

January 2003/\$4

# AIR FORCE

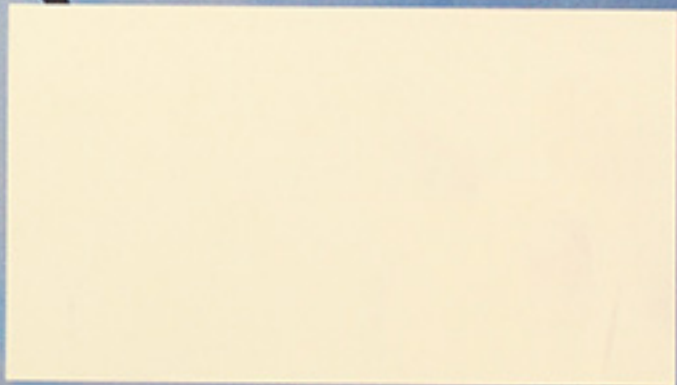
JOURNAL OF THE AIR FORCE ASSOCIATION

MAGAZINE

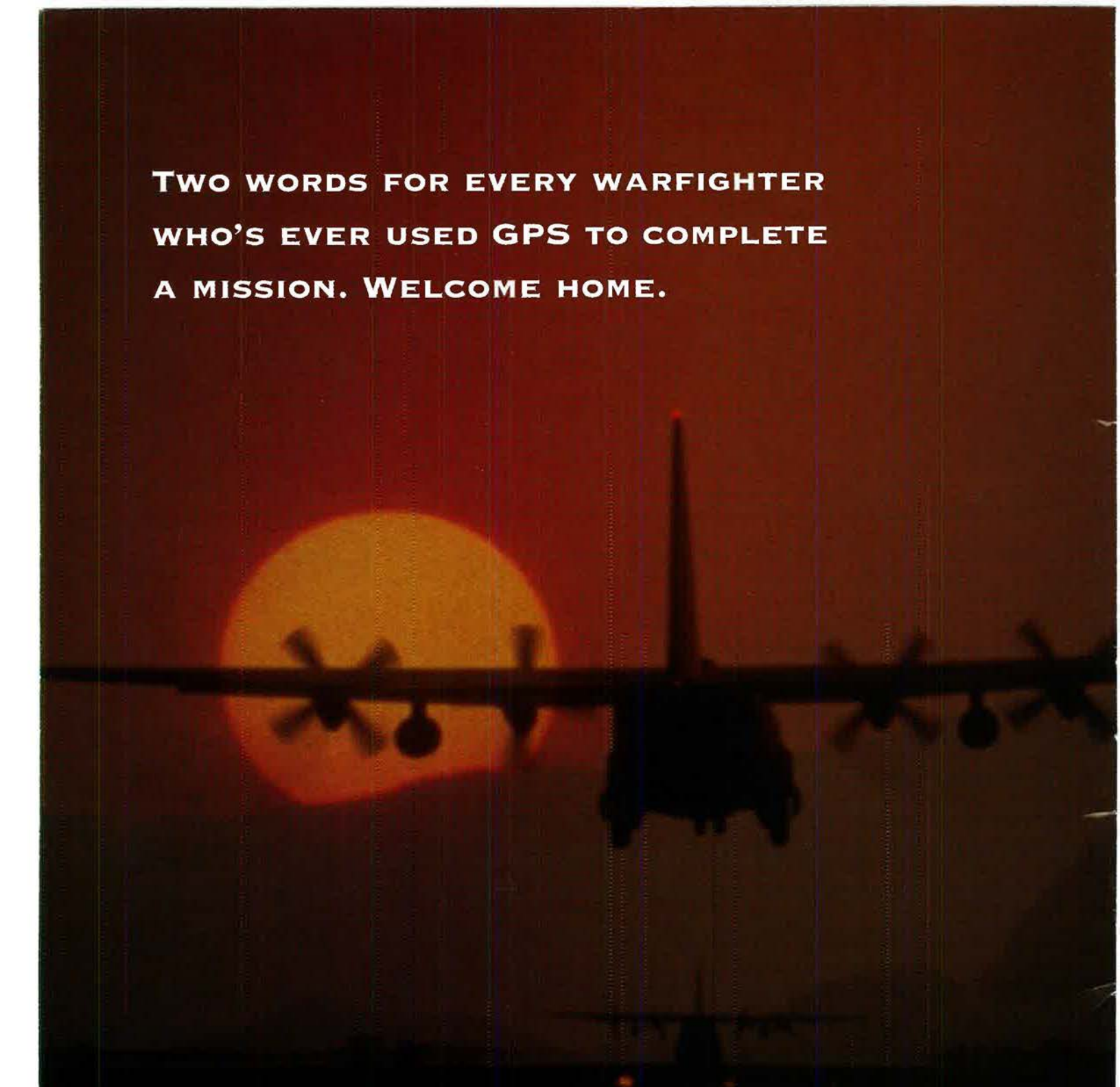
**Fighters of Spangdahlem**

**The Clash About CAS**

**Challenges for Military Space**



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By Robert S. Dudney, Editor in Chief

## Ghosts in the Machine

**F**OR US military retirees, the arrival of President Bush in the White House two years ago was a welcome event. Bush had spoken often of the need to honor the nation's veterans. He pledged to protect retiree benefits. And he vowed to put an end to government's "broken promises."

That last point got special emphasis from the new President. "We must keep our commitment to those who wore the uniform in the past," Bush noted on Jan. 19, 2001. "We will make sure promises made to our veterans will be promises kept."

The prime "broken promise," of course, concerned retiree medical care. A Bush campaign statement said the US "promised lifetime health care to career military personnel" but "we have reneged." It was a "contractual promise" Bush intended to fulfill.

To the exasperation of older retirees, however, even the Bush Administration has found the matter difficult to resolve quickly and in its entirety. This is evident in the course of an important retiree lawsuit seeking financial redress.

The issue is complicated, but the basic facts of this particular matter are not in dispute.

Retirees have long asserted they were promised free, lifetime care in military facilities after 20 years in uniform. This plan worked reasonably well until the 1990s, when two new factors emerged. First, thousands of retirees lost access to military clinics and hospitals due to base closures. Then, in 1995, the Clinton Administration announced a new military health care system, called Tricare. It excluded retirees 65 and older, who were told they had to use Medicare.

This twofold squeeze forced older retirees—mostly World War II and Korean War veterans—out of the DOD system and into a less-hospitable health care world. Many had to purchase supplemental policies, some costing hundreds of dollars a month.

In 1996, some retirees struck back, filing a federal lawsuit claiming breach of contract and seeking damages. Retired USAF Col. George

"Bud" Day—Medal of Honor recipient, Vietnam POW, and lawyer—brought suit on behalf of two Air Force retirees. Some 22,000 others, age 65 and older, supported the suit and formed a possible legal class, called the "Class Act Group."

A trial court dismissed the suit, but Day appealed, and a three-judge panel of the Circuit Court of Appeals in Washington agreed to hear him.

### **Congress and the Administration should negotiate a fair settlement with retirees.**

The previous Administration at first denied that recruiters made health care promises, but in the face of massive evidence to the contrary, backed off the claim.

In court, federal lawyers conceded that recruiters had, indeed, made promises. However, they said, they had no statutory right to do so and thus the promises weren't valid. It was a legalistic approach, amply summed up in a March 2000 exchange between Judge Pauline Newman and E. Roy Hawkens, the lead government lawyer:

*Newman: "You're not telling us that these promises were not made; you're just saying they don't have to be kept?"*

*Hawkens: "That's correct, your honor."*

The retirees won that round in court. To the surprise of some, however, the case has continued, and there was a rehearing before the full appellate court. That was bad news for the retirees. The court, in a 9-4 ruling on Nov. 18, acknowledged the retirees had "moral claims" but said recruiter promises were not backed by a statute and thus were not binding on the government.

The case now heads for the Supreme Court and more uncertainty.

Without question, the actions of

the government stem from worries about cost. Some have estimated that US liability could be significant, if it lost the case.

Whatever the cost, no one now disputes that World War II and Korean War veterans were promised free lifetime care. Recruiters offered it, service leaders supported it, service members counted on it, and Congress funded it through the regular health care appropriations. This, in the view of the Day group, was nothing if not a "contract."

The latest legal development comes on top of other struggles in recent years that have led to important gains for the majority of retirees. However, other retirees—especially elderly veterans, who are passing away at the rate of more than 1,000 a day—have become ghostly figures snarled in the complex machinery of government.

"What I find most troubling," wrote dissenting appeals court Judge S. Jay Plager, "is the insistence by the government, represented before us by the Department of Justice, to define the government's justice as a 'win' on any basis possible."

No one doubts that retiree health care has seen remarkable improvements in recent years. Congress and the Executive have worked together closely and effectively to improve retiree medical benefits. For one thing, Congress approved the Tricare for Life second-payer system for 65-and-over retirees. However, the new program is not free; 65-and-over retirees must enroll in Medicare and pay Part B premiums. More importantly, many older retirees already have sustained substantial out-of-pocket expenses.

While the court's majority could not find a legal basis to sustain the retiree case, it did express a "hope" that "Congress will make good on the promises recruiters made in good faith to plaintiffs and others of the World War II and Korean War era." The Bush Administration could make a good start toward resolving the problem by working closely with the Congress and opening negotiations for a fair and reasonable settlement that the older retirees could accept. ■



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## Access Issues

After reading Adam J. Hebert's article "Footholds on the Asian Rim" in your November issue [p. 58], I was amazed and disappointed that the mind-set against the mobility of naval aviation remains uppermost in the Air Force thought processes for the future. Shades of the early 1950s!

I remember, as a junior officer in those days, when the USAF spent so much effort to do away with aircraft carriers and create an endless fleet of heavy bombers which would win any conflict single-handedly.

The article made no mention of the options available with Navy aircraft carriers and independence from basing airpower in foreign lands, although since 9/11, most Americans have become alerted to the dangers of relying on our "friends" who may at any time deny the privilege of operating out of their territories. The expense of building and maintaining more air bases, which would still be at long range from potential conflict areas, does not seem to be in the best national interest for the United States.

I do not advocate doing away with the heavy bomber concept; however, I do believe that flying missions of 44 hours to place a few bombs on target just because we can do it is not a viable solution either.

When the chips are down, as they were in November 2001, there can be no denying the efficacy of the mobility of naval aircraft carriers' ability to project power from the sea to almost any point in the world, especially when supported by USAF tanking capabilities from bases that should remain politically available.

Please, let's try to keep the concept of joint forces working together in the national interest and stop trying to pave over much of the Asian rim.

Capt. T.E. Newark,  
USN (Ret.)  
Virginia Beach, Va.

## Under the Rubble

I applaud your excellent article ["Under the Rubble," November, p. 64] that highlights the deterioration of our military infrastructure. Of particular concern is the plight of Pope AFB [N.C.].

The military complex that includes Ft. Bragg's 18th Airborne Corps, 82nd Airborne Division, Army Special Forces, Joint Special Operations Command, and Pope Air Force Base provides a warfighter culture, environment, and capability that is difficult to match within our military. As such, it is a special place that encompasses a very critical element of our nation's ability to counter and defeat terrorism. Pope, similar to many other military installations, received excellent support during the 1980s. The 1990s proved a different story. Our dedicated military personnel and our nation's defense deserve better!

We have squandered a decade—now it's time to again pay special attention to fixing our critical military infrastructure assets such as exist at Pope Air Force Base and Ft. Bragg.

Brig. Gen. Ed Field,  
USAF (Ret.)  
Southlake, Tex.

## The Old Saws

In giving "low marks" to Phillip Meilinger for his September essay, John Stanaway repeats two of the greatest myths to emerge from World War II: that Japan was looking for a face-saving way out of the war prior to August 1945 and that the use of nuclear weapons at Hiroshima and Nagasaki was both unnecessary and unjustified. [See "Letters: About Those Bogus Charges," November, p. 7.] These same assertions by historical revisionists have been common for the past 25 years but have been repeatedly discredited by some of our nation's most eminent historians (e.g., William Manchester and David McCullough). The same applies to

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the revisionists' third great myth: that President Truman was completely uninformed when he made the decision to use the weapons.

As a point of fact, the alleged "peace feelers" were initiated by a lesser prince in the imperial household who had neither the position nor the authority to make such overtures. The war cabinet, under Gen. Kuniaki Koiso, was adamant about continuing the war to the end. Even though he had resigned as Prime Minister, Gen. Hideki Tojo was still the strongest influence on the cabinet and the emperor and he was committed to a fight to the finish. Not a shred of real evidence exists that the power structure at the time intended other than a long and bloody defense of the home islands. The battle of Okinawa was a clear prelude to the fanatical tenacity of the Japanese in defense of their home territories. The total mobilization of all remaining defensive resources was well under way when Hiroshima and Nagasaki were bombed.

Stanaway uses these myths to conclude that the nuclear ills of the past six decades—to include the current standoff with North Korea and Iraq over weapons of mass destruction—were somehow precipitated by the fact that the United States used nuclear weapons to terminate the war in the Pacific. That is tantamount to the illogic that the horrendous tragedy of 9/11 is the fault of the Wright brothers because they designed and flew the first flying machine.

Brig. Gen. Richard J. Toner,  
USAF (Ret.)  
Colorado Springs, Colo.

One wonders if John Stanaway had any close relatives who would have been involved in the invasion of Japan if we hadn't dropped two atomic bombs.

So Japan was trying to surrender in 1944. The families of the men killed and wounded on Iwo Jima and Okinawa certainly wish they had.

The fact is that Allied servicemen and civilians, some in Japanese prison camps, were dying every day that the war went on. If the bombs saved only one Allied life, they were worth it.

This was brought home to me at church one night several years ago when two fellow members mentioned that they landed on Omaha Beach June 6, 1944, and would have been involved in the invasion of Japan. Both came home to resume their careers and start families. One is the father of a fine FBI agent. The other has a daughter who served on her local school board. Her husband is a Naval Reserve doctor called to ac-



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tive duty after the attacks on the Pentagon. He was also called to active duty during the Persian Gulf War. Their son is a Naval Academy graduate.

These stories are typical. Mr. Stanaway and others feeling as he does about using the bombs evidently believe that saving the lives of these two fine men and so many others like

them (including my two brothers) wasn't important.

Cmdr. Walter D. Tucker,  
USNR (Ret.)  
Richmond, Va.

Congratulations to Phillip S. Meilinger for his excellent article on "The Bogus Charges Against Airpower" in the September issue and especially

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for answering his critics in the letters column of the November issue.

I confess to being one of those who still believe that the Air Force could have brought Japan to the peace table with the proper use of conventional airpower alone. Today, we have a "bridge" of tankers flying 24/7 between the US and the Middle East that is the very lifeblood of our entire effort in that area. In 1943 a small group of second lieutenants asked for permission to reconfigure B-24s into tankers for the purpose of attacking Japan from Midway island, 2,200 miles from Tokyo. Because of the "long" distances involved this would have necessitated single airplane, nighttime bombing as opposed to the sacred dogma of that time, high-altitude formation bombing that failed so miserably and brought about the controversial carpet fire-bombing of civilians.

According to Meilinger, "To argue that the atomic bombs were unnecessary implies there were alternatives." The alternative was the proper strategy—aerial refueled, single airplane, nighttime bombing of Japan's hydroelectric facilities. The B-24s could have been joined by P-51s, not flying cover but shooting out electrical transformers all over Japan on their own.

Avid readers of *Air Force Magazine* will recall that retired Air Force Gen. T. Ross Milton stated in one of his many fine articles that aerial refueling was well within the state of the art during World War II but was not accepted because [Lt. Gen. Henry H. "Hap" Arnold, our commander, was a great administrator but not a strategist.

An earlier defeat of Japan by using the proper strategy would not only have avoided the atomic bombings but the bloody island hoppings for airfields closer to Japan that would not have been necessary if aerial refueling had been accepted in 1943 instead of 1948. Most importantly it

would have shut out the Soviets from entering the war and dividing Korea, causing the "forgotten war" with its millions of casualties and the divided Korea that many rank as today's No. 1 world problem.

William J. Spelliscy  
Orange, Calif.

### Not Missing Napalm

I understand [retired] Lt. Col. [Price T.] Bingham's intent that we should use all resources available in pursuing the enemy. [See: "Letters: Missing Napalm," November, p. 10.] There is a problem with the statement "This is a situation that calls for fighters carrying napalm that can be delivered precisely and in very close proximity to friendly personnel without the high risk of fratricide," because there is no such thing available in anyone's inventory. Napalm is more akin to a shotgun shell than a sniper shot he seems to think it is.

I would much rather take my chances in a "danger close" situation with a pilot firing his cannon than counting on coming through a napalm attack on a position close by. You have wind drift, direction of wind, and direction of attack in an oxygen starved environment to factor into an already tough problem.

When napalm is employed with friendly personnel close to target, the very people you are trying to save might also be roasted or found with no burn marks but dead anyway because the little available oxygen was literally sucked out of their lungs to feed the nearby fire.

I would like to see pilots work on gunnery skills than attempt to put a regular napalm canister through a bunker window. Even a smart napalm bomb would be just a smart shotgun shell that burns.

MSgt. Mark Young,  
USAF (Ret.)  
Dallas



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# The Chart Page

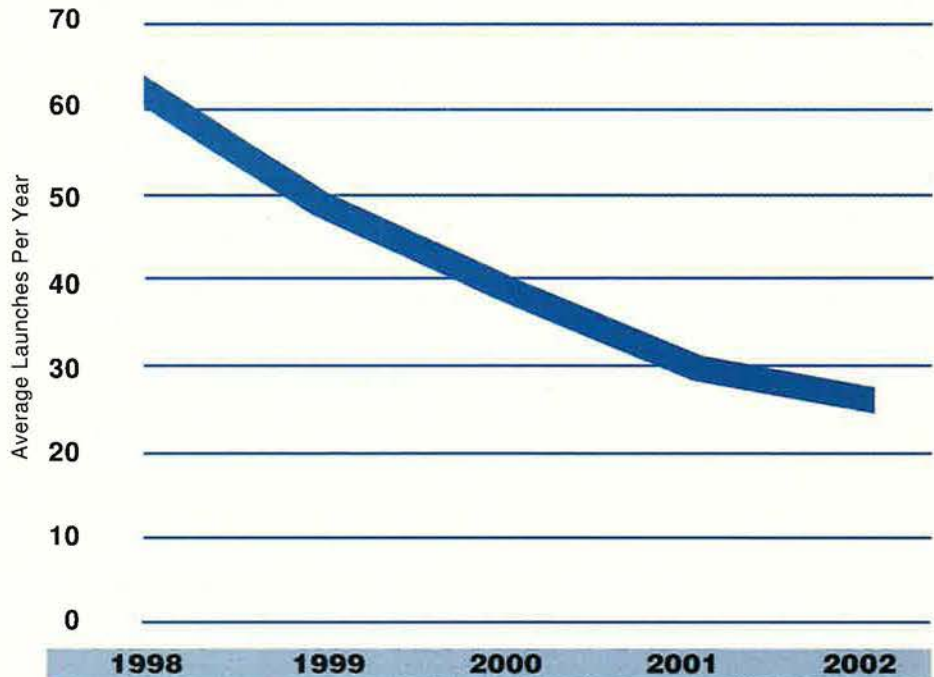
By Tamar A. Mehuron, Associate Editor

## Challenges Facing the US Launch Industry

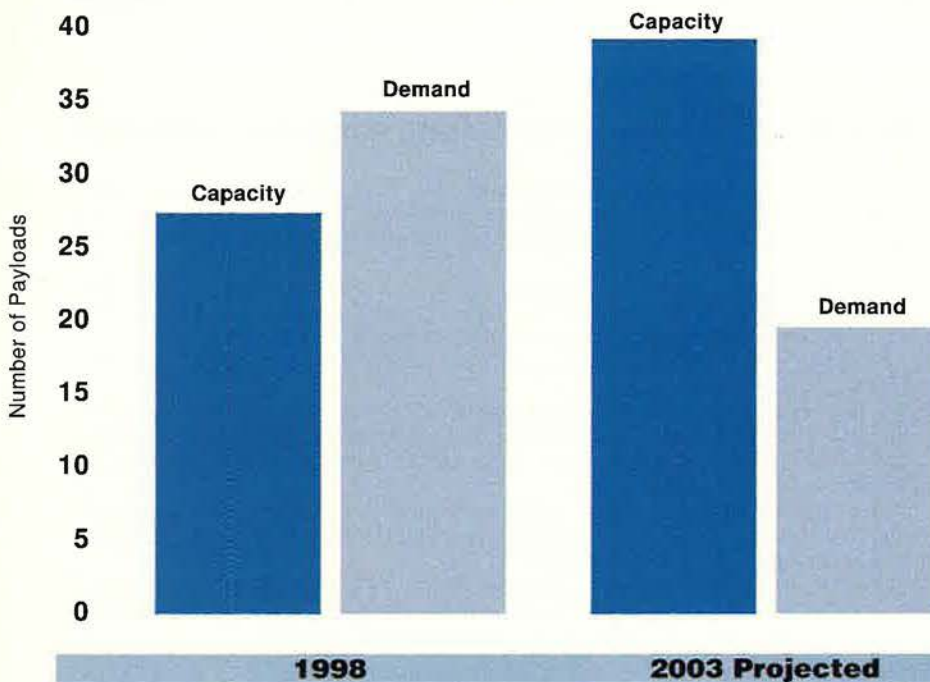
*Just five years ago, there weren't enough rockets to launch all the satellites being built. The telecom boom was at its peak, and the future for both satellite fabrication and the commercial launch business looked downright rosy. The Air Force was pushing a cheaper but more reliable generation of expendable launch vehicles, while NASA was leading the effort to build a new generation of reusable launch vehicles to replace the space shuttle.*

*Today, the telecom boom is over, and there are twice as many rockets as there are satellites needing a lift to orbit. However, the entire fleet of US government satellites will need replacement within a decade. The hard part for the launch industry will be weathering the in-between period.*

**Decline in Launches**



**Trading Places: Launch Capacity and Demand**



Sources: Commission on the Future of the US Aerospace Industry; Lockheed Martin.

By Suzann Chapman, Managing Editor

## Iraq Mounts Attacks on Patrols

Iraq continued to fire on US and coalition aircraft patrolling the UN no-fly zones over northern and southern Iraq.

On Dec. 1, US aircraft patrolling in the Operation Southern Watch zone responded with precision guided munitions against Iraqi air defense facilities. On Dec. 2, US and UK aircraft flying Operation Northern Watch missions used PGMs to strike an anti-aircraft artillery site.

On Dec. 14, coalition aircraft struck military sites in response to Iraqi military aircraft violating the no-fly zone.

On Dec. 15, coalition aircraft delivered PGMs against cable repeater sites and a mobile radar. On Dec. 16, coalition aircraft used PGMs to strike an Iraqi communications site. Both these strikes were in response to Iraqi surface-to-air artillery attacks on coalition aircraft.

Since the UN Security Council approved new weapons inspections, Iraq fired on coalition aircraft on at least 17 days in the south and seven in the north.

## Myers Says Iraq Endangers Civilians

DOD officials said retaliatory strikes were not always immediate because coalition pilots, in some case, were not able to pinpoint the source of an attack. One reason was that Iraq hides its mobile air defense units within civilian areas.

USAF Gen. Richard B. Myers, Joint Chiefs Chairman, in early December showed reporters a surveillance video that revealed a truck-mounted air defense radar being driven into an area of civilian buildings for cover from coalition aircraft.

"It's a good example, I think, how the Iraqi regime places civilians at risk in a very conscious way," said Myers. "We passed on hitting this target just to avoid putting the Iraqi civilians in harm's way."

## Commando Solos Beam Into Iraq

USAF EC-130E Commando Solo aircraft began broadcasting various messages into Iraq on Dec. 12. The

messages were directed at both Iraq's military and its civilian population.

The aircraft did not fly in Iraqi airspace, said DOD officials. They broadcast several messages at various times of the day. Leaflets dropped by other aircraft flying within the zones explain what broadcast frequencies are being used.

The content of the broadcasts varied. One message explained the UN Security Council Resolution calling on Saddam Hussein to declare his weapons of mass destruction and to disarm. Another exhorted the military to become "a legitimate army of the people." A message cited Saddam's misuse of the UN Oil for Food program to buy and produce weapons.

The 193rd Special Operations Wing of the Pennsylvania Air National Guard fly the EC-130s.

## B-52s, A-10s Aid Special Forces

On Dec. 1, USAF B-52 bombers dropped precision guided munitions in Afghanistan to support US special operations forces under attack in Herat Province near the Iranian border. Pentagon officials said the attackers—armed Afghans—stopped

firing after the B-52s dropped seven 2,000-pound bombs on their positions.

On Dec. 2, the Pentagon said al Qaeda and Taliban sympathizers made two hit-and-run attacks on a US Army Special Forces unit. The unit called for a USAF A-10, which dropped flares in the area.

There were no US casualties in either action. However, DOD officials noted that these and other similar incidents in recent weeks continue to highlight the danger faced by coalition forces in Afghanistan.

## USAF To Realign Manpower

The Air Force, on Dec. 19, announced its plan to realign more than 13,000 active duty and civilian authorizations beginning this year and running through 2009. The plan will shift manpower to the service's highest priority jobs, said officials.

USAF directed its eight active duty major commands to identify some 9,300 military and 3,900 civilian positions for realignment.

It is not intended to reduce the service's overall end strength, said Brig. Gen. W. P. Ard, USAF's director of manpower and organization.

## DOD Seeks Competition Among Airpower Elements

The Defense Department plans to conduct a "competition ... between three buckets of capabilities" to enhance its combat air forces, said Stephen A. Cambone, the Pentagon's director of program planning analysis and evaluation.

Cambone, who has been heading up DOD's transformation effort, told reporters in late November that the three capabilities will derive from unmanned and manned aircraft and standoff weapons.

Regarding manned aircraft, he said, "We clearly have to get into a stealth force as quickly as we can."

For unmanned aircraft, Cambone said DOD must decide what kinds of vehicles to develop based on what roles and missions they might handle. Once that determination is made, then DOD would balance the capabilities of unmanned vs. manned aircraft.

He speculated that standoff weapons, including cruise missiles, perhaps with hypersonic capability, might be launched from ships, unmanned or manned aircraft, or from the ground.

By the end of this decade, said Cambone, "the department will have a handful of choices about how it might go forward for the kinds of missions that [DOD leaders] think are going to be associated with airpower."

## F/A-22 Development Cost Issue Grows

The Air Force in December announced that the Red Team investigating problems in the F/A-22 program said the service must extend the fighter's Engineering and Manufacturing Development phase by 18 months—escalating the cost further than predicted one month earlier.

The Air Force now estimates the EMD extension will cost between \$700 million and \$1 billion, according to Marvin R. Sambur, assistant secretary of the Air Force for acquisition, who briefed reporters Dec. 6. Sambur emphasized the additional cost will be absorbed within the high-priority Air Force fighter program.

The immediate impact of the EMD stretch, he said, likely will be five or six fewer Raptors built over the next three fiscal years. The long-term impact on the size of the program is difficult to determine.

However, Sambur said that the EMD extension will not affect plans for Initial Operational Capability, which is still scheduled for the end of 2005. He added, though, that the program remains event-driven and was not guided by a schedule. "We will not compromise just to make our IOC," he said.

In early November, the Air Force had announced a potential \$690 million cost overrun, but Sambur said the Red Team now places the "risk range up to \$1 billion." He said that figure does not count \$200 million in management reserve funds already spent.

Shortly after announcing the EMD cost problem, Air Force leaders reassigned the two generals overseeing the program. (See "Aerospace World: USAF Changes F/A-22 Leaders," December, p. 9.)

Sambur revealed that the cost overrun means the Air Force has to trim its purchase of F/A-22s by one or two in each of the next three fiscal years. Currently, the service is re-evaluating the Fiscal 2003 buy of 23 Raptors, but a final determination may not be made for months.

The Air Force acquisition chief did say that modernization work intended to boost the Raptor's ground-attack capabilities will be slashed in Fiscal 2003. Sambur said that prime contractor Lockheed Martin "does not have the manpower to do modernization and EMD extension simultaneously."

The Air Force does not plan to touch Fiscal 2004 or 2005 modernization accounts. Therefore, unless some new production efficiencies can be found, F/A-22 production funds must cover all new development expenses.

The service had been told it could "buy to the budget," Sambur said. This arrangement was created to satisfy both the Air Force and the Defense Acquisition Board, which had differing opinions as to how much it would cost to build the airplane.

The DAB challenged the Air Force to build as many Raptors as possible for a total cost of \$43 billion. USAF officials believed 339 would be possible, while the Office of the Secretary of Defense believed the service could build only 303 for the money.

"Now it looks like we are going off that 339," Sambur admitted. "Obviously, because we are paying more, we're probably going to be buying less."

He said USAF would "have a zero-sum game on a year-by-year basis." In Fiscal 2004 and 2005, "even though it may mean only two planes, it still has an effect on your ramp rate and your learning curve."

Sambur listed four conclusions drawn by the Red Team: "Finding 1: The cost increase is driven by schedule extensions that will push completion of development from March 2004 to approximately November 2005. As a result, some of the development and production work and testing will now be done concurrently.

"Finding 2: Schedule extensions were in large measure caused by the necessity to resolve development-related issues such as fin buffet and avionics stability. These kinds of development issues are not uncommon to any major aircraft development program.

"Finding 3: The cost increase is not driven by aircraft performance issues and subsequently does not entail an increased risk of production retrofits.

"Finding 4: The magnitude of the increase is estimated to be about \$700 million with a risk range up to \$1 billion. The range is driven by assumptions regarding future schedule efficiencies. However, it is important to note that the Red Team also recommended mitigation options that could reduce the numbers significantly below \$700 million."

Sambur went on to explain the main development issues. He said that the fin buffet issue is nearly resolved. For the avionics integration, F/A-22 requirements call for avionics software that averages 10 hours before a failure requires a component restart.

He said that current avionics failures occur "every three or four hours," which, he explained, "is not atypical" at this stage of development. The Air Force expects to have the software corrected "within the next couple of months."

At that time, Sambur said, the Air Force will go back before Pentagon acquisition chief Edward C. Aldridge to finalize the production number for Fiscal 2003.

The F/A-22's integrated avionics package is one of the key capabilities not available on current fighters. Other Raptor selling points include stealth, supercruise, and lower support costs.

Sambur emphasized that the Air Force remains fully committed to its top acquisition priority, which "continues to perform superbly in flight tests and is demonstrating those revolutionary capabilities we expect it to deliver."

However, he said the program is not untouchable, and the Air Force and Lockheed Martin must get it right.

"Lockheed Martin cannot be in the situation they are in right now [and] win," Sambur said. "They can only lose in this "if the increase goes beyond a certain point," because the Air Force and OSD will not tolerate it.

Sambur emphasized that DOD could "tell us to get off this train [and] we will."  
—Adam J. Hebert

News reports last month indicated that the Air Force was poised to do just that by making personnel cuts in part to adjust its end strength, which was above authorized level for Fiscal 2002. The reports attracted the interest of lawmakers, several of whom contacted DOD and the Air Force to question personnel cuts at a time when the service has been straining to keep up with its long-running high operations tempo.

Ard said realigning active duty positions will enable the Air Force to make more airmen available for expeditionary duties, relieving stress on the most critical career fields. The civilian job realignments are intended to help shape the workforce, he added. USAF plans to provide civilians whose jobs are affected with opportunities for priority placement, voluntary early retirement, or voluntary separation incentives.

Service officials noted that, in line with direction from Defense Secretary Donald H. Rumsfeld, they are continuing to examine USAF's entire workforce to determine if the service can meet its requirements within its existing end strength.

### DOD Gets OK on Missile Defense

The Defense Department, on Dec. 17, announced that the President had directed the Pentagon to field

## No Plan To Address SEAD Shortage, GAO Contends

Despite several years of looking at the problem, the Defense Department still doesn't have a comprehensive plan to address a worsening shortage of Suppression of Enemy Air Defenses capabilities, according to the General Accounting Office.

In a report released in late November, GAO said the Pentagon has made "some progress" in modernizing its SEAD capability but still faces a gap between what it has for the mission and what is needed.

It also said a much-vaunted two-year Analysis of Alternatives for meeting SEAD requirements has not led to a workable plan to protect US air forces.

The Pentagon's AOA, said GAO, "only analyzed the airborne electronic attack portion of the mission and did not address needed improvements in aircraft self-protection systems or technical and funding challenges of other service programs, such as the Navy's and Air Force's air-launched decoy programs." The Pentagon relied on the AOA to establish its SEAD requirements for the Fiscal 2004 budget process.

GAO recommended again—as this was its second review of SEAD shortages in two years—that the Pentagon come up with a comprehensive plan for protecting its aircraft. In response, DOD said it agreed and would create an integrated product team to solve the SEAD shortfall.

The Pentagon's Analysis of Alternatives had identified 27 options for meeting SEAD requirements, almost all of which were considered too pricey to afford. (See "Next Steps in Electronic Attack," June 2002, p. 48.)

GAO pointed out that the Navy EA-6B Prowler tactical jammer/SEAD platform, which is jointly used by the Air Force, Navy, and Marine Corps, is suffering from wing fatigue and engine problems—two crashed in 2002 and 50 were grounded—and is chronically in short supply. About 104 are needed at any given time, but only 91 of 122 are available for service. The Navy must replace it by 2009.

Pentagon acquisition chief Edward C. Aldridge approved a Navy plan to replace the Prowler with an electronic warfare version of the F/A-18F Super Hornet, but that airplane won't be ready until 2011 at the earliest. The Air Force is considering using the production version of its X-45 unmanned combat air vehicle for the mission, but it won't be ready, even in limited numbers, until 2009.

GAO noted that airborne self-protection systems, particularly on the F/A-18, are experiencing problems and mission failures. Moreover, air-launched decoy projects have suffered from restructuring and delays.

In addition to the EA-6B, the Air Force largely depends on High-speed Anti-Radiation Missile-equipped F-16 fighters, designated F-16CJs, as its principal SEAD platform since the retirement of the F-4G Wild Weasel in the early 1990s. The service acknowledges that the F-16CJ was not a complete replacement for the F-4G. It considered dedicating specially modified F-15 aircraft to the role but dropped the idea because of high cost.

USAF also counted on an increasingly stealthy force to reduce its need for SEAD assets, but the service's fleet will not consist mostly of stealthy aircraft until the next decade.

GAO did cite the Air Force move to add 31 more F-16CJs to flesh out the SEAD capabilities of its Air Expeditionary Forces and the plan to upgrade the capabilities of 11 of its 13 EC-130 Compass Call communications jamming aircraft.

—John A. Tirpak

an initial missile defense capability in 2004–05.

Air Force Lt. Gen. Ronald T. Kadish, head of the Missile Defense Agency, told reporters that he is ready to proceed with a hit-to-kill capability, despite several misfires and continuing alterations to a ground-based booster system.

"Some things will work and some things won't," said Kadish. "What we do know is that our fundamental technology of hit-to-kill works. A few years ago, I could not tell you that with

confidence." Kadish said he plans to ask Congress to appropriate another \$1.5 billion over the next two years for the initial development capabilities. They include:

- Up to 20 ground-based interceptors capable of intercepting and destroying ICBMs in the midcourse phase of flight. Sixteen will be based at Ft. Greeley, Alaska, and four at Vandenberg AFB, Calif.

- Up to 20 sea-based interceptors employed on existing Aegis ships to intercept short- and medium-range

ballistic missiles in the midcourse phase of flight.

- Deployment of air-transportable Patriot Advanced Capability 3 systems to intercept short- and medium-range ballistic missiles.

- Land, sea, and space-based sensors, including existing early warning satellites, an upgraded radar now located at Shemya, Alaska, a new sea-based X-band radar, upgraded existing early warning radars in the UK and Greenland, and use of radars and sensors now on Aegis ships.

"The system testing that we have done gives us the confidence that we have the ability to integrate these elements, as complex as they are, and to make them effective," said Kadish. "We will build confidence over time as we invest in this program."

### DOD Starts Smallpox Effort

On Dec. 13, President Bush announced he had ordered smallpox vaccinations to begin for military personnel and recommended them for domestic medical personnel and first-responders.

The Pentagon, which had begun the mandatory vaccinations the day before, plans to immunize personnel, initially totaling about 500,000, based on occupational specialties. The first to receive the smallpox vaccine will be smallpox response teams and hospital and clinic workers.

Smallpox vaccinations, which use a two-pronged needle to prick the skin several times, were routine in the US for everyone until 1972. The World Health Organization declared the disease eradicated worldwide in 1980. US military smallpox vaccinations continued until 1990.

Reactions to the vaccine include swelling, headache, fatigue, muscle aches, pain, or chills. Some people may have rashes that last for days. There will be a red, itchy bump at the site of the vaccination if it's successful. About 1,000 people for every one million vaccinated for the first time experience serious reactions, according to the Centers for Disease Control and Prevention. The CDC reports that one or two people per million vaccinated may die.

Administration officials acknowledge there are risks in taking the vaccine. However, they said, the greater risk is to acquire and spread the disease, which is highly contagious. Smallpox kills about three out of 10 infected people, and there is no treatment or cure.

## NORAD Scrambles Fighters

NORAD officials at Cheyenne Mountain AFS, Colo., directed USAF fighter aircraft on Nov. 28 from several bases to check out reports of a suspicious contrail running toward the US from the Caribbean.

According to the Pentagon, commercial airline pilots later reported the contrail over Florida and then over Indiana. No other sightings of aircraft or contrails were reported.

The fighters made "no visual or confirmed radar contact" with the source of the contrail, said a Pentagon statement.

## Army Guard To Aid USAF

On Dec. 16, the Pentagon announced the Army and the Air Force had signed a memorandum of agreement calling for the Army to mobilize 9,000 Army National Guard soldiers to augment security at 163 Air Force installations in the US.

Under the agreement, Army Guardsmen will augment USAF security forces for up to two years while the Air Force phases in permanent solutions to address its shortage of security forces personnel. The increased optempo since 9/11 has forced Air Force officials to search for a variety of options to supplement its short-handed security forces.

DOD's head of reserve affairs, Thomas F. Hall, announced the agreement, saying, "Our intent is to reduce the burden on the Air Force security forces personnel, in particular those Air National Guard and Air Force Reserve members who are serving into a second year of mobilization."

## Supertyphoon Hits Guam

A supertyphoon with winds of 150 mph struck Guam Dec. 8, leaving the island without power and water. No one at Andersen Air Force Base was injured, according to base officials.

The storm, called Typhoon Pongsona, caused major damage to some base facilities and downed 1,000 trees.

Pacific Air Forces personnel from Elmendorf AFB, Alaska, Hickam AFB, Hawaii, and Yokota AB, Japan, were sent to help restore full base operations and provide medical and aircraft maintenance assistance. The Hawaii Air National Guard airlifted personnel and supplies.

Disaster relief officials estimated it would be weeks before the island had full power again.

## A-10 Pilot Dies in Crash

Capt. Eric Palaro died Dec. 4 in a midair collision between two A-10 attack aircraft over the Nevada Test



AP photo/Shawn Poynter

## P-38, Long Buried in Greenland Ice, Flies Again

A P-38 frozen under a Greenland glacier for 50 years flew again in October, culminating a 10-year recovery and restoration effort that honors World War II pilots and Arctic rescuers.

The aircraft, dubbed *Glacier Girl*, was one of six P-38s and two B-17s—all factory-fresh—that made forced landings in Greenland in July 1942. The US aircraft were en route to England when they went off course, possibly following bogus weather reports broadcast by Nazi submarines. As the aircraft ran out of fuel, they set down on the arctic ice. Except for one P-38 that flipped over, all the aircraft made controlled landings.

The warbirds were abandoned in place, but the 25 Army Air Forces crew members were rescued by five Army personnel who braved 15 miles of hazardous ice floes and crevasses to reach them. All the crewmen and their rescuers survived.

Entrepreneur and former Air Force pilot J. Roy Shoffner financed six expeditions to locate and subsequently raise one P-38 from this "Lost Squadron" which was resting nearly 270 feet beneath the arctic ice. The enterprise cost \$638,000. Recovered in 1992, *Glacier Girl*—an F model P-38—was brought to the Lost Squadron Museum in Middlesboro, Ky., where it has been undergoing restoration for the past 10 years at a cost of more than \$3 million.

Parts destroyed or made unusable from the long sleep in Greenland were manufactured from scratch or obtained through exhaustive detective work. The aircraft was brought to airworthy condition and flew Oct. 26 before a crowd of some 20,000 aviation fans and well-wishers, including some of the pilots and rescuers involved in the 1942 incident.

*Glacier Girl* is the only P-38F still in existence and one of only two dozen P-38s extant worldwide, out of the more than 10,000 produced. Only about six are flyable. The newly restored aircraft will travel the air show circuit and, between shows, serve as the centerpiece of the Lost Squadron Museum.

and Training Range, about 100 miles northwest of Las Vegas.

The other pilot, Maj. Scott Kneip, an instructor with the USAF Weapons School A-10 division, ejected from his aircraft. He was reported in good condition.

Palaro was assigned to the 81st Fighter Squadron at Spangdahlem AB, Germany. He was participating in a weapons school training exercise at the time of the accident.

USAF has appointed a board of officers to investigate.

## ACC Takes No-Fly Day

Air Combat Command officials announced Dec. 5 that on the next day command aircraft would not be flying.

Gen. Hal M. Hornburg, ACC commander, said increases in optempo and in aircraft mishaps called for a flight leadership focus day. He directed flying unit commanders to conduct mandatory training that would focus on basic flight discipline, as well as flight and maintenance procedures.

"It's understood that our people

## Bush OKs New Homeland Security Department

President Bush plans formally to establish the new Office of the Secretary of Homeland Security on Jan. 24. Late last year, Bush signed legislation officially creating the department, which had become a top bipartisan priority after the Sept. 11 terrorist attacks revealed flaws in the nation's homeland defense structure.

The legislation approved perhaps the most significant governmental reorganization since the National Security Act of 1947 created the Department of Defense, Central Intelligence Agency, and a separate Air Force.

When Bush signed the legislation Nov. 25, he also nominated former Pennsylvania Governor Tom Ridge to lead the new cabinet-level department. Ridge has served as head of the interim Office of Homeland Security since shortly after the 9/11 attacks. The Administration expects to have the new department—which will comprise 170,000 employees who are currently spread across 22 different government agencies—up and running by March. The Administration already has submitted a governmental reorganization plan outlining the strategy for transfer of agencies and personnel.

Bush also nominated Navy Secretary Gordon R. England, a former General Dynamics and Lockheed Martin executive, to be Ridge's deputy. Experts consider England's experience in working mergers and acquisitions to be one of his assets for the new post.

Creating the new department will be a daunting task. It will combine the Customs Service, Coast Guard, Border Patrol, Secret Service, and many other units into a single entity. The Administration expects the consolidation to answer critics who claimed that homeland defense measures have been too fragmented to be effective. Formerly, each group with homeland security responsibilities operated in its own orbit, without sufficient coordination.

No one predicts the department will function as a homogeneous whole any time soon. Ridge will have to integrate diverse organizational cultures while simultaneously attempting to fix a long list of homeland security vulnerabilities. He will work with a \$38 billion budget in Fiscal 2003.

are stretched thin conducting the global war on terrorism, other contingency operations, and homeland security missions over the United States, while preparing for possible future conflicts," said Hornburg. "However, focusing on the basics is every bit as vital in preparation for potential contingencies as it is for maintaining safe flying operations at home."

### AFIT To See Growth Spurt

The annual graduate education quota for the Air Force Institute of Technology will rise from 500 students to about 2,500 annually over the next six years, according to a new Air Force initiative. The initiative affects AFIT's resident and civilian institution programs.

AFIT, located at Wright-Patterson AFB, Ohio, has been under the gun in recent years and narrowly survived at least one attempt to close the institute.

Col. Michael Heil, AFIT commandant, said the resident program alone will increase from a 2002 quota of 265 students per year to about 500 in 2003. To keep up with the increase, AFIT plans to hire additional faculty members.

### Shorter Enlistments Coming Up

Congress and the Bush Administration have given the green light to the Pentagon to work up a shorter enlistment program than the current standard three- and four-year tours. The tours might be only 15 months,

## Military Hospitals Need Financial Improvement, Says Watchdog Agency

The financial management at some Defense Department medical treatment facilities is so poor that treatment may be given to imposters, insurance companies are not billed for patient care, and equipment is prone to theft, charged a recent General Accounting Office report.

According to the report, poor databases and lax oversight prevent military hospitals from knowing if health care is being obtained fraudulently.

At one facility, 41 patients allegedly treated in Fiscal 2001 had died before the year began. Although "this could be the result of clerical errors, someone may have fraudulently assumed the identity of a deceased person in order to receive free medical care," the report noted.

Lax billing practices are another problem. The facilities frequently did not bill third-party insurers for patient care "even when they knew that such coverage existed, thereby losing opportunities to collect millions of dollars of reimbursements," the report said.

Further, ineffective physical and financial controls led to more problems. Inventories were poorly controlled, creating the "risk that pilferable items or other types of

assets can be converted to personal use," the report cautioned. The treatment facilities are subject to the same problems with purchase card abuse as other DOD entities, according to GAO. Lack of control over purchases made on the government-issued cards creates the opportunity for fraud.

"At one location, a military cardholder defrauded the government of tens of thousands of dollars by purchasing items for personal use" on the government card, the report determined.

The Congressional auditors recommended that DOD strengthen the financial oversight at these facilities, a view the department concurred with.

William Winkenwerder Jr., assistant secretary of defense for health affairs, wrote in the Pentagon's response to the report that DOD was "appreciative" of GAO bringing the problems to light.

The investigation focused on representative military treatment facilities in Georgia, Virginia, and Texas, including Wilford Hall USAF Medical Center in San Antonio. The GAO study was requested by Reps. Janice D. Schakowsky (D-III.), and Dennis J. Kucinich (D-Ohio).

after completing basic and technical training.

Recruits joining the Air Force and Marine Corps currently must enlist for four years. They also have a four-year inactive reserve commitment following that. The Navy currently offers some select personnel two-year options and has a three-year tour. The Army has options of two, three, four, and five years.

The program is part of the Fiscal 2003 defense authorization act that President Bush signed into law Dec. 2. The plan calls for 15 months of active duty followed by either an additional active-duty period or 24 months in an active reserve status or in a national service program, such as the Peace Corps. More time would be spent in inactive reserve status, for a total of eight years.

The services have to work out the details, including which military jobs would be open to the short-term enlistees.

#### **Bush Orders Korea Medal**

The Fiscal 2003 defense authorization bill, signed by President Bush in December, directs the Pentagon to issue a Korea Defense Service Medal.

The provision calls for DOD to award the medal to members of the armed forces who served in Korea after July 1954, when DOD stopped issuing the Korean Service Medal. About 40,000 US personnel have served in Korea on a steady-state basis since the armistice. Since 1953, there have been 40,000 reported breaches of the armistice.

Some 1,200 service members have died as a result of service in Korea since 1953. One champion of the provision, Rep. Elton Gallegly (R-Calif.), called Korea "among the more dangerous places to serve."

#### **Russia Plans Military Reforms**

Russian Defense Minister Sergei B. Ivanov revealed several military reform proposals that will improve training and professionalism but probably will not bring about the extensive changes outlined previously by Russian President Vladimir Putin.

Ivanov told reporters that the Russian military would shift more quickly from draftees to professionals on contract. He said that, by 2007, troops in the most combat-ready units would be all professionals. The previous schedule called for such a transition to begin in 2011.

Ivanov said that under the new plan, 126,000 troops out of a total of 1.1 million would become professionals within the next four years. He said it's "a very ambitious goal."

## **CIA: North Korea Could Produce 50 Nukes a Year**

The CIA has determined that North Korea could produce enough plutonium to build at least 50 nuclear weapons per year by the middle of the decade. These weapons would be in addition to the one or two nuclear weapons officials believe the Communist dictatorship already possesses.

In an unclassified intelligence summary sent to lawmakers late last year, the CIA wrote that North Korea "has continued its nuclear weapons program" despite the pledge to halt it as part of the 1994 Agreed Framework between the US and North Korea.

The Administration revealed in October that North Korea had defaulted on the agreement and was running a clandestine nuclear weapons program. When confronted with US evidence of the program, North Korea admitted it was violating the terms of the agreement. (See "Aerospace World: North Korea Stuns US With Nuke Claim," November, p. 23.)

In a deal brokered by former President and 2002 Nobel laureate Jimmy Carter, Pyongyang agreed in 1994 to terminate its nuclear weapons program in exchange for energy assistance from Washington. Aid to North Korea was to include two light-water nuclear reactors that cannot easily produce weapons material.

The CIA assessment found that Pyongyang had halted its plutonium production program but had continued nuclear weapons development in other ways. North Korea reacted to the revelations by accusing the United States of being the party that actually abrogated the Agreed Framework. "It is well known to the world that the US has violated the framework and boycotted the implementation of its commitments," a spokesman for North Korea said in November.

The United States cut off oil shipments to North Korea about a month after Pyongyang confirmed its clandestine nuclear program. The North Korean spokesman called the end of the oil shipments a "wanton violation" of the mutual agreement.

In late December, Pyongyang began dismantling equipment monitoring a plutonium facility and appeared ready to restart plutonium production. The CIA's assessment determined that if North Korea fully abandoned the agreement, it could quickly resume plutonium production, generating enough material for "several more weapons" almost immediately.

If the framework collapses, almost all plutonium capacity would come from the Yongbyon and Taechon reactors, the assessment continued. Work on these heavy-water reactors was halted with the 1994 agreement, and the CIA noted that "it would take several years to complete construction."

Although "clear evidence" did not surface until recently, the intelligence community had suspected North Korea had a uranium enrichment program in place for several years. The CIA said, "North Korea embarked on the effort to develop a centrifuge-based uranium enrichment program about two years ago." Last year, North Korea began to seek out large quantities of centrifuge materials. More recently, the Intelligence Community learned North Korea had a weapons-processing plant under development, large enough to deliver enough uranium for two or more nuclear weapons per year by the middle of the decade.

The CIA continues to monitor the North Korean nuclear effort. The assessment conceded that "given the North's closed society and the obvious covert nature of the program," intelligence gathering will be difficult.—AJH

The defense minister did not indicate whether Putin's call for a drastic reduction in the size of the military force would be implemented nor whether the draft would be eliminated. Putin advocated reducing the size of the military by as much as one-third to pay for better equipment and training.

Ivanov said the decision over the size would be held until completion of a new strategy, requested by Putin, to deal with terrorism.

#### **USAF Changes Captain Selection**

The Air Force announced Dec. 6 that it planned to eliminate the central selection boards for promotion to

## NATO OKs Expansion, SACEUR Post Realigned

The NATO countries invited seven more nations to join the alliance. These included, for the first time, former republics of the now-defunct Soviet Union. The organization also began streamlining its military structure.

The seven newly invited nations are Bulgaria, Romania, Slovakia, Slovenia, and the three former Soviet states: Estonia, Latvia, and Lithuania. If the new members accept membership, the new NATO will stretch from the United States in the west to the Black Sea in the east and encompass 26 nations. Legislatures of the invitees must ratify a decision to join the alliance.

At a November NATO meeting, French President Jacques Chirac said the invitation eliminates the last vestiges of the old Cold War dividing lines in Europe. NATO Secretary-General George Robertson said this round of invitations "will not be the last," and NATO leaders generally urged nonmembers—such as Russia—not to view the expansion as a threat.

"Russia is not the enemy," Robertson said, noting instead a "deadly cocktail of threats" from terrorists and rogue nations as now posing the greatest danger to the alliance.

Defense Secretary Donald H. Rumsfeld said NATO's military arm will be transformed into a lighter, more agile force that will be better suited to taking on unconventional and out-of-area threats.

To be relevant in the 21st century, Rumsfeld said, NATO must transform, itself "from being a Cold War institution organized and trained and equipped to deter and dissuade and defend against a Soviet Union tank battle across the West German plain into an organization that's capable of responding quickly to trouble spots in the world."

Toward that end, NATO plans to reshape its top two military elements into two strategic commands, one focused on operations and one on transformation. The Supreme Headquarters Allied Powers Europe, or SHAPE, headquartered in Mons, Belgium, will become the Allied Command Operations. The Allied Command Atlantic, or ACLANT, headquartered in Norfolk, Va., will become Allied Command Transformation.

In addition, the alliance decided to form eight specialty headquarters, each headed by a different country. NATO voting members also endorsed a US initiative—creation of a rapid-reaction, brigade-sized NATO Response Force.

Current alliance leaders encouraged new members and member candidates to focus what few defense dollars they have on specialty niches that they can fill, rather than attempting to build fully capable independent militaries. The Czech Republic, for example, has invested in equipment and personnel that can detect radiological, biological, and chemical attacks and defend against them, while Slovakia has troops specializing in mountain warfare. Slovenia is focusing on well-trained special operations forces.

European member nations also agreed to commit funding to areas of military capability where they lag behind the United States. Specifically, nations promised to invest in secure communications, precision guided munitions, electronic warfare gear, and nuclear, biological, and chemical protective clothing.

Two nations—Germany and the United Kingdom—pledged to expand their outsize cargo airlift capability. The UK would continue leasing C-17s from Boeing, while Germany is considering the C-17 or the Russian AN-124.—JAT

captain, beginning this year. Promotion decisions about eligible first lieutenants are now to be made at the major command or equivalent level.

The change applies to active duty and reserve officers.

USAF officials said the new approach will save the Air Force time and money. Col. Dale Vande Hey, director of personnel programs at the Air Force Personnel Center, said it will also place the promotion decision-maker closer to the officer under consideration.

Vande Hey said the historical 99 percent selection rate to captain made

the change a logical move. Potentially, the service can promote 100 percent of the fully qualified first lieutenants.

### Kelly Shows Low Death Rate

A newly released study of the mortality rate for workers at the former Kelly Air Force Base in San Antonio shows there are "significantly fewer deaths from all causes than would have been expected using either US or Texas reference rates for comparison," said USAF officials in November.

The study, conducted by Applied

Epidemiology Inc., of Amherst, Mass., covered 32,000 civilians who worked for one year or more at Kelly between 1981 and 2000. The Air Force commissioned the study after concerns rose over the number of former workers who had died from Amyotrophic Lateral Sclerosis, or Lou Gehrig's disease. (See "Aerospace World: Link Between Kelly, Illness?" February 2001, p. 16.)

The study reviewed causes of death out of concern about ALS but found no higher rate for that disease. It did find the Kelly rate of death due to liver cancer, emphysema, and diabetes to be higher than the US rate, but it was not higher than the Texas rate for those diseases.

There is a separate study still under way to determine the occurrence of ALS among Kelly workers, living or dead, over the history of the base. Those results are expected this year, said officials.

### Northrop Grumman, TRW Merge

Northrop Grumman officials announced, on Dec. 11, completion of a merger with TRW. The TRW name will stand, with the company becoming a wholly owned subsidiary.

With the merger, said Kent Kresa, Northrop Grumman chairman and chief executive officer, the Los Angeles-based Northrop Grumman becomes the second largest defense company. It will have more than \$25 billion in annual sales and nearly 120,000 employees.

DOD had given its OK to the merger on Nov. 21, passing the matter to the Justice Department. A last-minute sticking point for Justice was concern expressed by defense industry leader Lockheed Martin that the new Northrop Grumman might abuse a new-found monopoly in production of key satellite components.

### Academy Flight Training Returns

The arrival of new DA20-C1 Falcon aircraft at the US Air Force Academy in late November marked the return of the Introductory Flight Training Program to the academy. Another 20 of the new aircraft are to arrive this month, said officials.

The aircraft, produced by Diamond Aircraft in Canada, are equipped with top-of-the-line avionics and a GPS navigation system. They are quieter and safer than aircraft the academy previously used, said Lt. Col. Kathy Doby, 557th Flying Training Squadron commander. The two-seat C1s are 23 feet long with a 35-foot wingspan.

The academy contracted Embry-



Riddle Aeronautical University to administer the IFT program, which is expected to train up to 300 students in the first year of operation. IFT, said Academy officials, reduces the attrition rate for graduates when they go through Air Force specialized undergraduate pilot training.

The academy did its own IFT until 1997 when the Air Force grounded the T-3A trainer, then in use, after a series of fatal accidents.

#### USAF Promotes CAP Leaders

On Dec. 3, the Air Force promoted Brig. Gen. Richard L. Bowling, Civil Air Patrol national commander, to major general and Col. Dwight Wheelless, CAP national vice commander, to brigadier general. In announcing the changes in November, Gen. John P. Jumper, USAF Chief of Staff, cited CAP's proud record of service and its coming role in homeland security as the deciding factors in ordering the promotions. The Air Force had recently moved CAP functionally from its operations directorate to its new homeland security directorate.

At the pinning ceremony, Bowling said the event was "an occasion never seen before in CAP." He added, "General Wheelless and I received the stars, but the entire organization received the promotion."

#### PACAF To Support C-17, F/A-22

Air Force Secretary James G. Roche told troops at Hickam AFB, Hawaii, that they would be supporting C-17s, the service's newest airlifter, and F/A-22s, when the stealth fighter enters operational service.

Roche said the C-17s need to be "pre-positioned and working out of Hawaii like they are forward deployed." He added that such a move would include a full C-17 maintenance facility "at least at the unit level."

He also said it will be important to forward deploy the new F/A-22 and Unmanned Aerial Vehicles in PACAF. Roche was on a tour of PACAF bases in late November when he unveiled these plans.

#### News Notes

##### By Tamar A. Mehuron

■ On Nov. 22, Lt. Col. Michael Brill of the 419th Fighter Wing, Hill AFB, Utah, became the first pilot to log 5,000 flying hours in the F-16 fighter. That is the equivalent of circling the Earth 70 times.

■ On Nov. 19, Lockheed Martin named Ralph Heath to replace Bob Rearden as the F/A-22 program manager. The change came a day after the Air Force replaced its top



Smithsonian Institution photo/Sisaon Studios, Inc.

### Air and Space Annex Is "Go" for 2003 Opening

Smithsonian officials expect to meet the target December 2003 opening of the National Air and Space Museum annex at Dulles Airport in Virginia, near Washington, D.C.

Construction on the facility is about 75 percent complete, NASM director Gen. J.R. Dailey (USMC, Ret.) announced in November. The opening date was chosen to coincide with the centennial anniversary of the Wright brothers' first powered flight, in December 1903.

The Steven F. Udvar-Hazy Center—named after the principal donor to the annex, which is being built without federal funds—will house some 200 aircraft and 135 large space artifacts in a facility comprising, initially, 523,000 square feet. The objects represent the 80 percent of the NASM collection for which there is insufficient room at its flagship building on the National Mall in Washington. Currently, the objects are located in warehouses at the Smithsonian's Paul E. Garber restoration facility in Suitland, Md., and on loan to other museums around the country.

At the opening of the new Dulles facility, 70 of the 200 aircraft will be on display. Two main hangars will house the collection, which includes oversized objects such as the *Enola Gay* B-29, space shuttle *Enterprise*, a speed-record-setting SR-71, and Dash 80, the prototype Boeing 707.

Officials have begun fund-raising for an expansion of the center to 760,000 square feet, to include a restoration hangar, archives, conservation lab, collections processing facilities, and a study collections storage unit.

Other aspects of the center include the 164-foot-tall Donald D. Engen Observation Tower, named after the museum's late director, from which visitors can view flight operations at Dulles Airport, and the Claude Moore Education Center, named after a Virginia philanthropist. The facility will also offer an IMAX format theater and a food court.

The downtown Washington NASM building is the most popular museum in the world, drawing nine million visitors annually. Museum officials expect the Dulles annex to draw at least half that many each year. The Smithsonian has already received applications from more than 400 persons wishing to be volunteer docents, or tour guides, at the Udvar-Hazy Center. The facility is being built by the Hensel Phelps Construction Co. of Greeley, Colo., which won the contract in April 2001. The Commonwealth of Virginia is providing infrastructure for the site.

two F/A-22 officials. (See "Aerospace World: USAF Changes F/A-22 Leaders," December 2002, p. 9.) Air Force acquisition chief Marvin R. Sambur told *Defense Daily* the Lockheed Martin and Air Force personnel changes were a joint plan and were not related to aircraft per-

formance issues. (See "Aerospace World: F/A-22 Development Cost Issue Grows," p. 9.)

■ An F/A-22 Raptor successfully fired an AIM-9 Sidewinder missile at Mach speed over White Sands Missile Range in New Mexico on Nov. 22. The F/A-22 was flying at Mach



### John McLucas, Former Air Force Secretary, Dies

John L. McLucas—engineer, government official in four administrations, businessman, and former Air Force Secretary—died Dec. 1 in Alexandria, Va. He was 82 and had suffered from heart problems for several years.

When he became Secretary of the Air Force in July 1973, McLucas had already flown in almost every type aircraft the Air Force had in its fleet, including the U-2 high-flying reconnaissance aircraft. He was also the holder of 10 US patents, a tribute to his technical abilities.

During World War II, he served as a Naval officer. After the war, he earned a doctorate in physics from Pennsylvania State University, and then was vice president and technical director of an electronics firm in Pennsylvania for seven years. In 1962, he became the Pentagon's deputy director of defense research and engineering for tactical warfare programs.

Two years later, he became assistant secretary general for scientific affairs at NATO. From 1956 until 1969, he was president of Mitre Corp., a non-profit systems analysis and research organization, headquartered in Massachusetts. McLucas then served as Air Force undersecretary and as director of the National Reconnaissance Office from March 1969 until July 1973.

He served as Air Force Secretary until November 1975. McLucas was then named head of the Federal Aviation Administration. Two years later, he became president of Comsat General, a subsidiary of the Communications Satellite Corp. He retired from Comsat in 1985 but continued to work in various private industry positions.

1.4 and 24,000 feet, while the target, an unmanned QF-4 Phantom II aircraft, was traveling at Mach 1 at 14,000 feet. The test completes the 20C2 flight-test criteria, said officials.

■ Boeing's Delta IV made a flawless launch debut Nov. 20 from Cape Canaveral AFS, Fla., and placed a European commercial satellite into orbit. The Delta IV is the second booster of the Air Force's Evolve Expendable Launch Vehicle program. Lockheed Martin successfully launched its Atlas V on Aug. 21, 2002.

■ A prototype Eurofighter crashed Nov. 21 near Toledo, Spain, after suffering engine failure. The two pilots ejected safely. A Eurofighter con-

sortium spokesman said the four production models already produced might have to be grounded if officials determine the problem might affect the fleet. The RAF plans to buy 232 Eurofighters to replace its aging Tornado F3 air defense and Jaguar ground-attack aircraft.

■ DOD announced Dec. 2 that military officials had identified the remains of an Air Force serviceman from the Vietnam War as those of Capt. Francis W. Townsend, of Rusk, Tex. Townsend's RF-4C Phantom was struck down Aug. 13, 1972, while he was on a photoreconnaissance mission over Quang Tri Province, Vietnam. His remains had been discov-

ered by a Joint Task Force—Full Accounting team during excavations conducted from July 1998 through May 1999.

■ In November, China tested a new cruise missile apparently having twice the range that US intelligence officials previously thought possible. The YJ-83 anti-ship missile, also known as the C-803, was fired from a JH-7A fighter-bomber over Bohai Bay off northern China. The test revealed a range of about 155 miles, vs. the previous estimate of 75 miles.

■ On Nov. 14 at Lackland AFB, Tex., John D. Goolsbee Sr., a retired senior master sergeant, received a Distinguished Flying Cross for his part in a sensitive RB-50 reconnaissance mission over the Soviet Union 50 years earlier.

■ The prospective retirement this spring of Gen. Lester L. Lyles, Air Force Materiel Command commander, is already prompting chatter about his potential successors. Among those mentioned is Gen. Gregory S. Martin, commander of US Air Forces in Europe. Such a move would trigger other personnel changes. *Inside the Pentagon* reported that Martin's replacement at USAFE might be Gen. Robert H. Foglesong, the current Air Force vice chief of staff.

■ April 15 is the date for the next undergraduate flying training board, to be held at Randolph AFB, Tex. It will fill 50 pilot, 10 navigator, and five air battle manager training slots. Applications must be postmarked by Feb. 28. Applicants must have been born after Oct. 1, 1973, and have a total active federal commissioned service date after Oct. 1, 1998. Applicants should send their completed package to: HQ AFPC/DPAOT3, 550 C Street West, Suite 31, Randolph AFB, TX 78150-4733.

■ The Air Force Institute of Technology conferred its highest honor, the title of Distinguished Alumnus on four members: retired Maj. Gen. Donald L. Lamberson, retired Brig. Gen. Daniel H. Daley, retired Col. Guion S. Bluford, and George W.S. Abbey. Lamberson was a pioneer in high energy laser weapons. Daley helped develop the strong academic curricula that led, in 1956, to AFIT's ability to award bachelor's and master's degrees. Bluford was the first black astronaut in space. Abbey worked on the Apollo space program as an Air Force captain and received the Medal of Freedom for his role on the Apollo 13 mission operations team.

■ The latest Officer Training School selection board tapped 55 enlisted

members for officer training. The board considered 814 total applications, accepting 250 for a 30.7 selection rate.

■ Pilot error caused a UH-1N Huey accident Aug. 8 near Kirtland AFB, N.M., according to Air Force investigating officials. A student pilot applied too much throttle to engine No. 1, causing its power to exceed that of automatically controlled engine No. 2—triggering a rapid descent. The instructor pilot managed to bring the chopper to level flight before it crashed, and all five people aboard escaped injury.

■ The Air Force established four basic military training flights at Lackland AFB, Tex., primarily for the Air National Guard. The goal is to help ANG overcome a basic training shortfall among its new recruits. Since 9/11, the Guard has seen a rise in the number of new personnel with no prior service. It had projected a need to train 4,500 raw recruits but realized it needed an additional 1,000 training slots. The first ANG recruits in the new flights graduated in a special ceremony last month.

■ An Air Force investigation found that the April 30, 2002, crash of an F-15 into the Gulf of Mexico was caused by structural failure. Maj. James A. Duricy from the 46th Test Wing at Eglin AFB, Fla., died in the crash. The accident occurred during a captive carry flight test for the AIM-9X, an improved version of the air-to-air Sidewinder missile. (See "Aerospace World: F-15 Pilot Killed in Crash," June 2002, p. 18.)

## Jimmy Carter and the Axis of Danger

**North Korean Danger Solved.** "The crisis is over. ... I don't think that they are an outlaw nation." —*Carter, June 18, 1994, returning from self-assigned mission to talk North Korea out of developing nuclear weapons.*

**North Korean Danger Returns.** "If true, this is a gross violation of previous agreements and a threat to peace in the region. It is not clear if the North Koreans are bluffing, actually have a nuclear program, or have yet produced any nuclear explosives. It is clear that the world community cannot permit North Korea to develop a nuclear weapons capability." —*Carter, New York Times op-ed, Oct. 27, 2002, on North Korea's revelation that it had been secretly developing nuclear weapons for years.*

**No Danger From Iraq.** "As has been emphasized vigorously by foreign allies and by responsible leaders of former administrations and incumbent officeholders, there is no current danger to the United States from Baghdad." —*Carter, Washington Post op-ed, Sept. 5, 2002, on threat from Iraqi weapons of mass destruction.*

**Danger of Pre-emption.** "For powerful countries to adopt a principle of preventive war may well set an example that can have catastrophic consequences." —*Carter, accepting Nobel Peace Prize in Oslo, Dec. 10, 2002.*

**Root Cause of Danger.** "Citizens of the 10 wealthiest countries are now 75 times richer than those who live in the 10 poorest ones, and the separation is increasing every year, not only between nations but also within them. The results of this disparity are root causes of most of the world's unresolved problems." —*Carter in Oslo, Dec. 10.*

**It's the Thought That Counts.** "He [Carter] fails constantly. But by talking peace and setting himself up for failure, he shows unbelievable courage. The effort shames other politicians." —*Douglas Brinkley, history professor and Carter biographer, Atlanta Journal-Constitution, Dec. 7, 2002.*

■ Air Force health officials want to align the service's weight management program and the cycle ergometry (bicycle) test to produce a more comprehensive picture of an airman's health.

The change was incorporated into a test program, called "WarFit," that Air Force Space Command will implement commandwide this month. WarFit underwent limited testing at two AFSPC

## Leaf Says USAF To Enhance Its Seven Warfighting-Concept Task Forces

The Air Force is bolstering the seven task forces charged with defining and developing future warfighting requirements, according to Maj. Gen. Daniel P. Leaf, whose title changed in December to director of operational capability requirements.

The changes recognize the task forces' growing role in Air Force planning and the emphasis Gen. John P. Jumper, USAF Chief of Staff, places on capabilities vs. systems. (See "Seven Pillars of Airpower," June 2002, p. 42.) In 2001, Jumper directed that the service develop seven Concepts of Operation, each the domain of a task force, that would focus on the capabilities needed to achieve effects rather than particular weapon systems.

In a Dec. 10 briefing, Leaf told reporters that seven "high powered" colonels will head each task force as its champion. Their jobs will be to oversee the seven CONOPS.

The CONOPS are: Global Strike; Global Response; Air and Space Command and Control, Intelligence, Surveillance, Reconnaissance; Homeland Security; Nuclear Response; Global Mobility; and Expeditionary Forces.

The Air Force evaluates these CONOPS in periodic, high-level, Capability Review and Risk Assessments. Leaf said the CRRAs attempt to look across the Air Force for the

capabilities needed to perform key missions, instead of being "anchored" to a single concept.

Previously, the Air Force held Quarterly Acquisition Program Reviews, each conducted largely in isolation, to weigh costs and benefits of individual systems. That process was "not good for assessing risk," Leaf said.

Leaf stressed that the task forces "are not all inclusive, and they're not intended to be all inclusive." However, he added, "There's a danger that every program advocate may feel the need to hang their hat on a CONOPS and a task force and a champion."

The Air Staff wants to dissuade that kind of thinking, said Leaf.

He emphasized that just because a capability or system is not included in a task force CONOPS, that does not mean it is being dismissed. Rather, it means it doesn't "fit into this Concept of Operation task force champion methodology," he explained. "Frankly we struggle with that."

In other changes, Leaf's office will gain a one-star general as deputy director and some electronic combat requirements staff members who formerly worked in the intelligence operations office. —*AJH*

## Commission Says National Security Needs a Strong Aerospace Industry

The US needs a comprehensive plan to strengthen and support its military aerospace industry, according to the final report of the Commission on the Future of the United States Aerospace Industry.

The commission's report, released Nov. 18, highlighted concerns about Science and Technology funding, space launch, and the deteriorating defense industry technical talent pool. However, several of its 12 members said the report did not go far enough in its recommendations because they were hindered by the need to form consensus opinions.

The commission was mandated by Congress in Fiscal 2001. Its mission was "to develop and recommend a series of public policy reforms which will permit the US aerospace industry to create superior technology, excel in the global marketplace, profit from investment in human and financial capital, benefit from coordinated and integrated government decision-making, assure our national security, access modern infrastructure, and give the United States a capacity throughout the 21st century to reach for the stars."

There were several issues cited in the report that commissioners said, if left unaddressed, could damage national security. They included:

■ **Inadequate S&T Funding.** The report acknowledged the US has an asymmetric advantage in aerospace power because of advanced technology, but it said the long-term health of this technological edge is now in danger. Consequently, the commissioners recommended S&T funding be kept at three percent of DOD's total obligation authority. They also said the Pentagon must protect S&T from budget cuts.

DOD's stated goal for S&T funding is three percent, but the report noted that the Pentagon had raided S&T accounts to pay for other obligations in recent years, jeopardizing future technological breakthroughs.

■ **Space Launch in Jeopardy.** According to the report, there is danger in DOD's reliance on private industry for public needs, such as in the Air Force's Evolved Expendable Launch Vehicle program. USAF's decision to help fund two EELV contractors—Boeing and Lockheed Martin—depended on a robust commercial space launch demand to offset government launch requirements. The two efforts were to help fuel competition and give DOD the opportunity to buy lower-cost launches.

"Today, however, worldwide demand for commercial satellite launch has dropped essentially to nothing—and is not expected to rise for a decade or more," the report noted. (See "The Chart Page: Challenges Facing the US Launch Industry, p. 7.) The nation's space industry needs government attention, the report continued, because critical segments are "not likely to be sustained by the commercial sector."

Commissioner Robert J. Stevens, Lockheed Martin chief operating officer, said the problem may be even worse than portrayed in the report. He said that Lockheed Martin's Atlas V has already met EELV program goals for lowering launch costs, yet "there is no evidence" that lower launch costs will reverse the deterioration in commercial demand.

Without a sound commercial business base, the two-con-

tractor EELV approach is no longer viable, said the commissioners. The report recommended DOD pursue a new strategy for assured access to space.

■ **Dwindling technical pool.** Another problem facing DOD and the defense industry is the growing inability to sustain and recruit skilled technicians and engineers.

For example, the report noted that when design work on the F-35 Joint Strike Fighter ends around 2008, there may be a gap of 20 or more years before work begins on another manned fighter aircraft. The fighter industry's highly skilled workforce will have evaporated in that time. As a remedy, the report recommended a greater use of prototyping, spiral development, and "other techniques which allow the continuous exercise of design and production skills."

Defense industry also has trouble engaging the "best and brightest" engineering minds, the report said, because of a lack of stable funding. Cyclical military needs are "difficult for businesses to sustain during periods of government inactivity." Without the ability to draw top new talent, the issue of a rapidly aging engineering workforce becomes more acute, noted the report.

### Other Concerns

Several commissioners included additional views to address what they saw as the final report's shortcomings.

R. Thomas Buffenbarger, president of the International Association of Machinists and Aerospace Workers, lamented the lack of a strategy to protect US aerospace workers. The report's "failure to sufficiently recognize and provide meaningful solutions for the aerospace employment crisis is a serious and glaring omission."

Buffenbarger went on to say that industrial policies that include technology sharing and joint ventures with international aerospace companies are "shortsighted." He said international offsets and outsourcing "threaten the US workforce and our nation's economy and national security by, among other things, transferring production and technology to other countries."

John W. Douglass, president of the Aerospace Industries Association, said post-9/11 air travel security demands have become a financial burden to struggling airlines. The government controls "virtually all of the means available to counteract the threat of aviation terrorism," he noted, and defending against such attacks is a government responsibility.

Unfortunately, he said, "well-intentioned policies have resulted in billions in post-9/11 costs and lost revenues and account for a great majority of the projected \$9 billion in 2002 industry losses." Security measures must be effective and encourage air travel, but "the government must reject the false premise that the airlines and their customers can or should bear this national defense burden."

John J. Hamre, a former deputy defense secretary, succinctly summed up a common concern. The commission's report "is too general and diffuse to have the impact I believe is needed," he said, adding, "This report offers a starting point."—AJH

bases, F.E. Warren AFB, Wyo., and Los Angeles AFB, Calif., last year.

■ DOD's Military Traffic Management Command now offers a free long-term privately owned vehicle storage option to qualified service personnel. Personnel deploying to locations such as South Korea and Japan, which have restrictive policies, may be able to put their cars in long-term storage, where they will

receive basic upkeep. Service members should contact their local traffic management office for details.

■ In December, the Air Force Personnel Center expanded the hours of its contact center to run from 5 a.m. to 11 p.m. CST to make it easier for airmen stationed overseas to talk with a customer service representative. Airmen may call 1-866-229-7074 toll free with questions about assignments, pay,

benefits, etc. Online services, including a chat feature, are at the AFPC Web site ([www.afpc.randolph.af.mil](http://www.afpc.randolph.af.mil)) via the "Contact Center" button.

■ A Web-based program developed by US Transportation Command's Joint Intelligence Center makes it possible for analysts to get comprehensive transportation information to users quickly. The Transportation Intelligence Digital Environ-

ment enables analysts to combine text, graphic, photo, video, and audio files, including live feeds, into reports, briefings, and other intelligence products. Since the program is database-driven, each time those databases are updated, the posted information in TIDE is also automatically updated. Command officials said the ground-breaking nature of the program has caught the attention of other DOD intelligence agencies that have long sought faster, more efficient delivery of constantly updated information. Further tests are being scheduled for this year.

- An annual report on ballistic and cruise missiles, prepared by the National Air Intelligence Center, Wright-Patterson AFB, Ohio, has been held up indefinitely in the Pentagon, reported the *Washington Times*. The report, finished last spring, is the definitive public document focusing on the growing missile threat. No reason was given for the delay.

- TSgt. Jason Anderson, a nondestructive inspection technician at Luke AFB, Ariz., discovered two cracks on an F-16 wing attachment, which led to a rewrite of technical orders Air Force-wide. His discovery, and the subsequent maintenance requirements, affected 1,200 Block 30 F-16s throughout USAF.

- The Air Force Reserve Command Recruiting Service has become the sole advertiser on the "Smoke-N-Thunder" jet dragster. The dragster is slated to perform at 15 air shows nationwide during 2003 and should increase public awareness and recruiting interest in AFRC.

- In late November, Boeing delivered to Northrop Grumman the first B-2 bomb racks for Joint Direct Attack Munitions. The racks will enable the B-2 to carry and launch up to 20 GPS-guided Mk 82 JDAMs from each of its four racks. The first B-52 with the four racks will undergo a six-month test program on a B-2 at Edwards AFB, Calif.

- Capt. John R. Fleming Jr., flight commander of the 352nd Maintenance Squadron at RAF Mildenhall, UK, and SMSgt. Eric Truhn, sortie generation superintendent of the 78th Fighter Squadron, Shaw AFB, S.C., were named the 2002 Gen. Lew Allen Jr. Trophy aircraft generation award winners.

- On Nov. 22, an Air Force civilian and two Air Force units received DOD 2002 Value Engineering Achievement Awards. They were: Bruce Lehr, lead engineer for the command, control, communications, and intelligence and integration engineering section at Ogden Air Logistics Center, Hill AFB,

## Bush, Congress Complete Large DOD Budget Boost

President Bush on Dec. 2 signed the policy-setting National Defense Authorization Act for Fiscal 2003, completing action on the largest defense boost in 20 years. Earlier, Bush signed the companion appropriations bill, which provided the actual funds for DOD's various programs and tasks.

The plan submitted last Feb. 4 sought \$379.3 billion—a one-year jump of \$41.4 billion. It included a \$10 billion contingency account to fund the war on terror. Congress nixed the contingency account (preferring a later supplemental request) but approved almost everything else.

The final defense appropriation (counting a separate military construction bill) came to about \$366 billion, \$3 billion less than Bush had requested, exclusive of the contingency fund.

The measure funded most of the Administration's major aircraft programs, including the Air Force's F/A-22 fighter, F-35 fighter, and C-17 transport. It added funds for a few smaller aircraft programs such as communications upgrades for F-15s and upgrades for the Navy's EA-6B electronic warfare aircraft, which are jointly operated by the Air Force.

The bill approved:

- \$4 billion to procure 23 F/A-22s, the number requested.
- \$3.5 billion to develop the multi-service F-35.
- \$3.3 billion—\$586 more than sought—to buy 15 C-17s.
- \$3.2 billion to procure 46 Navy F/A-18E/F fighters, two more than requested.
- \$270 million for 19 Army UH-60 Black Hawk helicopters.

The additional funding for the C-17 program simply restored full funding to planned purchases. The Air Force had attempted to fund the new strategic airlifter incrementally—an approach that is "technically at odds with long-standing DOD policy," according to the Congressional Research Service.

It would, said CRS, undermine DOD policies designed to promote long-term fiscal discipline. Congress rejected the USAF approach and warned DOD against using it in any future budget requests.

In other appropriations, Congress:

- Added \$2.6 billion to the Administration request of \$56 billion for Research & Development—a \$9.9 billion increase over Fiscal 2002.
- Approved a multiyear request for future procurement of 40 C-130J transports for the Air Force.
- Provided \$131 million—\$26 million more than the request—for USAF procurement of 22 Predator Unmanned Aerial Vehicles.
- Approved \$129 million for USAF's Global Hawk UAV procurement and \$42 million to accelerate development of a Navy Global Hawk variant.
- Authorized \$388 million for USAF's Multi-sensor Command and Control Constellation (MC2C) aircraft development program.

Congress went along with the Bush Administration decision to do without an increase in active-duty end strength. It fully funded a 4.1 percent pay raise.

For Operations and Maintenance, the appropriations bill funded the request of \$114.8 million—\$9.7 billion more than in Fiscal 2002. O&M funding included \$3 million for the Air Force's proposed tanker leasing program. (DOD is expected to make a decision this spring on whether to let the Air Force proceed with lease of Boeing commercial 767 aircraft modified for aerial refueling.)

The President received all but \$14 million of the \$7.4 billion requested for national missile defense programs, paving the way for deployment of ground-launched interceptors. (See "DOD Gets OK on Missile Defense," p. 9.)

In the \$10.5 billion Military Construction Appropriations Act, Congress provided \$4.21 billion to maintain and improve existing family housing units and to build new ones. It also included \$1.2 billion for dormitories, \$18 million for child development centers, and \$151 million for hospitals and other medical facilities.

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## DOD Fends Off "Big Brother" Charge

DOD officials are defending the fledgling Total Information Awareness System against a torrent of media criticism. Press accounts labeled the information-gathering system as a means for the government to spy on its own people—the embodiment of George Orwell's "Big Brother."

According to DOD officials, a prototype system will "determine the feasibility of searching vast quantities of data to determine links and patterns indicative of terrorist activities." The man in charge of the project is retired vice admiral and prominent Iran–Contra figure John M. Poindexter.

Poindexter, who now serves as head of the Defense Advanced Research Projects Agency's Information Assurance Office, was convicted of lying to Congress during the Iran–Contra hearings. The conviction was overturned on appeal.

Responding to questions on the subject late last year, Pentagon acquisition chief Edward C. Aldridge said Poindexter is the right man for the job because of his physics background and "passion for this project." In fact, Aldridge said that Poindexter broached the idea to DARPA in the first place.

Defense Secretary Donald H. Rumsfeld was critical of those condemning the project. He told reporters the hype and alarm being generated by the research project are "a disservice to the public."

Rumsfeld noted that DARPA also invented the Internet. "When that work began, the people doing it had no idea that what would evolve would be what we see today as the Internet," he said.

Aldridge told reporters the system would be subject to the same Privacy Act restrictions that govern other domestic security efforts.

Despite reports to the contrary, officials said, DARPA's role is to develop and assess the technology, not to run a spying system akin to Big Brother of Orwell's dark novel *1984*.

"What John Poindexter is doing is developing a tool," Aldridge said. "He's not exercising that tool; he will not exercise that tool. That tool will be exercised by the intelligence, counterintelligence, and law enforcement agencies."

Nonetheless, Poindexter may be serving as a lightning rod for criticism of the sort that led the Pentagon to disband its short-lived Office of Strategic Influence last year. Rumsfeld decided to close down the office after various media reported its purpose was to deliberately lie to advance American interests. The negative publicity made it impossible for the office to do its job, said Rumsfeld.—*AJH*

Utah; Electronic Systems Center's Space and Nuclear Deterrence Command and Control Office at Hanscom AFB, Mass., and its contractor, the Titan–JAYCOR Logistics Support Facility; and 46th Test Group's 746th Test Squadron at Holloman AFB, N.M.

■ The KC-135 Pacer CRAG modification program closed under budget and ahead of schedule Oct. 1, according to Air Force Materiel Command and Air Mobility Command officials. The six-year upgrade program included installation of a new compass, radar, and GPS, a traffic alert and collision avoidance system, and new digital multifunction cockpit displays on more than 560 aircraft. The program cost \$700 million. The improvements eliminated the navigator's position, saving the Air Force a projected \$31 million per year. The service should save another \$10 million per year in maintenance costs.

■ Roadeo, the Air Force supply and fuels readiness competition, drew 36 competing teams at Eglin AFB, Fla. The Dyess AFB, Tex., team garnered the most points in the three-day contest. The team from Eglin was the top supply winner, and the team from Shepherd AFB, Tex., was the fuels winner. More than 295 people participated. Competitions included changing tires on a refueler, backing up a 600-gallon refueling truck, and driving a forklift around a slalom course.

■ A five-member firefighter team from Travis AFB, Calif., took second place in the 2002 Fighter Combat Challenge World Championship at Deerfield Beach, Fla. Representing Travis were: SSgt. Mike Melton, 349th Air Mobility Wing (AFRC), SSgt. A.J. Eversley, SrA. Mike Romano, SrA. Harry Myers, and civilian Vince Clark, all with the 60th AMW.

■ Airmen from Maxwell AFB, Ala., are the driving force behind the Meals on Wheels volunteer program in Montgomery, Ala. Of 350 volunteers, 203 are from Maxwell. Volunteers deliver hot lunches five days a week to more than 300 homebound senior citizens unable to make their own meals.

■ On Nov. 18, Jordan's Ambassador Karim Kwar awarded the Jordanian Military Order of Merit 2nd Class to Col. Stephen R. Schwalbe, the US air attache to Jordan.

■ North Korea sent 15 gunboats to Iran in December, according to the *Washington Times*. The gunboats arrived at about the same time that US and Spanish warships stopped delivery of a shipment of North Korean Scud missiles. The Scuds were bound for Yemen. ■

## Senior Staff Changes

**PROMOTION:** To Lieutenant General: Arthur J. Lichte.

**CHANGES:** Maj. Gen. Paul W. **Essex**, from Mission Area Dir., Global Reach, Asst. SECAF, Acq., Pentagon, to Dir., P&P, AMC, Scott AFB, Ill. ... Brig. Gen. (sel.) Delwyn R. **Eulberg**, from Cmdr., 99th ABW, ACC, Nellis AFB, Nev., to Dir., Civil Engineering, AMC, Scott AFB, Ill. ... Brig. Gen. Wendell L. **Griffin**, from Cmdr., 7th BW, ACC, Dyess AFB, Tex., to Dir., Strat., Policy, & Plans, SOUTHCOM, Miami, Fla. ... Brig. Gen. Irving L. **Halter Jr.**, from Cmdr., 366th Wg., ACC, Mountain Home AFB, Idaho, to Dep. Dir., Natl. Sys. Ops., Jt. Staff, Pentagon ... Maj. Gen. (sel.) William W. **Hodges**, from Cmdr., 6th AMW, AMC, MacDill AFB, Fla., to Mission Area Dir., Global Reach, Asst. SECAF, Acq., Pentagon ... Brig. Gen. Richard B.H. **Lewis**, from Dir., Jt. Theater Air & Missile Defense Orgn., Jt. Staff, Pentagon, to PEO, Fighter & Bomber Prgms., Asst. SECAF, Acq., Pentagon ... Lt. Gen. Arthur J. **Lichte**, from Dir., P&P, AMC, Scott AFB, Ill., to Vice Cmdr., USAFE, Ramstein AB, Germany. ■

# Verbatim

By John T. Correll, Contributing Editor

## It's Boots, Boots, Boots

"In any scenario, the Army soldier brings closure, not precision guided munitions, not surgical strikes, and not minimalist combat events."—**Retired Gen. Gordon R. Sullivan, former Army Chief of Staff, Army Magazine, October.**

## Bad News For Bad Guys

"The killing in Yemen of a suspected senior al Qaeda terrorist by missiles fired from an unmanned American aircraft marks a new and deadly stage in the technology of warfare. ... No terrorist can ever again count on sanctuary in countries beyond the reach of American forces: The new weapon has made a reality of President Reagan's claim 15 years ago that terrorists 'can run but they can't hide.'"—**Editorial, The Times of London, Nov. 6.**

## Progressive Perspective

"Now some Democrats and progressive Americans are asking the unthinkable about an Administration they increasingly believe to be ruled by thugs and renegades. Did government gangsters murder the United States' most liberal legislator?"—**Columnist Ted Rall, on the death of Sen. Paul Wellstone (D-Minn.) in an airplane crash, Ted Rall Online, Oct. 29.**

## The People's Choice

"Our leader, President Saddam Hussein, may God bless him, has won 100 percent of the votes."—**Izzat Ibrahim, Saddam's deputy, after election in Iraq, quoted in the Washington Post, Oct. 17.**

## That Was Then

"A kind of anti-Americanism may have become a permanent feature of German politics. This is especially painful for those of us who actively nurtured what we consider one of the proudest achievements of American postwar foreign policy: the return of Germany to the community of nations as an equal, respected, and indispensable member. It was a journey marked by the Berlin Airlift; the Marshall Plan; support for Germany's membership in NATO and the European Community; close cooperation in two further Ber-

lin crises; American support for the German reconciliation with the East; American leadership in negotiating a final agreement on access to Berlin; and finally, American unconditional support for German unification despite the hesitations of other allies."—**Henry Kissinger, former secretary of state, Washington Post, Oct. 30.**

## Amphibious Days Are Past

"The amphibious aspect of our history is in our past. The expeditionary aspect is in the present and the future. ... People who don't know us still think of us as a fairly slow moving force coming from the sea, hitting the beach, fighting for an island, raising the flag, and declaring victory."—**Gen. James L. Jones Jr., Commandant of the Marine Corps, as quoted in Aerospace Daily, Oct. 25.**

## New Way to Eat

"Yes. A packaged peanut butter and jelly sandwich that has an unrefrigerated shelf life of three years at 80 degrees, or six months at 100 degrees."—**Jerry Whitaker, spokesman for the Army's Soldier Systems Center, on rations now in development, quoted in the Washington Times, Oct. 30.**

## We Talk and Talk

"I would guess that I've probably met more with the senior military leadership in the United States of America in the last 20 months than any other Secretary possibly ever did in four years."—**Secretary of Defense Donald H. Rumsfeld, denying that he shrugs off advice from military leaders, Pentagon briefing, Oct. 17.**

## Advice From Wesley Clark

"President Bush has a vision that the US should be the first to strike and will never be militarily challenged again. It's an incomplete vision. Those of us who have fought in wars know you don't make friends when you use weapons."—**Retired Army Gen. Wesley K. Clark, NATO commander in Operation Allied Force, quoted in the Fayetteville (N.C.) Observer, Oct. 16.**

## So Close

"What I really blame the Bush Administration for is not paying attention to the Arab-Israeli problem. It was our daily fare. And while we did not solve it ... just the fact that we were dealing with it all the time, I think gave a sense of hope. And we were so close to getting it done."—**Madeleine Albright, former secretary of state, in an interview with Detroit Free Press, Oct. 23.**

## Why They Need Nukes

"US imperialism looks down upon those countries weak in military power, forces them to accept its brigandish demands, and makes them a target of its military intervention and aggression. ... As a stick is the best to beat a wolf, so are arms to fight with the imperialists."—**North Korea's official Rodong Sinmun newspaper, Oct. 27, quoted by the Associated Press.**

## Throw Away the Key

"I obeyed my conscience rather than the law."—**Ana Belen Montes, as she was sentenced to 25 years in jail for spying for Cuba while working as a senior analyst for the Defense Intelligence Agency, quoted in the Washington Post, Oct. 17.**

## Boots in the City

"Fighting in the city is the wave of the future."—**Marine Capt. Eric Reid, to journalists participating in a "media boot camp" at Quantico, Va., quoted in the Washington Times, Nov. 25.**

## Privatizing the Force

"The Army must focus its energies and talents on our core competencies—functions we perform better than anyone else—and seek to obtain other needed products or services from the private sector, where it makes sense."—**Secretary of the Army Thomas E. White, in an internal memo, on the possibility that the Army will contract out nearly 214,000 military and civilian jobs to the private sector, quoted in the Washington Post, Nov. 3.**

At AFA's Los Angeles symposium,  
senior military and industry leaders  
talk requirements and programs.

# Challenges Ahead for Military Space

By John A. Tirpak, Executive Editor

**S**ENIOR Air Force and industry space leaders gathered at an Air Force Association symposium in Los Angeles on Nov. 15 to discuss some of the significant challenges and issues confronting military space. They noted particularly the evolution of USAF organizations to implement recommendations of the 2001 Space Commission and the health of the space industrial base.

*A launch from Vandenberg AFB, Calif., the nation's West Coast facility.*

**Gen. Michael E. Ryan (Ret.), former USAF Chief of Staff**

The Air Force "can't afford to be the bank for all space systems," said retired Gen. Michael E. Ryan. USAF should not have to pay for space capabilities required by other services and agencies, according to Ryan, who delivered the keynote address.

Ryan maintained that the Air Force has for too long been forced to make "corrosive trade-offs" between funding the space requirements of other agencies or services and its





service-specific programs, such as the F/A-22 fighter. In his view, the funding of space systems needs to be rethought and broadened.

He applauded the designation of the Air Force as executive agent for space within the Defense Department, observing, "Unfortunately, there are some who think the definition of executive agent is that the Air Force foots the bill for all requirements."

Taking money from key Air Force programs to fix other users' space programs that have been overloaded with requirements or run into technical problems "seems to me to be a fundamental foul," Ryan said.

He advocated what he called "requirements financing." In other words, the agency or service that has a requirement helps finance the space system's acquisition. "We'll run it—that's what we do—but they ought to finance the acquisition," he said.

If that agency or service later adds requirements—a process which forces costly redesigns and program restructures—then, Ryan said, "That service or agency ought to pony up." He added, "There should be no free bus rides. ... Space is not a welfare system."

The Air Force ignores this problem at its peril, Ryan said.

"In space systems, we simply have to get a firm handle on additive requirements if we're going to suppress freeloaders' appetites," he asserted.

Ryan revealed that the service briefly flirted with the idea of charging a \$1 GPS user fee on every handheld or vehicle-carried commercial GPS unit. Had it done so, he said, "We would not have much of a funding problem when it came to GPS." However, the idea was shot down because GPS was already freely available and there were worries that the move would give a boost to Galileo, the rival European system.

In talking about the Evolved Expendable Launch Vehicle, Ryan said the program suffered from faulty expectations about cost and the commercial demand for launch services. Although the Air Force had planned to select just one launch services provider, prudence suggested that two would provide a hedge against failure in maintaining assured access to space.

Although Ryan approves of maintaining the two-provider system, he thinks that approach will "eat up the savings" the service expects to get through reduced operating costs of

the new systems. "I just feel that one coming," he said.

"We must help keep the two systems active until we get a turnaround on the commercial side, which I think will come," said Ryan, adding, "but not in the next five years, and also in governmental programs, all of which need to be replaced in the next 10 [years]."

Ryan noted that the newly minted US Strategic Command's missions are still evolving and recommended that, as with other unified commands, it should have only one USAF component—Air Force Space Command. That would make AFSPC the "conduit to provide air and space Air Force capabilities," he said. AFSPC would have the authority to task bombers and reconnaissance assets to meet STRATCOM missions, Ryan added.

This arrangement would "require a broadening of scope, maturation of relationships with the other Majcoms, particularly ACC [Air Combat Command]," he said. "It's nothing more than we ask of other components, when it comes to Air Force capabilities not directly resident in their command." For example, Ryan said that when US Pacific Command needs bombers, Pacific Air Forces tasks ACC for the aircraft.

"I think it would be a great step forward in support of integration," he said. "It certainly would be full of challenges and opportunities galore."

### **Peter B. Teets, Undersecretary of the Air Force**

The nation must prepare now for inevitable conflict in space, according to Peter B. Teets, undersecretary of the Air Force and director of the National Reconnaissance Office.

To do that, the Air Force must begin developing space control capabilities, said Teets, who is also the first undersecretary of the Air Force to serve as the acquisition authority for all military space programs. "I believe we not only need to think about the mission and implications of space control, but it is fundamentally irresponsible for us not to do so," he asserted.

If the US fails to take action to secure the high ground of space, a competitor surely will, Teets emphasized.

"What will we do five years from now when American lives are put at



*Launch of Boeing's new Delta IV booster, part of USAF's EELV program, from Cape Canaveral AFS, Fla., the nation's East Coast facility.*

risk because an adversary uses spaceborne imagery collectors—commercial or homegrown—to identify and target American forces?” Teets asked. “What will we do 10 years from now, when American lives are put at risk because an adversary chooses to leverage the Global Positioning System or perhaps the Galileo constellation to attack American forces with precision?”

Although there has not yet been a concerted effort to impair US forces’ ability to use space assets to prosecute warfare, “that will change,” Teets said flatly.

He added that American capabilities in space “must remain ahead of our adversaries’ capabilities, and our own doctrine and capabilities must keep pace to meet that challenge.”

Teets also suggested that, just as airpower progressed from being a supporting military capability to one which is now “arguably the decisive form of combat,” so too will space power evolve to the point where it, too, may someday produce victory singlehandedly.

“This, then, is the principle of applying the capabilities of a new medium—not only integration into other, existing forms of warfare but development of entirely new ones, ones even conceivably capable of winning wars on their own,” Teets said.

“We can no more perceive what such a victory would look like than the military leaders at the dawn of the first World War could envision the Kosovo conflict of 1999,” he continued. “Everything we’ve learned about capabilities in a new medium, especially our own experiences with airpower, tell us that day is coming.”

Teets cautioned that if space is perpetually viewed as an enabler of other kinds of combat, the US will be outmatched in the next major development in warfare.

“If we limit our efforts only to application of space technologies to existing modes of warfighting, we have undershot,” he asserted. Teets said that supplying targeting, navigation, intelligence, surveillance, reconnaissance, and weather data to surface forces will remain a critical function. However, he added, “if that is all we envision that space can do over the next few decades, then we’ve missed the boat.”

Teets noted that the nation must find “ways to get a vehicle rapidly



*Operators at their consoles inside Cheyenne Mountain AFS, Colo., supply data to NORAD and US Strategic Command. STRATCOM replaced US Space Command last year as part of the unified command plan reorganizations.*

off the pad to any orbit on short notice.”

He said, “It is easy to see how such a responsive capability could be useful for rapid constellation replenishment and sustainment, but I leave it to your imagination ... to find other ways to employ such a capability to achieve desired warfighting effects.”

In addition, he said, the US must, over the next few years, develop a new cadre of experienced, intensely knowledgeable people skilled in applying space to combat.

“We are not talking about the creation of a mere career field or sculpting a field of expertise,” said Teets. “We are talking about an entirely new breed of warfighters, ones who will ultimately transform the power and scope of warfighting in the same way airpower professionals have done in the past century.”

The United States has a “proud history of successfully wielding land, sea, and airpower in the protection of our nation and its freedoms,” he said. “It must be our goal that the United States carry this legacy of success into the medium of space.”

#### **Gen. Lester L. Lyles, Air Force Materiel Command**

Space research is becoming the main thrust of Air Force Science and Technology funding, according to Gen. Lester L. Lyles, head of Air Force Materiel Command.

“Our S&T budget is tilted more

and more towards space technologies,” Lyles said.

In 1999, space-related research accounted for \$432 million—or 39 percent—of all Science and Technology investments, he said. By 2005, the Air Force plans to invest \$847 million, or 59 percent.

“That is a 20 percent jump in six years,” Lyles said. “By FY ’07, it will go up even further,” with up to 65 percent of the S&T budget devoted to space-related research.

All in all, this trend represents a “seismic shift” in the Air Force’s technology priorities, he said, adding, “but it is the kind of thing we need to do.”

The money will explore enabling technologies in space control, navigation, intelligence, surveillance, reconnaissance, monitoring of the space environment, information operations, satellite operations, force applications, space transportation, and command and control activities related to space, Lyles explained.

A key area of research will be in nanotechnology, the science of designing, producing, and operating extremely small mechanisms.

“Delving down to the angstrom level or atomic level of systems is really exciting in terms of what they will do for almost every system in the Air Force, but certainly space systems,” Lyles said. The principal benefits for spacecraft will be the achievement of radical weight re-

duction, strength, redundancy, and improved thermal properties.

Lyles predicted that transformational communications, such as data and information transfer by laser, will be another area of intense research. He said the technology could increase the bandwidth available for data transfer and pose a significant leap in the capability to communicate with spacecraft or aircraft. The promise is so great, he said, the Air Force Chief of Staff asked AFMC to "put together a critical experiment in a very short period of time to show how you can use that technology to communicate from air platform to air platform."

He also reported that AFMC may undertake a restructure that would emphasize an "enterprise focus on acquisition and sustainment" to eliminate "stovepipe management of systems or individual programs."

Another initiative would be an increased use of pathfinder programs for streamlined and agile acquisition. "We want to reduce the acquisition cycle, the acquisition time by three-fourths," Lyles said.

### **Gen. Lance W. Lord, Air Force Space Command**

Air Force Space Command will eventually become US Strategic Command's "one-stop shopping" center for space, missiles, and information warfare, said Gen. Lance W. Lord, AFSPC commander.

"It will take us awhile to get there, but it is a matter of building up trust and relationships based on a solid operational framework that people can depend on," he said. Air Force Space Command has already begun to work with STRATCOM to develop unified command plan missions for AFSPC's new functions: computer network attack and computer network defense.

Lord noted that information operations have mushroomed over the last 10 years. He said that, compared to the 1991 Gulf War, Operation Enduring Freedom consumed "10 times the bandwidth, [with] one-tenth the force involved."

He admitted that it is "probably an unachievable goal" to eliminate bandwidth as a constraint on communications "because bandwidth gets consumed."

He noted, "What we really need to do is make sure we've got good solid

operational frameworks and we do a little bandwidth appetite suppression from the end user in terms of our [concept of operations] and our requirements."

He emphasized, "We need to focus on the requirements side ... to make sure that, if you come to the table and want theater downlink, ... you need to really have a good, solid operational reason and argument for why you want it."

Lord said a theater commander should not tell AFSPC how many channels he wants or what he needs in terms of satellite capability. "If you can tell me the effect you want generated, ... we can generate that effect for you," he explained.

The volatility of requirements, according to Lord, represents the greatest threat to space acquisition

programs under his control. He pledged to put his command to work making certain new projects aren't overloaded.

"I think the biggest threat to any acquisition is an unstable baseline," he asserted. "We are going to be the requirements police to make sure ... the folks who are having to build the systems can count on a stabilized program."

Lord also spoke about personnel exchanges with the National Reconnaissance Office that will support Teet's push for space program integration within the black and white worlds—the classified and open sectors of space. To further that effort, he said, Air Force Space Command and the Space and Missile Systems Center at Los Angeles AFB, Calif., have developed a new launch organ-

## **Of Air, Space, and Aerospace**

In his keynote address to the AFA symposium, retired Gen. Michael E. Ryan, former Air Force Chief of Staff, closed ranks with his predecessor, Gen. Ronald R. Fogleman, and successor, Gen. John P. Jumper, on a long-simmering dispute: use of the terms "aerospace" and "air and space."

In 1996, Fogleman, then Chief of Staff, recognized the rising importance of space when he noted that USAF was in the process of shifting from an "air and space" force to a "space and air" force. At the time, Fogleman said he could envision a future with a new, separate service solely devoted to space operations.

Ryan, as the next Chief, disagreed with Fogleman about the prospect of a separate service. He went so far as to rearrange the terminology, touting USAF as the "aerospace force." Aerospace, he said, better described the "seamless operational medium" in which the service operates and would enhance the integration of air and space capabilities. With publication of a white paper on aerospace integration, a new acronym sprouted: TAF, for The Aerospace Force.

Next up: Jumper. Soon after taking over the top Air Force job in September 2001, Jumper opted to drop "aerospace" in favor of "air and space."

In remarks to AFA's Los Angeles symposium on Nov. 16, 2001, Jumper explained his rationale this way: "I carefully read the [2001] Space Commission report. I didn't see one time in that report, in its many pages, where the term 'aerospace' was used. The reason is that it fails to give the proper respect to the culture and to the physical differences that abide between the physical environment of air and the physical environment of space.

"We need to make sure we respect those differences. I will talk about air and space. I will respect the fact that space is its own culture, that space has its own principles that have to be respected. When we talk about operating in different ways in air and space, we have to also pay great attention to combining the effects of air and space because in the combining of those effects, we will leverage this technology we have that creates the asymmetrical advantage for our commanders."

The Space Commission had been headed by Donald H. Rumsfeld before he became Secretary of Defense. The commission also set the stage for USAF to become executive agent for all military space.

Ryan said Jumper's terminology switch was an understandable move, adding, "I think he and everybody in this room believes the principal need here is that we integrate air and space capability for warfighting."

nizational structure that will help not only on the white side of space but also on the classified side.

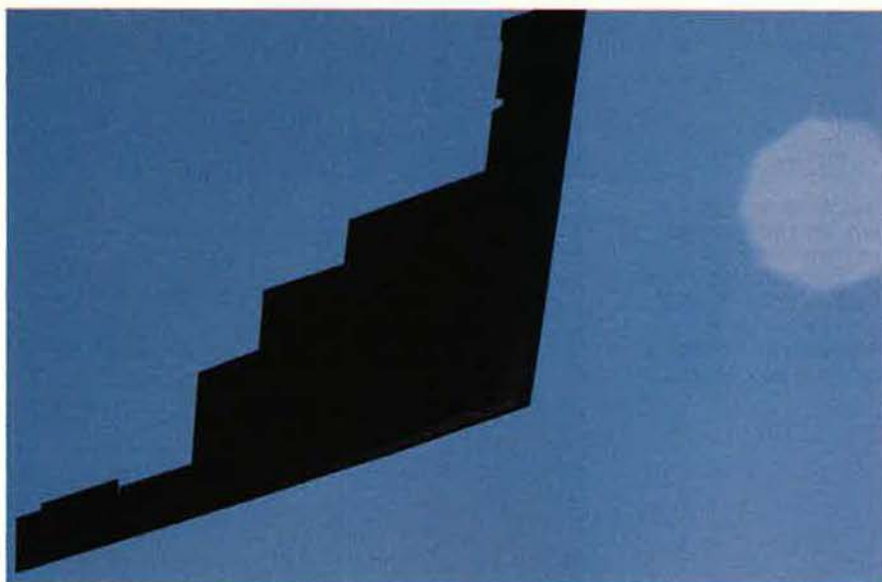
### **Lt. Gen. Brian A. Arnold, Space and Missile Systems Center**

As the Air Force tackles the role of executive agent for military space, it must face many problems that have plagued space program management, according to Lt. Gen. Brian A. Arnold, the Space and Missile Systems Center commander.

"We are probably at the highest point of risk at any time in our launch business," Arnold said, noting that the Air Force is in a transition phase where it is using up its older launch vehicles at the same time it is introducing a whole new generation of boosters. This situation requires the simultaneous use of old and new procedures to process satellites and boosters, but Arnold expects eventually to field a more efficient system.

He pointed to the recent 23 launch successes in a row, which he said is "the longest streak of successes that we've ever had in our launch business," as a measure of the "focus and the vigilance" paid to launch.

Additionally, Arnold said, the Air Force is analyzing and fixing longstanding space program problems. He singled out the Total System Performance Responsibility concept as a particular failure in the way it was applied to space systems. TSPR essentially removed the layer of government oversight, placing total sys-



USAF photo by S/A. Christina M. Rumsey

*If Air Force Space Command serves as the only USAF component to US Strategic Command, as suggested by former Chief of Staff Michael Ryan, it would task USAF bombers, such as this B-2.*

tem integration responsibilities on the contractor. "We dove into it headfirst, without explaining it to our industry partners," he said. "We paid dearly for that."

The concept led to confusion between subcontractors and primes as to who really was responsible for what. While TSPR works fine in sustainment programs, it was a failure in development projects, said Arnold, adding, "We will not venture down that path again."

He said the Air Force is focusing more investment and emphasis on systems engineering, as well. The goal

is to yield more measurable data at every step in a development program and to better achieve desired effects. System engineering "forecasts problems for us so we can be proactive instead of reactive," said Arnold.

Moreover, the service is still refining lines of responsibility. One of the most significant changes already made gave a second job—program executive officer for space—to the commander of Space and Missile Systems Center. "We had split responsibilities," said Arnold.

Under the old system, he said, "Everybody could say 'no,' but nobody could say 'yes.'" That has changed, with program oversight now centralized in Arnold's position.

Another initiative created the Defense Space Acquisition Board as a replacement for the Defense Acquisition Board when reviewing space systems. Teets is the presiding member of the space board.

"I report directly to Mr. Teets for milestone decision authority, and I report to Gen. Lance Lord for organize, train, and equip and all operational issues," explained Arnold.

SMC is also reorganizing its financial management of space systems. There has been poor estimation of what systems would cost.

"One of the flaws we've had in the past," observed Arnold, "is that we start a program off and we don't know really what the cost is, and it kind of fluctuates, and we get in big problems, and we start to say this

USAF photo by SSGT. Jessica Kochman



*Joint Direct Attack Munitions use GPS satellites to pinpoint targets. USAF wants to develop space control capabilities to ensure adversaries cannot block space use by US forces or use space resources against US forces.*

**SrA. Pratt Vivekanandan, an engineering journeyman from Malmstrom AFB, Mont., uses a GPS-enabled system to check elevation at a base in the Persian Gulf region.**

USAF photo by TSgt. Deborah K. Alvarado



program is overrun.” He said a new “organic cost estimating capability will have high payoffs in the future.”

Arnold noted that he has empaneled an independent team of retired senior government officials to look over the entire space systems development and acquisition business. The group will “see if there is anything ... out there that I really need to pay attention to,” he said.

#### **Albert E. Smith, Lockheed Martin**

There is a perception that the space acquisition system is broken and can’t supply needed systems and capabilities in a well-managed way, said Albert E. Smith, executive vice president, Lockheed Martin Space Systems. He added, “I don’t agree with that premise.”

Smith argued that there is cause for optimism in the space industry. Space assets of today are performing brilliantly, he said, and have provided the US with “an asymmetrical advantage, a truly great one.”

However, he acknowledged, “It is ... no secret that there are a number of important space systems that have been plagued by cost growth and schedule disappointments.”

The current problems stem from the transition between legacy production to new systems. That transition encompasses approximately 80 percent of the national security space portfolio, said Smith. Historically, such periods of transition always are attended “by higher costs and schedule risks than production programs,” he explained.

Moreover, Smith noted, space programs have had to get by without management reserves—standby funds to cover unexpected costs and late-added requirements. The lack of reserves “does not recognize the realities of development,” he said. “It is a recipe for program stretches, with inherent increased cost.”

To a great extent, the industry has been a victim of its own success: Satellites are lasting longer than expected, thus reducing demand for new ones. “As satellites lived longer, there were fewer acquisition opportunities, competition increased, and competition became fierce price shootouts with competitors making overly optimistic, and certainly at times unrealistic, pricing assumptions,” said Smith.

He cited launch as operating today at an “especially acute” risk re-

turn level. He said that industry recommendations to a current Defense Science Board task force included funding assured access to space. “We put the whole national security space program at risk if we have an unhealthy business case for launch,” he said.

Another recommendation, said Smith, involved improving and sharing cost-modeling data to put the program budgeting process more on a should-cost basis—improving the ability to anticipate expenses. He also advocated adoption and implementation of a space industrial base policy to provide “stable rules of the road” to sustain industry health.

Commenting on the proposed space based radar, Smith said the name “implies a solution: Let’s do everything from space.” However, he said that applying an effects-based perspective produces a different solution. In his view, the decision about how and when to pursue such a system must await a national rationalization of the “right mix of ground, air-breathing, and space assets.”

#### **Ronald D. Sugar, Northrop Grumman**

Space systems are going through a tough time because they are more complex than ever, and there is a need to take risks to deliver more dramatic returns on investment, according to Ronald D. Sugar, president and chief operating officer, Northrop Grumman.

“Over the last five to 10 years, getting these systems built has become even harder,” Sugar said. “The process of getting them built is incredibly complex and frankly is getting more so.”

The cost overruns and delays are the natural by-product “in almost any ambitious space program,” he continued. “That is the nature of the game, and if we didn’t take on these challenges, this nation would not be pre-eminent in war.”

Typically, the most problem-free space programs are those that are direct evolutionary extensions of existing systems, said Sugar. The primary reason: The operators know how to use them and know what they want and expect from them.

“Unfortunately, we can’t progress into the future by simply and always extending existing systems,” he said. “At some point, you have to take

new systems and go through new developments.”

In the drive to produce the low bid, space contractors have been forced to “do a lot of corner cutting,” which has hurt the nation’s space industrial base in the long run, he said. The effort to do space programs “better, faster, cheaper” has usually meant choosing two of the three, Sugar added.

There should be some kind of incentive for contractors to “reveal and fix problems early,” he said.

The Defense Department also needs to constrain the appetite of users who want to constantly add requirements, destroying a steady program baseline that can be properly managed.

“It is very difficult for acquisition executives and, frankly, contractors to say ‘no’ to warfighters who have legitimate reasons to want to put requirements into systems,” said Sugar. However, shifting requirements throw cost and schedule into a tailspin. He also said that unstable funding from Congress causes its own delays and extra expenses.

Getting the requirements process under control would have “enormous leverage on any new system,” said Sugar. He advocated creating a requirements czar to decide between the truly essential requirements and unnecessary add-ons.

Sugar also commented that, during the general drawdown over the last five to 10 years, the number of experienced, qualified program managers and system engineers has “dramatically been reduced.” Government and industry have “a lot of great folks,” he said, adding, “We just need more of them.”

### George K. Muellner, Boeing Integrated Defense Systems

The shortage of qualified technical people is an increasing worry for the health of the space industrial base, according to George K. Muellner, a retired Air Force lieutenant general and now a senior vice president for Boeing.

“We find ourselves actually having to move people off of programs, on to new programs, a lot sooner than we would like in many cases, because they are carrying most of the experience,” said Muellner.

“We need to broaden that capability, ... improve that talent base,” he

emphasized, adding, “We’ve got a lot of work to do there.”

He also criticized “requirements creep” and noted that it is the “nemesis of a good, stable program.”

There is almost no willingness to “push back on our customer when they come in and ask for something,” Muellner noted. He encouraged industry people to be brave enough to explain what it will really cost to add requirements that are marginally important and will radically affect cost and schedule.

Muellner also chastised the Air Force for the TSPR debacle, agreeing with Arnold’s assessment.

The government can’t “abandon its role in the process,” said Muellner. “I think that is a key thing that happened here. The government side really tried to walk away. And in some cases, it decimated the very workforce that was capable of providing that off-site, and in some cases adult, supervision that was necessary.”

Muellner criticized industry for being too willing to answer requirements with systems that perpetuate “stovepipes” within the military and challenged his colleagues to move toward the Air Force’s goal of “horizontal integration” of information systems.

“We need to exploit the advantages that information technologies give us to produce more interoperable systems,” he said. “We really need to make our systems network capable from the beginning. We need

to make sure that is part of an acquisition process that in many cases creates these ‘tribal’ boundaries.”

Muellner urged more aggressive work to find a rapid launch system.

“I don’t think we’re ever going to get to that five-minute alert status, although there are some that have solutions in that area,” he said. “We really have to improve over what we’ve got right now, which is neither assured in many cases, nor responsive enough to the warfighter.”

Finally, Muellner advocated a closer working relationship between the Air Force and its industry partners in space.

“What I don’t see is a process of industry and government working together,” he said. “In fact, I don’t even see government working together.” For instance, he said that to achieve success in developing a reusable launch vehicle system, “we all need to get together in the same room” to ensure industry is “maturing the right technologies and that we are pulling these together into operational concepts that are significant to the warfighter.”

There are “a lot of efforts to start up concepts in this area,” Muellner said, “but to me it almost looks like we are resurrecting NASP [National Aerospace Plane].” He added, “After about three years of struggling with the concept, we are going to find out that the long-pole technologies are still not mature enough to go forward.” ■



NASA photo

*Orbital Sciences uses its X-34 to demonstrate technologies that may migrate to low-cost reusable launch vehicles. USAF and industry leaders cite the need for assured, lower cost access to space.*

**USAF plans to keep its operational edge, even with aging combat and support aircraft.**

# When Aircraft

By Adam J. Hebert, Senior Editor



**A**IR Force aircraft are, on average, more than 22 years old—an unprecedented age brought on by the lengthy “procurement holiday” during the 1990s. The service is trying to stay in front of possible problems that tend to creep up as aircraft age, but top officials readily admit that the service is largely in uncharted waters.

The service’s aircraft will continue to age dramatically: If all existing acquisition programs are executed as planned, the average USAF aircraft by 2020 will be 29 years old—meaning that for every airplane

fresh off the assembly line there will be another that is 58 years old.

Consequently, the Air Force is taking a many-sided approach to managing the problem. On one hand, the service is trying to keep on schedule the procurement of new aircraft to replace older systems. On the other, it is trying to mitigate the problems it sees developing in its older airplanes and provide modifications to maintain their combat capability.

The fighter aircraft situation is typical of the overall problem.

Both the F-15 and F-16 are near the beginning of their planned retirements, while their replacements—

the F/A-22 and F-35—are two and seven years away, respectively, from entering service. To bridge the gap, the Air Force is making structural modifications to both the F-15 and F-16 and adding capability in the form of new weapons, computer upgrades, and better radars.

According to Gen. John P. Jumper, USAF Chief of Staff, these changes to the old fighters will preserve their edge until the new fighters come along.

Most of the problems that would prevent fighters from reaching—and going beyond—their planned service lives are being addressed.



# Get Old

*Two mainstays of the Air Force fleet execute an aerial refueling. Pictured, a 20-year-old F-15C takes on fuel from a 30-year-old KC-135R. Both aircraft have replacements in the works but will remain in service for years.*



Staff photo by Guy Aceto

Jumper told *Air Force Magazine* in an interview. Bulkheads that have cracked are being reinforced. Areas of delamination are being examined and fixed.

Yet aging fighters will pose a challenge for the foreseeable future, Jumper said, as the age of the fleet is at historic highs. "We've invested billions of dollars and programs to maintain their safety and viability until we are able to bring aboard the new generation," he said, adding, "We're dealing with it a piece at a time."

One of those pieces is the F-15. Currently, USAF is in the process of replacing the aluminum honeycomb component used in the tails and wingtips with a new structural technology called Grid-Lock. The importance of a seemingly esoteric engineering exercise like honeycomb component replacement was brought to light last spring when an F-15 flying a test mission out of Eglin AFB, Fla., broke apart at Mach 2 over the Gulf of Mexico, killing its pilot, Maj. James A. Duricy.

The official investigation found that the airplane's honeycomb component in the left vertical tail stabilizer had "a structural failure," causing the stabilizer's leading edge to break off. This quickly led to loss of control, further catastrophic structural failures, and the destruction of the airplane. The F-15 in question had an unremarkable maintenance history and was flown by a pilot with

a "spotless record," according to the accident report.

The parts that failed had been inspected every 200 flight hours, according to the investigation report. However, the inspections turned up "no indication whatsoever of any structural flaw or defect" in the aircraft's tail.

### Battling the Unknowns

In fact, the biggest concerns with aging aircraft are the unknowns.

"Many of the problems with aging material have emerged with little or no warning," said Raymond A. Pyles of RAND, who testified on the subject before a House panel. "This raises the concern that an unexpected phenomenon may suddenly jeopardize an entire fleet's flight safety, mission readiness, or support costs."

Lt. Gen. Michael E. Zettler, USAF deputy chief of staff for installations and logistics, told *Air Force Magazine* that the F-15 honeycombs are worrisome because problems in individual aircraft are "very difficult to detect."

According to Jerry Mobley, an engineer at Warner Robins Air Logistics Center, Ga., honeycomb is a "good structure" that offers a high strength-to-weight ratio. Over time, though, concerns about honeycomb parts developed because water has a way of working its way inside, leading to corrosion and component disbonding.

Over the course of six years, the

Air Force will swap out F-15 Eagle honeycomb structures for Grid-Lock components, as the Eagles transition through the depot for scheduled overhauls. To date, about 20 percent of the F-15 fleet has been reworked.

These types of seemingly isolated problems become more common with age and have a cumulative effect. "The structural work we had to do on the F-15 10 years ago ... was very modest," Zettler said. "It is more than double that today."

The F-15 is one of the Air Force's younger aircraft—and not one of the bad actors. Zettler said the KC-135 is "problematic." The A-10 is seeing the effects of structural defects that have to be fixed "with a sense of urgency." The F-16 needs structural improvements to reach its 8,000-hour service life. The C-5 spends entirely too much time in the depot.

"Those are long-term problems," he added.

### Heavy Use

The global war on terrorism has sharply increased aircraft flying hours, which were up 12 percent in Fiscal 2002. Fortunately, the Air Force has been able to manage its aging problems with minimal operational disruption.

Officials said the hard work and long hours put in by maintainers mean older airplanes have not been a hindrance to either Operation Noble Eagle, in which USAF active and reserve forces fly Combat Air Patrols over US cities, or Operation Enduring Freedom in Afghanistan.

Air Force Secretary James G. Roche has warned of "wear and tear" on fighter aircraft. "And certainly, if you talk to the maintainers, those folks who are working on the F-15Cs, the amount of time is really getting horrendous," he said.

Maintainers are keeping the aging aircraft ready "by many, many means, all quite proper, but they really have to work at it," Roche added.

Jumper noted that, while fighters "are racking up lots of hours" enforcing no-fly zones and flying CAPs, those hours are "not as stressful" as the hours of high G maneuvering the aircraft were expected to get in normal training operations at home. Fighters in no-fly zones and on CAPs tend to fly mostly straight and level, without the violent combat maneuvering they would experience in training.

Staff photo by Guy Aeoio



USAF is trying to head off age-related problems. Here, an X-ray machine performs a noninvasive inspection—maintainers can spot cracks or other defects without having to rip the aircraft apart.

"Now, what does that mean?" asked Jumper. "We don't know yet." The Air Force is trying to determine if long, reasonably benign flights will offset planned retirement dates.

According to Zettler, there has been a drop in the major parts requirements for aircraft flying these nontypical flight profiles. "We tend to use more spare parts per sortie than we do per hour," Zettler said. The biggest short-term result is that the CAP fighters need more consumable parts, phased inspections, and routine maintenance work, he said.

During the past year, the F-16 fleet was less stressed, added Zettler, because longer missions mean systems are turned on and off less frequently. That and the CAP profile contributed to higher F-16 Mission Capable rates. Further, since Air National Guard F-16As fly the lion's share of the CAP missions, MC rates for the older F-16As increased faster than MC rates for the newer F-16Cs. The older F-16s have seen their highest readiness level since Fiscal 1997.

These flight hours do not accumulate without cost, however. Col. Michael R. Carpenter, director of plans for USAF's Aging Aircraft System Program Office, Wright-Patterson AFB, Ohio, noted that the "hidden cost in operations" may come



Staff photo by Guy Acato

**An Oregon Air National Guard F-15A flies a Combat Air Patrol. Low-stress CAP missions have helped improve the near-term reliability of fighters such as this, but flying hours are now accumulating more rapidly.**

in later years—when aircraft begin to wear out faster. Carpenter cautioned that the Air Force may be setting itself up for a future problem because "there's a hidden bill out there."

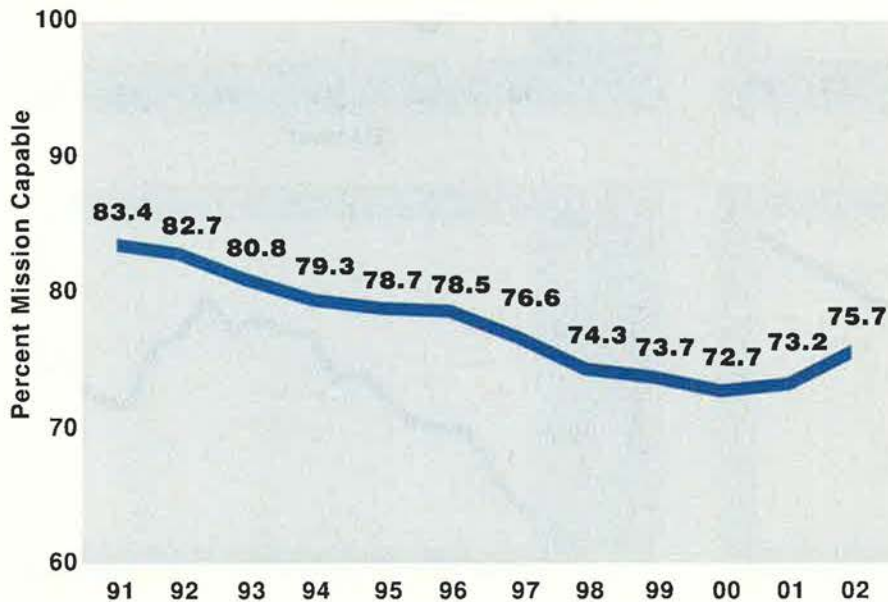
Zettler confirmed that even the "easy" CAP hours could have long-term consequences, partly because the aircraft are flying with heavy munitions loads. From a structural standpoint, he said, "we are accruing more structural hours than we

would have in a normal training environment."

The Air Force has already decided to accept some additional risk. Plans call for F-16s to be retired faster than F-35 Joint Strike Fighters are fielded. The risk inherent in this so-called "fighter bathtub" will increase if F-16s reach the end of their service lives even sooner than expected.

Zettler said the Air Force continuously re-evaluates modernization plans, and a year of the war on terrorism has not forced any changes in long-term fighter modernization strategies.

### The False Positive?



**Mission Capable rates are moving up thanks to the hard work of maintainers and full funding of spare parts. Still, USAF leaders base some of the MC turnaround on CAP missions, which are less stressful on fighter airframes.**

### Single-Point Failure?

The same cannot be said for airlifters and tankers. The war on terror has heightened concerns about the long-term health of airlift and air refueling aircraft. "We are aging in uncharted waters," Zettler commented.

The demands of Enduring Freedom and Noble Eagle have added new urgency to the Air Force's recent efforts to obtain new, Boeing 767-based aircraft as next-generation tankers. When looking at the logistical consequences of 9/11, "you come back to the tankers all the time," said Zettler. Air refueling aircraft are needed for homeland defense and for overseas operations. Their value goes beyond the Air Force; the Navy relies upon them as well.

By aviation standards the tankers are ancient. The average USAF tanker is now 39 years old and that average

includes relatively young KC-10s purchased in the 1980s. The 707-based KC-135s average 43 years of age.

"You'd better pay attention to tankers and you ought to find a way to modernize that tanker fleet," Zettler said.

The tankers are "the lifeblood of our fleet," Carpenter added, and they have been "worked pretty hard."

The concern is that the KC-135 platforms are so old that a major problem could spring up and force a grounding of the entire fleet.

Analysts at RAND note that unexpected failures in older aircraft had occurred many times before, and it is not far-fetched to believe they could happen again. "Major problems may result from corrosion, insulation cracking, composite delamination ... for which there are no scientific aging models or relevant historical experience," said Pyles. He cited examples of unanticipated failures such as the C-141 weep hole, the VC-137 corro-

sion workload, and the C-5 horizontal stabilizer tie-box fitting.

Generally speaking, aircraft built before 1970 are more susceptible to corrosion, Carpenter noted. Newer aircraft are also simply more efficient.

"You won't find airlines operating 707-type airplanes," said Zettler. "That would be as inefficient as hell. They want the airplanes in the air; they don't want them sitting in the overhaul facilities."

Over the past 10 years, the amount of KC-135 depot maintenance work has doubled, and the overhaul cost per aircraft has tripled, he added.

These increasing costs may be crowding out funds that could otherwise be used for modernization.

The cost of USAF's flying hour program grows by about 11 percent per year because of aging aircraft. In the Air Force's \$3 billion flying hour program, a one percent cost increase translates into a bill of \$30 million.

Preventing cost spikes is a major Air Force goal. "We don't field equipment and let it operate until something goes wrong," Zettler said.

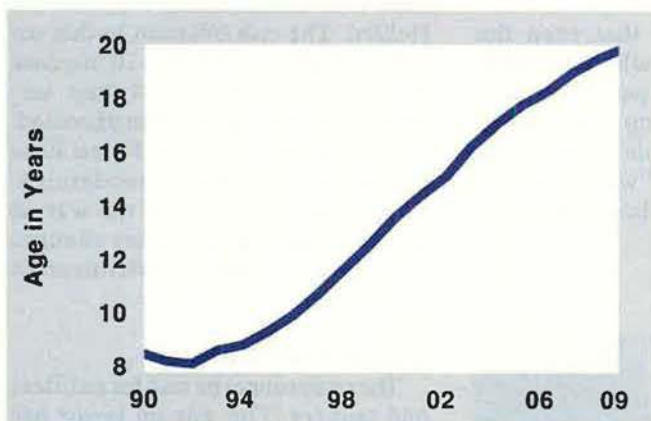
### Treating Obsolescence

Another danger is that some parts may simply become unavailable. Older aircraft are hindered because sometimes there are no vendors willing to manufacture components that are technologically obsolete and have no commercial application.

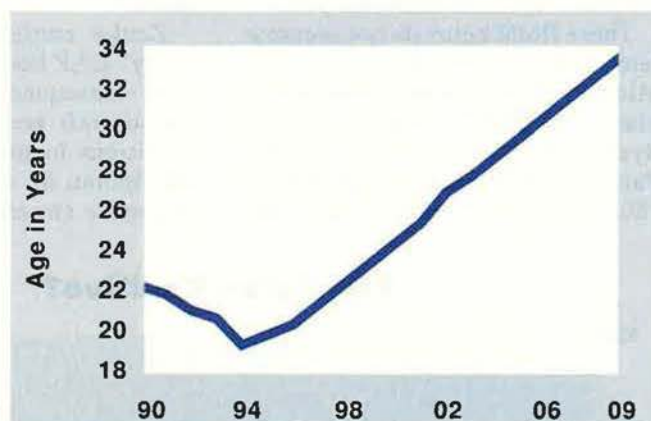
Zettler noted that aging avionics represent a problem because no one makes vacuum tubes anymore. "That is real—we still have a few of those situations around," he said. "More importantly, there are few makers of transistors and diodes and chips" of the type required by many USAF aircraft.

Occasionally, Zettler said, the Air Force will seek a spare part but find no suppliers because the component is obsolete. In these cases, the ser-

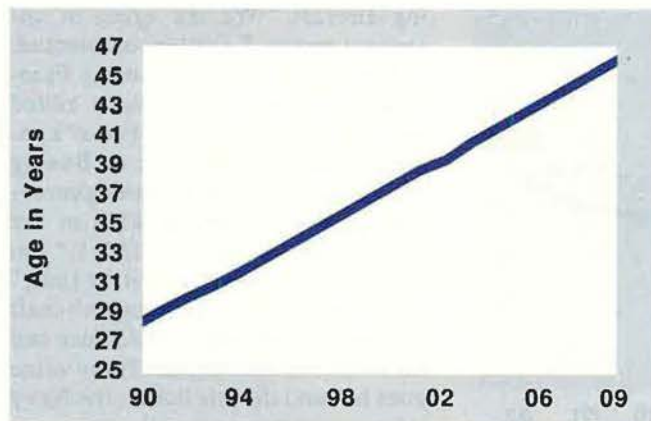
## The Four Faces of Aging Air Force Aircraft



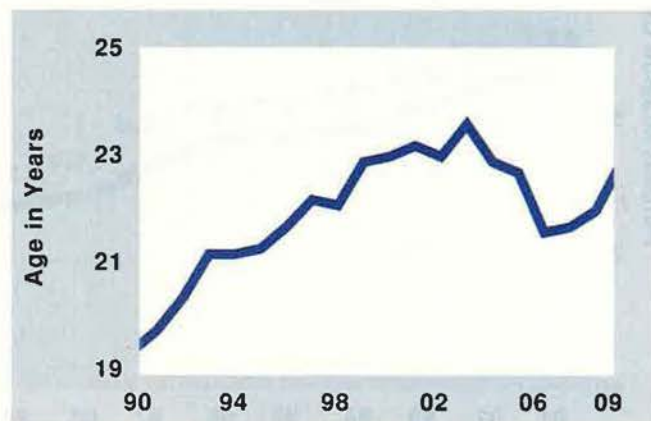
Fighter/Attack



Bomber



Tanker



Airlift

Aircraft ages are rising rapidly because of the 1990s procurement holiday and few purchases of current generation aircraft. The downturn in airlifter age, beginning in 2003, reflects large numbers of C-17s entering service.



## The BUFF at 80?

USAF's B-52 fleet now is expected to remain in service until around 2040. Thus, the venerable bombers—delivered in 1961 and 1962—are roughly halfway through their service lives.

Col. Michael R. Carpenter, director of plans for USAF's Aging Aircraft System Program Office, said the prospect of flying such old airplanes is "a troubling thought."

Fortunately, the B-52s are structurally sound. Carpenter said Strategic Air Command was "obsessed" with ensuring there was no corrosion on the bombers, and SAC maintainers worked overtime to ensure B-52 airframes stayed in top-notch condition.

The B-52 fleet also benefitted from the years the aircraft spent sitting on alert, rather than in the air, during the Cold War and from ceding the more stressful flying profiles to B-1 and B-2 bombers. Consequently, B-52 airframes are in relatively good shape for their age.

In recent years, the Air Force increased its use of the B-52, sending the aircraft to support operations in Iraq, the Balkans, and Afghanistan. That has led to some new age-related problems. For example, last year the service discovered that 53 of its 94 B-52s showed signs of fuel tank erosion, known as Fuel Tank Topcoat Peeling.

Service officials attributed the problem to two factors: an increase in flying hours and a switch from JP-4 to JP-8 jet fuel.

"Age, fuel, and fuel additives are playing a role in this problem," said Rex Cash, B-52 fuels engineer at Tinker AFB, Okla. Other aging aircraft, such as the Air Force's KC-135s and the Navy's P-3, are also developing FTTP problems.

The problem manifested itself in the B-52s when the bombers' boost pumps began failing at a higher rate. With the increased flying time, officials said that B-52s pumped more fuel through their boost pumps in a matter of weeks than they would have used in a normal year's worth of flying.

The Air Force launched a three-year, \$12 million study to determine the extent of the problem and potential solutions. According to Cash, if the topcoats need to be replaced in the entire B-52 fleet, the work could require 20,000 man-hours to complete. Officials had no estimate on cost.

vice will go back to the manufacturer to find the original specifications, then seek another vendor or try to manufacture the necessary components in an Air Force depot.

The Air Force tries to avert such problems by making a lifetime buy if a part is going to be headed out of production. "You generally can see the trend coming," Zettler said, and the lifetime-buy strategy has been executed successfully several times for B-52 components.

Nonetheless, the older the aircraft fleet gets, the more the maintenance bills will grow. Air Force officials noted that an F-15C flying hour is 15 percent less expensive than that of the older F-15A. On the airlift side, C-5As and C-5Bs have similar operating costs, but the newer B models have Mission Capable rates 25 percent higher, and that difference is increasing, according to USAF.

In ongoing research, RAND analysts note that "preliminary estimates indicate that aircraft support costs might grow by as much as \$9 billion a year by 2020" if maintenance and procurement trends continue.

Air Force officials believe the solution is a robust modernization program. By pushing forward with plans for the F/A-22, F-35, more C-17s, C-5 upgrades, and next-generation tankers, the Air Force could save even more money than is projected in the long term, Zettler said, because some cost benefits are not easily identified. "I think modernization has to be our first priority," he added.

Newer aircraft will allow the Air Force to retire the aircraft that are most difficult to sustain. Moreover, next-generation equipment is generally easier to maintain from the start. For example, the C-17 is less expensive to fly than the C-141 or C-5, and USAF officials say the F/A-22 will be 25 to 30 percent less expensive to operate than the F-15.

When the F/A-22 and F-35 begin to enter service, the average age of fighters will begin to decline, but overall fleet averages will only level off.

Consequently, Carpenter noted that the Air Force is "always going to have aging aircraft" and must continue to devote the resources needed to study the issue and pursue innovative solutions to head off potential problems. ■

**Gen. John Jumper, Chief of Staff, is struggling to find an optempo on which to base future manning and equipment.**

# The Force Seeks a New Baseline

**By John A. Tirpak, Executive Editor**

**E**VER since Sept. 11, 2001, the entire Air Force has been “sprinting,” according to Gen. John P. Jumper, Chief of Staff. USAF people have been engaged in a full-scale war on terrorism around the world and at home, while still conducting no-fly-zone operations in Iraq, defending the border between North and South Korea, supporting forces in the Balkans, operating a global airlift, and controlling a vast constellation of space assets, among many other significant tasks.

Late last year, Jumper spoke with *Air Force Magazine* about the most pressing challenges he now faces, his priorities, and prospects for solving deepening problems even as the force continues at a full run.

Funding increases in the last two defense budgets have helped the Air Force deal with some pressing problems, particularly in the areas of personnel benefits and readiness. However, long-term solutions to the issues of over-extended personnel and aging facilities and aircraft must wait for a pause in operations, according to Jumper.

Defining the true number of Air Force people and aircraft needed for the decades ahead is on hold until the service can accurately gauge “the new baseline activity that is brought on by this global war on terrorism,” Jumper asserted. The process of figuring out “what [it is] going to take for us to adjust to that new baseline ... is still ongoing,” he said.

Jumper is convinced that both operating tempo and requirements for personnel and equipment are headed up. "I know that the baseline of activity is going to increase rather than decrease, but it'd be folly for me to sit here and give you a number," said Jumper.

Senior officers working toward defining long-term requirements are doing their best to perform the intricate calculation of what kinds of functions can be privatized, how much more capable aircraft are than they used to be, how fast equipment is aging, what realistic threats are posed by emerging opponents, and what kinds of missions the Air Force will be assuming in the years to come, Jumper reported. However, absent any clairvoyance about what course the war on terrorism will take, hard answers will remain elusive.

### The Manning Issue

"I think a lot of that is unknowable until you see world events unfold," he said. "As long as world events are unfolding, and we are sprinting, it's hard to know what the baseline's going to be when it all settles down."

"You can't man yourself for the surge," he continued. "You have to try to estimate what the background level of activity is."

The Defense Planning Guidance—a classified document that tells service chiefs where to place priorities in their budgeting—describes the kinds of operations in which the Air Force will likely be involved but not their intensity or duration, Jumper noted.

"The DPG tells you ... we're going to have to deal with homeland defense, we're going to have to deal with so many regional contingencies, etc., but it doesn't say at what level," he explained. Moreover, the document doesn't forecast what kind of residual force will be required after various contingencies have ended. With the exception of Vietnam, the US has never in the last 60 years fully withdrawn from a region of major combat.

"At some point, we'll reach a steady state in Afghanistan," Jumper said. "At some point, we'll reach a steady state in the Balkans. [But we] don't know what that is, yet." He said the steady state in the no-fly-zones over Iraq is known, but so far it's been impossible to predict whether these residual operations in Iraq of-



Gen. John Jumper, USAF Chief of Staff, says Air Force optempo and requirements for personnel and equipment are going up. Here, he talks with airmen deployed to Southwest Asia for Operation Enduring Freedom.

fer a gauge of the level of effort required elsewhere, such as post-Taliban Afghanistan, he noted.

Jumper observed that the last time major decisions were made about manning levels and force structure was the early 1990s, and the Cold War had just ended. There was enthusiasm for reaping a peace dividend, and there was little indication that the Cold War would be followed directly by nonstop regional crises leading to substantial deployments of US forces.

"We brought ourselves down by 40 percent," Jumper said of the manpower and hardware decisions of that period. "In many cases, we brought ourselves down too far."

Soon after the war on terror began, senior leaders began talking about a need to increase the number of people in uniform. Jumper acknowledged that the Air Force initially requested an increase of 7,000 troops in the Fiscal 2003 defense budget. That figure was intended mainly to fill out the ranks of security forces that were already overextended and had inadequate depth to protect bases both at home and abroad simultaneously. The figure might have even been higher, but "you can only absorb so much at one time, because of your training base," he said.

However, Defense Secretary Donald H. Rumsfeld quickly stopped talk of increasing end strength for any of the services. In remarks to the press, Rumsfeld said he had seen too many

people in uniform performing functions that could or should be done by contractors. Farming those tasks out to civilians would free up service people for more obviously military missions than, as Rumsfeld characterized it, "painting rocks."

Rumsfeld ordered the armed services to first scrutinize their own ranks for people performing non-military tasks before he would entertain any requests for additional end strength.

### No "Rock Painters"

Jumper bristles at the notion that there are USAF people being applied to meaningless tasks or in some way being underused.

"There are no rock painters out there," Jumper insisted.

However, he said, "There are legitimate questions about our contributions to other agencies and ways, for instance, to do things, like guarding gates." Jumper said Rumsfeld has "rightly asked us to look at more efficient ways to do our business." There are, he agreed, "alternatives to increases in end strength."

Jumper noted, "We have a lot of people out there in [defense] agencies and other places who are not directly doing Air Force work." For example, USAF contributes hundreds of people to the Defense Finance and Accounting Service, whereas the Navy details about 80 people to that organization.

The Air Force has identified a

number of pools of human resources, Jumper said, but the Air Force must now, having found the people, get them back. That will not be automatic, as some are certainly performing unique work that supports the overall defense mission.

"We have to identify those people who are not directly involved in Air Force activity; we have to make the argument that they *should* be involved in Air Force activity and see how much of that we are able to win back inside the Air Force, doing blue-suit sorts of things," Jumper explained.

If the Air Force can't get most of those people back to put in its rotational base, "we've still got a manpower problem," he said. Jumper was quick to point out that "the difference between 'identifying' and 'taking' [is] ... significant."

In the coming discussions regarding the 2004 defense budget, Jumper explained, "We're making a case for what we think we need" in terms of end strength. The number of people required for Air Force missions is "going to go up, but I can't tell you that I'm going to have to come in and ask for an increase in end strength until we know how many ... we're going to be able to reclaim."

Jumper said he is not afraid to ask for more people if the internal searches for more deployable people come up short. "When we have enough fidelity [of data] to go argue with ... [and] I feel comfortable that I understand

that argument, I'll make that argument, whatever it is," he said.

Preserving and meeting goals for the length of deployments is another issue that concerns Jumper.

"The goal for the Air Expeditionary Force is going to continue to be 90 days," he said. "There are some extensions in highly stressed specialties that are going to go up to 180 days, and we're trying to keep a cap on that. Right now, it affects less than six or seven percent of our population, but still, we don't want any of our [people] to have to go over 90 days."

### Handling Personnel Shortages

The acute shortage in a number of specialties prompted Jumper to create interim solutions until he can find permanent ones.

"We have managed to install a program that identifies the stressed specialties earlier and shift our accessions—new people coming into the Air Force—into those shortages a lot more quickly than we've been able to do before," Jumper said.

Because security forces suddenly had a much larger task after Sept. 11—defending homeland bases as well as overseas deployment locations—that specialty has been targeted to get a substantially larger number of new recruits entering the service, Jumper said. However, he noted, moving new recruits into areas chronically short of people does

nothing to deliver seasoned, experienced airmen to those same specialties.

The security forces field is also emblematic of the problems attending an ongoing effort to privatize functions that don't necessarily have to be done by uniformed people, he pointed out.

Guarding gates is one candidate for contractor work, Jumper said. He pointed out that, while civilians can probably be used to guard bases, such an action raises a question. "If you reduce your security forces by that number, what does it do to your rotation base?" Jumper asked. "And that's the part we aren't able to answer yet."

In other words, if you have fewer active duty security forces, those you do have are deployed more often, or longer, or both. There would also be fewer, if any, Stateside bases where they could serve, practically ensuring a good portion of a career would be spent overseas.

Also in heavy demand are specialists in Intelligence, Surveillance, and Reconnaissance and field engineering areas such as electrical power generation for austere operating locations.

Jumper wants to make sure that everyone capable of expeditionary service is placed into the pool of eligible people. New categories of "eligibles" are being identified daily, and only a few specialties—such as ballistic missile launch officers—will be excluded. His goal is that, with the exception of just those few who cannot leave their post and deploy, everyone will be in the rotation base. Not even the Air Staff is immune, he said, though plucking people out of key jobs must be done "with care."

Service leaders are looking to "invent ways to make the Air Expeditionary Force rhythm more evident to our people in the Air Force, so that the rhythm of the AEF infects our assignment process, our professional military education process, and all the other processes," said Jumper. He wants the expeditionary mindset to pervade the service.

### Overtaxing Guard and Reserve?

Jumper was asked if he was worried that members of the Guard and Reserve—who have been called time

Staff photo by Guy Acello



Jumper says the Guard and Reserve are supporting USAF at a greater rate than they did during the Gulf War. This Oregon Air National Guard security forces specialist at left was one of many reservists called up after 9/11.



and again in the last 10 years and now serve as a regular part of the AEF rotation—are in danger of burn-out and whether the reservoir of goodwill shown by their employers is drying up.

“I hear a lot of fear about that,” Jumper said, “but I don’t see it manifesting itself. As we demobilize these tens of thousands of people we had called up, there is not the mass exodus” from the reserve components that some had feared.

Jumper chalks up the continued willingness to serve to several factors: a desire to see the conflict through to its end, supportive employers, and the Air Force’s determination that no one will be called to do unnecessary work and that no one will be held any longer than necessary.

Jumper has been “very, very impressed with the employers out there who understand exactly what the nation’s going through.” Numerous companies—some of them very small—have even moved to make up the difference between the peacetime wages of their employees called to active duty and their military pay; in some cases this poses a major hardship. Jumper said that, by and large, employer frustration is not a problem.

“The Guard and Reserve are supporting us at a rate greater than they did in the middle of Desert Storm,” Jumper pointed out, “and they’re doing it on a daily basis.”

“We’re in the process of a big demobilization right now, so that we’re not keeping people activated any longer than we absolutely have to, to do the job,” he said, “and again, that’s a massive effort to decide who’s not needed and to make sure that you let them go.”

Jumper added, “We owe it to them to make absolutely sure that when they are called up, and activated, that the work they do is meaningful to them.”

However, some reservists cannot be released, because the missions they perform are too crucial. Jumper said extensions and Stop-Loss are still being used.

“Now, are there worries about how long this is going to be?” he asked. “Absolutely. And there’s anxiety about it ... when we have to extend the call-up period of people, no doubt about it.” However, he pledged that



**With emphasis on special forces operating deep in enemy territory and the ability to attack moving targets under the weather, Jumper argues the F/A-22 “has only become more valuable.”**

these situations are reviewed “every day,” and USAF is doing everything possible “to get that down as quickly as we can.”

Whereas new recruits are brought in routinely throughout the year, the Air Force cannot renew its aircraft fleet quite as easily. Modernization was put on holiday during most of the 1990s, and the force aged considerably over that period—both chronologically and in terms of wear and tear.

### Using Up Aircraft

Fighters are being used “at a rate much greater than expected,” Jumper noted. Likewise, the conduct of “far-off conflicts” has also led to usage rates for the tanker and airlift fleets that exceed predictions. There are concerns that the fleet will wear out before replacements are available.

As some of the fighters do wear out, they won’t immediately be replaced. Consequently, the fighter fleet will grow smaller. “There has to be some reconciliation of the notion of increased capability and numbers [of fighters],” Jumper asserted. There’s an assumption that “all the numbers we have out there are still required,” he said. “What we have ongoing now are studies that will tell us where there are trade-offs.”

Jumper was referring in part to the advent of new small munitions which can cause the same destruction as large ones. More weapons can be

carried on each mission, more targets per mission can be destroyed. Perhaps not as many aircraft are needed. However, the issue of fleet size is not that clear cut.

“Your ... level of global activity dictates how many resources you have to have,” he said. One fighter cannot be in three places at once no matter what its capabilities. Multiple contingencies define a certain level of activity and a certain force structure, explained Jumper. “We’re trying to reconcile [that] right now.”

The need to meet the demands of a worldwide rotational base were essential to the debate over how many F/A-22s the Air Force should buy, and it is an argument that seems to be “well understood,” Jumper reported.

“We did a very exhaustive study on the F/A-22,” he said, referring to a review ordered by Rumsfeld as part of the Defense Planning Guidance. “It was good for us to do that,” Jumper observed, “and reaffirm all the reasons” the service has put forward for buying the Raptor.

The case for the F/A-22 is especially strong in light of a new emphasis on placing special operations forces deep within enemy territory. “What better than a platform that can penetrate [enemy airspace] at Mach 1.5-plus?” he asked. The F/A-22, which Jumper described as able to slip past “the next two generations” of surface-to-air missiles and “the worst defenses,” can reach out



**Jumper says he's not displaying a white-scarf fighter pilot mentality when he declares that UAVs, such as this Predator, and their follow-ons should be judged on their effects and not be viewed as novelty platforms.**

and provide air support to those deeply inserted troops.

If resupply is needed by C-130s or C-17, "what better to keep the corridors open from both the surface-to-air and air-to-air potential threats than the airplane that has proved itself to be most survivable against those kinds of threats?" asked Jumper. "That's the way we're looking at it."

Given the new concepts of operation that have emerged, especially defense against cruise missiles and the ability to attack "moving targets under the weather," the F/A-22 "has only become more valuable," Jumper said. It remains the Air Force's top priority.

Alongside the F/A-22 is the F-35. Jumper wants to ensure the service maintains the efficient high-low mix it has today with the F-15 and F-16 structure for its fighter fleet.

The F-35, Jumper said, addresses itself to the requirement to have persistent stealth over the battlefield, and it's there to deal with the dynamics of the pop-up target. "The F/A-22 can certainly contribute to that and keep the battlefield safe from a variety of threats, again, to include things like cruise missiles," he added, "but the workhorse part of that would be the purview of the Joint Strike Fighter."

The Air Force has typically modernized its force one element at a time. In the 1970s, it was fighters. In the 1980s, it was bombers. In the 1990s, it was airlift. This decade has

already seen two fighter programs entering production, continued purchase of the C-17, and a move to replace the aging tanker fleet sooner than planned.

Jumper categorically believes that fighters, in this particular time period, must be the priority.

"In the end, what it takes to win wars is firepower," he said. "We are anxious to start replenishing that part of our force that puts steel on targets, in the air and on the ground." This is necessary to "make up for the fact that we haven't ... bought that kind of airplane for a very long time."

#### Hard Trade-offs

Finding the correct balance among ISR, space, training, and special operations is "the subject of the debates that are going on right now," he reported. Making those trade-offs will be hard, he said, because there are no Air Force missions that could be cut in favor of new systems.

"There's no decreased demand for space," he said. "Nothing that tells us we're going to have to do less of ... Unmanned [Aerial Vehicles]. These are all growth industries."

Setting priorities means "deciding what you have to do first [rather than] managing a pile of things ... that you're clinging to that no longer have to be done," explained Jumper. "I haven't found that pile."

Real property maintenance accounts were consistently robbed during the 1990s to pay for moderniza-

tion and shortfalls in readiness, but Jumper said that won't be the case in the years to come. "A point of emphasis for our civilian leadership is to get us down from a 200-year [building] replacement cycle ... to 67 years, which is still not the industry standard," he said.

Traditionally, such accounts have been "a source we've had to go to when other budget priorities are cut," stated Jumper. "We don't want to go to that source. ... We're sticking to that goal, again with considerable plus-ups of money that we've gotten from OSD and this Administration."

The Rumsfeld Pentagon has adopted transformation as its watchword and has served notice that systems that don't propel their services into the next generation of warfare have little chance of continuing. Jumper agrees with the need to push the technological and conceptual envelope. However, he has one worry: Unmanned Aerial Vehicles and the Pentagon's current fascination with them.

UAVs clearly made their mark in Afghanistan. Global Hawk and Predator are "celebrated" because they were able to bring persistence and endurance to the force in a new way, Jumper explained. It's important to ensure that the UAVs the Air Force buys "continue to advance those virtues for us, rather than be overly duplicative of what we already have."

Jumper expressed frustration that, if he questions weaponizing UAVs or their rapid development, he is seen as championing the white-scarf fighter pilot community. "When guys like me express this opinion, people automatically jump to the conclusion that I am a fighter pilot and therefore I feel threatened by UAVs," Jumper said. In actuality, "I am the guy, personally, who put the laser ball on the UAV [and] who put the Hellfire [missile] on the UAV" to be able to shoot a target of opportunity when one emerges before a Predator.

He said he wants to keep those qualities of persistence and endurance "in front of us as we advance to the next generation" of UAVs and their armed descendants.

It's all about "the concept," said Jumper. He is intent on making sure "that we don't get caught up in this focus on novelty of platforms and lose sight of the effect we want to create." ■



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**The US–Saudi marriage of convenience probably won't end in divorce, but there is plenty of tension in the house.**

# Desert Chill

By Peter Grier

**L**AST August, Prince Bandar bin Sultan—fighter pilot, Johns Hopkins University graduate, and longtime Saudi envoy in Washington—paid a personal call on George W. Bush at the President's Crawford, Tex., ranch. The American leader escorted Bandar and his wife around the 1,600-acre spread. Later, Bush hosted the couple and six of their eight children at a lunchtime barbecue.

It was a gesture of friendship offered to few heads of state, let alone diplomats. And it had a purpose. The President's hospitality was meant to signal his desire to remain on good terms with the Kingdom of Saudi Arabia, a key supplier of the West's crude oil and a highly influential player in Gulf and Arab politics. Publicly, at least, the effort was a rousing success.

"We don't agree necessarily on every issue," State Department spokesman Richard A. Boucher said at the time. "There are points that we pursue with them and they pursue with us, but overall, the US–Saudi relationship is solid."

That is probably true. However, the mere fact that the meeting had to

be held at all underscores the tensions that have arisen lately in one of the most important of America's foreign relationships. The aggravating factors range from the personal—disputes over international child custody—to the global—how to live with Israel and what to do about Iraq's Saddam Hussein.

Bush Administration officials, for their part, have been frustrated at what they view as a reluctance by Saudi Arabia's aging leadership to recognize the degree to which its kingdom has become a breeding ground for terrorism and intolerance. Fifteen of the 19 hijackers of Sept. 11 were Saudi citizens. Saudi clerics remain the source of some of the most virulent anti-Semitic and anti-American rhetoric in the Arab world.

## **A Bad Neighborhood**

In reply, Saudi officials retort that the US has little understanding of the political and demographic pressures they are under. It shares a border with Iraq to the northeast and faces Syria to the northwest and Iran across the Gulf, a combination that makes its neighborhood

the most volatile in the world. Its population is exploding, while its oil revenue is dropping. The House of Saud, the monarchical family that has dominated the nation's life since the early 20th century, is entering a period of generational transition. Meanwhile, fiery leaders of the Wahhabi strain of Islam preach violence and resist social and political modernization.

The bottom line: Saudi Arabia, as a nation, is facing years of difficult fundamental change.

"The challenges the kingdom faces are more serious than any it has faced since the days of Nasser [Egyptian leader Gamal Abdel Nasser, who ruled Cairo in the period 1952-70] and the period before it acquired real oil wealth," said Anthony H. Cordesman of the Center for Strategic and International Studies, in a lengthy study of Saudi Arabia's future.

Saudi Arabia today is a nation defined by two roles that are very different and sometimes in conflict.

To the developed world, Saudi Arabia means oil, and lots of it. The kingdom possesses an estimated 27 percent of the world's proven petroleum reserves, far more than any other country. Saudi wells can produce, every day, upward of 10 million barrels of crude, if need be. This vast production capability allows Saudi leaders to quickly step in and stabilize world petroleum markets whenever supply falls in any other part of the world.

As a result, Riyadh can always prevent any use of "the oil weapon" merely by stepping up its own production.

To the Muslim world, Saudi Arabia isn't oil at all but a religious heartland. The Hejaz region on the western flank of the Arabian peninsula is the birthplace of Islam, and the Saudi cities of Mecca and Medina are considered its holiest sites. In fact, the fees paid by religious pilgrims traveling to Mecca were for decades (until the discovery of oil) the prime source of Saudi government revenue.

As a nation, the current kingdom is relatively young. In 1902, Abdel Aziz ibn Saud, a warrior-prince of the prominent al Saud family, stormed out of the desert and captured Riyadh in a daring military campaign.

Over the next 30 years, the man who would become King Abdel Aziz ibn Saud gradually consolidated his



**Gen. Hal Hornburg, commander of Air Combat Command, meets with Saudi Maj. Gen. Saeed Al-Haznawi, commander of Prince Sultan Air Base. Longtime allies, the Saudis allowed the US to build an air base in their country in World War II.**

control over most of the Arabian peninsula. By 1932, he had become the recognized leader of a sprawling territory that included the Hejaz, the Nejd, the Eastern Province of the Gulf, and the Empty Quarter, the largest contiguous body of sand in the world, populated mainly by nomadic tribesmen.

### The Mark of Wahhab

For a long time, the House of Saud has been associated with the rigorously fundamental Wahhabi branch of Islam. In the 18th century, the ancestors of King Abdel Aziz had given shelter to the sect's founder, Muhammad Ibn Ab al-Wahhab, and from that time onward the fortunes of the two groups were intertwined.

It was the life's mission of Muhammad to return his people to the "true" principles of Islam. A native of Medina, he wrote the Kitab at-Tawhid ("Book of Unity"), which is the main text for Wahhabi doctrines. His views were puritanical, and he took a strong stand against all innovations—he viewed them as blasphemous—in Islamic faith. Wahhabism has been the dominant religious force in Arabia since around 1800, and the Saudi royal family has accommodated its practitioners in ways large and small.

The modern petroleum industry came to the region in 1932, when a subsidiary of Standard Oil of California discovered oil in Bahrain. In the next year, the American com-

pany struck a deal with the neighboring kingdom of Saudi Arabia; SOCAL was permitted to explore the Eastern Province, which turned out to be a world-class petroleum mother lode.

Eventually SOCAL joined with other US firms in a unique partnership called the Arabian American Oil Co. Aramco erected a small corner of America at its facilities near Dhahran in the Eastern Province, and US oil experts ran the nation's petroleum facilities for decades. The Saudi government assumed full ownership of Aramco in 1980, renaming it Saudi Aramco. A native-born president was appointed in 1984.

From the kingdom's earliest days, its leaders saw the United States as a useful friend and ally. Like the British, colonial rulers of the region, the US could offer modern technology, arms, and aid. Unlike the British, the US appeared to have no imperial impulse.


The security relationship between the two nations began in earnest when the Saudis granted the US permission to build an air base at Dhahran in early 1943, a time when the outcome of World War II was still in doubt. Subsequently, President Franklin D. Roosevelt held a meeting with King Abdel Aziz on a warship at sea. FDR convinced the Saudi leader to enter the war on the side of the allies, and at war's end, Saudi Arabia

*Continued on p. 46*

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Continued from p. 43

began to modernize its armed forces with US aid and weapons.

By the mid-1950s, President Dwight D. Eisenhower had determined that Washington should try to firmly link Saudi Arabia to the West and promote the prospects of King Saud, who had assumed the throne in 1953 upon the death of his father, Abdel Aziz. Eisenhower even invited King Saud to the White House in January 1957, as part of an effort to convince key Third World leaders to resist communism.

In following decades, the kingdom became more and more dependent on its US friend for arms and military expertise. For a period in the 1970s the US promoted a "twin pillars" policy which envisioned Saudi Arabia (under the rule of King Saud) and Iran (under Shah Mohammed Reza Pahlavi) as the West's partners who would stabilize the region.

The fall of the shah in 1978-79 eliminated one of the pillars. The other, despite many dire warnings, has continued on with no interruption, to the surprise of many.

### The Thrill Is Gone

Over the past 20 years, a general bargain—the US provides military defense, Saudi Arabia provides stability in oil production—has served both nations reasonably well, with the Gulf War vividly displaying the extent of the relationship. Even so,

US officials often describe ties with Saudi Arabia as an arranged marriage, not a romantic one.

The two cultures are as different as any on Earth. Within Saudi Arabia, polygamy is legal, governance is based on sharia, or Islamic law, and the ruling elite is composed of Abdel Aziz's many sons and grandsons. US support for Israel has been a consistent source of tension in the relationship. For many years, US presidents promised that no Jew would serve at the US air base at Dhahran. Aramco made the same promise.

US resupply of Israel during the October 1973 Arab-Israeli War triggered a serious Arab oil embargo. When it ended, a series of major oil price increases drove up producer profits, which brought stupendous wealth to Saudi Arabia and other oil-producing nations. Today, the Saudis say they are dismayed by the extent of the Bush Administration's support for Israel at a time of great turmoil and military action in the Palestinian territories. To the White House, the majority of these blows can be categorized as battles against terrorism. To the Saudis, many of them are terrorism itself.

In an open letter to the US not long ago, 126 Saudi so-called scholars and authors wrote, "We consider the United States and its current Administration a first-class sponsor of international terrorism, and it, along

with Israel, form an axis of terrorism and evil in the world."

Today the US-Saudi relationship may not be heading for a divorce, but since the Sept. 11 attacks, it has come under more strain than at any time since 1973.

The major reason: Iraq. Following the terrorist attacks in the US, the Saudis supported US military action in Afghanistan, if quietly. Since then, however, Saudi leaders have continually questioned whether a broad war on terror needs to include Saddam Hussein as a target.

It is not that the Saudis are fond of the Iraqi dictator; they are not. They remember those tense days in August 1990, when it seemed likely that Saddam's armies might roll right through Kuwait and keep going to seize Saudi oil fields before US forces could get on the scene.

Riyadh simply does not appear to give high priority to regime change in Baghdad. They would prefer that President Bush focus his attention on solving the Palestinian-Israeli conflict, which many Muslims consider a driving force behind the growth of Islamist extremism.

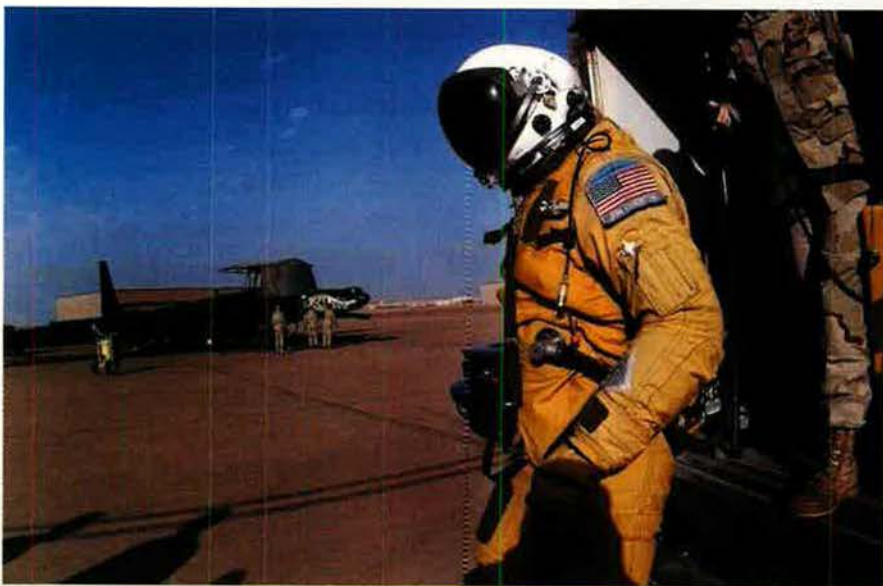
There are a number of nations besides Iraq threatening to acquire weapons of mass destruction, said Saudi senior foreign policy advisor Adel al Jubeir. "Are we going to go and attack every single one of them?" he asked rhetorically.

### Blowback of US Policies

The thrust of American foreign and military policies has contributed to the rise in anti-American attitudes among ordinary Saudis. In a Gallup poll in Saudi Arabia early in 2002, only 16 percent of respondents said they had a favorable view of the United States. Identifiably American consumer products have suffered a decline in popularity; sales of everything from Coca Cola to Marlboros have dropped in recent months. Overall, US exports to Saudi Arabia were down 30 percent in 2002.

Meanwhile, many in the United States hold that the Saudis have been slow to grapple with the problem of homegrown religious extremism. Indeed, some argue that the royal family does not want to deal with it at all. In the days after Sept. 11, Riyadh only grudgingly accepted the fact that most of the hijackers were Sau-

USAF photo by TSgt. Jack Braden



At Prince Sultan Air Base, a U-2 pilot steps to his aircraft for a no-fly-zone mission over southern Iraq. The base is located south of the Saudi capital city of Riyadh and is where most US military personnel in the country are stationed.



dis. In the months since that time, the royals have done little to change an educational system dominated by conservative Wahhabi clerics spewing hatred of Israel and the West.

An increasingly vocal faction of American political conservatives are calling on Washington to put an end to the so-called "special relationship." Cultural and social differences between the two nations are too great, according to those in this group, and the Saudis too soft on terrorism.

In a now-infamous briefing last summer to a group of Pentagon advisors, a controversial RAND analyst lambasted Saudi Arabia as America's "most dangerous opponent" in the Middle East and advocated planning for seizure of Saudi oil fields. The scholar later left his post at RAND.

In response to the criticisms, Saudi officials say that American claims do not take into account an important factor—the fragility of Saudi society. Saudi Arabia is facing massive social and economic dislocation, they say, and the kingdom is doing all it can to remain a friend to the United States while preserving its own stability. To be seen in the mosques as a complete puppet of Washington might doom Saudi rulers as it did Iran's shah, claim these Saudis.

### Geriatric Ward

To the outside world, one of the most visible changes in Saudi Arabia over the next decade will be political. Crown Prince Abdullah ibn Abdel Aziz will almost certainly inherit the throne from his half-brother and current occupant, ailing King Fahd ibn Abdel Aziz. Yet Abdullah is himself already in his seventies and thus cannot count on ruling for decades. That will lead to problems.

At the heart of the matter is the nature of the Saudi succession. Unlike European monarchies, succession does not pass from father to son in every generation. Instead, succession has passed from the Abdel Aziz only to his sons (Saud, Faisal, Khaled, and Fahd) but not grandsons. The old king had more than 50 male offspring, but even the younger ones are getting up in years.

As a result, the country may be entering what one analyst calls a "post-Brezhnev" period. A number of aging leaders—Saudi equivalents



USAF photo by SSgt. Sean M. Worrell

*An aerial view of the coalition compound at Prince Sultan. Saudi active duty end strength is estimated at about 178,000 personnel, serving in five major branches of service.*

of geriatric Soviet rulers Yuri Andropov and Konstantin Chernenko—may rule the country before power somehow stabilizes in a younger generation of princes.

### Strong Force, Weak Structure

While oil wealth allowed Saudi Arabia to purchase some of the most advanced weapons in the world—in some cases, systems more modern than those fielded by many NATO nations—it has one of the most complicated military structures of any developing country. During the Gulf War, Saudi forces provided significant punch to the coalition that pushed Saddam Hussein out of Kuwait. By the time fighting began, the Saudi Army fielded 270 main battle tanks and some 50,000 men. Its Air Force flew six percent of all combat sorties—the most by any nation except the United States.

Since 1991 its military posture has deteriorated somewhat, however. Saudi Arabia also still struggles with structural issues, such as the prevalence of royalty in high-ranking positions, that has long made its forces less effective than they perhaps could be.

There are five major Saudi services: the Army, the National Guard, the Navy, the Air Force, and the Air Defense Forces. In addition the Interior Ministry controls a number of security and paramilitary units.

Saudi active duty end strength totals about 178,000, according to the

International Institute for Strategic Studies. Irregulars bring force numbers up to about 226,500.

The Army has about 75,000 full-time actives. The National Guard and Royal Guards add about 100,000 more. Navy end strength is about 15,500, with 20,000 in the Air Force and 16,000 in the Air Defense Forces.

The complexity of the kingdom's force structure is reflected in the fact that it operates three different models of main battle tanks. Its armor mainstay is a force of 450 M60A3s and 315 advanced M1A2s. The Army also has 290 French-built AMX30s, older systems that lack firepower and the power and filtration necessary for desert operation.

Saudi Arabia also fields some 2,600 other armored vehicles, including 400 M2A2 Bradleys.

The Saudi Navy has eight major surface combatants, all missile boats. It has nine patrol craft, seven minesweepers, and a scattering of support vessels.

But it is the Air Force that has long had first claim on Saudi military funds, in large part because it is the only service that can credibly defend the entire vast Saudi peninsula. IISS estimates the Saudi air arm fields some 259 front-line fixed wing combat aircraft, organized into six wings and 15 squadrons. Total inventory is 432.

The force structure mix includes 72 F-15Ss, 67 F-15Cs, 20 F-15Ds, 85 Tornado IDSs, 22 Tornado ADVs, and



**Saudi officials are struggling to cope with vast social and economic changes while remaining an ally of the US. Here, KC-10s line the field at Al Udeid AB, Qatar, another key coalition partner in the Gulf region.**

five E-3A AWACS. Older F-5s—for years the mainstay of the Saudi force—have virtually all been grounded due to age and obsolescence and are now in storage.

Most decisions regarding regular armed forces are made by the Minister of Defense. Since 1962 that post has been held by Prince Sultan bin Abdel Aziz Al Saud, who has built his military into a credible shield against Iran and Iraq.

Because the nations that pose strategic threats to Saudi Arabia have larger populations, it will be difficult for Saudi Arabia to ever counter them completely without powerful allies, however. Promotion of mediocre members of the royal family into high positions has hobbled effectiveness as well. Command relationships are highly personal. “The Saudi command structure tends to be cautious and over-compartmented,” said Cordesman.

Additionally, much of the military’s organizational energy in recent years has been devoted to splashy weapons purchases at the expense of mundane support and maintenance issues.

“The Saudi military badly needs a new kind of leadership and one that focuses on military effectiveness and not major arms buys or force expansion,” concluded Cordesman.

Meanwhile, Saudi Arabia is becoming more populous and thus younger and poorer, in a per capita sense. The Saudi birthrate is among

the highest in the world, at an estimated 37.3 percent, and today more than 60 percent of Saudis are under 25.

Oil revenues have been falling for years, as the diversification of world production has undermined prices. The per capita income in Saudi Arabia has fallen from a peak of almost \$30,000 in the boom years to \$10,600 in 2001, according to a CIA estimate. Many educated Saudis are unemployed, yet the country still hosts some four million guest workers to fill jobs that the Saudis themselves find unpalatable.

It seems unlikely that any new spike in oil revenues will magically rescue the kingdom from what Crown Prince Abdullah has described as a coming economic crisis. Population growth plus more competition means “per capita export income from crude oil and gas will drop by another 40 to 60 percent, in real terms, by 2030,” said Cordesman.

Within the memory of many Saudis, Saudi Arabia was a largely rural and nomadic society. Today, it is rapidly urbanizing. Nearly half the nation’s population of 23 million lives in the big cities of Riyadh, Jeddah, or Dhahran.

Then there are Saudi Arabia’s

neighbors. Regime change in Iraq might remove one of the chief external threats to Saudi stability, but it might also result in an unstable, Bosnia-like nation to the north. To the east, Iran remains a problem. There have been tensions between the Wahhabi branch of Islam and Iran’s Shiites for centuries. As modern nations, Iran and Saudi Arabia have been rivals for regional supremacy. Part of the problem is that much of the population in the oil-bearing Eastern Province follows the Shiite path. Moreover, the current struggle in Iran between conservative, theocratic rulers and reformist students fills Saudi leaders with misgivings, as they see in it some echoes of their own internal situation.

“Continuing internal political turmoil forces Saudi Arabia to continue to perceive Iran as a potential threat,” wrote Cordesman.

Riyadh and Washington still have strong common interests. Saudi Arabia’s percentage share of US oil imports has fallen into single digits, but it remains one of the biggest foreign suppliers as well as a producer capable of stabilizing market swings. US action in Iraq may not be to Riyadh’s liking, but without the 5,000 US military personnel based on its soil, Saudi Arabia would be vulnerable to aggression in a highly militarized part of the world.

Both nations will simply have to face up to the awkward trade-offs they will have to make in years to come, according to Cordesman. Saudi Arabia must quash extremism while maintaining its Islamic character. The US must lower its military profile in the kingdom while maintaining a capability to project its power when needed. Both want peace between Israelis and Palestinians, but they will pursue it from different directions.

As Cordesman sums up the situation: “The entire history of Saudi-US relations illustrates the fact that common interests are never identical interests, and this seems certain to be as true in the future as in the past.” ■

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*Peter Grier, a Washington editor for the Christian Science Monitor, is a longtime defense correspondent and a contributing editor to Air Force Magazine. His most recent article, “The Iran Problem,” appeared in the December 2002 issue.*

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**Rep. Duncan Hunter, Congress' newest defense baron, talks about bombers, budgets, and the two-war force requirement.**

# The **Airpower** Advocate

By Otto Kreisher

**T**HE MAN poised to become House Armed Services Committee chairman in the new Congress will push for a major increase in defense spending, particularly for procurement, and wants to restore a "two-war" requirement, which could bring additional force structure to the services.

Rep. Duncan L. Hunter, R-Calif., also is one of Congress' strongest champions of ballistic missile defense and has waged an extended campaign to reduce the size of the Pentagon procurement bureaucracy in an effort to speed up weapons acquisition.

Although he is in his 12th term representing part of San Diego County, with its huge Navy and Marine presence and a large shipbuilder, Hunter has good "joint" credentials as an Army Vietnam veteran and a big proponent of airpower.

With regard to the latter, Hunter is an advocate of long-range airpower and may use his position as chairman to push for resuming B-2 stealth bomber production—a move the Air Force leadership opposes.

Hunter became the senior Republican on the House panel with the retirement of the former chairman, Rep. Robert L. Stump (R-Ariz.). Hunter was supported for the top post last year in a letter signed by 24 of the 31 GOP members, including the now second-ranking Republican, Rep. Curt Weldon of Pennsylvania.

Plans called for Congress to confirm his status after reconvening this month.

In a late November interview, Hunter said the nation needs to strengthen its defense capabilities because he believes "this is going to be a very dangerous era. Nine/11 dispelled all the euphoria that this was going to be a century of peace."

## **Forward to the Past?**

He also cited as "a cause for reflection by the President and the committee" the surprising declaration by North Korea that it had continued nuclear weapons development despite its agreement to stop in exchange for a package of benefits.

"That raises the prospect of two contingencies," he said, such as conflicts with Iraq and North Korea at the same time. "That revalidates the requirement that we have a two-war capability."

In fall 2001, the Pentagon's Quadrennial Defense Review adopted a new standard for sizing the armed forces. The old post-Cold War force-sizing standard envisioned being able to fight two major regional conflicts simultaneously. It has now been set aside, and the new standard calls for building a force that can defend the homeland, deter aggression forward in four critical theaters, and swiftly defeat aggressors in any two theaters at the same time, but with only one of these to feature occupation of the enemy's nation.

Hunter noted that the Army used the equivalent of eight divisions against Iraq in the 1991 Persian Gulf War and would need a similar force against North Korea. Today's Army has only 10 active divisions, he went on.

"That gives us a reason to look at force structure and not to slip the two-war standard," he said.

Defense Secretary Donald H. Rumsfeld has opposed the services' requests for military personnel increases, arguing that they could gain additional combat power by reducing support structure and shifting personnel to fighting units.

"There is validity in looking at the tooth-to-tail ratio, in getting more capability with less bureaucracy," Hunter agreed.

He noted that for years he has sponsored defense authorization amendments requiring yearly cuts of 25,000 procurement workers. Those amendments cut the workforce from "more than 300,000 professional shoppers" when he started, to less than 200,000.

"The real challenge for American security is to be able to field technology quickly," Hunter said. But the Pentagon bureaucracy "has grown so large and cumbersome, it's hard to get technology into the field."

"The real transformation in DOD will be in reforming the bureaucracy," he said.

"I think there is room to cut bureaucracy. Rumsfeld's right in that," he said.

But he pointed out the deep reductions in force structure in the 1990s, citing specifically the Air Force's cut of nearly half its fighter wings.

Now, "the optempo is so severe on our aircrews it is causing a chronic shortage of pilots and crewmen, and it's worse in maintenance personnel. Optempo affects retention," he said, using the shorthand term for operating tempo.

### Longer Legs for Airpower?

Despite his belief in the value of airpower in combat, Hunter warned that "the use of airpower is going to be affected by the threat of contamination of US troops in the theater by chemical or biological weapons."

The air bases in South Korea particularly "have to expect to be targeted by Scud-type missiles" with unconventional warheads, he said.

That, plus access denial by potential host nations, will make it diffi-

cult to maintain tactical air bases around the world, Hunter added.

"We saw that in Afghanistan, when the Air Force was struggling to get in," he said.

"That demonstrates that long-range airpower is going to become more and more critical," he continued. "It shows it was a mistake not to build more B-2s. It also was a mistake to stand down the B-1s." He was referring to the Air Force decision to retire 33 B-1B bombers to free up money to improve the 60 remaining Lancers.

Air Force officials have argued that the current bomber force is adequate because precision munitions enable one aircraft to hit multiple targets, instead of needing multiple aircraft to take out a single target.

"My argument back to them is that while they say precision munitions are the order of the day, we're low on precision munitions, based on their own stated requirements," Hunter replied.

Hunter has warned for years that all the services lack the ammunition stocks they would need to fight a major war, and he has tried to boost munitions funding in the annual defense authorizations.

More recently, he has stressed the need to build more Joint Direct Attack Munitions, the GPS satellite-guided bombs that were used extensively in Afghanistan.

"The numbers are classified, but I can tell you, we don't have enough," Hunter said.

### More Stealth, Precision

"We have learned the value of the combination of stealth and precision," he said, adding, "but the people who say stealth and precision are the keys to winning wars don't buy enough stealth and precision."

Hunter was particularly concerned about the limited fleet of B-2 bombers.

"I think we have to have more," he said. "Twenty-one is not enough."

Asked if he was advocating re-opening the B-2 line or designing a new bomber, Hunter noted the manufacturer's offer to build an improved B-2 for much less than the \$2 billion each of the existing Spirits cost, including development expenses.

"That's something that's really promising," he said.

Hunter said the Air Force's pro-

posal to develop a bomber version of the F/A-22 "has some promise," but he wanted to look at the proposed FB-22's bomb load and range capabilities.

"There is a question whether you can stretch a fighter into a bomber," he said.

Hunter was not prepared to side with the Air Force in the USAF-Pentagon debate over the total number of F/A-22s it will buy. But, he said, "I like the F-22. We need larger numbers than what Rumsfeld wants to build."

Hunter is enthusiastic about the Joint Strike Fighter, or F-35.

"I look forward to fielding it in substantial numbers," he said. "It's been unfortunate that we've been so long without stealth on the carriers."

The F-35 would be the first carrier-based aircraft with true stealth qualities that would give the Navy the ability to hit heavily defended targets on the first day of an air war.

Hunter said he has not been briefed on the details of the planned integration of Navy and Marine Corps tactical air units but indicated some reservations.

"I would be concerned about the strike capability of maritime airpower, the depth of that capability, and about the ability of Marine units to access airpower in a combat situation," he said.

"The reason the Marines have their own air is that they need to have it when they close with the enemy," added Hunter. "If the leaders of the Marine Corps are confident they will have it when they need it, that's a factor I would consider."

Although he has supported the troubled V-22, which the Marines and the Air Force want, Hunter said the tilt-rotor aircraft has "had enough problems in recent years to require a very thorough testing in a number of areas. ... It's going to have to show me and the committee" that it can operate safely and effectively.

Hunter said the Navy must increase its shipbuilding rates to prevent the fleet from shrinking far below the 300-ship level called for in the latest defense reviews. But he said he was "encouraged by a number of things being done," including the Navy's plan to build a small and fast but well-armed vessel called the Littoral Combat Ship.

He called the LCS "an opportu-

## Just "Showing Up" All the Way to the Top

A native of Riverside, Calif., Rep. Duncan L. Hunter, 54, attended college in California then enlisted in the Army in January 1969. He went through recruit training, Officer Candidate School, and parachute training at Ft. Benning, Ga.

He went to Vietnam in October 1970 as a platoon leader with the 173rd Airborne Brigade. When the 173rd was sent home in June 1971, he served with the 75th Ranger Regiment until October, when he returned to the States and was discharged.

He said of his Vietnam service, "I didn't do anything special. I just showed up."

After the Army, Hunter worked at farming and construction while he attended Western State University in San Diego, where he earned a law degree in 1976. As a lawyer, he specialized in poverty cases in a Hispanic area of San Diego until 1980, when he rode the Reagan landslide to victory over veteran Democratic Rep. Lionel Van Deerlin.

During his early years in the House, Hunter was considered aggressive and abrasive, often defying his party's leadership. He was an early supporter of Newt Gingrich's effort to drive the House Republicans to the right, was among the few elected Republicans to support Pat Buchanan's 1996 Presidential bid, and was one of seven senior GOP members who threatened to vote against the budget in 2000 to force Speaker Dennis J. Hastert to add \$4 billion for defense to the supplemental.

nity to marry ship technology with weapons technology," such as the Navy's "affordable missile" program, which is supposed to produce a precision strike missile for \$500,000, much less than the unit cost for Tomahawk cruise missiles.

The combination could "provide considerable firepower for the Navy and Marine Corps in a very affordable way," he said.

Hunter did not have a position on the Navy's dispute with Rumsfeld over the need for a radically different nuclear powered aircraft carrier, saying he was more concerned about the aircraft flying off the carriers.

"We need to have stealth on the carrier decks," Hunter said. "It's not going to do much good to have a reconfigured carrier if we fail to put stealth on it."

### The Topline Problem

Most of the disputes over what programs to fund, Hunter said, stem from "the topline problem," or the lack of money to buy what the services say they need.

"Defense spending ought to be based on what we need to defend this country, not on what's left over," he

emphasized. "For years it's been what's left over."

"The Joint Chiefs have been saying they need to spend \$100 billion a year on procurement," he added. "This year we reached \$71 billion, but [the Fiscal 2003 defense budget is] still underfunded by \$29 billion."

Total defense funding should be increased by \$50 billion above the current \$393 billion, he said.

Hunter did not blame Rumsfeld for the level of defense spending because he believed the Defense Secretary lost the fight for more funds with the White House Office of Management and Budget.

"I hope this time we really have a sit-down [discussion] with the Administration, with OMB, before they put the budget down," he said.

Hunter noted he also was "very concerned" about homeland security.

"We need to know who and what is coming into the country," he said, citing particularly the threat from the thousands of shipping containers

that come into the country every day, virtually uninspected.

Long before 9/11, port security was a major issue for Hunter. He blocked the Port of Long Beach's effort to use part of the closed Naval station as a container terminal for the China Ocean Shipping Co. He called the firm, which is owned by the Chinese Army, a "threat to national security."

He also has fought against relaxing export controls on defense related materials and computer technology, even though those restrictions hurt the aerospace and high-tech industries that are major economic factors in his state.

Because of the threat of terrorism, Hunter said security officials "need to know in real time what's in our air and water. We need to be able to detect very quickly something that's been released. That should be a priority for the President and for the committee."

Hunter has been a vocal advocate for another area of homeland security—national missile defense—since former President Ronald Reagan's ambitious Star Wars plan.

He echoed President Bush's view that there is no distinction between a national missile shield and theater defenses.

"I think the Administration finally took the right perspective," said Hunter. "It's a seamless challenge. ... We have to be able to defend against slow and fast missiles."

During the interview, Hunter said if he became chairman he would propose that the House panel establish subcommittees more like those of the Senate Armed Services Committee. He suggested subcommittees on air-land issues, on sea power, on strategic matters, on emerging threats, on military construction and readiness, and on personnel.

That structure would allow the subcommittees to follow programs from research and development through procurement, he said. And with GOP control of the Senate, similar subcommittees would make it easier to hold joint hearings.

"It deserves at least a look," he said. ■

*Otto Kreisher is a Washington, D.C.-based military affairs reporter for Copley News Service and a regular contributor to Air Force Magazine. His most recent article, "Air Wings Built for Two," appeared in the December 2002 issue.*

# Books

Compiled by Chequita Wood, Editorial Associate

**The 363rd Fighter Group in World War II: In Action Over Europe With the P-51 Mustang.** Kent D. Miller. Schiffer Publishing, Atglen, PA (610-593-1777). 192 pages. \$49.95.



**F-15 Eagle in Action: Aircraft No. 183.** Al Adcock. Squadron/Sigal Publications, Carrollton, TX (800-527-7427). 49 pages. \$9.95.



**Married to the Military: The Employment and Earnings of Military Wives Compared With Those of Civilian Wives.** James Hosek, et al. RAND, Santa Monica, CA (877-584-8642). 134 pages. \$20.00 (also available at [www.rand.org/publications](http://www.rand.org/publications)).



**The 464th Bomb Group in World War II: In Action Over the Third Reich With the B-24 Liberator.** Michael Hill and Betty Karle. Schiffer Publishing, Atglen, PA (610-593-1777). 262 pages. \$59.95.



**Flight: 100 Years of Aviation.** R.G. Grant. DK Publishing, New York (877-342-5357). 440 pages. \$50.00.



**Saddam: King of Terror.** Con Coughlin. HarperCollins Publishers, New York (212-207-7000). 350 pages. \$26.95.

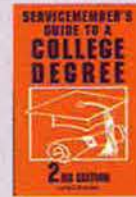
**Absorbing Air Force Fighter Pilots: Parameters, Problems, and Policy Options.** William W. Taylor, et al. RAND, Santa Monica, CA (877-584-8642). 110 pages. \$20.00 (also available at [www.rand.org/publications](http://www.rand.org/publications)).



**Forgotten Heroes of World War II: Personal Accounts of Ordinary Soldiers.** Thomas E. Simmons. Cumberland House Publishing, Nashville, TN (888-439-2665). 255 pages. \$14.95.



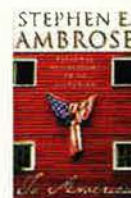
**Servicemember's Guide to a College Degree.** 2nd ed. Larry J. Anderson. Stackpole Books, Mechanicsburg, PA (800-732-3669). 231 pages. \$12.95.



**American Military Aviation: The Indispensable Arm.** Charles J. Gross. Texas A&M University Press, College Station, TX (800-826-8911). 375 pages. \$35.00.



**In War and Peace: My Life in Science and Technology.** Guy Stever. Joseph Henry Press, Washington, DC (888-624-8373). 382 pages. \$29.95.

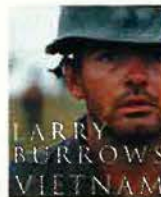


**To America: Personal Reflections of an Historian.** Stephen E. Ambrose. Simon & Schuster, New York (800-223-2348). 265 pages. \$24.00.

**Breakdown: How America's Intelligence Failures Led to September 11.** Bill Gertz. Regnery Publishing, Washington, DC (888-219-4747). 273 pages. \$27.95.



**Larry Burrows: Vietnam.** Larry Burrows. Alfred A. Knopf, New York (800-726-0600). 243 pages. \$50.00.



**To Reach the High Frontier: A History of US Launch Vehicles.** Roger D. Launius and Dennis R. Jenkins, eds. The University Press of Kentucky, Lexington, KY (800-839-6855). 519 pages. \$49.95.



**Deadly Arsenals: Tracking Weapons of Mass Destruction.** Joseph Cirincione with Jon B. Wolfsthal and Miriam Rajkumar. Brookings Institution Press, Washington, DC (800-275-1447). 465 pages. \$29.95.



**The Mammoth Book of Fighter Pilots: Eyewitness Accounts of Air Combat From the Red Baron to Today's Top Guns.** Jon E. Lewis, ed. Carroll & Graf Publishers, New York (800-788-3123). 492 pages. \$12.95.



**Reminiscence.** Alvin Randall Enlow. Turner Publishing Co., Paducah, KY (800-788-3350). 104 pages. \$21.95.

**Doctrinal bias and organizational concerns can make the Army an unhappy customer, even in the age of precision weapons.**

# The Clash About CAS

**N**OTHING has sparked friction between the Air Force and the Army like Close Air Support. In recent years, however, Close Air Support was fading as a hot-button issue. Historical trends pointed to a decline in overall requests, and recent operations featured little or no true CAS.

Then came Operation Anaconda. The two-week campaign in Afghanistan during March 2002 touched off a major Army–Air Force imbroglio over Close Air Support. This time, what made the Army mad about CAS also went to the heart of the Army’s future transformation concepts.

The new debate over CAS erupted when Anaconda’s commander, Army Maj. Gen. Franklin L. “Buster” Hagenbeck, critiqued Anaconda fire support operations in an issue of *Field Artillery*, the professional journal of the “Redlegs,” published by the Army at Ft. Sill, Okla., home of the artillery branch.

In the interview, Hagenbeck spoke mainly about his fire support experiences and requirements but leveled several charges at the Air Force specifically. These included complaints about slow delivery of precision

**By Rebecca Grant**

*At left, a USAF combat controller. At right, an F-16, one of the USAF aircraft that can perform Close Air Support. Army planners left CAS out of initial planning for Operation Anaconda.*



Staff photo by Guy Aceto





Staff photo by Guy Aceto

weapons and objections to the procedure for processing CAS requests.

In stark contrast with soldiers who took part in the battles, Hagenbeck offered only lukewarm assessments of Close Air Support. He lauded Navy and Marine pilots for flying low-level missions. He admitted there were "some close support successes." Still, the overall tone of the interview was critical of Air Force airpower.

This drew immediate reaction from the USAF Chief of Staff, Gen. John P. Jumper. "This is not the consensus of the leadership of the United States Army," he said of Hagenbeck's statements in an interview with *Inside the Pentagon*.

Private, high-level interservice meetings took up the issue. CAS for Anaconda was discussed in closed sessions during the annual Army-Air Force warfighter talks in October 2002. Hagenbeck later said his remarks were taken out of context.

On closer inspection, Hagenbeck's critique raised issues critical to future Army and Air Force operations. Army commanders will face difficult choices when they deploy lighter, more agile forces. The Army's dependence on CAS in fact may be increasing as future concepts bring about "distributed forces," with units spread across a large battlespace.

Where CAS was once a mission in decline, it may again be a key component of planning for 21st century joint warfare.

### The Decline of CAS

Until Anaconda, Close Air Support was out of the operational spotlight.

Classic Close Air Support provided additional "fires" for troops fighting to advance or struggling to defend territory. Even then, there were myths and misperceptions about how it was used and to what extent.

Historian Williamson Murray has written that Close Air Support for the German Army's advances in 1939-41 "played a relatively small role in the Luftwaffe's operations." The German Ju-87 Stuka dive-bombers often attacked fixed targets deep behind the line of advance. US Army Air Forces had the same experience. For example, the P-47s used in Europe may have performed plenty of Close Air Support, but much of the low-altitude work was actually armed



**An Army jumpmaster assists USAF SSgt. Chris DuBose, a combat controller with the 4th Air Support Operations Group, with his parachute gear. The 4th controllers help provide CAS for the Army's 173rd Airborne Brigade.**

reconnaissance. Pilots picked out targets in a designated sector and attacked at will, ripping through ammunition trains, vehicle convoys, and enemy command posts.

Statistically, CAS may have peaked in the Korean War. Even there, however, interdiction outweighed Close Air Support in the defensive operations against superior North Korean forces. Typical policy for Fifth Air Force allocated 96 CAS sorties per day or only 13 percent of its total sorties to support Eighth Army. Of the 24,000 sorties rung up by Far East Air Forces in October 1952, some 12.5 percent were dedicated to CAS, with the others going to air interdiction. In that same month, the Marines logged 3,600 support sorties, of which 36 percent was said to be CAS.

FEAF's most intense Close Air Support month was June 1953, and the count of dedicated Close Air Support sorties was still under 50 percent of the total.

Vietnam saw abundant use of CAS, both in support of offensives and as equalizers for defensive operations. Massive, around-the-clock B-52 strikes helped South Vietnamese forces hold out in the face of North Vietnam's 1972 "Easter Offensive." In the period May 11–13, 1972, Army Gen. Creighton W. Abrams Jr., senior US commander, shifted B-52 strikes around, within, and among the three major battle areas, giving each a sustained amount of air sup-

port. Abrams cautioned commanders to plan ahead for the days when they would have no B-52s.

A North Vietnamese report later testified to the effectiveness of the strikes: "The enemy mobilized a large number of B-52 strikes to viciously attack our campaign rear areas," it said. North Vietnamese forces walked away from that particular fight on May 15, 1972.

### Stretching the Definition

In Operation Desert Storm, CAS played only a minor role, accounting for just six percent of the sorties. And even at that, a very flexible definition of CAS was pressed into service. For the Marines, the term CAS was applied to all sorties within five miles of the forward edge of the battle area. That bumped up the total number of sorties.

CAS had a prominent role in only two Gulf War actions. Gunships and numerous coalition fighter and attack aircraft helped turn back Iraqi forces during the Battle of Khafji, which took place in the period Jan. 30–Feb. 1, 1991. Then, during the 100-hour ground offensive at the tail end of the war, CAS aircraft joined the fray in two major tank battles. These were clashes between the US Army VII Corps and Iraq's Tawakalna and Medina Republican Guards Divisions on Feb. 26–27, 1991.

Air interdiction operations dwarfed Close Air Support. Both CAS and air interdiction were highly fluid.

With links to Airborne Battlefield Command and Control Center aircraft, strike aircraft could be on target in as few as five minutes, wrote Lt. Col. Robert E. Duncan, USAF, in this magazine. (See "Responsive Air Support," February 1993, p. 74.)

After Desert Storm, the percentage of CAS in major air operations was close to zero. The next air campaign, Operation Deliberate Force in Bosnia in 1995, featured no true Close Air Support at all. NATO aircraft did on many occasions attack Serb military vehicles in defense of UN-designated safe areas such as the city of Gorazde, besieged in 1994, but the two-week campaign itself concentrated on fixed targets and came at a time when battle lines were static, and, of course, no American ground forces were engaged.

The pattern recurred four years later in Operation Allied Force, the NATO action in the Balkans. Kosovo Liberation Army irregulars were active in many areas and on occasion provided tips about Serb force concentrations. No NATO ground forces engaged in the 78-day campaign. NATO airmen destroyed or damaged an impressive number of Serb tanks, armored personnel carriers, artillery pieces, and military vehicles, but the sorties were not all true CAS procedures.

Anaconda, the 1,200-man operation against Taliban and al Qaeda forces in the Shah-e-Kot Valley of Afghanistan in early March 2002, brought Close Air Support for Army troops back to the forefront.

Expecting only light resistance and a large haul of prisoners, Army soldiers quickly found themselves under fire and without much organic support. One al Qaeda mortar team fired on a 10th Mountain Division unit for two days until killed in an attack by an F-16, followed by a mortar barrage.

In Anaconda, demand for CAS was high because ground forces did not bring in artillery. The plan called for using helicopters to rapidly insert soldiers, a major challenge in the rugged mountains. The terrain also made inserting artillery and counter-battery radars impossible.

### Hagenbeck's Confidence

"We didn't consider bringing in 105s [the 105 mm artillery piece] because I knew we could accom-

plish the mission without them," said Hagenbeck, who planned and led the operation. No one objected to leaving the 105s behind during mission planning, Hagenbeck added.

In his view, the question was hypothetical anyway: "I will tell you that the trade-off I would have had to make the first day would have precluded me from using 105s," he explained to *Field Artillery*. "In that terrain, my choice would have been to either airlift in soldiers with their mortars, or 105s."

It would have been a feat just to lower the huge artillery pieces into place. "To sling a 105 underneath a CH-47 and try to set it down in very rugged terrain, to include slinging in the ammo after it, would have been very difficult and dangerous," Hagenbeck said.

Instead of attempting such a risky operation, Hagenbeck chose to rely on Close Air Support. His soldiers, facing heavier-than-anticipated resistance, were without the means to return fire, aside from their mortars and small arms. Al Qaeda fighters were holed up in defensive positions from which they rained down fire on the coalition task force.

In short order, requests for Close Air Support deluged air controllers. However, Army planners had failed to coordinate CAS in advance. The CAOC learned of the pending operation only hours before its planned start. The situation was not ideal for airmen or soldiers. Instead of pre-planning hundreds of sorties in advance as was done for Desert Storm, the CAS for Anaconda at first resembled a free-for-all.

The ABCCC aircraft system was slated for retirement and was not deployed to the theater. Without ABCCC to sort through the CAS requests and prioritize the missions of strike aircraft, the job was even tougher. Officers flying in E-3 Airborne Warning and Control System aircraft and working from the Combined Air Operations Center struggled to sort out dozens of urgent requests from troops under fire.

Effective CAS was made all the more difficult by lack of time for prior planning. Hagenbeck did order an air strike about 20 minutes prior to the start of the operation, but he placed little reliance on it. His belief was that "air campaigns are most effective against fixed targets."

Moreover, Hagenbeck did not want to bomb the Shah-e-Kot caves too heavily. US Central Command planners wanted to capture al Qaeda sites and exploit them for clues to the nature of the terrorist organization and plans for upcoming attacks. That was another factor, along with the estimate of lower resistance, that argued against preparatory bombing, in Hagenbeck's view.

## 200 Coordinating Factors

Providing fire support for Anaconda was an intricate and complicated matter. More than 200 fire support coordinating measures were in place at the peak of the fighting. In addition, other government agencies wanted no-fire zones in their operating areas, Army Lt. Col. Christopher F. Bentley, Hagenbeck's deputy fire support coordinator, said in another *Field Artillery* article.

The coalition task force had 34 mortars. It positioned 26 in the firefight and left eight behind for defense of the airfields at Bagram and Kandahar.

Because the force deployed light, the "vast majority" of fire support measures was provided by air assets, noted Bentley. He observed that they were "dependent on the USAF TACP"—meaning, the Tactical Air Control Party, an Air Force member assigned to the Army unit to call in support. At the same time, according to Bentley, independent special reconnaissance and uncon-

ventional warfare teams were "all operating simultaneously and all demanding the same fire support resources."

Simply put, the request system jammed. It was forced to work 30 points of contact in the first 24 hours.

Nonetheless, CAS provided not only tangible firepower but also a kind of psychological lift.

Cpl. Landon Perry, a Canadian soldier who took part in the assault, told reporters that entry into the combat zone was "unnerving." However, he went on, "once you hit the ground and see the number of troops out there and the massive air support, your confidence builds pretty quickly, and you feel fairly secure in what you're doing."

The CENTCOM commander, Gen. Tommy R. Franks, claimed success for Anaconda and praised his soldiers for making the operation work. "You did it with violent execution," said Franks.

Hagenbeck, though, was not pleased with the Close Air Support he received from outside the Army. He praised the Army's Apache helicopter crews as "extraordinary" but gave the Air Force little more than a passing grade.

"The Air Force had to work through airspace management," Hagenbeck said. "Aircraft were stacked up to the ceiling and could only be flown in, in a few numbers." Another big complaint was that it could take "anywhere from 26 minutes to hours (on



**US soldiers watch a CH-47 drop off Canadian troops for Operation Anaconda. The mountainous terrain prevented the Army from bringing in heavy artillery, putting a heavy burden on CAS aircraft.**

US Army photo by Spc. Andrew J. Rodriguez

occasion) for the precision munitions to hit the targets.”

Rules of Engagement for Operation Enduring Freedom as a whole mandated that aircraft could strike some targets under standing ROE, while others, especially fleeting targets such as individuals driving in sport utility vehicles, had to be cleared by CENTCOM. Those rules, like other unique features of the Afghan war—such as altitude, terrain, unexpected resistance, and the desire to find out what was in the cave complexes before bombing them—accounted for many of the complications of Anaconda.

### CAS and Transformation

However, the larger question centers on the connection between the lessons of Anaconda and the role of CAS in the Army’s concept of future operations. It is in this critical area that Anaconda uncovered some disturbing assumptions that bear directly on Army transformation concepts.

Anaconda pointed out all over again that Close Air Support is highly demanding for two reasons: Time to help is limited, and each mission requires terminal control. In terminal control, a qualified liaison on the ground (or in the air) talks directly to the pilot or aircrew of a strike platform to guide weapons onto targets. The art of CAS starts with that vital chain of communication.

When CAS works, it works well, as soldier accounts from Anaconda

attested. “Air strikes and Apache helicopters destroyed most of the enemy mortars in those first two days,” Warrant Officer Scott E. Prochniak and Maj. Dennis W. Yates, both of whom were involved in the battle, wrote in *Field Artillery*.

The problem with CAS, despite the glowing gratitude of soldiers who’ve seen it work, is that both soldiers and airmen regard it as inefficient. Soldiers inevitably and understandably prefer organic fires, starting with “the smallest caliber weapon at your disposal,” said Yates. “The normal sequence goes: mortars of varying calibers, then artillery, and Apaches, and close air.”

Soldiers plan to have CAS available, but in the strictest sense, they don’t plan to use it. It’s truly an emergency measure. If someone’s called for CAS, something has already gone awry. Maybe there are more enemy forces in the area than expected, as with Anaconda. Maybe enemy troops turned up in an unexpected location, as so often occurred in Vietnam. Maybe they are putting up resistance and presenting an opportunity for decisive victory, as with the Gulf War tank brawl at the Battle of Medina Ridge. That calls for more of what the Army sees as fire support, and most soldiers would far prefer it to come from an asset under their immediate control, such as 105s. It’s been an article of faith for soldiers since World War II that heavy artillery in position is preferable to

summoning fighter aircraft. Hagenbeck called ground-based indirect fires “indispensable, absolutely indispensable” for the close fight. If for some reason, artillery is not present, CAS becomes the alternative.

Airmen see CAS as a sacred obligation. An F-15E pilot who ran out of bombs then strafed an al Qaeda position to support troops under fire proved it yet again. But CAS is not the optimum employment of airpower in support of land forces. Airpower in the close fight is devastatingly effective but not necessarily efficient. Air is at its most efficient working deeper, through armed reconnaissance or deep attack of enemy forces. The need for terminal control inevitably restricts the flow of sorties that can be safely moved into an area.

For example, in Desert Storm, the air component planned 50 sorties per hour for a battlefield more than 124 miles long. Few of the sorties were used for CAS. Most of the assigned aircraft were sent on to strike interdiction targets beyond the battle edge because the ground forces didn’t need them. When facing light resistance, a heavy Army division simply may not need much Close Air Support (providing, of course, that the joint air forces hold air superiority).

For lighter forces, it’s a whole different matter. Hagenbeck complained to *Field Artillery* that the Air Force did not have enough ground forward air controllers or Enlisted Terminal Attack Controllers “in their inventory to support every ground maneuver element” in the fight. Hagenbeck cited the example of one platoon whose ETAC was extracted after the first day. Until the controller was returned, “not even the battalion commander could call in Precision Guided Munitions.” Anaconda stalled during the first few days because of the problems created when platoons in firefights had no artillery and no means to call for air support.

### Firepower for the Objective Force

The “platoon fight led by platoon leaders,” as Hagenbeck described it, made Anaconda a preliminary test of concepts the Army holds dear in its transformation plans. While it was unintentional, Anaconda ended up staging a test of what happens to

USAF photo by TSgt. Steve Faulisi



Even some skeptical about Air Force CAS efforts had praise for AC-130 and A-10 aircraft. This A-10 is part of the 354th Expeditionary Fighter Squadron in Afghanistan.

small or lightly equipped units that are trying to hold out under attack while spread out across the battlefield.

Firepower is more important than ever in the Army's future plans. "The long-term goal of the Objective Force is to dominate, as part of a joint force, the future battlefield through integration and effective, concentrated firepower," reported the Association of the US Army in an August 2002 study.

The Army's transformation to the Objective Force will take decades. But the Army has already begun testing bridging concepts such as Stryker light armored vehicle brigades. The Stryker Brigade Combat Teams now training at Ft. Lewis, Wash., are ultimately supposed to learn to deploy within 96 hours. By the end of the decade they will take delivery of Stryker vehicles that can range 300 miles at speeds of up to 60 mph. Each Stryker Brigade Combat Team will also be an information node with its own reconnaissance and surveillance capabilities, unmanned aerial vehicles, and reachback for logistics requests, up-to-date intelligence, and long-range fires. When problems emerge for these teams, Navy and Air Force units have to bring up firepower via Close Air Support and interdiction.

This is the key issue for CAS in the future. Aside from questions about the need to deploy within 96 hours, perhaps the major operational issue for the Stryker brigades is whether they'll be able to hold out and survive if they hit unexpected enemy resistance. Distributing forces widely enables the land force to control ground fast; the theoretical drawback is that it makes pockets of soldiers vulnerable if the enemy concentrates. Leaving CAS arrangements to the last minute, as with Anaconda, or failing to work out the balance between air-delivered and organic fires could spell disaster the next time.

Sprawling future battles will only complicate matters. The operating



**AC-130 gunship crewmen of the 16th Special Operations Squadron load a 40 mm gun. Lt. Col. Christopher Bentley was critical of Air Force CAS in Anaconda but said, "Every light infantry division needs an AC-130 squadron."**

area for Anaconda was about 60 square miles, according to Franks. A land component fanned out across a wider battlespace generates a high potential demand for Close Air Support. They have to be able to hold out until Close Air Support can be directed to the right targets—and it may be more than 26 minutes.

Instead of the 1,200 US infantrymen of Anaconda, the Stryker brigade in a larger scale future conflict may deploy several thousand soldiers, potentially increasing the volume of CAS requests.

Hagenbeck and Bentley spoke most favorably about A-10s and AC-130s. However, their taste for Precision Guided Munitions was two-sided. "PGMs take too long to arm and deliver to attack small mobile targets and targets of opportunity," Bentley claimed. Hagenbeck echoed similar thoughts. Disturbingly, comments each made about the time required to coordinate an Air Tasking Order (Bentley said 36 hours) signaled that even field-grade fire support coordinators still don't understand that the CAOC keeps sorties on call for emerging targets and pop-up requests.

The major lesson the Army took away from Anaconda was that it wants more "fires"—preferably its own.

"The ground force needs a highly lethal, all-weather indirect fire capability organic to the force," said Hagenbeck. He also called for "training and certification for our observers to call in JDAMS—any precision munitions or air support—to be universal observers."

Bentley said, "Every light infantry division needs an AC-130 squadron."

The need for good fire support is beyond dispute, but blaming the Air Force for Army shortcomings is not the way to transform. The Army itself has an obligation to evaluate its plans for lighter forces and equip them to defend themselves until CAS arrives. Anaconda showed the risks of doing otherwise.

If the Army of the future is to fight successfully in a large, distributed battlespace, it must understand the basics of CAS—what it is and what it isn't. No air force in the world can guarantee the safety of an infantry unit inserted in tough terrain without proper "organic fires," as the Army would say. The lighter, faster Army forces of the future still have to be able to defend themselves for a minimum period and cope with the unexpected. CAS will remain a sacred obligation for airmen—but heavy reliance on it rarely is the preferred way to win wars. ■

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The operations tempo at the 52nd Fighter Wing in Germany picked up during the Gulf War and simply has never gone back down.

# Fighters of



# Spangdahlem

Photography by Guy Aceto, Art Director, and Paul Kennedy

**S** Spangdahlem Air Base, situated in the Eifel Mountain region of Germany, has been a pivotal military site in Europe since its dedication in 1953. The 52nd Fighter Wing has served as its host unit for more than 30 years. It began its tenure at Spangdahlem as the 52nd Tactical Fighter Wing on Dec. 31, 1971. In October 1991, it was redesignated the 52nd Fighter Wing. Air Force fighter operations at Spangdahlem are the most extensive in Germany, and perhaps the most versatile, with three fighter squadrons—the 22nd, 23rd, and 81st—and the 606th Air Control Squadron.



Photos by Paul Kennedy



At left, two F-16s from the 23rd Fighter Squadron get a final check from the ground crew before taking off on a training sortie. The 23rd completed conversion in 1995 to the latest version of the F-16CJ, becoming a dedicated defense suppression unit for US Air Forces in Europe.

Most signs at the base are in English and German. USAF employs more than 600 German nationals at Spangdahlem, and base-community relations are excellent.

Hardened aircraft shelters (seen top and right) are typical of Cold War-era NATO bases. At right, an A-10 from the 81st Fighter Squadron taxis out of its shelter in preparation for a sortie. The 81st is the only A/OA-10 squadron in USAFE. Optempo is very high at the base—the 81st provides dedicated close air support, air strike control, and combat search and rescue capability to NATO and USAFE commanders.

The squadron converted from F-4s to A-10s in 1994.







*An A-10 travels one of Spangdahlem's short taxiways in preparation for yet another mission. At right, an A-10 takes on fuel.*



*Above and right: A weapons loader checks an AGM-65 missile.*

*The A-10 Warthog can carry up to six AGM-65 Mavericks and up to four AIM-9 Sidewinders. The aircraft can, with max load, go into combat with 16,000 pounds of ordnance.*



*In September 1997, the 81st became the first USAFE squadron to participate in Operation Southern Watch, the enforcement of the no-fly zone over southern Iraq. The unit also flew more than 1,400 sorties in Operation Allied Force, the 1999 NATO action in the Balkans, and led the conflict's first two successful search and rescue missions, recovering two downed pilots.*

*From the cockpit of an F-16, one gets a panoramic view of the German countryside near Spangdahlem. Base officials work closely with local government representatives and agencies to provide effective training, despite noise and altitude restrictions.*

*Spangdahlem boasts the largest US fighter presence on the continent and has busy skies. Air traffic is somewhat alleviated by a high optempo; members of the 81st deploy frequently to other areas, including the Persian Gulf, Kosovo, Bosnia, and other European bases, and for operations in Afghanistan as part of Operation Enduring Freedom.*



*Bucolic scenes such as these are common in the area surrounding the air base. Farm lands and rolling hills dominate the landscape.*

*Spangdahlem covers more than 1,200 acres of Eifel countryside. The air base was built in the French occupation zone at the end of World War II. It was turned over to the US in 1952.*

*The 22nd Fighter Squadron came to the base in 1994 when nearby Bitburg AB, Germany, shut down. The 23rd has been at Spangdahlem since 1972.*





*The two F-16 units fly state-of-the-art aircraft and are tasked with the Suppression of Enemy Air Defenses mission. The 22nd and 23rd F-16s carry AGM-88 High-speed Anti-Radiation Missiles, GPS-guided munitions, and the HARM targeting system pod.*

*Spangdahlem crews train in F-16s carrying a mock combat load to give the aircraft a realistic feel in flight. The aircraft shown here is carrying training versions of the AIM-120 AMRAAM, AGM-88 HARM, and AIM-9 Sidewinder missiles. On the centerline hardpoint is a ALQ-131 electronic jamming pod.*



*The wing's 606th Air Control Squadron also came to Spangdahlem from Bitburg. The 606th was the first USAFE ACS tasked to support Southern Watch and has deployed to Kuwait as part of several Air Expeditionary Force rotations in support of OSW and Enduring Freedom.*

The base's "hot pit" is in a protected area right off the taxiway and is designed so that the airplanes can refuel while undergoing maintenance.



At left, pilots from the 23rd Fighter Squadron get the day's flight, aircraft, and weather information from "the board." Every fighter pilot is familiar with these information centers, which are continually updated.

Below, an A-10 from the 81st takes off in the mist. Operations are all-weather—the Eifel region averages 100 sunny days a year. Temperature and precipitation are similar to what is found in the Pacific Northwest.

Eighty-first crews recently have been flying training missions with C-130 crews from nearby Ramstein AB, Germany. The heavily armed fighters fly escort for the theater transports, as they did over Afghanistan for Enduring Freedom.

The 81st's Warthogs, with tank-killing 30 mm GAU-8/A guns, are ideal platforms for close air support.





*Above, an F-16 Fighting Falcon breaks through the clouds to land at Spangdahlem. At right, an A-10 taxis to the runway.*



*Optempo at the German bases skyrocketed during the Gulf War. It remained high through the 1990s and has escalated even further in response to European base closures and military action elsewhere.*



Photo by Paul Kennedy

*As the war on terror broadens and other conflicts erupt, it isn't likely that the men and women of USAF's 52nd Fighter Wing will be standing down any time soon. ■*

**DOD thinks it can save money and free more troops to fight by hiring private firms to provide support services.**

# SEND IN THE CONTRACTORS

By George A. Cahlink

**L**AST spring, Air Force combat engineers in the United Arab Emirates needed to speed up work on a \$25.4 million project to upgrade an air base in the Persian Gulf nation for possible future use by the United States. Some quick research found that a key piece of construction equipment, a concrete paver, could shave as much as two months off the project and would allow the 820th RED HORSE Squadron, Nellis AFB, Nev., to complete the airfield overhaul before its six-month rotation in the Gulf was up.

Maj. Patrick Morris, deputy commander for the engineering unit, called a few US vendors and found getting the equipment would cost as much as \$240,000. So, Morris did what Air Force personnel who need services and construction equipment overseas are increasingly doing. He called Readiness Management Support and told them what he needed. The Panama City, Fla., logistics company, a subsidiary of Johnson Controls, holds a wide-ranging logistics contract to provide the Air Force with equipment and services worldwide.

Using a network of local vendors in the Middle East, RMS was able to

find the paver at a fraction of the cost (\$12,000) and deliver it quickly enough for the airfield to be finished ahead of schedule.

"If using a contractor is the most efficient way to do it, then we'll do it that way," said Morris.

## **TO WAR WITH CONTRACTORS**

In January 2002, the Air Force awarded RMS a \$450 million eight-year deal, the service's largest logistics service contract yet in the growing market. Since 1997, RMS has earned more than \$200 million providing airmen and, in some cases, other federal agencies (covered under the Air Force contract) everything from power generators for overseas bases to engineers who can assist in surveying airfields on foreign soil.

More specifically, jobs covered under the wide-ranging contract, known as the Air Force Contract Augmentation Program (AFCAP), have included:

- A \$40 million order to build three large refugee camps within 45 days to support as many as 20,000 Kosovo refugees who were driven out of their homeland by Serbian forces.
- A \$20 million deal to procure and

transport 19,000 metric tons of construction timber on 39 trains from various locations in Europe to Kosovo to assist the Agency for International Development in repairing houses damaged during the Balkan war.

- Making safety upgrades to airfields in Ecuador to support Air Force counterdrug operations in Latin America.

- Providing supplies and services, such as medical equipment, clothing, and commercially available items, under a blanket purchase agreement with the Defense Supply Center in Philadelphia.

- Providing backfill forces as needed for air traffic control and air management services at Langley AFB, Va., and Holloman AFB, N.M.

- Overseeing assessment of damage from Typhoon Paka at Andersen AFB, Guam, and then assisting in the design of more robust facilities and making repairs.

- Assisting in electrical engineering design at Ali Al Saleem Air Base in Kuwait.

Dwight E. Clark, AFCAP program manager for RMS, said hiring contractors for support services allows the Air Force to quickly procure supplies and services for contingency operations where they may not be readily accessible and also saves money by allowing the service to rapidly scale back support work as soon as RMS is no longer needed. "They use us when they need us and then let us go," said Clark.

Kathleen I. Ferguson, Air Force deputy civil engineer, described AFCAP as "a force multiplier that allows us to get the right material and right equipment to the right place at the right time."

The Air Force increasingly is relying on contractors as a way to free up forces for more pressing duties. Last year, the service asked the Pentagon to increase Air Force end strength by about 7,000 troops. The other services had similar post-9/11 requests, but Defense Secretary Donald H. Rumsfeld rejected such plans. Instead, Rumsfeld told the services that they should try to find those additional service members from within their existing forces. One way, he said, is to move military personnel out of jobs that can be outsourced to contractors.

Air Force senior leaders agreed. "Just increasing end strength does not mean we're doing things smarter," said Air

Force Secretary James G. Roche. "We're just doing more of what we did. We as leaders have the responsibility to look and see [if] there are smarter ways of doing things."

The Air Force is not alone. All the military services are increasingly hiring contractors to provide support services behind the lines to stretch lim-

**ONLY THOSE  
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ited dollars and free up uniformed personnel for front-line warfighting duties. The Army has paid more than \$2.2 billion to Brown & Root Services of Houston, since troops were first sent to Bosnia in 1995, to build, operate, and maintain bases throughout the Balkans. Over the past decade, Navy spending on service contracts for bases has more than doubled—from \$728 million in 1991 to \$1.48 billion. It recently hired contractors to build prison facilities for al Qaeda detainees at Guantanamo Bay, Cuba.

Military logisticians are fond of saying contractors have been a part of war since they were hired to feed and care for the Continental Army's cavalry horses during the Revolutionary War, but there's little question that the military's use of contractors has expanded rapidly since the Berlin Wall came down.

#### **THE NUMBERS ARE GROWING**

About 5,200 contractors supported some 500,000 US troops during the Persian Gulf War. That's a ratio of one contractor for every 100 military personnel. In the Balkans, the ratio dropped, and at times, there have been more service providers on the ground

than troops. One Army contractor in Kosovo boasted that private workers were doing all jobs that did not require them to carry guns.

Indeed, a General Accounting Office report found about 10 percent of the \$13.8 billion spent on Balkan operations from 1995 through March 2000 went to contractors. "The Department of Defense has increasingly relied on contractors rather than soldiers to provide some services in the Balkans as force-level ceilings have been reduced," GAO auditors said in a 2000 report.

In preparation for war with Iraq, officials said, contractors were sure to play a role larger than in 1991. There could be one contractor for every 10 troops in the Persian Gulf, according to Peter W. Singer, a fellow at the Brookings Institution in Washington, D.C. Already, DOD employs thousands of contractors throughout the Middle East for maintaining warehouses of pre-positioned supplies and for building and supporting bases.

For example, DynCorp Technical Services, a logistics services company based in Fort Worth, Tex., has a seven-year, \$30-million-per-year contract to maintain Air Force war reserves in Oman, Qatar, and Kuwait.

USAF also used contractors in Operation Enduring Freedom in Afghanistan. RMS provided the engineers and generators in former Soviet states to power several airfields now being used by US and allied forces. Since February 2001, the Air Force has awarded RMS some 65 service jobs worth about \$90 million, mainly for tasks supporting the war on terrorism.

Pentagon leaders have made it clear they want to use industry on the battlefield whenever possible. The Quadrennial Defense Review, a planning drill conducted every four years, suggested in 2001 that contracting out battlefield services will become as common as hiring private firms to build tactical aircraft. "Only those functions that must be performed by DOD should be kept by DOD," stated the QDR. It continued: "Over the last several decades, most private sector corporations have moved aggressively away from providing most of their own services. ... Aggressively pursuing this effort to improve productivity requires a major change in the culture of the department."

The Pentagon also required a change in how the contracts are man-

aged and structured. According to retired Army Gen. William G. Tuttle Jr., a former head of Army Materiel Command, the military services used hundreds of contractors in Vietnam and the Persian Gulf under individual contracts, but they now hire a single company, like RMS, to serve as prime contractor. The prime then manages scores of subcontractors and vendors under an umbrella logistics contract like AFCAP. Having a single contractor responsible for all the work improves accountability, said Tuttle.

Each of the services has created Indefinite-Delivery/Indefinite-Quantity contracts that allow logistics work to be awarded to one prime contractor that then issues work orders to pre-approved vendors and smaller subcontractors. Those vendors and subcontractors compete to offer their goods and services at set prices on the contract.

IDIQs have come into vogue across the federal marketplace in recent years as part of acquisition reforms that allow agencies to get what they need more quickly and at lower prices. The contracts do not have a set value, but instead set a price cap for the entire contract that cannot be exceeded.

In the Defense Department, the IDIQ contracts came of age in the Balkans, when the Army, facing harsh deadlines, had to build facilities for thousands of troops. At the height of the conflict, the Army employed some 20,000 contractor personnel to build and then run bases for upward of 20,000 GIs in Bosnia and Kosovo.

### **THE AIR FORCE APPROACH**

Based on the Army's success, the Air Force, in 1997, awarded its first Air Force Contract Augmentation Program contract to RMS. It had a potential value of \$450 million over five years. During those five years, the Air Force ordered \$170 million in goods and services from AFCAP. In 2001, the Air Force held a competition for a new AFCAP deal and again awarded that work to RMS. The new RMS contract runs for eight years, but the value remains at \$450 million. (The Air Force decided not to raise the contract value above the original deal since it never came close to reaching the cap.)

Unlike the Army, the Air Force has not used AFCAP to provide thousands of support workers. Instead, the Air Force primarily has used the

contract approach to provide engineering experts, special power and construction equipment, and supplies at various sites around the world. As of October, Clark said, RMS and its subcontractors employed as many as 400 managers, engineers, and mechanics to provide and oversee AFCAP services. Only about a dozen

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## **QUESTIONS WILL REMAIN ABOUT THE LOYALTY OF CONTRACTORS IN A WAR ZONE.**

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employees administer the contract from Panama City. The bulk of RMS workers are forward deployed.

"Whenever possible, we use local labor to keep costs down," said Clark, adding that those workers are paid local wages and are always supervised by on-site managers who are US citizens. Using local workers builds support with local nations, he said.

The AFCAP contract is a performance-based pact that pays contractors extra fees for meeting or exceeding specific goals. For example, RMS can receive a bonus of six percent of the cost of the work for exceeding goals. "We get all of it or none of it," said Clark.

The Air Force Civil Engineer Support Agency manages AFCAP and relies on various sources to decide how well a contractor is performing. The primary on-site government representatives come from the Defense Contract Management Agency and the specific Air Force unit requesting AFCAP contracting support.

DCMA, which oversees 325,000 defense acquisition contracts valued at \$850 billion, provides contract officers at forward deployed locations to handle the day-in and day-out duties of contract management, such as issuing start and stop work orders, accepting and rejecting work orders, and ensuring the proper subcontractors and vendors are being used.

Every six months, the DCMA and Air Force unit quality assurance and technical representatives at the job site submit a five-page review rating the goods and services provided. (The scale is zero-100.) Generally, RMS rates above average, scoring in the 80s and 90s, Air Force officials said.

There have been no detailed independent assessments of AFCAP to date, although GAO is currently conducting a review of the logistics services contract. While such contracts save the services money, questions will always remain about the loyalty of contractors in a war zone and whether the military is liable for their safety.

Paul V. Lombardi, president and chief executive officer for DynCorp, argues that those concerns are overstated. He maintained that if military officials were really concerned about contractors deserting a war zone, DOD would not be increasingly contracting out logistics services.

More recently, the threat of terrorism has raised concerns about whether it's wise for the military to use foreign workers at overseas installations. Both Air Force managers and contractors said subcontractors, vendors, and foreign workers undergo background checks and are always accompanied by US military personnel or US citizens. In UAE, RED HORSE members kept the contractors off base altogether, hiring a local company to manufacture concrete off site and then trucking it onto base with US vehicles and personnel.

Morris said that AFCAP offers the latitude to be more creative, but procurement and security rules still are followed. ■

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*George Cahlink is a military correspondent with Government Executive Magazine in Washington, D.C. His most recent article for Air Force Magazine, "First Skirmishes in the Battle of the Bases," appeared in the December 2002 issue.*



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# From the Bicycle Shop to B-2 Bombers

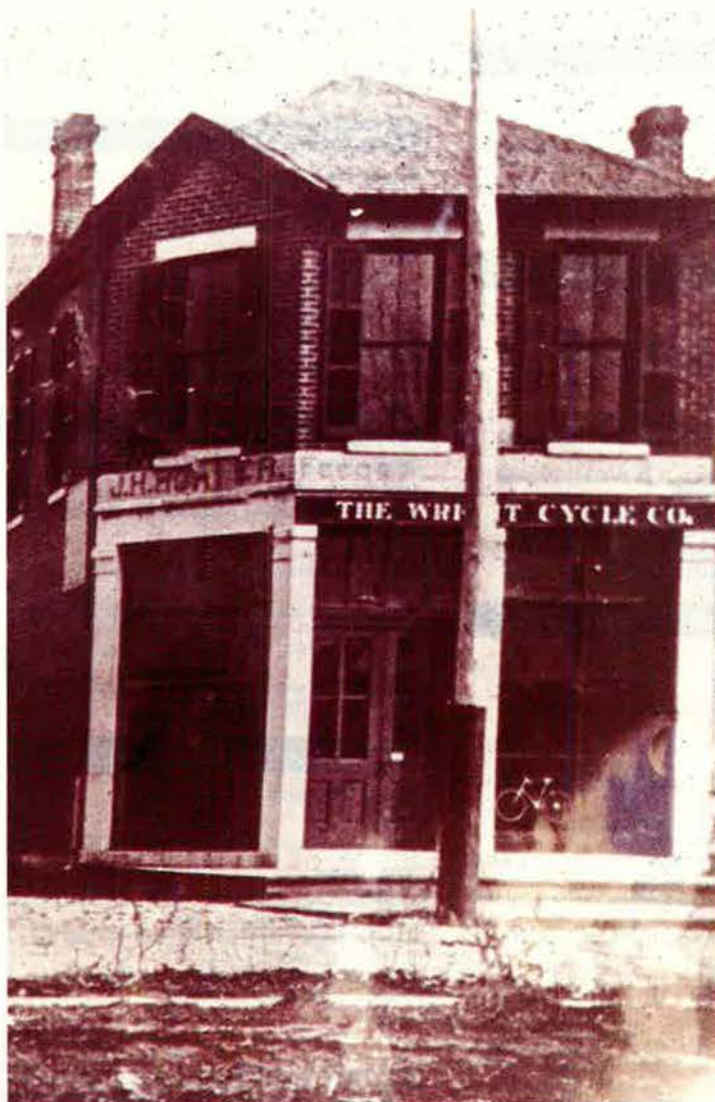
For nearly a century, Dayton, Ohio, has been a seedbed of the nation's military airpower.

By Robert E. van Patten

**D**ECEMBER 1903 was the big month for "the Bishop's Boys" who ran the Wright Bros. Cycle Co., a bicycle shop in Dayton, Ohio. Orville and Wilbur Wright gave the world the gift of powered, sustained, controlled, heavier-than-air flight. Despite their intelligence, intellectual drive, creativity, and unbreakable spirit, it is doubtful that these two young Ohio men had any conception of the kind of impact their work would have on the world at large.

Looking back on the past century, we now see that Dayton, nestled in the rolling hills of Ohio, served as a cradle of innovation which made possible the development of the art and science of flight. The drama that began with brief flights above the sands at Kitty Hawk, N.C., on Dec. 17, 1903, soon shifted to Ohio, where it has continued into its 100th year.

Financial circumstances had dictated a relocation to Dayton, where the Wrights could conduct flying



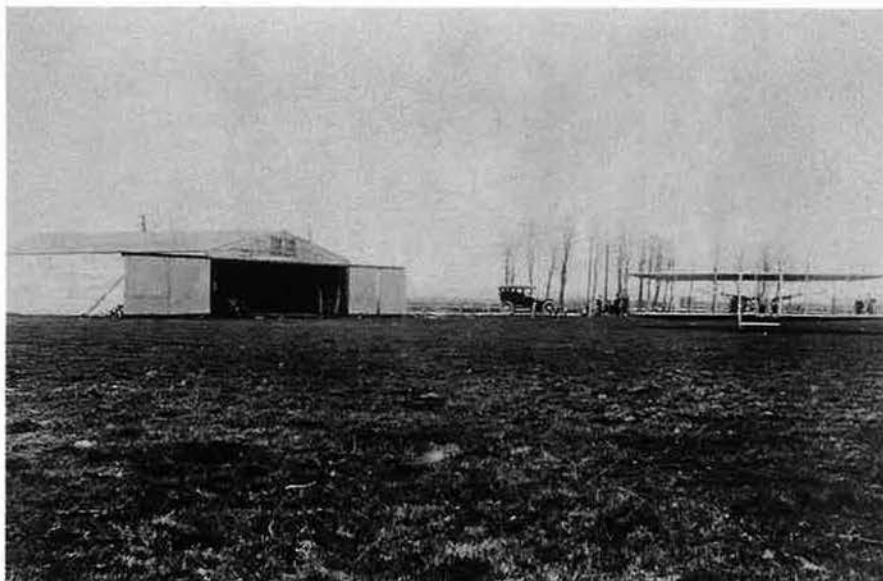
*The Wright Cycle Co., Dayton, Ohio, pictured circa 1896.*

and experimental work at less expense. Following their successful flights at Kitty Hawk, the Wrights set up shop at a flying field on Huffman Prairie, which is now within the boundaries of Wright-Patterson Air Force Base near Dayton. In May 1904, the Wrights made their first successful flights there. For nearly a decade, the brothers honed their flying skills and refined their machines, teaching fledgling aviators along the way. The on-site hangar and repair facility constituted the world's first airport.

The next decade was marred not only by the death of Wilbur Wright in 1912 (of typhoid) but also by consuming litigation with Glenn H. Curtiss over the aileron aspects of the Wright patents. Even so, Orville and, until his death, Wilbur Wright continued to make major contributions to basic technologies and techniques of flight. On Feb. 10, 1908, the Aeronautical Division of the Army's Signal Corps accepted the Wrights' bid to provide the first military flying machine. The price was \$25,000.

In late 1909, aviation formally became an industry in Dayton, with the founding of the Wright Company. Soon, the firm's manufacturing plant was turning out two airplanes a month. The Great War in Europe, which erupted in August 1914, left America untouched for years, but, in April 1917, the US was drawn into the conflict. War, as always, provided a great stimulus for technological advances. Less than a week after the United States entered the war, the Dayton-Wright Airplane Company was organized. The war also stirred a sudden awareness that US aviation capabilities—research, development, and production—had fallen far behind those found in Europe.

This realization led to the Army's establishment, later in 1917, of an Ohio military installation intended to be the Research and Development arm of the brand-new Air Service. The new facility, set in a bend of the Great Miami River near Dayton, was named McCook Field. Over the years, this seed of aeronautical science and technology was nourished by the environment of innovation and the entrepreneurial spirit of the Dayton community as well as by the courage and intelligence of the airmen who blazed the aviation trail in America.



*In 1904, the Wrights made their first successful flights at Huffman Prairie, near Dayton, Ohio. By 1909, aviation formally became an industry in Dayton with the founding of the Wright Company.*

McCook Field was the focus of Air Service flight-test activities from 1917 through most of 1927. By the late 1920s, however, it had become too small to handle the demands of military aviation, and a bigger facility, Wright Field, was built. That, however, was still well in the future.

### **The Kettering Bug**

In Ohio, the name "Wright" continued to be at the forefront of the new field of aviation.

In 1918, Orville Wright collaborated in the invention and production of what is now seen to be the world's first cruise missile—the Kettering "Bug." His partner was Charles F. Kettering, a prominent Dayton inventor and entrepreneur who invented the auto self-starter and mechanized the drive of the National Cash Register machines.

The Bug partook of Orville's "automatic pilot" concept, patented in 1913. It was a small biplane with a wingspan of about 15 feet, powered by one De Palma 40-hp four-cylinder engine. It took off from a dolly that ran on a track. Kettering went to Wright because he was dissatisfied with the complexity of his guidance system.

The Bug, after it had been airborne for a predetermined length of time (based on a count of engine revolutions), would shut down its engine and disconnect the wings. Then, the Bug would plummet to

earth. The impact would detonate its 180-pound warhead.

The Bug was successfully demonstrated, and the US bought roughly 50 of them before the armistice. The Air Service conducted some post-war tests with the air vehicle, but a lack of funding soon put an end to its development.

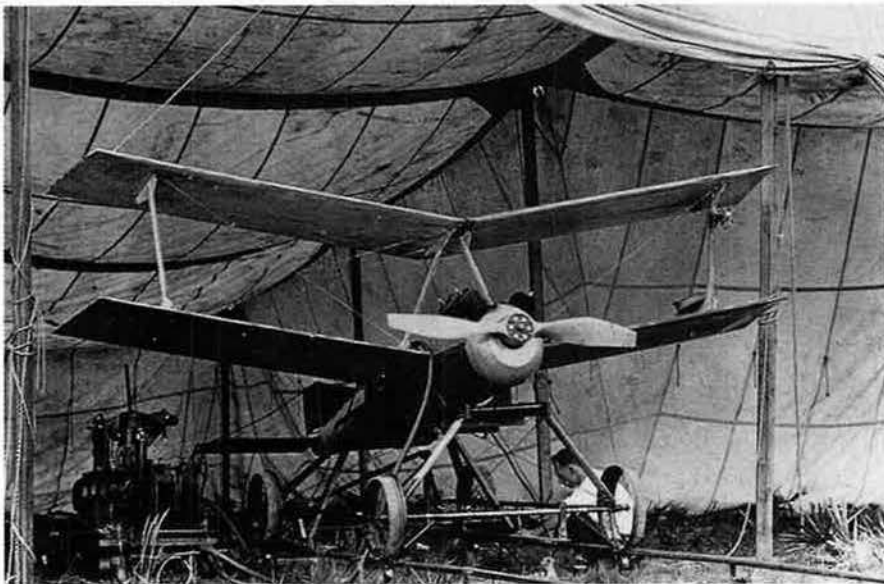
The Dayton inventor, Kettering, also had a major role in developing the use of tetraethyl lead as an additive that permits modern high-compression-ratio auto and aircraft engines.

During World War I, Kettering and his cohorts at the Dayton Engineering Laboratories Co. (now more familiar as Delco) began to experiment with chemical additives to eliminate detonation in automobile engines.

Kettering left Delco after the armistice and formed a research division for General Motors. He intensified his Edison-style research (try everything until you find something that works), which soon uncovered the fact that tetraethyl lead caused a dramatic reduction in detonation.

This opened the way to the eventual development of high-octane aviation gasoline, leading to a major jump in performance of aircraft engines. The fact that World War II Allied fighters burned 130 octane avgas and the Nazis used 87 octane was a big advantage for the Allies.

Wright's contributions continued



**Orville Wright collaborated with Charles Kettering to invent the Kettering "Bug," now recognized as the world's first cruise missile. The US bought about 50 of the aircraft before the World War I armistice.**

into the postwar period. In 1920, the Dayton-Wright organization produced an amazing racing airplane for entry into the Gordon Bennett trophy race in France. This airplane, the Dayton-Wright RB-1, incorporated a number of aviation firsts, including:

- Practical retractable landing gear.
- Monocoque fuselage with a totally enclosed cockpit.
- Wing structure with no wires or struts.
- A flight-adaptive airfoil.

The airfoil worked with the landing gear deployment system. When the wheels were down for low speed flight, both leading-edge slats and trailing-edge flaps were deployed by the airfoil. As the gear was retracted, so were the slats and flaps, an action that converted the airfoil to its high-speed configuration.

This combination of features was not duplicated in any production aircraft until the advent in 1954 of the Lockheed F-104. Such high-lift devices have contributed greatly to the performance and safety of military and civil aircraft.

### Reaching for Altitude

Of all the early achievements at McCook Field—and there were many—high-altitude flying was possibly the most important. The source of military interest in high-altitude flying was, of course, the experience of World War I. High-flying German dirigibles bombed England with

impunity, while the German Rumpler high-altitude airplanes were almost invulnerable.

The first of the high-altitude pilots at McCook Field was Capt. Rudolph W. "Shorty" Schroeder. Schroeder's work began in 1918. The Air Service had fielded a new biplane—the LePere type C-11 with a 12-cylinder Liberty engine. In Schroeder's hands, it became America's first dedicated research aircraft, the X-15 of its day.

Schroeder's early attempts set altitude marks of 24,000 and 27,000 feet. He then attempted another high-altitude mission, and new problems were identified; at 23,000 feet, Schroeder was experiencing hypoxia symptoms, which he later described as making him feel sleepy, tired, cross, and hungry. The symptoms were relieved by gulps of oxygen. As he reached 25,000 feet, Schroeder again experienced hypoxia symptoms and cranked up his oxygen supply, also noting in a log that the temperature was 50 degrees below zero Fahrenheit. At 27,000 feet, he could not see through the frost on his goggles and raised them to read the altimeter. The air was so cold that his eyes watered excessively, but he saw that he was at almost 29,000 feet.

At this point, his aircraft ran out of fuel and he began to spiral downward where, at 20,000 feet, he had mostly recovered from his symptoms. Schroeder continued his descent through clouds and snow and

finally broke out into the clear over Canton, Ohio. He had set a new world record.

### Supercharging

On Feb. 27, 1920, Schroeder set a new world record of 33,113 feet in the LePere, which had by then been equipped with a gear-driven centrifugal supercharger. It was based on a turbosupercharger designed by Sanford A. Moss and built by the General Electric Co. The flight took one hour and 47 minutes.

Schroeder's pioneering work was carried on by another of Ohio's high-altitude pioneers, 1st Lt. John A. Macready. He was the recipient of some timely engineering breakthroughs. Between 1919 and 1921, intensive work had gone on at McCook Field in the development of a new propeller for the LePere, one that would not overload the engine in "thick" air at low altitudes but permit the engine to develop full performance in "thin" air at altitudes exceeding 35,000 feet. The final design was large and two-bladed, which proved superior to earlier four-bladed designs.

On Sept. 28, 1921, Macready and the aircraft were ready. Following takeoff, Macready flew in circles over McCook Field to be within gliding range of the airstrip. Soon, he had reached a record altitude of 36,750 feet, and his circles had expanded to 70 miles in diameter.

An hour after takeoff, Macready reached an indicated altitude of a bit over 41,000 feet. Five more minutes passed, and he became convinced that the aircraft had topped out. He reduced throttle to begin a descent. He reported that the bottom seemed to drop out of the airplane, and down it went—quickly. Macready regained control at 30,000 feet and was later confirmed to have set a new official altitude record at 36,750 feet.

Later, Macready set his final record, which was logged at 38,704 feet.

These early flights of supercharged aircraft engines provided the basis for warplanes such as the B-17, B-24, B-29, P-38, and P-47.

Another early McCook Field experiment in high-altitude flight took place June 8, 1921, and it was designed to try out the concept of a pressurized cockpit. A cylindrical chamber was bolted into the open cockpit DH-9A biplane and taken up

for a test. The contraption was not much more than a tank with a viewport and some sealed connections for control cables. It was pressurized by means of a propeller-driven pump.

On the test hop, the airplane was piloted by Lt. Harold R. Harris. Soon after takeoff, Harris found to his dismay that the output of the pressurization pump was far greater than expected; the chamber exhaust valve could not cope, and the pressure in the chamber was rising alarmingly.

It finally reached a pressure altitude equivalent of about 3,000 feet below sea level and the temperature had risen to 150 degrees Fahrenheit. Harris could not get the chamber to open and did not have a hammer to smash a hole in the port. Fortunately he was able to get the airplane down quickly enough. The contraption was never tested again, but it had proved a principle.

### High G Combat Maneuvers

Dayton technicians were deeply involved in the 1922 Pulitzer race that identified a menace that is still killing pilots today.

The problem was G-induced Loss Of Consciousness, better known as G-LOC. G-LOC was correctly perceived as a major barrier to the development of fighter aircraft. Jimmy Doolittle, while stationed at McCook Field, developed an interest in the subject. He knew that, since 1914,

fighter pilots were subject to what was usually called "fainting in the air."

Doolittle's MIT master's degree thesis included work on blackout and G-LOC in high G combat maneuvers and was done in March of 1924. Tests were flown in a Fokker D.XI (PW-7), an experimental Dutch fighter. The airplane was instrumented with recording accelerometers that indicated that his maneuvers reached +7.8Gs.

Doolittle identified man's average, unprotected tolerance for limited time at about +4.5Gs and stated that blackout and G-LOC were results of a loss of cerebral circulation. The idea was ridiculed by aeronautical experts of the day, their view being that the problem was neurological. Doolittle's work held up and was affirmed eight years later in other experiments.

For the Pulitzer race, the Wright organization of Dayton collaborated with the Navy on the design of a sesquiplane racer known as the NW-1. This aircraft spawned a generation of Navy fighters—the Wright Apache line—in both landplane and seaplane configurations.

In 1928, Navy Lt. Carleton C. Champion flew the Wright Apache seaplane to a new world altitude record of 38,455 feet. In 1929, Navy Lt. Apollo Soucek flew the landplane version to a new world altitude record of 39,140 feet. In 1930, Soucek once again set a world alti-

tude record in an Apache. This one, equipped with a Pratt & Whitney 450-hp engine, soared to a height of 43,166 feet.

It was at McCook Field that aeronautical visionaries laid the foundation for instrument flight. On March 7, 1924, Lts. Eugene H. Barksdale and B.Q. Jones flew a Liberty powered DH-4B aircraft on instruments from McCook to Mitchell Field, N.Y. In 1927, Wright Field superseded McCook as the showcase of the nation's military aviation research, and it was the scene of the world's first solo blind flight (without safety pilot). This instrument-only flight was carried out by Capt. Albert F. Hegenberger in May 1932.

Wright Field was also the site of the first successful demonstration of an automated landing system, which would prove to be vital to the future of both military and civil aviation. It was on Aug. 23, 1937, that Capt. George V. Holloman, flying a Fokker C-14B transport, took off from Wright Field and activated the system. The airplane then turned toward nearby Patterson Field and made a hands-off descent and landing, using a system of five radio beacons, without any intervention by the pilot.

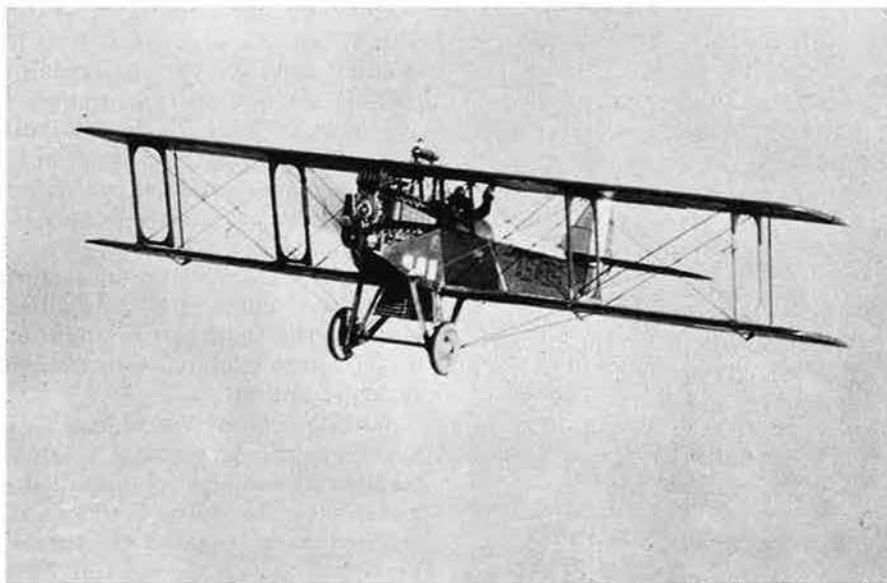
For this accomplishment, Holloman and the system's inventor, Capt. Carl J. Crane, were awarded the Mackay Trophy.

### Full Pressure Suits

The Aeromedical Laboratory, established at McCook, moved over to Wright Field after it opened. The lab came of age under the leadership of Capt. Harry G. Armstrong, a physician of energy and vision who spearheaded development of aviation medicine, personal equipment for the flight environment, and aircrew life support research.

The laboratory had a couple of altitude chambers large enough to permit human studies and capable of simulating very high-altitude environments without the cost and danger of conducting physiological studies in flight. An important early piece of work done was not connected with military flight at all. It started with Wiley Post, a former oilfield roughneck who became a record-setting aviator.

Post was not interested in the simple up-and-down sorties used in



On Sept. 28, 1921, 1st Lt. John Macready set a world altitude record of 36,750 feet in this supercharged LePere aircraft, with a propeller designed for both "thick" and "thin" air.

the contemporary altitude record flights. His interest was setting speed and distance records at altitudes where he knew he could pick up 125 mph—plus tailwinds in what we now call the jet stream. In his compound supercharged Lockheed Vega monoplane, *Winnie Mae*, he needed physiological protection from the effects of exposure for long periods to the rarefied pressures at those altitudes. He wanted “a rubber suit” that could sustain him with an atmosphere of about five pounds per square inch (a pressure altitude of about 25,000 feet).

With backing from Phillips Petroleum, Post convinced B.F. Goodrich Corp. of Ohio that the suit was necessary. Goodrich assigned engineer Russell Colley to help Post. Post also gained permission to conduct developmental tests in the chambers at Wright Field.

After testing three pressure suit designs, Post and Colley had one that worked. It was not the first such suit, but it was the first one that was practical for prolonged flight. (Decades later, Cowley received a belated NASA decoration as “The Father of the American Spacesuit.”)

In December 1934, Post made a record attempt in *Winnie Mae*. Those associated with the test flight were convinced he had set a new record of 50,000 feet. However two recording barographs required by the certifying FIA did not agree within the permitted tolerance, so this accom-

plishment was not certified as a record.

In 1935, Armstrong published a new Air Corps Technical Report on the physiological requirements of sealed high-altitude aircraft compartments. This formed the basis of pressurization specifications for the Lockheed XC-35.

In the XC-35, pressurization consisted mainly of reducing all the windows to slits and covering everything else with sticky rubber tape. Cabin pressure was provided by a turbosupercharger. Control was all manual, handled by Pvt. Raymond U. Whitney, who still lives in Fairborn, Ohio. This approach was good enough to maintain a cabin pressure altitude of 12,000 feet when the airplane was flown at 30,000 feet.

Aeromedical Laboratory conducted exhaustive research on explosive decompression and established human limits for gas expansion. This work was crucial to pressurized flight and led to the first mass-produced pressurized aircraft: the Boeing B-29.

### Breaching the Sonic Wall

Much has been written about the Bell X-1 and how Chuck Yeager flew it to become the first man to breach the sonic wall and enter the realm of supersonic flight. Very little has been written about the man who made that flight possible.

Ezra Kotcher truly deserves the accolade of Father of the X-1. One

of the most brilliant and visionary engineers ever, Kotcher worked as a civilian at Wright Field. With the outbreak of World War II, Kotcher entered military service and continued to advocate rocket-propelled supersonic research aircraft. By 1943, US officials had heard reports of German gas turbine and rocket systems, and were primed to listen to Kotcher.

During 1944, Army Air Forces and National Advisory Committee for Aeronautics engineers worked to outline a joint research airplane program. Kotcher’s view that the aircraft should be rocket-powered rather than a turbojet prevailed. However, the NACA group provided critical technical data leading to the recommendation that the horizontal stabilizer of the XS-1 should incorporate not only movable elevators but also the capability to move the entire stabilizer as a unit. This resulted in the distinctive high T-tail empennage found on the X-1 and many other supersonic aircraft.

In November 1944, Kotcher met with Bell Aircraft Corp. Bell reached the same conclusions as Kotcher. The final decision to go with an air-launched vehicle dropped at high altitude by a B-29 was driven by weight and space requirements. The final design and its fuselage profile was chosen for its similarity to a .50-cal. machine-gun bullet; it was known to be stable at supersonic speed. The rest, as they say, is history.

For Ohio, the coming of World War II brought a quantum leap in aviation activity. Various types of military test aircraft filled the skies over Wright Field. Wright Field test pilots and engineers were kept busy trying out and verifying the latest and best ideas of aeronautical engineers.

Wright Field became the testing ground for scores of US and allied aircraft. The same sort of attention was given to captured German and Japanese aircraft.

With the end of World War II, a major change occurred. The flight testing of most new jet aircraft began to move to Muroc Field, Calif. Meanwhile, in January 1950, the Air Force pulled its R&D function from Air Materiel Command and established a separate Air Research and Development Command. About a



*This circa late 1940s view of Wright Field shows some of the aircraft that frequented the field as a primary testing ground for aeronautical ideas. Visible here are B-17, B-29, B-46, and C-97 aircraft.*

year later, ARDC established at Wright Field what eventually became known as the Wright Air Development Center, later to become known as Aeronautical Systems Division and then Aeronautical Systems Center.

### On to Space

In 1954, the Air Force, Navy, and NACA launched the X-15 effort, a program to investigate hypersonic and extreme high-altitude flight. The Air Force managed the vehicle and the engine programs. On Nov. 19, 1961, the X-15 flew at an astounding 4,093 miles per hour. On Aug. 22, 1963, it reached an altitude of 354,200 feet. By the 1950s, it was obvious that manned spaceflight was the new frontier. To obtain information on cosmic radiation, astronaut selection and training, physiological monitoring, high-altitude bailout, and high-altitude hardware, the Air Force started two military programs. These were Project Man High and Project Excelsior. The Aerospace Medical Research Laboratory at Wright-Patterson Air Force Base contributed to both. (The Air Force merged Wright Field and Patterson Field in 1948.)

In 1957, Capt. Joseph W. Kittinger Jr., stationed at Holloman AFB, N.M., piloted Man High One—a gondola and balloon—to 96,000 feet, providing data critical to NASA's Project Mercury. In 1958, Kittinger moved to AMRL at Wright-Patterson, where he was test director for Project Excelsior. The Excelsior goal was to put man into near space via a balloon-supported gondola to test human tolerance to bailouts at extreme altitudes. Kittinger's jump from Excelsior I nearly cost him his life when his drogue chute tangled, throwing him into a flat spin that caused him to go unconscious. Fortunately his chute opened automatically at 14,000 feet.

Undaunted, Kittinger stayed with the project, and on the Excelsior III flight achieved a new altitude record by reaching 102,800 feet. He "stepped out" at that altitude and dropped in



**Capt. Joseph Kittinger Jr., right, jumped from this open air gondola attached to a balloon to try man's tolerance for bailouts at extreme heights. The jump from about 100,000 feet nearly cost him his life, but he stayed with the project.**

free fall for four minutes and 36 seconds, reaching supersonic speed and enduring temperatures of more than 100 degrees below zero during his descent.

The information and experience gathered during these projects proved that pilots and astronauts could escape from aircraft and space vehicles at extreme altitudes and made it possible to equip the Gemini capsule with ejection seats. In December 1957, Wright Field engineers began work on the X-20 Dyna-Soar, an orbital vehicle capable of maneuverable re-entry and conventional landing. ASD's work on the X-20 aided in the development of the space shuttle.

The intensification of the Cold War brought about major changes in the way the Air Force conducted R&D. The emphasis shifted from the purely military laboratories at Wright-Patterson to consortia merging military labs, industry, and academia.

Explosive growth in the aerospace profession brought a boom in innovation and experimentation. These included G-protection equipment and techniques, aircraft noise and sonic boom studies, bioacoustics research,

biodynamic modeling of the human body for crash, and ejection seat design research.

The 1970s saw development of technologies for the F-16 fighter and the B-1 supersonic bomber. In the 1970s and 1980s, Dayton scientists, engineers, and technologists were deeply involved in the study and development of low observables—stealth—undergirding such aircraft as the F-117A stealth fighter, the B-2 stealth bomber, various cruise missiles, and now the F/A-22 Raptor. There are, of course, other important contributions that remain highly classified.

In recognition of its storied aeronautical past, the Dayton community will hold numerous celebrations marking the Centennial of Flight this year. Among the largest will be the Air Power 2003 Open House in May at Wright-Patterson. Plans call for a display of all aircraft currently in the Air Force inventory. They will be parked on the ramp adjacent to Huffman Prairie, the same spot where the Wrights built, developed, and tested their aircraft. The Air Force Association's Wright Memorial Chapter plans to support these efforts.

The development of modern aviation required a unique convergence of scientific talent and inventiveness with a base of knowledgeable and entrepreneurial businessmen. That this incredible combination emerged in a single place—Dayton, Ohio—stands as one of history's more remarkable occurrences. ■

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The daytime vs. nighttime bombing debate carried the highest stakes—the outcome of the war against Germany.

# Decision at Casablanca

**S**IXTY years ago, in January 1943, the US Army Air Forces leadership squared off against Britain's air ministry and Prime Minister Winston Churchill on the key issue of strategic bombing. The decision that was reached at a 10-day conference in Casablanca, French Morocco, marked a critical turning point in World War II.

Allied heads of state and the Combined Chiefs of Staff at the Casablanca Conference, the second of the Anglo-American wartime meetings, faced this question: Should the AAF continue its daylight strategic bombing campaign or join the Royal Air Force in night bombing operations against Nazi Germany?

The Allies had to decide where to attack after completing the North African campaign. By late 1942, there already were signs that the Allies were beginning to take the offensive against the Axis powers.

In the Southwest Pacific, Maj. Gen. George C. Kenney's Fifth Air Force had gained air superiority over Japan, and by 1943, Buna, Papua (a critical point in the battle for New Guinea), fell to the Allies. Previously, in May and June 1942, Japan had suffered heavy losses in the battle of the Coral Sea and Midway island. On Guadalcanal, the tide had turned in favor of the US Marines.

On the other Axis front, the Allies had invaded North Africa in early

*Despite damage, a B-17 stays in formation and drops its bombs. British leaders were skeptical of AAF plans to conduct daytime strategic bombing of Germany.*

November 1942 under the code name Operation Torch and soon showed good progress. In late November, after the Allies defeated the Nazis in Tunisia, President Franklin D. Roosevelt recommended to Churchill that Britain, Russia, and the US convene a military conference.

Roosevelt seemed certain that Soviet Premier Joseph Stalin would want to attend. Churchill willingly accepted since, as he said, "At present we have no plan for 1943 which is on the scale or up to the level of events."

As it turned out, Stalin declined the invitation, saying he was too busy repelling the Germans at Stalingrad. However, the meeting stood, because

By Herman S. Wolk





Churchill wanted to gain American approval for a Mediterranean strategy that called for an attack on Italy in 1943. Churchill believed that hitting the underbelly of Hitler's Fortress Europa would force Germany to scatter its forces, making a final Allied blow against the European continent less costly.

Churchill also believed that Roosevelt, having been "in for a penny" with Operation Torch, would send US forces "in for a pound" to continue operations in the Mediterranean.

Roosevelt, in fact, was inclined to accept the Mediterranean strategy, but US military leaders were not. They had been opposed to the North African thrust, considering it more a political move than a sound military step. Instead of pushing on into Italy, said Gen. George C. Marshall, US Army Chief of Staff, the Allies should invade across the English Channel as soon as possible.

"The Mediterranean is a blind alley to which American forces had only been committed because of the President's insistence that they should fight the Germans somewhere," Marshall argued.

### Day vs. Night Bombing

Meanwhile another Allied argument intensified in the run-up to the Casablanca Conference. RAF Air Chief Marshal Charles A. "Peter" Portal wanted the AAF to join the RAF in night bombing, since during

daytime, the B-17 bomber would be vulnerable to Luftwaffe fighters.

Because the RAF's Bomber Command had suffered heavy losses during daylight raids, Portal thought nighttime bombing was the right approach. Air Chief Marshal Arthur T. "Bomber" Harris, commander of RAF Bomber Command, concurred and said that area bombing or city-busting could wreck the German economy and war machine, making an Allied invasion unnecessary.

However, one RAF official who had met with AAF leaders during 1941 discussions in Washington, D.C., knew they wanted to conduct daytime bombing over Germany. Air Vice Marshal John C. Slessor, assistant chief, Air Staff (Plans), sent a note to the British secretary of state for air, Archibald S.M. Sinclair, explaining that the US was deeply committed to daylight precision bombing.

Slessor pointed out that Lt. Gen. Henry H. "Hap" Arnold, AAF Commanding General, Maj. Gen. Carl A. "Tooeey" Spaatz, Twelfth Air Force commander, and Maj. Gen. Ira C. Eaker, Eighth Air Force commander, were convinced that, once they had bombers in sufficient numbers, they could do the job in the daytime. He wrote: "Americans are much like other people—they prefer to learn from their own experience. If their policy of day bombing proves to their own satisfaction to be unsuccessful or prohibitively

expensive, they will abandon it and turn to night action. ... But they will not do this until they are convinced of the necessity. And they will only learn from their own experience. In spite of some admitted defects—including lack of experience—their leadership is of a high order, and the quality of their aircrew personnel is magnificent. If, in the event, they have to abandon day bombing policy, that will prove that it is indeed impossible. I do not believe it will prove to be so."

Churchill was not convinced. The Americans, he stated, would suffer heavy losses during the day, and it was necessary to convince them to join the RAF force at night. Sinclair, however, warned Churchill that the Americans were committed to daylight bombing. Should the British continue to question this campaign, it would jeopardize the entire bombing offensive against Germany and potentially encourage an American swing to the Pacific.

### The Eaker Ploy

The debate continued into late December 1942, when Portal finally joined Sinclair and Slessor in the view that pushing the AAF on this issue could cause deep resentment and have a lasting negative effect on the air war. However, Arnold wanted to take no chances with the fundamental concept of US strategic airpower. He asked Lt. Gen. Dwight D. Eisenhower, commander in chief, Allied Air Forces North Africa, to send Eaker to Casablanca for fear that Churchill still might convince Roosevelt to shift Eighth Air Force to nighttime bombing.

On Jan. 15, 1943, Eaker arrived in Casablanca. The British had come to the conference armed with position papers and a comprehensive agenda. Churchill brought his top military leaders—Field Marshal Alan F. Brooke, Portal, Maj. Gen. Hastings Ismay, Admiral of the Fleet Dudley Pound, Admiral Louis Mountbatten, and Slessor—backed by a large staff.

"We Americans were unprepared," recalled Col. Jacob E. Smart, who accompanied Arnold. "The President had failed to inform the Chiefs of the armed services of the nature of the meetings. The Chiefs came without agreed position papers. The unprepared Americans could only react to well-prepared positions—all pre-



Maj. Gen. Carl "Tooeey" Spaatz (left), Twelfth Air Force commander, confers with Air Chief Marshal Arthur Tedder. Spaatz, like Arnold, Andrews, and Eaker, met with Churchill privately, pressing the case for daytime bombing.

pared from the British point of view. We felt that we had been duped.”

Arnold had prepped Eaker. “The President is under pressure from the Prime Minister to abandon day bombing and put all our bomber force in England into night operations along with—and preferably under the control of—the RAF,” Arnold told Eaker.

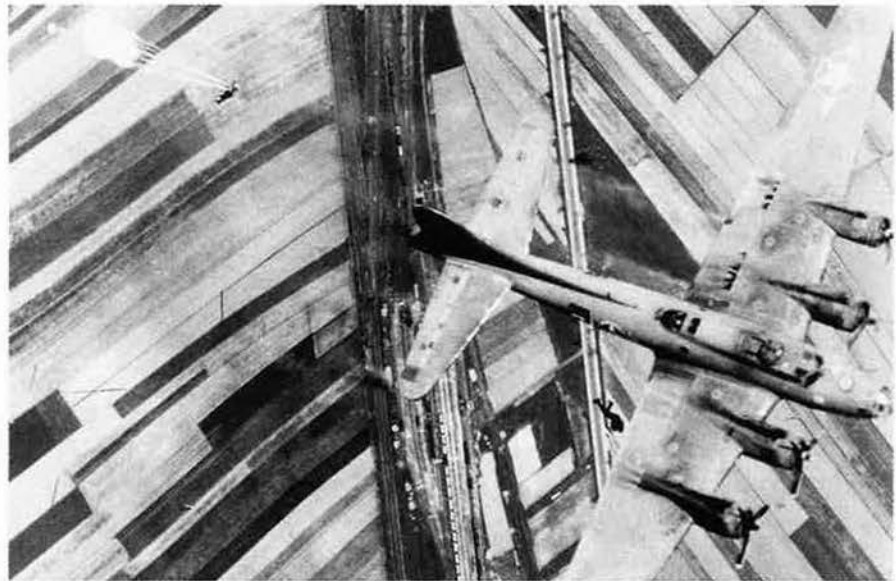
Eaker was furious. “That is absurd,” he replied to Arnold. “It represents complete disaster. It will permit the Luftwaffe to escape. The cross-channel operation will then fail. Our planes are not equipped for night bombing; our crews are not trained for it. ... If our leaders are that stupid, count me out. I don’t want any part of such nonsense.”

Arnold emphasized that Churchill needed to be persuaded and said he would arrange for Eaker to meet with the Prime Minister, who in fact thought highly of the Eighth Air Force commander.

Arnold had also made other plans. He arranged for Spaatz and Lt. Gen. Frank M. Andrews, commander, US Forces in the Middle East (who had flown in from Cairo, Egypt), to talk with the Prime Minister prior to the Churchill–Eaker meeting. Arnold, himself, already had pressed the case for continued daylight bombing with Churchill.

On Jan. 18, for 30 minutes, Eaker met with Churchill—dressed in his air commodore’s uniform—at the Prime Minister’s villa. Churchill stressed that, despite months of building up, the Americans had yet to drop a single bomb on Germany. He was skeptical of the daylight bombing concept. “I had regretted,” he wrote in his memoirs, “that so much effort had been put into the daylight bombing and still thought that a concentration upon night bombing by the Americans would have resulted in far larger delivery of bombs on Germany.”

Eaker predicted that by the end of January his bombers would be hitting targets in the Third Reich. The Eighth Air Force commander then proceeded to make the case for day bombing and gave the Prime Minister a one-page exposition of his rationale. Eaker emphasized that the Eighth had been held back by lack of long-range fighter escort, the commitment to Operation Torch, and by poor weather. He also pointed out that the Eighth’s loss rate in daytime



**A B-17 crew is forced to bail out over enemy territory. Fortress crews trained for daylight bombing of Germany, but such missions made them more vulnerable to attack by enemy fighters.**

was lower than the RAF’s at night.

Day bombing, Eaker noted, would complement the night effort. The RAF, flying at night, would be guided by fires set by day—an around-the-clock offensive. “The devils will get no rest,” he said. Since AAF crews had been trained to bomb in daytime, Eaker explained, if they operated at night, their losses would increase. It would take months for the AAF to prepare for effective night operations.

Eaker wrote in the position paper: “We have built up slowly and painfully and learned our job in a new theater against a tough enemy. Then we were torn down and shipped away to Africa. Now we have just built back up again. Be patient, give us our chance, and your reward will be ample—a successful day bombing offensive to combine and conspire with the admirable night bombing of the RAF to wreck German industry, transportation, and morale—soften the Hun for land invasion and the kill.”

### **Skill and Tenacity Win**

According to Churchill, Eaker pleaded his case “with skill and tenacity.” If not sold by it, Churchill was certainly impressed. “Young man,” he said, “you have not convinced me you are right, but you have persuaded me that you should have further opportunity to prove your contention. How fortuitous it would be if we could, as you say,

‘bomb the devils around the clock.’ When I see your President at lunch today, I shall tell him that I withdraw my suggestion that US bombers join the RAF in night bombing and that I now recommend that our joint effort, day and night bombing, be continued for a time.”

The Eaker–Churchill meeting proved to be one of the critical turning points of the war in Europe. Arnold recalled, “We had won a major victory, for we would bomb in accordance with American principles, using methods for which our planes were designed.”

Churchill said, later, “I decided to back Eaker and his theme, and I turned round completely and withdrew all my opposition to the daylight bombing by the Fortresses.”

The Prime Minister seemed willing to let the matter drop, said Arnold. “It was quite evident to me he had been harassed by some of his own people about our daylight bombing program and had to put up a fight on the subject,” he added. “Whether they were fearful we would use our airplanes ineffectively in the daylight missions; whether they were afraid we would waste airplanes; or whether they feared we would do something they could not and had not been able to do, I do not know.”

By the day of the Eaker–Churchill meeting, the Combined Chiefs of Staff still had failed to agree on an overall strategic concept for pressing the war. This failure to set pri-



**Eighth Air Force commander Ira Eaker (here as lieutenant general) was key to overcoming British opposition to the AAF strategic air campaign. Churchill said Eaker convinced him "with skill and tenacity."**

orities for 1943 threatened to scuttle the conference. As Slessor recalled, "Temperatures were getting a little frayed." At this critical point, Slessor presented a compromise policy to Portal that amounted to a breakthrough.

Actually, the Combined Chiefs were not that far apart, but Slessor got to the heart of the problem. "The real trouble was that Americans obviously felt that we were concentrating all our interest and attention on defeating Germany and didn't care a damn about Japan, while our Chiefs of Staff suspected that the Americans intended to build up a tremendous campaign in the Pacific to the serious prejudice of our ability to defeat Germany," he said.

Slessor based his compromise proposal on Eaker's concept of an intensive strategic bombing campaign. The RAF would bomb at night, and the AAF would pound away during the day. He also suggested postponing a decision on the invasion of Europe.

With few alterations, the CCOS accepted this proposal.

On Jan. 21, 1943, the Combined Chiefs formally promulgated the Casablanca Directive, setting out a combined bomber offensive. Addressed to Eighth Air Force and RAF Bomber Command, the directive outlined the major objective of the bomber offensive as "the progressive destruction of the German military industrial and economic system, and the undermining of the morale of the German people to a

point where their armed resistance is fatally weakened."

#### **Eighth's Orders**

Of seven points the Combined Chiefs emphasized in the directive, they aimed one specifically at Eaker's Eighth Air Force: "You should take every opportunity to attack Germany by day, to destroy objectives that are unsuitable for night attack, to sustain continuous pressure on German morale, to impose heavy losses on the German fighter force, and to contain German fighter strength away from the Russian and Mediterranean theaters of war." The Chiefs also directed the Eighth to provide the Allied armies, when they re-entered the continent, "all possible support in the manner most effective."

The Casablanca Directive described primary targets as submarine construction yards and bases, the aircraft industry, transportation, oil, and other industries. The immediate top priority was the Nazi submarine fleet, which was taking an enormous toll on Allied shipping and imperiled the entire Allied offensive in the west.

Subsequently, in June 1943, the Combined Chiefs approved the so-called "Point-blank Directive." That directive pinpointed fighter aircraft

production as a major target and designated a complex that, if badly damaged, would help make the planned Allied invasion a success.

The Combined Chiefs deliberately had crafted the Casablanca Directive to allow both the AAF and RAF sufficient flexibility to pursue their own bombing doctrines and, at the same time, set the stage for a cross-channel strike.

However, the final overall 1943 strategy amounted to a victory for the British Mediterranean strategy. The Allies would invade Sicily next, followed by the effort to knock Italy out of the war. Preparations in England would continue for the cross-channel strike, but the invasion was on hold—a blow to the American strategy championed by Marshall.

Although the conference "was more or less a rat race, out of it I think there is a definite understanding between the British and ourselves as to the conduct of the war in future," said Arnold. For starters, Arnold emphasized to Eaker the absolute importance of starting to attack targets in Germany. By the end of January, Eaker had sent the first Eighth Air Force bombing mission over Germany.

After Casablanca, Arnold wrote to Spaatz: "You and Ira were both a great help to me at Casablanca. I don't know what I would have done without you."

The question of whether the Army Air Forces would continue daylight bombing was settled, allowing the strategic air campaign to go ahead and intensify.

The Casablanca Directive was "one of the finest air documents of the entire war," emphasized Maj. Gen. Haywood S. Hansell Jr., one of the AAF's outstanding war planners. In retrospect, Hansell concluded, if the AAF been forced into night bombing, the entire course of the war might have been different. It would certainly have been almost impossible to defeat the Luftwaffe, and the success of the Normandy invasion would have been jeopardized.

The decision at Casablanca marked the beginning of the end for Nazi Germany. ■

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*Herman S. Wolk is senior historian in the Air Force History Support Office. He is the author of the Struggle for Air Force Independence, 1943-1947 (1997), and a coauthor of Winged Shield, Winged Sword: A History of the United States Air Force (1997). His most recent article for Air Force Magazine, "American Chieftains," appeared in the September 2002 issue.*

By Frances McKenney, Assistant Managing Editor

## AFA Calls for "One on One"

In December, Air Force Association Chairman of the Board John J. Politi and National President Stephen P. "Pat" Condon challenged each AFA member to recruit at least one new member this year.

"Your association wants and needs your help to ensure a strong Air Force and an adequate national defense," Politi and Condon said in a memo to national and field leaders. They asked that this message be distributed to chapters, to reach all AFA members.

They said the association's leaflets called "What's In It for Me?"—available on the AFA Web site under Field Resources—is an excellent aid in recruiting newcomers.

They also mentioned a challenge from Jack H. Steed and the Membership Committee for AFA's national and field leaders to recruit five new members each.

"The stronger our membership," Politi and Condon concluded, "the greater are our chances for success in accomplishing our mission."

## Cheering for the Falcons

When Air Force beat Army, 49–30, AFA Chairman of the Board Politi was in the stadium at West Point, cheering with football fans from AFA chapters from three states.

The Air Force Academy's Falcons scored on nine of their 10 possessions during this service academy game against the Black Knights of the Hudson. The Falcons earned their 16th Commander in Chief Trophy and their 13th win against the US Military Academy.

Politi sat with about 30 association members and guests, including Richard H. Waring from the **L.D. Bell-Niagara Frontier (N.Y.) Chapter**; Michael J. Ferraro from the **Hangar One (N.J.) Chapter**; and Robert T. O'Brien from the **Liberty Bell (Pa.) Chapter**.

The AFA gridiron fans sat together in a block of seats that had been reserved by the **Gen. Carl A. "Tooney" Spaatz (N.Y.) Chapter**. O'Brien reported that other VIPs in the Air Force section were former New York Governor George Pataki and US Attor-



*AFA's Academic Achievement Award, presented at each SNCOA graduation, was rededicated in November as the Air Force Senior NCO Academy CMSAF James M. McCoy Academic Achievement Award. AFA Board Chairman John Politi (right) and McCoy (left) stand before a new display at Gunter Annex, Maxwell AFB, Ala., that explains the award and McCoy's achievements.*

ney General John Ashcroft, whose son, Joey, kicked four field goals for the Falcons.

## In the "Mountain State"

Before the big game, Politi visited Fairmont, W.Va., for the annual awards dinner of the **Brig. Gen. Pete Everest (W.Va.) Chapter**.

Politi addressed chapter members and presented Herman N. Nicely II with an AFA Exceptional Service Award. He also helped install chapter leaders. New to their offices are John R. Pfalzgraf, president, and Charles W. Heckert, Vice President.

Joining Politi on this chapter visit were John E. Craig II, national director; Thomas G. Shepherd, region president; and Mary Anne Thompson, former AFA national secretary. Shepherd presented Certificates of Appreciation to Jack G. Richman, outgoing chapter president; David A. McRobie, outgoing VP; Max Murray, re-elected as chapter secretary; and Jack L. Oliver, re-elected treasurer.

The Everest Chapter was chartered in 1999 and is named for Brig. Gen. Frank K. "Pete" Everest Jr., who set world speed records in a YF-100 and Bell X-2. He is a member of the **Tucson (Ariz.) Chapter**.

## Fire Behind the Force

Secret recipes and cooks in costume were ingredients for success at the eighth annual chili cook-off at Hill AFB, Utah.

Sponsored by the **Northern Utah Chapter**, the competition raised \$4,000 for Hill's Family Support Center, whose own entry, "Miss Kitty's Wild West Chili," won the most awards: Best Chili, People's Choice, and Best Presentation.

In addition to soliciting donations for the chili entries, the chapter raised funds through corporate sponsors and a golf chipping contest.

The cook-off featured nearly 20 creatively named concoctions, such as "Cadaver Chili," from the 75th Medical Group, and "Flatulent Stu Chili" from the TRW team. The cooks

USAF photo by CMSgt. Marjorie Stuart

also caught the judges' attention through costumes or table decorations highlighting their chili's theme—for example, cardboard cutouts of lightning bolts and clouds for the Weather Division's entry.

AFA fielded a large team to ladle up a chili they called "The Fire Behind the Force."

"Head chef" was AFA National President Stephen P. "Pat" Condon, supported by AFA National Secretary Daniel C. Hendrickson, Aerospace Education Foundation President L. Boyd Anderson, and Grant W. Hicinbothem, state AEF VP.

Cooks' helpers included Northern Utah Chapter's Wycliffe McFarlane, president; Kit K. Workman, VP; Amy B. Vidrine, secretary; Lt. Christopher L. McIntyre, treasurer; and from the **Ute-Rocky Mountain Chapter**, Gary A. Strack, president, and chapter member Sandra J. Strack. A1C Jennifer Harrington from Hill also volunteered.

As the cook-off's sponsor, the AFA team eliminated themselves as contestants. "The Fire Behind the Force" was nevertheless a best-seller—gone by the end of the event. The AFA cooks refused to reveal their recipe, however, only admitting to "specially prepared meats and secret seasonings."

#### **WASP Scholarship**

A World War II WASP joined the **Fort Wayne (Ind.) Chapter** in presenting a Civil Air Patrol cadet with an annual CAP scholarship named in her honor and sponsored by the chapter.

Margaret Ray Ringenberg joined Theodore Huff Jr., Indiana state treasurer, in awarding the scholarship to Jonathon E. Feichter at a ceremony held at the Hoosier Warbirds Museum at DeKalb Airport in Auburn, Ind. The award will help fund his flight training and CAP activities.

Chapter member Ringenberg was among the first Women's Airforce Service Pilots in World War II. She was assigned to the 2nd Ferrying Division at Wilmington, Del. She told Tom Brokaw, who devoted a chapter to her in his book *The Greatest Generation*, "We worked seven days a week, sunup to sundown." She flew the PT-19, AT-6, C-45, and many newly designed airplanes just off the assembly line, as well as one whose engine quit as she ferried it to the boneyard.

After the war, Ringenberg became a flight instructor and began competing every year in the transcontinental



*Dishing up the chili for the Northern Utah Chapter are (l-r) Boyd Anderson, Christopher McIntyre, Daniel Hendrickson, Gary Strack, Sandra Strack, Grant Hicinbothem, Amy Vidrine, A1C Jennifer Harrington, Wycliff McFarlane, Pat Condon, and Kit Workman. (See "Fire Behind the Force," p. 83.)*

### **AFA's National Committees for 2002-03**

**Executive Committee.** John J. Politi (*Chairman*), Stephen P. "Pat" Condon, Roy A. Boudreaux, W. Ron Goerges, Richard E. Hawley, Daniel C. Hendrickson, Thomas J. Kemp, Charles A. Nelson, Edward I. Wexler, L. Boyd Anderson, *ex officio*, Richard B. Goetze Jr., *ex officio*, Donald L. Peterson, *ex officio*.

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## This Is the Aerospace Education Foundation

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Powder Puff Derbys, now called the Classic Air Race. She won it in 1988. In 1994, she competed in a round-the-world race, flying for 24 days in a Cessna 340. More recently—at age 80—she was copilot in a 2001 air race from London to Sydney, Australia, coming in 12th.

### Wings Over Topeka

The **Maj. Gen. Edward R. Fry (Kan.) Chapter** helped sponsor the 2002 Wings Over Topeka air show carried out by the 190th Air Refueling Wing (ANG) at Forbes Field, Kan., in September.

The chapter donated \$1,000 to the air show, Chapter President Stewart L. Entz and VP Gregg A. Moser ran an AFA table, and AFA promos ran on a jumbotron throughout the day. Entz said other chapter members contributed to the air show activities, too.

The USAF Thunderbirds headed the list of aerial demonstration teams at the airfield. Dozens of aircraft were on static display, along with exhibits and military hardware. Country music artists Keith Urban and Sawyer Brown performed, and fireworks at 11 p.m. capped the all-day event.

The base newspaper estimated the crowd at more than 80,000, and Entz

said many more, caught in miles of backed up traffic near the base, watched the aerial displays of the Thunderbirds, the Army's Golden Knights parachute team, and the Canadian Forces Snowbirds from their cars.

### Alamo Chapter Awards

In a Texas-size awards ceremony, the **Alamo (Tex.) Chapter** presented nearly 50 awards at the annual Charlotte and Carlton Loos Civilian Awards Banquet. Honorees included civilian USAF employees, chapter members, and other AFA award recipients from the San Antonio area.

More than 30 Air Force civilians—who represented 14 major organizations and ranged from WG-1 to GM-13—received Loos awards. Charlotte Loos is a chapter member, and the late Carlton Loos, who was also a chapter member, was a retired USAF civilian.

Thomas J. Kemp, AFA national director, and Karen S. Rankin, then Alamo Chapter president, presented the national level awards listed in the November issue, p. 85. State level awards went to chapter members Capt. David L. Stanfield, as Officer of the Year; Wright A. Nodine Jr., Civilian of the

## Unit Reunions

reunions@afa.org

**42nd BG**, Thirteenth AF, June 4–8 in Dayton, OH. **Contact:** Ed Brisick, 12 Stardust, Irvine, CA 92612 (949-854-9367) (fitldr@worldnet.att.net).

**58th FG** and squadrons (WWII); **58th Fighter-Bomber Gp and Wg** (Korea), including squadrons; **474th Fighter-Bomber Gp** and squadrons (Korea); and the **210th Mexican FS**. May 20–25 at the Holiday Inn—Downtown in Louisville, KY. **Contact:** Jean Kupferer, 2025 Bono Rd., New Albany, IN 47150 (812-945-7649) (jkupfer@iglou.com).

**444th FIS**. April 10–13 at the Airport Holiday Inn in North Charleston, SC. **Contact:** Wallace Mitchell, 535 Mimosa Rd., Sumter, SC 29150 (803-469-3297).

**466th BG Assn**, Eighth AF (WWII). April 8–11 at the Radisson Hotel in New Orleans. **Contact:** Lou Loevsky, 16 Hamilton Dr. East, North Caldwell, NJ 07006 (973-226-4624).

**485th Tactical Missile Wg**. March 6–9 at Davis-Monthan AFB in Tucson, AZ. **Contact:** Joe Whaley, 5425 N. Ventana Vista Rd., Tucson, AZ 85750 (520-577-9580) (jwhaley580@aol.com).

**667th, 932nd, 933rd, and 934th Aircraft Control & Warning Radar Sqs**, Iceland. April in Dayton, OH. **Contact:** William Chick, 104 Summit Point Ct., Chapin, SC 29036 (803-932-9596) (littlechick@msn.com).

**A-1 Skyraider Assn**. Oct. 2–4 at the Ramada Plaza Beach Resort in Fort Walton Beach, FL.

**Contacts:** Rocco Defelice (210-659-5965) (roccodef@earthlink.net) or Ralph Hoggatt (210-494-3190) (tadhoggatt@aol.com).

**F-86 Sabre Pilots Assn**. April 13–17 at the Monte Carlo Hotel in Las Vegas. **Contact:** Lloyd Ulrich, 1661 Crescent Pl. N.W., Apt. 201, Washington, DC 20009 (202-483-1661) (lculrich@juno.com).

**Pilot Tng Class 45-B**, all commands. April 24–27 in Pensacola, FL. **Contact:** Paul Wildes, 714 River Haven Cir., Hoover, AL 35244 (205-682-0467) (prdwildes@aol.com).

Primary pilot trainees who attended the **W&B Flying School** (1941–45) in Chickasha, OK, April 25–27 in Chickasha, OK. **Contact:** Ron Baker (405-224-5343).

Seeking members of **Pilot Class 54-O** for a reunion in 2004 in either Brussels, Belgium, or the US. **Contact:** "Silver Wings," c/o Mich Moulin, avenue Hamoir 37b b9, B1180 Brussels, Belgium (phone/fax: 0 322 771 3845) (mich.moulin@wanadoo.be).

Mail unit reunion notices four months ahead of the event to "Unit Reunions," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Please designate the unit holding the reunion, time, location, and a contact for more information. We reserve the right to condense notices.



*MSgt. Stanley Gohl, secretary of the Edward J. Monaghan Chapter, stands next to the 11th Air Force memorial, located near Elmendorf AFB, Alaska. He participated in a chapter Veterans Day ceremony at the memorial. (See "Alaska Memorial," below.)*

Year; and the 433rd Airlift Wing from Lackland Air Force Base, Organization of the Year. The Alamo Chapter received the state level Outstanding Community Partner Program award, and Beverly Hallmark from Douglas MacArthur High School in San Antonio was named Teacher of the Year.

SSgt. Michael A. Holland received recognition as one of USAF's 12 Outstanding Airmen. Holland is the noncommissioned officer in charge of resource protection and electronic security, 12th Security Forces Squadron, at Randolph Air Force Base.

#### Fall Ball

In dress uniforms, tuxedos, and formal dresses, AFA members from eight New Jersey chapters turned out for the state's annual Fall Ball at McGuire Air Force Base.

More than 20 of the nearly 90 guests came from the **Mercer County Chapter**, whose members went home with almost all of the awards presented that evening, including Stephen Lipski's national level Medal of Merit.

Col. James R. Pugh, a member of the **Thomas B. McGuire Jr. Chapter** and the vice commander of the 305th Air Mobility Wing at McGuire, was guest speaker for the Fall Ball. CMSgt. Walter J. Tafe Jr., also from the McGuire Chapter and the 305th, served as master of ceremonies.

Honored guests at the formal included Raymond "Bud" Hamman, region president of the Northeast Region; Eugene B. Goldenberg from the **Liberty Bell (Pa.) Chapter**; Ethel Mattson, outgoing state president; and Robert W. Nunemann, current state president.

Among individuals representing AFA chapters were George A. Filer from the **Brig. Gen. Frederick W. Castle Chapter**; James E. Young from **Hangar One**; Murlin Lower from **Highpoint**; Robert W. Ehrhardt from the **Hudson Chapter**; Janet A. Currie from the **John Currie Memorial Chapter**; Geraldine Jones, McGuire Chapter; Vincent S. Fairlie, Mercer County Chapter; and Amos L. Chalif, **Shooting Star**.

#### Alaska Memorial

On Veterans Day, members of the **Edward J. Monaghan (Alaska) Chapter** held a ceremony at Merrill Field at the new memorial to 11th Air Force.

Located near Elmendorf Air Force Base, the memorial marks the site where the first Army Air Corps personnel landed Aug. 12, 1940. They were forerunners of what would become 11th Air Force, famous for having driven the Japanese from the Aleutians in World War II. Merrill Field today is a general aviation airport.

Among those at the ceremony were Jacqueline S. Burdette, chapter president; MSgt. Stanley D. Gohl, secretary; Victor R. Davis, membership VP; and Gary A. Hoff, government affairs VP.

John H. Cloe, 11th Air Force historian and a chapter member, spoke to the group about the significance of the memorial site. Also offering remarks was Paul Drummond, a local Veterans Affairs official, who, along with the Monaghan Chapter, the 11th Air Force Association, and the city of Anchorage, was a driving force behind the memorial.

Dedicated in October 2001, the

memorial also pays tribute to POWs interned in Siberia during World War II.

#### Eglin's All-Stars

The **Eglin (Fla.) Chapter** recently held its twice-yearly awards ceremony that salutes behind-the-scenes base personnel—"the unsung heroes," as Douglas L. Hardin, chapter president, calls them.

Every six months, the eight major organizations on base each select two members who are then honored at this luncheon gathering as "AFA's Team Eglin All-Stars." The 16 personnel represent the full range of USAF personnel, from junior enlisted airmen to civilians, Hardin said.

Approximately 300 guests turned out for this latest chapter function, with Maj. Gen. Robert W. Chedister, commander of the Air Armament Center at Eglin, as guest speaker.

In a highlight of the gathering, the chapter presented a \$5,000 donation to the Air Force Enlisted Foundation to help support two retirement communities near Eglin.

#### Firsthand Account

Guest speaker Brig. Gen. (sel.) Philip M. Breedlove "held the audience spellbound," according to **Frank Luke (Ariz.) Chapter** President Harry Bailey.

Breedlove has commanded the 56th Fighter Wing, Luke AFB, Ariz., since last June and at the October chapter meeting provided an update on USAF and base activities. But it was his account of the heroism he witnessed at the Pentagon on Sept. 11, 2001, that riveted his listeners, Bailey said. Back then, Breedlove was Senior Military Assistant to Sec-



retary of the Air Force James G. Roche and had been on the job for three months. Breedlove described the selfless acts of military personnel and civilians who helped each other in the chaos after the hijacked airliner crashed into the building.

The more than 50 guests at the base's Desert Star Enlisted Club that evening included Arthur W. Gigax, state president, and Elaine Scruggs, the mayor of Glendale, and several city council members. The city is a chapter Community Partner.

#### More AFA/AEF News

■ The **John W. DeMilly Jr. (Fla.) Chapter** participated in the Veterans Day parade in Homestead, Fla., and hosted an annual Veterans Day breakfast. It featured guest speaker Maj. Gen. (sel.) Charles E. Stenner Jr., director of strategy, policy, and plans at US Southern Command in Miami. He is also a member of the **Miami Chapter**. Stenner joined chapter leaders in presenting an art print to chapter member AFRC Col. Steven R. Fulghum, commander of the 482nd Fighter Wing (AFRC), Homestead Air Reserve Base. The print, from AEF's art collection, is a reproduction of artist Roy Grinnell's "Olds Flight." It is signed by retired Col. Charles B. DeBellevue, a Vietnam War ace and member of the **Central Oklahoma (Gerrity) Chapter**, and retired Col. John A. Madden Jr., pilot of the F-4 from which DeBellevue scored his fifth and sixth aerial victories.

■ In October, the **Brig. Gen. James R. McCarthy (Fla.) Chapter** helped sponsor Pine Ridge High School's seventh annual AFJROTC drill meet. Richard A. Ortega, state aerospace education VP, reported that 19 high



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school AFJROTC units from central Florida competed in the invitational event, held in Deltona, Fla. AFROTC cadets from Embry-Riddle Aeronautical University in Daytona Beach, Fla., served as judges for the all-day competition. From among winners in 30 categories, Sandalwood High School (Jacksonville, Fla.) emerged as overall top team, receiving a trophy from

Robert Perry, former McCarthy Chapter president.

#### Have AFA/AEF News?

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**At Osan Air Base's recent Community College of the Air Force graduation ceremony, Osan (Korea) Chapter Vice President Capt. James Hickman (left) presented AEF Pitsenbarger Awards to (l-r) SrA. Brett Eby, MSgt. Brian Sarpy, and SSgt. Paul Czechowicz. A base education service officer, Laura Dean, is at right.**



USAF photo by A1C Priscilla Galbreath

# Pieces of History

Photography by Paul Kennedy

## Back to the Future



More than 20 years ago, the Air Force envisioned an F-15 replacement—a next-generation fighter that would ensure the US could maintain air superiority into the next millennium. Winning the fighter competition in 1991 was the Lockheed-Boeing-General Dynamics team's YF-22 prototype, one of which now resides at the US Air Force Museum at Wright-Patterson

AFB, Ohio. For the display shown here, the museum replaced the aircraft's General Electric engines with Pratt & Whitney engines of the type that appear on today's F/A-22.

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