September 2010/$5

AIR FORCE MAGAZINE

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September 2010, Vol. 93, No. 9

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About the cover: A B-1 takes on fuel from a KC-10 over Afghanistan. See "Struggling to Cover Commitments," p. 42. Photo by SSgt. Aaron Allmon.

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Editorial

By Robert S. Dudney, Editor in Chief

The Lavelle Syndrome

"Vietnam-era General, Wronged by Nixon, Is Vindicated by Obama," said the Aug. 4 *Washington Post.* That is the preferred narrative for the case of the late USAF Gen. John Lavelle, a man who, in 1972, was stripped of two stars and forcibly retired on what now is known to be a bogus charge of ordering rogue air attacks on North Vietnam.

It is a soothing version of reality: The honorable officer, Lavelle, is done dirty by the archetypal villain, Richard Nixon, but a decent leader, President Obama, ends the extraordinary injustice, exonerating Lavelle and restoring his lost stars.

The tale, however, is incomplete. Permit us to add two inconvenient facts to the story. First, Nixon was not the only guilty party. Second, the odious treatment of Lavelle was not unusual; it was just one variation of a fairly regular practice in Washington.

In July 1971, Lavelle took command of all air operations in Vietnam. By summer 1972, he had been cashiered. Congressional and DOD investigators concluded he had sent aircrews on unauthorized "preplanned protective reaction" strikes against Hanoi's air defenses, contrary to declared presidential directives.

Recently discovered historical records, however, demonstrate conclusively that Lavelle only followed orders—orders that came from the Commander in Chief himself. To his disgrace, Nixon chose not to own up to this fact in public.

Nixon was not alone, however. In 2007, after this magazine published a story about Lavelle, we received a letter from Melvin R. Laird, Nixon's Secretary of Defense. Laird wrote, "I told him [Lavelle] that my order on 'protective reaction' should be viewed liberally. ... The new orders permitted hitting anti-aircraft installations and other dangerous targets if spotted on their missions, whether they were activated or not."

This is exactly what Lavelle, to the day he died, claimed he had done—followed rules of engagement handed down by Laird, the Joint Chiefs of Staff, and Gen. Creighton Abrams, US commander in Vietnam. Washington seemed most concerned with the political fallout of the case.

Lavelle and the Vietnam War both faded away. However, the trashing of Air Force leaders for essentially political purposes continued. The notorious Lavelle case from the 1970s has much in common with some more recent events. One glimpses a kind of Lavelle Syndrome at work.

■ In March 1989, Secretary of Defense Richard B. Cheney publicly attacked Gen. Larry Welch, USAF Chief of Staff, for alleged "freelancing" on Capitol Hill—that is, holding improper talks with lawmakers about ICBM basing options.

The notorious case from the 1970s has much in common with some more recent events.

This was a false charge. Gen. Colin Powell, in his autobiography, said, "His talks with the Congress had been OK'd by Cheney's then-deputy, Will Taft, and Brent Scowcroft, the National Security Advisor." Cheney, said Powell, "seized an early opportunity to say, 'I am not afraid of generals and admirals.'"

■ In September 1990, Cheney abruptly fired Gen. Michael Dugan, USAF Chief of Staff, for public remarks about US plans for war in Iraq. Cheney claimed Dugan "showed poor judgment" and talked of "things we never talk about." Did Cheney really believe this? Dugan, a highly decorated pilot who flew 300 combat missions in Vietnam, had a keen sense of operational security, and President George H. W. Bush himself said he had no concern Dugan caused any increased danger to US troops. What really seemed to rankle Cheney was Dugan's advocacy of airpower and alleged denigration of what the other services would contribute in the war.

■ In April 1993, Secretary of Defense Les Aspin disciplined three Air Force general officers and one senior civilian for their prior work on the C-17 program. Aspin acted on the basis of a DOD inspector general's report that already had been thoroughly discredited. The most plausible explanation was that Aspin wished to appease C-17 critics in Congress.

■ In July 1997, Secretary of Defense William S. Cohen chose to override the judgment of the USAF Chief of Staff, Gen. Ronald R. Fogleman, and punish Brig. Gen. Terryl Schwalier for the 1996 Khobar Towers bombing in which 19 airmen died. Schwalier was their commander. Cohen, alleging Schwalier "could and should have done more," cancelled his previously approved promotion to major general, ending his career. It was not enough that Schwalier had taken 130 specific actions to improve security in the year before the attack, or that two USAF investigations found no fault with his actions. According to Schwalier's commander, Army Gen. J. H. Binford Peay III, "These guys went for a political decision and ruined a young general's career." It was one reason Fogleman decided to step down early from the Chief's post.

■ In June 2008, Secretary of Defense Robert Gates forced the resignations of both the Secretary of the Air Force, Michael W. Wynne, and the Chief of Staff, Gen. T. Michael Moseley. His stated reason: their alleged failure to ensure control of nuclear weapons, spotlighted by the flight of a B-52 with nuclear weapons mistakenly on board. Many, including this magazine, are skeptical that these political executions were really about nukes. Wynne and Moseley were outspoken. They pushed for more F-22 fighters and other aircraft and clashed with DOD over control of short-range airlift and unmanned aerial vehicles. After sacking them, Gates began methodically to shut down important Air Force weapon programs.

It should surprise no one that US political leaders, even those in the Pentagon, can at times behave in truly oily and reptilian ways. What is striking, though, has been their virtual lack of concern about the effect of such actions, on the individual, the service, or the nation.

No one seemed to ask whether it was wise to fire or undermine an officer for the kinds of actions cited. Political considerations always seemed to trump.

In a statement issued after Obama's recent action, Mary Jo Lavelle, the general's widow, said, "Jack was a good man, a good husband, a good father, and a good officer. I wish he was alive to hear this news."

If Jack Lavelle could magically come back among us, he would find that his case wasn't so unique, and that he has been joined by lots of fine airmen. Unfortunately. ■

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Letters

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Superpower No More?

I am in total agreement with the thesis of your [editorial] "Superpower No More?" only I think you have been overly kind to this current Administration's policy as it deals with world conflicts *[July, p. 4]*. It is of no use to possess the most sophisticated defensive weapon systems and strategies if the foreign policies undermine it. I wish more people in the print media had your insight and boldness to report what is really happening to our great country.

Paul Tannehill
Corsicana, Tex.

Since when is it liberal or conservative to attempt to lessen the world's nuclear stockpiles (remember Reagan)? Does not the available scholarship tell us that as stockpiles decline, so does the temptation, as well as the perceived ability, to use them—at least for the "established" nuclear states? Ignore the so-called nuclear renegades in this calculus because they respond to stimuli other than the relative stockpile size. The bottom line is that it is simply wasteful, provocative, and distracting to maintain stockpiles beyond "deterrence," especially when both former enemies are in agreement to continue to find ways to reduce stockpiles, and thus overall risk. This seems a good policy when, according to most scholars, the odds of a superpower nuclear gambit or first strike have by most estimates sunk to near zero—with odds continuing to lower, by hypothesis, as stockpiles diminish.

R. D. Truitt
Westfield, N.J.

Nukes For NATO

This was a good article on a subject area not widely known and still less talked about *["Nukes for NATO," July, p. 42]*. Other NATO nations not mentioned were involved in this mission, including one that "withdrew" in the mid-1960s, in a fit of pique.

Hardly mentioned was the widespread employment of F-84Fs and F-100s. F-101A/Cs were not mentioned at all. Though certainly not fighters, the B-45s and B-66s of the 47th Bomb Wing (TAC), and RAF Valiants and Canberra B (I) 8s played a part in their day, as well.

The B61s planned for life extension were first fielded in 1968. Tough, rugged, and normally requiring minimal field maintenance (other than an occasional exterior detail job), they are getting long in the tooth, and I am concerned a computerized modeling test program may not be adequate to detect aging problems, metal embrittlement, etc., no matter the updating. How many of our policy-makers are driving 1968 limousines, even with air-conditioning, stereo, and electric seats added? It still performs like a 1968 limousine with its attendant age-related problems.

SMSgt. George A. Boyce,
USAF (Ret.)
Gulf Breeze, Fla.

I would add my thoughts to Ms. Rebecca Grant's article in the July issue of *Air Force* Magazine. I have long enjoyed Ms. Grant's articles but feel she neglected one major aircraft in her article, the F-105D and its early role in the nuclear deterrent in Europe during the hot years of the Cold War.

As a retired member of USAF and New Jersey ANG, and a 1,000-hour-plus F-84F pilot, and an 800-hour-plus F-105B pilot, I am fully aware of the

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nuclear role these two aircraft symbolized. The NJANG and other ANG units were nuclear delivery qualified for several years in the late 1950s and early 60s and the F-105D units in USAF were also nuclear capable in those years and later. There were, I know for a fact, at least two F-105D units based in Germany in the late 50s and early 60s with the nuclear mission as their primary one.

In 1961, the NJANG and many others were activated in President Kennedy's response to the Berlin Wall and were sent to bases in France in what, up to that time, was the largest deployment overseas to bases in France in the conventional weapons role while those F-105D units stood nuclear readiness in Germany and elsewhere, I suspect.

Not to include the F-105 aircraft in that article about nukes for NATO was an unfortunate over sight.

Maj. Robert V. Thompson,
USAF/NJANG (Ret.)
Punta Gorda, Fla.

Ms. Rebecca Grant left out one of the most important aircraft the US Air Force had in theater during the turbulent 60s. The F-105D fighter-bomber played a major role as a deterrent during two periods in the 60s. F-105Ds stationed at Bitburg Air Base and Spangdahlem Air Base [in Germany] were on "Victor Alert" during the Berlin Wall crisis and later during the Cuban Missile Crisis. These aircraft standing Victor Alert' were fully loaded with nukes in their internal bomb bay. Pilots were briefed and ready to go if the word to scramble was sounded.

Their presence in Europe armed with nukes certainly sent a message to Russia that the US was serious in protecting Europe.

F-105D/Fs were one of, if not the only, nuclear capable aircraft that could "Toss Bomb" a B61 nuclear bomb. Toss bombing was established and tested using F-105 aircraft.

Nowhere in her article was the F-105 aircraft given credit for being the workhorse that she was, or a nuclear capable aircraft, and that's a shame.

I was stationed at Bitburg Air Base, Germany, from 1960 to 1964 as a jet engine mechanic and worked the Victor Alert area many times.

MSgt. Paul R. Soucy,
USAF (Ret.)
Myrtle Beach, S.C.

Take It Down!

I read with great interest your article "Take It Down! The Wild Weasels in Vietnam" *[July, p. 66]*, and offer the following for thought from the standpoint of a crew member flying in EB-66s starting Dec. 7, 1971: I was on my first mission as an EB-66 EWO, flying cover for a flight of two F-105s that were "trolling" the border, clearly well out of Vietnam. I was assigned to search the band that the guidance signal would use to direct a missile. Our aircraft was about 10 miles farther away from the border than the F-105s, and they were some 15 to 20 miles from the border. At no time during the mission did we receive any missile warnings through our quite good receivers. We heard Falcon One (F-105 call sign) call out that Falcon Two (numbers could be in reverse) had been hit by a missile. We immediately flew around the location to listen for beepers; were refueled twice in the air and once when we landed at NKP; and assisted in the search and rescue attempt, logging about six hours total flying time.

By Dec. 25, Korat was on full-scale flying operations, presumably taking out any sites that emitted signals, regardless of geographical location. The speculation at the time was that the Vietnamese were either triangulating and firing the SAMs, turning on the guidance signal at the last moment, negating the dodging tactics the aircrews used. They could also stay silent, defeating any attempts to destroy the sites. It is my belief that the shooting down of the F-105 was the seminal event that led to the missions against the North Vietnamese that led to the unjustified sacrifice of Gen. [John] Lavelle. Most of the crew members I flew with at the time thought it was a cover-up and that high-level leaders had to know about the "raids."

Lt.Col. Bobby O. Welch
USAF (Ret.)
Fort Walton Beach, Fla.

■ *See "Air Force World: Obama Orders Lavelle's Two Stars Restored," p. 26.*

Washington Watch

Regarding a possible future armed conflict with China, the author assumed that China would strike first *["Washington Watch: Path to AirSea Battle." July, p. 8]*.

Such a war between major powers is the end of the world as it exists. Openly identifying China as our adversary is horribly wrong!

Russia and America chose "containment," and we now have agreements in the reduction of nuclear missiles that are valid and measurable.

Budget for peace, for there has to be a way to achieve agreements with China. This war-weary world surely needs to see an agreement between the US and China and then many more with other nations.

CMSgt. Leroy Y. Hassler,
USAF (Ret.)
San Antonio

Money Savers

I am writing in response to the quote from Secretary of Defense Robert M. Gates in the July issue of *Air Force* Magazine. Gates was addressing the Navy League on May 3 *["Verbatim: Is the Navy Affordable?" p. 34]*. What he said made a lot of sense, but it just did not go far enough. Prior to the last Presidential election, I was jokingly telling people I thought I might run. If elected, my platform would be one which could save the country trillions of dollars. I would start immediately closing every military base which we now have in a foreign country. Why do we need all of these bases? Can you name one foreign country that has an operational military base in this country? If we are helping to defend these countries, then they should be footing the bill. If it's for our own defense, it is unnecessary because with our B-2 bombers, B-52 bombers, nuclear-powered carriers, and submarines, we can defend our own country from within our borders. Why do we have thousands of military people in South Korea? They've been there for 50 years. Will we do this for the next 100 years? If it's for their defense, they should be footing the bill. Think of the money which we could save and which we really need.

Lt. Col. John W. Glenn,
USAF (Ret.)
Elizabethtown, Ky.

Global Strike Command Steps Up

The SAC no-notice ORI teams went to great extremes to surprise an air base *["Strike Command Steps Up," June, p. 26]*. Once, while stationed at Glasgow AFB, Mont., this happened, but was foiled by some sharp-eared air refueling tanker crew members on alert:

The C-97 transporting the IG team circled and landed at the municipal airport near the town of Glasgow, 16 miles away, and rented transportation to the air base. Some of the tanker crew members had previously flown the KC-97 and were outside on alert and heard the engine noise. They alerted the command post, and the battle staff was called together and were in session when the IG team arrived.

Similarly, the IG team was sent packing due to a higher headquarters-directed mission: After the capture of USS *Pueblo,* the Glasgow Air Force Base's SAC 91st Bomb Wing's 322nd Bomb Squadron and 907th Air Refueling Squadron were ordered to prepare for "unit move" deployment to Kadena AB, Okinawa.

In the early hours of the preparations for deployment, the SAC IG team arrived. Again, the team was surprised to find that the staff was in session. Upon

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arrival, the team was told that the unit was immune to an ORI, but they wouldn't take the wing commander's word. They were invited to use the "Red Phone" and check with HQ SAC.

The team called SAC and left without knowing the reason—since they didn't have a "need to know."

Lt. Col. James Bradley, USAF (Ret.)
Westmoreland, Kan.

The "Global Strike Command" section in "Letters" affirms the contention that SAC (General LeMay's Strategic Air Command) is alive and well *[July, p. 6]*. Its name was changed, but clearly not its mission, when reactivated in 2009 as Air Force Global Strike Command.

The excellent letters from CMSgt. Donald W. Grannen, USAF (Ret.), and Daniel L. Haulman (Air Force Historical Research Agency) concisely affirm that "SAC is back." The purpose of this letter is not to applaud their efforts, which are substantial, but to remind *Air Force* readers that General LeMay made a telling case for SAC, years ago, in his book *Mission With LeMay,* published in 1965 as an autobiography—assisted by author MacKinlay Kantor for editorial polish, but contents described by General LeMay as: "This is the way I remember it."

I don't know why I had left the book on the shelf for almost 45 years until a news item about some current Air Force changes stirred my interest. Once opened up again, I found it hard to leave alone—and I believe those of us who lived through his era of a constantly changing military aviation picture will be fascinated by his recollections and surprised by his uncanny managerial talents, as well.

I believe *Mission With LeMay* deserves to be made widely available once more. Although he is gone, he has left us with the means to do some heavy thinking about how to run a Defense Department.

Robert C. Dick
Castine, Maine

Delta Dagger

I always thoroughly enjoy the coverage of "Airpower Classics." The July issue *[p. 80]* was of special interest in view of the fact that I was a ground crew weapons control specialist for the F-102 Delta Dagger. I served with the 95th Fighter Interceptor Squadron at Andrews Air Force Base from 1957 to 1960. Our radar officer at the time was 1st Lt. Alfred M. Warden. He was a pilot and should have been included in your Famous Fliers/Notables paragraph. As a matter of record, Lieutenant Worden ultimately became the command pilot on Apollo 15.

Ed Cunnie
North Kingstown, R.I.

Washington Watch

By John A. Tirpak, Executive Editor

Future Air Force tech; Buying up Raptor production tooling; Saving $2 billion is hard ....

New Technology Horizons

Autonomous systems ... Computers plugged into the brain ... Chemically or genetically enhanced airmen ... Exotic new kinds of jet engines and directed energy weapons ...

These are among the advances the Air Force should aim for in the coming two decades, says a new service "vision" paper.

"Technology Horizons: A Vision for Air Force Science and Technology During 2010-2030" was prepared by USAF's chief scientist, Werner J. A. Dahm.

This study, released in July, is the most recent of six Air Force technology forecasts since 1945. Dahm submitted it to Secretary of the Air Force Michael B. Donley and Chief of Staff Gen. Norton A. Schwartz.

Technologies "to reduce manpower, energy, and sustainment costs" are the most worthy of investment, Dahm said, arguing that they are areas that have typically received too little attention. He suggested that the Air Force communicate the results of the study broadly and align USAF's science and technology portfolio with the courses laid out in it.

A chief manpower-saving innovation will be superfast computers substituting for armies of human intelligence analysts, "connecting the dots" of sensor data to figure out what an enemy will do and recommending action to commanders.

A tough technology challenge will be developing the means to verify that what the computers come up with is reliable enough to act on.

Human beings themselves will have to change to keep up with the computers, Dahm said.

"By 2030, machine capabilities will have increased to the point that humans will have become the weakest component in a wide array of systems and processes." This will demand closer "coupling" of humans and machines—both through more intuitive interfaces and by "direct augmentation of humans themselves."

These enhancements might entail simply screening recruits for their specialties "based on brainwave patterns or genetic correlators," up to "drugs or implants," or "genetic modification itself."

Such methods "may appear inherently distasteful," Dahm wrote, but "potential adversaries may be entirely willing to make use of them."

The study found a growing need to be able to operate in "contested or denied" environments. USAF networks should be able to protect themselves, avoid corruption from outside intruders, and reconstruct themselves after attacks.

Electronic warfare threats will become more acute. USAF has to become a virtuoso at "electronic spectrum warfare," developing means to "increase resilience to spoofing and resistance to signal injection."

Other "key priority areas" for Air Force S&T investment include processing-enabled intelligent sensors, directed energy for tactical strike and defense, persistent space situational awareness, rapidly composable small satellite systems, and next generation high-efficiency gas turbines, Dahm wrote.

The S&T World's Big 12

Dahm identified 12 "overarching themes" setting the course for USAF's technology, illustrating a required shift in emphasis.

Many of these transitions have been under way for several years already. They are:

1. From platforms to capabilities: thinking in terms of results, independently of the devices used to obtain those results.
2. From manned to remotely piloted: increasing use of uninhabited vehicles and systems.
3. From fixed to agile: expeditionary, movable, and flexible assets rather than garrisoned or centralized.
4. From control to autonomy: systems and platforms that run themselves.
5. From integrated to fractionated: away from "exquisite" all-in-one, do-everything systems to a constellation of cheaper, easily replaceable units.
6. From preplanned to composable: decision-making on the fly, rather than set-piece operations.
7. From single-domain to cross-domain: capabilities that can perform a variety of functions as needed.
8. From permissive to contested: domination of any domain not assumed. USAF will be challenged in every domain and must be capable of prevailing under duress.

Illustration by Erik Simonsen

On the horizon, directed energy and more.

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9. From sensor to information: seeing the big picture seamlessly, irrespective of the way it was generated.

10. From operations to dissuasion-deterrence: preventing combat by making it pointless.

11. From cyber defense to cyber resilience: making networks and information systems able to withstand attacks, changing constantly to make intrusions difficult, and generating inherent forensic evidence of where attacks came from.

12. From long system-life to expendable: using systems designed with a short, limited, and predictable lifespan, meant to be used up or expended in combat rather than built to last.

End of the Raptor Option?

After the last F-22 Raptor is delivered in early 2012, the Air Force will keep the production tooling at least until it figures out how it will make the 186-aircraft fleet last into the 2030s.

Secretary of the Air Force Michael B. Donley informed Congress in late June that he intends to retain the F-22 tooling until the Air Force completes an analysis of "sustainment" needs for the aircraft. Typically, when an aircraft production line shuts down, USAF will either buy a supply of major structural replacement parts or preserve some tooling to fabricate new parts as needed. Sometimes, it does both.

The tooling could also permit a future service life extension program of the F-22 fleet by making possible the economical replacement of wings, bulkheads, spars, and other heavy load-bearing elements that wear out. Air Force leaders have suggested that the need for the first F-22 service life extensions will arise in the early 2020s.

Photo by Clive Bennett

Sustaining the F-22, but not building more.

Air Force Materiel Command has been studying sustainment and a future SLEP of the F-22 for some time. Although such a program is feasible in principle, the F-22's structures are different from any previous USAF aircraft. The wings, for example, combine metal and composite materials with antennas in an integrated whole that might not easily lend itself to parts swaps.

Low observable materials on the F-22 will also likely be superceded by newer materials that are less costly and easier to maintain, potentially requiring substantial re-engineering of the aircraft.

Despite retention of the tools—which Donley said, citing a recent RAND Corp. study of F-22 production shutdown, could be done at "moderate" cost—he specifically ruled out the idea that the F-22 could ever go back into production.

Again citing the report, Donley said the one-time and recurring costs to restart F-22 manufacture would be "prohibitive." Lockheed Martin, which makes the F-22, has said as much in previous discussions of the fighter's future, noting that the cost to clear and recertify workers and production methods and recertify suppliers and find new ones to replace those that have exited the industry would take several years and billions of dollars.

The RAND study pegged F-22 restart costs at $17 billion to $18 billion if the Air Force preserved the tooling.

Japan, Australia, and other allies expressed interest in obtaining F-22s, but the US has informed them that the F-22 will not be available for export.

Fiscal 2010 defense appropriation language, however, allows the development of an export version of the F-22 that would have less than USAF's version's full capability, while the 2010 authorization bill directs the Pentagon to study the ramifications of such foreign sales.

What-If Budget Drills

The Air Force has been looking at a number of "what-if" scenarios toward meeting defense leadership guidance to cut $28.3 billion from the Future Years Defense Program, but some—such as elimination of the B-1B bomber fleet, for example—are for comparative purposes, not serious consideration.

So said Lt. Gen. Christopher D. Miller, the Air Force's deputy chief of staff for strategic plans and programs. Following a July Air Force symposium in Arlington, Va., Miller noted that USAF is considering more options "than you can shake a stick at," but that many are "not even close to reality."

A brief furor arose when it came to light that the Air Force was contemplating the B-1B retirement as a deep vertical cut to quickly reach outyear savings targets, but the service quickly reassured anxious members of Congress that no such plan will be put into action.

Defense Secretary Robert M. Gates, in ordering the cuts, insisted that the services and defense agencies look to overhead—process, layers of bureaucracy, repetitious functions, non-value-added reports, etc.—rather than force structure. Undersecretary of Defense Ashton B. Carter, in clarifying the guidance, said that the reductions must be "specific, actionable, and measurable," and that "across-the-board reductions are not acceptable."

The Air Force has to come up with $2 billion in savings for Fiscal 2012, and "we have to be very concrete" with plans on how to meet that target, Miller said. For the outyears, USAF has "time to adjust and figure out exactly how you get there."

He said that converting some programs into joint initiatives—thereby spreading cost, benefit, and risk—will be among the budget-cutting tools, but isn't "a panacea" for flatline budgets.

"There are absolutely ... synergies" that the services can pursue, such as on the Global Hawk remotely piloted surveillance airplane, Miller said. There may also be opportunities in joint training and equippage "at the joint operational level."

However, joint programs present "challenges" in terms of deciding which service pays for what. Close coordination is needed in such instances because the budget machinations of preserving force structure and conducting modernization while cutting overhead are "pretty complex," he observed. If programs are made joint, we have to "make sure we get it right." ■

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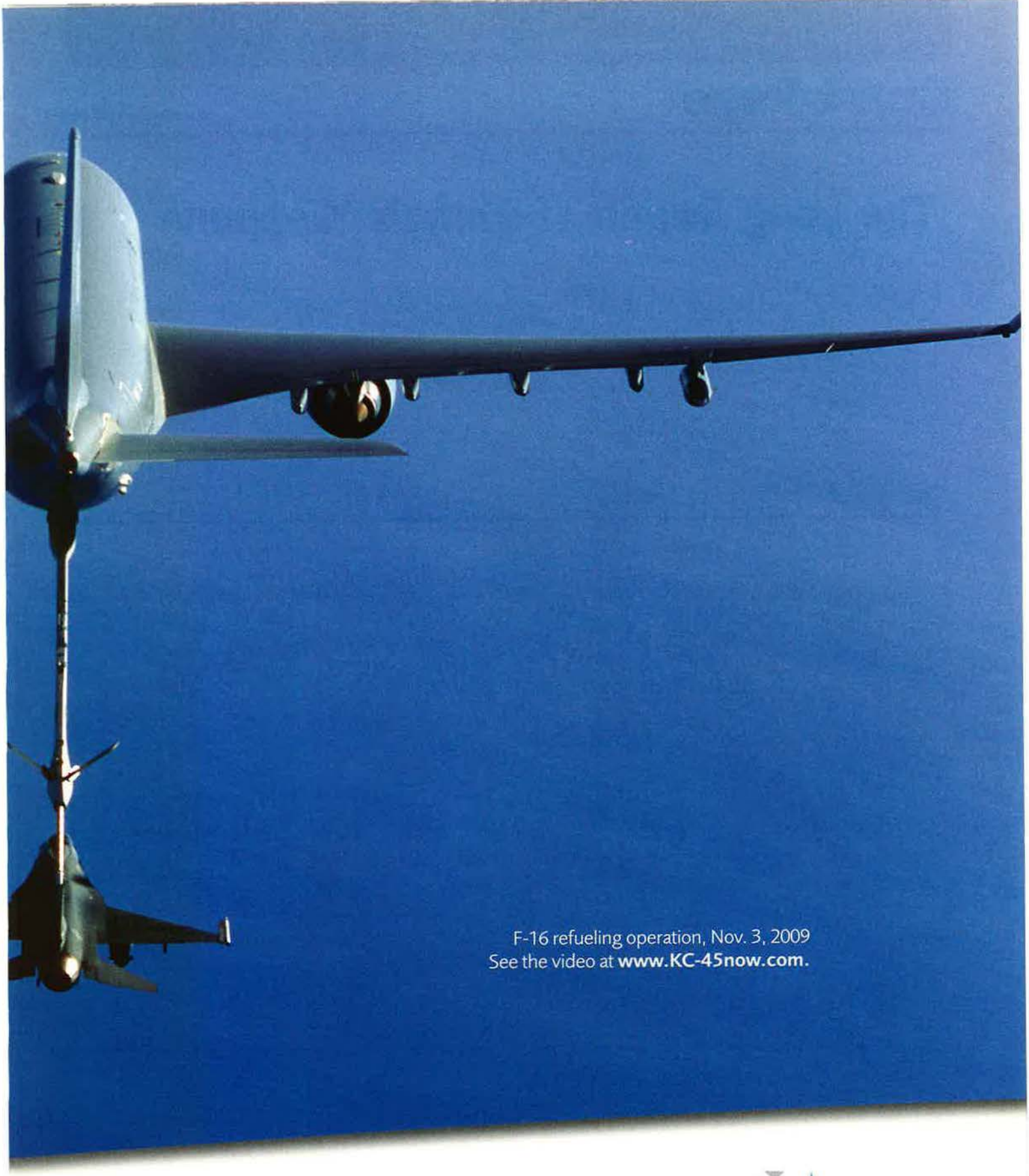

F-16 refueling operation, Nov. 3, 2009
See the video at **www.KC-45now.com.**

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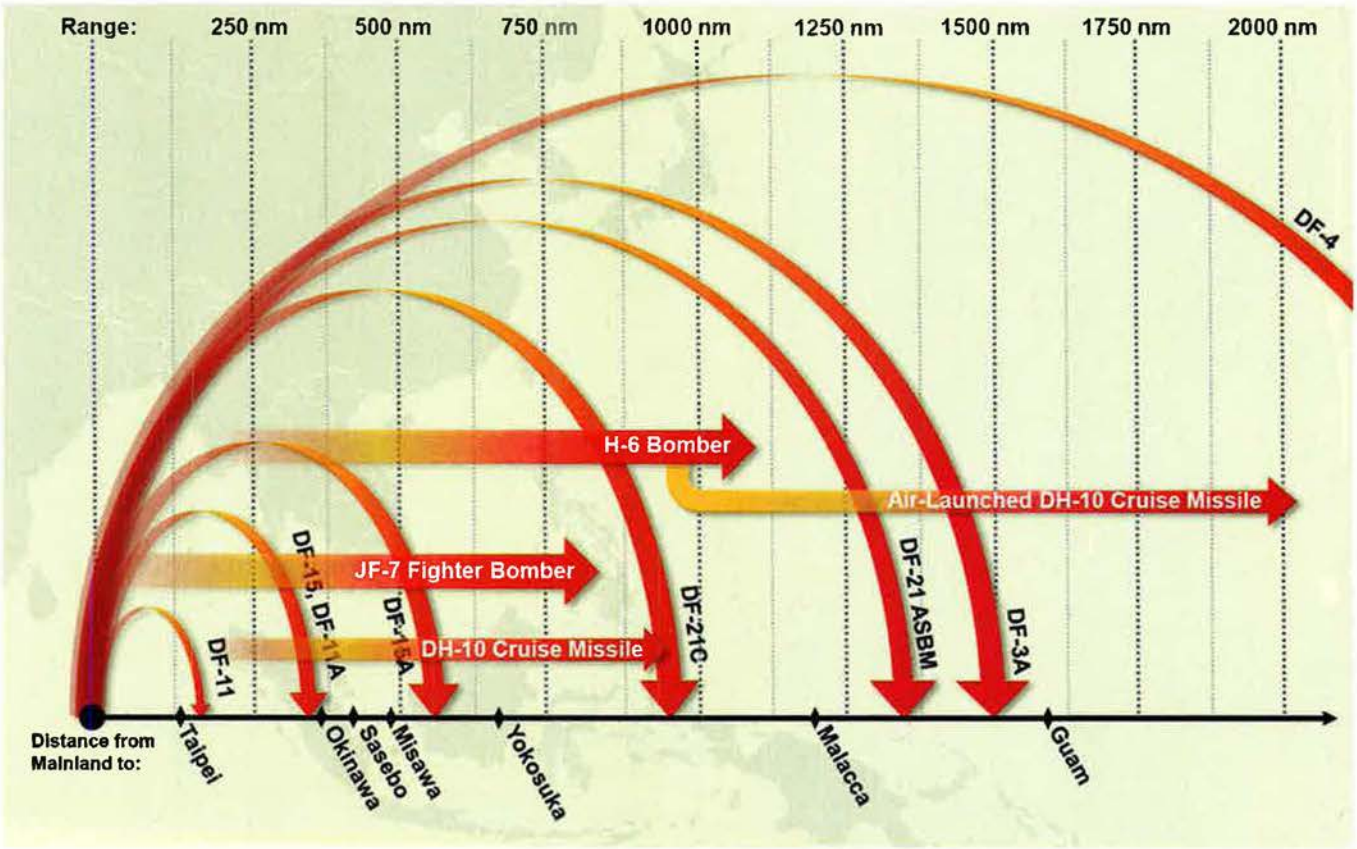
The Long Reach of China's Weapons

China has built an "anti-access" barrier to US airpower with land-based ballistic and cruise missiles. These may be joined by air launched cruise missiles. In a recent study, the Center for Strategic and Budgetary Assessments said Chinese missiles "in the thousands" threaten "all US operating bases" with "persistent" attacks. Beijing's aim would be to deny US forces the ability to generate combat power from air bases and stifle operations in this "keep-out" zone. CSBA noted the existence of eight variants of Dongfeng (DF) missiles, two Donghai (DH) cruise missiles, and two bomber-type aircraft.

Ranges of Missiles and Aircraft



Source: "AirSea Battle: A Point-of-Departure Operational Concept," report and briefing by Jan M. van Tol, Mark A. Gunzinger, Andrew F. Krepinevich Jr., and Jim Thomas, Center for Strategic and Budgetary Assessments, Washington, D.C., May 18, 2010.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Air Force World

By Marc V. Schanz, Senior Editor

C-17 Crash Claims Four Airmen

An Air Force C-17 Globemaster III assigned to the 3rd Wing, JB Elmendorf, Alaska, crashed near the base shortly after takeoff July 28, killing the four airmen on board and resulting in the total destruction of the aircraft, the first such accident in the C-17 fleet's history.

The four airmen on board the flight were Maj. Michael Freyholtz of Hines, Minn., and Maj. Aaron Malone, of Anchorage, Alaska, both pilots with the Alaska Air National Guard's 249th Airlift Squadron; Capt. Jeffrey Hill of York, Pa., a pilot with Elmendorf's 517th AS; and SMSgt. Thomas Cicardo, of Anchorage, a 249th AS loadmaster.

The aircraft was on a local training mission when it took off from the base about 6:14 p.m., crashing in a wooded area about two miles from the base's runway. The crash occurred only days before Elmendorf's popular "Arctic Thunder" air show and open house.

Safety investigation board members were assembled Aug. 2, and a full investigation is ongoing, according to a 3rd Wing statement.

Silent Eagle Fires First AMRAAM

Boeing announced in July it had successfully launched a missile for the first time from the new conformal weapons bay designed for the company's new F-15 variant, called the Silent Eagle. The fighter features radar cross-section reduction and internal weapons carriage.

The F-15E1 demonstration aircraft made its debut flight with the special bay on July 8 in St. Louis, and the missile firing occurring on July 14 at Point Mugu Naval Air Weapons Station, Calif.

The test pilot fired an inert AIM-120 air-to-air missile from the left side bay. The weapon performed exactly as planned—demonstrating the flightworthiness of the new bay and ability to deploy missiles with no adverse effect on performance—said chief Boeing F-15 test pilot Dan Draeger.

Airpower Casualties Low—Report

A Cambridge, Mass., think tank in July released a paper suggesting that improvised explosive devices used by the Taliban and affiliated militants in Afghanistan are far more likely to kill or injure civilians than are air strikes from coalition aircraft.

The National Bureau of Economic Research issued these findings in a working paper, "The Effect of Civilian Casualties in Afghanistan and Iraq." It shows that, despite the publicity they receive, air strikes accounted only for six percent of International Security Assistance Force-caused casualties of women and children and about 16 percent of ISAF-caused casualties among adult male civilians.

Traffic accidents between local Afghan and ISAF vehicles caused more Afghan civilian casualties than air strikes, the data show.

The study period ran from January 2009 through March 2010. During the period, insurgents and militants caused 243 of 395 casualties among women and children and 3,857 of 4,255 casualties among adult males, states the report.

IEDs accounted for about 60 percent of the insurgent-caused casualties among women and children and about 70 percent of insurgent-caused adult male casualties.

WTO Delays Boeing Ruling

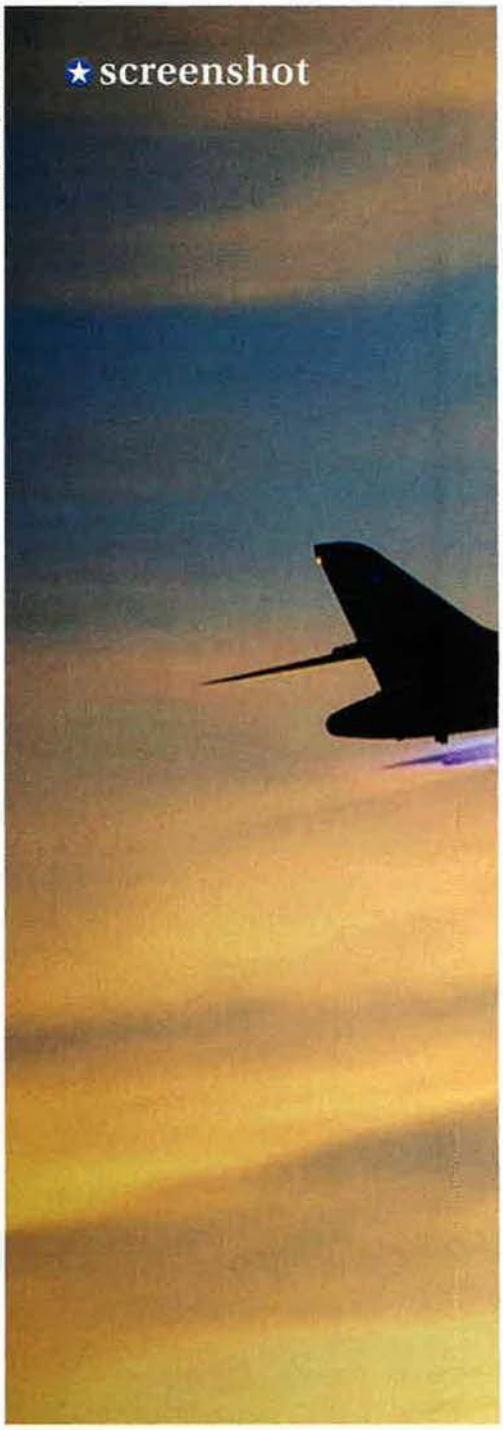
The World Trade Organization announced July 8 it will not rule on a European counterclaim, alleging improper US support for Boeing's large aircraft division, until later this month. This pushes the WTO's decision closer to the Air Force's expected announcement of the winner of the KC-X contract.

The WTO's announcement came on the heels of its ruling in March that Airbus, a subsidiary of EADS, did receive improper subsidies.

The impact of the ruling on the KC-X competition remains unclear, since the first WTO decision is being e appealed, and so far the Pentagon has kept the trade dispute separate from the KC-X competition. The KC-X winner is expected to be announced in November.

Canada Commits to F-35

Canada's department of defense on July 16 announced that the country will commit itself to spending about $8.5 billion to buy 65 F-35s as replacements for its fleet of CF-18 fighters.



USAF photo by A1C Corey Hook

The announcement was regarded as a significant boost to the F-35 Lightning II program.

First delivery of the new fighters is expected in 2016 as the CF-18s are due to reach the end of their operational service by 2020.

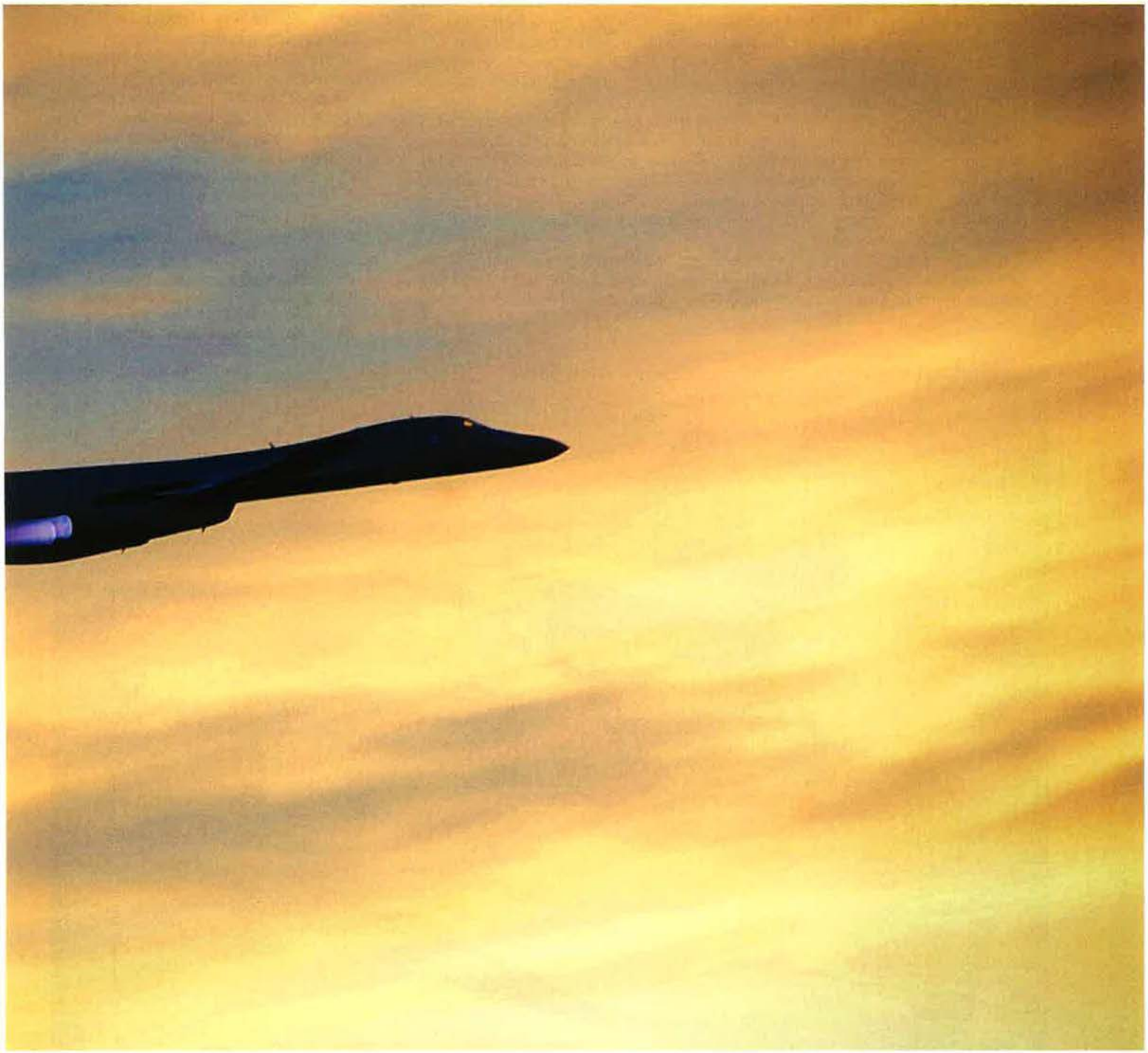
"Not only does the F-35 meet all of the Canadian Forces operational requirements for a next generation fighter aircraft, the F-35 offers the best value by providing exceptional capability at the lowest cost with excellent benefits and opportunities for the Canadian defense industry," stated the July announcement.

Canada has been a member of the multinational consortium developing the F-35 since 1997.

C-17 Makes RIMPAC Debut

A C-17 from the 535th Airlift Squadron at JB Pearl Harbor-Hickam, Hawaii, dropped supplies to marines on the island of Hawaii on June 24 as part of the Rim of the Pacific exercise, better known as RIMPAC, the largest maritime biennial exercise in the world.

The sortie marked the first time C-17s participated in the exercise, which tests participating nations and strengthens their ability to communicate and operate in simulated air, land, and maritime scenarios. This year's exercise included 14 nations, 34 ships, five submarines, more than



08.03.2010

Heading off into the sunset is a B-1B Lancer. The "Bone" is departing Ellsworth AFB, S.D., for a training mission. B-1s such as this one have been heavy hitters in the skies over Afghanistan, where they are prized for their ability to stay on-station for extended periods and deliver massive amounts of weapons.

Raptor Makes Korea Debut in Invincible Spirit

Two F-22 fighters participated in Invincible Spirit in July, a large-scale combined US and South Korean exercise to demonstrate allied resolve. The exercise came in the wake of the sinking of the South Korean frigate *Cheonan* in March off the west coast of the peninsula, killing 46 sailors, and North Korea's increasingly bellicose rhetoric toward its neighbor. The exercise marked the F-22's first deployment to the Korean peninsula. The Raptors participated in the exercise on July 26 and 27, and deployed from Kadena AB, Japan's, 7th Expeditionary Fighter Squadron (visiting from their home station at Holloman AFB, N.M., according to Pacific Air Forces officials).

The largest such exercise on the peninsula in years, according to US Pacific Command, Invincible Spirit was the first in a series of combined maritime and air readiness exercises planned to take place in the Yellow Sea and Sea of Japan.

Approximately 8,000 US and South Korean service members participated in the exercise in the Sea of Japan, as well as 20 surface ships and submarines. The exercise was centered around the USS *George Washington* carrier strike group and South Korean Navy ships, plus 200 fixed wing aircraft, including the F-22s. Raptors have deployed routinely to Okinawa, Japan, and Guam over the past few years, but the July exercise was the highest-profile F-22 event in the region so far.

Over the course of four days, participating ships and aircraft conducted strike exercises, aerial refueling practice, air defense simulation, anti-submarine warfare training, and other activities, US PACOM officials said.

170 aircraft, and 20,000 personnel, and ran from June 23 through Aug. 1.

The C-17 crew used the Improved Container Delivery System to drop more than 25,000 pounds of supplies to marines deployed for the exercise, said Maj. Paul Anderson.

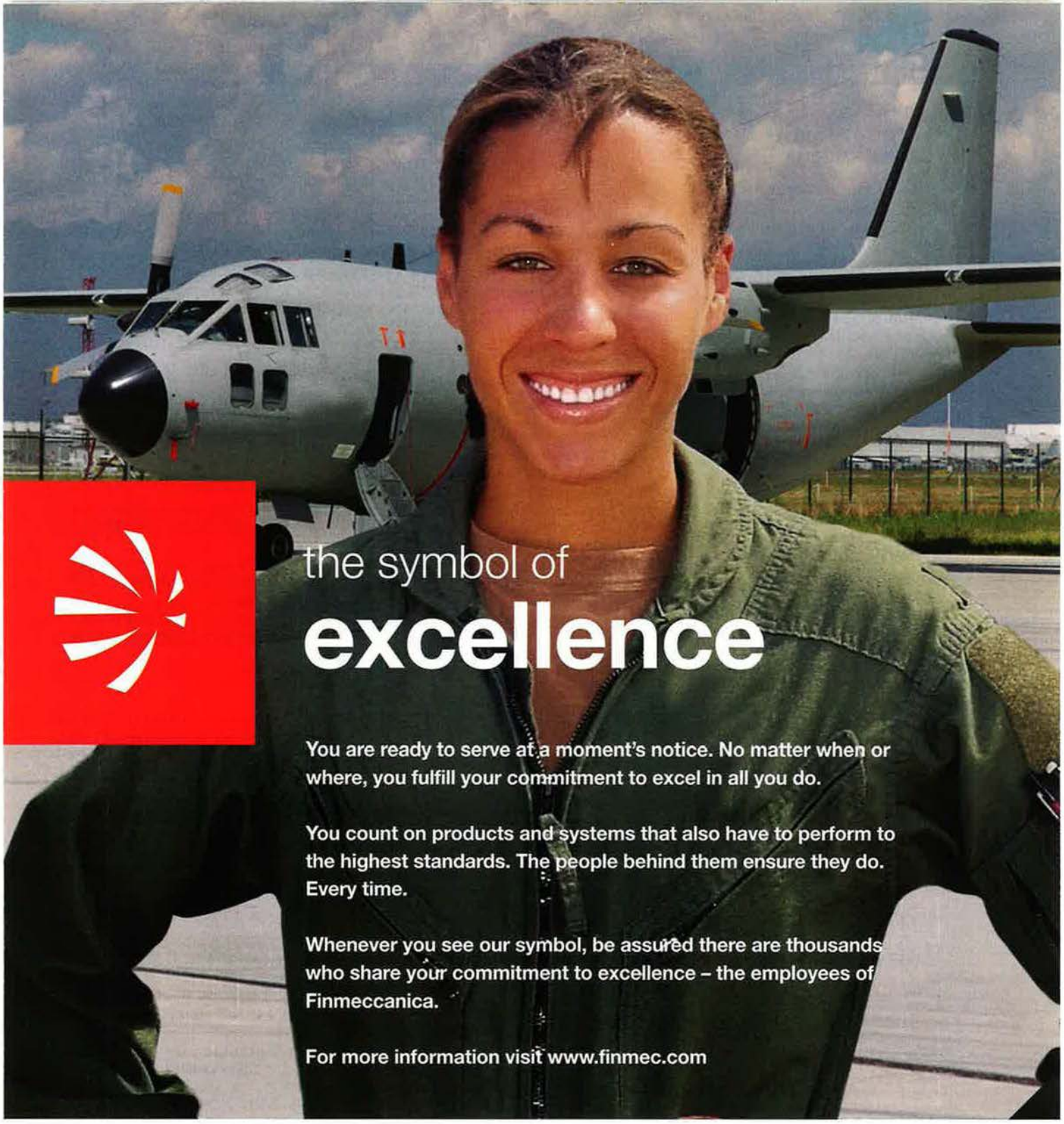
Gary Payton Retires

Gary E. Payton, who had overseen the Air Force's space portfolio since 2005, retired July 31. Richard W. McKinney was named as his successor for the post of deputy undersecretary of the Air Force for space programs.

A pilot and 1971 graduate of the Air Force Academy, Payton flew on the space shuttle *Discovery* in 1985 as a payload specialist. He retired from active duty with the rank of colonel after more than 23 years of service, and served stints with NASA and the Ballistic Missile Defense Orga-

The Fast Pitch: ***An F-22 Raptor pitches out while its companion, an F-15, comes in on approach at Nellis AFB, Nev. Both aircraft are from the USAF Weapons School at Nellis.***

USAF photo by MSgt. Kevin J. Gruenwald



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nization—later renamed the Missile Defense Agency—and also worked in the aerospace industry.

SBSS July Launch Scrubbed

The Space Based Space Surveillance (SBSS) satellite system launch planned for July 8 from Vandenberg AFB, Calif., was delayed days before the launch, to resolve a test anomaly associated with the Minotaur IV rocket design, the Space and Missiles Systems Center said in a July 1 statement.

Air Force officials, according to press reports, are working out a timing flaw with the flight software of the Minotaur IV, which was first designed for a different mission. While chances were considered small that the software issue would have affected the rocket being used for the SBSS' placement in low Earth orbit, the Air Force decided to take no chances and ordered a software patch created. As of mid-August, USAF and industry officials expected a late September launch.

The satellite will be the Air Force's only space-based asset used for detecting and monitoring objects in orbit.

Record Class for SNCO Academy

The Air Force Senior Noncommissioned Officer Academy at Maxwell AFB, Ala., graduated its largest class ever on July 21, according to CMSgt. Alexander D. Perry, the academy commandant.

The following class could be even larger, he said, than the 457 students who just graduated from the six-week course. Normally the cap is 450 students divided into 30 flights, but the decision was made to accept the extra seven and create an extra flight to accommodate them.

Perry said the goal for the August class was 32 flights serving 476 students, and the academy plans to graduate 2,200 students annually.

Cyber Expansion Completed

A $1.3 million military construction project to expand training facilities of the 39th Information Operations Squadron at Hurlburt Field, Fla., wrapped up on July 20, after nearly a year of construction.

The 39th IOS is currently the Air Force's sole information operations and cyber formal training unit, and the new 4,500-square-foot addition will house nearly 200 computers, along with classified and unclassified network connections and video teleconference capability, to instruct more than 60 students at one time. The unit is transitioning more into mission qualification training

A Transition at *Air Force* Magazine

This issue of *Air Force* Magazine is the final one with Robert S. Dudney as Editor in Chief atop its masthead. Dudney became the magazine's top editor in 2002, and presided over exactly 100 issues in that role. During his tenure, Dudney modernized the magazine while ensuring it remained the standard for defense journalism. He also conceived and launched the online Daily Report and was instrumental in establishing AFA's Mitchell Institute for Airpower Studies. After 23 years with this magazine, Dudney retires Sept. 1.

AFA named Adam J. Hebert to succeed Dudney as Editor in Chief. Previously the magazine's principal Executive Editor, Hebert joined the magazine in 2002 and since 2007 has had day-to-day responsibility for planning, assigning, and editing most articles. He also played a key role in configuring the magazine and managing its finances. Hebert announced several related staff changes that took effect this summer.

The position of Editor has acquired new duties. Suzann Chapman on June 1 assumed cradle-to-grave responsibility for all special projects, including reports, studies, conference programs, and the May Almanac.

Michael C. Sirak was promoted to Executive Editor June 1. He is now responsible for all aspects of the Daily Report, including planning and editing. He joined the magazine staff in January 2008.

Sirak joins John A. Tirpak as an Executive Editor. Tirpak oversees the print magazine's news departments, writes the highly regarded "Washington Watch" column, and will take on additional editorial duties.

Marc V. Schanz, who joined the magazine in 2005, was promoted to Senior Editor. He writes for the Daily Report and print magazine, and adds new editorial responsibilities. The change was effective June 1.

Air Force Magazine also welcomes Amy McCullough, who joined the staff as Senior Editor on July 12 from the Military Times family of publications. She is a former Air Force Reserve staff sergeant.

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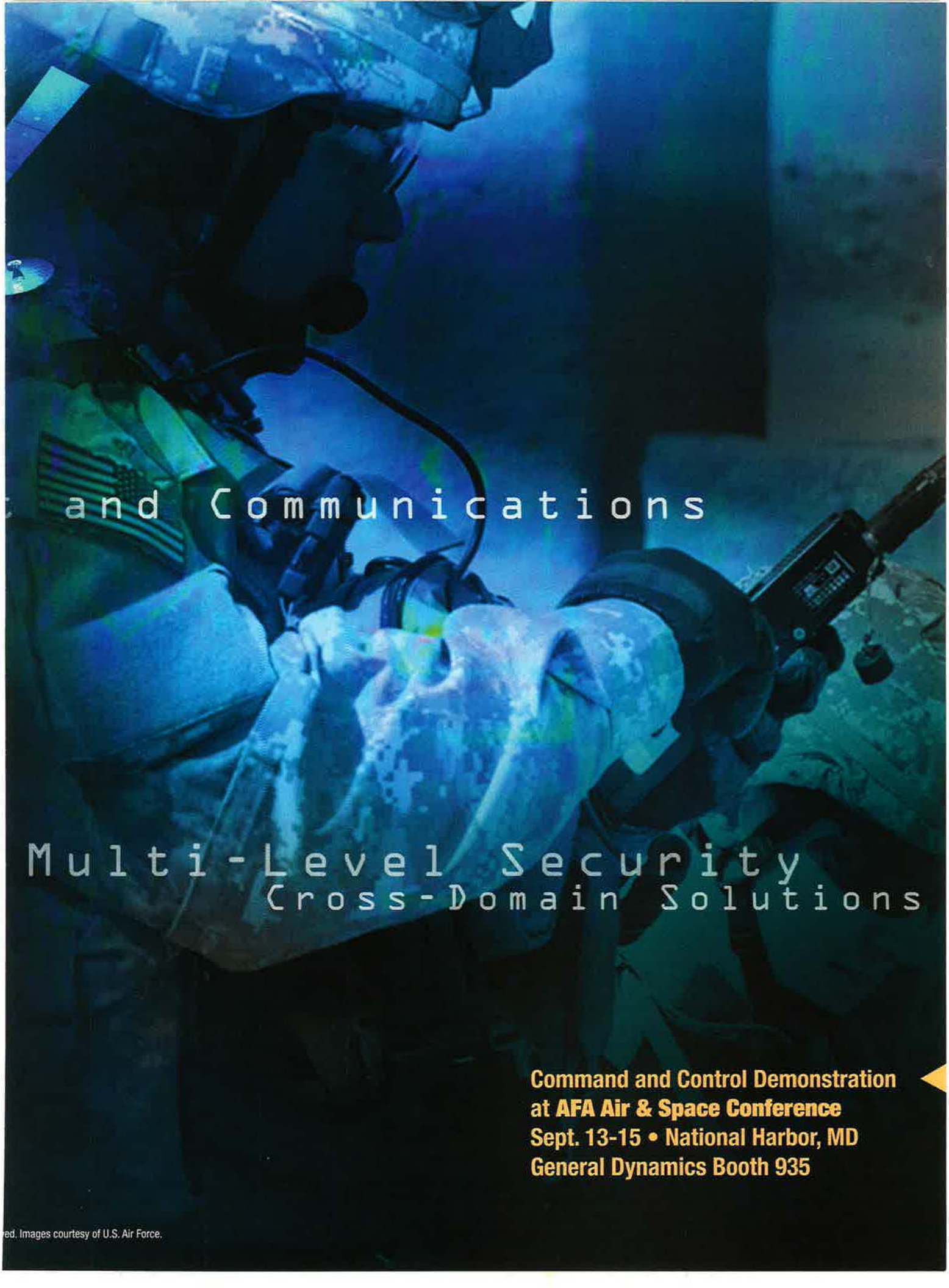

Command and Control Demonstration
at AFA Air & Space Conference
Sept. 13-15 • National Harbor, MD
General Dynamics Booth 935

ed. Images courtesy of U.S. Air Force.

Obama Orders Lavelle's Two Stars Restored

President Obama in early August posthumously nominated Maj. Gen. John D. Lavelle for advancement on the retired rolls to the rank of general. This move would return the two stars stripped from Lavelle for alleged—and now debunked—misconduct during the Vietnam War.

Lavelle was demoted for allegedly ordering unauthorized "protective reaction" bombing missions into North Vietnam, and falsifying reports to conceal them. He died in 1979.

Lavelle's family fought for more than three decades to correct the record and restore his reputation. Favorable Senate action would restore Lavelle to his highest active duty rank, when he was removed from command of 7th Air Force in Saigon in April 1972. The nomination was awaiting Senate approval as Congress adjourned for its August recess. However, the chairman and ranking member of the Senate Armed Services Committee released a joint statement Aug. 5 saying the committee would act "expeditiously on the matter."

"After their decades-long fight to restore General Lavelle's honor, his wife Mary Josephine and her family deserve prompt action," wrote Sen. Carl Levin (D-Mich.) and Sen. John McCain (R-Ariz). Sen. Jim Webb (D-Va.), a Vietnam veteran who helped move the case forward, also praised the decision. "For those of us who care about history, the vindication of General Lavelle's conduct during the Vietnam War is important news," said Webb in a statement.

Obama's nomination followed an Air Force Board for Correction of Military Records decision and recommendations from the Secretary of Defense and Air Force Secretary. His case was reviewed after information declassified and released showed that President Nixon had authorized US commanders to conduct the bombings.

Two articles in *Air Force* Magazine contributed to the re-evaluation of Lavelle's case.

The first, "Lavelle," by John T. Correll in November 2006, highlighted Lavelle's insistence, until his death, that he had authorization for the protective reaction strikes.

The second, "Lavelle, Nixon, and the White House Tapes," by Aloysius Casey and Patrick Casey in February 2007, revealed the declassified Nixon recordings that proved Lavelle's innocence. Nixon was privately troubled by the fact that Lavelle was being made a scapegoat, but the President nonetheless decided to publicly blame the general for unauthorized air strikes.

The BCMR also "found no evidence that Lavelle had caused, either directly or indirectly, the falsification of records, or that he was even aware of their existence," according to DOD.

While Lavelle retired as a two-star general, his retirement pay was based on his last active duty rank—general. Accordingly, Air Force officials said there would be no retroactive pay for his family.

as undergraduate cyber training moves to Keesler AFB, Miss.

DOD Announces Research Awards

The Department of Defense announced the list of academic institutions that won its Fiscal 2010 contract awards for basic, multidisciplinary research on July 16—32 projects for a total of $227 million in research funds. The program is highly competitive, and the final awards were selected from 152 submitted formal proposals.

Ten of the selected projects will support the Air Force Office of Scientific Research, with topics ranging from energy-dense liquids to social networking. Ten additional projects fall under the Army Research Office, and 12 are for the Office of Naval Research.

The awards are a result of a competition under the DOD Multidisciplinary University Research Initiative (MURI) program, which supports research by teams of investigators that intersect more than one traditional science and engineering discipline in order to accelerate both research and transition of the results to applications.

Pakistan Comes to Red Flag

The Air Force conducted Red Flag 10-4 at the Nevada Test and Training Range July 19-30. The service's premier combat training exercise featured Air Force, Navy, Marine Corps, and allied aircraft simulating a range of scenarios over the range's 12,000 square miles of airspace.

In addition to US aircraft such as F-15s, F-16s, MC-130s, KC-135s, Navy EA-6Bs, EA-18Gs, and others, the exercise welcomed approximately 100 Pakistan Air Force pilots, maintainers, and support personnel to Nellis AFB, Nev., along with six F-16B fighters. The deployment for the Pakistanis marked their first time participating in Red Flag. (The PAF also participated in Green Flag 10-9 held at Nellis in August.)

Other allies that participated in the last 2010 iteration of Red Flag included the Royal Saudi Air Force with its F-15S fighters and the Republic of Singapore Air Force detachment from Luke AFB, Ariz., bringing its F-16CGs.

USAF photo by SMSgt. David H. Lipp

Ready, Aim, Fire: ***Airmen and soldiers from the North Dakota National Guard in July competed in the adjutant general's markmanship match at Camp Grafton South, N.D. The two-day contest is held annually to promote markmanship. Although the North Dakota ANG had not participated for several years, airmen placed sixth at the event.***

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The War on Terrorism

Operation Enduring Freedom—Afghanistan

Casualties

By Aug. 12, a total of 1,213 Americans had died in Operation Enduring Freedom. The total includes 1,211 troops and two Department of Defense civilians. Of these deaths, 915 were killed in action with the enemy while 298 died in noncombat incidents.

There have been 7,416 troops wounded in action during OEF. This number includes 3,385 who were wounded and returned to duty within 72 hours and 4,031 who were unable to return to duty quickly.

Afghan Wing Conducts First FTX

Under observation of US Air Force advisors with the 738th Air Expeditionary Advisory Group, members of the Afghan National Army Air Force's Kandahar Air Wing conducted their first-ever fielding training exercise in July.

During the July 11 event, the Afghans responded to the simulated crash of an Afghan National Army Air Force Mi-17 helicopter at Kandahar Airfield shortly after its takeoff. The exercise tested the ability of the Afghans as first responders and their leaders to act decisively throughout the crisis. All the elements of the wing pulled together and effectively communicated and coordinated their actions to respond as a team during the exercise, said Col. Bernard Mater, commander of the 738th AEAG.

Afghan Air Force Expanding Rapidly

The Afghan National Army Air Force has grown significantly in the last year and will expand its aircraft fleet to more than 70 airframes by 2011, Brig. Gen. Michael R. Boera told reporters on a teleconference call July 16. Pilot training and technical skills will continue to be the areas US and NATO advisors focus on in their efforts.

Boera, commander of the Combined Airpower Transition Force, said the ANAAF fleet is on track to increase from 40 aircraft in November 2009 to a planned 71 by July 2011 as it transitions to more Western airframes and fewer legacy Warsaw Pact-era platforms. Over the next year, an additional 2,300 airmen are expected to join the air arm, and mission capability is expected to grow 215 percent, Boera said.

Operation Iraqi Freedom—Iraq

Casualties

By Aug. 12, a total of 4,418 Americans had died in Operation Iraqi Freedom. The total includes 4,405 troops and 13 Department of Defense civilians. Of these deaths, 3,490 were killed in action with the enemy while 928 died in noncombat incidents.

There have been 31,907 troops wounded in action during Operation Iraqi Freedom. This number includes 17,922 who were wounded and returned to duty within 72 hours and 13,985 who were unable to return to duty quickly.

Airpower Shifts Course in Iraq

As of July 22, there had not been a kinetic air strike in Iraq in at least six months, the head of US Forces-Iraq told reporters in Washington in July, and there likely won't be one soon. Army Gen. Raymond T. Odierno, who has been confirmed to take over US Joint Forces Command, said that three years ago, US and coalition allies had to carry out strikes in order to get control. Now that control has been returned to the Iraqi government, "we don't have to use that [kind of capability]. ... What we don't want to do is to alienate people with collateral damage."

With the number of US troops down by 75,000 since January 2009, the focus of operations has shifted more to stability activities, he added. But airpower has other uses, such as for reconnaissance and deterrence.

Odierno Supports Iraqi F-16 Sale

US Forces-Iraq's commander, Army Gen. Raymond T. Odierno, told reporters in July he supports the sale of F-16s to the Iraqi Air Force, which the rebuilt air arm and Iraqi government have expressed interest in acquiring.

"They are going to buy multirole aircraft, so ... I'd rather have them buy F-16s. That's probably better for us if we are involved in that," he said. He added that the Iraqis have requested purchase of 18 fighters initially, enough to build their own squadron. The new aircraft would likely not be delivered until 2018, when the country's oil revenues are expected to be at a level to support the purchase and follow-on sustainment activities, he noted.

Last year, US Air Forces Central began an air sovereignty study to examine the possibility of providing new aircraft, or excess inventory USAF assets, to Iraq.

Chilton Sees ALCM in 2030

The Air Force's nuclear-armed Air Launched Cruise Missile will be viable in the fleet for two more decades, said Gen. Kevin P. Chilton, commander of US Strategic Command in testimony before the Senate Armed Services Committee on July 20 regarding the new Strategic Arms Reduction Treaty.

However, he issued this important caveat: The ALCM will last that long only if it receives proper upgrades.

The Air Force's ALCM can easily be extended until 2030 with "modest investments" in upgrades, Chilton told the committee. The approach is the proper path to take and will allow the US to begin studies by 2015 or so to see what the appropriate follow-on replacement to the cruise missile should be.

The Air Force announced in February its intent to explore an ALCM replacement together with the Navy, allotting $3.3 million in its proposed budget for the concept. The Navy is already retiring its nuclear Tomahawk cruise missiles, DOD leadership announced earlier this year.

Robot Concept Eyed for Loading

Air Force Research Laboratory engineers and Air Mobility Command's chief scientist, Donald R. Erbschloe, visited JB Charleston, S.C., on July 16 to see how the base's aerial port squadron operates—and whether to infuse it with robotic equipment.

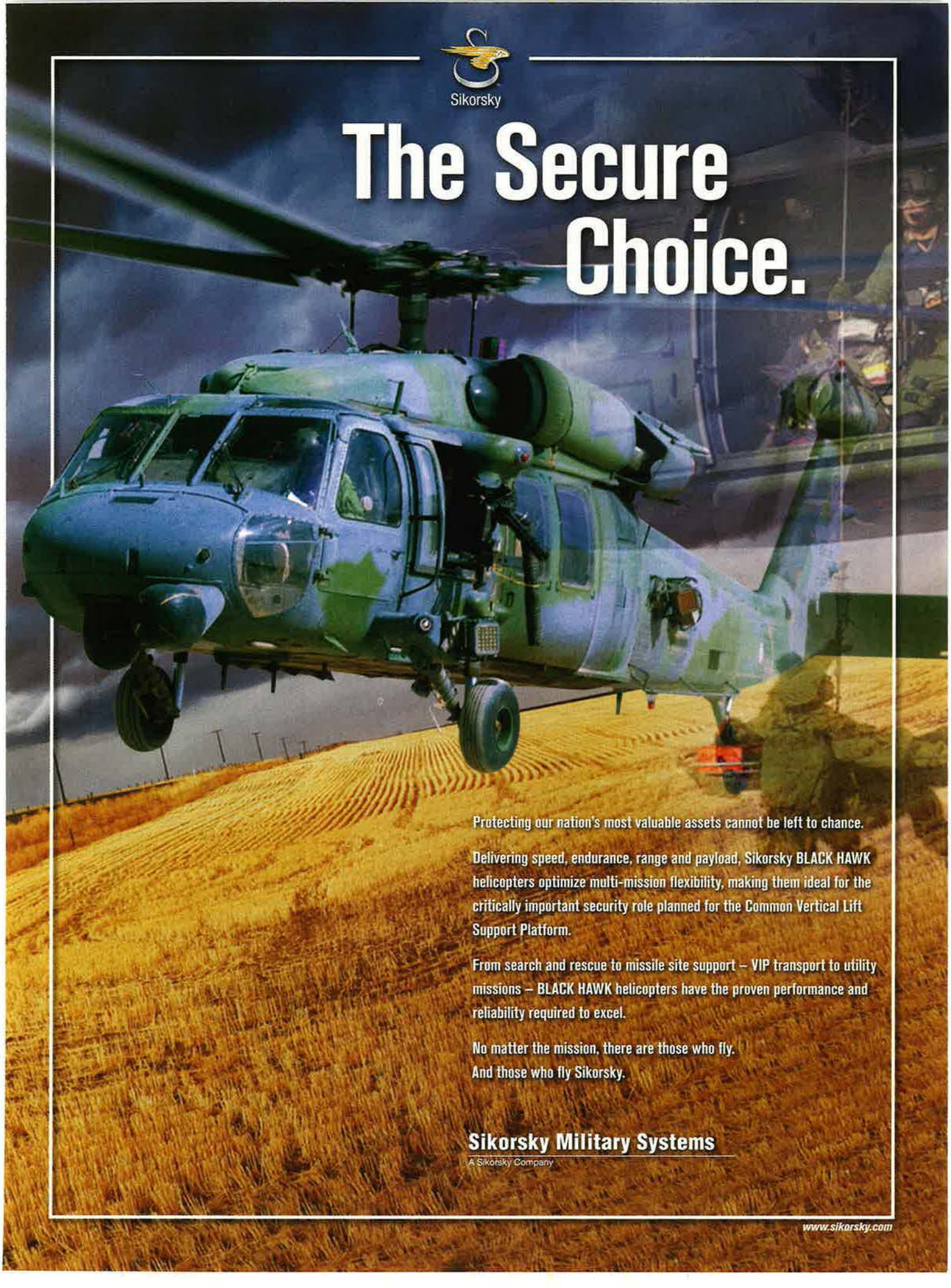
Calling the trip a fact-finding mission, the researchers went to see how the 437th APS carries out its tasks every day, and whether the introduction of robotics could make the loading and unloading of cargo more efficient.

The AFRL researchers are working on a concept called a "robo-pallet" that could drive itself to and from the loading dock and aircraft. The system would know the exact weight and type of cargo it is hauling and could discern whether the contents have been tampered with at any point in the transit process.

AFRL researchers are currently refining the concept in order to eliminate non-value-added tasks that take up time but don't require a person to perform. Already, the lab's Air Base Technologies Division has developed robots for a variety of Air Force platforms and is working on an automated ground refueling system.

Cyber Hiring Streamlined

Air Force managers hiring civilian federal employees for certain cyber security jobs have been authorized to use a streamlined hiring authority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Senior Staff Changes

RETIREMENTS: Maj. Gen. Roger W. **Burg,** Maj. Gen. Ronald R. **Ladnier,** Maj. Gen. Thomas J. **Loftus,** Maj. Gen. Marshall K. **Sabol,** Brig. Gen. Jonathan D. **George.**

NOMINATIONS: To be Lieutenant General: James M. **Kowalski,** Stephen P. **Mueller. To be Major General:** Alfred J. **Stewart. To be Brigadier General:** Christopher J. **Bence,** Paul H. **McGillicuddy,** Scott A. **Vanderhamm. To be ANG Major General:** Hugh T. **Broomall,** Paul D. **Brown Jr.,** William R. **Burks,** James E. **Daniel Jr.,** Michael J. **Dornbush,** Michael J. **Dzialo,** Gregory A. **Fick,** Robert H. **Johnston,** Joseph L. **Lengyel,** William N. **Reddel III,** James R. **Wilson. To be ANG Brigadier General:** Donald A. **Ahern,** James C. **Balserak,** Frank W. **Barnett Jr.,** Mark E. **Bartman,** Robert M. **Branyon,** Richard J. **Dennee,** Donald P. **Dunbar,** Richard J. **Evans III,** Lawrence P. **Gallogly,** Michael D. **Hepner,** Worthe S. **Holte Jr.,** Arthur W. **Hyatt Jr.,** Bradley S. **Link,** Donald L. **McCormack,** Brian G. **Neal,** Roy V. **Qualls,** Marc H. **Sasseville,** Mark L. **Stephens,** Aphonse J. **Stephenson,** Kendall S. **Switzer,** Daniel C. **VanWyk.**

CHANGES: Brig. Gen. Mark A. **Atkinson,** from Dir., Log., Instl., & Mission Spt., USAFE, Ramstein AB, Germany, to Dir., Log., ACC, Langley AFB, Va. ... Maj. Gen. (sel.) Michael R. **Boera,** from Commanding General, Combined Airpower Transition Force, NATO Tng. Mission-Afghanistan/Combined Security Transition Command-Afghanistan, to Dir., P&P, ACC, Langley AFB, Va. ... Maj. Gen. Joseph D. **Brown IV,** from Dep. Dir., Nuclear Ops., STRATCOM, Offutt AFB, Neb., to Commandant, Industrial College of the Armed Forces, NDU, Ft. McNair, Washington, D.C. ... Brig. Gen. John B. **Cooper,** from Cmdr., 309th Maintenance Wg., Ogden ALC, AFMC, Hill AFB, Utah, to Dir., Log., Instl., & Mission Spt., USAFE, Ramstein AB, Germany ... Brig. Gen. Teresa A. H. **Djuric,** from Cmdr., Jeanne M. Holm Ctr. for Officer Accessions & Citizen Dev., Air University, AETC, Maxwell AFB, Ala., to Dep. Dir., Space & Intel. Office, Office of the Undersecretary of Defense, Acq., Tech., Log., Pentagon ... Maj. Gen. David J. **Eichhorn,** from Cmdr., AF Flight Test Ctr., AFMC, Edwards AFB, Calif., to Cmdr., AFOTEC, Kirtland AFB, N.M. ... Maj. Gen. Judith A. **Fedder,** from Dir., Log., ACC, Langley AFB, Va., to Dir., Log., DCS, Log., Instl., & Mission Spt., USAF, Pentagon ... Brig. Gen. Jeffrey B. **Kendall,** from Dep. Dir., Intel., Ops., & Nuclear Integration for Flying Tng., AETC, Randolph AFB, Tex., to Cmdr., Kandahar Airfield, US Forces-Afghanistan, Kandahar, Afghanistan ... Brig. Gen. Frederick H. **Martin,** from Dep. Dir., Log., AFRICOM, Stuttgart, Germany, to Spec. Asst. to the Cmdr., AMC, Scott AFB, Ill. ... Maj. Gen. Robert H. **McMahon,** from Dir., Log., DCS, Log., Instl., & Mission Spt., USAF, Pentagon, to Cmdr., Warner Robins ALC, AFMC, Robins AFB, Ga. ... Lt. Gen. Stephen P. **Mueller,** from Dir., Air Component Coordination Element, AFCENT, Kabul, Afghanistan, to Vice Cmdr., USAFE, Ramstein AB, Germany ... Brig. Gen. Robert C. **Nolan II,** from Dir., Standing Jt. Force, NORTHCOM, Peterson AFB, Colo., to Cmdr., AF Flight Test Ctr., AFMC, Edwards AFB, Calif. ... Maj. Gen. (sel.) Harry D. **Polumbo Jr.,** from Dir., P&P, ACC, Langley AFB, Va., to Dir., P&P, AFRICOM, Stuttgart, Germany ... Maj. Gen. Stephen T. **Sargeant,** from Cmdr., AFOTEC, Kirtland AFB, N.M., to Spec. Asst. to the Chief of Safety, Pentagon ... Maj. Gen. Michael A. **Snodgrass,** from C/S, AFRICOM, Stuttgart, to Asst. Deputy Undersecretary of the AF, Intl. Affairs, Office of the Undersecretary of the AF, Washington, D.C. ... Brig. Gen. (sel.) Kenneth E. **Todorov,** from Exec. Asst. to the Cmdr., NORTHCOM, Peterson AFB, Colo., to Dir., Standing Jt. Force, NORTHCOM, Peterson AFB, Colo. ... Brig. Gen. Scott A. **Vander Hamm,** from Asst. Dep. Dir., Global Ops., Jt. Staff, Pentagon, to Cmdr., 509th Bomb Wg., AFGSC, Whiteman AFB, Mo. ... Brig. Gen. Robert E. **Wheeler,** from Cmdr., 509th Bomb Wg., AFGSC, Whiteman AFB, Mo., to Dep. Dir., Nuclear Ops., STRATCOM, Offutt AFB, Neb.

COMMAND CHIEF MASTER SERGEANT CHANGE: James A. **Cody,** to Command Chief Master Sergeant, AETC, Randolph AFB, Tex.

SENIOR EXECUTIVE SERVICE RETIREMENTS: Margaret **Leclaire,** Clarence E. **Maxwell.**

SES CHANGES: Kevin W. **Buckley,** to PEO, Mobility, ASC, AFMC, Wright-Patterson AFB, Ohio ... Cynthia L. **Culpepper,** to Dir., Contracting (Spec. Access Programs), Asst. SECAF, Acq., Pentagon ... Randall D. **Culpepper,** to Dep. AF PEO, Combat & Mission Spt., Office of the Asst. SECAF, Acq., Pentagon ... Michael R. **Deis,** to Dep. Dir., Air, Space, & Info. Ops, AFMC, Wright-Patterson AFB, Ohio ... Francis A. **Machina,** to Dep. Chief Financial Officer, SOCOM, MacDill AFB, Fla. ... Richard W. **McKinney,** to Dep. Undersecretary of the AF, Space Prgms., Office of the Undersecretary of the AF, Pentagon ... John M. **Miller,** to PEO, Agile Combat Spt., ASC, AFMC, Wright-Patterson AFB, Ohio ... Kelli L. **Seybolt,** to Dir., Strategy, Ops., & Resources, Office of the Dep. Undersecretary of the AF, Intl. Affairs, Pentagon. ■

to quickly fill more than 680 positions, the Air Force Personnel Center announced in July.

The Pentagon grants use of "Schedule A" hiring authority in cases when there is a critical need or when there are special jobs which need filling. The authority allows applicants to be considered for jobs without using traditional competitive procedures.

Positions approved for streamlined hiring include strategic analysis and cyber risk assessment, incident handling, vulnerability analysis, cyber vulnerability detection and assessment, intelligence analysis, network and systems engineering, and other functions. US Strategic Command, the Air Force Office of Special Investigations, and 24th Air Force have all been cleared to use the streamlined hiring authority to fill the jobs.

WWII Airman Receives DFC

Retired Col. Claude M. Schonberger, a B-24 bomber pilot during World War II, received a long-delayed Distinguished Flying Cross for his heroism in February 1945 in the attack on Regensburg, Germany. The medal was awarded in a July 19 ceremony in the Pentagon's Hall of Heroes.

"Despite the fact that it's taken over 60 years for this day to arrive, time in no way diminishes the courageous actions of my fellow airman, Claude Schonberger," said Lt. Gen. David A. Deptula, the deputy chief of staff for intelligence, surveillance, and reconnaissance, who presented the DFC to Schonberger.

Raptors Roost at Hickam

Officials at JB Pearl Harbor-Hickam, Hawaii, formally dedicated two F-22 Raptors on July 9, inaugurating the base as the newest permanent home for the fifth generation fighter and marking the start of the partnership between the US Air Force and the Hawaii Air National Guard.

Attending the ceremony were Gen. Gary L. North, commander of Pacific Air Forces, Gen. Craig R. McKinley, chief of the National Guard Bureau, Hawaii Gov. Linda Lingle (R), and other dignitaries.

Pilots from the 199th Fighter Squadron of the Hawaii ANG and the 19th Fighter Squadron of the active duty US Air Force will fly the F-22s at Hickam. A combination of ANG personnel and active duty airmen will maintain and sustain the planned fleet of 20 Raptors.

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weather satellite is now complete, and the effort is being developed for a 2018 launch date, the director for space and intelligence programs in the Office of the Secretary of Defense's acquisition office told Congress June 29.

Gil I. Klinger told the House Committee on Science and Technology's subcommittee on oversight that the new satellite program, now called the Air Force's Defense Weather Satellite System, will fill the void left by the cancellation of the National Polar-Orbiting Operational Environmental Satellite System weather satellite this past February. The Obama Administration axed NPOESS after the joint DOD-Commerce Department-NASA program became untenable due to cost growth, management difficulties, and schedule slips.

In its place, the Air Force will pursue DWSS, while Commerce develops the Joint Polar Satellite System for climate monitoring. The first JPSS launch is expected around 2014.

SOF Wing Hosts Capabilities Drill

The 27th Special Operations Wing at Cannon AFB, N.M., held its first capabilities exercise (CAPEX) at the Melrose Air Force Range on June 26, featuring AC-130 gunship mock close air support runs, pre-assault fire support, exfiltration by CV-22 Ospreys, and soldiers performing high-altitude, low-opening parachute jumps.

A team effort by the 27th SOW and Army Special Forces, CAPEX demonstrated how the operations and maintenance groups prepared aircraft for missions. Explosive ordnance disposal personnel set up explosions on the range, adding more realism and helping EOD personnel hone their skills. Opposing forces captured an Army SF team, leading to a close air support run by an AC-130H Spectre.

Observing the exercise were about 400 airmen from the base and their families, since many of the support personnel had never seen the 27th SOW in operation, said Capt. Paul Golando, of Cannon's 16th SOS. The 27th SOW, Air Force Special Operations Command's newest active wing, stood up at Cannon in October 2007.

Bullis Gets New Med Facility

Air Force officials unveiled the $18 million Medical Readiness Training Center at Camp Bullis, Tex., on June 25. It is the new home of all initial, sustainment, and future medical readiness training. The BRAC 2005 round relocated the 882nd Training Group from Sheppard AFB, Tex., to Bullis, where an estimated 6,500 airmen will transition through in 2010 on their way to their deployed locations.

"The goal from the beginning has been to have a place that would allow all the services to train together and to know exactly what the equipment sets are going into war," Lt. Gen. Charles B. Green, the Air Force surgeon general, said at the opening ceremony.

The new facility includes six classrooms, four dorms, three buildings, a dining facility, a 10,000-square-foot warehouse, and 10 training pads. Five training aircraft have been moved to the site, so students can train in aeromedical evacuation as well.

USAF photo by SrA. Perry Aston

My, What Sharp Teeth You Have: *Ali, a military working dog, goes after a Navy MWD handler at Al Asad AB, Iraq. Ali's handler, SSgt. Dustin Weeks (l), works with him at least once a week to ensure that the dog stays accustomed to biting people.*

Courses ended at Sheppard in April, and are transitioning to Bullis and Ft. Sam Houston, Tex. The 882nd TRG's mission is to develop, conduct, and evaluate Total Force military medical service-medical readiness training for 15,000 members of all four uniformed services each year. The group at Camp Bullis will be composed of members from the 882nd Training Support Squadron and the 381st, 382nd, and 383rd Training Squadrons.

Seven WWII Airmen Identified

The remains of seven servicemen, missing in action from World War II, were identified earlier this summer, the Pentagon's Prisoner of War-Missing Personnel Office announced July 2.

Identified were Army Capt. Joseph M. Olbinski of Chicago; 1st Lt. Joseph J. Auld of Floral Park, N.Y.; 1st Lt. Robert M. Anderson of Millen, Ga.; TSgt. Clarence E. Frantz of Tyrone, Pa.; Pfc. Richard M. Dawson of Haynesville, Va.; Pvt. Robert L. Crane of Sacramento, Calif.; and Pvt. Fred G. Fagan of Piedmont, Ala. The remains of all Army Air Corps airmen were interred July 15 in Arlington National Cemetery.

On May 23, 1944, the men were aboard a C-47 flying from Dinjan, India, on an air-drop mission to resupply Allied forces near Myitkyina, Burma.

When the crew didn't return, searchers were sent out, but no evidence of the aircraft was recovered from its flight path. In 2002, a missionary gave US officials a data plate from a C-47 crash site about 31 miles north of Myitkyina. The following year, a Burmese citizen turned over human remains and identification tags for three of the crew, leading to an excavation of the crash site.

Last AMPed C-130 Ready To Test

Boeing delivered the last of three upgraded Avionics Modernization Program C-130 test aircraft to the Air Force on June 30, and announced the program was prepared to shift into low-rate initial production.

The third test aircraft was flown from Boeing's San Antonio facility to Little Rock AFB, Ark., where it was prepared for programmed depot maintenance. The two other C-130 AMP test aircraft were sent to Robins AFB, Ga., for depot maintenance as well. The program has developed a new digital cockpit, new communications and navigation gear, and night-vision capability for 220 legacy C-130H transports.

During the low-rate initial production phase, Boeing will supply 20 upgrade kits, five of which it will also install. The Warner Robins Air Logistics Center in

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Georgia will install another 10, while a competition will be held to select the third party to install the remaining five.

Initial operational test and evaluation activities for the AMP test aircraft are scheduled to start by late Fiscal 2011 at Little Rock.

Disaster Response Units Announced

The Pentagon announced July 12 its selection of Massachusetts, New York, Pennsylvania, Georgia, Texas, Missouri, Utah, and California to host the remaining eight homeland response forces to be established in Fiscal 2012. In June, DOD announced Ohio and Washington state as hosts for the first two HRFs.

The HRFs will be distributed across the country, with one for each of the 10 Federal Emergency Management Agency regions. They will provide a response capability of approximately 570 personnel, from National Guard and Air National Guard units, who specialize in chemical, biological, radiological, nuclear, and high-yield explosive threats, search and rescue, command and control capabilities, security forces, and other areas. The units will be able to self-deploy within 12 hours of an event.

DOD has also selected Puerto Rico, Wisconsin, Louisiana, Kentucky, Nevada, Oregon, and Maine to replace existing CBRNE Enhanced Response Force Packages which will evolve into HRFs. ■

Global Hawk Block 40 RPA Ready for New Radar

Northrop Grumman announced July 19 that its first RQ-4 Global Hawk Block 40 remote piloted aircraft built for the Air Force had completed envelope expansion flights at Edwards AFB, Calif.—six months after conducting its first flight.

The Block 40 aircraft will carry the sophisticated MP-RTIP (Multiplatform Radar Technology Insertion Program) active electronically scanned array radar, used to track ground objects and produce high-quality radar imagery. The Air Force currently plans to acquire 22 Global Hawk Block 40 aircraft out of a total fleet of 77 aircraft.

The first MP-RTIP unit for developmental testing arrived at Edwards from the Electronic Systems Center at Hanscom AFB, Mass., earlier in July for integration on the Block 40 Global Hawk test vehicle. Testing at Edwards includes assessment of the simultaneous operation of the radar's ground moving target indicator and its synthetic aperture radar.

Also in July, the first of two RQ-4 Block 20 aircraft was outfitted with special gear to serve as an aerial communications relay and made its maiden flight from Northrop Grumman's facility in Palmdale, Calif. The flight served as a functional checkout of the Battlefield Airborne Communications Node (BACN) configuration. After taking off and checking out, it landed at nearby Edwards. The Air Force is modifying the two Block 20 vehicles to meet urgent requests from battlefield commanders in Afghanistan for enhanced battlefield air and ground communications. They are expected to be operational by Fiscal 2011.

News Notes

■ The 23rd Wing at Moody AFB, Ga., celebrated the opening of the new TF34 engine repair facility at the base on July 16. The engine powers the Air Force's A-10 fleet. Per BRAC 2005, the Air Force relocated its TF34 intermediate maintenance work from Shaw AFB, S.C., to Moody. The repair center will support Moody's A-10s as well as those from Eglin AFB, Fla. It is one of two TF34 centralized intermediate repair facilities, the other being at Bradley Arpt., Conn.

■ The National Museum of the US Air Force in Dayton, Ohio, is adding a new exhibit to honor the late fighter ace Brig. Gen. Robin Olds, and is slated to open in spring 2011 as part of a renovation of the museum's Southeast Asia gallery. A World War II and Vietnam War fighter pilot, he was the first F-4 pilot to score four combat victories over Vietnam. The exhibit will feature Olds' gear, his leadership during the war, and his role in Operation Bolo.

■ Work began on a new headquarters building for the 502nd Air Base Wing at Ft. Sam Houston, Tex., on July 14. The 25,733-square-foot building will have a 5.5-acre footprint on the base, which is now part of JB San Antonio, along with Lackland and Randolph Air Force Bases. The 502nd ABW oversees installation support for the three facilities under the new arrangement. Wing officials are expected to move in to the new facility in July 2011.

■ Members of the 61st Civil Engineer and Logistics Squadron at Los Angeles AFB, Calif., announced in July the completion of a solar energy array that will cut the base's energy consumption measurably. A 12-foot-high canopy of photovoltaic panels now covers the north side parking lot of the base, home of the Space and Missile Systems Center. The energy collected will power everything from lighting in base facilities to heating, cooling, and computer systems.

■ NORAD and 1st Air Force (Air Forces Northern) assembled air chiefs from across North America July 12-15 at Tyndall AFB, Fla., hosting briefings and breakout sessions to provide attendees the opportunity to foster relationships and cooperation on a range of activities. Topics discussed at the conference included air defense, homeland security, and border security. Participants included Canada, Mexico, Puerto Rico, the US Virgin Islands, Bahamas, and the Turks and Caicos Islands.

■ The US Air Force Academy selected Insitu's ScanEagle remotely piloted aircraft to train cadets for planning and executing RPA missions, the company announced June 29. The ScanEagle was chosen because it is extremely intuitive, giving cadets a hands-on learning experience almost from Day One, said the academy's Lt. Col. David Latham. At a fraction of the cost of larger RPA platforms, the ScanEagle provides a cost-effective and efficient option for the Air Force, Insitu officials said.

■ An F-16 displayed at the gate of Arnold AFB, Tenn., was dedicated June 26 in honor of Maj. Gen. Winfield S. Harpe, the commander of 16th Air Force, Torrejon AB, Spain, in 1988 when he died in an F-16 crash while on a training mission. He was the highest ranking active duty officer to die in an F-16.

■ Airmen at McConnell AFB, Kan., completed Global Response Exercise June 22-28, testing the ability to rapidly deploy and sustain operations from a remote location. A US Strategic Command-led exercise performed with other Air Mobility Command bases, the exercise helped hone the use of air refueling resources in a realistic and dynamic environment. McConnell processed 94 personnel, generated four KC-135 tankers, along with four other tankers supporting the exercise, and processed 13.5 tons of cargo. The exercise was a step in a series of preparations for McConnell's October 2011 operational readiness inspection. ■

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Verbatim

By John T. Correll, Contributing Editor

Air Force Tempo

"One of the biggest challenges we've had is our tempo. ... We have pushed you, pushed the Air Force, pushed our airmen hard, and you have really met the task, time and time again. You've set the example in so many ways."—***Adm. Michael G. Mullen, Chairman of the Joint Chiefs of Staff, June 3.***

Jobs Program

"You can see a certain air of complacency even on government websites. On the front page of the House Committee on Homeland Security site, there's a picture of Chairman Bennie Thompson, a Mississippi Democrat, then below, an area devoted to something called 'Business Opportunities Model' and an area for 'DHS Business Opportunities.' On the Homeland Security Department's website, the priorities seem equally clear: 'Find Career Opportunities,' 'Use the Job Finder.' There's little sense of urgency; it's a government employment agency, not a crisis leader."—***Peggy Noonan,*** **Wall Street Journal,** ***June 11.***

Up to the Responsibility

"Airmen have been providing strategic [deterrence] for more than 50 years. They have shown that perfection is not only achievable, it's the standard. ... There's no room for error in their mission. ... We owe a debt of gratitude to these warriors who provide security for us every day."—***CMSAF James A. Roy,*** **The Enlisted Perspective,** ***June 10.***

The Unshared War

"The Long War is not America's war. It belongs exclusively to 'the troops,' lashed to a treadmill that finds soldiers and marines either serving in a combat zone or preparing to deploy. To be an American soldier today is to serve a people who find nothing amiss in the prospect of armed conflict without end."—***Andrew J. Bacevich, Boston University,*** **Washington Post** ***"Outlook," June 27.***

Fraud

"The entire COIN strategy is a fraud perpetuated on the American people. The idea that we are going to spend a trillion dollars to reshape the culture of the Islamic world is utter nonsense."—***Retired Army Col. Douglas A. Macgregor, author of*** **Breaking the Phalanx,** ***on the counterinsurgency strategy,*** **Rolling Stone,** ***June 22.***

New Industrial Base

"We've got to get beyond the fact that it's Russian. ... It works well in Afghanistan."—***USAF Brig. Gen. Michael R. Boera, Combined Airpower Transition Force, on the simple and rugged Russian Mi-17 helicopter, favored by both US and Afghan military officials to become the core of Afghanistan's fledgling air force,*** **Washington Post,** ***June 19.***

Control of the Air

"Control of the air ... must be present wherever friendly forces operate so that they may maintain their freedom of action with minimal threat of attack from above. Even where the adversarial threat from above is negligible, friendly airpower constitutes a constant threat to hostile ground forces, ultimately enhancing joint and coalition freedom of action on the surface."—***Gen. Norton A. Schwartz, USAF Chief of Staff, RAF Airpower Conference, June 18.***

Invest Without Fear

"There is absolutely no possibility of a full-scale war on the Korean peninsula. ... Don't worry about a war, invest."—***South Korean Pres. Lee Myung-bak, speaking at a business meeting in Singapore closed (he thought) to news media,*** **Washington Post,** ***June 6.***

Not Just al Qaeda

"Defining the enemy by reference to al Qaeda implies that this war is primarily about destroying an organization, rather than defeating a broader political ideology. This war will not end when al Qaeda has been vanquished—though that, of course, is a critical goal—but only when the ideology of violent Islamist extremism that inspires and predates it is decisively rejected."—***Sen. Joseph I. Lieberman (I-Conn.),*** **Wall Street Journal,** ***June 15.***

That Would Be Bad

"In the forthcoming defense review, the abolition of the RAF and the absorption of its remaining airpower into the Army can be expected."—**Daily Mail** ***(Britain), June 23.***

Marine Anxiety

"There is a paranoia, bred into every marine, that the Marine Corps will be made to look like the Army, and then in lean times something will get cut—the 'extra' army."—***Ret. Marine Corps Lt. Gen. Emerson N. Gardner Jr.,*** **Los Angeles Times,** ***June 21.***

The Advantage of Bombers

"Perhaps the most flexible leg of our nuclear deterrent, however, includes air-delivered weapons loaded on a long-range bomber, affording the President the option to increase or decrease force posture and thereby adjust the message to our allies and opponents. Simply generating our strategic nuclear bombers on alert allows the nation to make a strong statement and the ability to reposition, launch, and recall bombers adds significant flexibility and scalability to our military tool box."—***Secretary of the Air Force Michael B. Donley, National Defense University, June 23.***

The Afghanistan Problem

"What weakens transparent central governance is not so much [President Hamid] Karzai's intentions, ambiguous as they may be, but the structure of his society, run for centuries on the basis of personal relationships. Demands by an ally publicly weighing imminent withdrawal to overthrow established patterns in a matter of months may prove beyond any leader's capacities."—***Former Secretary of State Henry A. Kissinger,*** **Washington Post,** ***June 24.***

WikiLeakers

"Somewhere upward of 2.4 million Americans hold security clearances. A population that size will always contain a significant portion of individuals disaffected for one reason or another. ... The power to leak on a confidential basis offers any one of the 2.4 million a megaphone into which he or she can speak while wearing a mask. Often acting from partisan motives or for personal advancement, and almost always under the cover of anonymity, such whistle-blowers are willing to imperil the nation but not their careers."—***Gabriel Schoenfeld,*** **Necessary Secrets: National Security, the Media, and the Rule of Law.**

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Issue Brief

By Adam J. Hebert, Executive Editor

A Tanker for the Air Force

USAF's tanker modernization odyssey has brought a decade of frustration. Boeing and EADS are now facing off in a competition to supply the Air Force with a critical "KC-X" tanker. US Aerospace would like to join them, and is protesting its exclusion from the competition, after the Defense Department said the company delivered its proposal five minutes late. When it comes to tanker modernization, this level of chaos is all par for the course.

It is hoped the Air Force will pick a winner this November to deliver 179 aircraft, over 12 years, for some $35 billion. Two more competitions will follow in later decades, so the entire fleet of 415 KC-135Rs can be retired.

"I'm going to cut to the chase," said Gen. Arthur J. Lichte, then head of Air Mobility Command, at AFA's Air and Space Conference in Washington, D.C., last September. "We need tankers now. I stood here at the AFA forum in September 2007 and said tankers were my No. 1 priority. I said it last year. I said it this year. And I still don't have a new tanker."

Lichte has since retired, and there is no new tanker.

The competition is bitter. Competitors and their proxies are taking public swipes at each other, employing massive advertising campaigns and enlisting the support of friendly lawmakers. The stakes are high.

First production KC-135 in 1956.

It is critical that USAF get things right: Under current plans, the oldest KC-135s will be 80 years old when finally retired. More delay simply cannot be tolerated.

How did things get to this sorry pass?

Secretary of the Air Force F. Whitten Peters sounded the tanker modernization alarm fully a decade ago. USAF had "no significant plans on the books" to replace its KC-135s, he warned. "We do not have a dollar programmed at this point to replace our aging tanker force, probably the most important part of our infrastructure," he added.

Tanker modernization moved up in the requirements queue after the Sept. 11, 2001 terror attacks. Boeing and Air Force supporters in Congress saw potential synergy: If USAF leased 767s as tankers, that would supply a critical Air Force need and help Boeing weather a crisis brought on by the post-9/11 collapse of air travel. In January 2002, lawmakers authorized the Air Force to lease 100 tankers.

To address concerns about cost and legality, lawmakers in 2003 revised the deal so USAF would lease the first 20 aircraft but buy 80 outright.

That agreement didn't last, either; it collapsed in a legal scandal that eventually put Air Force acquisition executive Darleen A. Druyun and Boeing executive Michael M. Sears in prison.

DOD attempted to move on. It began a new competition, in which Boeing battled a partnership of Northrop Grumman and EADS. The Northrop-led team was the surprise winner in February 2008, but Boeing immediately protested the decision, claiming the competition was flawed—partly because the competition's draft rules were modified after Northrop threatened to stay out of the contest.

The government upheld the protest, and DOD was forced to start over once again.

Northrop Grumman chose not to enter this year's competition—even though it had won the previous go-round. The company felt the revised rules favored Boeing to the extent that Northrop Grumman had no realistic chance of winning. For a short time this year, it looked like Boeing would be the only candidate. Then EADS, parent company of Airbus, put its hat in the ring—but only after DOD agreed to extend the entry deadline by 60 days. That move generated howls of protest from Boeing supporters.

Boeing's 767-based tankers would be assembled in Seattle and modified in Wichita, Kan.; the company claims 50,000 jobs would be supported. EADS would assemble its larger Airbus 330-based tankers in Mobile, Ala., and claims the program would support 48,000 jobs.

The fireworks haven't stopped.

"Unlike the Boeing tanker, which would be built at proven facilities by experienced workers, Airbus planned to assemble its tankers at facilities which haven't even been built yet," said Sen. Patty Murray (D-Wash.).

"If the welfare of our warfighters trumps politics in this competition, the Air Force will select the EADS tanker," countered Sen. Richard Shelby (R-Ala.). "It is clearly the most capable plane."

EADS touts the capabilities of its larger aircraft; Boeing says its design is more efficient. The Pentagon does not want to take sides on the point: "This is a best-value competition," noted Deputy Defense Secretary William J. Lynn III. "A bidder could actually have a higher proposed price and still win."

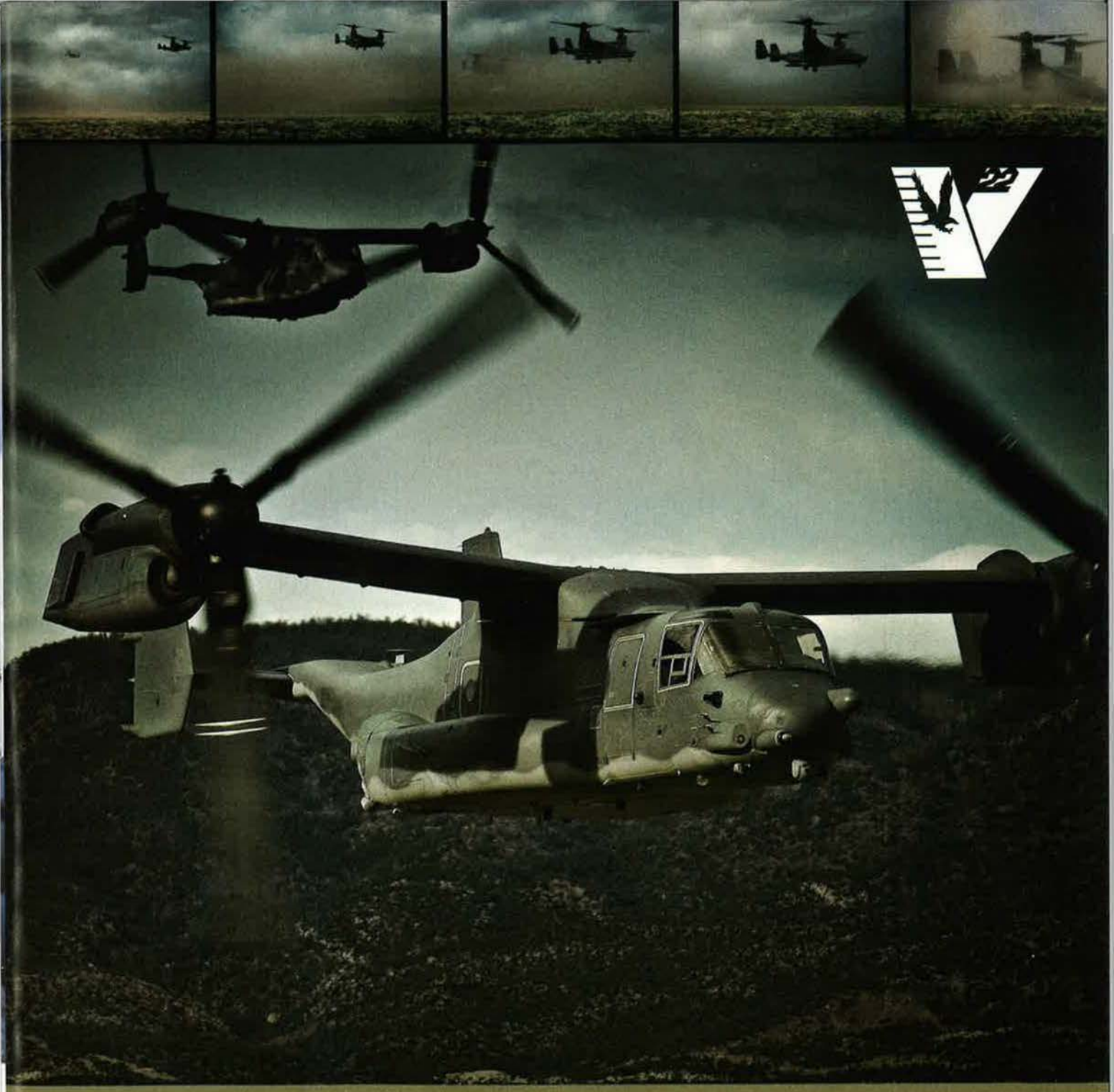
As if things weren't contentious enough, the World Trade Organization in June finalized a ruling against Airbus, saying the company received billions of dollars in illegal "launch aid" from European governments to help develop its aircraft. This gave EADS a competitive advantage over Boeing, the WTO ruled.

DOD has tried to stay out of this issue as well, and has repeatedly said the WTO rulings cannot be factored into the current competition. Indeed, the European Union is now appealing the WTO's decision.

There will be bruised feelings and possible grounds for appeal regardless of which tanker the Air Force selects as its KC-X winner this fall. The parochial interests are strong, but from the national security perspective, the important thing is to field a new system.

The worst possible outcome is a flawed competition forcing yet another redo. ■

More information: http://opencrs.com/document/RL34398



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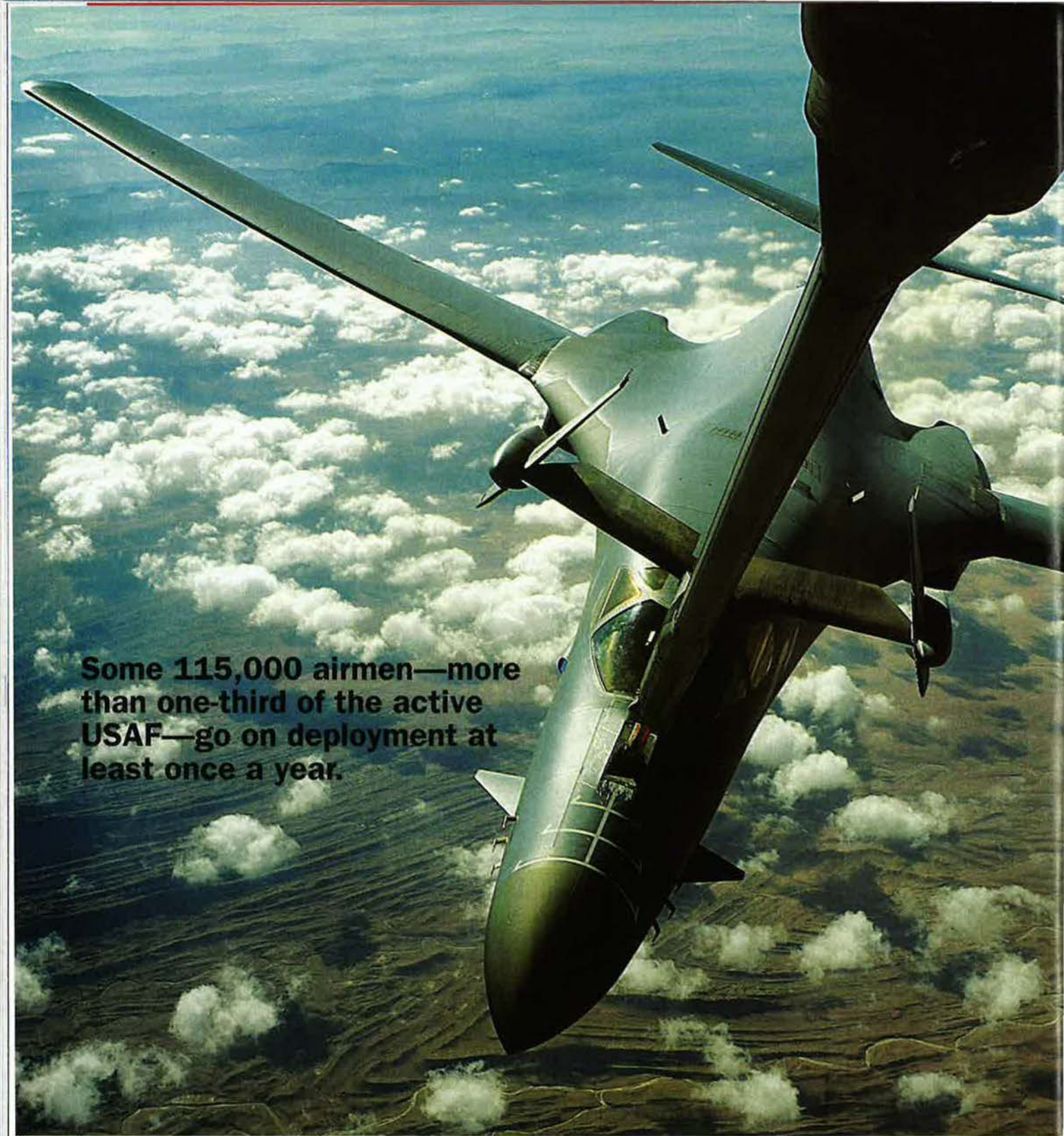
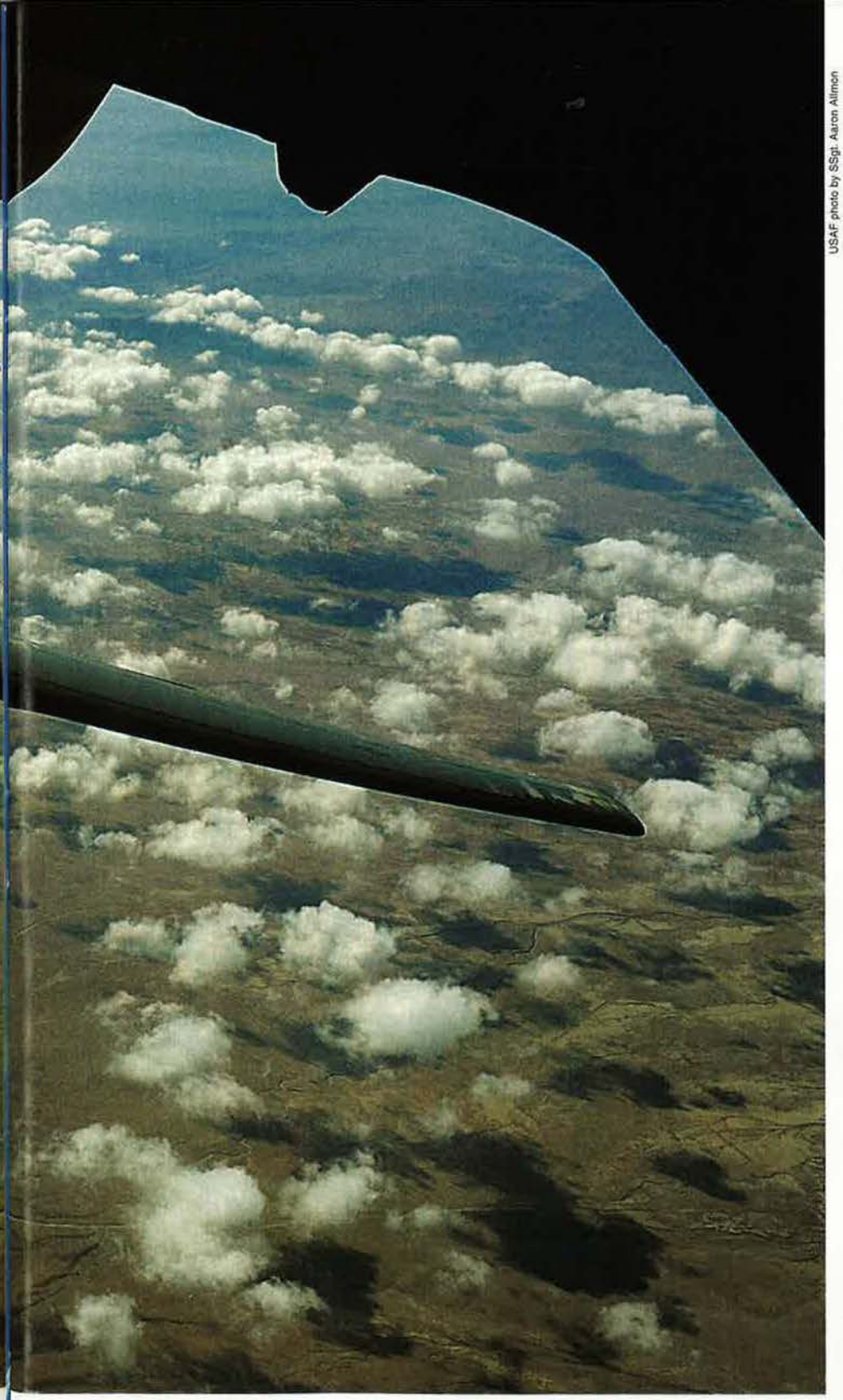


Some 115,000 airmen—more than one-third of the active USAF—go on deployment at least once a year.

Struggling to Cover Commitments

By John A. Tirpak, Executive Editor



USAF photo by SSgt. Aaron Allmon

A B-1 takes on fuel from a KC-10 over Afghanistan.

The Air Force is revamping its expeditionary air system to cope with a stark reality: The service has too few airmen and too little equipment to meet desired rotational goals.

Fewer than half of all airmen deploy at the idealized rotation rate of four months out of every 20. The majority are in a now-institutionalized rhythm of longer deployments with less rest and reset time in between.

The new system is called "tempo banding." In it, airmen are slotted into deployment cycles that vary by specialty. About 40 percent of airmen will still follow a "dwell" ratio of one-to-four, meaning one month deployed for every four months of home-based rest, training, and workup to the next deployment.

The majority of airmen, though, have been recast into tempo bands with dwell ratios of one-to-three, one-to-two, or one-to-one. These groups face deployment periods of 179 days or longer.

The new scheme offers no relief to the most in-demand but shorthanded specialties, such as combat search and rescue personnel. They are still stuck in a six-months-away, six-months-home cycle. However, it is intended to give all airmen a greater degree of predictability and certainty about when they will deploy.

Dramatic Evolution

Moreover, because USAF is deploying so many specialties by individual, rather than by unit, home-based commanders will have more notice of when they will be losing a particular person or capability, and have more time to plan ways to mitigate those absences.

All in all, the construct of 10 roughly comparable air expeditionary forces—or "buckets of capability"—hasn't been discarded, but has evolved dramatically since it was first formulated in the mid-1990s.

"I don't see a reduction in the number of AEFs," Air Force Vice Chief of Staff Gen. Carrol H. Chandler said in July. "At least, we haven't talked about that."

He acknowledged that the Air Force has come down substantially in force structure over the past few years, and is still in the process of eliminating 3.5 wings of fighters this year alone. However, he added, "We haven't spent a lot of time thinking about ... AEF reductions."

Eventually, the Air Force may have to decide between running its aircraft at a higher operating tempo to keep all 10 AEFs or consolidating to fewer AEFs, which "is an option, too," Chandler said.

For the moment, AEF planners have "been able to meet the need," and "as long as they continue to meet the need," there's no urgency to overhauling the construct, Chandler asserted.

Following significant cuts in airmen and force structure a few years ago, the Air Force recognized that many of its deploying units were only partially manned. It undertook a servicewide

USAF photo by SrA. Wes Carter

Members of a provincial reconstruction team made up of airmen, soldiers, and State Department officials speak with Brig. Gen. Craig Franklin (facing) at a base in Kalsu, Iraq.

"scrub" to put partial units together to make good whole ones, and then assessed the new situation.

"When we looked at it, we decided that we needed to ... take the next step from the 10 AEF bucket concept ... to tempo banding," said Col. James C. Horton, director of air and space expeditionary force and personnel operations at the Air Force Personnel Center, Randolph AFB, Tex.

"What that's done for us is allow us to go in and more surgically ... keep track" of how stressed each Air Force specialty is, "and be more effectively able to manage [them] ... instead of just lumping them into a 'rinse, lather, repeat' cycle of 120 [days], where we were kind of wearing them out."

Getting a Break

The new method almost eliminates the need to "reach forward" into future AEF cycles to pull airmen meant to be in their regeneration cycle to answer an immediate deployment need, Horton said. That practice, driven by necessity, led to a chaotic system where future AEFs were full of vacancies that had to be filled by reaching even further ahead into future AEFs, or extending the tour lengths of some people already deployed. It was unsustainable.

The reason why most specialties have shifted from 120-day rotations to 179 days is not just because of fewer hands, though, Horton explained. Those 120 days constitute the deployment window; they don't "count" two months of time spent in intensive preparatory training. Such training would often require an individual to go away from home base, such as to a Red Flag exercise or an Army course in close-quarters combat. By expanding the dwell to 179 days in some cases, workup training could be accomplished just once in 20 months instead of twice or more. A similar rationale was behind moving from 90-day AEF deployments to 120 days, earlier this decade.

The goal is to put more "white space on the calendar," and maximize both the deployed and home-station times, Horton explained.

By deploying at almost the individual level, some specialties have gotten a break. Security forces, for

Airmen at Whiteman AFB, Mo., prepare a B-2 for a mission. The stealth bombers have routinely deployed to Guam to project power in the Pacific.

USAF photo by SrA. Jessie Mae Snow

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example, are in "Band E," a one-to-one dwell of 179 days. However, that metric applies to whole units, which are "vulnerable" for deployment at the highest dwell rate. When individuals from those units are tapped, however, "they're somewhere [in the] one-to-three [band], just shy of one-to-four in terms of dwell," Horton noted.

"Our typical tasking [from a unit] is anywhere from two to five bodies at a time," Horton said. "That's how, surgically, we're managing what's going on out there."

That shift has been possible because combatant commander requirements have also evolved, Horton noted. Combat aircraft units, for example, are in far less demand in Iraq and Afghanistan than they once were.

"The mission has changed," Horton said, with greater emphasis on "hearts and minds" activities such as reconstruction and civil engineering, as well as "Army support," than on dropping ordnance from aircraft. And because whole fighter squadrons, for example, are not required as much, "we're ... taking it down to the lowest level we need to: ... onesies and twosies."

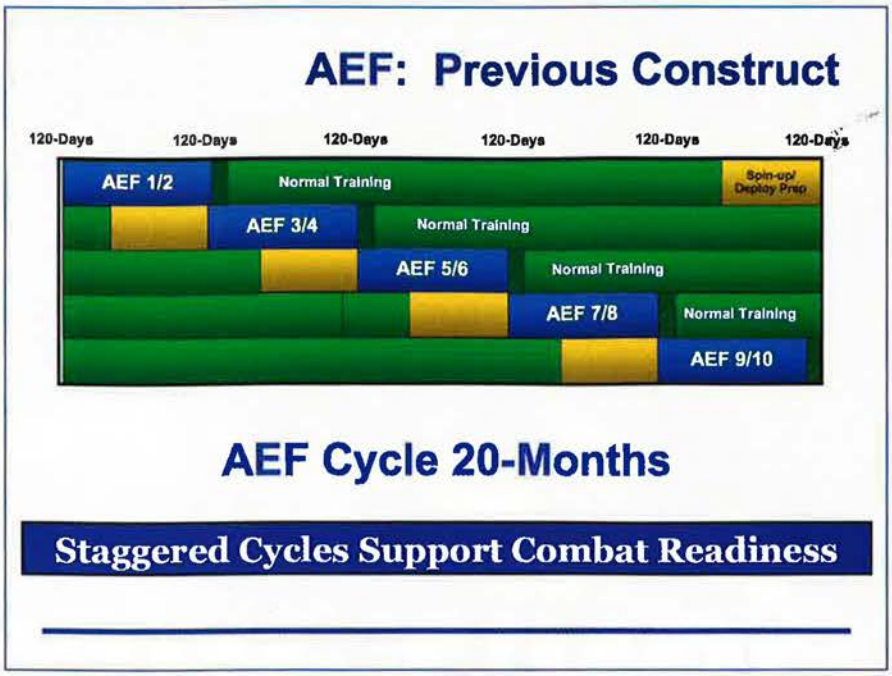
He added that, "realistically, you don't need the whole civil engineering squadron out of Elmendorf Air Force Base. What you need is, at any given time, 10 guys able to go in and do electrical work."

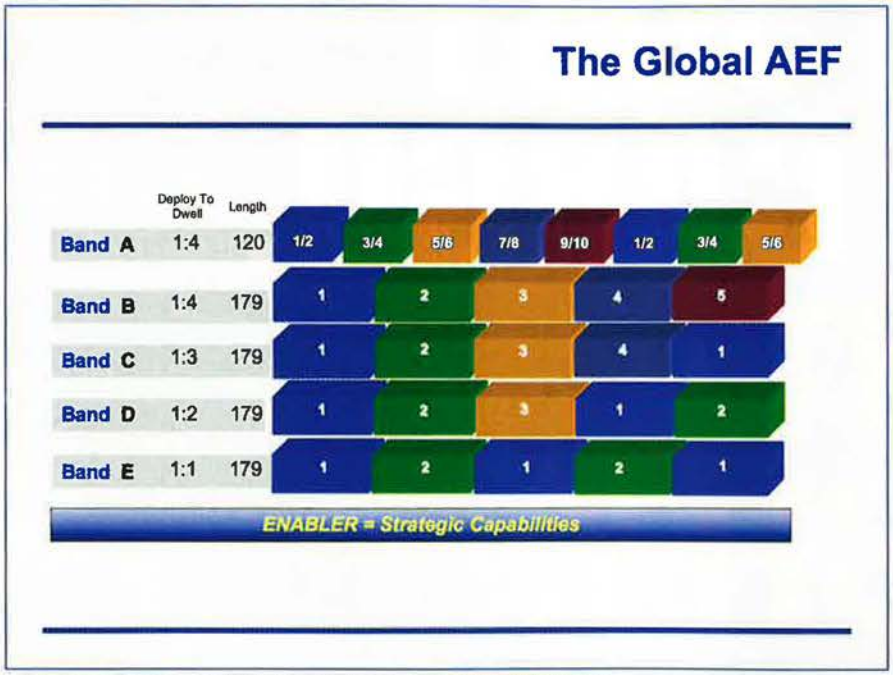
The individual-specific tasking also gained importance because, Horton said, the Air Force doesn't have the "luxury" of deploying as the Army does.

The Army can "take a whole brigade and shut the building and the power down, and the whole unit walks out the door and goes downrange. We still have our training mission ... back at home," so the home-base, garrison, mission must be recognized, accommodated, and balanced with the deployment need.

Horton maintained that "we haven't broken anything at home yet," although "I'd be lying if I told you there weren't some areas that are stressed, at home bases," and commanders are having to make tough choices about "what to not do at the level they normally would do if they had everybody home."

He continued that there is a "larger combat mission that we still need to be trained for that is not just the ... war we're fighting right now. So, we're trying to keep a balance on that, and it's working quite well."





Airmen in different AEF "bands" can expect to deploy at the intervals seen here in blue.

Three Big Rotations

Numerically, more than a third of the Air Force goes on deployment at least once in a year.

"We're doing three big rotations a year that number [about] 35,000 folks per cycle," or 115,000 a year, Horton noted, out of an active duty force of about 331,700. Air National Guard and Air Force Reserve follow their own system, but are still coordinated through Horton's organization. A majority of Guard and Reserve individual deployment requirements are met with volunteers.

Because they are not deployed as much, flying units seem to be in better shape than they were just a few years ago, Horton observed.

"We've brought some of them home or reduced the size of their footprint downrange."

However, in specialties such as intelligence, expeditionary combat support, civil engineers, and security forces, "those folks are all very heavily engaged downrange."

USAF photo by MSgt. Mike R. Smith

Security forces airmen prepare for a convoy live-fire exercise at Ft. Bliss, Tex. After they complete the six-week USAF Desert Defender course, they will immediately deploy to Iraq or Afghanistan.

While some capabilities have been withdrawn because they are less in demand—bomb droppers, for instance—other aircraft have required a surge in deployments. The new MC-12 intelligence-surveillance-reconnaissance aircraft, for example, required what Horton called a "huge push" to become operational in-theater.

The ability to manage the AEFs at the individual level was enabled substantially by the 2008 split of the old AEF Center at JB Langley, Va. The hardware aspects of the AEF are still managed from Langley, but the personnel end moved to Randolph so that the AEF coordinators could be "face to face" with those managing the regular churn of duty assignments, the Directorate of Personnel Assignments. Together, they have made great strides in making it possible for individuals with heavy AEF commitments to get their professional military education, upgrade training, and other necessary career development, Horton asserted.

One of the problems that drove creation of the AEF, under Gen. Michael E. Ryan, then Chief of Staff, was that some USAF personnel were deploying constantly while others rarely did. The AEF was considered—in part—a tool to add some fairness to the system and spread the burden of deployments as widely as possible. It took until the tenure of Gen. T. Michael Moseley to get everybody in the Air Force into a "library" of people in the AEF system.

"There was a big push four or five years ago ... to make sure everybody was deployable," Horton noted, and "the Air Force is 100 percent deployable at this stage."

However, about 13 percent of airmen are considered "deployed in place" because of the unique requirements of their jobs. An obvious example is a missile launch officer in a ballistic missile silo; others include Predator and Reaper remotely piloted aircraft operators, who control their in-theater aircraft from control stations back in the US.

Even then, "those folks ... are not totally off-limits" if there is a compelling reason their unique talents or abilities are demanded for an AEF, but such cases are rare, Horton said.

As Global Strike Command has stood up in the last year, it has roped off some of its people as nondeployers in order to get on its feet with a minimum of turbulence, as well as to quickly achieve the demanded high standards for the command's activities.

Global Strike Command designated some personnel as deployed in place because it "wants ... the continuity of those specially trained security forces there for that mission, and [so] they don't go below a reasonable and prudent level," Horton noted.

The AEF system does not award "credit" for having deployed or for having served in a deployed-in-place job, Horton noted.

"As soon as they come out of that position and rotate to another ... job, then they're back on the hook to deploy just like everybody else."

Some jobs deploy at durations beyond the tempo bands. Expeditionary group and wing commanders serve a one-year tour, as do contracting officers and other specialties. These officers serve that long because of the need for continuity in the job, and the high importance placed on familiarity by partners in Afghanistan and Iraq. Obtaining trust requires building a long-term relationship that cannot be achieved in just a few months, or even half a year.

Stocking the JETs

The Air Force also has to provide about 6,000 people a year for joint expeditionary taskings, or JETs. These are jobs fulfilled by airmen that would normally be accomplished by Army or Marine Corps personnel, but in order to spare as many troops as possible for combat, airmen and sailors step in

USA photo by Spec. Eric Cabral

SSgt. Drake Iverson, a joint terminal attack controller, keeps an eye on the horizon during a patrol outside the wire at FOB Baylough, Afghanistan.

USAF photo by SSgt. Andy M. Kin

SSgt. Aaron Walton, a flight engineer with the 64th Expeditionary Rescue Squadron, pulls himself into a departing helicopter. Rescue forces are among USAF's most heavily tasked airmen.

to perform these functions. The JETs used to be called ILOs, for "in lieu of" assignments.

To a large degree, JET positions are filled with volunteers. Horton said they volunteer for many reasons; some will be doing a job well above their normal responsibilities, or well outside their usual function, and these jobs can actually be competitively assigned. Some JETs are filled by volunteers who simply want to be "in the fight," he said.

However, volunteers are supposed to step forward for JETs during the period when they would normally be vulnerable for an AEF deployment. That keeps the turbulence of missing personnel at home base to a minimum. If a volunteer wishes to serve in a JET job off-cycle, his commander must agree, due to the strain the absence would place on the home-based unit.

On average, airmen going to a 120-day deployment now get notification of where, specifically, they will be going about 80 days before "first movement," Horton said.

"That is not the date they show up in the AOR; that's the first time they have to go out the door" to do workup training. The airman will already know what AEF he's in and what tempo band, so it will not be a surprise that the deployment is coming up. The notice refers specifically to his destination, so that he has time enough to get shots, training, and other affairs in order, to be ready when the time comes. It's now only rarely that an airman gets the word "a week ahead of time," he said.

For those going on a six-month deployment, notification time is now typically four months.

"How much are we reaching forward?" Horton asked. "Very little."

"If you ... promise ... they don't have to go for another four cycles, and then you reach forward, well, you've just broken your promise." The tempo banding "has helped in not having to reach forward," and will work to eliminate that problem and the frustrations that ensue for the airman and his family.

The AEFs are not exclusively about sending forces downrange, however. They are best thought of as a mechanism by which forces are presented to combatant commanders to meet their needs.

Custom Demands

For example, while there is limited demand for air superiority F-15s in Iraq and Afghanistan, there is a requirement for these aircraft from US Northern Command for Operation Noble Eagle air sovereignty missions, and in Pacific Command and European Command, noted George Nelson, an AEF program analyst for Air Combat Command. ACC continues to manage the deployment of hardware for the AEFs.

"That is a 24/7, 365-day mission that's being done," Nelson said. "Just because [a squadron is] not sitting ... [in] Iraq or Afghanistan doesn't mean it's not participating."

Likewise, bombers assigned to Global Strike Command are still available to be deployed in AEFs, according to Hal Burns, also an AEF analyst for ACC.

Although there must be coordination with US Strategic Command regarding the assignments of bombers, "we use them as a deployable asset," Burns said. "They're just like any other Air Force squadron. And if we need them, then we try to use them, and schedule them."

The Air Force is employing some methods to spread its more limited hardware around the AEFs. For instance, if two squadrons from the same wing deploy to the same location in back-to-back AEFs, "one squadron will take [the aircraft] over [to the theater], and another will bring it back at the end of the two AEF periods," said Burns. In such deployments, only the personnel will change out in between. This technique saves the expense of taking a dozen aircraft across the ocean two times, reducing wear and tear on the aircraft.

"If it's a different unit, normally the airplanes stay with the unit and they bring them back, and the new unit will bring its own airplanes."

He summed up the approach as "whatever works."

When originally conceived, the AEF was meant to divide the Air Force into 10 buckets of capability that would be roughly equivalent, with comparable numbers of air-to-air fighters, bombers, strike aircraft, ISR, etc.

"We try to make each bucket equal" still, Burns noted. However, "what deploys ... forward from each bucket is what the theater commander requires. So, in the case of the F-15C, if there's no requirement to go overseas—if the combatant commander doesn't have a requirement for them—then they don't go, but ... they're still in the AEF bucket and they rotate through just like all the others."

It's important to distinguish, Nelson cautioned, between "presentation" of forces to the COCOM and the actual deployments.

"The actual sourcing ... comes from the larger pool, and we do whatever's necessary" to meet COCOM requirements.

He added that the AEF structure of 10 buckets of capability "has value beyond just [trying] to make them all look equal and then match them to a requirement. That's never occurred before. They were never equal from Day 1. ... They never perfectly matched whatever the combatant commander's requirements were. We've always had to adjust, depending on that."

Looking ahead, and taking into account the reductions in force structure now taking effect, Nelson said the tempo banding is the logical response to "where we are." ■

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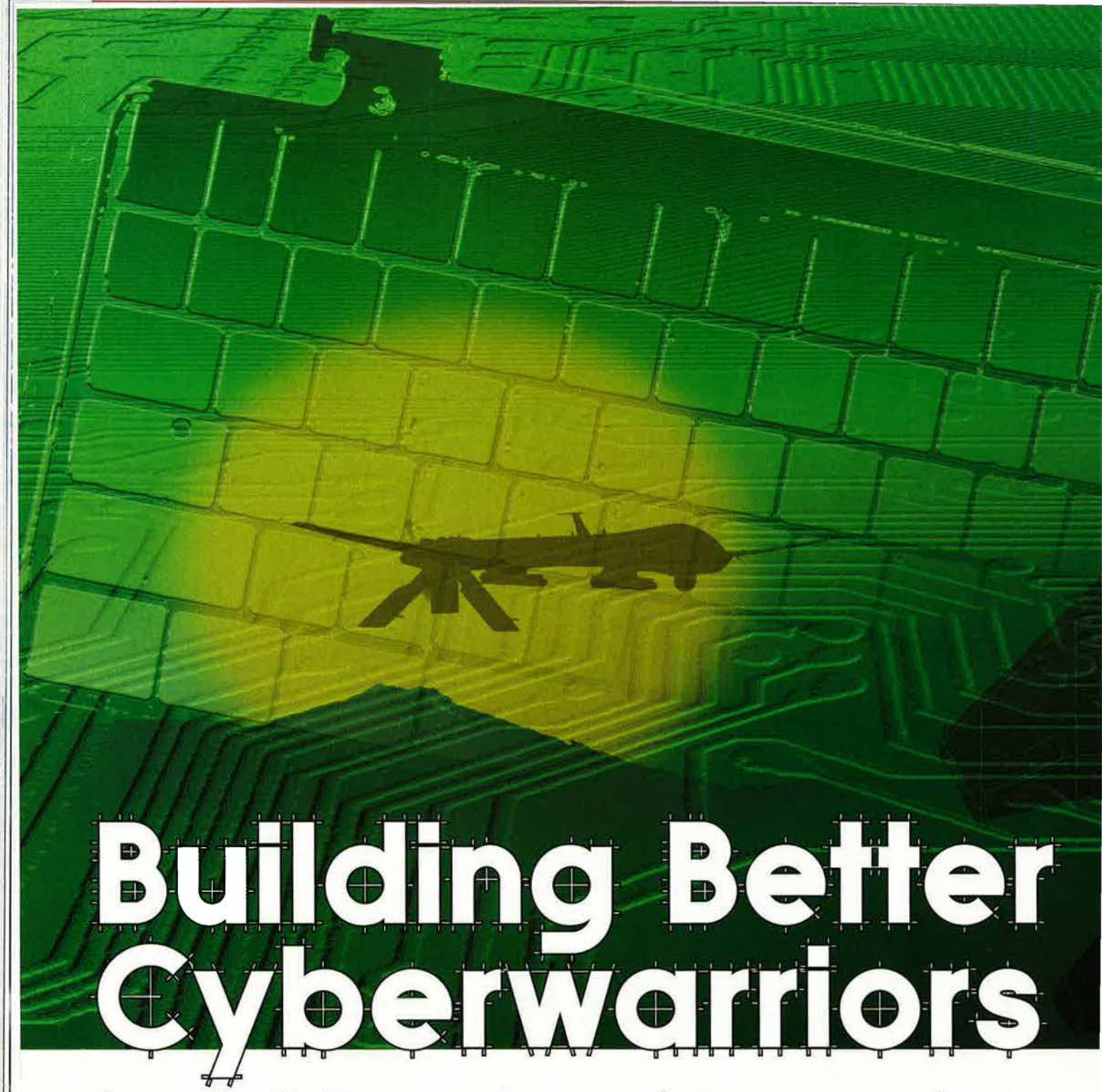


Building Better Cyberwarriors

Across the Air Force, people are moving, courses are changing, and the cyber operator's edge is growing sharper.

By Marc V. Schanz, Senior Editor

A year after becoming the focus of Air Force cyber warfare activities, 24th Air Force is combining information operations, network defense, cryptology, and more into a major new USAF career field. The numbered air force, working with Air Education and Training Command, has launched a full-scale effort to find and develop future cyber warriors.

This secretive and highly complex mission is growing quickly. SrA. Desiree Lozano is an evaluator and advisor with the 68th Network Warfare Squadron. She notes that, in the old days, "if you were using checklists, [it meant] you didn't know how to do your job." Now, says Lozano, cyber operators use checklists because "they want to be sure [they] don't miss a thing."

The 68th NWS, tucked inside a secure facility at Brooks City-Base in San Antonio, falls under Air Force Space Command—the home for all things cyberspace in the US Air Force today.

To build the capabilities needed to succeed in the mission, the Air Force needs to establish a career path giving

Staff Illustrations by Zaur Eylanbekov

airmen a strong incentive to come into the field.

SMSgt. Shane Flynt, superintendent of the 315th NWS at Ft. Meade, Md. (home of the National Security Agency), said his unit is getting people as fast as the billets are approved. Flynt expects the squadron to be 50 percent manned by October. It is receiving 69 more billets for Fiscal 2011, and even this new influx won't be enough for the surge of work.

Last summer, the Air Force stood up 24th Air Force to be USAF's new home for cyber warfare—establishing the numbered air force at Lackland AFB, Tex., and putting its efforts under the command of a two-star general officer, Maj. Gen. Richard E. Webber.

Webber—a career space and missile officer—said in a June interview that the development of cyber warriors will resemble the Air Force's methods for developing aircrews. In that field, USAF has built up an effective career path, from undergraduate training to check rides to combat qualifications, all of which are aimed at certifying, educating, and promoting its aircrews through the ranks and eventually to leadership positions.

The task ahead of 24th Air Force and Air Education and Training Command is to create a new "cyber culture" out of the various components of the cyber mission—more than 5,400 personnel (active duty, civilian, and contractor)—across the US and at overseas installations, conducting cyber operations across a range of activities.

At the 315th, airmen are tasked with some of the most innovative cyber missions in the military. These are referred to as "full spectrum operations"—exploiting, attacking, or infiltrating networks. Training and aptitude standards are high.

In evaluating talent, Flynt said, the basics are critical. All airmen must, of course, stay up to date with security and programming architectures, in addition to some of the "latest and greatest" technology used by the squadron.

Over the course of two years, the Air Force will invest some $100,000 in the average airman working with network technology. The squadron also partners with the University of Maryland, he added, for advanced network and information technology training.

The cyber mission demands the merger of career fields which, until previously, operated autonomously, said Lt. Col. Robin Mason, the chief of current operations at 24th Air Force.

Critical Fields

Computer-and-communications airmen and intelligence personnel represent two of the most critical fields in cyber operations. "We're merging comms and intel in a way that's never been done before," Mason said.

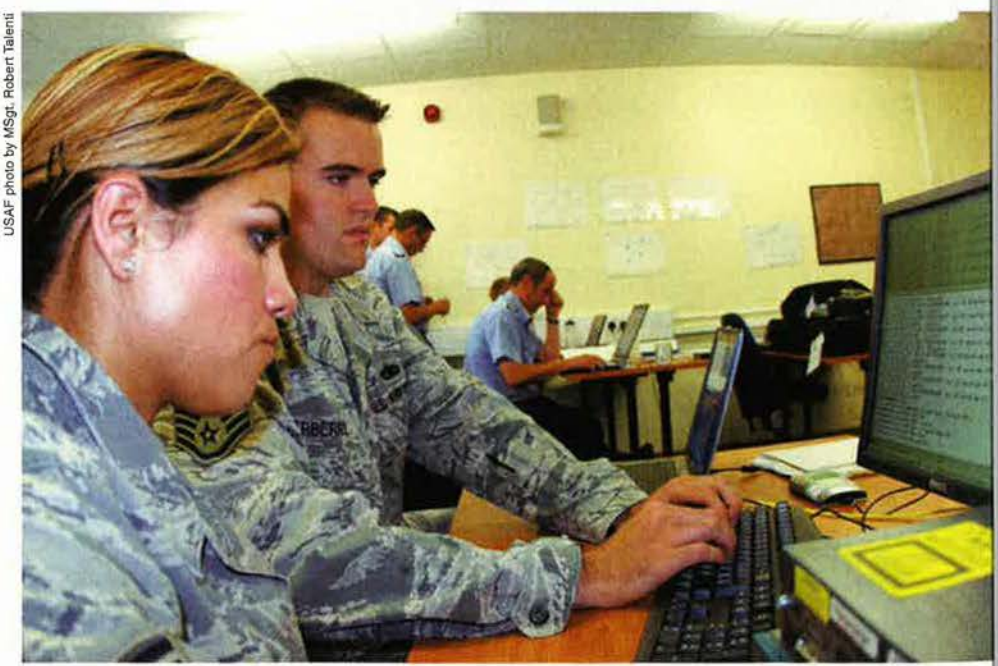
Cyberspace officers now are dealing with a blend of communications, intelligence, engineering, net defense, network operations, information operations, and other specialties in one career field, Mason added.

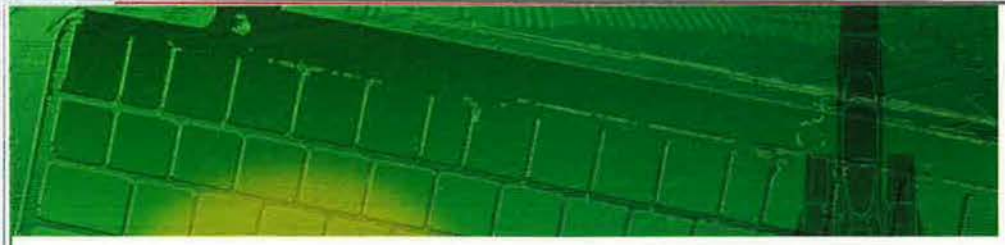
Air Force Space Command has brought in more than 10,000 reserve component personnel from existing Guard and Reserve units associated with the combat communications mission of the 689th Combat Communications Wing at Robins AFB, Ga., and the network operations of the 67th Network Warfare Wing at Lackland.

These two wings, along with Lackland's 688th Information Operations Wing, provide 24th Air Force's current three-combat-wing force structure.

SSgt. Gabriel Scarberry instructs SrA. Denise Gonzalez during training at RAF Lemming, Britain. The cyber mission will require USAF to bring together previously separate career fields.

USAF photo by MSgt. Robert Talenti





The task of creating a career path for the service's cyber warriors is not new; the Air Force has been at it for several years, starting long before the establishment of 24th Air Force.

"In the past, the Air Force human resources system, as it was, didn't recognize cyber," said Lt. Col. Dean A. Clothier, commander of the 39th Information Operations Squadron at Hurlburt Field, Fla. The 39th IOS has served as a sort of incubator for formal training of the Air Force's cyber warriors, because of the unit's involvement in information operations and network warfare.

In 2006, when the Air Force created a major, blue-ribbon cyber task force, the 39th IOS was tapped to start initial formal training for cyber warriors. It began the first course in October 2007. By 2008, the squadron was spending more time with its rapidly expanding undergraduate cyber training course than it was working with its traditional network warfare instruction.

The development of cyber career fields for airmen began to move forward, Clothier said, when Lt. Gen. Robert J. Elder Jr., former commander of 8th Air Force at Barksdale AFB, La., pushed reforms, clearing a path for 24th Air Force to assume the cyber mission and stand up career fields for cyber airmen.

Old Careers, New Areas

The reforms established mandates for personnel known as "17 Deltas." The identifier 17D denotes an Air Force cyberspace operations officer, a career field created in April. It draws into the new career field some 3,000 communications officers in other assignments, according to Capt. Brian Black, the 24th's chief of operations training. An equivalent enlisted cyber operations airman course will begin in October.

Training has been put together into a course called "undergraduate cyber training" (UCT), Black said. "They will get all of their basic knowledge," and know what the cyber realm is and what happens in it, he added.

This provides cyber training for operations officers, base-level communications airmen who conduct "touch maintenance," and all airmen singled out for operations—the ones who "create effects," as Black puts it. From there, officers will progress into initial qualification training of those who are being tasked with specific mission sets.

USAF photo by MSgt. Russell P. Petcoff

Lt. Gen. William Lord, chief information officer for the Air Force, pins the new cyberspace badge on 1st Lt. Thomas McGrevey, who is assigned to the 844th Communications Group at Bolling AFB, D.C.

Cyber operators will then be sent to mission qualification training, to learn what is known as network attack, network defense, and network exploitation—three related but different tasks in the cyber world.

These are the special mission areas, Black said. "You learn how to defend that network, but continue to operate" while experiencing attacks.

In addition to the undergraduate training, there will also be a "cyber bridge course" that will take certain communicators and cyber folks from other career fields and channel them into cyber operations.

"We [want to] leverage their knowledge and experiences," Black said. "Initial accessions will be through UCT cyber training, but if you have a really bright pilot, captain or major, from another field, we could bring them into [this career]."

The cyberspace mission under 24th Air Force is pushing those in old career fields into new areas, said SMSgt. Terrence A. Edwards, the chief enlisted manager for the numbered air force's intelligence shop.

Edwards, a veteran intelligence airman with a background in special operations, said the unique requirements of the revamped cyber operations field are taking airmen who work in computers and communications and putting them together with intelligence in a unique manner. "Intel is what we call a 'one series' specialty," Edwards said. "We're an operations kind of area; it's more of a mindset we're used to dealing with."

On the other hand, communications airmen are coming from a different field—one more studied in the sophistication of networks, routers, firewalls, and other aspects of the cyber mission.

"Intel guys know the adversary, ... [comm guys] understand networks," he said. Old specialties are being merged with new requirements and objectives and new reporting chains—operating on a whole new battlefield, in many aspects.

The construct is coming together in pieces to create a pipeline, cyber officials say. On June 22, 24th Air Force assisted Air Education and Training Command in standing up its inaugural UCT course at Keesler AFB, Miss.

The curriculum, first developed by the 39th IOS, now resides at the 333rd Training Squadron at Keesler. It is part of the effort to standardize and shape cyber training across the force. It allows the 39th's operators to focus on training for advanced network warfare skills.

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The UCT course teaches not only cyber fundamentals but also ways to connect various capabilities for operational effect, tying in the various mission components of the cyber mission. The initial class of 15 will be trained to establish, secure, operate, assess, and actively defend seven types of networks.

The new course is only the first step in what the service hopes will be a fully functional cyber warfare career path within a few years. According to AFSPC plans, officers will also receive professional continuing education and advanced academic degrees as they progress through tours in operations, as a schoolhouse instructor, on the Air Staff, in major commands, and in joint duty assignments.

Across the service, the broader goal of these efforts is to build a culture of "cyber wingmen," said CMSgt. Kevin Slater, the command chief for 24th Air Force. Cyber education will not just be aimed at those entering the 24th but also at others in noncommissioned officer courses.

The Air Force's intelligence schoolhouse at Goodfellow AFB, Tex., is considering addition of a cyber component to its ground level intel instruction.

"When I was at the 1st Fighter Wing, there were strict guidelines on anyone stepping out onto the flight line and anyone touching the aircraft," Slater recalled. "We're trying to get that kind of awareness of the cyber world, of the network, for all airmen to appreciate."

From network defense operators, those who protected and secured Air Force networks, to network attack operators—the airmen who infiltrated networks to create shadowy "full spectrum effects"—policies and requirements have long existed at the squadron level, but none were standardized, said MSgt. Gene Lloyd, an evaluator with 24th Air Force's standardization and evaluation program.

This has all changed.

Now, at Lackland, evaluators and airmen are spreading out and visiting the new organization's units, gathering input to assemble the new instruction sets for training, development, and guidance for future cyber airmen to be signed off on by Webber.

The new standards and evaluation instructions were approved, Lloyd said in June; by October, when 24th Air Force declares full operational capability, instructions for training, operations, and standard operating procedures are to be approved.

USAF photo by Ted Koniares

Maj. Gen. Richard Webber (r), commander of 24th Air Force, greets MSgt. James Fleming. The numbered air force is finalizing its training, operations, and procedures and should be fully operational this fall.

"The hardest part is getting the mindset to shift," he said. "Traditional computer operator guys just did traditional training in the Air Force. They weren't really subject to a rigorous evaluation and constant recertification."

Damage Control

Col. David Weismiller, head of future programs for the 24th, noted, "We need to build a mentality, at the officer to mid- to senior NCO level down to airmen, with the understanding we are conducting battle every single day."

Practices such as acquisition cycles more associated with satellite systems or large aircraft production runs don't apply in the fast-moving world of cyber and network operations, Weismiller said.

Barriers to entry into the cyber domain are much lower, he said. Getting on a network, whether through a computer, a mobile device, or other means is relatively inexpensive for potential adversaries, and USAF's cyber efforts should reflect the same attitude. "It doesn't cost contractors or developers ... a lot of money to tool up and do research for solutions for cyber effects, ... and we take advantage of that," as the needs are changing constantly, he said.

Webber has delegated authority to field new technology without having to go through a long-term acquisition strategy—a change that has taken timelines for development into days and weeks as opposed to months and years.

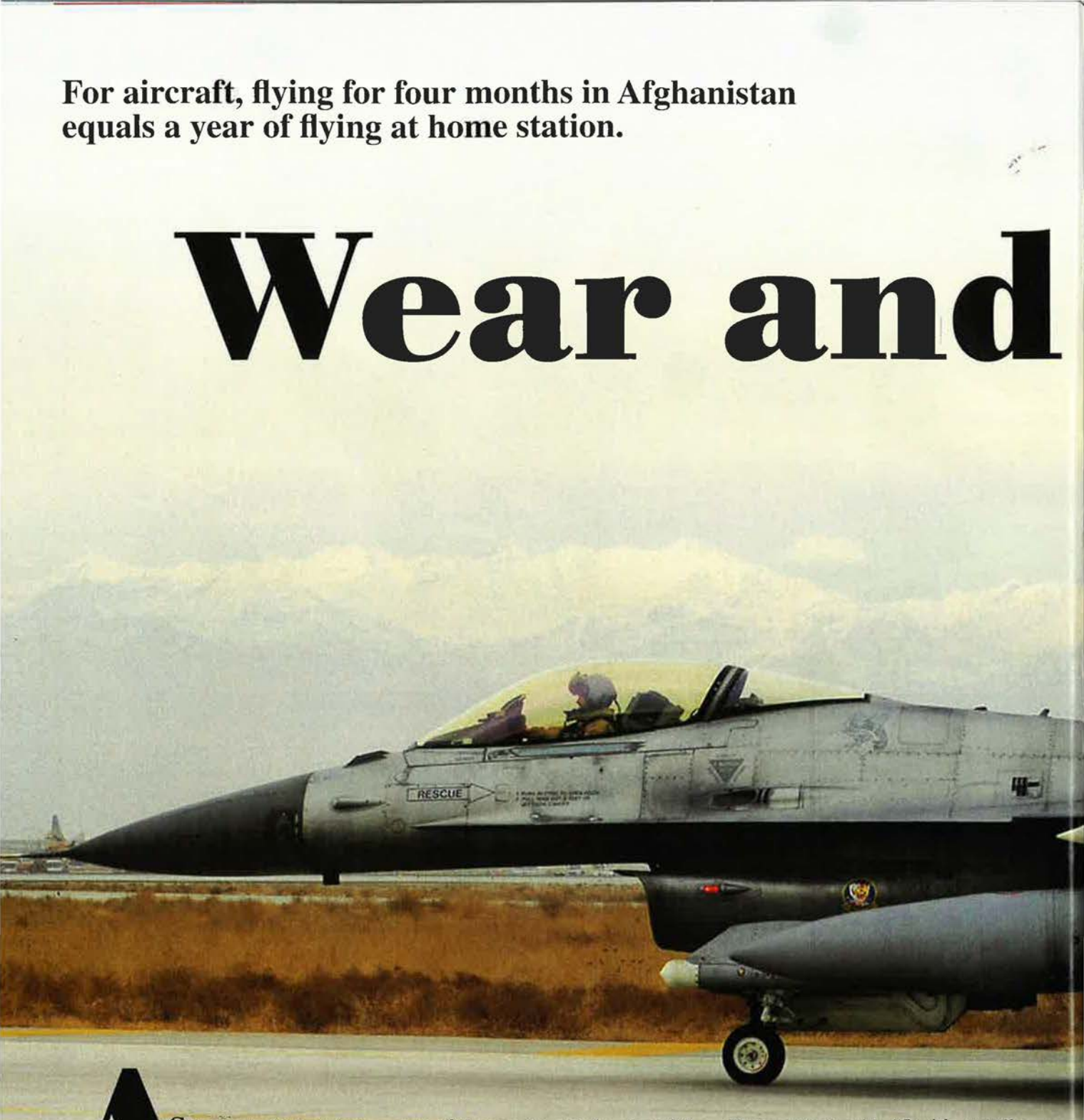
We have to posture ourselves appropriately, said Weismiller. The Air Force is in a nonkinetic fight, and kinetic terms don't always apply. "The policy and doctrine of this mission area have not caught up to the speed of development, the speed of need."

Many units working in communications and networks under their old command structure were accustomed to a culture of supporting operations. Now, they are being asked to become front-line warriors, on a battlefield with no flight line, no borders, and often a nebulous and constantly evolving enemy.

"Right now, we are in damage control mode a bit," Clothier mused. "We have the tools and the policy to get a 'score card' for our efforts, and we need one." He said the Air Force is "the furthest along in the cyber enterprise, because the risk is highest" to its network. "We have the most to lose." ■

For aircraft, flying for four months in Afghanistan equals a year of flying at home station.

Wear and



As the war in Afghanistan enters its 10th year, the operational pace and harsh physical conditions are taking a toll on USAF aircraft. These flying systems go through a wringer of intense heat, salty air, and raging sandstorms at bases throughout Southwest Asia. It often falls to deployed USAF maintainers, on duty 24 hours a day, seven days a week, to keep them running at all.

The weather "is probably the biggest challenge we face in terms of taking care of the people and the aircraft," said Lt. Col. Jennifer Hammerstedt, commander of the 379th Expeditionary Aircraft Maintenance Squadron.

On a "moderate" summer day at a Middle East base, she observed, temperatures can soar above 120 degrees Fahrenheit. As the sun beats down and with the blacktop absorbing the heat, the flight line can typically climb 10 degrees above that.

"That means that, with the heat, everything you touch out on the flight line can be 130 degrees or more," Hammerstedt said. "So it's usually much hotter out where the guys are working."

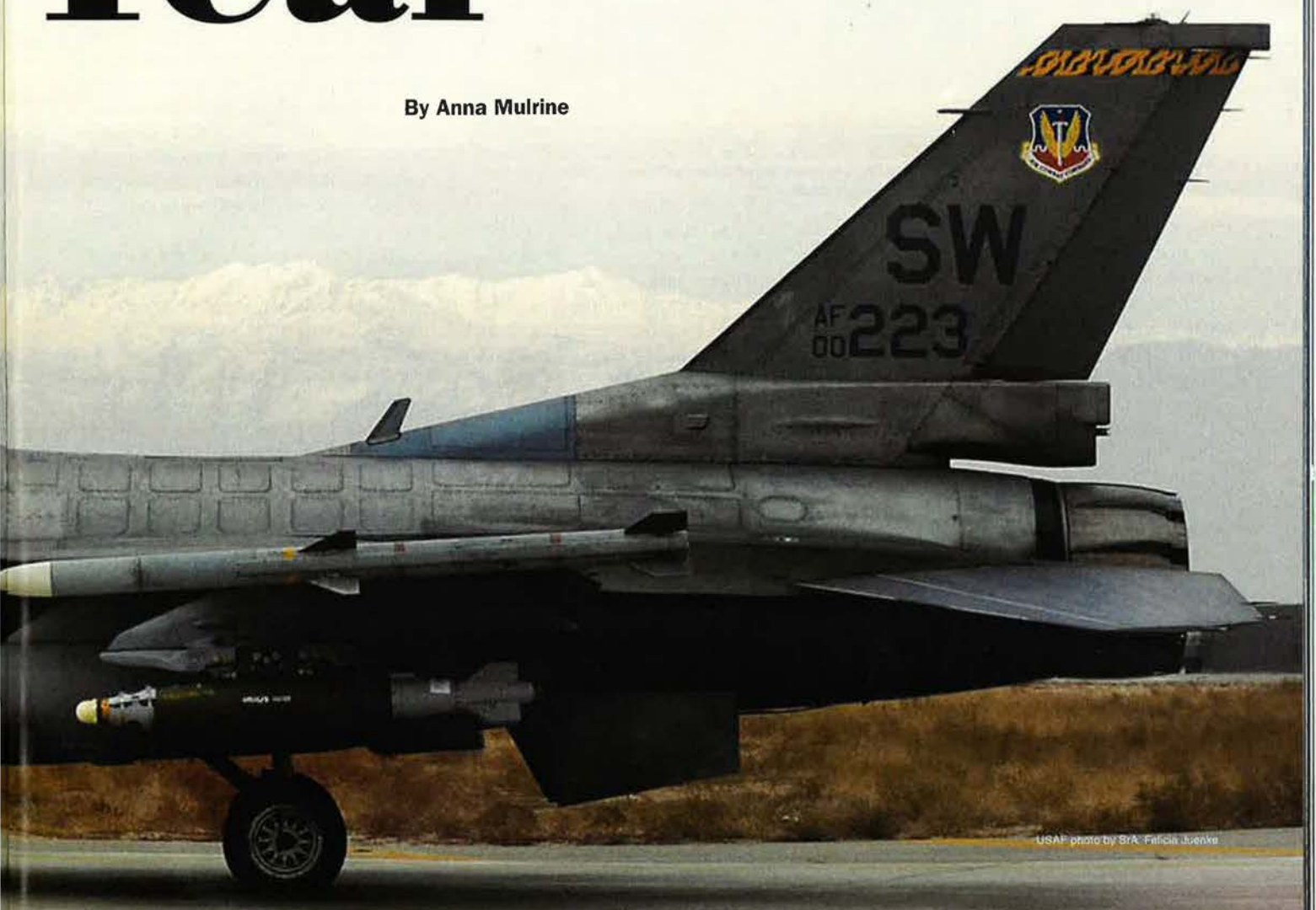
Humidity exceeds 80 percent on some days and, said Hammerstedt, "you can definitely feel it." The wind can offer some relief, she said, but with the wind comes the sand, which can enter aircraft through the smallest of openings.

Hammerstedt is in charge of maintenance for a wide variety of aircraft at war in Southwest Asia. That makes her responsible for the operability of "very diverse, very different airframes."

An F-16 gears up for takeoff from the flight line at Bagram Airfield, Afghanistan.

Tear

By Anna Mulrine



USAF photo by SrA. Felicia Juenke

Air Force leadership acknowledges the challenges of conditions and optempo. "These operations continue to stress both people and platforms," Gen. Carrol H. Chandler, vice chief of staff for the Air Force, told the Senate Armed Services Subcommittee on Readiness and Management Support. "Operations tempo continues to take a toll, and many of our aircraft are increasingly unavailable due to required maintenance."

On the flight lines, maintainers regularly reposition the aircraft so the wind doesn't blow sand up the intakes of the jet engines. "We reposition the planes 90 degrees, so the wind is blowing across the side," explained CMSgt. Terry Neuharth, superintendent of a B-1 bomber aircraft unit. "As much sand is in the air, it obviously goes through the engine, and it reduces performance," he said. "We monitor the engine, to make sure the performance doesn't deteriorate."

Even as the jet aircraft are taxiing down the runway, they are at risk from the heat. "A lot of times, we have to be careful" about its potential effects, cautioned Neuharth. Air Force maintainers on the runway fire handheld laser thermometers, which resemble highway patrol radar guns, toward the tires of the jet aircraft. "If it's below 140 degrees, we let it take off," Neuharth explained. "If not, we make them sit for 20 minutes." This is because as the tire rubber gets hotter, "it's a lot softer," he added. At soaring temperatures, there is a risk that the tires might "blow up on takeoff." On a hot day, the tarmac temperature can reach 160 degrees, Neuharth noted.

Bagram Airfield, Afghanistan, has its own range of challenges. The sand-

USAF photo by TSgt. Michelle Larche

TSgt. Todd Clow (l) and SrA. Christopher Hughes anchor a boom pod fairing panel on a KC-135 tanker at a base in Southwest Asia.

storms—known as "brownouts"—roll in quickly and can muck up engine systems. This particularly affects the HH-60 helicopters used by the combat search and rescue personnel, said Maj. James Upchurch of the 455th Expeditionary Aircraft Maintenance Squadron.

"The environment really does affect them," he said, especially in a region "where dust and dirt get in the engines." Sand also seems to gravitate toward even the smallest drop of oil, airmen noted.

To keep the aircraft safely running, "we have to do additional maintenance to clean them up," Upchurch said. This includes jet washing the engine, which entails pressure washing to get rid of all the sand and dirt. "When the rotors stir up the dust, it degrades engine performance."

Maintainers take care to make sure canopies are closed and the protective covers are put on the inlet and the exhaust of the engines. These covers shield equipment such as angle of attack probes, which sense whether an airplane is in a climb or banking to the right or the left.

Sand, Wind, Dirt, Rocks

The wind offers its own challenges. "We just recently saw over [52 mph] in the afternoon," Upchurch said. "It's kind of a constant," he added, estimating that it tends to blow at "anywhere between [29 to 52 mph]," so "we have to make sure everything is tied down." He said, "We tie down the airplanes after every flight."

C-130 cargo airplanes are landing "on unimproved surfaces every day," Upchurch explained. This includes temporary runways and dirt landing strips out at the far-flung forward operating bases that dot the mountains of eastern Afghanistan and the high desert of the south. "When you land on unimproved surfaces, you're kicking up rocks, dirt, things of that nature," Upchurch said. "It also puts a stress on the brakes and the tires." That creates additional maintenance requirements for the airmen.

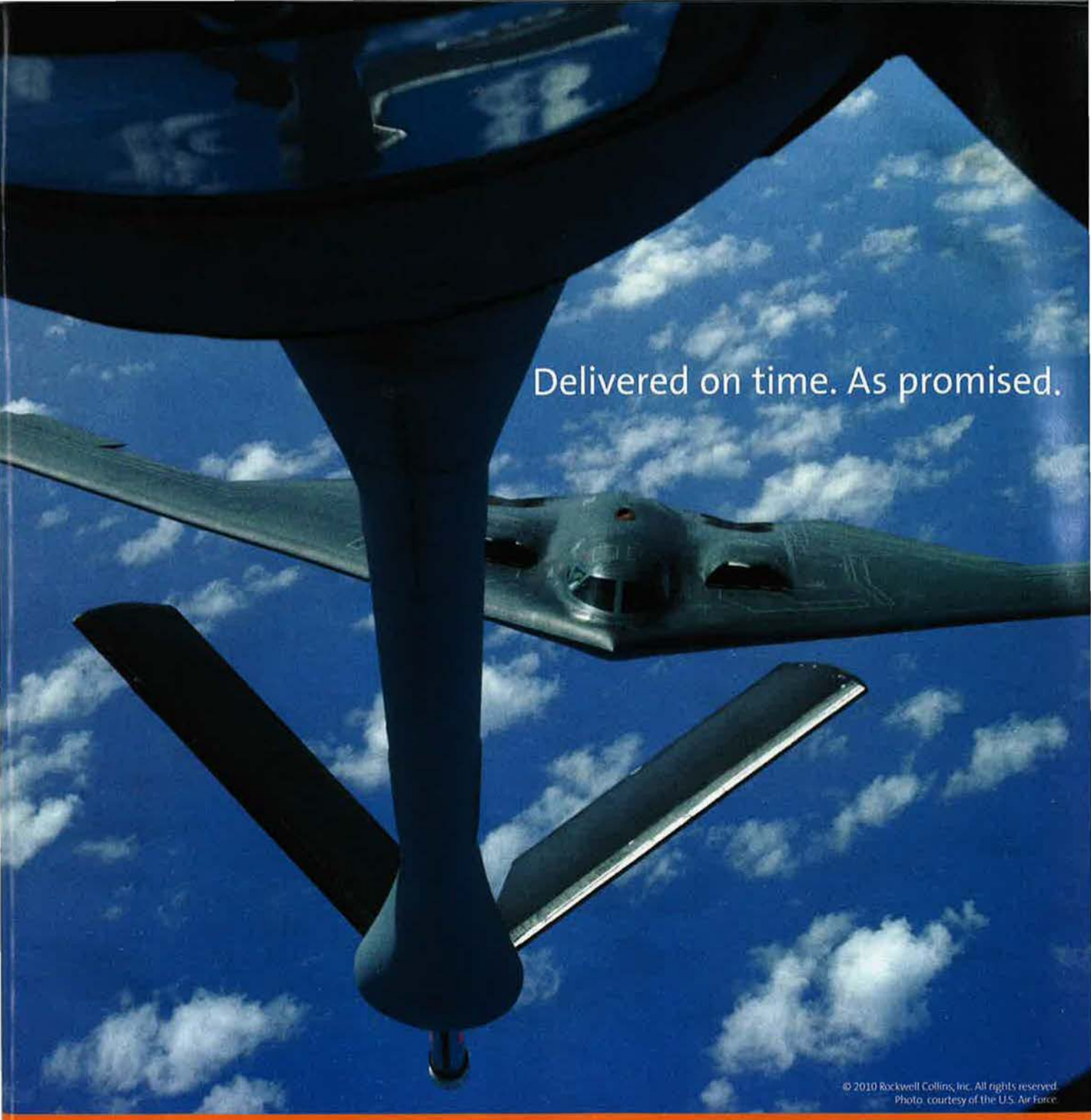
They also see wear and tear in the airplanes' panels, when rocks get kicked up and dent them. "We have to determine whether it's in the limits or not," Upchurch said. "We either fabricate or put a panel on the stretcher itself." What's more, he added, antennae and probes on the underbelly of the aircraft take a beating.

The heavier loads that the aircraft are hauling can also increase the effect of the elements, airmen add. This is especially true in the case of fighters such as F-15s and F-16s.

"The weight that they're carrying puts a little bit more of a strain on the brakes and the tires," Upchurch said. "We're going through those a lot more, and changing them out a lot more. ... We're flying more hours than if we were in our home station." He estimates that four months of flying in Afghanistan "equals a year of flying at home station." The operational tempo, combined with the elements, means that "things are going to start breaking down a lot faster."

Crews ready an EC-130H Compass Call at Bagram Airfield.

USAF photo by SSgt. Samuel Morse



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Coming from her home station of Elmendorf AFB, Alaska, Hammerstedt has noticed that "these airplanes can be quirky or temperamental when they are accustomed to flying in one temperature, and then they come to a different climate."

She added, "You can have problems with hydraulic components like landing gear," and "radar and cooling systems can be overworked." Because of the wide spectrum of airframes operating in theater, some of them have problems with hydraulics or engines overheating, others with radar and communications systems that have "more sensitive platforms," Hammerstedt said.

She went on to say, "Some of the systems that have a lot of radar, they have components that will heat up." When the airplanes are aloft, they are all cooled by the aircraft systems. "But when you run them off the ground, you have to use other pieces of equipment, like air-conditioning type of units," she said. "It's like when your computer gets hot when it operates, but it's on a different level."

Sheer distances cause problems, too. While normal sorties back at home station are one-and-a-half to two-and-a-half-hours, "sorties here are around 12 to 14 hours," said Neuharth. "We definitely fly a lot more hours here than we do at home station—we're 24 hours a day here."

Munitions flight supervisors at Bagram say they are concerned about the impact of environmental factors on weapons systems as well. "I can tell you that one of the things we're seeing is damage to different components of different munitions," due in part to the intense operational tempo, said SMSgt. David Anthony, the munitions flight supervisor for the 455th EAMXS. "Munitions are designed to be built and expended—not carried on numerous flights."

USAF photo by TSgt. Michelle Larche

SrA. Nick Bentler (l) and SSgt. Juan Hernandez work on an E-8C Joint STARS wheel and tire assembly at a forward air base.

A Continuous Process

That means maintainers regularly have to replace components. "By no means do we fly damaged munitions," Anthony said. But this can also lead to a torrent of work during events such as hailstorms. "We get components back from the sandstorms or the hailstorms that the jets have been through," he said. "We don't run into these sorts of situations every day, but it has made a noticeable impact." Anthony added, "Over the two-and-a-half months that I've been here, we've had quite a few [munitions] damaged because of weather."

For example, seeker systems and guidance systems sometimes get broken, and maintainers need to replace components and send the weapons back out. So they take the munitions to the bomb dump to disassemble the components, take off the munitions, replace components, and then retest them.

"It's a continuous turn process," Anthony said.

Since most munitions are smart bombs, they are hooked up to a test set. "That tester will tell us whether

An HH-60G Pave Hawk stirs up dust while flying low in Afghanistan.

USAF photo

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USAF photo by SrA. Kasey Zickmund

USAF photo by SSgt. Robert Barney

Left: SSgt. Richard Mabry carefully inspects a B-1 wheel bolt for cracks. Above: TSgt. Jesse Maddox installs an air-conditioning "splitter" on a B-1. The device allows the aircraft to only use one air-conditioning unit instead of several.

that munition is good to go," Anthony noted. "It will tell you what component you need to replace, and which is a dud."

The maintainers don't get any time off even in difficult conditions. "Right in the middle of a sandstorm, we still have to launch aircraft out," Neuharth said. "We don't stop for the sandstorms or the hot temperatures." He added, "It's pretty amazing how these guys work in these conditions. They understand what's on the line, and that we have to get our jets in the air, because it may save lives."

Indeed, maintainers must work 12-hour shifts, six days a week, rather than the three shorter shifts they generally work, five days a week, back at their home stations.

"With the shift changes and everything else, it's closer to 13 or 14 hours, and they're working that whole time," Anthony said.

Deployed to JB Balad, Iraq, 1st Lt. Michael Adams, the Tiger Aircraft Maintenance Unit officer in charge of F-16s of the 332nd Expeditionary Aircraft Maintenance Squadron, said it is typical to arrange shifts into half daylight hours and half night hours, "so that one group isn't sleeping in the cool hours, and the other group is trying to sleep in the 120 degree heat."

While the altitude does not seem to have a great impact on the aircraft that stay under their flight ceilings, it does have an impact on the maintainers.

"You feel it a little bit—nosebleeds, shortness of breath, and when you run, and stuff like that," Anthony said. "It takes a little bit of acclimation. It probably took me a good month to get my run time back, after going from sea level to about 4,800 feet" in Afghanistan.

Running Hot

At US bases, maintainers see the impact of Afghanistan translating into more unscheduled maintenance, according to Jim Yankel, the technical director for Air Force Materiel Command's Directorate of Logistics. He has noticed that "higher temperatures typically affect mainly engines, avionic-type systems, electronic boxes—whatever that ... electronic box is."

He added that higher operating temperatures can put thermal distress on the combustors and turbines at a faster rate.

What's more, sand and dust from Afghanistan "have a tendency to accumulate on some of these components, which will drive additional maintenance as far as water washing, so it doesn't plug cooling holes and cooling passages within the engine itself," Yankel added. That's because "if you plug those cooling passages, you start to run hotter."

At Tinker AFB, Okla., some 20 KC-135 tankers are being retrofitted with extra piping, as well as probes. "Those are used a lot in Afghanistan," said Col. Robert Torick, the base's KC-135 system program manager. As a result, they run 840 hours a year, versus the 580 hours a year that is more customary for the aircraft.

They also carry a heavy fuel load, which adds to the wear and tear. That, combined with the higher temperatures, can result in fuel leaks. "It's more of a maintenance burden," Torick said. Air Force officials add that the impact of conditions on the KC-135 mirrors many of the challenges that face jet engines throughout the theater.

Ralph Garcia, the Propulsion Sustainment Division director, said KC-135 engine removals have been increasing since 2003. Today, they are double what they were just after the Afghan war began. "We've gone from in the neighborhood of 45 back in 2002 to 90 annually." This year, he predicts another increase.

Several of the air bases supporting Afghan operations are located along the coastline of the Persian Gulf. Their geographic location near the salty sea air leads to corrosion problems.

Torick said of the KC-135: "It was built in the early 1950s, and it was not built to resist corrosion. It was built to be really lightweight." As a result, he said, being forward deployed is "aggravating the issues that we currently face, but we stay on top of them." ■

Anna Mulrine, senior editor and defense correspondent for US News & World Report *magazine, reports frequently from Iraq and Afghanistan. Her last article for* Air Force *Magazine, "UAV Pilots," appeared in the January issue.*

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The US military needs 4.6 billion gallons of fuel each year. Somebody has to fetch it.

Move That Gas

By Otto Kreisher

USAF photo by A1C Courtney Witt

When fuel starts flowing into an Air Force aircraft—whether it comes from an on-base refueling point or an airborne tanker—it is the last, and perhaps easiest, step in a long, complex, and sometimes dangerous process.

Getting fuel to Air Force units around the world often brings into play an array of US agencies and commands, personnel from at least three of the armed services, and armies of civilian contractors across many nations. At various stages, the fuel can be moved by nearly every means of transport: pipelines, ships, trains, trucks, fixed wing aircraft, and helicopters.

The challenge is magnified by the scope and breadth of the enterprise. The Defense Department is the world's single largest consumer of fuel, spending more than $20 billion a year to purchase 4.6 billion gallons of fuel and transport it across the world. The Air Force uses 52 percent of that total—about 2.4 billion gallons a year.

The burdens are particularly great in US Central Command, which is the overseer of two major conflicts and, in the case of Afghanistan, must use especially difficult and dangerous supply routes that put American lives at risk.

USAF photo by T/Sgt. Bryan Bouchard

Top: A1C John Nguyen inspects a quart of fuel, checking it for impurities. Right: TSgt. Daniel Morris (l) pops the cap on a fuel drum at Hyakuri AB, Japan, while working on a joint training exercise with Japanese Air Self-Defense Force firefighters.

USAF photo by TSgt. Tony Tolley

SrA. Alexander Andreassi drags a fuel hose away from a C-17 on the ramp at a base in the Greater Middle East.

US Pacific Command must contend with vast distances over open ocean.

The Air Force commands in those two theaters use half the service's total, about 1.22 billion gallons of all types of fuels annually, according to logistics experts in those commands.

The key to this massive operation is a cadre of a few thousand Air Force logisticians and petroleum, oil, and lubricants (POL) specialists—uniformed and civilian—who deal with problems that range from calculating and ordering needed supplies at the start to pumping fuel into aircraft at the end.

SMSgt. Edwin Ludwigsen, Pacific Air Forces fuels function manager at PACAF headquarters in Hawaii, said that he and his fellow POL professionals "go to great lengths to make sure we never spill it, never contaminate it, and by all means, never run out of it."

That last requirement can be especially challenging in Afghanistan.

Kenneth Murphy, the fuels manager for US Air Forces Central (AFCENT) at Shaw AFB, S.C., contends that Afghanistan is the toughest logistics challenge he has ever faced, mostly because the country's infrastructure is so poor.

"They have no transport system, no roadways for long-hauling fuel, no refined fuel processing," Murphy reported, "so a lot of the fuel has to be brought in through GLOCs [ground lines of communication] from other countries. The coordination to get fuel across the borders, across the mountains, across the terrain, really generates some extreme challenges."

In AFCENT countries, fuel can be moved to the bases in two ways, Murphy said. If the host nation has the infrastructure, the trucks, and the storage capability, AFCENT will contract with it for support, he said. "That saves us from having to bring in equipment and personnel to handle that convoy resupply mission."

A Long, Hard Haul

In countries that do not have the right infrastructure, the Army is leaned on heavily for resupply, because of its bases and the inland distribution responsibilities, he continued. "They'll establish fuel hubs at the main bases, and then they'll make pushes out from those hubs to other locations," Murphy said.

Because Afghanistan is landlocked, most of the fuel and other bulk supplies for it arrive at the port in Karachi, Pakistan, more than 550 miles over land from Kandahar. Moving supplies over that route normally takes 14 to 20 days, a Marine Corps CENTCOM logistician said. Bagram Airfield, the Air Force's largest base in Afghanistan, is more than 300 miles farther north.

The route from Karachi goes through the Federally Administered Tribal Areas, where Islamic militants, including the Taliban and al Qaeda, often have more control than the Pakistani government, and the road into Afghanistan goes through high mountain passes, including the notorious Khyber Pass.

Because of that rugged terrain and frequently bad weather, Murphy said, "the whole mission profile causes a lot of logistics challenges." Fuel convoys going across the mountains, he said, run into heavy snow up on the top. As they come down the mountain, the snow turns to rain, leading to washed out roads, flooding in certain areas, and problems accessing bridges. "Then farther down in other regions, they can be faced with extreme heat, desert-type conditions. So we can have one convoy mission go through all three extreme weather conditions in one day." Those conditions result in frequent truck breakdowns and accidents. In north-


USMC photo

ern Pakistan and in Afghanistan, even greater danger is posed by the militants, who frequently attack convoys or plant improvised explosive devices, or IEDs, in the roads.

Similar threats face supply convoys moving from the main bases or hubs to smaller operating bases inside Afghanistan.

An Army study that looked at the resupply challenge in 2003-07—before the Taliban insurgency escalated to its current levels—found that one person was killed or wounded for every 24 fuel convoys moving in Afghanistan.

Virtually all the supply runs from Karachi into Afghanistan are conducted by Pakistani or Afghan truckers, contracted by the Army or DLA. A Congressional study released in June said millions of dollars that US authorities pay to have fuel and other supplies moved from Karachi to Afghanistan go to bribe Afghan warlords, and possibly the Taliban, to prevent attacks.

Because of the physical difficulty and militant threats to the logistics route through Pakistan, US authorities have been working to expand a northern route that can bring supplies by rail or air from Europe through some of the Central Asian countries north of Afghanistan.

That route could be a better way of getting bulk supplies, including fuel, to Bagram, north of Kabul.

So far, the northern route handles only a small percentage of the supplies for US and coalition forces in Afghanistan, but the Pentagon is anticipating awarding a new multimillion-dollar contract for supplying fuel to Bagram, requiring that it be brought in from the north.


AP photo by Rahmat Gul

Top: An overland fuel convoy traverses Afghanistan. Above: An Afghan Army soldier shields his face from a burning NATO fuel truck that had been struck by militants near Jalalabad.

The northern supply line is currently used to provide fuel to the US operations at Manas, which has been threatened by the political turmoil in Kyrgyzstan, as well as Russian pressure on the government to remove the US presence from what Moscow still considers its sphere of influence.

Projecting the Requirements

Kyrgyzstan's government, which took over in a coup in April, has agreed to renew the US lease for Manas. Even so, the Pentagon has called excessive the $100 million-plus fee it has been paying for fuel.

The new Kyrgyz government announced in June it was establishing a state-owned firm that could supply the fuel to Manas.

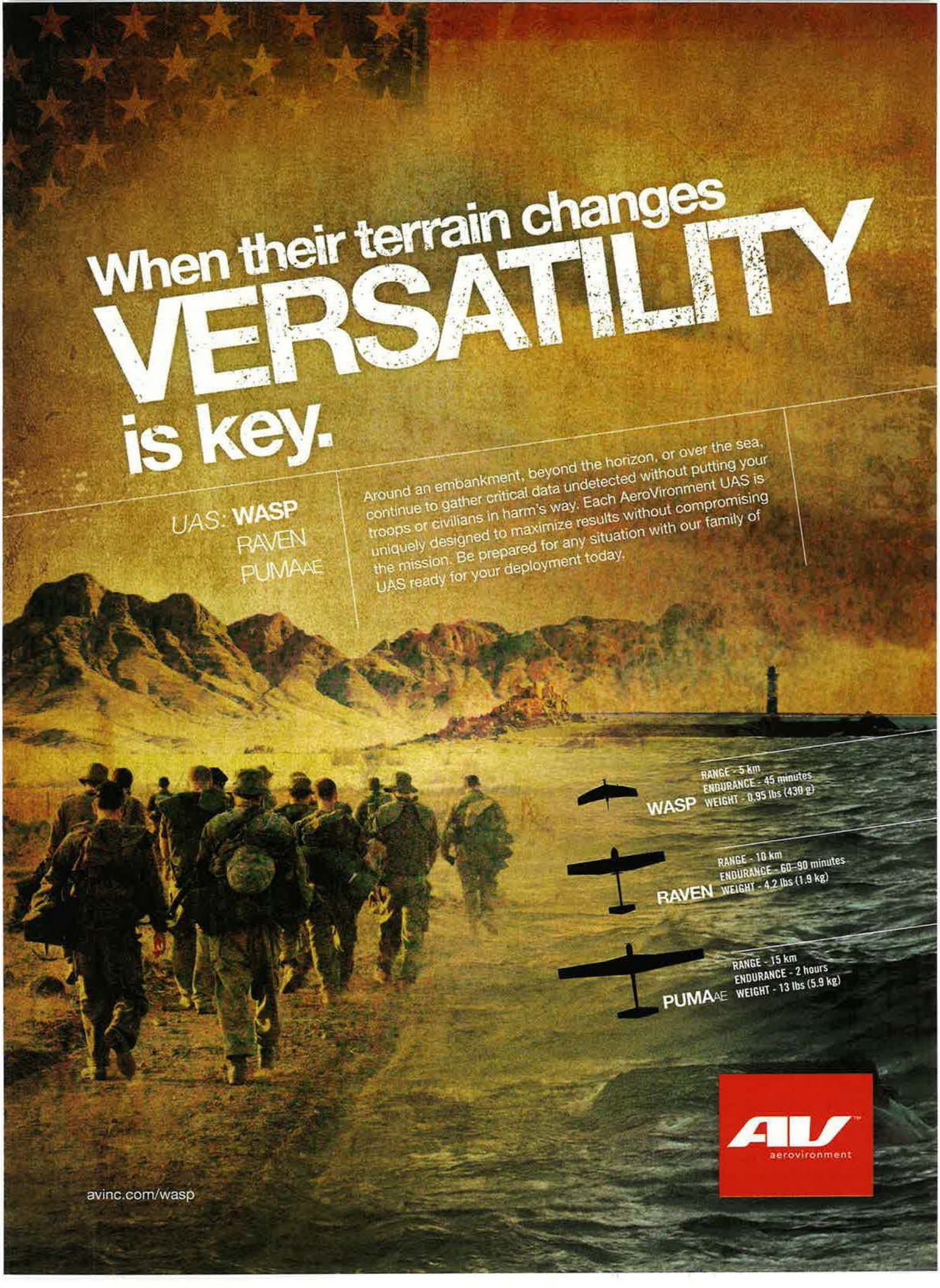
Getting fuel into Iraq had been an easier task because of local production and better infrastructure, Murphy said, but the rapid drawdown of forces there is creating new challenges.

As the US troops withdraw, CENTCOM is closing some of the hubs that had supported Air Force units in Iraq, Murphy said. He added that where one hub would support four bases, now one hub may be supporting five or six—a problem that could get worse as the US presence is declining rapidly.

Although PACAF has fewer problems with infrastructure, it faces the task of moving vast quantities of fuel over great distances and to some rather isolated locations.

The process used by the fuel supply staffs across the Air Force is designed to ensure that the users' requirements are met, despite obstacles. The process begins with the fuels management team at each location calculating expected fuel consumption, based on the types of aircraft and ground support requirements and projected flight operations, according to fuel specialists. That calculation is usually performed on a quarterly basis, and includes a reserve that ensures the ability to adjust to surges or disruptions to fuel resupply, Murphy said.

The projected requirements for each location are compiled into a total for each of the Air Force theater commands, and that is submitted to the buyer, the Defense Logistics Agency Energy, a component of the Defense Logistics Agency (DLA).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ENDURANCE - 60–90 minutes
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ENDURANCE - 2 hours
WEIGHT - 13 lbs (5.9 kg)
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"They're the ones doing the purchasing," Murphy said. "They're the ones dealing with industry to reserve the fuel coming off the refineries. To be able to get fuel for our operations, we have to be looking down the road. We have to put a marker into the commercial system, so that the fuel that gets produced three months from now will be available for us. And that's DLA. They handle all of that."

DLA, through DLA Energy, contracts for the fuel to be delivered to each base, where the POL airmen receive fuel and account for it while in storage, Ludwigsen said. But DLA Energy still owns the fuel even though it is being stored on the Air Force base, he noted. The Air Force does not own the fuel until it is actually issued to the aircraft.

The Air Force buys the fuel at that point by use of an AIR (Aviation Into Plane Reimbursement) card that provides the billing information for the aircraft's unit, Ludwigsen explained.

Like a credit card at a civilian gas station, the AIR card usually "can be swiped by automated equipment on the refueling vehicle."

But actually getting the fuel to the Air Force facility needing it can be a complicated process that can involve a number of other government and civilian entities.

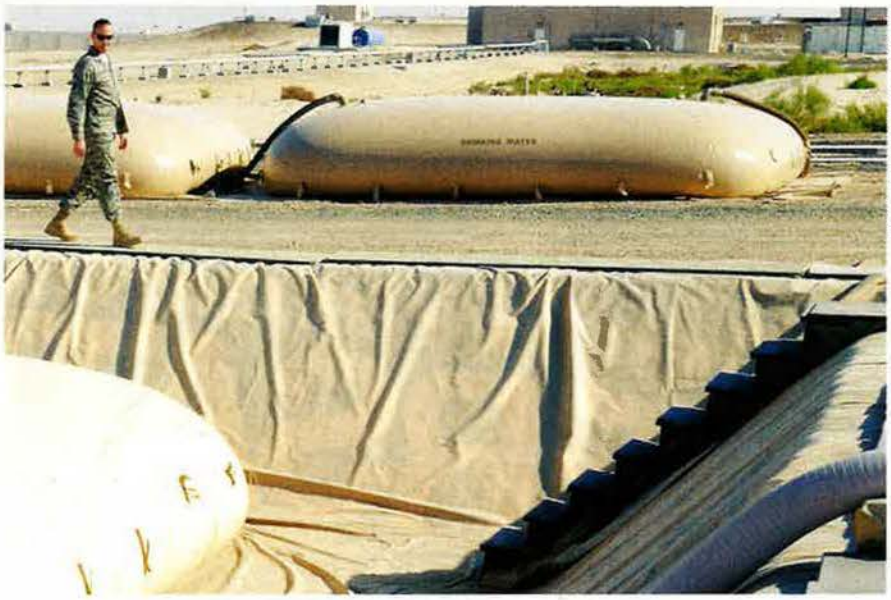
For most of the fuel needed by AFCENT and PACAF, part of the movement is under the control of US Transportation Command, which has ground and sea components in addition to Air Mobility Command.

Distribution

The Army's Surface Deployment and Distribution Command handles fuel movement by pipeline or rail within the United States and by a variety of means overseas. Because of their locations, most of PACAF's fuel (and a lot of AFCENT's) is transported to the host countries under authority of the Navy's Military Sealift Command. MSC owns three large tanker ships, which can carry 238,400 barrels of fuel each, and charters a shallow draft 36,000-barrel tanker that is used to move fuel intratheater for Japan and South Korea.

All of these ships are crewed by US merchant seamen. MSC also can hire US-flagged vessels to meet the military's needs.

In PACAF, the fuel goes to 10 major bases in South Korea, Japan, Guam, Wake Island, Hawaii, and Alaska, plus four smaller South Korean facilities and 15 remote Alaskan radar sites. MSgt. Joel Brown, PACAF fuels operations superintendent, said Guam is the command's largest fuel account, since it is a vital trans-Pacific refueling stop and a heavily used staging base. On average, Andersen AFB, Guam, issues more than 50 million gallons of jet fuel annually, but can store up to 66 million gallons, Brown said.



USAF photo by TSgt. Scott T. Sturkol

SMSgt. James Calhoun checks 200,000-gallon fuel bladders at an air base in Southwest Asia. AFCENT supports 14 bases in eight countries, and they all need fuel.

AFCENT supports 14 bases in eight countries, Murphy said. Those bases include well-equipped facilities in Iraq, Kuwait, and other Persian Gulf countries; large bases at Balad in Iraq and Kandahar and Bagram in Afghanistan; and some small, austere locations throughout that country. The command also supports the US operations at Manas in Kyrgyzstan, a key supply waypoint and air tanker base.

Although the primary fuel used by both commands is JP-8 for fixed wing aircraft and helicopters, they also require significant quantities of diesel for ground vehicles and generators, and small amounts of standard automotive motor gasoline (Mogas) for a limited number of vehicles. AFCENT also requires aviation gasoline (Avgas) for some of the smaller remotely piloted aircraft operating in theater. PACAF issues more than 285 million gallons of jet fuel annually, about 40 million gallons of diesel, and about two million gallons of Mogas, Ludwigsen said.

AFCENT requires a total of 878 million gallons of jet fuel, diesel, and Mogas a year for Afghanistan, Iraq, and for theater support bases, which are outside those countries but support both, Murphy said. The command also uses more than 60,000 gallons of Avgas a month, which is tough to manage because it is not produced within the CENTCOM area of responsibility and has to be brought in, mainly from Europe, Murphy said.

Distributing Avgas in country also is a problem, because many of the RPAs are based in austere locations, Murphy added. Avgas is normally brought into Afghanistan in 6,400-gallon bulk fuel containers, and then put into 500-gallon collapsible rubber bags, called blivets, for shipment to the point of use. That may require what Murphy called a "stair step" process in which a C-17 takes a number of blivets to a larger forward operating location, from where some will be carried by helicopter as sling loads to more remote locations.

For PACAF, most of their fuel arrives in the host country, or island, by tanker ships. It then is transported to the Air Force facility by established transportation systems, such as pipelines, rail, or trucks, which frequently are commercially operated. On the base, the fuel is stored in bulk storage tanks until an aircraft requests fuel, Lugwigsen said. Aircraft can be serviced using an R-11 refueling vehicle, holding 6,000 gallons. If a base has a built-in fuel hydrant system, refueling can be performed using an R-12 hydrant servicing vehicle, basically a pump moving fuel between the in-ground system and the aircraft. ■

Otto Kreisher is a Washington, D.C.-based military affairs reporter and longtime contributor to Air Force *Magazine. His most recent article, "The Aircraft Losses Mount," appeared in the February issue.*

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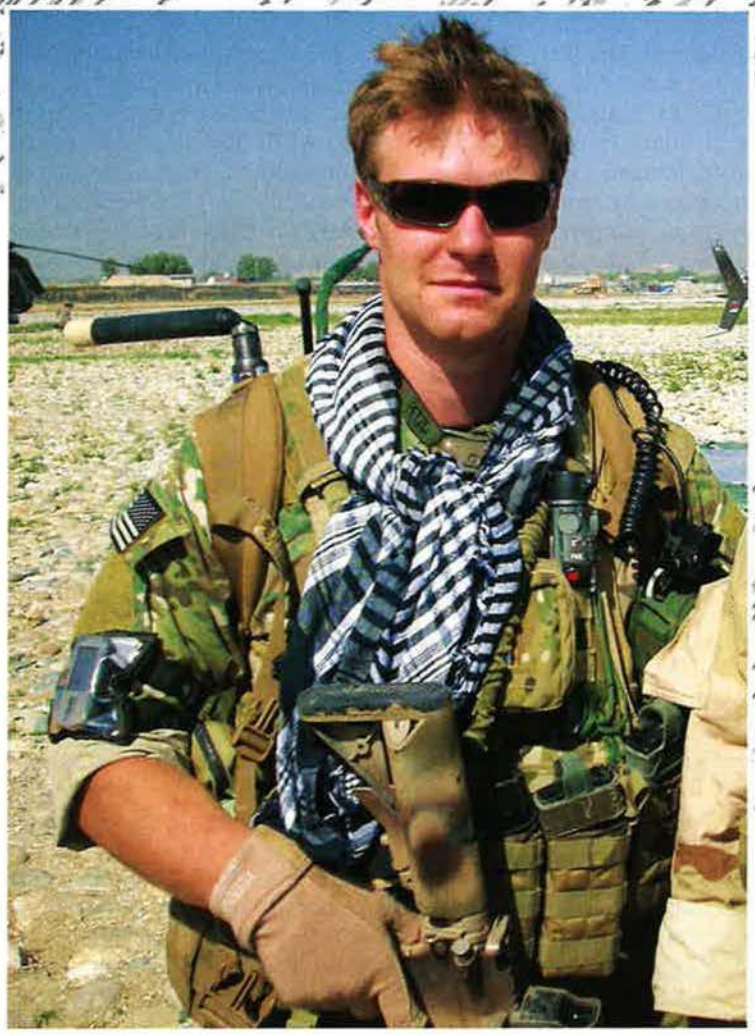
The soldiers, pinned down on the mountain slope, would have been overrun except for the air strikes called in by combat controller Zachary Rhyner.

Cliffhan

An A-10 attack aircraft joins the fight at the Shok Valley in this artist's conception. Right: SSgt. Zachary Rhyner at a forward base in Afghanistan.

ger

By John T. Correll



USAF photo

In the early morning hours of April 6, 2008, six CH-47 Chinook helicopters lifted from the airfield at Jalalabad in eastern Afghanistan, carrying an assault force of some 140 Afghan and American troops. Their mission, designated "Commando Wrath," was to kill or capture a band of insurgents gathered in a remote region near the Pakistan border.

Their destination was the Shok Valley in Nuristan province in the rugged Hindu Kush, an offshoot of the Himalayas. It is isolated territory, just north of the Khyber Pass and accessible only by foot or pack mule. The Russians, in their 10-year occupation of Afghanistan, never got to the Shok Valley, and American forces had never been there either. The mountain villages were insurgent strongholds.

The target was the Hezb-e Islami al Gulbuddin (or HIG) terrorist group, meeting in the valley with Taliban fighters. The provincial governor had been tipped off

USAF photo

Rhyner, a combat controller, mans a gun in Afghanistan.

that Gulbuddin Hekmatyar, founder of HIG, was on hand as well. Bagging Hekmatyar himself would be a substantial bonus. He had been a paramilitary commander since the days of the Soviet invasion. In the 1990s, he was briefly prime minister two times, but then left the country and linked up with Osama bin Laden and al Qaeda. The United States designated him as a terrorist in 2003.

US Army Special Forces Capt. Kyle M. Walton was in command of the assault force, which consisted of 40 Americans and about 100 Afghan commandos. There were three teams, each with an ODA—a 12-man Operational Detachment Alpha, core unit of the US Special Forces—and one-third of the Afghan troops.

Walton would personally lead ODA 3336 and its associated part of the Afghan commandos against the main objective while the other two ODAs secured secondary objectives scattered out for more than a mile up and down the valley.

Each of the ODAs had its own Air Force combat controller, qualified as a joint terminal attack controller, to direct supporting air strikes. Air Force SrA. Zachary J. Rhyner, 21, of Medford, Wis., was aboard the first Chinook inbound. He joined the Air Force in 2004, completed combat control training in 2006, and was assigned to the 21st Special Tactics Squadron at Pope AFB, N.C. He was on his first deployment to Afghanistan, and was embedded with ODA 3336.

Air Force SSgt. Robert Guiterrez Jr. was on one of the following Chinooks. He was deployed from RAF Mildenhall, Britain, and was the combat controller for ODA 3312, assigned to an objective farther down the valley. The third combat controller with the force was Air Force SrA. Cory Madonna, attached to an ODA that would attack an insurgent position a kilometer to the north of the main assault.

Quiet to 100 Miles an Hour

The Shok Valley cuts southwest through the high mountains at an elevation of almost 10,000 feet. In April, a fast-moving river, fed by melting snow, ran down the middle of the ravine with cliffs rising to 160 feet on either side. Most of the terrorists were in the village on a finger of land at the top of the cliffs.

The noise of the approaching helicopters ruled out any possibility of surprise, but Walton and his troops hoped they could catch the insurgents before they were fully prepared. The intelligence estimate said there were about 70 combatants in the village. In fact, there were 200. As the Chinooks descended toward the landing zone at the bottom of the cliffs, insurgents scurried for firing positions in stone houses and holes dug into the canyon walls. AH-64 Apache attack helicopters and two F-15E fighters circled overhead.

The helicopters could not land on the jagged rocks on the valley floor, so the soldiers had to jump the last 10 feet. Many of them landed waist deep in the icy water. Walton took advantage of the view provided by the F-15E's targeting pod. "They asked me to get them the best route of ingress from the riverbed to the village itself," said Capt. Prichard Keeley, weapons system officer on one of the F-15s. "I chose the terrain that was least exposed to enemy gunfire and the easiest point of ingress, while avoiding the most mountain climbing."

Walton and his troops pulled themselves up a five-foot wall and climbed the hillside by way of "switchbacks," or terraced farm plots. Rhyner, going in with the lead element of ODA 3336, carried 80 pounds of gear, including two radios and an M-4, the carbine version of the M-16 rifle.

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The insurgents waited, and then opened fire when the soldiers were partway up the slope. "It went from quiet to 100 miles an hour in 30 seconds," said Capt. Jeremy Duffey, pilot of one of the F-15s. Guiterrez and ODA 3312, on the other side of the river and a short distance to the south, were also under fire. They could hear and see the main engagement but were not in position to help.

The insurgents poured on a heavy fire from machine guns, rocket-propelled grenades, and AK-47s. Within minutes, the detachment interpreter, standing next to Walton, was shot in the head and killed. The only protection was a shallow wadi in the rock.

"When the enemy opened fire, I was on a narrow terrace, about 60 feet up from the bottom of the valley and six feet wide, with little to no cover," Rhyner said. "The only cover we had were additional terraces [and] switchbacks sloping up toward the village, and we were trapped on the terrace with the enemy owning the high ground. The fire came from 360 degrees from various prepared fighting positions and fortified structures with multiple sniper positions."

Rhyner was shot in the leg. "The rounds hit my left thigh and went through my leg and hit another guy in the foot," he said. Walton treated Rhyner's injury as Rhyner called in air strikes. The Apaches and the F-15s swept down with rockets and strafing runs to hold the insurgents back. The battle was on. It would last for the next six hours.

Walton's team was pinned down on the mountainside. Lethal fire from above had the terraces covered, and several more soldiers were soon down with serious wounds. An Afghan commando was killed.

Danger Close Air Support

Rhyner was in constant communication with the fighters overhead and with the joint air command and control center at Bagram Air Base, north of Kabul. "I was next to Captain Walton throughout the majority of the operation," Rhyner said. Rhyner advised Walton on the choices and effects of aerial munitions, but Walton had to concur on the air strikes, especially if they were of the "danger close air support" kind, in which the weapons would impact in close proximity to friendly forces. An additional hazard was falling rocks and debris from the bombing at the top of the slope.

However, the team was at less risk from the bombs than from the insurgents, who approached within 40 feet at one point. Walton's force was nearly overrun twice, and would have been, had not Rhyner, with Walton's agreement, repeatedly called in very close air support. It helped that some of the munitions employed were precise laser guided bombs.

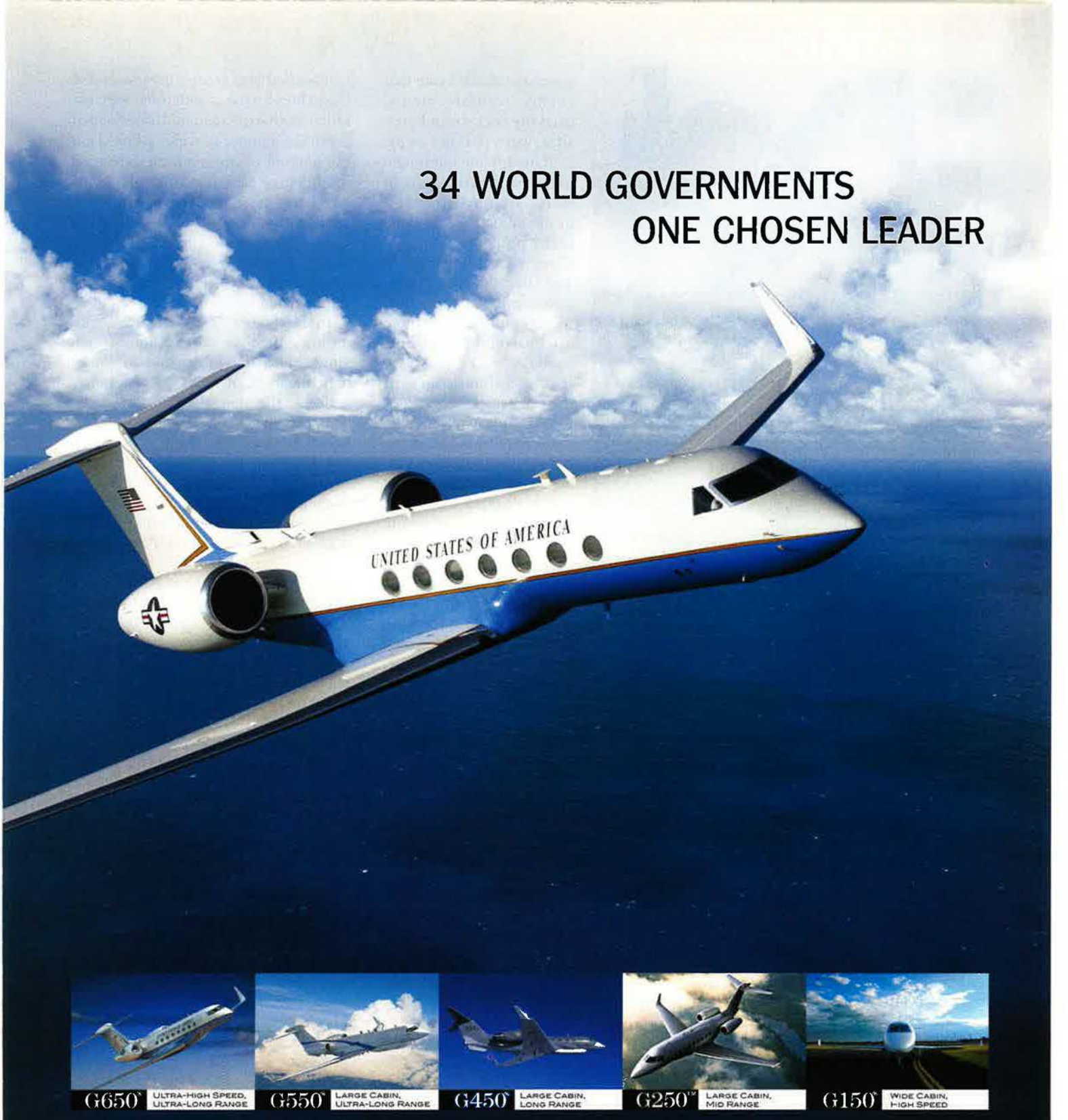
A-10 attack aircraft arrived to join the fight about an hour after it started. The two F-15Es remained overhead for three hours, refueling twice, before running out of munitions and being replaced by two other F-15Es. The air strikes held back the insurgents and took a toll on the shooters. Still more fell to small-arms fire from the assault force. SSgt. Seth Howard, who had trained as a sniper, picked off one terrorist after another.

Across the valley, Guiterrez was directing strikes by the fighters and

Army Special Forces troops perform a reconnaissance mission in a portion of the remote Shok Valley region of Afghanistan.

US Army photo

34 WORLD GOVERNMENTS
ONE CHOSEN LEADER



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USAF photo

Gen. Norton Schwartz, USAF Chief of Staff, pins on Rhyner's Purple Heart medal, moments after Air Force Secretary Michael Donley pinned on an Air Force Cross.

helicopters against a terrorist village to the south. "Zach and I were in constant radio contact," Guiterrez told Capt. Laura Ropelis for a report in Air Force Print News. "I could hear the ammunition, sniper fire, and rocket-propelled grenades with multiple blasts. We tried to push to the north to collocate with Zach's team, but every time we pushed up the river, it put us in an open line of fire. My team ran across the freezing river. The water came off the mountains and we were 100 to 200 feet beneath the enemy, like fish in a barrel."

Three hours into the battle, Guiterrez climbed up to confer briefly with Rhyner, but his ODA remained on the valley floor, taking what cover they could and adding their rifle fire to that of Walton's team on the slope. "Zach was coordinating tremendous amounts of fire on both villages simultaneously," Guiterrez said. "Zach was in charge of the air strikes, since he was closest to the fight and could see what the F-15 pilots could not."

"Cloud cover was coming in, and there was no certainty we would be able to get out that night," Walton said. "So we didn't waste our ammo. We really didn't fire unless we had a shot or when we needed to lay suppressive fire to allow people to move."

The assault force had been on the hillside for almost six hours when intelligence notified Rhyner that enemy reinforcements, carrying rockets and missiles, were 10 miles away.

"Our higher command told us we had to get out of there," Walton said. "Most of the objective was gone at that point, but our casualties were mounting. ... They became our priority. ... When the weather rolled in, we could be stuck there at least overnight, possibly for days."

It was time to get off the terrace. Rhyner conferred with Walton, who authorized the use of the biggest weapon the fighters had, a 2,000-pound bomb, dropped almost on top of the team's position. It was a highly accurate Joint Direct Attack Munition, guided by a GPS signal from space, but the impact point was just 100 feet up the slope. Walton hoped the explosion would kill or daze the insurgents, and it did all of that.

With rocks still falling from the bomb blast and the other ODA adding fire support from the ravine, Walton's team bumped and slid down the hillside, hanging onto branches and rocks. The less seriously wounded helped carry the most seriously wounded. It was rough going for the injured—especially the last 20 feet, which was a steep drop—but better than waiting until the insurgents regained their wits. Howard, the sharpshooter, was the last American off the cliff. Rhyner was next to last.

Without Regard for His Life

UH-60 Black Hawk medevac helicopters, with bullets pinging off their fuselages, picked up the worst of the wounded and took them to the hospital at Bagram. The rest of the force was extracted from a landing zone farther down the valley. Back at base, Rhyner was treated at the clinic. "I got some pills—antibiotics—and was good to go," he later told *Air Force Times*. He remained in Afghanistan until his tour was finished.

According to some official estimates, 150 to 200 insurgents were killed in the Shok Valley battle. A more likely count is 40 killed and around 100 wounded. Casualties for the assault force were two killed, both Afghans, and 100 wounded. From the number of weapons used and the amount of ammunition expended, intelligence concluded that the insurgents had been stockpiling guns and ammunition in the village since the 1980s. Gulbuddin himself, if he was there, escaped. He was soon active again, and was still a strong factor in Afghanistan in 2010.

In December 2008, the US Army awarded 10 Silver Stars, the most for any single battle in Afghanistan, to Walton and members of ODA 3336 for their action in the Shok Valley.

In March 2009, Secretary of the Air Force Michael B. Donley presented the Air Force Cross to Rhyner before his home unit, the 21st Special Tactics Squadron, at Pope. Gen. Norton A. Schwartz, Air Force Chief of Staff, presented Rhyner with the Purple Heart medal.

Among those on hand to see it was his mother, Sue Rhyner. "I couldn't be prouder," she said. "Zack is part of an awesome group of individuals who personify teamwork, something he learned early on, being one of five children."

"Without regard for his life, Airman Rhyner placed himself between the most immediate threats and provided suppressive fire with his M-4 rifle against enemy fire while fellow teammates were extracted from the line of fire," the citation for the Air Force Cross said. "Airman Rhyner bravely withstood the hail of enemy fire to control eight United States Air Force fighters and four United States Army attack helicopters.

"Airman Rhyner controlled more than 50 attack runs and repeatedly repelled the enemy with repeated danger close air strikes, several within 100 meters of his position. Twice, his actions prevented his element from being overrun during the intense six-and-a-half hour battle."

Rhyner is the only living combat controller recipient of the Air Force Cross. Another Pope combat controller, TSgt. John A. Chapman, was posthumously awarded the Air Force Cross for heroism under fire in Afghanistan March 4, 2002.

Since then, Rhyner has had more deployments "downrange" to Afghanistan. He has been promoted to staff sergeant and is still assigned to the 21st Special Tactics Squadron at Pope. ■

John T. Correll was editor in chief of Air Force *Magazine for 18 years and is now a contributing editor. His most recent article, "Take It Down! The Wild Weasels in Vietnam," appeared in the July issue.*

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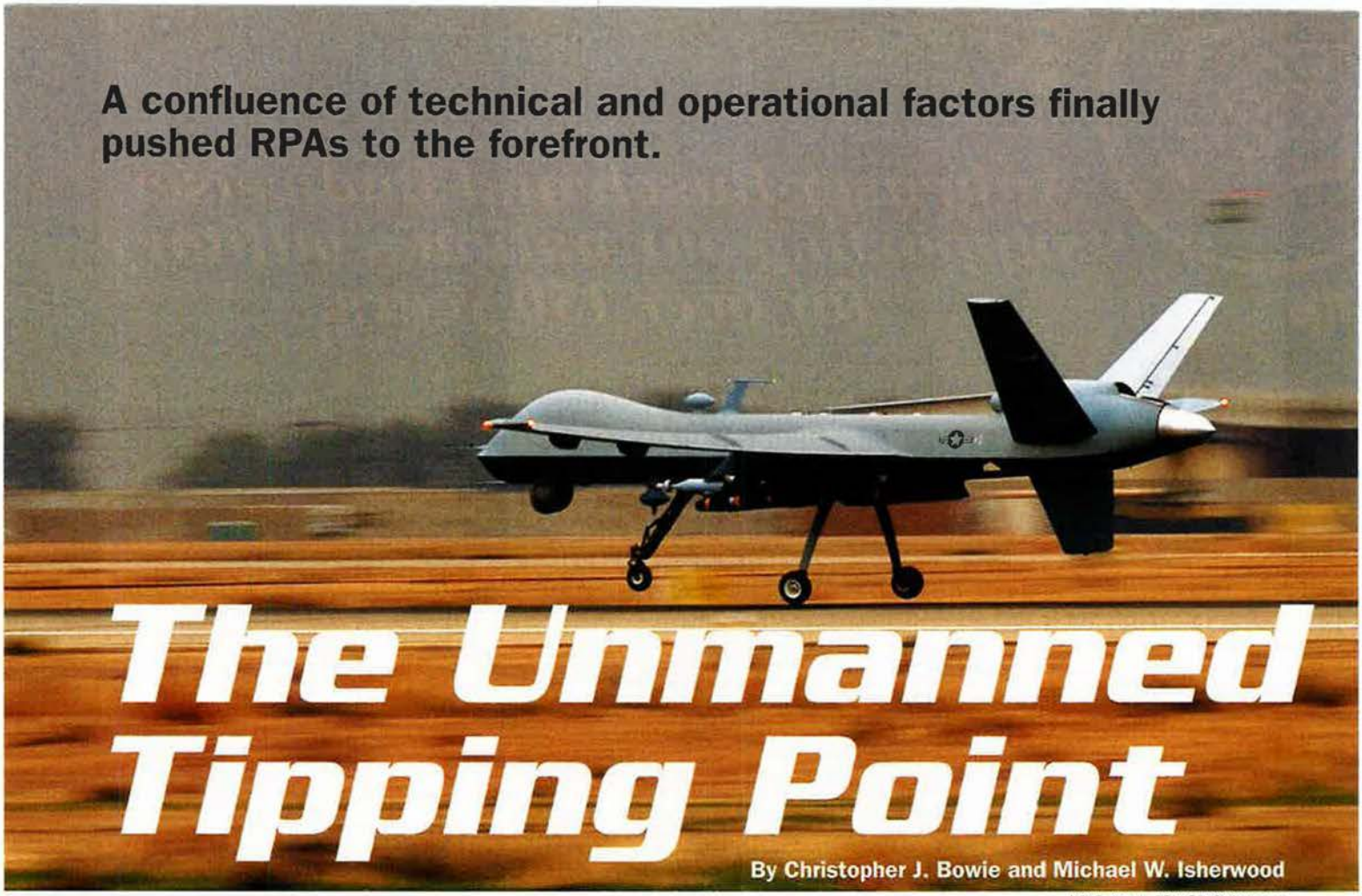
A confluence of technical and operational factors finally pushed RPAs to the forefront.



The Unmanned Tipping Point

By Christopher J. Bowie and Michael W. Isherwood

USAF photo by TSgt. Erik Gudmundson

From the 1950s through the turn of the century, the Defense Department spent some $25 billion on numerous unmanned aircraft programs without ever coming up with an effective, operational air system deployed over a long period.

Today, though, US military forces employ thousands of remotely piloted aircraft (RPAs), and they fly in every theater of operation. Their growth has been nothing short of stunning—the military services logged more than 500,000 RPA flying hours in 2008, representing a 16-fold increase over 2002.

The systems provide a wide range of capabilities, from surveillance and reconnaissance and target identification and designation to strike and even tactical airlift. RPA capabilities are now resident in all combat components.

The Air Force, not surprisingly, possesses the most sophisticated inventory and has made the greatest investment in unmanned aircraft, with nearly 66 percent of all service RPA spending coming from Air Force accounts over the past decades.

At present, USAF operates more than 180 medium and large unmanned aircraft as it builds toward a target of 65 continuous MQ-1 and MQ-9 orbits. It also operates a multitude of smaller aircraft, such as Wasp, for short-range support to special operations or air base defense missions.

Looking forward, the Defense Department is poised to spend tens of billions of dollars over the next decade on unmanned air systems of all types.

USAF photo by SrA. Nancy Hooks

Why did these systems take off only recently? Why did each service go from a handful of RPAs in 2001 to inventories in the thousands today? Why, almost alone among military aircraft, do unmanned aircraft show promise of strong growth ahead?

The reasons stem from the convergence of technological and operational factors. In the past, for instance, RPAs relied on inertial navigation systems whose positional error increased with flight time. The 1960s Tagboard RPA that launched from SR-71s and B-52s and the long-endurance Compass Dwell/Cope systems had marginal operational utility due to their meandering flight path.

Now, the Global Positioning System satellite constellation provides major gains. First, it can accurately determine the RPA's location and, more importantly, establish the precise area on which a sensor is focused. With GPS allowing sensor operators to know the target's location, the information can be disseminated to command centers and attack pilots quickly and efficiently. This allows the RPA to be relevant in combat operations.

That's not all. Thanks to the growth of computational capabilities and advanced software development, engineers since the late 1990s have been able to design, develop, and manufacture RPAs with the inherent capacity to accomplish key tasks with greater effectiveness and safety. The miniaturization of computers allowed these aircraft to perform additional automated tasks within the size, weight, and power constraints of the vehicle.

These software and computer developments allow RPAs to maneuver and perform without the pilot onboard. For instance, the Predator and Reaper, rated as Level Two on the Air Force's nine-level autonomy scale (nine being the highest level of autonomy), are equipped with an autopilot. A pilot transmits "stick and rudder" commands to fly the aircraft, which requires constant communication between the aircraft and its ground station. If a Predator or Reaper loses its communication link, the aircraft goes into an airborne hold or can head back toward its base until communications are re-established or it runs out of fuel.

Advanced unmanned aerial vehicles such as the RQ-4 Global Hawk would be rated as Level Four on the autonomy scale. Pilots adjust flight path, altitude, and speed via premission planning inputs or with corrections on the mission management console during flight. The aircraft has the ability to address contingencies that arise and "decide" whether to continue or divert, return to base, and land.

Top left: An MQ-9 Reaper lands at JB Balad, Iraq. Left: Maintenance crew members push an MQ-1 Predator toward a hangar to be inspected.

A Defensewide RPA Boom

Although USAF dominates, by far, in the use of large remotely piloted aircraft, this is not solely an Air Force story. The other services have leaped in.

The Army has fielded more than 4,000 unmanned air systems, which have flown more than one million hours this decade. The Army has ordered more than 2,000 small Raven systems and 132 large Sky Warriors derived from USAF's MQ-1 Predator. The Army operates RPAs at all organizational levels. At the battalion level are small aircraft that fly no more than two hours and as far as 15.5 miles. The brigade level features unmanned aircraft with a 78-mile range and up to 10 hours of endurance. At the division level are systems that can reach 124 miles, with 16 hours or more of flying time.

The Navy procured the Pioneer unmanned aircraft system in 1985 to provide support for naval gunfire. During Desert Storm, Pioneer flew more than 300 missions but was limited to line of sight of the ship, restricting its effectiveness. In addition, electromagnetic interference from ships often caused the Pioneer to crash, further restricting its utility. Today, the Navy is procuring the RQ-4 Global Hawk for its broad area maritime surveillance requirement, the unmanned Fire Scout helicopter for ship-based surveillance, and is making steady progress toward demonstrating the ability to operate a fixed wing unmanned aircraft from a carrier deck.

Losses Decrease

The aircraft's systems constantly monitor its status and determine, through a rule-based architecture, whether to continue the mission or abort and divert when an anomaly is detected. Global Hawks have successfully landed following in-flight engine failures and "lost link" events without additional pilot inputs.

The increased availability of satellite communications and associated bandwidth also enhanced the ability to employ unmanned aircraft beyond the horizon. With previous RPAs, the reach or range of the system was typically limited to line of sight from the ground station. In addition, RPAs were limited to downloading sensor images using line-of-sight data links to ground stations, as insufficient bandwidth was available for over-the-horizon transmission.

Today, the expansion of SATCOM removes such limitations and allows RPAs to operate beyond the horizon, opening an entirely new realm of possibilities. Medium and large remotely piloted aircraft rely on launch and recovery crews in theater, while pilots and sensor operators are typically in the United States, using satellite communications to provide flight inputs. The aircraft sends its sensor data through SATCOM.

By allowing the pilot to be removed from the cockpit, SATCOM allows an RPA, when persistence is needed, to remain on station significantly longer than most manned aircraft. Satellite control also means that fewer personnel must be forward deployed.

Often in the past, unmanned aircraft were seen as "disposable" air vehicles. The RQ-2 Pioneer had a mishap rate of 363 crashes per 100,000 flight hours early in its operational history. The RQ-5 Hunter mishap rate was 255 per 100,000 hours prior to 1996.

The first Predators were also low cost, and few cared if an air vehicle was lost to mechanical failure or hostile fire. This mind-set contributed to high loss rates, and so the MQ-1A Predator loss rate was 43 per 100,000 hours during the first six years of its operation.

These mishap rates are in stark contrast to the roughly two to three accidents seen per 100,000 hours by fighter aircraft, which had more robust development programs. In addition, the Air Force attributed a number of the Predator crashes during Operation Allied Force to the lack of spare parts and trained maintenance crews. Finally, operational commanders took risks with the unmanned system that they would not take with a manned aircraft.

Today, RPA loss rates have decreased as a result of higher experience levels and more rigorous acquisition programs. In the case of Global Hawk, loss rates are projected to become lower than the U-2's rate—and on par with fighter aircraft.

Collectively, improvements in computational power and associated software, GPS for navigational accuracy, and SATCOM bandwidth provided the technological foundation for the expansion of remote aircraft and their effective integration into the joint force. But without

An early drone aircraft was the D-21, shown here on the back of its mother ship, a specially configured A-12. This project was called Tagboard.

new operational demands and innovative doctrinal concepts, attempts to integrate UAVs into the force would probably have met the same fate as those of the previous 50 years.

Nothing drives change more than the need to support combat operations when people's lives are at risk. RPAs offered the ability to meet the operational challenges of combat in Afghanistan and Iraq in new ways.

Placing a pilot onboard the aircraft limits the sortie's duration, particularly with a small, fighter-sized aircraft and limited cockpit space. In these conditions, the typical pilot duty day is 12 hours. With mission preparation (two hours) and debrief (one hour), sortie length for single seat aircraft such as the U-2 and many fighters can be constrained. In extraordinary circumstances, flight times can be extended, but this cannot be sustained on a routine basis without increasing the risk of pilot error.

RPAs are free of these human constraints. An RQ-4 can fly for about 32 hours, an MQ-9B for up to 28 hours.

Concepts of operations for the unmanned combat air system, or UCAS, envision using aerial refueling to fly the system for 50 to 100 hours. Endurance translates into range, or time on station, or both. Longer range provides significantly greater flexibility with regard to basing locations and routing around other nations' airspace.

Long-endurance aircraft are also able to maintain position much more efficiently than shorter-duration aircraft. For example, to maintain a 24-hour orbit, some 1,150 miles from base, with a Global Hawk requires one sortie. To do the same with a U-2 requires five sorties. In fact, for the total flying time required to maintain a U-2 over a 24-hour period (with five sorties), barely 50 percent of the flying time is spent on orbit; the rest is used in transit.

Persistent Stare

While remotely piloted aircraft still need crews, personnel on the ground can "switch out" while the aircraft is on station and be replaced by a fresh crew.

In the past, aircrews monitored the data from wide-area surveillance sensors, while intelligence analysts exploited precise reconnaissance information. No matter what type of sensor employed, distinct training was required to interpret the data for commanders and combat troops.

The arrival of Predator and Reaper, with full-motion video cameras, changed this paradigm. Full-motion video allows ground forces to see without physically being present. The average soldier, sailor, airman, or marine can monitor the video and determine what is happening. The scene quality of current UAV sensors is sufficient to discern people with weapons or the types of activities people are doing (such as digging a hole and placing something into it such as an improvised explosive device).

As Army Maj. Gen. James O. Barclay III stated, "We can send a UAS [unmanned aircraft system] to look down alleys, around buildings, in backyards, or on a roof to see what's up there, ... a vital force multiplier in this era of persistent conflict."

Given that the RPA's sensor quality is not sufficient to determine who that person is standing on a rooftop or in the backyard, traditional intelligence-surveillance-reconnaissance sensors are also finding their way onto small UAS airframes. These additions are allowing signals intelligence or moving target indicator data to be rapidly fused with video imagery, increasing the commanders' understanding of what is occurring. There is a parallel demand for semi-automated processing of such data, to allow the generic warfighter to accurately comprehend what is displayed. This is of paramount importance as the number of orbits being flown to support ongoing operations continues to increase.

The capability to watch an area on the other side of the world, persistently, in near real time, is something new. Given the nature of the fight against terrorism, it is also something enormously valuable.

Adding weapons to the persistent stare that unmanned aircraft offer has provided

Northrop Grumman

Maintenance workers prep a Global Hawk for a test mission. Global Hawks are rated Level Four on the Air Force's nine-level autonomy scale.

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another important new capability: the ability to strike within minutes after locating a target.

During Operation Desert Storm, the Air Force began to make improvements in accelerating the kill chain, as it recognized the need to engage fleeing ground targets. During the Battle of Khafji, E-8 Joint STARS aircraft provided direct and accurate targeting information to A-10, F-16, and F-15E fighters, allowing them to intercept Iraqi armor formations.

Joint STARS combined wide-area surveillance with precise targeting information that allowed the air component to decimate hostile armor forces moving in the open. In other conventional and irregular conflicts, however, targets would not necessarily lend themselves to easy detection.

For instance, North Korea, immediately north of the demilitarized zone, maintains a number of hardened artillery sites from which it intends to rapidly move a gun into an open position, fire, and retreat back under cover.

During air operations over Kosovo, the A-10 airborne forward air controller used gyro-stabilized binoculars to find and identify enemy armor. The requirement to maneuver the aircraft often meant the AFAC's eyes were taken off the target, however, and sometimes the target was lost.

The AFAC often found several potential hiding locations that were turned over to a Predator to "stare" at. The Predator's optics were actually better than binoculars, improving confidence that the target was real and not a decoy.

During operations in Afghanistan, extended UAV presence allowed US forces to monitor a suspect's location for hours, providing capability of exceptional value to find, "stare," fix, and attack targets.

In a counterinsurgency or counterterror campaign, adversary leadership or other high-value targets may appear only momentarily from hiding locations, necessitating vigilance by the air component to fix and track during the rare opportunities. Once tracking, collateral damage or other concerns may prohibit an immediate attack, further increasing the demand for persistence.

As unmanned aircraft provided a sustained sensor presence, military leaders realized they could potentially provide the lethal striking power as well. As the former director of the Central Intelligence Agency noted in his memoirs, US officials found it very frustrating to see a target, such as Osama bin Laden, but not be able to engage in a timely manner. In the past, once a drone detected a target, command centers would need to locate a strike system and then vector an aircraft or cruise missile to the target. This could take from minutes to hours to days.

USAF photo by SrA. Nadine Y. Barclay

First Lt. Jorden Smith, a Predator pilot with the 11th Reconnaissance Squadron, operates an RPA on a training mission.

Evolving Threats

Arming the Predator reduced the sensor-to-shooter times to minutes. The value of this capability has been routinely seen in strikes against terrorists in the Afghan-Pakistan border regions in recent years.

The rise of RPAs has taken place under the cover of air supremacy in a variety of conflicts over the past two decades. Permissive operational environments enable drone flights with no defensive suites and very limited maneuverability.

The benign environment is critical, as many RPAs are slow, easily detected on radar, and vulnerable to surface-to-air missiles, guns, and combat aircraft. During operations in Bosnia, a Serbian helicopter reportedly flew alongside a Predator MQ-1 and opened fire with door-mounted machine guns. In 2002, an Iraqi MiG-25 downed a Predator, highlighting the risk to small- and medium-size unmanned aircraft in contested airspace. Accordingly, against a moderately capable air defense network, RPAs could only operate in locations where US forces had established a degree of localized air superiority.

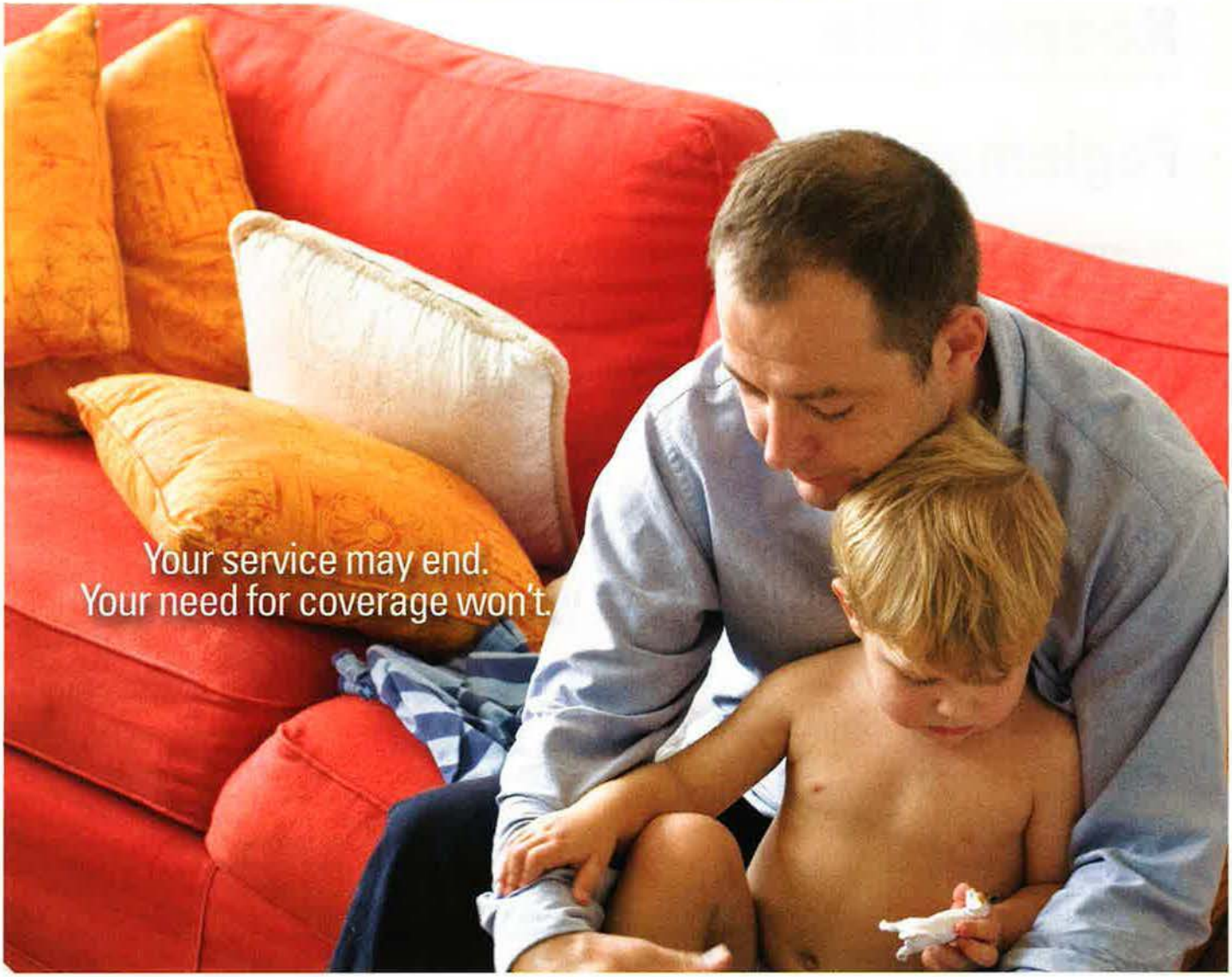
Another option is to exploit the aircraft's ability to operate above 50,000 feet. Hostile fighter aircraft will have a difficult time engaging another aircraft at 60,000 to 70,000 feet, and only a limited number of SAMs reach that high. From this altitude, an RPA's active sensors can reach more than 100 miles into hostile territory.

In the future, larger unmanned aircraft could employ air-to-air missiles and electronic attack techniques to improve survivability, potentially permitting persistent operations in an environment denied to today's Reaper or Global Hawk.

Electronic attacks against command and control or sensor data links are an evolving threat to RPA operations. In late 2008, insurgents reportedly tapped into the unencrypted video links from Predator to monitor what the aircraft was seeing. More sophisticated jamming could slow the flow of data from sensors to control stations.

In addition, there is growing concern about GPS jamming. While higher-flying aircraft would be less affected by GPS jamming, lower and smaller RPAs could face significant challenges. Improvements to RPA connectivity and survivability will be required to ensure these capabilities remain available to US military forces while adversaries seek to deny them. Unmanned aircraft came of age during two decades when the US benefited from air superiority. Future foes might not be so accommodating. ■

Christopher J. Bowie has held a variety of positions with RAND Corp., the aerospace industry, and the Air Force. He is director of strategic studies for Northrop Grumman Integrated Systems. His last article for Air Force *Magazine, "The Lessons of Salty Demo," appeared in March 2009. Michael W. Isherwood, a retired USAF colonel and fighter pilot, is a senior analyst with the Northrop Grumman Analysis Center. His most recent article for* Air Force *Magazine, "Roadmap For Robotics," appeared in December 2009.*



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Keeper File

Fogleman's Big Six

The notion of USAF "core competencies," so-called, appeared in the mid-1990s. Both the Commission on Roles and Missions and the Air Force itself produced lists in 1995. No one was satisifed with these, and a year later, the Air Force Chief of Staff stepped forward with a revised list, and Gen. Ronald R. Fogleman surprised many by unveiling a new grouping of six competencies. Fogleman's comments were his first concerning the result of an 18-month-long review of Air Force plans and capabilities, a review which unabashedly concluded that airpower could be "decisive" in future warfare.

"Strategic Vision and Core Competencies"
Gen. Ronald R. Fogleman
Address to Air Force Association Symposium
Beverly Hills, Calif.
Oct. 18, 1996

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

The Air Force considers a core competency to be the combination of professional knowledge, specific airpower expertise, and technological capabilities that produce superior military outcomes. ... What distinguishes the Air Force's core competencies is the speed, flexibility, and global range of our forces, along with the strategic perspective of airmen. ...

The long-range planning effort by senior Air Force leaders has convinced us we need to make some adjustments to our core competencies, and after much discussion, we arrived at the following:

- Air and space superiority
- Global attack
- Rapid global mobility
- Precision engagement
- Information superiority, and
- Agile combat generation

In keeping with our nature and focus as a global force capable of employment at the strategic, operational, and tactical levels of war, and in view of the continued integration of capabilities in space, we've combined air and space superiority into one core competency. ... Control over the air and space environment assures a fundamental benefit to American forces: preventing adversaries from interfering with our operations and allowing our forces freedom of action. In short, air and space superiority provides freedom from attack and freedom to attack. Gaining control of the air over both friendly and enemy territory has been one of the constants of warfare in the last half of the 20th century and will continue to be so in the future. Simply put, air and space superiority is the key to winning wars with the fewest losses. ...

A core competency we've added is one we elected to call global attack. ... The primary aspect of global attack is the ability of the Air Force to find and attack targets anywhere on the globe using the synergy generated by air and space assets to operate at the strategic level of war. The other aspect of global attack is the expeditionary nature of our force. ... Depending on the situation, that force can include both lethal and nonlethal elements. This expeditionary capability will be key to rapidly providing tailored air and space capabilities to the regional CinCs [commanders in chief] in the future.

Because our forces will need to move quickly and lightly, we reaffirmed rapid global mobility as a core competency that will remain critical into the first quarter of the 21st century. Rapid global mobility provides the ability to bring forces forward for combat operations, peacekeeping, or humanitarian efforts. As we have seen since the end of the Cold War, we can expect our mobility forces to be on call and in use every day, as far into the future as we can imagine.

We call the ability to apply selective force against specific targets to achieve decisive effects precision engagement. This Air Force capability ... has a long legacy for airmen. Its origins date back to the 1930s at the Air Corps Tactical School. ... Today and in the future, our forces will be more precise and more effective, at day or night, in good weather or bad, whether delivering food or lethal ordnance. This ability will allow airpower, with its strategic perspective and ability to attack the enemy with precision, to sharpen the usually blunt instrument of military force for national leaders. ...

The core competency of information superiority is not the sole domain of the Air Force. Indeed, all of the services must develop their own capabilities in this area. ... We have moved out to build impressive offensive and defensive information capabilities. As the executive agent for battle management [and] command and control, the Air Force has the charter to be the integrators for the joint force. ... This ranges from providing the joint force commander of the 21st century with a picture of the entire battlespace ... to facilitating real-time control and execution of air and space missions. ... Information superiority must include aggressive efforts at defending our increasingly information intensive capabilities from enemy attack. ...

[A] vital part of what the Air Force provides the nation is highlighted by a core competency called agile combat generation. ... Agile combat generation reaches outside of pure logistics to include functions like security police, engineering, and other combat support functions. We adopted this core competency at Corona with the view of making our forces more expeditionary in nature, so that we will continue to be the instrument of choice when the national leaders want to engage quickly and decisively, anywhere on the globe. ...

These core competencies ... provide one construct for thinking about air and space power, but they are not written in stone. They will change over time. ... What must be understood and what must endure is the vision of air and space power as the decisive force for the 21st century. ■


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Kicked out of

For the US, Uzbekistan's big air base was an answered prayer that soon turned into a nightmare.

By Scott G. Frickenstein

In the wake of the Sept. 11, 2001 terrorist attacks, as Washington prepared for war in Afghanistan, the US pursued overflight, landing, and basing rights in Central Asia. This vast, predominantly Muslim zone surrounding Afghanistan was one in which America had little access or influence.

Uzbekistan, however, was an attractive power projection locale. The US moved to secure basing rights at an old Soviet air base near the Uzbek towns of Karshi and Khanabad, 90 miles from Afghanistan, and at Manas airport in Kyrgyzstan. The US and Uzbekistan quickly signed a status of forces agreement granting use of Karshi-Khanabad (K2) Air Base at no cost.

This hasty "marriage" lasted only about four years. The bilateral relationship faltered, and the US response to the Uzbek government's harsh crackdown on a spring 2005 domestic incident accelerated the decline. By fall 2005, Uzbekistan had evicted the US from K2.

Few, at the start of Operation Enduring Freedom, would have predicted K2's swift demise. K2 became a bustling hub of action, with roughly 1,000 of the Army's 10th Mountain Division among the first to deploy there. Eventually, hundreds of active duty, Guard, and Reserve airmen and soldiers operated there, coordinating surface shipments and supporting the 416th Air Expeditionary Group's C-130 and C-17 cargo missions.

The status of forces agreement, according to analyst Kurt H. Meppen, showed America's commitment to Uzbekistan's future, "thereby strength-

K2

USAF photos by TSgt. Scott T. Sturkol

A US Air Force C-130 Hercules takes off from Karshi-Khanabad AB, Uzbekistan.

ening the Karimov regime internally and in the region."

The accord opened the door for extended cooperation. President George W. Bush and President Islam A. Karimov in 2002 signed a more substantial "Framework Agreement," deepening their partnership in fighting terrorism and benchmarking reform efforts. In a classic quid pro quo, the US provided substantial funding for military hardware, security services, and US Export-Import Bank credits, and Uzbekistan promised to accelerate democratization, bolster human rights, and improve freedom of the press.

In spite of these agreements, trouble was brewing on Karimov's home front. Regional expert Fiona Hill with the Brookings Institution said that nonsensical economic policies pushed Uzbeks into "subsistence survival strategies." The problem was compounded by government repression that bred vast discontent and a political succession struggle that further agitated the people.

Marking the Report Cards

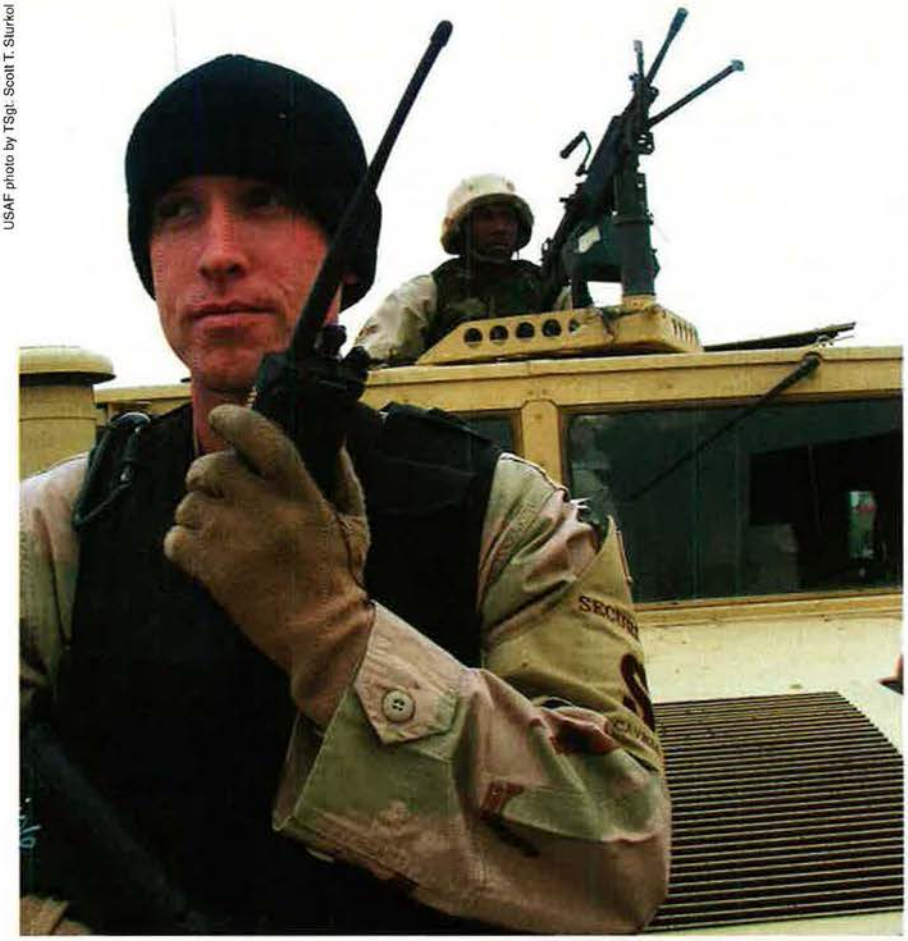
Many Uzbeks turned to underground organizations including the Islamic activists of Hizb-ut-Tahrir and the terrorists of the Islamic Movement of Uzbekistan. Tension was not only evident on Karimov's home front; his partnership with the US was also faltering.

Washington's initial goodwill toward the Karimov regime cooled. More strain resulted when Karimov began insisting that the US pay for the use of K2.

Congress began using the Framework Agreement as a report card for Uzbekistan's progress toward reform, and Karimov was definitely not making the grade. Due to Uzbekistan's lack of progress toward democratization, the US held back FREEDOM Support Act funding. (This legislation was the main US means of assisting former Soviet republics in transitioning out of communism.)

Also, International Military Education and Training and Foreign Military Fi-

USAF airmen carry gear back to their unit during a shift change at a guard booth at K2 in 2005. On the flight line are USAF C-130 cargo aircraft.



USAF photo by TSgt. Scott T. Sturkol

SrA. Joshua Pitman, a security forces airman, makes a call, while A1C Quentin Norris mans a machine gun during a training exercise at K2.

nancing funds were curtailed because of human rights concerns. Karimov chafed at losing aid he had gotten accustomed to receiving, but the US government's hands were tied by the legislation.

Karimov had learned the US paid Kyrgyzstan large annual sums for use of Manas. K2 was a military airfield, and the US saw it simply as an aspect of bilateral military-to-military ties. Manas, on the other hand, was a civilian airport, so the US felt it appropriate to pay for access.

After fruitless negotiations, Uzbekistan began to curtail flying operations at K2, but this brought no payoff, and the US foreign policy apparatus was blindsided by what was about to happen.

Bad Days

Domestic turbulence worsened. In May 2005, it exploded in Andijan, the capital of Uzbekistan's easternmost province. In the May 12-13 "Andijan incident," 23 local Muslim businessmen, imprisoned on charges of religious extremism and connections to terrorism, were undergoing trial. On the night of May 12, armed militants stormed the prison to protest the trials and freed hundreds of inmates, some of whom joined the militants in seizing local administration buildings.

Throughout the morning and afternoon of May 13, thousands gathered in the main square to express their grievances, hoping for an audience with President Karimov. Uzbek security services surrounded the crowd and began shooting and pursuing those who fled—ultimately killing scores, possibly hundreds, of men, women, and children.

The US demanded to know what had happened. At a press briefing on May 18, State Department spokesman Richard Boucher stated, "It's becoming apparent that very large numbers of civilians were killed by the indiscriminate use of force by Uzbek forces." Boucher called for a "transparent accounting to establish the facts," and also mentioned that militants may have had a role in the attack on the prison and other government facilities.

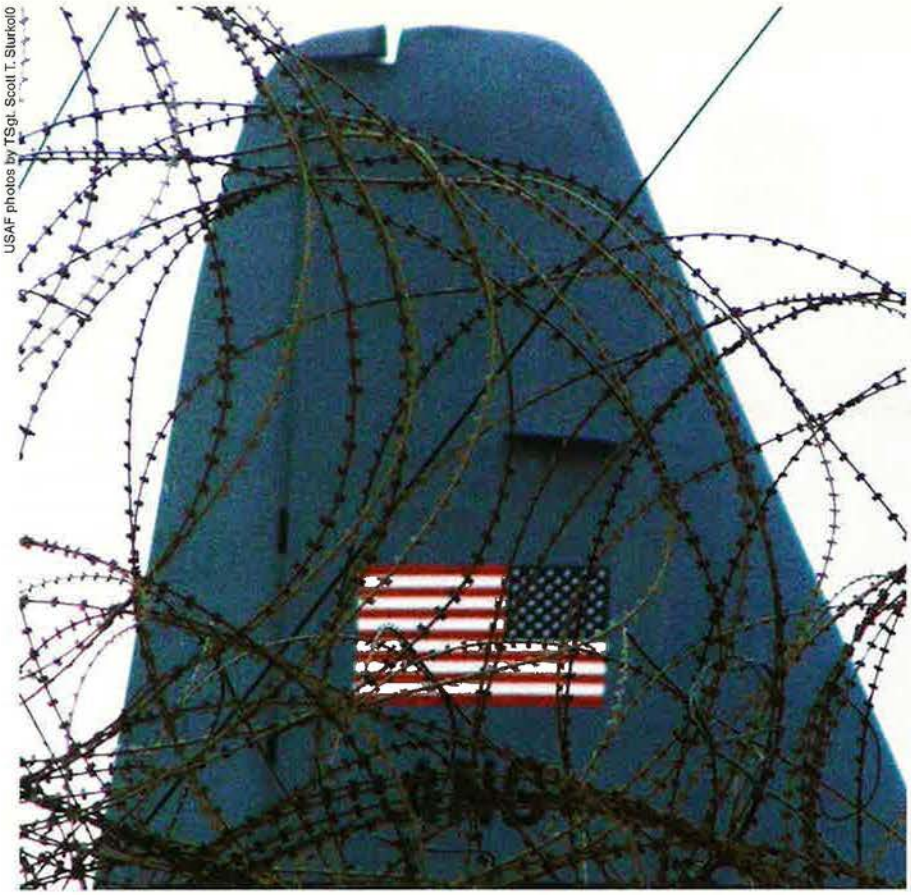
Since it was not clear if Uzbekistan attempted to target militants but killed civilians by accident, the executive branch was initially tentative about condemning Karimov for his harsh response.

Second, the US wanted to maintain rights to K2, a key logistics node in the air network between Europe and Afghanistan. The Defense Department clearly acknowledged that K2 was "undeniably critical" to OEF.

Below left: An entry to K2. Below: A woman carrying her child hurries past an Uzbek soldier in downtown Andijan during the violent May 2005 clashes.

USAF photo

AP photo by Efrem Lukatsky



USAF photos by TSgt. Scott T. Sturkol

The tail of an Air National Guard C-130 can be seen through a tangle of concertina wire at K2.

In addition to these near-term goals, the US intended to sustain bilateral relations over the long run. The State Department was quick to affirm US strategic interests in anti-terrorism cooperation, and the White House immediately expressed concern that "terrorists" from the prison might be a threat to US interests.

US policy-makers also wanted Uzbekistan to reform politically and economically. America had poured massive amounts of reform-oriented aid into Uzbekistan since its independence, and expected a return on its investments. On May 17, Secretary of State Condoleezza Rice affirmed Washington's relationship with Tashkent, but added that the US "held all countries equally responsible to engage in human rights practices that are sound and to engage in ... democratization and openness."

In an attempt to answer the ever-increasing domestic demands for a full accounting, Sen. John McCain (R-Ariz.), Sen. Lindsey Graham (R-S.C.), and Sen. John Sununu (R-N.H.) flew to Uzbekistan on their own initiative to meet with members of opposition groups and Andijan eyewitnesses. At a May 30 press conference, the trio said the events were "shocking, but not unexpected" in such a country. The Senators called for a complete investigation, and announced that a bilateral relationship is "very difficult, if not impossible, if a government continues to repress its people."

Uzbek officials refused to meet with the Senators.

Journalists sensed an apparent rift between State and Defense in the weeks following the tragedy. A senior diplomat told the *Washington Post,* "There's clearly interagency tension," admitting that State seemed "extremely cool on Karimov," while DOD wanted to avoid upsetting Uzbekistan.

The Andijan Refugees

The public perceived the security vs. democracy dilemma as the media hinted that DOD worried about losing K2, and thus pragmatically opposed a NATO inquiry into the killings, while State seemed concerned that the US would lose credibility by supporting a brutal government.

After State concurred with international demands for an investigation and declined Karimov's invitation to send observers to the Uzbek inquiry, Karimov countered by restricting night flights and curtailing C-17 operations at K2. Furthermore, Karimov and two other Central Asian Presidents jointly called for members of the coalition supporting Afghanistan operations to establish a date to end use of their nations' infrastructure.

Perhaps the greatest source of irritation for the Uzbeks was the US decision to airlift Andijan refugees. After the violence, hundreds of residents had

A USAF maintenance airman rolls equipment up to a Missouri ANG C-130 in March 2005. Behind the C-130 are two Su-27 Flanker aircraft owned by Uzbekistan.

USAF photo by TSgt. Scott T. Sturkol

A1C Janine Sivak, a security forces airman, guards an entry to K2 before the US withdrawal.

fled across the border into Kyrgyzstan, becoming refugees protected by the United Nations. The Uzbeks wanted to question the residents, whom they described as "escaped criminals and ... suspected rebels."

The US negotiated with the UN to airlift one group of refugees to Romania on July 28; a courier delivered a demarche from Uzbekistan to the US Embassy in Tashkent on July 29, invoking the SOFA's 180-day termination clause. A second group of refugees was airlifted out of Kyrgyzstan on Aug. 2; the official announcement of US eviction from K2 was made the next day.

The eviction notice effectively gave the United States 180 days to vacate K2. However, the US had already begun adjusting operations. It transferred search and rescue aircraft to Bagram, Afghanistan, and because of Uzbek complaints of runway damage, rerouted C-17 flights through Manas. On Nov. 21, the US officially ceased operations at K2—well ahead of the 180-day deadline.

Defense Secretary Donald H. Rumsfeld had visited Kyrgyzstan and Tajikistan in July 2005, shoring up America's sustained presence in Central Asia, but he did not visit Uzbekistan. Secretary of State Rice similarly gave Uzbekistan a cold shoulder, choosing not to visit while touring Central Asia in October.

Karimov took the hints, and turned instead to those who affirmed his actions in Andijan. Throughout the fall, he solidified a partnership with Russia by hosting a joint military exercise, signing an alliance treaty, and lauding Russia as "the most reliable bulwark and ally."

A Two-Pronged Approach

Uzbekistan's counterreactions prove the United States did not achieve its policy aims. The US hoped for a full accounting of the killings, but got none. To the contrary, adding America's voice to the multilateral choruses of condemnation effectively conceded Uzbekistan to the Russians, thereby undermining both long-term relational and reform goals.

Nor was the US aim of keeping access to K2 realized; the refugee airlift effectively slammed the door on that. Further, the two major "non-visits" did not align with any of the United States' four goals. Instead, they did more harm than good and contributed to Uzbekistan's realignment with Russia.

Access to Central Asia is essential to US and NATO operations in Afghanistan. But the late 2005 departure from K2 left the US with Manas as the sole air base in the region

The Air Force has witnessed, on an almost continual basis, the precariousness of its position at Manas. Minor incidents and made-up allegations have been repeatedly used by Russian-controlled media to foment anti-American sentiment around Manas. Moscow went so far as to pressure the Kyrgyz government to oust the US from Manas in 2009. Even now, it is still unclear whether the government installed this spring will let the current lease expire, extend previous agreements, or attempt to extract from the US even greater usage fees and developmental aid.

What can the US do to preemptively "lead-turn" future Andijans and attempts to expel American forces? Finding tools to engage nations that are helpful in prosecuting overseas contingency operations—yet are deeply steeped in their Soviet past and under intense Russian pressure to show the US the exit door—is indeed a tall order.

Policy-makers and airmen can take a two-pronged approach to set up the lead-turn. The first prong is to turn the tide in the "battle of the narrative" via public diplomacy. Relatively minor incidents are long remembered by locals, while major positive contributions are soon forgotten by elites operating from a "what have you done for me lately?" mind-set. The military leadership needs to continuously remind their hosts about the benefits of the American presence.

The second prong in securing US interests is to assist the local population with "basic blocking and tackling" of democratization, economic growth, human rights, and other aspects of good governance. This will remind all parties that there are broader issues at stake.

These approaches will help both the US and the host nation meet their immediate military and political needs while simultaneously preparing for the day when US troops draw down or leave. The US may have lost K2, but there is still much in Central Asia to win. ■

Lt. Col. Scott G. Frickenstein is analysis branch chief in the Force Support Division on the Joint Staff/J8. He has written extensively on statistics, military professionalism, and Central Asian security. This is his first article for Air Force *Magazine.*

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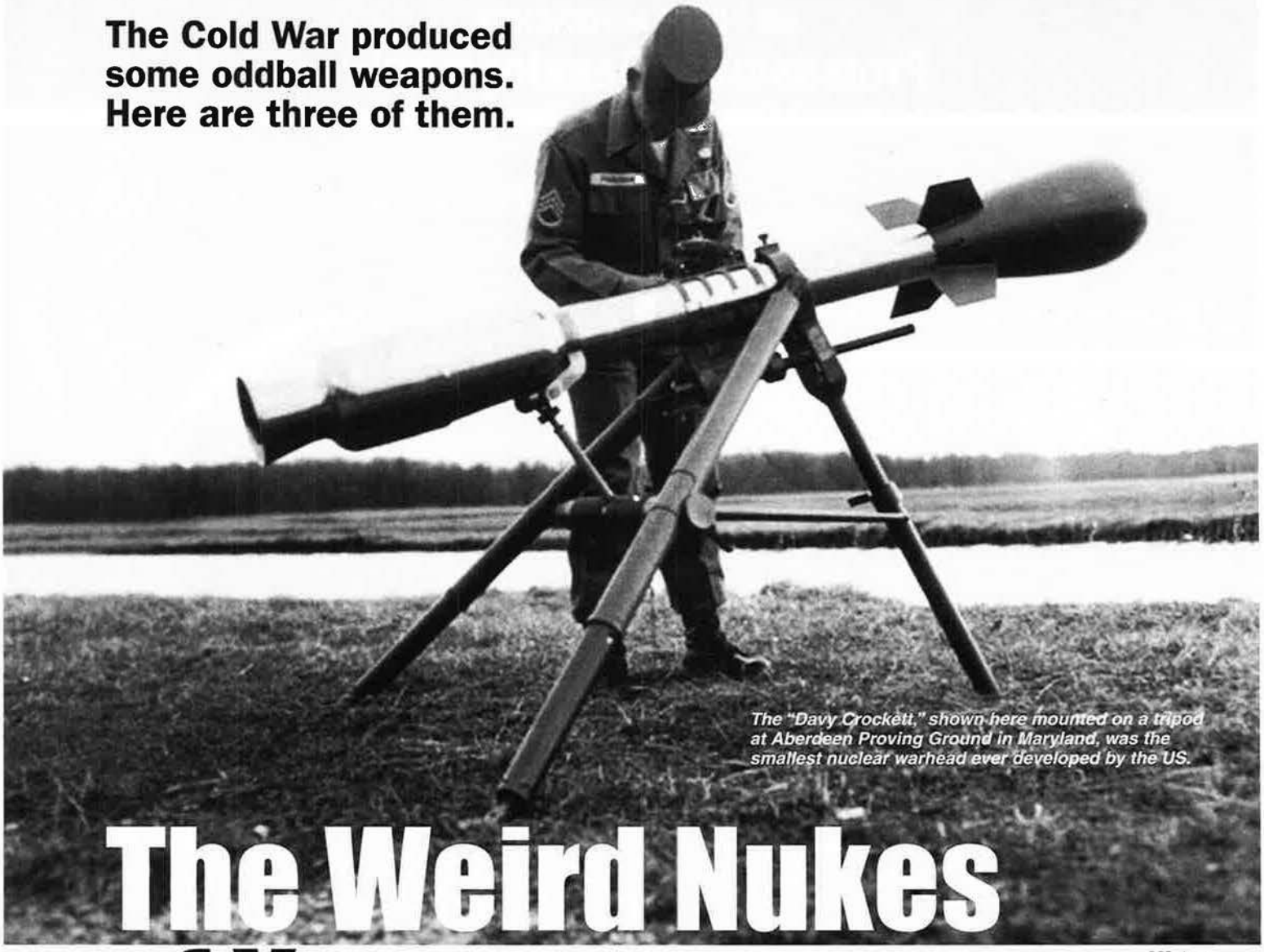
The Cold War produced some oddball weapons. Here are three of them.



The "Davy Crockett," shown here mounted on a tripod at Aberdeen Proving Ground in Maryland, was the smallest nuclear warhead ever developed by the US.

DOD photo

The Weird Nukes of Yesteryear

By Norman Polmar and Robert S. Norris

By the time the Cold War reached its height in the late 1960s, the American nuclear arsenal had grown to more than 31,000 weapons. The Army, Navy, Air Force, and even the Marine Corps worked to acquire weapons for the "nuclear battlefield," whether in the air, on the ground, on water, or underwater.

Three of the more unusual—and in the end impractical—of these weapons were the enormous Mk 17 hydrogen bomb, the Navy's drone anti-submarine helicopter equipped with a nuclear depth charge, and the "Davy Crockett" atomic mortar-recoilless rifle.

When the first US atomic bombs were developed in World War II, there was some concern about whether they could be carried in aircraft, due to size. The "Little Boy" dropped on Hiroshima tipped the scales at 9,700 pounds, and the "Fat Man" dropped on Nagasaki weighed 10,300 pounds. The immediate follow-on bombs were about the same size or smaller.

However, the development of thermonuclear or hydrogen bombs led to much larger weapons, with the largest US nuclear weapon being the Mk 17 hydrogen bomb.

This thermonuclear weapon had a yield of 13.5 megatons—almost one thousand times more powerful than the Hiroshima explosion. The Los Alamos laboratory developed the Mk 17 at the end of a series of thermonuclear bombs initiated in 1950. This followed the Soviet detonation of an atomic bomb in 1949, several years before Western intelligence agencies expected such an event.

It was the era of "bigger is better." The zenith of "big bombs" would be seen on Oct. 30, 1961, when the Soviet Union detonated (at Novaya Zemlya in the Arctic) a thermonuclear bomb that produced an explosion equivalent to 58 megatons—the largest man-made explosion ever achieved. Soviet Premier Nikita Khrushchev would later write in his memoirs: "It was colossal, just incredible! Our experts later explained to me that if you took into account the shock wave and radioactive contamination of the air, then the bomb produced as much destruction as 100 million tons of TNT."

In the US, Gen. Curtis E. LeMay, commander of Strategic Air Command

from 1948 to 1957 and later Air Force Chief of Staff, was a key advocate of big bombs. According to a SAC history, LeMay urged development of a 60-megaton bomb, claiming it would be useful to destroy hardened targets, have a deterrent value of its own because of large Soviet weapons, and be effective if deterrence failed because one "super" bomb could destroy targets that would require several lower-yield weapons.

The Lawrence Livermore National Laboratory provided SAC with proposals for 22,000-pound bombs that would have yields of 45 MT or 60 MT. Neither was developed, as critics claimed they had no realistic military value and could cause widespread nuclear contamination.

However, the Los Alamos National Laboratory's proposed Mk 17 hydrogen bomb with a 15-MT yield was considered a practical weapon.

The Mk 17 was 24 feet, eight inches long and five feet, 10 inches in diameter. It was the second most powerful nuclear weapon to be developed and deployed by the United States. The Mk 17 design was successfully tested on May 4, 1954, during the Operation Castle series of nuclear tests at Bikini Atoll in the South Pacific. Its estimated yield was 13.5 MT.

The bomb entered the US inventory in May 1954 with about 200 weapons produced. It was followed into the inventory a few months later by the similar B24 thermonuclear bomb, with a similar predicted yield of 10 to 15 MT. The B24 was never tested, but a total of 105 bombs were produced.

Although never dropped in combat, a Mk 17 was once dropped inadvertently in New Mexico.

On May 22, 1957, one of the bombs was being transported to Kirtland AFB, N.M., in Albuquerque. Approaching Kirtland, the B-36 Peacemaker bomber hit turbulence at 1,700 feet while the Mk 17 was being secured for landing. The turbulence caused the 21-ton bomb to fall, carrying away the bomb bay doors.

Its parachute did not fully deploy, and the bomb struck the ground in an open field. The conventional high explosive within detonated, creating a crater 25 feet in diameter and 12 feet deep. Fortunately, the plutonium capsule—on board the aircraft—had not been inserted, thus there was no nuclear explosion. The mishap was one of 32 confirmed US nuclear weapons accidents—"Broken Arrows"—between 1950 and 1980.

The Mk 17 and B24 were in service for brief periods, until 1957 and 1956, respectively. Their size restricted them to being carried only by the giant B-36 Peacemaker. By the mid-1950s, the B-36 was being phased out of the nuclear strike role in favor of the B-52 Stratofortress and B-47 Stratojet, while smaller, more efficient nuclear weapons were being produced for those aircraft and for fighter and attack aircraft.

At the other end of the nuclear weapons spectrum was the Davy Crockett—a battalion-level weapon intended to provide US Army infantry units with an effective weapon against Soviet armored forces.

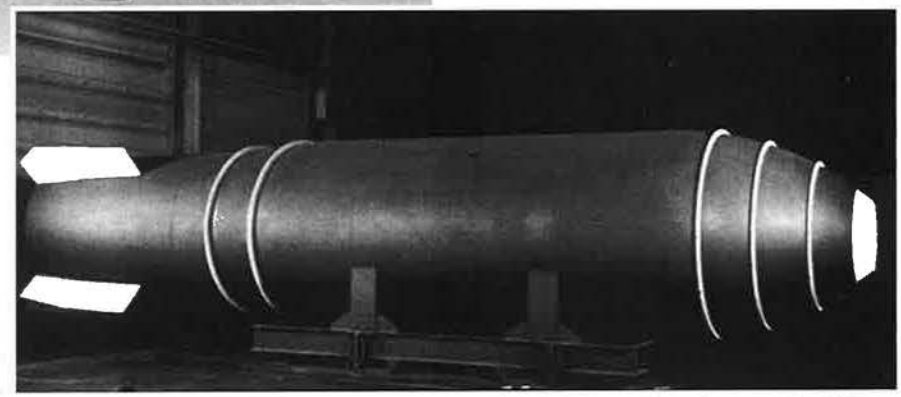
It was a recoilless rifle that could be fired from a light vehicle or from a tripod mount on the ground. The rifle fired a projectile 30 inches long, 11 inches in diameter, and weighing 76 pounds. Its warhead produced a yield in the 10- to 20-ton range (.01 to .02 KT). This was a smaller yield than predicted for the other applications of the W54 warhead, in the Falcon air-to-air missile or the Special Atomic Demolition Munition (SADM).

The weapon was tested twice in 1962, with live nuclear rounds producing estimated yields of 22 and 18 tons. The second test, on July 17, 1962, was witnessed by Attorney General Robert F. Kennedy and Gen. Maxwell D. Taylor, then a White House advisor and subsequent Chairman of the Joint Chiefs of Staff. It proved to be the last atmospheric nuclear test at the Nevada Test Site.

Two versions of the recoilless rifle could fire the nuclear warhead: a 120 mm weapon with a range of 6,650 feet, and a 155 mm weapon with a range of 13,125 feet. These ranges (less than three miles in all cases)—coupled with the lengthy process for obtaining release authority for nuclear weapons, especially in a combat environment where radio communications could be interrupted or denied—raised questions about the practicality of the Davy Crockett.

Still, with the massive proliferation of nuclear weapons, the Army persevered, and 400 nuclear rounds were produced for the system. It entered the inventory in 1961, and beginning in 1962, it was deployed with the US Seventh Army in West Germany and subsequently with Army units in Hawaii, Guam, Okinawa, and South Korea.

USAF photo



B-36s, such as the one shown at top, were tasked with carrying the massive 21-ton Mk 17 nuclear bomb (above), which was nearly six feet in diameter.

Photo courtesy gyrodynehellicopters.com

A remotely operated DASH comes in for a landing on the deck of a US Navy destroyer. Plans called for DASH to deliver a nuclear depth charge.

The withdrawal from service of the Davy Crockett began in July 1967, after six years in the inventory. The last weapons were retired in 1971. Its decade of service turned out to be much longer than the Mk 17 and B24 hydrogen bombs.

For the Navy's part, one of the most unusual nuclear weapons systems of the Cold War was the Drone Anti-Submarine Helicopter (DASH). This was the only unmanned vehicle intended to carry a nuclear weapon—in this situation, a B57 nuclear depth bomb with a yield of about five KT.

By the late 1950s, the Navy was installing on ships the large AN/SQS-26 sonar, with an effective detection range beyond that of ship-launched, anti-submarine torpedoes or even rocket-assisted torpedoes.

The Trouble With DASH

The British and Soviet navies were developing manned helicopters to exploit advanced shipboard sonar detections. The US Navy decided to develop an unmanned helicopter. It was hoped DASH could fly from smaller ships than could manned helicopters, operate in bad weather that would keep a manned helicopter on deck, and have higher readiness to launch in response to sudden sonar detection.

DASH was developed from the Gyrodyne firm's one-man "Rotorcycle," intended to carry a single marine and his equipment. The Marines had evaluated two XRON-1 and three YRON-1 prototype manned Rotorcycles, with the first XRON-1 flying in 1956. The DASH was to be a modification of the off-the-shelf RON-1 design, capable of carrying two Mk 44 anti-submarine, acoustic homing torpedoes, one Mk 46 torpedo, or a B57 depth bomb.

The helicopter had a range of some 35 miles, based on the range of a ship's radar, needed for drone control. For a DASH mission, the drone was "piloted" during takeoff and landing by an officer at a console adjacent to the ship's flight deck. During the mission, the drone was controlled by an officer in the ship's combat information center who would "fly" the helicopter to the target area and release the weapon. No sensors were carried by DASH, and its endurance was just over two hours.

Gyrodyne was awarded a contract for the first unmanned DSN-1 helicopter on Dec. 31, 1958, but the first unmanned landing did not occur aboard ship until two years later. The definitive DSN-3 became operational in late 1962, redesignated QH-50C in the new joint designation system. These drones were deployed two per anti-submarine ship, beginning in January 1963 aboard the destroyer USS *Wallace L. Lind*. An improved QH-50D variant entered service in 1966.

US Army photo

The Davy Crockett nuclear weapon could be launched from either a light vehicle or a stable tripod.

In all, the Navy built or modified more than 200 destroyer-type ships and frigates to operate DASH. The procurement numbers were impressive—12 prototypes were followed by 732 QH-50C/D aircraft.

While DASH was deployed with anti-submarine torpedoes, no ships are known to have carried the planned nuclear depth charges. DASH was in operational service with the Navy for less than a decade: from November 1962 to January 1971. More than 400 DASH helicopters were lost in this period.

The large number of DASH casualties was due in large part to the Navy's operational policies. To conserve the aircraft, destroyers that operated with aircraft carriers would not fly their helicopters en route to overseas areas. And because of problems with electronic interference, they could not fly their drones while the carriers were operating in forward areas.

Thus, during a typical six-month deployment, the ships rarely operated the drones, and this led to operators lacking flight experience. Furthermore, there was a desire not to risk the drones but to retain them in a high state of combat readiness.

Dropped from anti-submarine ships by 1971, the DASH helicopters did serve aboard a few US ships in the Vietnam War for gunnery spotting (equipped with television cameras), and were flown for several years by the Japanese Maritime Self-Defense Force.

No nuclear weapons were employed in combat during the 45 years of the Cold War, although tens of thousands were poised and ready for use.

In retrospect, many would have been "practical" in the terrible environment of nuclear conflict, but many others, including those described above, were not only impractical, but absurd in concept as well as in development. ■

This article is adapted from The US Nuclear Arsenal: A History of Weapons and Delivery Systems Since 1945, *by Norman Polmar and Robert S. Norris. Polmar is a defense analyst and author in the Washington, D.C., area. Norris is senior research associate at the Natural Resources Defense Council in Washington, D.C. Polmar's most recent article for this magazine was "Flights From the Deep," in the March 2004 issue. This is Norris' first article for* Air Force *Magazine.*

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In numerous campaigns and wars, airpower turned out to be the "force of decision."

A Short History of "Decisiveness"

By Phillip S. Meilinger

Field Manual 3-0, the Army's keystone doctrine document, declares, "The Army's primary purpose is deterrence, and should deterrence fail, decisively winning the nation's wars." It will do this "by fighting within an interdependent joint team."

Any airman making such a claim—that airpower might be "decisive" in war—would be roundly chastised or, at minimum, be accused of parochial thinking. Yet military airpower has often been decisive in war.

The term "decisive" does not mean one service achieves victory itself. Airpower has seldom achieved victory independent of surface forces. It is equally difficult to list any recent campaign in which land or sea power achieved victory without airpower.

It is more useful to examine the political and military objectives and then determine airpower's role in achieving them. Viewed in that light, airpower is seen as having a unique power to deter, detect, deliver, defend, deny, and destroy—and it has performed these missions with great success for decades.

EARLY DECADES

Airpower's unique ability to strike hard and fast has been demonstrated many times. Today, political considerations dictate that the US project power quickly and precisely, with low risk of collateral damage or civilian casualties. What follows is a brief chronology of campaigns and wars where airpower played a particularly vital—and decisive—role.

In 1914, as the German Army moved on Paris, French and British reconnaissance aircraft noted a gap developing between the German First and Second Armies. The British Expeditionary Force moved into this gap, halting the German advance and disrupting Germany's strategic war plan irrevocably. The resulting Battle of the Marne saved Paris and probably France.

After the war, the Royal Air Force policed British colonies in the Middle East and Africa in lieu of expensive ground forces. These colonial policing operations saved thousands of lives and millions of pounds sterling, while also being successful in maintaining order throughout many areas of the British Empire.

WORLD WAR II

In 1940, the Battle of Britain was a watershed event for airpower. It proved that whoever controls the air also controls the ground and sea beneath it. If Germany had achieved air superiority over the English Channel, Britain could not have

The railyard near Limburg, Germany, after a bombing raid in 1945.

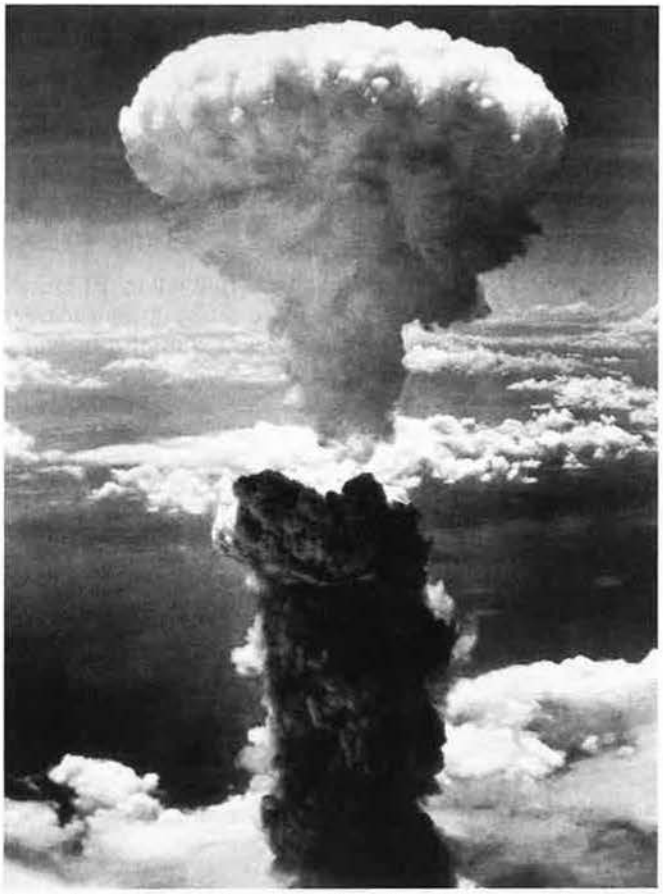
prevented an invasion. Given the strength of the Nazi Wehrmacht, this would have inevitably led to British defeat, leaving the US unable to intervene effectively in the war. There has seldom been a clearer example of airpower's importance to the outcome of a major war.

The following year, when the Germans assaulted Crete, the British rushed to defend the island with the Royal Navy. In the ensuing battle, the Luftwaffe sank three British cruisers and eight destroyers; severely damaged two battleships, an aircraft carrier, and seven more cruisers; and sank two dozen smaller vessels. It was Britain's worst naval defeat of the war. German paratroopers then captured the strategic island that dominated the sea-lanes in the eastern Mediterranean for the remainder of the war.

From 1941 to 1943, the Battle of the Atlantic was another campaign of enormous significance in the European Theater of World War II. German U-boats came close to severing the vital sea-lanes between Britain and the US. Long-range aircraft, especially B-24s, were instrumental in locating and defeating German submarines. Most of the U-boats destroyed during the war were sunk by airpower. In addition, aircraft sank nearly 900 enemy merchant ships, while less than 200 were sunk by Allied submarines and surface ships.

In the 1943 European campaign, the Italian island of Pantelleria—a stronghold in the Mediterranean Sea between Africa and Sicily—surrendered solely as a result of Allied bombing. The island was then used as an Allied air base and stepping stone for the invasion of Sicily.

The 1944-45 Battle of the Bulge achieved notable success for the Germans during its first week, due largely to surprise and also heavy winter weather that grounded Allied airpower.



A mushroom cloud rises over the industrial manufacturing center at Nagasaki, Japan, on Aug. 8, 1945.

When the weather lifted, however, American airpower halted the German offensive, prevented reinforcement and resupply, and then turned the Germans back. Field Marshal Karl R. Gerd von Rundstedt ruefully noted the key role played by airpower in defeating his offensive.

OVER NORMANDY

The February 1944 air campaign made the invasion of Normandy possible, Gen. Dwight D. Eisenhower later stated. The "Big Week" had broken the back of the Luftwaffe and provided the needed air superiority over the beachhead.

On June 6, 1944, the Allies flew more than 12,000 sorties over the French coast while protecting the invasion forces below. The Luftwaffe mustered less than 100 sorties that day.

After the July 1944 breakout from Normandy, Lt. Gen. George S. Patton's Third Army raced across France using Brig. Gen. Otto P. Weyland's XIX Tactical Air Command as his southern flank. Weyland used his fighter-bombers to keep German forces at least 30 miles from the Third's vulnerable flank. This was one of the most successful examples of air-ground maneuver in history. In one case, a German army of 20,000 men surrendered as a result of constant air attack—Maj. Gen. Eric Elster insisted upon surrendering personally to the airman who had brought about his defeat.

COMBINED BOMBER OFFENSIVE

The combined air offensive, from 1943 to 1944, deserves a book in itself and has raised great controversy ever since.

What cannot be disputed is that all German economic indicators—the production of steel, oil, electric power, chemicals, armaments, etc.—dropped precipitously from mid-1944 on, just as the Allied bomb tonnage began rising dramatically. It is crucial to recall that 72 percent of all Allied bombs falling on Germany were dropped after July 1, 1944. Long before Allied ground forces ever set foot on German soil, the enemy's economy had collapsed.

THE PACIFIC WAR

On Dec. 7, 1941, carrier-based airpower was the deciding factor in the Japanese attack on US forces around Pearl Harbor, Hawaii. By the end of the day, four US battleships had sunk and four others were severely damaged. The US Pacific Fleet was decimated and would be unable to mount offensive operations for months thereafter.

Three days later, the Royal Navy's *Prince of Wales* and *Repulse* made the blunder of venturing into open water without air cover. They were quickly sunk by Japanese aircraft off the Malayan coast, leaving the British with no capital ships in the Pacific—a loss that hamstrung British strategy for the next three years.

In June 1942, in one of the great air battles of the Pacific war, American aircraft from all services attacked the Japanese fleet as it moved toward the island of Midway. In this battle, where the enemy fleets never saw each other, the Japanese lost four of their six large aircraft carriers; the US lost one. The remainder of the Japanese invasion fleet turned back, and with it ended Japanese expansion in the Pacific.

Beginning in August 1942, air interdiction operations were essential in isolating the island of Guadalcanal, disrupting Japanese resupply efforts, and ensuring Allied success in this, the first US offensive campaign in the Pacific Theater.

In 1943, Fifth Air Force interdiction operations were similarly effective in the New Guinea campaign. Japanese resupply convoys were virtually halted, thereby isolating the

A B-52 drops a load of bombs in Southeast Asia during the Vietnam War.

theater and helping Gen. Douglas MacArthur's island-hopping strategy to be successful.

In the Pacific in 1945, mines laid by B-29s of the Twentieth Air Force sank 95 percent of all Japanese ships lost to mines during the war. This staggering total meant the paralysis of Japanese water-borne movement in the Inland Sea.

The continuing US strategic bombing campaign, culminating in the atomic strikes against Hiroshima and Nagasaki, brought about Japanese surrender prior to an invasion. During his radio address to the Japanese people on Aug. 14, 1945, Emperor Hirohito was clear in recognizing the role of the atomic bombs in his decision to surrender. Although casualty projections for the scheduled land invasions are debatable, the atomic strikes undoubtedly saved hundreds of thousands of Allied lives, as well as millions of Japanese lives, both military and civilian.

EARLY COLD WAR

The 1948 Berlin Airlift was perhaps the West's greatest victory of the Cold War, a period in which airpower was repeatedly proved decisive. After the Soviets blockaded Berlin and forbade all land traffic, Allied airpower was able to keep West Berliners provisioned with food and fuel for 15 months. Airpower was shown to be a powerful tool of peaceful diplomacy. The entire world, but especially Germany, saw the West was attempting to save Berlin and its citizens, while the Soviets were trying to destroy them.

In the Korean War, Gen. Douglas MacArthur and several of his top ground commanders stated that airpower prevented North Korean forces from pushing them off the Korean peninsula. The interdiction campaign waged against North Korean forces and their supply lines stretching back into the north was one of the most effective in history.

From 1952 to 1953, the air superiority campaign in "MiG Alley" was, like the Battle of Britain, of enormous significance. Had the United Nations lost air superiority, the massive Chinese ground forces supported by airpower would have wreaked havoc on UN forces stalemated near the 38th parallel. The MiG Alley battles, in which the US Air Force compiled a victory ratio of 10-to-one, were instrumental in preventing a Communist victory and preserving South Korean independence.

In 1961, the Cuban Air Force was tiny, but it was enough to ensure air superiority over the beaches at the Bay of Pigs. Without air cover, American-supported Cuban forces attempting to retake their country were destroyed, and Fidel Castro's Communist regime clung to power.

MIDEAST TO VIETNAM AND BACK

In 1967, Israel put on one of the most effective air campaigns in history. The Israeli Air Force destroyed the Egyptian, Syrian, and Jordanian Air Forces, wiping out some 400 aircraft in one day. This air supremacy, which extended over the ground battlefields, paved the way for an overwhelming Israeli victory in the Six Day War.

In Vietnam in 1968, US airpower destroyed two divisions of North Vietnamese troops besieging the American firebase at Khe Sanh. At the same time, airlift kept the base well-supplied and reinforced. (This battle was a stark contrast to the situation at Dien Bien Phu in 1954, when French forces, lacking sufficient airpower, were overrun by the Viet Minh, essentially ending French involvement in Southeast Asia.)

Toward the war's end in 1972, Linebacker I was instrumental in preventing South Vietnam from being overrun during the Easter Offensive. Since American ground forces had already been withdrawn and the South Vietnamese Army was not strong enough to hold, American airpower was essential in blunting the invasion. It must be remembered that the only difference between victory in 1972 and the South Vietnamese defeat in 1975 was the presence of American airpower during the first invasion from the north and the lack of that airpower in the latter invasion.

Linebacker II's goal at the end of 1972 was to bring the North Vietnamese back to the negotiating table for serious discussions, while at the same time reassuring the South Vietnamese government of American resolve. Although success was short-lived and Saigon fell less than three years later, it is nonetheless true that peace accords were signed within weeks of the Linebacker II air offensive and American prisoners of war were released soon after. Airpower achieved President Nixon's limited objectives.

The next year, in a massive airlift termed Operation Nickel Grass, the US Air Force moved more than 22,000 tons of critical supplies to Israel during the 1973 Yom Kippur War. Munitions and spare aircraft parts were especially crucial to Israeli survival.

SMALL WARS OF THE 1980s

In June 1981, a daring strike by Israeli aircraft on the Osirak nuclear reactor just south of Baghdad set back Iraqi nuclear weapons development. Operation Desert Storm, less than a

USAF photo by SrA. Jeffrey Allen

Airmen load AIM-120 missiles on a cart at Aviano AB, Italy, during Operation Allied Force.

decade later, would have been a much more dangerous event had Saddam Hussein possessed nuclear weapons.

The year 1982 was a big one for airpower. British success in the Falklands would have been impossible without land- and sea-based airpower. Raids by Vulcan bombers on the Port Stanley airfield caused the Argentines to reposition fighter aircraft to defend Buenos Aires, thus limiting the effectiveness of Argentina's air force over the Falklands and contributing to the British victory.

Later that year, the Israeli Air Force routed its Syrian counterpart in the Bekaa Valley War, running up an air-to-air kill ratio that may have been as lopsided as 85-to-zero. Israeli F-15s and F-16s proved vastly superior to their Soviet-built counterparts and gave Israel air superiority for its invasion of southern Lebanon.

In 1986, Operation El Dorado Canyon's political objective was to convince Libya's Muammar Qaddafi to cease his support for anti-US terrorists in the wake of an attack on a Berlin nightclub that killed two Americans. Although less than two dozen aircraft actually delivered ordnance, airpower achieved President Reagan's political objectives.

Airpower's major role in the 1989 operation to oust Manuel Noriega from power in Panama came largely through airlift and tanker support. The war-opening F-117 strike may have generated headlines and controversy, but close air support, gunship, and jamming operations were also important factors in the US success.

1990s VICTORIES

Operation Desert Storm, in 1991, was one of the most decisive military victories in modern times. For six weeks, a coalition led by the US pummeled the Iraqi forces at strategic and tactical levels. When major ground operations finally began, US Central Command and CIA analysts determined that all Iraqi front-line divisions had already been rendered combat ineffective by coalition airpower. As former USAF Chief of Staff Gen. Merrill A. McPeak stated, it was the first time in history a field army had been defeated by airpower.

From 1991 through 2003, the coalition decided not to occupy Iraqi territory. Instead, airpower was used to prevent Iraqi aircraft from flying in certain areas and to prevent Iraqi ground forces from deploying in a threatening manner close to the Saudi border. These operations, Northern Watch and Southern Watch, were amazingly successful. Despite repeated attempts by Iraqi air defenses to disrupt these "air control" operations, the coalition flew more than 300,000 sorties over 12 years with no combat losses. More importantly, Iraq was contained—it was unable to build weapons of mass destruction or threaten her neighbors.

For 25 days in 1995, airpower conducted a scrupulously precise and effective air campaign, Operation Deliberate Force. After Josip Broz Tito had died in 1980, Yugoslavia—composed of a number of disparate ethnic groups—began to splinter. In 1995, factions in Bosnia took up arms against one another. One faction, supported by Serbia, shelled civilian targets in Sarajevo, prompting NATO air forces to intervene. Deliberate Force brought warring factions to the negotiating table at Dayton, Ohio, after which Bosnia obtained its freedom and peace.

By 1998, another former Yugoslavian province began agitating for more autonomy. This was Kosovo. Serbia, under the leadership of Slobodan Milosevic, intervened to prevent Kosovo's secession by forcibly deporting hundreds of thousands of ethnic Kosovars from their land. Once again NATO acted, and as with Bosnia, it was decided ground forces would not be used for fear of escalation of bloodshed. Instead, airpower was used to decimate the Serbian forces in Kosovo while also taking down key industrial targets throughout Serbia itself. After 78 days of relentless yet precise Operation Allied Force air strikes, Milosevic capitulated. The Kosovars who had been driven from their homes were able to return, and Kosovo gained its autonomy.

USAF photo by SSgt. Michael B. Keller

An F-15E is refueled by a KC-10 over Afghanistan during Operation Enduring Freedom.

AFTER SEPT. 11

Following the Sept. 11, 2001 terrorist attacks, the US and a coalition of allies attacked Afghanistan—home to the al Qaeda terrorist organization that had orchestrated the attacks against New York and the Pentagon. Airpower, supported by special operations forces and indigenous Afghan units, brought the Taliban government that supported al Qaeda to its knees. Afghanistan's capital, Kabul, was liberated by Northern Alliance forces before US conventional ground forces had even entered the country. This stunning military victory was achieved without a single aircraft lost to enemy action.

By 2003, Saddam Hussein's continued defiance of United Nations sanctions finally brought action. The US, backed by UN resolutions, attacked Iraq with the intention of bringing down Saddam's regime and installing a democratic government in Baghdad. Once again, airpower played a key role, necessitating far fewer coalition ground troops than had been used in Desert Storm. In northern Iraq, conventional ground troops were barely used, due to the refusal of Turkey to allow operations from its soil. Instead, airpower and a handful of special operations forces, an airborne brigade, and indigenous Kurdish forces neutralized 11 Iraqi divisions. Baghdad fell, and the regime was toppled with the loss of only one aircraft and less than 150 coalition combat deaths.

Airpower will not be decisive in all wars or in all circumstances, but neither will traditional surface forces. The events of the past several decades indicate airpower can be extremely decisive in a variety of situations due to its ability to react quickly, precisely, and with discrimination to help achieve political and military objectives. Those who claim airpower is not decisive simply haven't been paying attention. ■

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USAF photo by Amn. Jerilyn Quintani

Saved by the Wild Blue Yonder

By David A. Lande

If "Off We Go ... " hadn't appeared at the last second, what would airmen be singing today?

In the 1930s, the leadership of the United States Army Air Corps wanted an official service song—one that would inspire, build camaraderie, and forge an identity. The other armed forces had songs: "The Marines' Hymn," "Anchors Aweigh," and "The Army Goes Rolling Along" (originally "The Caisson Song").

The Air Corps had no budget of its own for such pursuits. Regardless, then-Brig. Gen. Henry H. "Hap" Arnold and his boss, Maj. Gen. Oscar Westover, sought a song to capture the distinctive identity of airmen. They found support in the form of a patriotic publisher and aviation enthusiast named Bernarr A. Macfadden.

In the April 1938 issue of his popular magazine *Liberty,* Macfadden announced

a song contest and put up prize money in the amount of $1,000. Rules stipulated that "harmonic construction must be simple," while the range "must be within limits of untrained voice" and the pace "in march tempo of military pattern."

Beyond that, anything was fair game.

A deluge of entries came from all parts of the country, written by a cross section of hopefuls that included mechanics, waitresses, bureaucrats, church organists, widows, prison inmates, retirees, and even a few professional composers.

Results fell short of hopes.

Members of the song selection committee pulled no punches in reporting that, after months of judging material, they had found little of value in the 700-plus entries. Most songs fit the rules of simple harmonic construction and vocal limits of untrained voices, more or less, but a progress update from a junior officer-liaison to Arnold noted, "Many of the songs were submitted by persons of unquestioned patriotism, but with obvious signs of illiteracy."

In newspapers of April 1939, journalists were equally blunt about the songsmiths: "Most of them aped old tunes; none of them caught the spirit of the Air Corps."

The judging committee, formally known as the Advisory Song Committee or Ladies' Song Committee, was mostly composed of wives of high-ranking Air Corps officers. Several of their surnames are still familiar—MacDill, Tinker, and Spaatz. Members all had musical credentials and in some cases accomplished backgrounds. This was particularly true of chairwoman Mildred A. Yount, who had been a child musical prodigy before becoming the wife of the Air Corps' top training commander, Brig. Gen. Barton K. Yount.

The committee "received over 700 manuscripts and only a few were worth even taking to musical experts that we had decided to consult," groused Mrs. Yount. "The entries were so poor that we sent an appeal to the [American Society of Composers, Authors, and Publishers], calling their attention to the competition, and asking them to enter."

Commercial music publishers submitted previously published songs, among them "Flying High," "Aces Up," and "Men With Wings" (from a movie of the same name). "Wings on High" was the product of Meredith Willson, who went on to musical immortality with "The Music Man." The Air Corps approached the legendary Irving Berlin to write a song. Although not chosen, it did find fame as the title song in Moss Hart's play and movie called "Winged Victory."

The committee's ultimate charge was to recommend four or five finalists to the Air Corps' top brass by a deadline that was extended to July 15, 1939.

The song that went on to Air Force immortality wouldn't arrive until two days before the extended contest deadline.

But what if the song about "the wild blue yonder" hadn't come in time? Would there have been a choice from the discard pile instead?

By some accounts, the rejects could never be known, because *Liberty* had gone to great lengths to ensure all entries were returned. The magazine's records of the contest, along with *Liberty* itself (which folded in 1950) have long disappeared.

Calls to descendants of the song selection committee yielded clippings and pleasant reminiscences, but no contest-related notes. Music historians doubted any traces of the other songs would be found.

Nonetheless, the search eventually led to a dusty box at the National Archives, carted out by an archivist who conjectured that it had not been off the shelf in decades. Inside, jumbled papers revealed bits and pieces of songs, their titles sometimes introduced in yellowed cover letters infused with now-moot enthusiasm.

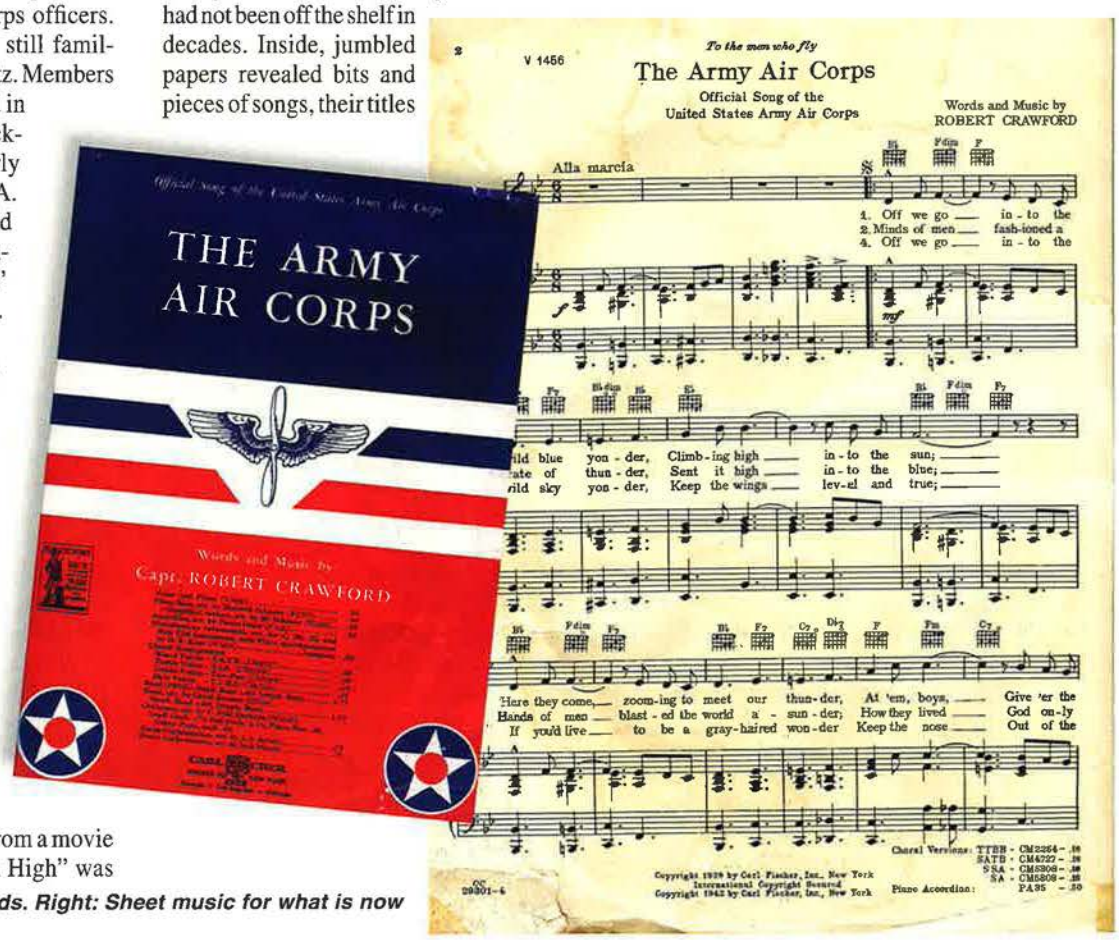
Today, the Singing Sergeants—official chorus of the Air Force—might be belting out a rendition of "Crank 'er Up," written by a former airplane mechanic from Washington, D.C. Or perhaps "Eyes of the World Are We." Or even a scrappy "Give 'er the Gun."

There was the simple gusto of "Give Me a Ship and a Song." A bit awkward, but still on course was "Headin' in the Wind, To Win."

Some composers fueled patriotism with songs such as "Eagles of Uncle Sam" and "Serve Your Country," although the latter undoubtedly lost points for lack of Air Corps focus in Marine-like lyrics that included "Uncle Sam trains men for air, on land or sea."

"Eyes of Our Nation" sounded promising, but began to sputter and stall with a second verse that went as follows:

We're the eyes of the nation,
Scouting here and there.
Our sky wagons at home in the clouds,
With us none do compare.
We're the boys of courage,
A stout and fearless bunch.
Let's sing a song in the choppy air waves
As we do our stunts.



Facing page: The Thunderbirds. Right: Sheet music for what is now the Air Force's official song.

Many compositions played it safe with no-nonsense titles such as "Wings of USA," "Spirit of the Air Corps," "Our Air Defenders," and "Song of the Flying Corps." Others loosened up and took a chance with jaunty ditties such as "Buddy Pal—Hear Me Call" and "Uncle Sammy in the Air." Both charted a direct route to the discard pile.

"Squadrons of the Air" made sure we knew we weren't singing about squadrons of, say, PT boats. One contented composer came up with, "The Air Corps Is Home Sweet Home to Me."

Too arcane for public consumption was the entry from a retired air officer who offered "The Chandelle," named for the abrupt turning-while-climbing tactic developed by French pilots in World War I. Another composer set a plodding tempo in "The Airplanes Keep Winging Along," which could have led smoothly into a medley with other submissions, "Up in the Sky" and "Up in the Stratosphere."

"Props and Wings" would have grown obsolete quickly after the dawn of the jet age. "Aero Rag" likewise suffered a limited shelf life, especially since ragtime had peaked more than 20 years before.

Certain entries betrayed the real reason some young men become fighter pilots: "All the Girls Smile on Me," which resonated with other submissions such as "Above the Clouds With You" and "Let's Take Off Together."

A few were quite nebulous, such as "Up in the Clouds" and "Over the Clouds." Several reflected newfound optimism that truly had come with the awe-inspiring advent of airpower: "Peace Forever" and "The Sky Is Clear."

"Idols of Aviation" and "Come On and Hail the Airmen" appealed to those who worshipped the air heroes of the day.

There were a number of marches, all sounding pretty much the same in name: "United States Air March," "US Army Air Corps March," and "The Air Corps on Parade."

Lyrics of "Air Corps March" were representative of the type:

Hurrah! For the men who man the planes
Through space at ever a dazzlin' speed
And proudly soar where the eagle reigns
And fill their lives with valiant deeds.

Contact! What a savage thrill it brings
To hearts as they hear the motors roar
And list to the wind and song it brings
And ride the skies like gods of yore.

Hats off! For the men who ride no more
Through time their deeds will live again
And though they rest on that distant shore
Their lives have not been lost in vain.

Chorus

With a whirr and a roar we'll give 'er the gun
And fly o'er the highest cloud
With a bank and a turn and a loop well done
Of our mounts we're justly proud
With a song in our hearts we'll sing once more
All Glory to the Old Air Corps.

Note that the last line of the chorus about "the Old Air Corps" showed a certain forward-thinking quality, considering that the Air Corps name had existed a mere 12 years in 1938.

The award for run-on title goes to a composer from Bad Axe, Mich.: "For Greater Than the Eagle's Wings, Are Air Corps of the USA." In contrast, "Sons of the Sky" was crisp and alliterated, but too many S-words in its refrain were bound to elicit say-it-don't-spray-it protests.

Numerous entrants supplied only lyrics, accompanied by hopeful notes asking that a professional composer might kindly tailor a tune to fit. Those could have been married up with the few that came with only the suggestion of a melody, such as "Ninety-Nine Out of a Hundred Wanna Be Loved," or an idea to create verses to fit the 1867 tune, "The Daring Young Man on the Flying Trapeze," for which the entrant made a point of claiming in his cover letter that he had witnessed a resurgence in the song's popularity among young airmen.

A polite query came from a piano tuner in Oregon: In the Corps, was "corps" pronounced singular or plural? It was crucial knowledge to get his rhyming right, he explained. A carbon copy shows then-Lt. Col. Ira C. Eaker, assistant chief of Air Corps public relations, mailed back a dutifully patient response.

Had the committee been forced to finalize their lukewarm choice two days earlier than they did, these would have made the cut: "Give 'er the Gun," "Wings on High," "Wings of the Nation," and "Spirit of the Air Corps."

The last song, submitted by an Air Corps major, was quietly discouraged from consideration. "Spirit of the Air Corps," the committee noted, was "an excellent song but, according to our experts, a steal on 'On Brave Old Army Team.'"

The group consulted with several professional musicians, including Col. Edmund L. Gruber, composer of "The Caisson Song," who sagely uttered: "You can't force Army songs. When you find a song you will like, it will come from a young flyer, one who has the feel of flying in his bones and knows the thrill and the glamour of the Air Corps."

Gruber, of course, was right: The winning entry came famously at the last moment and in dramatic fashion. As the committee was unenthusiastically wrapping up its work on July 13, Robert M. Crawford was "climbing high into the sun" on a flight to Washington, D.C., to personally deliver a sound recording of his entry. Crawford was a professional musician known as the "Flying Baritone," because he flew to performances in his own private airplane. He was not a military pilot, but had tried to become one in World War I, only to be washed out of training when he was discovered to be underage. (He would successfully join up early in World War II as a pilot in the US Army Air Forces' Air Transport Command.)

Crawford had composed his entry days before while flying from New York to his home in Cos Cob, Conn., he told Mrs. Yount. She later recalled him saying the song seemed to come to him "out of the sky into the engine."

The committee members knew a winner when they heard one. Rudolph Ganz, guest conductor with the National Symphony Orchestra and another professional consulted by the committee, had this reaction, according to Yount's account: "Ganz himself actually burst from the door and came walking—or rather bounding—down the hall, whistling Mr. Crawford's song and exclaiming in between measures, 'It's a great song. (Whistling.) It has music. (Whistling.) It has fire, spirit. (Whistling.) It will be famous!'"

Contest rules required a written manuscript, not a sound recording, so Crawford complied with the formality by quickly writing the song in manuscript form. But even Crawford's winning lyrics and melody came with an ill-advised title as originally submitted: He had named the song, "What Do You Think of the Air Corps Now?"

The song was instead officially given the title "The Army Air Corps." It was introduced with considerable fanfare at the 1939 National Air Races in Cleveland—sung by the Flying Baritone himself over the public address system and also on national radio.

Not long after the establishment of the US Air Force as a separate and independent service, the song was retitled, "The US Air Force." Commonly known today by its opening, "Off we go, into the wild blue yonder," the Air Force song has stood the test of time—but this was a very close call.■

David A. Lande is a senior researcher for National Geographic *magazine and previously served on the World War II Memorial Staff. This is his first article for* Air Force *Magazine.*

Photochart of USAF Leadership

An *Air Force* Magazine Directory
By June Lee, Editorial Associate

(As of Aug. 19, 2010)

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Brig. Gen. Mark A. Ediger

Air Force Medical Support Agency
JB Bolling, D.C.

Commander
Brig. Gen. James J. Carroll

Air Force Office of Special Investigations
JB Andrews, Md.

Commander
Brig. Gen. Kevin J. Jacobsen

Air Force Operations Group
Pentagon

Commander
Col. David A. Miller

Air Force Personnel Center
Randolph AFB, Tex.

Commander
Maj. Gen. Kay C. McClain

Air Force Personnel Operations Agency
Pentagon

Director
Mark E. Doboga

Air Force Petroleum Agency
Ft. Belvoir, Va.

Commander
Col. Thomas C. Redford

Air Force Public Affairs Agency
San Antonio

Director
Larry Clavette

Air Force Real Property Agency
San Antonio

Director
Robert M. Moore

Air Force Review Boards Agency
JB Andrews, Md.

Director
Joe G. Lineberger

Field Operating Agencies (continued)

Air Force Safety Center
Kirtland AFB, N.M.

Commander
Maj. Gen. Frederick F. Roggero

Air Force Security Forces Center
Lackland AFB, Tex.

Commander
Col. Steven W. Robinette

Air Force Services Agency
San Antonio

Commander
Col. Sandra M. Adams

Air Force Weather Agency
Offutt AFB, Neb.

Commander
Col. Robert L. Russell

Air National Guard Readiness Center
JB Andrews, Md.

Commander
Col. Michael J. McDonald

Direct Reporting Units

Air Force District of Washington
JB Bolling, D.C.

Commander
Maj. Gen. Darrell D. Jones

Air Force Operational Test & Evaluation Center
Kirtland AFB, N.M.

Commander
Maj. Gen. Stephen T. Sargeant

United States Air Force Academy
Colorado Springs, Colo.

Superintendent
Lt. Gen. Michael C. Gould

Auxiliary

Civil Air Patrol-USAF
Maxwell AFB, Ala.

Commander
Col. William R. Ward

Civil Air Patrol
Maxwell AFB, Ala.

National Commander
CAP Maj. Gen. Amy S. Courter

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Department of Defense

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Brig. Gen. Peter F. Hoene
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Brig. Gen. Martin Whelan
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Brig. Gen. John F. Newell III
Deputy Director, Politico-Military Affairs (Asia)

Brig. Gen. Lori J. Robinson
Deputy Director, Force Application & Support

Brig. Gen. Rowayne A. Schatz Jr.
Deputy Director, Global Operations

Brig. Gen. Jonathan T. Treacy
Deputy Director, Anti-terrorism & Homeland Defense

Brig. Gen. Scott A. Vander Hamm
Assistant Deputy Director, Global Operations

Joint Service Schools

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Commandant, National War College
Ft. Lesley J. McNair, D.C.

Brig. Gen. Marvin T. Smoot Jr.
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Norfolk, Va.

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Maj. Gen. Margaret H. Woodward
Air Component Commander
Stuttgart, Germany

Maj. Gen. Michael A. Snodgrass
Chief of Staff
Stuttgart, Germany

Brig. Gen. Frederick H. Martin
Deputy Director, Operations & Logistics
Stuttgart, Germany

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Commander, Air Forces Central
Southwest Asia

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NATO Training Mission-Afghanistan/Combined Security Transition Command-Afghanistan
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Brig. Gen. Scott M. Hanson
Commanding General, Coalition Air Force Transition Team, Multinational Security Transition Command-Iraq
Baghdad, Iraq

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US Cyber Command

Maj. Gen. Suzanne M. Vautrinot
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US European Command

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Ramstein, Germany

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Maj. Gen. Harold Moulton II
Director, Operations
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Maj. Gen. Paul G. Schafer
Director, Plans & Policy
Stuttgart-Vaihingen, Germany

Brig. Gen. Gregory L. Brundidge
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Stuttgart-Vaihingen, Germany

Brig. Gen. Daniel R. Eagle
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Moscow

US Joint Forces Command

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Air Component Commander
Langley AFB, Va.

Maj. Gen. David M. Edgington
Chief of Staff
Norfolk, Va.

Maj. Gen. Kevin J. Kennedy
Director, Joint Capability Development Directorate
Norfolk, Va.

Brig. Gen. Robert Yates
Director, Operations, Plans, Logistics, & Engineering
Norfolk, Va.

US Northern Command

Lt. Gen. Dana T. Atkins
Commander, Joint Task Force Alaska
JB Elmendorf, Alaska

Maj. Gen. Lawrence A. Stutzriem
Director, Plans, Policy, & Strategy
Peterson AFB, Colo.

Maj. Gen. Howard N. Thompson
Chief of Staff
Peterson AFB, Colo.

Brig. Gen. Jeffrey G. Lofgren
Deputy Director, Operations
Peterson AFB, Colo.

Brig. Gen. Robert C. Nolan II
Director, Standing Joint Force Headquarters-North
Peterson AFB, Colo.

US Pacific Command

Gen. Gary L. North
Air Component Commander
JB Pearl Harbor-Hickam, Hawaii

Lt. Gen. Dana T. Atkins
Commander, Alaskan Command
JB Elmendorf, Alaska

Lt. Gen. Daniel J. Darnell
Deputy Commander
Camp H. M. Smith, Hawaii

Lt. Gen. Edward A. Rice Jr.
Commander, US Forces Japan
Yokota AB, Japan

Brig. Gen. William W. Uhle Jr.
Deputy Director, Operations
Camp H. M. Smith, Hawaii

Brig. Gen. Brett T. Williams
Director, C⁴ Systems
Camp H. M. Smith, Hawaii

US Southern Command

Gen. Douglas M. Fraser
Commander, US Southern Command
Miami

Lt. Gen. Glenn F. Spears
Commander, Air Forces Southern
Davis-Monthan AFB, Ariz.

Brig. Gen. Veralinn Jamieson
Director, Intelligence
Miami

Brig. Gen. Steven M. Shepro
Director, Strategy, Policy, & Plans
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US Special Operations Command

Lt. Gen. Eric E. Fiel
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Commander
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Maj. Gen. C. Donald Alston
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F. E. Warren AFB, Wyo.

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Chantilly, Va.

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Offutt AFB, Neb.

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Commander
Scott AFB, Ill.

Brig. Gen. Michelle D. Johnson
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Scott AFB, Ill.

Brig. Gen. Earl D. Matthews
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North American Aerospace Defense Command

Lt. Gen. Dana T. Atkins
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North Atlantic Treaty Organization

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Deputy Chief of Staff, Strategic Plans & Policy, NATO, Allied Command Transformation
Norfolk, Va.

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Brig. Gen. Andrew M. Mueller
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Brig. Gen. David E. Petersen
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Brussels, Belgium

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Deputy Commander, Combined Air Operations Center 7
Larissa, Greece

Maj. Gen. Mark F. Ramsay
Deputy Chief of Staff, Operations, SHAPE
Casteau, Belgium

Brig. Gen. Scott D. West
Chief of Staff, Joint Warfare Center
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United Nations Command

Lt. Gen. Jeffrey A. Remington
Deputy Commander, UN Command Korea; Deputy Commander, US Forces Korea; and Commander, Air Component Command, ROK/US Combined Forces Command
Osan AB, South Korea

Maj. Gen. Lawrence L. Wells
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Yongsan Army Garrison, South Korea

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Commander, Special Operations Command Korea, US Forces Korea and UN Command Special Operations Component and Deputy Commanding General, Combined Unconventional Warfare Task Force
Yongsan Army Garrison, South Korea

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Associate Director, Military Support, Central Intelligence Agency
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Washington, D.C.

Brig. Gen. Jonathan D. George
Director, Strategic Capabilities Policy, National Security Council
Washington, D.C.

Brig. Gen. Garrett Harencak
Principal Assistant Deputy Administrator for Military Application, Department of Energy
Washington, D.C.

Brig. Gen. Francis L. Hendricks
Vice Commander, Army & Air Force Exchange Service
Dallas

Brig. Gen. Thomas J. Masiello
Deputy Assistant Secretary, Plans, Programs, & Operations, Bureau of Political-Military Affairs, Department of State
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MARYLAND: Robert Roit, P.O. Box 263, Poolesville, MD 20837 (301) 349-2262.
VIRGINIA: Randy Hobbs, 3304 Beechnut Ct., Williamsburg, VA 23185 (757) 896-2784.
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Far West Region

Region President

Richard Taubinger
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State Contact

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HAWAII: Nora Ruebrook, 808 Ahua St., Suite 26, Honolulu, HI 96819 (808) 596-2448.

Florida Region

Region President

Jim Connors
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State Contact

FLORIDA: Jim Connors, 914 Highway 90 W, Holt, FL 32564 (850) 305-2855.

Great Lakes Region

Region President

John McCance
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State Contact

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For information on the Air Force Association, see www.afa.org

AFA Almanac

By Frances McKenney, Assistant Managing Editor

Chapters of the Year

Year	Recipient(s)
1953	San Francisco Chapter
1954	Santa Monica Area Chapter (Calif.)
1955	San Fernando Valley Chapter (Calif.)
1956	Utah State AFA
1957	H. H. Arnold Chapter (N.Y.)
1958	San Diego Chapter
1959	Cleveland Chapter
1960	San Diego Chapter
1961	Chico Chapter (Calif.)
1962	Fort Worth Chapter (Tex.)
1963	Colin P. Kelly Chapter (N.Y.)
1964	Utah State AFA
1965	Idaho State AFA
1966	New York State AFA
1967	Utah State AFA
1968	Utah State AFA
1969	*(no presentation)*
1970	Georgia State AFA
1971	Middle Georgia Chapter
1972	Utah State AFA
1973	Langley Chapter (Va.)
1974	Texas State AFA
1975	Alamo Chapter (Tex.) and San Bernardino Area Chapter (Calif.)
1976	Scott Memorial Chapter (Ill.)
1977	Thomas B. McGuire Jr. Chapter (N.J.)
1978	Thomas B. McGuire Jr. Chapter (N.J.)
1979	Brig. Gen. Robert F. Travis Chapter (Calif.)
1980	Central Oklahoma (Gerrity) Chapter
1981	Alamo Chapter (Tex.)
1982	Chicagoland-O'Hare Chapter (Ill.)
1983	Charles A. Lindbergh Chapter (Conn.)
1984	Scott Memorial Chapter (Ill.) and Colorado Springs/Lance Sijan Chapter (Colo.)
1985	Cape Canaveral Chapter (Fla.)
1986	Charles A. Lindbergh Chapter (Conn.)
1987	Carl Vinson Memorial Chapter (Ga.)
1988	Gen. David C. Jones Chapter (N.D.)
1989	Thomas B. McGuire Jr. Chapter (N.J.)
1990	Gen. E. W. Rawlings Chapter (Minn.)
1991	Paul Revere Chapter (Mass.)
1992	Central Florida Chapter and Langley Chapter (Va.)
1993	Green Valley Chapter (Ariz.)
1994	Langley Chapter (Va.)
1995	Baton Rouge Chapter (La.)
1996	Montgomery Chapter (Ala.)
1997	Central Florida Chapter
1998	Ark-La-Tex Chapter (La.)
1999	Hurlburt Chapter (Fla.)
2000	Wright Memorial Chapter (Ohio)
2001	Lance P. Sijan Chapter (Colo.)
2002	Eglin Chapter (Fla.)
2003	Hurlburt Chapter (Fla.)
2004	Carl Vinson Memorial Chapter (Ga.)
2005	Central Florida Chapter
2006	Enid Chapter (Okla.)
2007	Central Oklahoma (Gerrity) Chapter
2008	Lance P. Sijan Chapter (Colo.)
2009	Paul Revere Chapter (Mass.)
2010	C. Farinha Gold Rush Chapter (Calif.)

Gold Life Member Card Recipients

Awarded to members whose AFA record, production, and accomplishment on a national level have been outstanding over a period of years.

Name	Year	Card No.
Gill Robb Wilson	1957	1
Jimmy Doolittle	1959	2
Arthur C. Storz Sr.	1961	3
Julian B. Rosenthal	1962	4
Jack B. Gross	1964	5
George D. Hardy	1965	6
Jess Larson	1967	7
Robert W. Smart	1968	8
Martin M. Ostrow	1973	9
James H. Straubel	1980	10
Martin H. Harris	1988	11
Sam E. Keith Jr.	1990	12
Edward A. Stearn	1992	13
Dorothy L. Flanagan	1994	14
John O. Gray	1996	15
Jack C. Price	1997	16
Nathan H. Mazer	2002	17
John R. Alison	2004	18
Donald J. Harlin	2009	19

AFA Member of the Year Award Recipients

State names refer to recipient's home state at the time of the award.

Year	Recipient(s)
1953	Julian B. Rosenthal (N.Y.)
1954	George A. Anderl (Ill.)
1955	Arthur C. Storz (Neb.)
1956	Thos. F. Stack (Calif.)
1957	George D. Hardy (Md.)
1958	Jack B. Gross (Pa.)
1959	Carl J. Long (Pa.)
1960	O. Donald Olson (Colo.)
1961	Robert P. Stewart (Utah)
1962	*(no presentation)*
1963	N. W. DeBerardinis (La.) and Joe L. Shosid (Tex.)
1964	Maxwell A. Kriendler (N.Y.)
1965	Milton Caniff (N.Y.)
1966	William W. Spruance (Del.)
1967	Sam E. Keith Jr. (Tex.)
1968	Marjorie O. Hunt (Mich.)
1969	*(no presentation)*
1970	Lester C. Curl (Fla.)
1971	Paul W. Gaillard (Neb.)
1972	J. Raymond Bell (N.Y.) and Martin H. Harris (Fla.)
1973	Joe Higgins (Calif.)
1974	Howard T. Markey (D.C.)
1975	Martin M. Ostrow (Calif.)
1976	Victor R. Kregel (Tex.)
1977	Edward A. Stearn (Calif.)
1978	William J. Demas (N.J.)
1979	Alexander C. Field Jr. (Ill.)
1980	David C. Noerr (Calif.)
1981	Daniel F. Callahan (Fla.)
1982	Thomas W. Anthony (Md.)
1983	Richard H. Becker (Ill.)
1984	Earl D. Clark Jr. (Kan.)
1985	George H. Chabbott (Del.) and Hugh L. Enyart (Ill.)
1986	John P. E. Kruse (N.J.)
1987	Jack K. Westbrook (Tenn.)
1988	Charles G. Durazo (Va.)
1989	Oliver R. Crawford (Tex.)
1990	Cecil H. Hopper (Ohio)
1991	George M. Douglas (Colo.)
1992	Jack C. Price (Utah)
1993	Lt. Col. James G. Clark (D.C.)
1994	William A. Lafferty (Ariz.)
1995	William N. Webb (Okla.)
1996	Tommy G. Harrison (Fla.)
1997	James M. McCoy (Neb.)
1998	Ivan L. McKinney (La.)
1999	Jack H. Steed (Ga.)
2000	Mary Anne Thompson (Va.)
2001	Charles H. Church Jr. (Kan.)
2002	Thomas J. Kemp (Tex.)
2003	W. Ron Goerges (Ohio)
2004	Doyle E. Larson (Minn.)
2005	Charles A. Nelson (S.D.)
2006	Craig E. Allen (Utah)
2007	William D. Croom Jr. (Tex.)
2008	John J. Politi (Tex.)
2009	David R. Cummock (Fla.)
2010	L. Boyd Anderson (Utah)

H. H. Arnold Award Recipients

Until 1986, AFA's highest aerospace award was the H. H. Arnold Award. Named for the World War II leader of the Army Air Forces, it was presented annually in recognition of the most outstanding contributions in the field of aerospace activity. In 1986, the Arnold Award was redesignated AFA's highest honor to a member of the armed forces in the field of national security. It continues to be presented annually.

1948 W. Stuart Symington, Secretary of the Air Force
1949 Maj. Gen. William H. Tunner and the men of the Berlin Airlift
1950 Airmen of the United Nations in the Far East
1951 Gen. Curtis E. LeMay and the personnel of Strategic Air Command
1952 Sens. Lyndon B. Johnson and Joseph C. O'Mahoney
1953 Gen. Hoyt S. Vandenberg, former Chief of Staff, USAF
1954 John Foster Dulles, Secretary of State
1955 Gen. Nathan F. Twining, Chief of Staff, USAF
1956 Sen. W. Stuart Symington
1957 Edward P. Curtis, special assistant to the President
1958 Maj. Gen. Bernard A. Schriever, Cmdr., Ballistic Missile Div., ARDC
1959 Gen. Thomas S. Power, CINC, SAC
1960 Gen. Thomas D. White, Chief of Staff, USAF
1961 Lyle S. Garlock, Assistant Secretary of the Air Force
1962 A. C. Dickieson and John R. Pierce, Bell Telephone Laboratories
1963 The 363rd Tactical Recon. Wing and the 4080th Strategic Wing
1964 Gen. Curtis E. LeMay, Chief of Staff, USAF
1965 The 2nd Air Division, PACAF
1966 The 8th, 12th, 355th, 366th, and 388th Tactical Fighter Wings and the 432nd and 460th TRWs
1967 Gen. William W. Momyer, Cmdr., 7th Air Force, PACAF
1968 Col. Frank Borman, USAF; Capt. James Lovell, USN; and Lt. Col. William Anders, USAF, Apollo 8 crew
1969 *(No presentation)*
1970 Apollo 11 team (J. L. Atwood; Lt. Gen. S. C. Phillips, USAF; and astronauts Neil Armstrong and USAF Cols. Buzz Aldrin and Michael Collins)
1971 John S. Foster Jr., Dir. of Defense Research and Engineering
1972 Air units of the Allied Forces in Southeast Asia (Air Force, Navy, Army, Marine Corps, and the Vietnamese Air Force)
1973 Gen. John D. Ryan (Ret.), former Chief of Staff, USAF
1974 Gen. George S. Brown, USAF, Chm., Joint Chiefs of Staff
1975 James R. Schlesinger, Secretary of Defense
1976 Sen. Barry M. Goldwater
1977 Sen. Howard W. Cannon
1978 Gen. Alexander M. Haig Jr., USA, Supreme Allied Commander, Europe
1979 Sen. John C. Stennis
1980 Gen. Richard H. Ellis, USAF, CINC, SAC
1981 Gen. David C. Jones, USAF, Chm., Joint Chiefs of Staff
1982 Gen. Lew Allen Jr. (Ret.), former Chief of Staff, USAF
1983 Ronald W. Reagan, President of the United States
1984 The President's Commission on Strategic Forces (the Scowcroft Commission)
1985 Gen. Bernard W. Rogers, USA, SACEUR
1986 Gen. Charles A. Gabriel (Ret.), former Chief of Staff, USAF
1987 Adm. William J. Crowe Jr., USN, Chm., Joint Chiefs of Staff
1988 Men and women of the Ground-Launched Cruise Missile team
1989 Gen. Larry D. Welch, Chief of Staff, USAF
1990 Gen. John T. Chain, CINC, SAC
1991 Lt. Gen. Charles A. Horner, Cmdr., CENTCOM Air Forces and 9th Air Force
1992 Gen. Colin L. Powell, USA, Chm., Joint Chiefs of Staff
1993 Gen. Merrill A. McPeak, Chief of Staff, USAF
1994 Gen. John Michael Loh, Cmdr., Air Combat Command
1995 World War II Army Air Forces veterans
1996 Gen. Ronald R. Fogleman, Chief of Staff, USAF
1997 Men and women of the United States Air Force
1998 Gen. Richard E. Hawley, Cmdr., ACC
1999 Lt. Gen. Michael C. Short, Cmdr., Allied Air Forces Southern Europe
2000 Gen. Michael E. Ryan, Chief of Staff, USAF
2001 Gen. Joseph W. Ralston, CINC, EUCOM
2002 Gen. Richard B. Myers, USAF, Chm., Joint Chiefs of Staff
2003 Lt. Gen. T. Michael Moseley, Cmdr., air component, CENTCOM, and 9th Air Force
2004 Gen. John P. Jumper, Chief of Staff, USAF
2005 Gen. Gregory S. Martin, Cmdr., AFMC
2006 Gen. Lance W. Lord, Cmdr., AFSPC
2007 Gen. Ronald E. Keys, Cmdr., ACC
2008 Gen. Bruce Carlson, Cmdr., AFMC
2009 Gen. John D. W. Corley, Cmdr., ACC
2010 Lt. Gen. David A. Deptula, USAF deputy chief of staff, ISR

John R. Alison Award Recipients

Established in 1992, the John R. Alison Award is AFA's highest honor for industrial leadership.

1992 Norman R. Augustine, Chairman, Martin Marietta
1993 Daniel M. Tellep, Chm. and CEO, Lockheed
1994 Kent Kresa, CEO, Northrop Grumman
1995 C. Michael Armstrong, Chm. and CEO, Hughes Aircraft
1996 Harry Stonecipher, Pres. and CEO, McDonnell Douglas
1997 Dennis J. Picard, Chm. and CEO, Raytheon
1998 Philip M. Condit, Chm. and CEO, Boeing
1999 Sam B. Williams, Chm. and CEO, Williams International
2000 Simon Ramo and Dean E. Wooldridge, missile pioneers
2001 George David, Chm. and CEO, United Technologies
2002 Sydney Gillibrand, Chm., AMEC; and Jerry Morgensen, Pres. and CEO, Hensel Phelps Construction
2003 Joint Direct Attack Munition Industry Team, Boeing
2004 Thomas J. Cassidy Jr., Pres. and CEO, General Atomics Aeronautical Systems
2005 Richard Branson, Chm., Virgin Atlantic Airways and Virgin Galactic
2006 Ronald D. Sugar, Chm. and CEO, Northrop Grumman
2007 Boeing and Lockheed Martin
2008 Bell Boeing CV-22 Team, Bell Helicopter Textron, and Boeing
2009 General Atomics Aeronautical Systems Inc.
2010 William H. Swanson, Chm. and CEO, Raytheon

W. Stuart Symington Award Recipients

Since 1986, AFA's highest honor to a civilian in the field of national security has been the W. Stuart Symington Award. The award, presented annually, is named for the first Secretary of the Air Force.

1986 Caspar W. Weinberger, Secretary of Defense
1987 Edward C. Aldridge Jr., Secretary of the Air Force
1988 George P. Schultz, Secretary of State
1989 Ronald W. Reagan, former President of the United States
1990 John J. Welch, Asst. SECAF (Acquisition)
1991 George Bush, President of the United States
1992 Donald B. Rice, Secretary of the Air Force
1993 Sen. John McCain (R-Ariz.)
1994 Rep. Ike Skelton (D-Mo.)
1995 Sheila E. Widnall, Secretary of the Air Force
1996 Sen. Ted Stevens (R-Alaska)
1997 William Perry, former Secretary of Defense
1998 Rep. Saxby Chambliss (R-Ga.) and Rep. Norman D. Dicks (D-Wash.)
1999 F. Whitten Peters, Secretary of the Air Force
2000 Rep. Floyd Spence (R-S.C.)
2001 Sen. Michael Enzi (R-Wyo.) and Rep. Cliff Stearns (R-Fla.)
2002 Rep. James V. Hansen (R-Utah)
2003 James G. Roche, Secretary of the Air Force
2004 Peter B. Teets, Undersecretary of the Air Force
2005 Rep. Duncan Hunter (R-Calif.)
2007 Michael W. Wynne, Secretary of the Air Force
2008 Gen. Barry R. McCaffrey, USA (Ret.)
2009 Sen. Orrin G. Hatch (R-Utah)
2010 John J. Hamre, Center for Strategic & International Studies

AFA Lifetime Achievement Award Recipients

First presented in 2003, the award recognizes a lifetime of work in the advancement of aerospace.

2003 Maj. Gen. John R. Alison, USAF (Ret.); Sen. John H. Glenn Jr.; Maj. Gen. Jeanne M. Holm, USAF (Ret.); Col. Charles E. McGee, USAF (Ret.); and Gen. Bernard A. Schriever, USAF (Ret.)
2004 Gen. Russell E. Dougherty, USAF (Ret.), and Florene Miller Watson
2005 Sen. Daniel K. Inouye, William J. Perry, and Patty Wagstaff
2007 CMSAF Paul W. Airey, USAF (Ret.)
2008 Col. George E. Day, USAF (Ret.); Gen. David C. Jones, USAF (Ret.); and Harold Brown
2009 Doolittle Raiders, Tuskegee Airmen, and James R. Schlesinger
2010 Walter J. Boyne; Andrew W. Marshall; Gen. Lawrence A. Skantze, USAF (Ret.); and Women Airforce Service Pilots

AFA Chairmen of the Board and National Presidents

Jimmy Doolittle
President, 1946-47
Chairman, 1947-49

Edward P. Curtis
Chairman, 1946-47

Thomas G. Lanphier Jr.
President, 1947-48
Chairman, 1951-52

C. R. Smith
President, 1948-49
Chairman, 1949-50

Robert S. Johnson
President, 1949-51

Carl A. Spaatz
Chairman, 1950-51

Harold C. Stuart
President, 1951-52
Chairman, 1952-53

Arthur F. Kelly
President, 1952-53
Chairman, 1953-54

George C. Kenney
President, 1953-54
Chairman, 1954-55

John R. Alison
President, 1954-55
Chairman, 1955-56

Gill Robb Wilson
President, 1955-56
Chairman, 1956-57

John P. Henebry
President, 1956-57
Chairman, 1957-58

Peter J. Schenk
President, 1957-59

James M. Trail
Chairman, 1958-59

Howard T. Markey
President, 1959-60
Chairman, 1960-61

Julian B. Rosenthal
Chairman, 1959-60

Thos. F. Stack
President, 1960-61
Chairman, 1961-62

Joe Foss
President, 1961-62
Chairman, 1962-63

John B. Montgomery
President, 1962-63

W. Randolph Lovelace II
President, 1963-64
Chairman, 1964-65

Jack B. Gross
Chairman, 1963-64

Jess Larson
President, 1964-67
Chairman, 1967-71

Robert W. Smart
President, 1967-69

George D. Hardy
President, 1969-71
Chairman, 1966-67
Chairman, 1971-72

Martin M. Ostrow
President, 1971-73
Chairman, 1973-75

Joe L. Shosid
President, 1973-75
Chairman, 1972-73
Chairman, 1975-76

George M. Douglas
President, 1975-77
Chairman, 1977-79

Gerald V. Hasler
President, 1977-79
Chairman, 1976-77

Victor R. Kregel
President, 1979-81
Chairman, 1981-82

Daniel F. Callahan
Chairman, 1979-81

John G. Brosky
President, 1981-82
Chairman, 1982-84

David L. Blankenship
President, 1982-84
Chairman, 1984-85

Edward A. Stearn
Chairman, 1985-86

Martin H. Harris
President, 1984-86
Chairman, 1986-88

Sam E. Keith Jr.
President, 1986-88
Chairman, 1988-90

Jack C. Price
President, 1988-90
Chairman, 1990-92

Oliver R. Crawford
President, 1990-92
Chairman, 1992-94

James M. McCoy
President, 1992-94
Chairman, 1994-96

Gene Smith
President, 1994-96
Chairman, 1996-98

Doyle E. Larson
President, 1996-98
Chairman, 1998-2000

Thomas J. McKee
President, 1998-2000
Chairman, 2000-02

John J. Politi
President, 2000-02
Chairman, 2002-04

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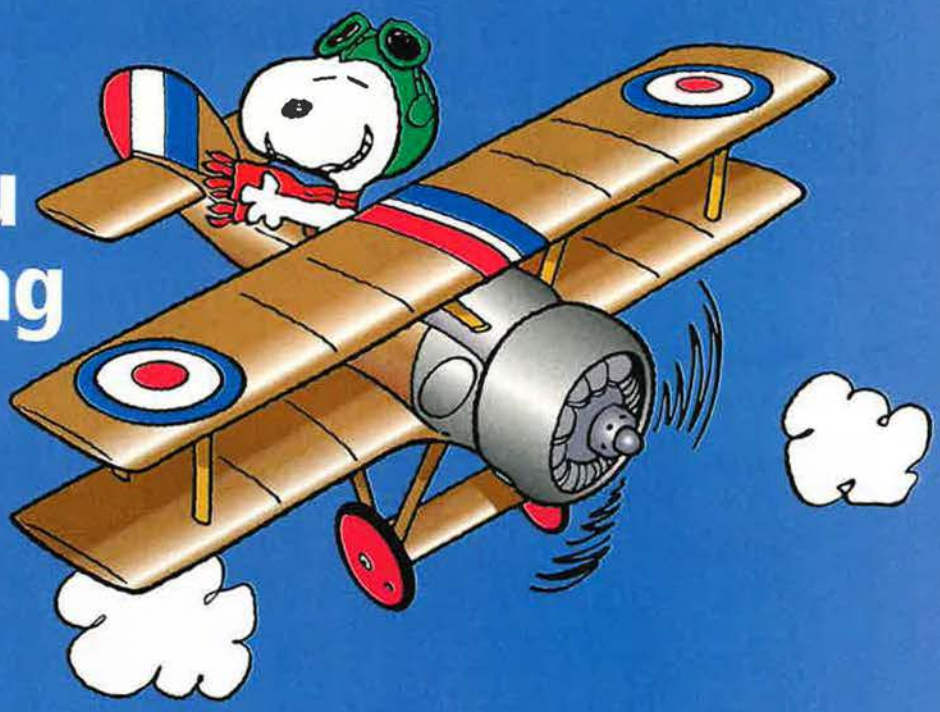

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AFA VETERAN BENEFITS ASSOCIATION

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MetLife's Preferred Dentist Program (PDP) provides you benefits based on negotiated fees with over 120,000 dentist locations nationwide, including over 28,000 specialists. When you visit a Preferred Dentist, your cleanings and oral exams are covered 100%; fillings 80% and 50% for major restorative work like crowns and root canals (see your Policy Certificate for full details). Participating dentists also provide MetLife negotiated discounts on NON-covered services like cosmetic dentistry and adult orthodontia.

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- Comprehensive—covers basic services PLUS crowns, bridges, dentures, root canals, orthodontia and more!

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MetLife

*MetLife data as of December, 2008 **Savings from enrolling in a dental benefits plan will depend on various factors, including how often participants visit the dentist and the cost of services covered. Like most group health insurance policies, MetLife group policies contain certain exclusions, limitations, waiting periods and terms for keeping them in force. Please contact MetLife for complete details.

AFA Chairmen of the Board and National Presidents (cont.)

Stephen P. Condon
President, 2002-04
Chairman, 2004-06

Robert E. Largent
President, 2004-06[a]
Chairman, 2006-08[b]

Joseph E. Sutter
Chairman, 2008-10

[a] The office of National President, an elected position, was disestablished in 2006.
[b] AFA's Chairman of the Board also serves as Chairman of both AFA affiliates, the AFA Veteran Benefits Association and the Air Force Memorial Foundation.
[c] The position of Executive Director was replaced in 2006 by President-CEO.

Vice Chairmen for Field Operations

Joseph E. Sutter	2006-08
James R. Lauducci	2008-10

Vice Chairmen for Aerospace Education

L. Boyd Anderson	2006-07
S. Sanford Schlitt	2007-10

AFA National Treasurers

W. Deering Howe	1946-47
G. Warfield Hobbs	1947-49
Benjamin Brinton	1949-52
George H. Haddock	1952-53
Samuel M. Hecht	1953-57
Jack B. Gross	1957-62
Paul S. Zuckerman	1962-66
Jack B. Gross	1966-81
George H. Chabbott	1981-87
William N. Webb	1987-95
Charles H. Church Jr.	1995-2000
Charles A. Nelson	2000-05
Steven R. Lundgren	2005-10

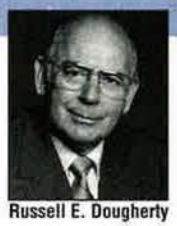
AFA National Secretaries

Sol A. Rosenblatt	1946-47
Julian B. Rosenthal	1947-59
George D. Hardy	1959-66
Joseph L. Hodges	1966-68
Glenn D. Mishler	1968-70
Nathan H. Mazer	1970-72
Martin H. Harris	1972-76
Jack C. Price	1976-79
Earl D. Clark Jr.	1979-82
Sherman W. Wilkins	1982-85
A. A. "Bud" West	1985-87
Thomas J. McKee	1987-90
Thomas W. Henderson	1990-91
Mary Ann Seibel	1991-94
Mary Anne Thompson	1994-97
William D. Croom Jr.	1997-2000
Daniel C. Hendrickson	2000-03
Thomas J. Kemp	2003-06
Judy K. Church	2006-09
Joan Sell	2009-

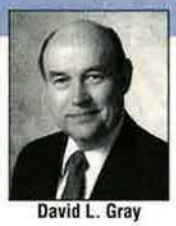
AFA Executive Directors/President-CEOs

Willis S. Fitch
Executive Director
1946-47

James H. Straubel
Executive Director
1948-80



Russell E. Dougherty
Executive Director
1980-86



David L. Gray
Executive Director
1986-87

John O. Gray
Executive Director
1987-88

Charles L. Donnelly Jr.
Executive Director
1988-89

John O. Gray
Executive Director
1989-90

Monroe W. Hatch Jr.
Executive Director
1990-95

John A. Shaud
Executive Director
1995-2002

Donald L. Peterson
Executive Director, 2002-06[c]
President-CEO, 2006-07

Michael M. Dunn
President-CEO
2007-

The Twelve Founders

John S. Allard, Bronxville, N.Y.
Everett R. Cook, Memphis, Tenn.
Edward P. Curtis, Rochester, N.Y.
Jimmy Doolittle, Los Angeles
W. Deering Howe, New York
Rufus Rand, Sarasota, Fla.
Sol A. Rosenblatt, New York
Julian B. Rosenthal, New York
James M. Stewart, Beverly Hills, Calif.
Lowell P. Weicker, New York
Cornelius Vanderbilt Whitney, New York
John Hay Whitney, New York

AFA's First National Officers and Board of Directors

This panel of officers and directors acted temporarily until a representative group was democratically elected by membership at the first national convention, in September 1947.

OFFICERS

President	Jimmy Doolittle
First Vice President	Edward P. Curtis
Second Vice President	Meryll Frost
Third Vice President	Thomas G. Lanphier Jr.
Secretary	Sol A. Rosenblatt
Assistant Secretary	Julian B. Rosenthal
Treasurer	W. Deering Howe
Executive Director	Willis S. Fitch

BOARD OF DIRECTORS

John S. Allard
H. M. Baldridge
William H. Carter
Everett R. Cook
Burton E. Donaghy
James H. Douglas Jr.
G. Stuart Kenney
Reiland Quinn
Rufus Rand
Earl Sneed
James M. Stewart
Forrest Vosler
Benjamin F. Warner
Lowell P. Weicker
Cornelius Vanderbilt Whitney
John Hay Whitney

Dottie Flanagan Staff Award of the Year

A donation from the late Jack B. Gross, national director emeritus, enables AFA to honor staff members each quarter. Those members become eligible for the staff award of the year.

1992	Doreatha Major	2001	Katie Doyle
1993	Jancy Bell	2002	Jeneathia Wright
1994	Gilbert Burgess	2003	Jim Brown
1995	David Huynh	2004	Pearlie Draughn
1996	Sherry Coombs	2005	Ursula Smith
1997	Katherine DuGarm	2006	Susan Rubel
1998	Suzann Chapman	2007	Ed Cook
1999	Frances McKenney	2008	Michael Davis
2000	Ed Cook	2009	Chris Saik

Aerospace Education Foundation Chairmen of the Board

W. Randolph Lovelace II	1963-64
Laurence S. Kuter	1964-66
Walter J. Hesse	1966-69
J. Gilbert Nettleton Jr.	1969-73
George D. Hardy	1973-75
Barry M. Goldwater	1975-86
George D. Hardy	1986-89
James M. Keck	1989-94
Walter E. Scott	1994-96
Thomas J. McKee	1996-98
Michael J. Dugan	1998-2000
Jack C. Price	2000-02
Richard B. Goetze Jr.	2002-03
L. Boyd Anderson	2003-06*

Aerospace Education Foundation Presidents

John B. Montgomery	1963-64
Lindley J. Stiles	1964-66
B. Frank Brown	1966-67
Leon M. Lessinger	1967-68
L. V. Rasmussen	1968-71
Leon M. Lessinger	1971-73
Wayne O. Reed	1973-74
William L. Ramsey	1975-81
Don C. Garrison	1981-84
George D. Hardy	1984-86
Eleanor P. Wynne	1986-87
James M. Keck	1988-89
Gerald V. Hasler	1989-94
Thomas J. McKee	1994-96
Walter E. Scott	1996-98
Jack C. Price	1998-2000
Richard B. Goetze Jr.	2000-02
L. Boyd Anderson	2002-03
Mary Anne Thompson	2003-06*

* On April 1, 2006, the Air Force Association and the Aerospace Education Foundation combined their activities under the title AFA. L. Boyd Anderson, the last AEF Chairman, became Vice Chairman of AFA for a transitional period.

AFA's Regions, States, and Chapters

These figures indicate the number of affiliated members as of May 31, 2010. Listed below the name of each region is the region president.

CENTRAL EAST REGION 11,009
Jeffrey Platte

Delaware 525
Brig. Gen. Bill Spruance 126
Delaware Galaxy 399

District of Columbia 473
Nation's Capital 473

Maryland 2,126
Baltimore* 675
Central Maryland 367
Thomas W. Anthony 1,084

Virginia 7,591
Danville 46
Donald W. Steele Sr. Memorial 3,090
Gen. Charles A. Gabriel 1,219
Langley 1,368
Leigh Wade 145
Northern Shenandoah Valley 250
Richmond 586
Roanoke 325
Tidewater 356
William A. Jones III 206

West Virginia 294
Brig. Gen. Pete Everest 51
Chuck Yeager 243

FAR WEST REGION 10,700
Richard Taubinger

California 9,984
Bob Hope 783
Brig. Gen. Robert F. Travis 702
C. Farinha Gold Rush 1,340
Charles Hudson 101
David J. Price/Beale 379
Fresno* 322
Gen. B. A. Schriever Los Angeles 620
General Doolittle Los Angeles Area* 1,030
Golden Gate* 544
High Desert 187
Maj. Gen. Charles I. Bennett Jr. 278
Monterey Bay Area 195
Orange County/Gen. Curtis E. LeMay 653
Palm Springs 384
Robert H. Goddard 555
San Diego 737
San Gabriel Valley 279
Tennessee Ernie Ford 535
William J. "Pete" Knight 360

Hawaii 716
Hawaii* 716

FLORIDA REGION 9,752
James Connors

Florida 9,752
Brig. Gen. James R. McCarthy 400
Cape Canaveral 997
Central Florida 1,410
Col. H. M. "Bud" West 308
Col. Loren D. Evenson 443
Eglin 1,277
Falcon 479
Florida Highlands 300
Gen. Nathan F. Twining 588
Gold Coast 677
Hurlburt 847
Jerry Waterman 1,084
John W. DeMilly Jr. 208
Miami 285
Red Tail Memorial 449

GREAT LAKES REGION 7,850
John McCance

Indiana 1,491
Central Indiana 416
Columbus-Bakalar 106
Fort Wayne 228
Grissom Memorial 286
Lawrence D. Bell Museum 208
Southern Indiana 247

Kentucky 672
Gen. Russell E. Dougherty 407
Lexington 265

Michigan 1,646
Battle Creek 97
Kalamazoo 416
Lake Superior Northland 138
Lloyd R. Leavitt Jr. 224
Mount Clemens 771

Ohio 4,041
Capt. Eddie Rickenbacker Memorial* 594
Frank P. Lahm 474
Gen. Joseph W. Ralston 307
North Coast* 265
Steel Valley 163
Wright Memorial* 2,238

MIDWEST REGION 6,864
Frank J. Gustine

Illinois 2,626
Chicagoland-O'Hare 1,050
Heart of Illinois 202
Land of Lincoln 320
Scott Memorial 1,054

Iowa 676
Fort Dodge 62
Gen. Charles A. Horner 255
Northeast Iowa 220
Richard D. Kisling 139

Kansas 664
Lt. Erwin R. Bleckley 436
Maj. Gen. Edward R. Fry 228

Missouri 1,485
Whiteman 266
Harry S. Truman 555
Spirit of St. Louis 664

Nebraska 1,413
Ak-Sar-Ben 1,141
Lincoln 272

NEW ENGLAND REGION 3,589
John Hasson

Connecticut 711
Flying Yankees/Gen. George C. Kenney 447
Lindbergh/Sikorsky 264

Massachusetts 1,725
Minuteman 289
Otis 253
Paul Revere 740
Pioneer Valley 273
Worcester* 170

New Hampshire 705
Brig. Gen. Harrison R. Thyng 705

Rhode Island 256
Metro Rhode Island 216
Newport Blue & Gold 40

Vermont 192
Green Mountain 192

NORTH CENTRAL REGION 2,994
James Simons

Minnesota 1,115
Gen. E. W. Rawlings 904
Richard I. Bong 211

Montana 261
Big Sky 261

North Dakota 452
Gen. David C. Jones 203
Happy Hooligan 135
Red River Valley 114

South Dakota 454
Dacotah 238
Rushmore 216

Wisconsin 712
Billy Mitchell 712

NORTHEAST REGION 5,594
Robert Nunamann

New Jersey 1,504
Brig. Gen. Frederick W. Castle 136
Hangar One 122
Highpoint 113
Mercer County 168
Sal Capriglione 230
Shooting Star 213
Thomas B. McGuire Jr. 522

New York 2,006
Albany-Hudson Valley* 355
Chautauqua 51
Gen. Carl A. "Tooey" Spaatz 183
Genesee Valley 221
Iron Gate 140
L. D. Bell-Niagara Frontier 330
Long Island 726

Pennsylvania 2,444
Altoona 63
Eagle 43
Greater Pittsburgh* 287
Joe Walker-Mon Valley 127
Lehigh Valley 225
Liberty Bell 618
Lt. Col. B. D. "Buzz" Wagner 107
Mifflin County* 94
Olmsted 280
Pocono Northeast 193
Total Force 157
York-Lancaster 250

NORTHWEST REGION 4,707
I. Fred Rosenfelder

Alaska 772
Edward J. Monaghan 561
Fairbanks Midnight Sun 211

Idaho 109
Snake River Valley 109

Oregon 1,097
Bill Harris 288
Columbia Gorge* 809

Washington 2,729
Greater Seattle 912
Inland Empire 629
McChord 1,188

ROCKY MOUNTAIN REGION 5,889
Grant Hicinbothem

Colorado 4,226
Gen. Robert E. Huyser 118
Lance P. Sijan 2,465
Mel Harmon 133
Mile High 1,510

Utah 1,303
Northern Utah 561
Salt Lake 356
Ute-Rocky Mountain 386

Wyoming 360
Cheyenne Cowboy 360

SOUTH CENTRAL REGION 6,581
Mark J. Dierlam

Alabama 1,973
Birmingham 371
Montgomery 1,208
Tennessee Valley 394

Arkansas 885
David D. Terry Jr. 681
Lewis E. Lyle 204

Louisiana 1,021
Ark-La-Tex 669
Maj. Gen. Oris B. Johnson 352

Mississippi 972
Golden Triangle 360
John C. Stennis 457
Meridian 155

*These chapters were chartered prior to Dec. 31, 1948 and are considered original charter chapters; the North Coast Chapter of Ohio was formerly the Cleveland Chapter; and the Columbia Gorge Chapter of Oregon was formerly the Portland Chapter.

AFA MEMBERS . . .

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Tennessee	**1,730**
Chattanooga	139
Everett R. Cook	375
Gen. Bruce K. Holloway	610
H. H. Arnold Memorial	148
Maj. Gen. Dan F. Callahan	458
SOUTHEAST REGION	**7,240**
Donald R. Michels	
Georgia	**3,302**
Carl Vinson Memorial	1,178
Dobbins	1,561
Savannah	332
South Georgia	231
North Carolina	**2,201**
Blue Ridge	419
Cape Fear	246
Kitty Hawk	73
Pope	422
Scott Berkeley	386
Tarheel	655
South Carolina	**1,737**
Charleston	511
Columbia Palmetto	381
Strom Thurmond	431
Swamp Fox	414
SOUTHWEST REGION	**6,655**
John Toohey	
Arizona	**3,883**
Cochise	137
Frank Luke	2,019
Prescott/Goldwater	418
Tucson	1,309
Nevada	**1,274**
Thunderbird	1,274
New Mexico	**1,498**
Albuquerque	1,015
Fran Parker	320
Llano Estacado	163
TEXOMA REGION	**12,244**
David Dietsch	
Oklahoma	**2,244**
Altus	213
Central Oklahoma (Gerrity)	1,266
Enid	363
Tulsa	402
Texas	**10,000**
Abilene	364
Aggieland	192
Alamo	3,677
Austin	624
Concho	260
Del Rio	142
Denton	450
Fort Worth	1,621
Gen. Charles L. Donnelly Jr.	306
Northeast Texas	413
San Jacinto	1,089
Seidel-AFA Dallas	862

AFA Membership

Year	Total	Life Members	Year	Total	Life Members
1946	51,243	32	1979	147,136	1,869
1947	104,750	55	1980	156,394	2,477
1948	56,464	68	1981	170,240	3,515
1949	43,801	70	1982	179,149	7,381
1950	38,948	79	1983	198,563	13,763
1951	34,393	81	1984	218,512	18,012
1952	30,716	356	1985	228,621	23,234
1953	30,392	431	1986	232,722	27,985
1954	34,486	435	1987	237,279	30,099
1955	40,812	442	1988	219,195	32,234
1956	46,250	446	1989	204,309	34,182
1957	51,328	453	1990	199,851	35,952
1958	48,026	456	1991	194,312	37,561
1959	50,538	458	1992	191,588	37,869
1960	54,923	464	1993	181,624	38,604
1961	60,506	466	1994	175,122	39,593
1962	64,336	485	1995	170,881	39,286
1963	78,034	488	1996	161,384	39,896
1964	80,295	504	1997	157,862	41,179
1965	82,464	514	1998	152,330	41,673
1966	85,013	523	1999	148,534	42,237
1967	88,995	548	2000	147,336	42,434
1968	97,959	583	2001	143,407	42,865
1969	104,886	604	2002	141,117	43,389
1970	104,878	636	2003	137,035	42,730
1971	97,639	674	2004	133,812	42,767
1972	109,776	765	2005	131,481	43,094
1973	114,894	804	2006	127,749	43,266
1974	128,995	837	2007	125,076	43,256
1975	139,168	898	2008	123,304	43,557
1976	148,202	975	2009	120,507	43,782
1977	155,850	1,218	2010	117,480	43,954
1978	148,711	1,541			

AFA's Overseas Chapters

CHAPTER	LOCATION
	United States Air Forces in Europe (USAFE)
Charlemagne	Geilenkirchen, Germany
Dolomiti	Aviano AB, Italy
Lufbery-Campbell	Ramstein AB, Germany
Spangdahlem	Spangdahlem AB, Germany
United Kingdom	Lakenheath, UK
	Pacific Air Forces (PACAF)
Keystone	Kadena AB, Japan
MiG Alley	Osan AB, South Korea
Tokyo	Tokyo, Japan
	Supreme Headquarters Allied Powers Europe (SHAPE)
Gen. Lauris G. Norstad	Mons, Belgium

Profiles of AFA Membership

As of May 2010 (Total 117,480)

43%	One-year members
20%	Three-year members
37%	Life members
15%	Active duty military
52%	Retired military
18%	Former service
5%	Guard and Reserve
3%	No military service
4%	Cadet
3%	Spouse/widow(er)

Of AFA's service members:

72% are officers

28% are enlisted

Of AFA's retired military members:

75% are retired officers

25% are retired enlisted

AFA National Report

natrep@afa.org

By Frances McKenney, Assistant Managing Editor

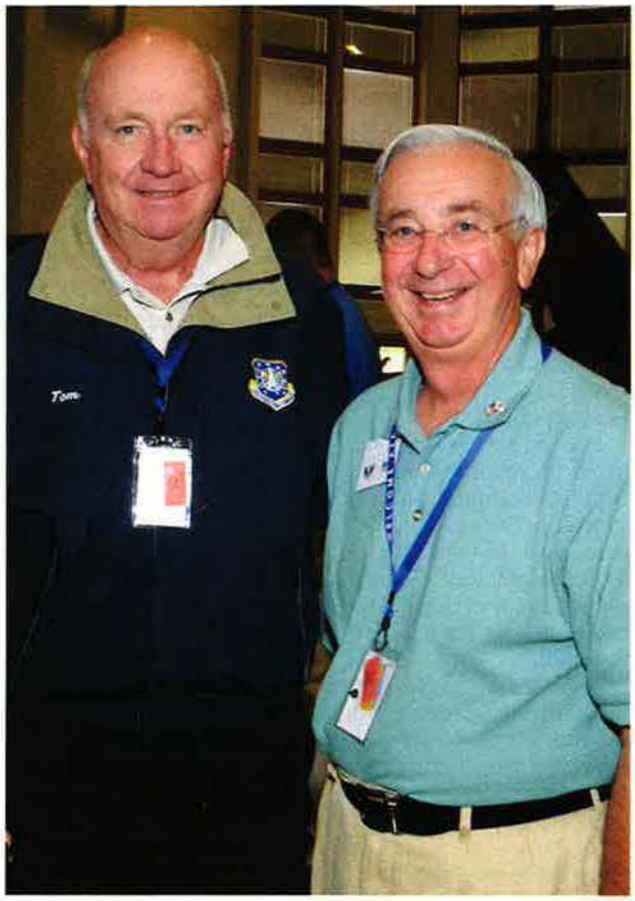
Utah's Focus on Defense

Air Force Association Chairman of the Board Joseph E. Sutter attended the 31st annual Focus on Defense symposium in Utah in June. The state's three AFA chapters—the **Northern Utah Chapter, Salt Lake Chapter,** and **Ute-Rocky Mountain Chapter**—co-sponsored the day-long event.

Held at a conference center in Ogden near Hill Air Force Base, the June 16 symposium threw a spotlight on the new Air Force Global Strike Command, with its chief, Lt. Gen. Frank G. Klotz from Barksdale AFB, La., as keynote speaker.

"Being the steward of two-thirds of the United States' operational nuclear triad is a special trust and responsibility," he told the audience of more than 350 attendees. "Our partners in the ICBM sustainment and modernization enterprise at Hill Air Force Base will continue to have a critically important mission and critically important work to perform."

Other speakers on the roster included Lt. Gen. Loren M. Reno, deputy chief of staff for logistics, installations, and



Retired Maj. Gen. Thomas Deppe (left), former vice commander of Air Force Space Command, chatted with AFA Board Chairman Joe Sutter at an informal event during the Focus on Defense symposium in Utah. Sutter spoke briefly at the conference, noting USAF's renewed attention to the nuclear enterprise.

mission support; Dennis A. Muilenburg, president and CEO of Boeing Defense, Space, and Security; and Robert C. Hinson, Northrop Grumman vice president of government programs.

Walter Saeger Jr., Utah state VP, and Kevin J. Sullivan, a former commander of Ogden Air Logistics Center, were chairmen of the symposium.

The chapters hosted a salmon barbecue at the end of the conference, and the next day, two days of golf got under way to raise funds for the state AFA aerospace education foundation. The tournament included a "Midcourse Correction" party at the end of the first day of play and an awards banquet at the end of the tournament.

Honoring WASPs

Hosted by the **Gold Coast Chapter** in Fort Lauderdale in July, the Florida State Convention honored four World War II-era Women Airforce Service Pilots who live in the area.

Florine Maloney, Shirley Kruse, Tex Meachem, and Helen Snapp were special guests at the convention's evening banquet.

As WASPs, they were among the first female military pilots, eventually numbering more than 1,100, who volunteered for World War II and flew every aircraft in the inventory.

In March, the Women Airforce Service Pilots—some 290 of whom are still alive—received the Congressional Gold Medal in a ceremony at the US Capitol. It is the highest award Congress can award to a civilian. The original Gold Medal went to the Smithsonian Institution for its "Women in Aviation" display, but each WASP received a smaller version of the medal to keep. Some of the WASPs brought these bronze versions to the Florida state convention.

According to Fran C. Shaw, Gold Coast Chapter government relations VP, the WASP guests were "fun, funny, informative, told great stories, and they were given a standing ovation at the end."

Brian A. Maher, president of the Joint Special Operations University at Hurlburt Field, Fla., also spoke at the evening's banquet.

The convention's all-day business meeting included a luncheon where USAF Col. Phil Locklear, chief of staff for Special Operations Command South, addressed the attendees. SOCSOUTH, at Homestead ARB, Fla., is a subunified command of US Southern Command and serves as the functional component for special operation missions in the Caribbean and Central and South America. Among topics Locklear covered: the Haitian earthquake relief effort.

Pacific Northwest Pilot for a Day

The **McChord Chapter** in Lakewood, Wash., recently helped a six-year-old girl put aside, for a while, the burden of a serious illness and enjoy a day at an Air Force base.

Kaylie Bergen, who had been diagnosed with a brain stem tumor, became a "Pilot for a Day" at JB Lewis-McChord in May.

The Pilot for a Day program originated in 1994 with Capt. Rory Blackburn of the 560th Flying Training Squadron, Randolph AFB, Tex., who created it as a way to give children a respite from their medical treatments.

At McChord, the 4th Airlift Squadron takes the lead for Pilot for a Day, with all funding provided by the McChord Chapter, in particular, its Community Partners. The chapter's Robert Branscomb heads the fund-raising effort.

For Kaylie, Pilot for a Day actually began the night before, when her 4th AS hosts presented her with a helmet bag filled with a personalized flight suit, scarf, nametag, and unit patches.

The next day, Kaylie, now in uniform, embarked on a base tour: At an explosive ordnance disposal demonstration, an EOD robot extended an "arm" with a pink gift bag dangling from it. Ajax, a military working dog at the security forces squadron, put on a K-9 demonstration.

Then came lunch at the Combined Club with members of the McChord Chapter, headed by President Tommy L. Carson. The afternoon was devoted to the base's C-17s. Kaylie watched one of the transports perform a touch-and-go, then walked through one that was on static display.

"We are hoping that the entire day will never be forgotten by her," commented Carson.

Space Briefing for the Shooting Star

A teacher who spent a week at space camp gave a full report in May to the **Shooting Star Chapter** of northern New Jersey.

Valerie Finneran, a seventh-grade special education instructor from Randolph (N.J.) Middle School, was selected last year for the Honeywell Educator @ Space Academy program. The company paid all expenses for her and 287 other teachers to travel to Huntsville, Ala., and attend the US Space & Rocket Center's 45-hour professional development course.

Shooting Star Chapter President Howard Leach Jr. reported that Finneran brought to the chapter meeting photos

More photos at http://www.airforce-magazine.com, in "AFA National Report"

of her fellow teachers and of the astronauts who served as their mentors during the program of classroom, lab, and field training. She also displayed some of the educational material that she learned about at the camp, aimed at improving classroom teaching through new, innovative techniques.

Amos Chalif, chapter Community Partners VP, noted that Finneran took part this past school year in the AFA-*USA Today* newspaper's Visions of Exploration program. Visions encourages the study of math, science, and aerospace technology by providing the *USA Today* newspaper for students, as well as lesson plans and resources for teachers.

The Landing on the Hudson

A retired airline pilot spoke to the **Columbus-Bakalar Chapter** in Columbus, Ind., in May, about one of the most memorable moments in commercial aviation history: the Jan. 15, 2009 US Airways airplane landing on the Hudson River.

Hometown native and Air Force veteran Tony Patterson retired from Northwest Airlines in 2001, after flying, among other aircraft, the Airbus A320.

US Airways pilot Chesley B. Sullenberger III was flying the same kind of aircraft last year, when less than a minute into the flight from New York's La Guardia Airport, a flock of birds flew into the engines, disabling them. Sullenberger had no time to head for the nearest airport. Instead, he guided the airplane over the George Washington Bridge and landed it on the river. All 155 people on board survived, leading New York Gov. David Paterson to call it "a miracle on the Hudson."

Columbus Chapter guest speaker Patterson, like Sullenberger, was an Air Force veteran. Patterson earned a commission from Ball State University in Indiana and flew F-4 Phantoms before serving as a forward air controller in O-2s for the 4th Infantry Division in Pleiku, South Vietnam. After leaving the Air Force in 1972, he became a Northwest Airlines pilot.

Chapter President Robert J. Goedl wrote in an e-mail that, in his talk to the chapter, Patterson covered his USAF and commercial aviation years quickly before turning to the topic of the Hudson River landing. Because of Patterson's experience with the A320, he was able to virtually "put us right into the pilot's seat" of the US Airways flight, Goedl said. "We felt like we actually helped land that plane."

Return Engagement

In July, Col. Michael F. Canders returned to the **Iron Gate Chapter** in New York City for a second speaking engagement. The Air National Guardsman had first stepped up to Iron Gate's podium in 2006, back when he commanded the

106th Rescue Wing, based at Francis S. Gabreski Arpt., N.Y.

This time, he spoke about his experiences as both commander of the 447th Air Expeditionary Group, Baghdad, Iraq, and Air Force commander of Sather Air Base. During his six months there, he was responsible for 1,500 service personnel, as well as thousands transiting the gateway. He also led negotiations for the 2011 transfer of the base to the Iraqi Air Force.

Chapter President Frank Hayes said some of the 73 guests in the audience—which included more than a dozen New York City firemen—came from as far as Washington, D.C., Hartford, Conn., and Wilmington, Del., for Canders' presentation.

Reunions

reunions@afa.org

19th AREFS, SAC. Homestead & Otis AFB, all personnel welcome. Oct. 10-13 at the Doubletree Guest Suites in Charleston, SC. **Contact:** Dave Callis, 120 Quail Croft Dr., Goldsboro, NC 27534 (919-778-4886) (dcallis@earthlink.net).

450th BG (WWII). Oct. 6-10 at the Doubletree Suites Hotel in Omaha, NE. **Contact:** Al Goodman (847-543-8381) (gobaral@aol.com).

Distinguished Flying Cross Society. Oct. 24-27 at March ARB, CA. **Contact:** John Appel (johneappel@yahoo.com).

USAF Pararescue. Oct. 6-10 at the Speedway Radisson Hotel in Tucson, AZ. **Contact:** Bill Preble (520-252-0633).

Westover AFB AF Spec. Projects Production Facility, including former members of **8th Recon Tech. Sq, 497th Recon Tech. Gp, 6594th Test Sq, 7405th Support Gp, and 7499th Support Gp.** Oct. 11-15 at the Hilton Garden Inn-Midtown, Savannah, GA. **Contact:** Dick Temple (703-786-4743) (dicktemple@aol.com).reunion. ▪

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.

Empire State's Education Awards

In New York, US Rep. Peter T. King (R-N.Y.) was among the special guests at the **Long Island Chapter's** annual education awards luncheon in June.

The ranking member of the House Homeland Security Committee, King received the Outstanding Community Leadership award, presented by the chapter's aerospace education VP, Alphonse Parise.

Other awards highlights: High school seniors Samantha Carey and Christina D'Agostino each received $1,000 schol-

AFA Conventions

Sept. 11-12	**AFA National Convention,** Washington, D.C.
Sept. 13-15	**AFA Air & Space Conference,** Washington, D.C.

arships that are named for the late Col. Francis S. Gabreski. The two-war ace earned 34.5 aerial victories in World War II and the Korean War and was a chapter member before his death in 2002.

Joe Castelli, who teaches technology at Jonas E. Salk Middle School in Levittown, received the Chapter Teacher of the Year award at the luncheon. Chapter President William Stratemeier made the presentation with New York Assemblyman Joseph S. Saladino. It was announced at the luncheon that Castelli had been named the State Teacher of the Year, as well. His state-level awards included $500, a Certificate of Excellence, a personalized jacket, and a Civil Air Patrol aerospace education membership.

Jason Horowitz, a teacher and Science Department chairman at Salk Middle School, received the chapter's Visions of Exploration Teacher award for best use of the program in motivating his students.

Salk Middle School students Matthew Appel and Jessica Keane wrote winning papers for a Visions of Exploration essay contest. They received tickets to the Cradle of Aviation Museum on Long Island and $50 gift cards for an electronics store.

More Chapter News

■ In June, the **Lewis E. Lyle Chapter (Ark.)** heard a firsthand account of the World War II Normandy Invasion from someone who took part in the largest amphibious landing in history. A. J. Simpson, a native of Hot Springs, Ark., recounted how he joined the Army in spring 1942. On D-Day, June 6, 1944, he and the other 49 men in his unit cleared the way for troops coming ashore at Omaha Beach. At the end of two days, there were only 13 men left from his company. According to Morris D. Cash, Lyle Chapter secretary, Simpson said that as a young man, he wasn't especially religious, but the war changed him and he became a minister.

■ At a ceremony marking 60 years since the Korean War began, Jack Murphy, **Hawaii Chapter** VP for awards, represented the chapter, joining veterans Al Guarino and Dan Carvalho in presenting an AFA wreath. The annual Korean War remembrance service took place at the National Memorial Cemetery of the Pacific in Honolulu on June 25.

■ The **Carl Vinson Memorial Chapter** in Warner Robins, Ga., hosted a luncheon in June for the commander of Air Force Materiel Command, Gen. Donald J. Hoffman. As reported in the Macon *Telegraph,* the next day, Hoffman warned that budget belt-tightening was on the horizon for Warner Robins Air Logistics Center. WRALC Commander Maj. Gen. Polly A. Peyer was among the 150 people in what Chapter President Timothy P. Callahan called "a sellout crowd." ■

Airpower Classics

Artwork by Zaur Eylanbekov

A-4 Skyhawk

All the performance at half the weight—that about summed up the A-4 Skyhawk, one of the finest jet aircraft ever to have served with the US Navy and Marine Corps. The Douglas delta-wing aircraft, ordered during the Korean War, first reached the Navy's carrier wings in 1956 and the Marine Corps in 1957. Within a few years, the A-4 was the mainstay of naval light attack missions in Vietnam.

The Skyhawk was chosen to replace the A-1 Skyraider. A 1950 Bureau of Aeronautics request called for an attack aircraft with a maximum weight of 30,000 pounds. Ed Heinemann, determined to reverse the prevailing trend toward heavier and heavier aircraft, created a radical design of simple structure and tight focus on weight control. His XA4D-1 weighed in at under 15,000 pounds, loaded. Heinemann used a tailed-delta configuration and a tall landing gear (to permit clearance for external stores). The delta wing did not require folding, provided room for fuel, and allowed operation from small World War II-era carriers.

The A-4's small size and light weight translated into speed and power. Its basic design was reworked often to support missions—fast FAC, reconnaissance, buddy refueling, fighter training—other than attack. It stayed in production for 27 years, and continued in service with the Marine Corps until 1998 and the Navy until 2003. Several small nations still use them in front-line units.

—Walter J. Boyne

This aircraft: Navy A-4E Skyhawk—*BuNo #151050*—as it looked in 1966 when assigned to Marine Corps VMA-121 at Chu Lai AB, South Vietnam.

In Brief

Designed, built by Douglas ★ first flight June 22, 1954 ★ crew of one or two ★ number built 2,960 ★ one P&W J52-P-408A turbojet engine ★ **Specific to A-4M:** max speed 670 mph ★ cruise speed 465 mph ★ max range 2,000 mi ★ armament two 20 mm cannon and up to 9,000 lb ordnance ★ weight (loaded) 24,500 lb ★ span 27 ft 6 in ★ length 40 ft 4 in ★ height 15 ft.

Famous Fliers

Medal of Honor: Michael Estocin, James Stockdale (both USN). **POW:** Everett Alvarez Jr., John McCain (both USN). **Navy Cross:** James Busey IV, Bryan Compton, Edward Dickson, Trent Powers, Marvin Reynolds, Homer Smith (all USN). **Test Pilots:** Gordon Gray (USN), Robert Rahn. **Notables:** Randy Cunningham, Wynn Foster (both USN).

Interesting Facts

Dropped first and last bombs of Vietnam War ★ suffered 380 aircraft losses (276 combat) and 47 POW losses in Vietnam ★ set 500 km closed-course speed record (695.163 mph) in 1955 ★ nicknamed Heinemann's Hot Rod after chief designer Ed Heinemann; also Scooter, Bantam Bomber, Tinker Toy, Mighty Mite, Camel, Skyhog, Vulture (Israel), Chickenhawk (Australia) ★ equipped with thermal cockpit shield for nuclear operations ★ carried special belly tanks designed to save airframe in a wheels-up landing ★ boasted roll rate of 720 degrees per second ★ saw combat with air forces of Kuwait, Israel, Argentina ★ used as stand-in for MiG-17 in dissimilar air combat training ★ featured in movie "Top Gun," 1986.

A Skyhawk powers up on a carrier deck.

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