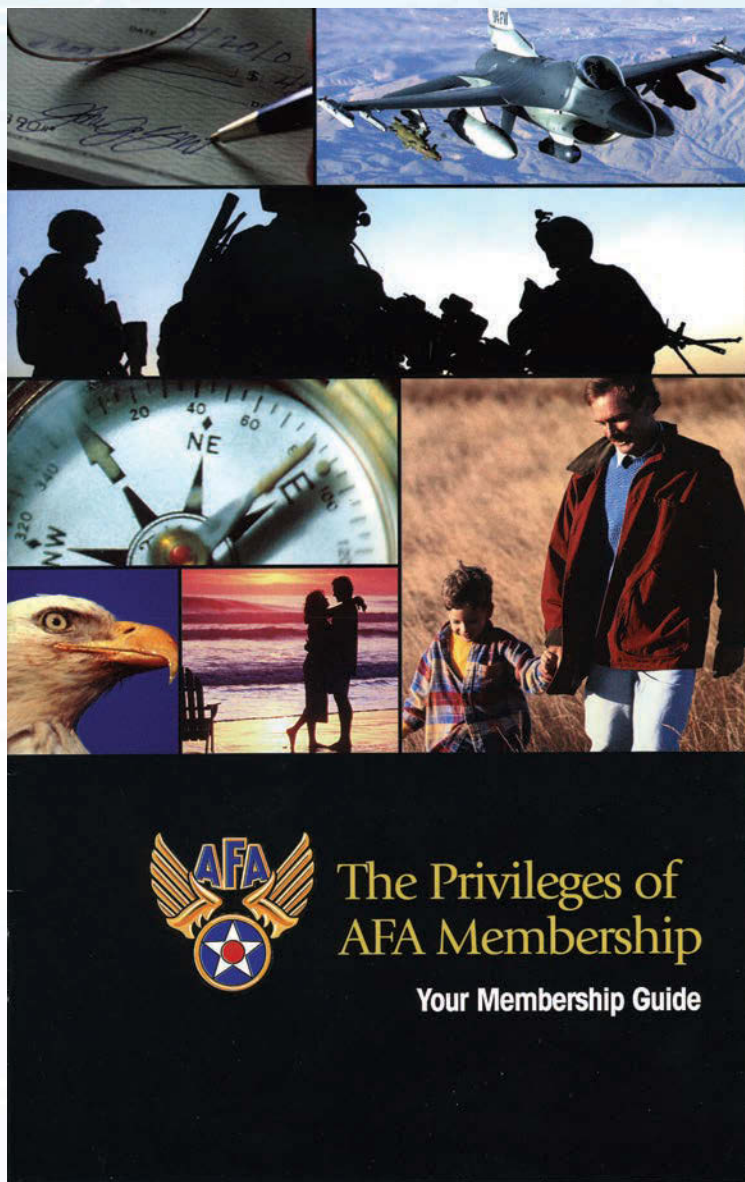
AFA Conventions

April 23-24	South Carolina State Convention , Charleston, S.C.
April 30-May 1	Tennessee State Convention , Jackson, Tenn.
June 10-12	California State Convention , Beale AFB, Calif.
June 26	North Carolina State Convention , Goldsboro, N.C.
July 24	Alabama State Convention , Huntsville, Ala.
Sept. 11-12	AFA National Convention , Washington, D.C.
Sept. 13-15	AFA Air & Space Conference , Washington, D.C.

E-mail unit reunion notices four months ahead of the event to reunions@afa.org, or mail notices to "Reunions," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Please designate the unit holding the reunion, time, location, and a contact for more information. We reserve the right to condense notices.

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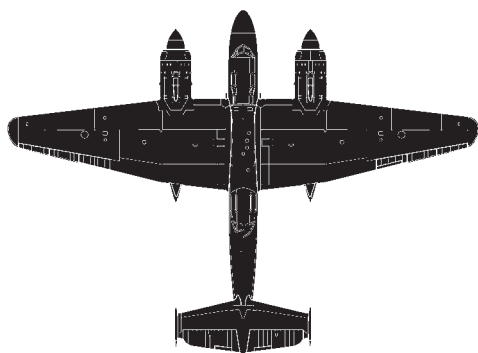
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Tu-2 Bat



An exceptionally clean midwing monoplane, the Tu-2's radial engines were tightly enclosed in streamlined nacelles. Noted for its rugged construction, the Tu-2 was designed for use in multiple roles such as level and dive bombing, reconnaissance, dropping torpedoes, attacking enemy armor, escorting bombers, crew training, and, when stripped down, as a freighter. Built in many variants during the war, the Tu-2 served principally as a level bomber. Its large bomb bay could accommodate a 2,200-pound bomb load, and some reports indicate that up to an additional 6,600 pounds in bombs could be mounted externally. The Tu-2's rear defense was

formidable, for three of its crew members could man rear-firing 12.7 mm UBT guns.

Despite it being a very sophisticated aircraft, Moscow rushed its development. Performance of the prototypes was so good that the aircraft was ordered into mass production well before testing was finished. The favorable progress of the war allowed some Tu-2s to be used in experimental roles, including testing radar systems and ejection seats and serving as a test bed for jet engines. After the war, modified Tu-2s served as tanker aircraft using a trailing hose system.

—Walter J. Boyne

This aircraft: Soviet Air Force Tu-2 bort 32 White—*Moskva*—as it looked in summer 1944 when assigned to the 6th Bombardment Air Regiment in Russia.



In Brief

Designed, built by Tupolev ★ first flight Jan. 29, 1941 ★ crew of four (pilot, navigator/bombardier, radio operator, gunner) ★ number built 3,200 ★ two ASh-82FN radial engines ★ **Specific to Tu-2S:** armament, two ShVAK 20 mm cannons; three 12.7 mm UBT machine guns ★ bomb load up to 8,800 lb ★ max speed 350 mph ★ cruise speed 260 mph ★ max range 870 mi ★ weight (loaded) 25,050 lb ★ span 61 ft 11 in ★ length 45 ft 3 in ★ height 14 ft 11 in.

Famous Fliers

Mikhail Nyukhtikov, M. P. Vasyakin, V. Tyreshchyenko, A. D. Perelyot, I. P. Skok.

Interesting Facts

Designed by an in-prison design team headed by Andrei Tupolev ★ appeared in some 20 variants ★ performed service in nine air forces ★ flown by Chinese Air Force in the Korean War and in Tibet ★ fitted with 75 mm cannon in special "Shturmovik" version ★ modified as "Paravan" version with steel cables to cut barrage balloon cables ★ used to bomb ice dams on Chinese rivers ★ led to Tu-77 jet version.



The Tu-2 was a rugged machine.

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