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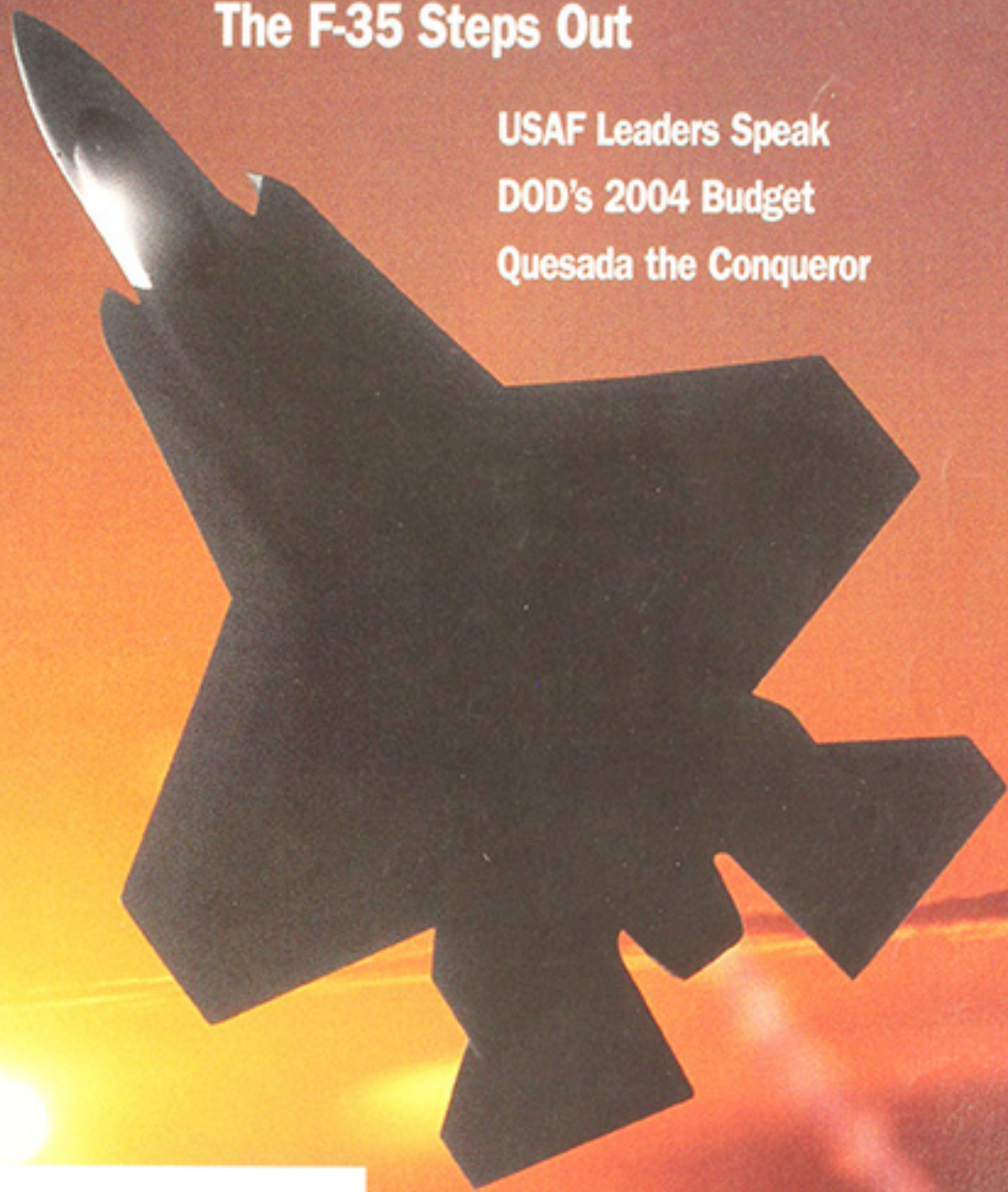
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By Robert S. Dudley, Editor in Chief

As Good As It Gets?

EVEN as US forces massed for war with Iraq, influential critics blasted President Bush's new defense budget. Some described it as "mammoth." The ever-reliable *New York Times*, espousing yet another "spending spree at the Pentagon," said DOD "seems to glory in its excesses." The *St. Louis Post-Dispatch* saw signs that the nation was turning into a "New Rome."

Bush did increase the budget—by 2.2 percent. Some spree.

It is now fashionable to say defense spending has returned to "Cold War levels." Well, not quite. President Bush's 2004 defense plan, unveiled Feb. 3, allocates \$380 billion for the military. In the Reagan years, spending averaged well above \$400 billion. At its 1985 peak, the DOD budget exceeded today's by \$80 billion.

The Cold War isn't a valid reference point, anyway. That struggle centered on the superpower nuclear balance, and nuclear arms are cheap compared to conventional forces. The US never tried to match the Soviet Union tank for tank, fighter for fighter. If it had, the cost would have been stratospheric.

In a way, today's threat exceeds that of the Cold War. Each actual or potential US foe—Iraq, al Qaeda, North Korea, Iran—could, given enough time, send a US city up in a mushroom cloud. Each is capable of making a cold-blooded decision to do so.

When one assesses Bush's new defense plan in this context, it is hard to conclude that Washington is overdoing things.

Nothing has been done to remedy massive force cuts levied in the 1990s, when it seemed that greatly reduced US forces would be sufficient to handle any problem. The number of USAF fighter wings fell from 36 to 20, active Army divisions from 18 to 10, Navy warships from 546 to 306. Active strength dropped from 2.2 million to 1.38 million.

Today, this small force is badly stressed by numerous demands. Gen. John P. Jumper, Air Force Chief of

Staff, says that "our people have been sprinting for a long time." The Air Force has had to pull 23,000 airmen from future rotation packages to meet current commitments. As for the Army, 220,000 of its soldiers are overseas. The Navy says 195 of its 306 ships are under way, including six of its 12 carrier groups. Two-thirds of Marine operating forces are deployed.

For the Guard and Reserve, the story is much the same. The call-up

The armed forces have been waiting for years to "get well." That day still seems distant.

of 177,000 reservists is straining many communities.

The services are scrapping older but serviceable weapons to scrape together funds to buy new ones. The Air Force plans early retirement for 114 F-15 and F-16 fighters, 33 B-1B bombers, and 115 cargo and tanker aircraft. The Navy plans to mothball 26 ships ahead of schedule.

Even this won't make a dent in the problem of aging equipment. Army helicopters now average 18.6 years of age. Two-thirds of the Navy's aircraft are more than 15 years old. The average age of USAF tankers is 37 years. For the entire Air Force fleet of 6,300 aircraft, the figure is 22 years, the highest in history.

The cost of keeping old aircraft flying has jumped. "We are looking at costs of repairing these aircraft rising at more than 10 percent a year," says Jumper.

Modernization is cramped. The 2004 budget requests \$72.7 billion for procurement of weapons. This is \$20 billion less than what is needed to sustain the force, much less expand it.

A serious mismatch between US strategic ends and military means developed during the Clinton Administration, and it persists.

The US military would be spread thin were war to erupt in Korea. The confrontation with Iraq and War on

Terror have stretched US military resources to the max. Senior military officers say forces fighting in Korea would be hamstrung by shortages of airlift, AWACS, tankers, and reconnaissance aircraft.

Responding to these pressures, Rep. Duncan Hunter (R-Calif.), chairman of the House Armed Services Committee, wants to add two more fighter wings, 50 more stealth bombers, and more C-17 airlifters. Rep. John M. McHugh (R-N.Y.), who heads the panel's total force subcommittee, argues, "We need more men and women in uniform."

In a Jan. 23 letter to President Bush, a group of conservative defense experts said spending had to rise by at least \$70 billion a year in order to meet global obligations.

The conditions are there for truly substantial spending increases. The nation has a strongly pro-defense President and Congress. The threats are numerous and undeniable. By historical standards, the burden of defense spending on the economy is low.

Bush and Congress have rammed through several important and much-needed defense spending increases, for which they deserve great credit. Still, Washington has resisted the kind of buildup that seems not only prudent but essential, and the force continues to struggle along.

President Kennedy spent nine percent of GDP on defense. President Reagan spent six percent. As recently as 1994, President Clinton allocated four percent, and that was before the US came face to face with a global war on terror and serious crises in two hot spots. Today, the figure is 3.4 percent.

In a recent film, a character played by actor Jack Nicholson finds himself in a psychiatrist's office surrounded by anxious patients, all hoping that treatment will help them get well. He adds immeasurably to their unhappiness by asking a simple but piercing question: "What if this is as good as it gets?"

The armed forces need help. We can only hope this is not as good as it gets. ■

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The Professor Weighs In

You published some documents with regard to my e-mail misadventures with Cadet Robert Kurpiel of the Air Force Academy with this headline in your December issue: "Pacifist Professor Feels Blowback From Comments." [See "Aerospace World," p. 20.]

You made a major, careless error in quoting my e-mail to Cadet Kurpiel. I wrote, "No war, no air force cowards who bomb countries without AAA," not "with AAA." I do know the differences between offensive and defensive weaponry and your error imputes an ignorance that is not reflective of my knowledge or fair to me.

As you know I apologized for my harsh and intemperate remarks and they were accepted graciously. Yet I am convinced this incident has sparked a significant discussion concerning war and peace, just war, and the rights of protest in America. It has also shown that discourse can evolve from harsh rhetoric to an appropriate exchange of disparate ideas.

I believe much of the anger directed against me was based upon my pacifist rejection of violence and my harsh statements concerning military tactics and strategy and not only due to my lack of etiquette and thoughtfulness in e-mail discourse. The first area is one that I continue to address with a stronger voice and with even a wider audience and the latter is an area that I have learned my mistakes from.

Peter N. Kirstein
Professor of History
Saint Xavier University
Chicago

■ Many other media outlets reported it the way we did. However, if Mr. Kirstein says he knows the difference between offensive and defensive weapons, that's good enough for us. We certainly did not feel any need to impute ignorance to his remarks.—THE EDITORS

The Rest of the Story

Mr. [Roy] Shoffner did not finance six expeditions to recover the P-38 in

Greenland. [See "Aerospace World: P-38, Long Buried in Greenland Ice, Flies Again," January, p. 11.] The Greenland Expedition Society of Atlanta was responsible for the recovery of the P-38 from 265 feet below the ice cap.

Roy Shoffner did not organize, hire anyone, or put together in any way the 1992 P-38 recovery expedition. He loaned GES \$350,000 initially, then another \$100,00 before the P-38 was brought back. The \$450,000 made up about 70 percent of the 1992 expedition cost. Another \$1,370,000 had been spent on six previous GES expeditions before Shoffner showed up.

The 1992 expedition was the only one in which Shoffner was involved. GES put together the 1992 P-38 recovery expedition and directed the operation from start to finish. GES recovered the P-38 and returned it to the USA. Shoffner rebuilt it. We would like to keep the facts straight.

Pat Epps
Atlanta

I wish to add some facts regarding the story relating to the restored P-38F model that was in the Greenland ice cap for exactly 50 years—to the day!

Roy Shoffner alleges it was his idea to go to the ice cap and recover the P-38. Fact: Pat Epps and Richard Taylor of Atlanta came up with this idea. They formed the Greenland Expedition Society (GES) in the early 1980s. GES people invented, built, and actually used the neces-

sary equipment to melt a shaft down to the P-38.

Dan Callahan
Centerville, Ga.

Everybody's Problem

In answer to Stephen Miller's comments ["Letters: War of Fog," February, p. 4]: North Korea is a threat because they have nuclear weapons already. After all, they developed them with Iranian help after buying the equipment from Pakistan. If the North Koreans want to throw a nuke at us, they'd better make it a good one; they'll only get one shot. The biggest worriers about the North Koreans are China, Japan, and South Korea—all major trade partners of ours, by the way. It's really a Northeast Asia problem, not ours.

Now, Iraq, on the other hand, is everybody's problem. We no longer live in the world of Metternich's [Congress] of Vienna (post Napoleonic). The rule of nations is fragmenting as we watch. The threat is from nongovernmental organizations. I don't mean the Red Cross here, I mean Hamas, al Qaeda, and their ilk. When 9/11 happened, we knew al Qaeda was using Afghanistan as a base camp. But where are they now? They receive funding and support from Saudi Arabia, Iran, Syria, and our other erstwhile allies.

When we get hit again (not if, when) and the American people scream for [retaliation], who will we hit? Lebanon for shielding Hezbollah? Syria and Iran for supporting Hezbollah [and] al Qaeda? Qatar for shielding Hamas? Saudi Arabia, Kuwait, Sudan, and Iran for bankrolling everybody? All these countries can honestly say, "These elements are in our country, but we are not responsible for them." You see, unlike Arafat, countries can lie and get away with it, because the [Congress] of Vienna gave them the right. There will be no target.

We are at war; we just haven't admitted it as yet. The enemy is elusive, without uniforms and flags or even a base of operations. The Geneva Convention doesn't apply, nor does the Law of Nations, be-

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cause the terrorists are not a nation; they have the status of pirates and should be treated as such. We don't have to be "nice" to them. Israel tried to be nice to them after Oslo and lost more people per year than previously. Israel tried to be nice to them and withdrew from south Lebanon, only to have Hamas stock up on Iranian missiles, [only to suffer] continuous bombings, and [only to give] the perception of weakness. These pirates do not respect civilized dealings, and they never will. If we wait for them to strike the first blow, as is expected of nice civilized nations, of which we consider ourselves to be [one], we will be filling many body bags.

It has nothing to do with Mr. Bush not "liking" the other nation's leader, nor our desire for oil. We get most of our oil from Canada and Venezuela.

Should we allow [Saddam Hussein] to obtain horrific weapons, what policy can you possibly comprehend he will use—scratch that, continue to pursue? He's already invaded three neighbors (Iran, Kuwait, and Saudi Arabia).

Larry Krauser
San Angelo, Tex.

Targets Too Constrained

Rebecca Grant did not address reports from Operation Enduring Freedom that constraints on airpower may have been extended to include prohibiting the destruction of any bridges, causing landslides to block roads, and even the cratering of dirt roads. [See "In Search of Lawful Targets," February, p. 38.]

Reports also indicated that in most cases "civilian" trucks and vans could not be the target of an air attack unless a ground force in close proximity with "eyes on the target" could confirm that the occupants were enemy fighters. Reducing risks to civilians is an appropriate goal, but measures designed to achieve this goal must be balanced against the costs of forfeiting important US advantages (airpower) and the future risks that are created by such constraints.

Those imposing constraints do not seem to appreciate that letting enemy personnel escape attack from the air when they are in vehicles out in the open significantly increases the probability these personnel will be able to reach a city or town where fighting poses far greater risks to civilians. Also, such constraints dramatically increase the risks faced by US personnel and not just those on the ground who must get into close proximity to the enemy to put eyes on the target. When the enemy is al-

lowed to escape to fight another day this not only creates risks for US military personnel who will have to fight that future engagement, it also creates risks for US civilians since those escaping may well be future terrorists.

While it may be unintentional, the growing tendency to put constraints on airpower's ability to target enemy ground forces that are not in close proximity to US ground forces has a disturbing similarity to attempts in the past to ban the crossbow. Those attempting to ban the crossbow considered this standoff weapon to be "barbaric" and preferred to engage in more "civilized" and, some might say, more "manly" close combat using lances, swords, and axes.

Lt. Col. Price T. Bingham,
USAF (Ret.)
Melbourne, Fla.

Airline Travails

The article "Grim Days for the Airlines" by Richard J. Newman in the February issue [p. 76] needs some clarification. He cites Morgan Stanley numbers comparing the cost of a 1,100-mile trip on Southwest and other low-cost carriers vs. United and the high-cost carriers. Morgan Stanley indicates this 1,100-mile trip on Southwest would cost the airline \$9,861 vs. \$21,428 at United. Management would like us to believe this difference is due largely to labor costs. They are only partly right.

I assume that the Morgan Stanley cost comparison is based on the entire fleet at each airline, although this was not clear in the article. If true, then the numbers would still favor Southwest if their pilots were paid the same as United pilots. A 777 or 747 clearly will cost more to operate than a 737 favored by Southwest. Morgan Stanley is comparing apples and oranges.

I would suggest another cost comparison for Morgan Stanley to look at advantages another way. They should compare the costs of operating a 7,000-mile flight between Southwest and United. I feel fairly certain United would win this one hands down when the 737 ran out of fuel at about the 2,800-mile mark and sank in the North Pacific! At the least, Morgan Stanley should compare one 737 fleet against another 737 fleet.

Labor had nothing to do with the hundreds of millions United management squandered on the botched US Air merger. Labor had nothing to do with the hundreds of millions United management squandered on the failed attempt to start up a biz jet operation. Labor had nothing to do with the air-

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Letters

plane buying binge United went on in the 1990s. Clearly labor costs are part of the equation for a healthy airline business. However, I would like to see writers address the whole issue and not just the labor cost side of the equation.

Robert Peasley
Lonsdale, Minn.

As a retired military officer and captain for a currently profitable commercial airline, I noted with interest the juxtaposition of the well-written articles on both Air Force pilot retention and the travails of the airline industry. [See "Grim Days for the Airlines," p. 76, and "New Gains on the Pilot Retention Front," February, p. 54.] As Maj. Gen. [Richard A.] Mentemeyer so succinctly pointed out in the pilot retention article, these are unique times, for both the Air Force and the airlines.

The troubles experienced by the airlines are, in my opinion, a classic case of those ignoring the lessons of history being condemned to repeat them. The challenges faced by United Airlines and US Airways are, at their roots, virtually carbon copies of those faced by now-defunct airlines such as Pan Am, Eastern, and Braniff. It remains to be seen whether the current financially troubled air carriers will be able to avoid the latter's fates.

However, this lesson should not be lost on the institutional Air Force, as well. While pilot retention is currently on the upswing, it has little to do with the success of the Air Force in changing the underlying causes of past retention crises. To the contrary, those former military pilots who fly my right seat in an airline cockpit relate stories remarkably similar to those I have heard throughout the 10 years I have flown in commercial aviation, as well as the 20 years I served on active duty.

While the Air Force has succeeded in identifying the ancillary factors impacting pilot retention, it has virtually ignored the primary issue which has motivated virtually all of my former military coworkers and current right-seaters to seek a change of career: lack of consistent, effective leadership at the unit level and above. It appears that the Air Force has virtually ignored this aspect of pilot retention and will continue to do so until, figuratively speaking, it gets hit on the head with a two-by-four.

It would be wonderful if the Air Force would seize this opportunity, with the pilot retention problem abating, to make the necessary changes

to the assignment, evaluation, and promotion systems so that a future repeat of the retention crises of the 1970s, 1980s, and 1990s is averted. Alas, it seems that Air Force leadership has already put this one in the "too hard" box. It would take great moral courage to look in the mirror and realize that you are part of the problem. It remains to be seen if that will ever occur.

Finally, I would like to correct two items from the otherwise well-written, insightful airline article. Southwest Airlines pilots have been represented by the Southwest Airlines Pilots' Association, an independent union, for well over 20 years. Additionally, while Southwest pilots can include Southwest stock in their profit sharing accounts, and have benefitted from some very large stock option grants during the last two contract amendments, no pilot has access to Southwest stock as part of his retirement account. I state that as an eight-plus-year member of SWAPA.

Lt. Col. Peter M. McCarthy,
USAF (Ret.)
San Antonio

■ *McCarthy is correct. We should have said Southwest does not have to deal with a national pilot's union. We also erred in linking the stock options Southwest provides to retirement.—THE EDITORS*

Sensational Signal

Thanks for the excellent article "The Sensational Signal" on the Global Positioning System in the February issue [p. 66]. As one who had a small role in initiating the program, it is a delight to see how it has developed to the state it currently enjoys and the worldwide service it provides to so many systems. It truly has been transformational in its impact, for both our military and civilian users.

The article accurately states the early efforts, especially by the Navy, focused primarily on positioning and navigation. But early on, some very bright and hardworking people perceived GPS would have an extremely important application and impact on the accuracy of weapons delivered by various airborne platforms. Their ideas were consolidated and focused by the OSD and Air Staff focal points, Colonels Brentnall and Martin, who as a team opened many eyes to the fuller utility possible with GPS.

As a young staff officer in the Air Staff shortly after the December 1973 approval of the program, it was my task (and pleasure) to draft the first

concept paper for what was then called "midcourse guidance" for missiles using GPS, implementing the vision these forward-thinking leaders had developed.

The events described in the article delayed the implementation of this concept, but many in the technical and planning communities were aware of the importance it would have in precision strike as well as navigation. Precisely because it took awhile before it was demonstrated and fully understood, it would be appropriate to recognize the efforts of so many people who "kept the faith" through the hard times to provide the warfighters with the exceptional precision they now employ so well.

Col. Daniel E. Kelleher,
USAF (Ret.)
Beavercreek, Ohio

The article asks: "Who knew, 25 years ago, that the humble little GPS satellite would mean a revolution in accuracy?" I was the head of the Air Staff Directorate of Space (RDS) from 1972 to 1976. Although the initial studies contemplated a navigation satellite system, called Navstar, it became obvious to RDS that the Air Force was not interested in funding another navigation program.

Prior to the 1973 [Defense Systems Acquisition Review Council], when the program was approved for development, the Air Force in an RDS program directive adopted the global positioning name as a way of emphasizing that GPS was a satellite system that could place weapons on targets anywhere in the world with astounding accuracy. As the service lead for the DSARC briefing, I was instrumental in getting my counterparts from the other services to support the operational, warfighting need for GPS. This theme was used by us to introduce the program briefing by the [system program office] director, Col. Bradford W. Parkinson.

In this briefing, mention was made of other uses such as a bare-airfield landing system, and we may have described its use as an aid to air traffic control, which was not a use FAA wanted to hear. Also, the application to long-range missiles had to be treated carefully because the missile people were concerned about the vulnerability of satellites and the potential loss of funds for further inertial guidance development. Initially, GPS incorporation was described as a backup to the inertial systems, which helped diminish opposition from the missile community.

Those of us close to GPS knew over 25 years ago that what we were

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Maj. Gen. Henry B. Stelling Jr.,
USAF (Ret.)
Anaheim, Calif.

The XB-15 and its Engines

I have just read Tom Baldenhofer's letter [*Letters: More to the Story, February, p. 8*] and have a few comments—the rest of the story.

I recently came across an example of the Allison V-3420 (24-cylinder, liquid-cooled, double-vee, with gear-driven supercharger and exhaust-driven turbo-supercharger) at the Chino Airport, Calif., Planes of Fame Museum. After seeing this unique engine I was curious about its history.

The V-3420 with a maximum rated horsepower of 2,885 was designed for or used in a variety of experimental aircraft, including the Douglas XB-19, Lockheed XP-58, Boeing XB-39, and the Fisher XP-75. I do not believe, however, that it was ever used in the Boeing XB-15 (Boeing Model 294 or XBLR-1). The XB-15 had used the Pratt & Whitney R-1830-11/1,000 HP radial engines.

While Mr. Baldenhofer was correct in pointing out the XB-15 (Boeing model 294) followed the Boeing "299" or B-17 into the air, it can be argued that the XB-15 (Boeing Model 294) is an "ancestor" of the B-17 since its design began before the Boeing Model 299, as evidenced by the model designations—294 for the XB-15 and 299 for the (X)B-17.

The Douglas XB-19 did eventually use the V-3420, which replaced the original Wright R-3350. Both the XB-15 and the XB-19 ended their service lives as cargo-transport aircraft. The Allison V-3420 was most famous for its lack of success, most notably in the Fisher XP-75. Allison built 150 examples of the V-3420, starting in 1941. Another interesting variant that

used the V-3420 was the XB-39 "Spirit of Lincoln" delivered in 1944; one example was built. The XB-39 was a modification of the first YB-29 (Serial No. 41-36954).

Steve Wallace
Chino Hills, Calif.

Big

Just saw your "Flashback" titled "Big" in the February issue [p. 74]. Thought it would interest your readers that the XC-99 is decaying and corroding at Kelly Annex (formerly Kelly Air Force Base) to Lackland AFB, Tex. A sad finish for a glorious airplane.

CMSgt. John T. Lopes,
USAF (Ret.)
San Antonio

Remembering Foulois

I really enjoyed Walter Boyne's piece on Maj. Gen. Benjamin D. Foulois. [See "Foulois," February, p. 82.] As an acquisition officer, I can identify with General Foulois's role as one of the Air Force's first acquisition program managers, working with Congress and industry to transform French Premier Ribot's operational requirement into US combat capability. Given the relative value of money, his \$640 million program in 1917 must have been similar in scope and precedent to today's F/A-22 and Joint Strike Fighter programs.

On a more personal note, I relished your Foulois story because my mother, who was a receptionist at the Andrews AFB [Md.] Officers' Club in the early 1960s, knew him personally. I was astounded when she told me this back when I was an AFROTC cadet. She had no idea he was such an icon in Air Force history. To her, he was just Ben, a nice old gentleman who frequented the club.

Lt. Col. Allan J. Smith,
USAF
Burtonsville, Md.

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As a newly commissioned second lieutenant, my first assignment was assistant information officer for the 6595th Aerospace Test Wing at Vandenberg AFB, Calif., which had the dual mission of full systems testing of ICBMs and launching satellites into polar orbit. Our major command four-star, Gen. Bernard Schriever, was making a farewell tour of his Air Force Systems Command units, and the wing threw a formal dining-in in his honor.

Accompanying General Schriever as his personal guest was Maj. Gen. Benjamin Foulois. Then in his mid-80s, General Foulois was trim in his black-tie outfit, alert and congenial, and reputedly could hold his own at the bar with anyone.

General Schriever's military service dated back to the small prewar Army Air Corps, and he was married to Dora Brett, daughter of a general of that era, so maybe that's when his acquaintance with General Foulois began. If so, I'm sure it had been quite an experience for him as a young officer to meet such a key military aviation pioneer.

I was really impressed by the consideration General Schriever showed for General Foulois, and it's been one of my treasured memories to have shaken hands at the same event with the man who led America's military into the air and with the man who took the Air Force into space.

Lt. Col. Mark R. Foutch,
USAF (Ret.)
Olympia, Wash.

Feeling poorly, General Foulois was admitted to Malcolm Grow [Medical Center] at Andrews [AFB, Md.]. Still, he went down to breakfast at our outstanding cafeteria, and I had the pleasure of breaking bread with the grand old man [along] with his young aide.

Later, Foulois lapsed into a semi-coma. Intensive evaluation, including a nationally renowned neurologist in those days well before modern scanning, revealed nothing reversible.

A few days later, in the hospital [commanding officer's] office (Maj. Gen. Archie Hoffman) an unforgettable dynamic voice came through on his speaker phone. "This is Eddie Rickenbacker! What are you all doing to Benji?"

History was palpable.

Col. David E. Langdon,
USAF (Ret.)
Arlington, Tex.

The picture of Foulois and [Gen. John J.] Pershing at Issoudon Aviation Camp in France says it all. Both were wearing spurs on their highly polished boots—one foot in the past, one foot in the future!

Col. George Kobernus,
USAF (Ret.)
Traverse City, Mich.

Put Other Feet to the Fire?

Regarding the Article 32 hearing at Barksdale AFB, La., two items are missing from your presentation and are, in my opinion, scandalous. [See "Aerospace World: The Case of the ANG Pilots: Blame, Support, and Conflicting Testimony," February, p. 20.]

First is the matter of the pilots' duty period. In the Vietnam War the flight duty period for single-control fighters was 12 hours. In the C-130s I flew, the period was 16 hours. I have been told that these Air Guard pilots' flight duty period was 20 hours.

What is undeniably true is that these, and other, pilots are encouraged to take drugs to ward off fatigue. This is scandalous enough on its own. There are a lot of feet that need to be held to the fire for the

Letters

whole unconscionable business, and I don't include the pilots. Even disregarding excessive duty periods and drugs, we have here the usual spectacle of the 20/20 hindsight so prevalent among the chair-borne.

Do not let coverage of this business drop, and please give it more prominence than an inset on p. 20.

Col. Robert J. Powers,
USAF (Ret.)
Shreveport, La.

When in Rome

Ms. [Ruth D.] Helm, how dare you suggest that [Lt. Col. Martha] McSally's stand for her personal rights bears any resemblance to General Mitchell's heroic stand for airpower. [See "Letters: Women in Combat," February, p. 6.]

As a person whose master's thesis topic was "Executive Appraisal" (OERs) [Officer Effectiveness Reports], I have news for you: McSally was likely one of a thousand or more lieutenant colonels being considered who had essentially "perfect" records.

So your suggestion that the Air Force somehow "owed" her a promotion to colonel betrays your ignorance of a system that—while a long way from perfect—has served USAF reasonably well for many years. What you chose to ignore was the right and need of a promotion board to consider a candidate's inclination to work within the system for positive changes. Those who instead decide to plead their personal judgment as being superior to their leaders' in the left-leaning media are not likely to receive favorable consideration, male or female.

When in Rome, do as the Romans—if you want them as friends!

Brig. Gen. John Rollston,
USAF (Ret.)
Granbury, Tex.

The Issues Never Change

As a former operations officer and commander of a forward air control squadron—the 704th Tactical Air Support Squadron, Sembach, Germany, from 1978 through 1980—I found the article "The Clash About CAS" [January, p. 54] extremely interesting. Not a whole lot has changed in the issues surrounding close air support. The issue of priorities as to the allocation of available air assets still appears to be a significant problem. Both the Army and the Air Force seem unwilling to give the required support to make CAS effective.

The 704th was in direct support of US V Corps. We provided ground FACs

to every maneuver battalion as well as OV-10 airborne FACs to coordinate the CAS needs of V Corps. Our ground FACs were constantly in the field with the Army, and their inputs were requested and used by most battalion commanders in development of individual general defense plans.

During the years I was there I participated in the planning and execution of several REFORGER exercises. A full division from V Corps would be in opposition to a full division from VII Corp. CAS was a very large part of these exercises. After several experiments in how best to effectively provide CAS we found that the best way was to keep it as simple as possible. In our case we used the A-10 almost exclusively. A two-ship of A-10s would be directed in the daily frag issued by the air support operations center to proceed to a contact point short of the forward edge of the battle area and here contact either an airborne OV-10 or a division air liaison officer (ALO). From there, the A-10s would be given target data and the call sign and frequency of the battalion ground FAC if there was a target that needed to be engaged. We simply kept at least a two-ship of A-10s available for CAS targets from dawn to dusk over each division or brigade.

This simple system worked great. The Army made the immediate decision where they wanted to use the available CAS, and the Air Force provided the assets to meet their requests. If more CAS was needed the Air Force provided more A-10s or other assets to meet the threat.

What the Air Force planners need to understand is that the Army cannot always provide them with specific target information 24 or 36 hours in advance. As pointed out in the article in the case of the 10th Mountain Division's Operation Anaconda, much heavier resistance was encountered than expected, and organic artillery was not available. This is where CAS can really shine. My question here is, Where was the division ALO staff? They should have been in on the planning of Anaconda from the very beginning. Please don't tell me there are no longer division ALOs.

As the armed services continue to face threats such as we found in Afghanistan, where the full power of organic assets cannot be brought to bear by the Army, it is imperative that the Army and the Air Force each understand the capabilities and the limitations that each have to offer to the conflict. There is just too much at stake to become mired in doctrinal issues or, worse, finger-pointing

in the application of close air support.

Lt. Col. Hugh D. Sims,
USAF (Ret.)
Fort Myers, Fla.

As a regimental air liaison officer and brigade trainer, mentoring airpower integration at the National Training Center, I had seen the lack of effective airpower planning for the three years I supported that capstone training environment. As such, I assisted in developing potential tactics, techniques, and procedures for a close air support battle drill.

Key problem areas in integrating CAS in the Army battlespace seem to keep popping back up. Ineffective planning for the air asset, poor target nominations and selections, lack of massed and integrated fires, poor communications, and the failure to set conditions for effective airpower application are just a few. To minimize this problem we provide air liaison officers to the Army staffs. The ALO has the responsibility to address the air puzzle in concert with the planning effort. Unfortunately the ALO is often left out of the process or, worse, relegated to the role of "I'll call you if I need you."

The lack of effective planning may horrifically lead to the case where we may not bring those "boots on the ground" back. The issue has a couple of potential fixes that could be fairly quickly employed.

First, we need to integrate our Army leadership into our processes for exploiting the airspace in their respective sectors. Possibly they could attend our Joint Firepower Controller Course at Nellis AFB, Nev. (where ALOs are trained). This would improve their knowledge of the impact integrated and massed fires will have on their desired outcomes.

Additionally, we need to provide our Army cohorts expert ALOs who are trained and respected. The ALO assignment is often frowned on (in the Air Force tactical community) and may create a "least common denominator" fill for this important position. Often our ALOs are company grade officers, who, on the staff level with the Army, are not listened to effectively based on rank alone. Our ALOs, and the entire Tactical Air Control Party, live with an Army unit on an Army post. They deploy under Army field conditions and use Army processes for housing and family. For all intents and purposes they are "in the Army now" for their duty period. Yet their chain of command is all Air Force and often not colocated. The desire to maintain this pristine command chain is done to maintain an airman in control of airpower—a good

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idea on paper; but the world is changing, and if we provide the right training to our Army leadership they may change as well.

We recently authorized joint duty credit for many airmen serving in various planning and staff efforts. This was a good thing but is incomplete. If our ALOs, who live and breathe Army and eat the same dirt as a proud infantryman or tank driver, were jointly attached to their respective units (receiving applicable joint duty credit), we may see a desire on our more senior flying personnel to see this assignment as other than three years out of the cockpit and away from their normal career flow. This might send a more dynamic person (instead of a high percentage of nonvolunteer fills) into that Army combat staff cell to sell our story of integrated and massed fires.

These repairs, or some others not addressed here, must happen—and soon. As long as we have the rivalries verified by the article in debate, we are not doing business as we should. The price of this lacking of integration may be the blood of Americans proudly serving in any of our service branches. That is a sin we cannot bear.

Lt. Col. David G. Smith
Edwards AFB, Calif.

Aerospace World

By Suzann Chapman, Managing Editor

American Forces Commence Operations in Iraq

MARCH 20, 2003—

President Bush told the nation at 10:16 p.m. on March 19 (5:16 a.m., March 20, Persian Gulf time) that US and coalition forces had gone into action against selected military targets in Iraq.

He said, "We will accept no outcome but victory."

In the predawn strikes, US Air Force F-117 radar-evading fighters dropped GPS-guided 2,000-pound bombs, and US Navy ships fired cruise missiles on at least three targets in Baghdad where intelligence indicated senior Iraqi leaders were present.

The US called the action Operation Iraqi Freedom.

Full coverage of the war will appear in next month's issue.—

THE EDITORS



USAF photo by Maj. Laurent Fox

BUFFs Readied for Gulf Action. An Air Force B-52 from Minot AFB, N.D., touches down March 4 at RAF Fairford, UK. More than a dozen of the bombers were sent to Fairford in early March as the US and coalition forces prepared for war against Saddam Hussein. Initial strikes were launched March 20 (local time) in Baghdad against selected military targets.

USAF Triggers Stop-Loss

The Air Force on March 14 announced it had implemented Stop-Loss to retain personnel in certain career fields. The action is effective on May 2.

In this second use of Stop-Loss since the 9/11 terrorist attacks, USAF has listed 43 officer and 56 enlisted specialties "critical" to the service's ability to conduct operations. The action affects active duty, Air National Guard, and Air Force Reserve Command personnel.

US Beefs Up Bombers for Korean Crisis

Administration officials on March 5 said the US was sending USAF B-52s and B-1B bombers to Guam to be within easy striking distance of North Korea, should diplomacy fail.

The deployment order was not tied to a March 2 incident in which four North Korean fighter aircraft intercepted a USAF RC-135S Cobra Ball aircraft flying in international airspace. Defense Secretary Donald H. Rums-

feld had issued the order days earlier in what Administration officials said was a realignment of forces to offset the buildup in Southwest Asia.

The North Korean aircraft came within 50 feet of the unarmed USAF reconnaissance aircraft, but they did not "acquire" or lock on to the US aircraft, as early reports had indicated. It is the first such incident since the North Koreans shot down a Navy EC-121 surveillance aircraft, killing 31 Americans, in 1969.

President Bush has maintained that diplomacy will work to restrain North Korea's nuclear weapons program. The movement of the bombers, officials said, serves as insurance against opportunistic moves by North Korea.

Charleston Workload Soars

The amount of cargo passing through Charleston AFB, S.C., on its way to Southwest Asia skyrocketed after two cargo processing buildings at Dover AFB, Del., collapsed under heavy snow in late February. USAF

estimated a 250 percent increase for some Charleston units.

The 437th Aerial Port Squadron members normally process five to seven truckloads each day. That grew to more than 70 trucks a day as Air Mobility Command shifted the flow from Delaware to South Carolina. With about 150 squadron members deployed overseas, the unit had to call for help from other active duty and reservist aerial port specialists around the country.

Officials said the work was also nonstop for other Charleston units—security forces to search the trucks, logistics readiness to unload them, and transportation to keep forklifts and other equipment running—as base personnel prepared the cargo for commercial airlift to a forward operating location.

USAF Tests 21K Bomb

The Air Force on March 11 announced it had tested a 21,500-pound precision guided munition at the Air Armament Center's western test range

in Florida. A C-130 dropped the bomb, called the Massive Ordnance Air Blast weapon.

USAF said it is the largest conventional bomb in existence. It outstrips the 15,000-pound "Daisy Cutter," or BLU-82 bomb, used in Afghanistan against al Qaeda and Taliban forces hiding in caves. The Daisy Cutter, which can obliterate anything within hundreds of yards, serves as a tremendous psychological weapon, as well.

The Air Force Research Lab began the MOAB project in Fiscal 2002 and is expected to complete the program this year.

Aircrews Hit No-Fly Zone Threats

Coalition aircrews enforcing the no-fly zones in Iraq on March 14 struck a mobile radar system that Iraq forces had moved into the southern no-fly zone in violation of UN resolutions, said US Central Command.

It was the second such movement by Iraq in two days. CENTCOM officials said that Iraqi mobile anti-aircraft systems remain a threat to coalition aircraft. Iraq has targeted air patrols in both the southern and northern no-fly zones. When Iraqi anti-aircraft artillery fired on coalition aircraft on March 10, CENTCOM directed strikes against three unmanned, underground military communications sites.

Gen. Richard B. Myers, Chairman of the Joint Chiefs of Staff, on March 11 told reporters that patrols had been stepped up to keep the pressure on Saddam Hussein. "We are now flying several hundred sorties a day, with 200 or 300 over the southern no-fly zone," said Myers.

Leaflet Drop Reaches 12 Million

US Central Command on March 17 reported that coalition aircraft had dropped more than 1.4 million informational leaflets into western and southern Iraq that day, raising the year's total to 12 million.

The leaflets have a variety of messages directed at Iraqi military members and civilians. One of the March 17 messages told Iraqi civilians that they could be the victims if Saddam Hussein uses chemical weapons. Another encouraged Iraqi military members not to use weapons of mass destruction. Some leaflets provide information on how to tune into coalition radio broadcasts.

Iraqi Forces Defecting?

US intelligence sources in northern Iraq said in late February that dozens of Iraqi military members had defected since the first of the year.

USAF Outlines \$4 Billion in Unfunded Priorities

The Air Force in February identified \$4 billion worth of programs the service would like to fund, if lawmakers make additional money available during the Fiscal 2004 budget process.

The 66-item Unfunded Priority List "in no sense is an alternative to the fundamental priorities of our President's budget," wrote Air Force Secretary James G. Roche in the list's cover letter. The list was sent to the House Armed Services Committee at the committee's request.

The "wish list" highlights already planned programs that could be accelerated or expanded if additional dollars become available. The two top items alone total nearly \$1 billion and highlight the service's growing need for additional money for depot-purchased equipment maintenance and aircraft spares.

According to the supporting documentation, USAF's top unfunded requirements are:

1. DPEM. The service noted that depot-purchased equipment maintenance funding is the lowest in 10 years, at 79 percent of requirements. An additional \$516 million would bring this program back to historically effective levels and avoid "depot maintenance backlogs on our critical weapon systems."

2. Flying Hour Spares. The Air Force "faces an extraordinary degree of uncertainty" about the actual operational profile it will fly in Fiscal 2004, the list explains. The service "took some risk" with its spares funding for the year, risk that could be alleviated with \$412 million.

3. Anti-Terrorism/Force Protection. USAF explained that \$140.7 million would improve the ability to mitigate force protection concerns and begin "minimal investment" in transformational technologies needed for long-term improvements.

4. Basic Expeditionary Airfield Resources. An additional \$149 million could be used to purchase equipment needed to support beddown of deployed forces in austere locations where infrastructure is lacking or destroyed or to augment existing sites.

5. Aircrew Life Support. The service could use \$50.6 million for additional panoramic night vision goggles, ejection seat improvements, better parachutes, and new survival vests and radios.

The Air Force then listed two options—lease and accelerated buy—to handle its need to replace aging aerial refueling aircraft. The lease option would give the service more new tankers sooner and, according to USAF, for less money.

6A. Lease 100 KC-767A. This option seeks \$132 million to support a lease-to-buy arrangement for 67 KC-767A tankers by Fiscal 2009 and a full complement of 100 new tankers by Fiscal 2011.

6B. Accelerate KC-135 Replacement. If the lease arrangement is not approved, this option seeks \$154 million to accelerate an existing KC-135 replacement program by two years. This "potentially delivers 16 aircraft" by Fiscal 2009 and the complete fleet of 100 tankers by Fiscal 2014.

7. Distributed Ground Station Block 20. The legacy intelligence, surveillance, and reconnaissance architecture needs to be replaced, and \$123.3 million would help "provide decision quality information within time lines to impact the 'kill chain'" and transform the ground station infrastructure.

8. Rivet Joint Signals Intelligence Modernization. Existing systems are reaching maximum capacity, and \$5.5 million would correct a signals intelligence collection gap by providing for a host of new components and equipment upgrades.

9. Common Configuration Block 35. Currently, three of USAF's 14 Compass Call aircraft lack funding for the Block 35 upgrade. The \$15 million delta "exacerbates already critical availability shortfalls" for the low-density, high-demand aircraft.

10. Joint Surveillance Target Attack Radar System Production Shutdown. When the original 13-aircraft Joint STARS program was increased in piecemeal fashion to 17 aircraft, \$20 million in production shutdown funding was not set aside. The Air Force must pay this bill.

In his letter, Roche noted the Air Force has been careful to limit the unfunded list to items that "can be executed in a timely manner and that will not disrupt the program" laid out in the President's budget request.

—Adam J. Hebert

Many more are preparing and hiding white flags of surrender.

The *Washington Times* reported that two of the defectors revealed that morale was low and much of their equipment defective. One said his division was "at about 25 percent effectiveness and most soldiers were

hiding their white flags," according to the *Times*.

USAF Expands Deployment Force

The Air Force has increased the number of personnel in its deployment pool to 75 percent of the force. That represents a growth of nearly

100,000 people in just the past year, according to Maj. Gen. Timothy A. Peppe, special assistant for air and space expeditionary forces.

Although this means the service has identified 269,000 deployment

positions, said Peppe, there still are not enough individuals in certain specialties.

"Most of this increased deployment capability is in associate unit type codes, so they're not primary

deployers," said Peppe. The increase came largely from staffs at USAF, major commands, direct reporting units, and field operating agencies. Their inclusion in the deployment pool, he said, does help spread the

Despite Complaints, USAF Declared Saudi-based CAOC "Fully Capable"

The Air Force continued to improve its combined air operations center at Prince Sultan AB, Saudi Arabia, despite claims that the center was unready to mount a major theater war.

A USAF Tiger Team issued a critical report last summer, but its conclusions first surfaced in February in a *Washington Times* article.

In response to questions from *Air Force Magazine*, USAF said, "The PSAB CAOC is fully capable of effectively coordinating and directing combat operations" and "is far more capable than the operations centers used in Operations Desert Storm [1991] and Allied Force [1999]."

The Tiger Team's report stated that the CAOC "is not currently poised to smoothly transition to an MTW." It identified 75 actions the service should take to enhance the center.

The service acknowledged in mid-March that so far it had implemented 27 of the 75 changes the team recommended.

Gen. John P. Jumper, USAF Chief of Staff, dispatched the team to Prince Sultan in May 2002 to "examine the manpower, processes, and equipment required" to support air operations for US Central Command. The team spent two weeks at 9th Air Force headquarters at Shaw AFB, S.C., and PSAB and forwarded its findings to Jumper on July 8.

A USAF spokeswoman said the team has met "on multiple occasions since that time to update the status and close action items generated" by the report.

Among the items noted by the team was "confusion about roles, responsibilities, and chain of command." It said the CAOC operators were not sure who they should take direction from or who they should consult to get things done. The different dynamics of various operations (Northern Watch and Southern Watch in Iraq and Operation Enduring Freedom in Afghanistan) "led to a somewhat ad hoc organization optimized for none and not well suited to an MTW-sized conflict," the Tiger Team reported.

It also noted that intelligence reports were too widely distributed within the CAOC, hindering coordination "and unity of effort during execution." It pointed out that there was a sharp upturn in the learning curve when many of the CAOC's personnel rotated back to other jobs all at once, forcing the center to constantly relearn lessons. There was also mention of a cap on the



Controllers in the combined air operations center monitor the status of operations of an ongoing Operation Southern Watch mission. The CAOC, which spans nearly 30,000 square feet, is the nerve center for US Central Command air operations in Southwest Asia.

number of people who could be detailed to the CAOC—a limit imposed by host nation Saudi Arabia—which hindered proper staffing.

The Air Force said it has implemented many of the easier to fix items, such as changing schedules for CAOC personnel so that outgoing people had time to "exchange information" with their replacements.

Among "the most significant" changes USAF said it first put into effect was a compilation "by name" of all personnel who would staff the CAOC "to prosecute an air campaign in Southwest Asia." The listing includes personnel from the rotational air and space expeditionary forces, the headquarters of Central Command Air Forces and 9th Air Force, Air National Guard augmentees, and joint and coalition liaison teams, "along with interagency analysts to round out the warfighting team."

USAF also took immediate steps to improve operator orientation and theater training to help operators more clearly understand roles and responsibilities. Personnel assigned to the CAOC also must now complete the Joint Air Command and Control Course.

At the time of the team's report, the Prince Sultan CAOC was barely a year old. USAF said the report "highlighted many organizational, process, and system improvements to sustain, stabilize, and to institutionalize the CAOC and all air operations centers."

—John A. Tirpak

USAF photo by RAF Sgt. Gareth Davies

"pain." The Air Force now exempts from deployment only select career fields and positions, such as ROTC staff members, many instructors, recruiters, space operators, missile crews, and missile security professionals.

Westover Surges for Gulf Buildup

Within hours of receiving word that C-5 aircraft loaded with troops and equipment bound for the Persian Gulf were on their way, Air Force Reserve Command's 439th Airlift Wing at Westover ARB, Mass., set up 24-hour operations to gas and inspect the aircraft and feed the troops—normally a four-hour job per aircraft.

As it did for the 1991 Persian Gulf War, Westover serves as a key air bridge for US forces deploying to Southwest Asia. AFRC officials said that since Westover started its 24-hour operations Feb. 2, the base had processed 375 aircraft, primarily C-5s and C-130s, and pumped more than 3.3 million gallons of JP-8 fuel. It has also handled 2,571 passengers and more than 8.5 million pounds of cargo.

AFRC Extends Air Bridge

More than half of the 10,000 Air Force Reserve Command personnel who have been mobilized serve as a major span in the US air bridge moving troops, equipment, and cargo to Southwest Asia.

Air Mobility Command planners began staging C-5 and C-130 aircraft through Westover ARB, Mass., in early February. (See "Westover Surges for Gulf Buildup," above.) AFRC's 445th Airlift Wing, Wright-Patterson AFB, Ohio, serves as the staging point for AFRC C-141 missions.

In addition, other AFRC units support the air bridge. They include C-5 crews from the 512th AW, Dover AFB, Del.; 433rd AW, Lackland AFB, Tex.; and 349th Air Mobility Wing, Travis AFB, Calif. They also include C-17 crews from the 315th AW, Charleston AFB, S.C., and 446th AW, McChord AFB, Wash. AFRC tanker units help the airlifters cross the Atlantic: KC-135 crews from the 434th Air Refueling Wing, Grissom ARB, Ind., and 452nd AMW, March ARB, Calif.; KC-10 crews from the 514th AMW, McGuire AFB, N.J., and 349th AMW, Travis.

"Light Benches" Wins

DOD announced on March 3 the winning design for the Pentagon memorial to honor the 184 people killed by the terrorists who flew American Airlines Flight #77 into the Pen-

CMSAF Thomas Barnes, 1930–2003



Retired Chief Master Sergeant of the Air Force Thomas N. Barnes died March 17 in Sherman, Tex., from cancer. He was 72.

Barnes was the fourth person to be named to USAF's top enlisted post and the first black to hold such a position in any of the military services. He served in that post from 1973 to 1977, when he retired.

Born in Chester, Pa., in 1930, Barnes entered the Air Force in 1949, training at the Chanute AFB, Ill., aircraft engine and hydraulics specialist school. He served as a hydraulics specialist at McChord AFB, Wash., then was sent to Japan in 1952. Shortly after arriving in Japan, he

completed on-the-job training as a flight engineer and served in both specialties because of a manning shortage.

Through 1965, Barnes served as a crew chief, flight engineer, and senior controller on various aircraft, including the B-25, B-52, C-45, and C-47. In October 1966, he entered F-4 field training, and, in December, he went to Southeast Asia, serving with the 8th Tactical Fighter Wing until December 1967. He next served at the pilot training base at Laughlin AFB, Tex., and, in 1971, Air Training Command selected him as the command's senior enlisted advisor.

After his retirement, he remained active in Air Force matters and was often sought as a speaker at military functions.

Barnes once responded to a question in an interview: "I'd like to be remembered as a role model for people who believe they can't get there." He added that it was an honor to be chosen as the Chief Master Sergeant of the Air Force "on the basis of my qualifications, as opposed to my race or my gender."

End Strength Issue Flares in Congress

In Congressional testimony on the Fiscal 2004 defense budget, each of the service Chiefs described the increasing stress that the high operations tempo is having on their personnel, especially those in a few critical skills.

Yet, lawmakers pointed out that the Pentagon had failed to include any significant end strength increases in the budget request.

Asked to explain the disparity, Air Force Chief of Staff Gen. John P. Jumper said, "It's not just a matter of adding end strength."

Jumper continued, "It's a matter of making efficiencies out of what you've got." He said the Air Force had identified more than 12,000 billets that do not require a military member to fill them. These individuals will be reassigned and, in some cases, retrained to critical career fields in need of additional personnel. Those fields include force protection, combat search and rescue, and special operations forces.

Jumper maintained that if the efficiencies the Air Force is working "don't do the job, I will be the first to go back to the Secretary of Defense and ask for the relief that we need."

tagon on Sept. 11, 2001. The design is titled "Light Benches."

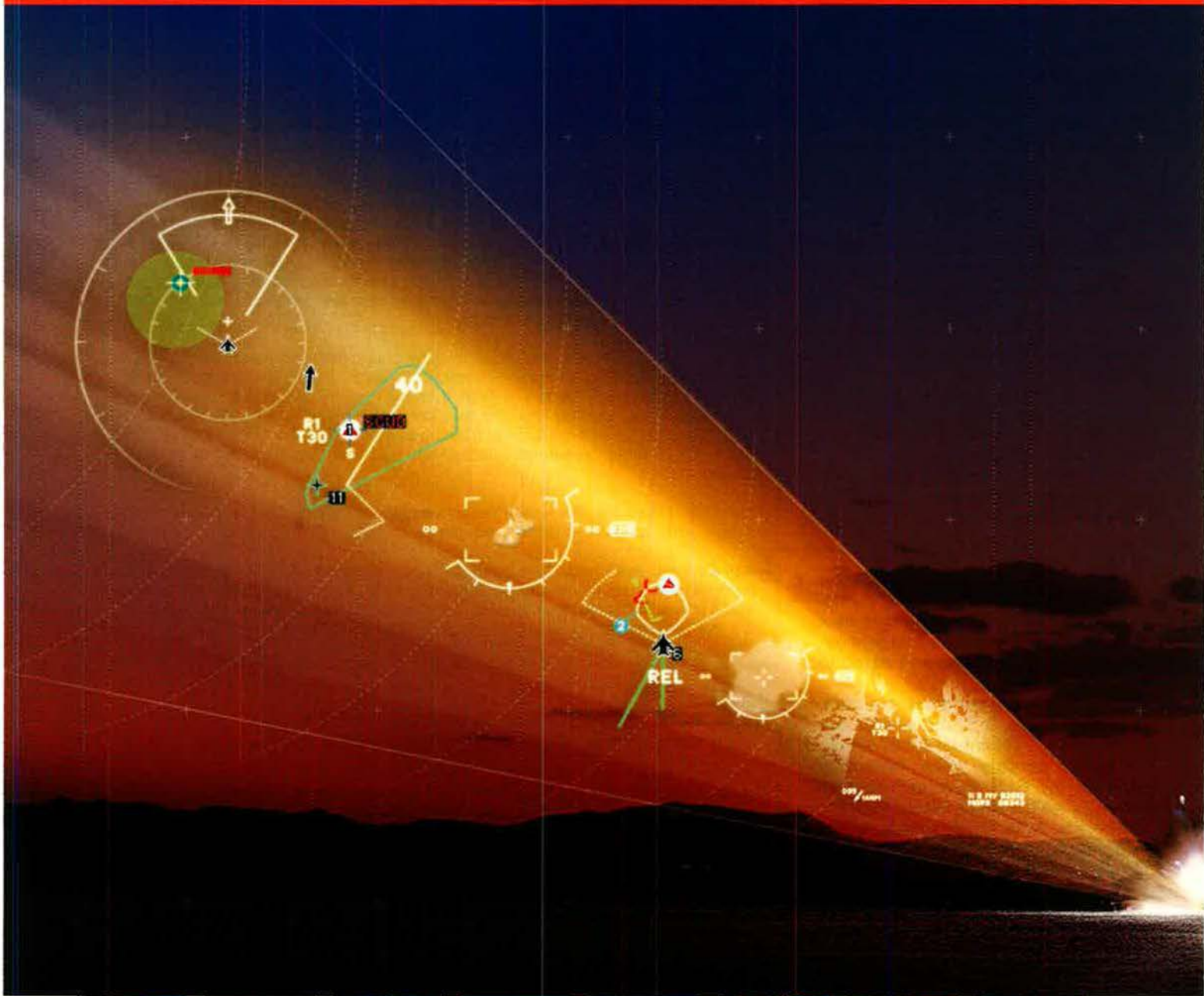
Submitted by Julie Beckman and Keith Kaseman of New York, the design includes 184 benches, each with the name of a victim. The benches will be set according to age, from the youngest at age 3 to the oldest at 71.

"Basically, the memorial unit itself is a cast aluminum sculptural ele-

ment that does several things," said Kaseman. "It's a reflecting pool that glows at night with light. It's a slender cantilevered bench surface that grows out of the ground and hovers over the ... glowing light pool." He added that it would include trees throughout, forming "a canopy of light and shade and shadow."

Beckman said they wanted to cre-

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APG-73
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Lawmakers Fear Reserve Forces Are Overused

A Congressional delegation's recent visit to US European Command facilities has added new focus to concerns that the use of Guard and Reserve forces has reached a critical level.

In a Feb. 12 trip report, three Republicans and one Democrat told Duncan Hunter (R-Calif.), House Armed Services Committee chairman, that reserve forces are being overused. They said the situation could lead to problems for both active duty and reserve units in the future.

"The Total Force policy is being implemented in ways never anticipated," according to the report, signed by delegation leader Rep. John M. McHugh (R-N.Y.) and Reps. Robin Hayes (R-N.C.), Mike McIntyre (D-N.C.), and Jeff Miller (R-Fla.). They cited anecdotal evidence that the high operating tempo may drive some reservists out of the military.

Reservists serving in EUCOM told the lawmakers during their 10-day trip that "leaving the reserves is an increasingly attractive option" and that some employers are beginning to see reserve status as a liability in employees.

More than 188,000 reservists are on active duty (as of March 12) to support the war on terrorism. Some have been serving for longer than a year.

The lawmakers said they were impressed by the professionalism and dedication of the EUCOM forces and heard "no explicit statements" that the reservists would be unable to do what is asked of them.

They noted that "missions being performed by reservists today are above a rate that is sustainable simply through the reserve component volunteers."

McHugh told the publication *Congress Daily* that EUCOM commanders could not do their jobs without Guard and Reserve support. "We need more men and women in uniform," he said.

—AJH

USAF Leaders Blast Anonymous Critics of War Strategy

Top Air Force officials condemned unnamed critics who complained, in a *Washington Times* front page article, about a draft Iraq air war plan.

The Feb. 13 article asserted that some senior military officials, who said they were briefed informally on the target lists, were concerned the Iraq war plan was too timid. They said it "would largely spare infrastructure targets, such as bridges, and most, if not all, telephone communications" from air attack, to limit devastation for Iraqi citizens.

This restraint would leave ground forces facing tougher defenses than necessary, they claimed. One official was quoted as saying there were too many "political restrictions" being placed on the air war plan.

USAF leaders quickly took aim at the critics.

"People who make that comment are either ones who were in on the planning and didn't have the courage to speak up at the time or those who are content not to know about the plan in detail but take potshots from the shadows," said Gen. John P. Jumper, Chief of Staff, Feb. 13 at the Air Force Association's symposium in Orlando, Fla.

"I have great concern about the professionalism of officers who would comment in this way," Jumper added. Officials who would complain to the press are a "small minority of the officers in our Air Force."

Air Force Secretary James G. Roche echoed that sentiment in remarks in Orlando Feb. 14. He said, "There is no such thing as an informal war plan briefing ... and no such thing as an anonymous Air Force officer." If officials lack the courage to express concerns through the chain of command, "they are not living up to the standards of our Air Force."

In a letter Jumper fired off to the newspaper, he noted that the criticisms were "based on the musings of a single anonymous source about classified contingency planning." Jumper added that in his 37 years of military service, he had never seen "an environment of such joint cooperation and interservice communication."

He continued: "The very best minds of each service are working to maximize the combined effects of all our forces in pursuit of victory. On that point—and unlike the shadow critic who violates his or her oath even while presuming to represent other airmen—I am willing to put my name and reputation on record."

—AJH

ate a place that is welcoming to family and friends of the victims but also a place for the nation. "It is a place where two people can be or thousands of people can be," she said.

The memorial will be built on 1.93 acres on Pentagon land near where the aircraft struck the building. Officials estimate the cost could go up to about \$7 million. They said the money would not come from "taxpayers funds."

Although located on Pentagon property, officials said it will be open to the public. Mike Sullivan, manager of the Pentagon renovation program, said there is commercial parking at the Pentagon City Mall with a breezeway under Interstate 395, and there's Metro.

DIA Follows Speicher Leads

The director of the Defense Intelligence Agency told Congress that the agency was pursuing leads as if missing Navy pilot Capt. Michael S. Speicher is "alive and being held by the Iraqis." The Iraqis know of his fate, said Vice Adm. Lowell Jacoby.

"They are not forthcoming with the information that they have available," he added.

Speicher was shot down during the 1991 Gulf War and listed as killed in action. The Navy changed that classification to "missing/captured" in October 2002, based on new intelligence information.

On Feb. 11, Jacoby told the Senate Intelligence Committee that DIA had "a number of leads" that it was pursuing "very aggressively."

DOD Wants Own Civilian System

Pentagon officials want to take over the personnel system that governs DOD's more than 600,000 civilian personnel. This, they say, would help ease the bureaucracy.

"Right now our military system is governed by us," said Dov S. Zakheim, DOD comptroller. "Our civilian personnel system, on the other hand, is governed by everybody's rules."

He continued, "We believe we are in a unique situation. ... We need to have a much more different, much more responsive civilian personnel management system."

The plan, said Zakheim, is to "go even beyond" what Homeland Security got when Congress allowed the new department to set up its own personnel rules. DOD wants the same fast-track approach, instead of having to come in "every year with bits and pieces changes."

He said DOD was finalizing proposals to go to Congress. Among possible changes is removal of some positions that require Congressional confirmation and development of a system that would give managers more flexibility in hiring and firing and a means to reward performance rather than longevity.

The performance-reward approach falls in with the Bush Administration's 2004 budget proposal to establish a special fund to boost the base pay for the best workers. (See "Bush Pushes 'Best Worker' Pay," March, p. 14.)

Court Hears Agent Orange Case

The US Supreme Court on Feb. 26 began hearing arguments to decide whether two veterans can sue the chemical companies that made Agent Orange years after the companies settled a 1984 class action suit.

Neither Joseph Isaacson, an Air Force veteran, or Daniel Stephenson, a retired Army helicopter pilot, was ill in 1984 or up to the deadline of 1994, so they could not be party to the class action agreement. Since then, each has been diagnosed with diseases believed to stem from Agent Orange exposure.

The 1984 agreement stipulated that no one who showed disease symptoms after 1994 would receive cash payments. Once all claims had been filed against the \$180 million fund, the remaining money went to research, counseling, and other services to benefit veterans exposed to Agent Orange, a chemical defoliant used extensively during the Vietnam War.

Supporters of the original agreement say overturning it could affect all past class action judgments. However, veterans groups maintain the negotiated agreement was legally flawed because it did not leave open a window for those not yet manifesting illness. They also claim the lawyers for the chemical companies knew a good deal when they saw it.

USAF, Navy Weather Join Forces

A shortage of personnel prompted the merger of an Air Force weather unit and its Navy counterpart—both supporting Operation Enduring Freedom in Afghanistan. Officials said the move has greatly improved morale, as well as operations.

It took only three weeks to develop training programs and complete the merger. The weather community was concerned about how the two services would operate together, given

USAF: Jamming GPS Signals Won't Work

Global Positioning System signals, which guide newer US munitions to their targets, can be jammed, but not easily, and not for long.

Efforts are under way both to make the signal broadcast by GPS satellites more jam-resistant and to reduce interference with GPS-guided munitions when they reach the target area, according to Lt. Col. John Carter, USAF chief of space requirements.

Carter said the service has been working "from the day we built GPS" on ways to frustrate would-be jammers.

"We're very confident we can do that," he said.

An enemy hoping to use a GPS jamming signal to fool weapons like the Joint Direct Attack Munition shouldn't count on success, Carter said. For one thing, JDAMs also have inertial navigation systems that help them guide their way to a target, so jamming the GPS signal being received by JDAM is no guarantee the weapon will go off course. Other weapons use laser or optical guidance, with GPS signals as simply a backup.

Moreover, anyone transmitting a GPS-jamming signal "can be found, and anyone who can be found can be targeted," Carter pointed out. He advised "bad guys" not to be the one picked to jam a GPS signal. Reportedly, Iraq has obtained a number of Russian-made transmitters that can spoof GPS signals.

The current generation of GPS IIR satellites already have a measure of jam resistance, by which they can broadcast with greater power if their signal is being jammed, according to Air Force Undersecretary Peter B. Teets. He called this tactic "flexible power."

Teets added that "real improvement" will come with GPS III, about 10 years from now. It will be "much more jam-resistant on the satellite side, on the control-element side, and on the user-equipment side." The Air Force, he said, "is doing the necessary smart things to enable GPS to serve us well."

—JAT

Little Belgium, Doing Its Level Best

The Belgian minister of defense rushed to support his nation after the *Wall Street Journal* highlighted Belgium as a case study in European military inefficiencies.

"We refuse to squander our public funds for the sole purpose of national glory, since we prefer to spend them on social affairs, health care, and pensions for our fellow citizens," Andre Flahaut, Belgium's defense chief, wrote in a Feb. 26 rebuttal.

The Feb. 13 *Wall Street Journal* article ("How Europe's Armies Let Their Guard Down") noted that many of NATO's forces "are poorly equipped, in part because so much money is spent on pay and benefits." It went on to say, "Belgium, for example, employs hundreds of military barbers, musicians, and other personnel who aren't likely to be called into battle. Yet Belgium doesn't have the money to replace aging helicopters or conduct regular combat training exercises."

In his response, Flahaut said, "The primary mission of our armed forces is to maintain the peace and to help the civilian population (Belgian or foreign)."

Belgium does this "without being belligerent or being convinced of having been elected by a higher authority to keep watch over the world order," he added.

Flahaut also objected to the *Wall Street Journal's* numbers. The newspaper said Belgium spends "some 67 percent of its annual defense budget" on personnel and "only about 5.4 percent" on equipment. Flahaut said Belgium spends 62 percent on personnel and 11 percent on equipment.

—AJH

USAF Leaders Vow To Make Changes at Academy

The Air Force has been under fire from lawmakers, news media, and parents of cadets since multiple allegations of rape, cover-up, and retaliation against victims surfaced earlier this year concerning the Air Force Academy in Colorado Springs, Colo.

According to Sen. Wayne Allard (R-Colo.), as of March 5, 25 female cadets—15 former and 10 current—had complained to his office that they had been raped or sexually assaulted at the academy. Some said they were ignored, punished, or shunned for reporting the incidents, and some did not make reports for fear of being ostracized or kicked out.

Allard was joined by Sen. John Warner (R-Va.), chairman of the Senate Armed Services Committee, and several other lawmakers in asking for investigations of the situation at the academy.

A working group, appointed by Air Force Secretary James G. Roche and headed by USAF general counsel Mary L. Walker, began gathering information at the academy Feb. 19. Walker's group is one of three elements in the investigation, Roche told members of the House Armed Services Committee on Feb. 27. The second is a review of each case by the DOD inspector general. The third is oversight by the undersecretary of defense for personnel and readiness.

Roche also told the lawmakers that Air Force leaders had first become "aware that something was grossly wrong when we received an e-mail back in mid-December." Before that, he said, a Congressman had sent them a letter on a single case. The e-mail signaled something "broader," said Roche.

The Secretary then said that he and USAF Chief of Staff Gen. John P. Jumper have a simple logic: "We must not commission any criminal. We must not allow any cadet to take violence on another cadet. ... We are also committed to ridding the academy of any cadet who would knowingly harbor some cadet who has done this. ... We want to rid the academy of any cadets who would shun any victim. ... We will not tolerate this."

Both Roche and Jumper have since visited the academy and talked with cadets and staff. Amid some calls for removal of the current academy leadership, both senior service leaders said the problem did not start with the current leadership. Instead, they pointed to budget and manpower restrictions that led the service to make cutbacks in counseling training for staff officers. Roche called the problems "a corporate responsibility."

The service plans to implement major policy changes before the arrival of the new class of cadets in June.

Roche and Jumper jointly sent letters March 13 to the parents of incoming cadets, saying, "We've made it clear to the cadets that all perpetrators, those who fail to act to prevent assaults, those who knowingly protect perpetrators after the fact, and those who would shun or harass anyone with the courage to come forward and report these criminals, will be brought to justice."

The service has set up a phone line for cadet victims of sexual assault to report their assault directly to the Air Force inspector general. Current and former cadets may call 703-588-1541 from 8 a.m.-4 p.m. (EST), Monday-Friday.

their different responsibilities, said 1st Lt. Richard Stegronsky, the USAF weather flight commander. "So far, it's been extremely smooth," he added.

His navy counterpart, Lt. Charlotte Welsch, said the joint operation also aids continuity. "There are more people here to keep the knowledge base strong and steady," she said.

Concurrent Receipt Rises Again

Lawmakers have reintroduced legislation to provide military retirees with full concurrent receipt rather than the limited compensation plan reached as a compromise when Administration officials threatened a Presidential veto if the full measure remained in the Fiscal 2003 defense bill.

Full concurrent receipt would en-

able all military retirees to receive both retired pay and any disability pay they are due. Under the old rules, most retirees have their pay offset by disability pay.

The 2003 defense bill authorized full restoration for certain categories of retirees, such as those awarded Purple Hearts and those with combat-related disability ratings of 60 percent or higher. Those eligible under the new provisions could number about 30,000.

Regan Guilty, No Death Penalty

A federal jury in late February found Brian P. Regan, a retired Air Force master sergeant, guilty of two counts of attempted espionage and one count of gathering national defense information. The jury decided against imposing the death penalty.

Regan, who had worked with the National Reconnaissance Office while on active duty and later as a contractor, was arrested in August 2001 as he tried to board a flight to Europe. He was charged with spying for China, Iraq, and Libya. (See "Retired Airman Faces Death Penalty in Espionage Case," June 2002, p. 18.)

Among the evidence against Regan was a letter to Saddam Hussein asking for \$13 million for secret information about US reconnaissance satellites. The FBI found that letter and a similar one to Muammar Qaddafi on Regan's computer.

Regan now faces up to life in prison when he is sentenced in May.

Smallpox Reactions Called Rare

A DOD official said reactions among military members to smallpox vaccinations have been rare—and all personnel have been treated and returned to work.

According to Col. John Grabenstein, deputy director for military vaccines in the Office of the Army Surgeon General, there have been three serious reactions and seven minor out of more than 100,000 military personnel who have received the smallpox shots. He was speaking to the Institute of Medicine's Committee on Smallpox Vaccination Program Implementation on Feb. 13.

Grabenstein said two men contracted encephalitis—a serious inflammation of the brain—and had to be hospitalized but had returned to duty. Another man, an airman, had developed myocarditis—inflammation of the heart. He was discharged from the hospital within two days. He also reported that seven individuals developed serious rashes with pustules,

but they were treated as outpatients and returned to duty.

One of the men who had encephalitis had never received a smallpox shot before, noted Grabenstein, while the other had been vaccinated previously. About 63 percent of those vaccinated in the military were receiving their first smallpox shot.

Pentagon officials had previously reported that about three percent of those vaccinated missed an average of 1.5 days of work because of common side effects, such as fever, flat rashes, malaise, or swollen lymph nodes.

First DOD Web Survey Results In

Pentagon officials on Feb. 25 announced the results of DOD's first active duty status of forces survey (SOFS) via the Internet. DOD's general conclusion: Things are looking up.

Some 38,000 service members were surveyed last summer to assess their attitudes toward a variety of personnel and policy issues. The response rate was 32 percent.

David Chu, undersecretary of defense for personnel and readiness, initiated the Web-based SOFS, which will also be used to poll reservists and DOD civilians.

According to the survey, 83 percent of active duty members were satisfied with job security; 68 percent were satisfied with military values, lifestyle, and tradition; and 67 percent with exchange and commissary availability. Although respondents were less satisfied with housing (29 percent), pay (38 percent), and family support programs (41 percent), officials said those numbers were higher than in a 1999 survey.

Attitudes toward staying in the military were also higher than in 1999. The percent of those who intend to remain in the service increased eight percentage points and were even slightly higher for more junior members.

Day Petitions Supreme Court

Retired Col. George E. "Bud" Day's petition on behalf of World War II and Korean War era military retirees was placed on the US Supreme Court docket Feb. 24. The court gave the government until March 26 to file briefs, after which the court will decide if it will hear the case.

Specifically the case is William O. Schism and Robert L. Reinlie vs. United States and involves government promises of lifetime health care for military retirees. The government has not denied that promises were made, just that they were not legally



USAF photo by TSgt. Lisa M. Zurzanyika

Airmen and soldiers on March 7 team up at Langley AFB, Va., to push one of two Army CH-47 Chinook helicopters aboard a C-5 airlifter bound for Southwest Asia. The Air Force said that, since the 9/11 terrorist attacks, it has transported more than 445,000 tons of cargo and more than 447,000 passengers to the US Central Command theater of operations.

Proposals on Joint Chiefs Hit Wall of Opposition

The Defense Department has canned draft proposals that would have cut the terms of the Joint Chiefs of Staff and eliminated Joint Staff autonomy. When lawmakers queried top Pentagon officials about it in February, all asserted they had not seen the proposed plan.

According to Sen. Carl Levin (D-Mich.), a draft of proposed legislation that circulated the Pentagon last fall called for reducing the terms of the Joint Chiefs from four years to two, with the option of a two-year renewal. That proposal was requested in a memo signed by David Chu, undersecretary of defense for personnel and readiness.

The other proposal cited by Levin would have required the Joint Staff to report to the Defense Secretary instead of to the Chairman of the Joint Chiefs of Staff. Approval for selections to the Joint Staff would also have been shifted to the Secretary. And the draft legislation, said Levin, "would strike the statutory requirement that the Joint Staff be, quote, 'independently organized and operated.'"

When Levin asked Defense Secretary Donald H. Rumsfeld and JCS Chairman Gen. Richard B. Myers about the proposals at a Senate Armed Services Committee hearing Feb. 13, both said they had not yet seen the draft proposals. However, Rumsfeld noted that he and Myers had "talked about" the way OSD and the JCS operate and that they saw some duplications.

"There might be a way to merge some of those pieces in a way that did not in any way inhibit the Chairman's responsibility under law" to provide independent military advice to the national command authority, Rumsfeld said.

At a Feb. 25 committee hearing, Levin asked each of the service chiefs about the proposals. Each said they had not seen the draft proposals but defended their four-year terms.

"For a service chief, a longer-term perspective is helpful," said Army Chief of Staff Gen. Erik K. Shinseki.

Chief of Naval Operations Adm. Vern Clark agreed, saying, "There's a great learning curve in these assignments."

USAF Chief of Staff Gen. John P. Jumper said that although the Chiefs had not been briefed on the proposals, they did recently discuss the issue with Rumsfeld. Jumper emphasized, "I would think the Secretary would want his service chiefs in position long enough to be able to make a difference and to establish rapport with one another to be able to deal with the joint issues that we deal with every day."

A Feb. 27 InsideDefense.com article reported that the proposals on the Joint Chiefs had been dropped.

—AJH



On March 10, USAF launched the first military payload aboard an Evolved Expendable Launch Vehicle. This Boeing Delta IV rocket boosted a Defense Satellite Communications System satellite into orbit from Cape Canaveral AFS, Fla. (See "EELV Boosts First DOD Payload" below)

Will USAF Get 150 FB-22 Bombers?

Air Force Secretary James G. Roche told lawmakers he would like to have at least 150 FB-22s (a proposed bomber version of the F/A-22) in addition to 381 F/A-22s.

At a House Armed Services Committee hearing on Feb. 27, committee chairman Rep. Duncan Hunter (R-Calif.) exclaimed that the "extremely small present day bomber force of 21 B-2s, 76 B-52s, and 63 B-1s ... is a tragedy." He then asked Roche, "If you had your druthers and you had the money, what size bomber force would you like to have today?"

The Air Force leader's initial response was to discuss types and numbers of targets. Hunter interrupted, saying, "I'm not going to let you make the answer complex. ... You've got a lot of deep strike requirements that may percolate real quickly. How many bombers would you like to have?"

Roche said: "My definition of bombers, strike systems: I would like to have the 21 B-2s we currently have. I would like to have 60 of the B-1s with the [Joint Air-to-Surface Standoff Missile] extended range on board. I would like to have the chance to build the FB-22, which has dramatic range, almost as much as the B-2 and that also can defend itself, that has advances in stealth. I would like to have 381 minimum F/A-22s, minimum of 150 FB-22s, and then I would like to go to the next generation."

Senior Staff Changes

PROMOTIONS: To Lieutenant General: John D.W. Corley. To Brigadier General: Jarisse J. Sanborn.

CHANGES: Maj. Gen. L. Dean Fox, from Dir., Civil Engineering, AMC, Scott AFB, Ill., to Civil Engineer, DCS, Instl. & Log, USAF, Pentagon ... Brig. Gen. Stanley Gorenc, from Cmdr., 9th Recon Wg., ACC, Beale AFB, Calif., to Dir., P&P, USAFE, Ramstein AB, Germany ... Brig. Gen. Frank G. Klotz, from Dir., Nuclear Policy & Arms Control, NSC, Washington, D.C., to Cmdr., 201st AF, AFSPC, F.E. Warren AFB, Wyo. ... Maj. Gen. (sel.) Mark A. Welsh III, from Dir., P&P, USAFE, Ramstein AB, Germany, to Mission Area Dir., Global Power, Asst. SECAF, Acq., Pentagon. ■

binding. (See "Editorial: Ghosts in the Machine," January, p. 2.)

Attorney Day, who is a Medal of Honor recipient, turned to the Supreme Court when the Circuit Court of Appeals in Washington, D.C., last November overturned a decision—that favored the retirees—made by a three-judge panel of the appellate court in February 2001.

Day hopes to move the case to class action status, pending a favorable decision by the Supreme Court.

Tricare Offers Provider Bonuses

This summer, DOD's Tricare Management Activity plans to offer a 10 percent bonus to providers in medically underserved areas. However, TMA must negotiate this arrangement with its managed care contractors.

Supplementing basic reimbursement rates has been a standard practice for Medicare in what it terms health professional shortage areas. Tricare will use Medicare's HPSA criteria to determine which providers may receive bonuses.

Low reimbursement rates are one reason some physicians have opted out of Tricare. (See "Are There Enough Doctors in the House?" March, p. 46.)

EELV Boosts First DOD Payload

The Air Force on March 10 launched the first military satellite using an Evolved Expendable Launch Vehicle—a Boeing Delta IV booster. The payload was a Defense Satellite Communications System satellite.

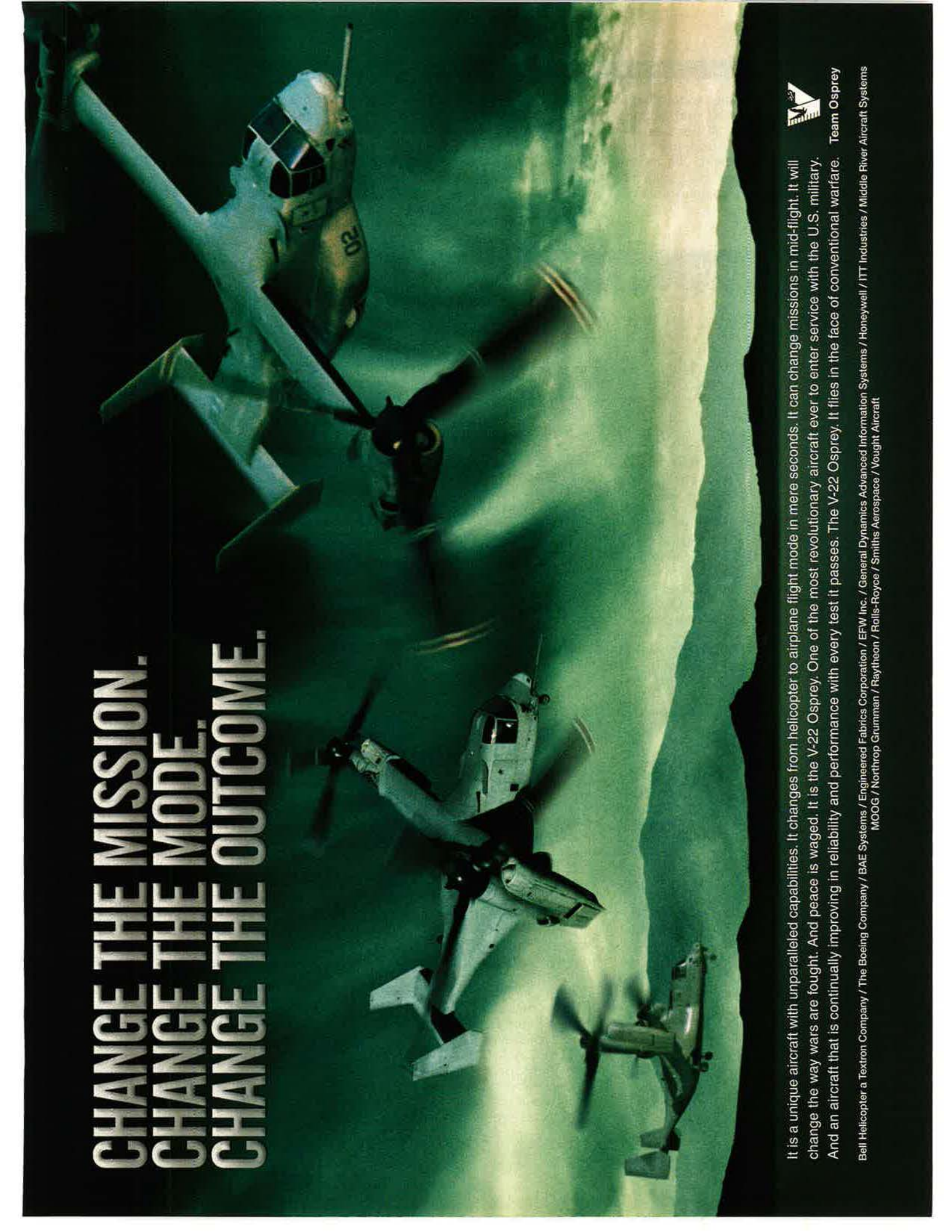
The EELV program features two families of rockets developed jointly by the Air Force and two contractors, Boeing and Lockheed Martin, that will be used for commercial, as well as military launches. Both the Boeing Delta IV and Lockheed Martin's Atlas V flew their maiden missions with commercial payloads last year.

USAF expects the EELVs to reduce the cost of spacelift operations.

School Funds Cut in Budget

President Bush's Fiscal 2004 budget includes elimination of federal impact aid—the money provided to local school districts to educate children of military parents. The school districts lose tax revenue because of the presence of the bases, which are tax-exempt federal properties.

The Administration proposal is to eliminate those children who do not live on a military base from the impact aid calculations—saving about \$125 million annually.



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The cut is justifiable, according to Office of Management and Budget spokeswoman Amy Call, because the school districts do get property taxes from those children who live in private homes off base. She said the bases themselves also generate revenue for the community.

The counter argument is that the bases themselves, which occupy, in many cases, a large portion of some school districts, do not pay property taxes. That potential revenue is lost.

The federal impact aid program was established during the Truman Administration. Several Administra-

tions since have proposed cuts to the program.

DOD Seeks Missile System Waiver

Included in the Administration's 2004 defense budget is a request to exempt the new missile defense system from operational testing re-

News Notes

By Tamar A. Mehuron, Associate Editor

■ Japan announced in late February that it planned to launch its first two spy satellites in early spring, with another two likely to follow this summer. The satellites will give Japan its first capability to detect ballistic missile launches. Since World War II, it has relied on the US for such data.

■ North Korea on Feb. 26 conducted a flight test of a new long-range cruise missile, reported the *Washington Times*. The missile, which has a range of about 100 miles, is a variant of China's HY-2 Silkworm missile. Initial US intelligence reports mistakenly identified it as a Russian Styx anti-ship missile whose range is 50 miles.

■ Air Combat Command on March 11 announced cancellation of a Red Flag exercise scheduled for that month at Nellis AFB, Nev., citing "emerging Air Force deployment requirements."

■ US intelligence officials said Russia in February delivered additional advanced Su-30MKK fighter-bombers to China and planned to deliver a new air-to-ground missile—the AS-17X—as part of the aircraft deal, according to the *Washington Times*. Other arms recently traded by Moscow to China include Su-27 fighters, A-50 airborne warning and control aircraft, and SA-10 and SA-15 surface-to-air missiles.

■ USAF said a T-38 aircraft crashed on March 8 into two houses in Valparaiso, Fla. The pilot had ejected safely, and no one on the ground was injured. The pilot was from Holloman AFB, N.M., and flying a training mission near Eglin AFB, Fla. A safety board is investigating the incident.

■ Northrop Grumman delivered the seventh Global Hawk UAV—the final advanced concept technology demonstration platform—to Edwards AFB, Calif., on Feb. 14. The UAV is "the

first true test aircraft and will define future production models," said Lt. Col. Michael Guidry, director of the Global Vigilance Combined Test Force at Edwards. It contains a new mission management computer and other improvements recommended after the UAV's early operational debut in Afghanistan. Northrop is slated to deliver the first two production vehicles later this year.

■ NASA on Feb. 18 released its top level requirements for the design of the Orbital Space Plane, its name for a next generation system of space vehicles that will be used for the transport of crews to and from the International Space Station.

■ Human error caused the Sept. 17, 2002, crash of an Air Force RQ-1 Predator UAV in Southwest Asia, an Air Force investigation report concluded. The unmanned reconnaissance aircraft was destroyed upon impact. No one on the ground was injured. Air Force investigators determined that the pilot accidentally directed the aircraft into hazardous weather, causing the flight control computers to become disabled. The pilot re-established communications twice with the aircraft, but it failed to respond to the pilot's commands.

■ A US-Russian panel on prisoners of war has used information from Russia's military archives to help identify seven of 51 American pilots who were reported missing during the Vietnam War. Other identifications may follow.

■ The Air Force broke ground Feb. 20 for a new \$15.5 million laboratory for Air Force Research Laboratory's Directed Energy Directorate at Kirtland AFB, N.M. Called the Telescope and Atmosphere Compensation Laboratory, it will support the directorate in its work on advanced optical research, laser propagation, and space

object imaging. The building, which is scheduled for completion in April 2004, will provide space to design, construct, test, and integrate experimental hardware for optical research, along with work areas and office space for 84 scientists, engineers, and technicians who are currently in portable trailers and buildings.

■ Pentagon employees began training Feb. 25 in the use of emergency gas masks to prepare for a possible biological or chemical attack. DOD began giving its 24,000 workers the masks and is stockpiling hundreds in cafeterias and other high-traffic areas. The masks have provided protection for about an hour in testing and are designed to give wearers 15 to 30 minutes to flee biological or chemical contaminated areas.

■ DOD has certified four more National Guard Civil Support Teams to assist civil authorities in response to a domestic weapons of mass destruction incident. They are: 35th CST, St. Albans, W. Va.; 45th CST, Smyrna, Tenn.; 46th CST, Montgomery, Ala.; 51st CST, Augusta, Mich. These four bring the total number of certified teams to 31.

■ Orbital Sciences on Feb. 6 successfully launched the first prototype of the interceptor boost vehicle it is developing, testing, and manufacturing for Boeing to support the Missile Defense Agency's Ground-based Mid-course Defense system. The booster launched from Vandenberg AFB, Calif., and flew over the Pacific Ocean, reaching an altitude of 1,125 miles and traveling about 3,500 miles. The launch verified vehicle design and flight characteristics, gathered flight data, and confirmed performance of the propulsion system.

■ A midair collision between two A-10s Feb. 18 over Cannon Guntery Range near Ft. Leonard Wood, Mo., resulted in minor damage to the two aircraft. Neither pilot was injured and both flew their aircraft safely back to Whiteman AFB, Mo. A board of officers is investigating the incident.

■ The UK production version of

quired for all new weapon systems. According to DOD, the waiver is needed so the system can be fielded by 2004.

Sen. Carl Levin (D-Mich.), the ranking member on the Senate Armed Services Committee, on March 6 told the Defense Writers Group, the request "is going to be a very contentious issue."

Lawmakers criticized the Administration last year when the Pentagon imposed new secrecy rules on the missile defense system program. The Missile Defense Agency maintained Congress would have the data it needs to keep watch on the program. (See "MDA Secrecy Rule Under Fire," July 2002, p. 16.) If enacted, the testing waiver would mark the first time such

leeway has been granted for a major weapon system.

At a Feb. 13 Senate hearing, Levin asked Defense Secretary Donald H. Rumsfeld how he could justify the move. Rumsfeld replied, "I would justify it very easily."

He compared it to the use of the Predator unmanned aerial vehicle during Operation Allied Force in 1999,

the Eurofighter Typhoon made its maiden flight Feb. 14, when it flew from the BAE Systems site at Warton, UK, for 21 minutes. The other three Typhoon program participants—Germany (EADS Deutschland), Italy (Alenia), and Spain (EADS-CASA) have already flown their production versions. Initial deliveries of a total 620 aircraft are expected later this year. Germany will receive 180; Italy, 121; Spain, 87; and UK, 232.

■ Northrop Grumman on Feb. 23 successfully completed the first flight of its Pegasus X-47A unmanned aerial vehicle, landing the experimental vehicle at a predesignated point to simulate the ability to "catch" a tailhook while landing on a carrier. The X-47A, which measures 27.9 feet long, with a wingspan of 27.8 feet, serves as a test bed for Northrop's work on a naval unmanned aircraft under a Defense Advanced Research Projects Agency and Navy program.

■ According to a USAF investigation report released Feb. 19, engine failure caused an F-16C to crash Sept. 11, 2002, at Hattiesburg, Miss. The Air National Guard pilot, from the 187th Fighter Wing, Dannelly Field, Ala., ejected safely, receiving minor injuries. The fighter was destroyed upon impact, 1,300 feet short of the runway at the airport in Hattiesburg. The engine's high pressure turbine post failed, allowing the turbine blades to break free and damage the engine.

■ Orbital Sciences announced Jan. 31 that it received a USAF contract to provide space launch and missile defense target vehicles using deactivated Peacekeeper ICBM assets. The contract could provide up to 41 launch vehicles for a maximum value of \$475 million.

■ USAF announced Feb. 20 formation of a new Directorate of Innovation and Transformation to consolidate, under a single director, Air Force logistics transformation initiatives and information system integration. Grover Dunn, former deputy director of maintenance, will head the new directorate, which will fall



An artist's concept of USAF's new multisensor command and control aircraft. USAF officials have named the new aircraft the E-10A. (See below.)

under the Deputy Chief of Staff for Installations and Logistics.

■ Northrop Grumman announced earlier this year it had conducted a successful demonstration of a UAV system designed to deliver a variety of payloads to multiple preprogrammed locations. The company derived the system from its BQM-34 Firebee drone within eight weeks.

■ Members of the 376th Expeditionary Security Forces Squadron, Manas, Kyrgyzstan, delivered \$1,800 worth of goods to an orphanage in nearby Bishkek. The goods included 70 comforters, 10 sets of bedsheets, five floor heaters, four cassette tape players, clothes, and music and video tapes, as well as various other supplies for the children. Squadron members raised the funds through direct donations and fund-raising events, such as tournaments, craft sales, and other activities.

■ USAF named Pacific Air Forces the major command recipient of the 2002 Secretary of the Air Force Safety Award. The 11th Wing, Bolling AFB, D.C., earned the award in the direct reporting unit/field operating agency

category. The Chief of Staff Individual Safety Award went to MSgt. Shane B. Finders, 20th Air Force, F.E. Warren AFB, Wyo.

■ Officials at Electronic Systems Center, Hanscom AFB, Mass., announced Feb. 28 that USAF had designated its new multisensor command and control aircraft the E-10A. ESC manages acquisition and development of the E-10A, intended to be the central platform in USAF's new command and control constellation. (See "Seeking a Triple-Threat Sensor," November 2002, p. 38.)

■ USAF awarded BAE Systems a \$4.6 million contract to provide advanced identification, friend or foe equipment for Block 25, 30, and 32 versions of USAF's F-16C aircraft. The total program, including options over the next five years, is worth approximately \$100 million.

■ The National Inventors Hall of Fame announced a list of 17 inductees for 2003, including Theodore Von Karman, the 1944 chair of the Army Air Forces Scientific Advisory Board, for his research and work in aerodynamics. ■

DOD, Army Officials Joust Over Iraq Numbers

The price of unseating the current Iraqi regime, setting up a new government, occupying the country, and rebuilding its infrastructure could cost as little as \$10 billion and as much as \$100 billion, Deputy Defense Secretary Paul D. Wolfowitz told Congress on Feb. 26.

"We have no idea what we will need until we get there," Wolfowitz told the House Budget Committee. He said a major cost factor would be how many troops would be needed for postwar occupation and how long they would stay.

The \$100 billion figure he cited was a notional, in-house Pentagon guess that assumed the very worst case scenarios, Wolfowitz noted. But he specifically cited a figure of \$95 billion as being too high. He also said all such estimates ignored Iraq's oil revenues of up to \$20 billion a year and discounted the contributions that could be made by other countries.

Wolfowitz made his remarks as estimates of Iraqi reconstruction as high as \$300 billion swirled around Washington. (A senior Pentagon official, briefing reporters on the Fiscal 2004 defense budget, said DOD is notionally using a figure of about \$20 billion a month for combat and \$10 billion a month for postwar occupation.)

While he insisted it is too early to guess how much a regime change in Iraq would cost, Wolfowitz did contradict the estimate of Army Chief of Staff Gen. Eric K. Shinseki on how many troops would be required for the postwar occupation.

During a Senate Armed Services Committee several days earlier, when lawmakers pressed Shinseki to provide an estimate, he said it would take "on the order of several hundred thousand soldiers" to do the job. His answer carried some credibility since he had been a commander of peacekeeping troops in the Balkans.

Wolfowitz, however, called Shinseki's number "wildly off the mark" and "highly suspect." He argued that a force for Iraq could be smaller and not stay as long. There is no history of ethnic warfare in Iraq as there was in the Balkans, Wolfowitz contended, despite the fact that the Iraqi government has violently repressed both Kurds in the north and Shiite Muslims in the south. Wolfowitz said Iraqi civilians will welcome American troops, "provided they leave as soon as possible."

Defense Secretary Donald H. Rumsfeld, at a press conference the next day, said that the answer to the question posed to Shinseki by the committee "is not knowable."

"We have no idea how long the war will last," Rumsfeld said. "We don't know to what extent there may or may not be weapons of mass destruction used. We don't ... have any idea whether or not there would be ethnic strife. We don't know exactly how long it would take to find weapons of mass destruction and destroy them. ... There are so many variables that it is not knowable."

He went on to say, though, that he, too, thought Shinseki's number was "off the mark" and "simply not the case."

It's "not logical to me that it would take as many forces ... following the conflict, as it would to win the war," Rumsfeld asserted. He also said several countries have volunteered forces for "stabilization activities," which would reduce the number of US troops needed.

—JAT

before the UAV had completed testing. It was advantageous to use it, he said, and it led to improvements.

He added that he did not think something has to be perfect before it's deployed if "reasonable people look at the situation" and conclude it can be deployed. "In the case of missile defense, we need to get something out there, in the ground, at sea, and in a way that we can test it, ... we can evolve it."

Levin's response: "If it works."

Guard Gains National Museum

The first museum dedicated to the National Guard, the oldest military organization in the country, opened in Washington, D.C., on March 17.

The National Guard Memorial Museum is located at One Massachusetts Ave., N.W., one block west of Union Station. It occupies 5,600 square feet of the lower level of the National Guard Association building. Admission is free.

The museum explores Guard history from its militia roots in 1607 to its support to the war on terror today, according to a release from the National Guard Educational Foundation, which operates the museum.

Bush Authorizes New Medals

President Bush signed an executive order March 12 authorizing DOD to create two new medals to cover service in the global war on terrorism.

One is the Global War on Terrorism Expeditionary Medal, which recognizes service members who participate in an expedition to combat terrorism on or after Sept. 11, 2001. Pentagon officials said this medal is limited to those who deploy as part of Operation Enduring Freedom. They said personnel assigned to operations in Afghanistan and the Philippines are examples of those who may receive the award.

The second, the Global War on Terrorism Service Medal, recognizes service in military operations to combat terrorism on or after Sept. 11, 2001. It applies to those who participate in Operation Noble Eagle and who support Enduring Freedom from outside the area of eligibility designated for the first medal.

These awards do not replace the Armed Forces Expeditionary Medal, established Dec. 4, 1961, or the Armed Forces Service Medal, created Jan. 11, 1996. "Any member who qualified for those medals by reason of service in operations to

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combat terrorism between Sept. 11, 2001, and a terminal date to be determined by the Secretary of Defense, shall remain qualified for those medals," states the executive order.

However, no one may be awarded more than one of the four medals for service in the same approved expedition or operation, said officials, nor can individuals receive more than one award of the two new medals.

Officials said it could take 12 months to produce and stock the medal.

Belated DFC Awarded to Flier

The Air Force earlier this year awarded the Distinguished Flying Cross posthumously to B-24 pilot 2nd Lt. Lawrence Berkoff—59 years after his act of heroism and sacrifice.

On Sept. 8, 1944, as Berkoff and his crew took off from Harrington Field in England, on a mission across the English Channel. They didn't get far before they noticed that flames coming from engine No. 1 would make them perfect targets. Berkoff turned back to the field as No. 1 went out and engine No. 2 began to run rough and send out flames.

The B-24 began to lose altitude quickly. Berkoff and his copilot struggled to keep the aircraft level, but Berkoff soon realized it was impossible with power on one side only. He ordered his crew to bail out. All made it, as could have Berkoff. However, he remained with the rapidly descending, and now burning, aircraft to guide it beyond an English village. The B-24 crashed just 200 yards past Lambourn.

Senate Backs Nuclear Pact

The Senate on March 6 unanimously approved the nuclear arms treaty signed by President Bush and Russian President Vladimir Putin in May 2002. The Treaty of Moscow calls upon the two countries to reduce their nuclear arsenals by nearly two-thirds.

The Russian parliament still has to approve the agreement.

The pact requires each nation to reduce its arsenals to between 1,700 and 2,200 warheads by Dec. 13, 2012. This will be the lowest level in decades. Each side gets to determine the composition of its strategic nuclear force.

The US plans to retire all 50 of its 10 warhead Peacekeeper ICBMs and convert four Trident submarines from strategic to conventional service. Some of the excess warheads will become spares and some will be destroyed, according to Administration officials. ■



USAF photo by SSGT Levi Collins

A reproduction of the Wright brothers' powered flying machine undergoes aerodynamic testing in a wind tunnel at Langley AFB, Va. NASA's Langley Research Center in Hampton, Va., owns the wind tunnel, which is operated by Old Dominion University in Norfolk, Va. USAF members will be among a team of pilots who will attempt to fly the replica on Dec. 17 in Kitty Hawk, N.C.

DOD Intel Chief Says He Will Stay in His Lane

Stephen A. Cambone, the Pentagon's newly minted Undersecretary of Defense for Intelligence, assured lawmakers he will not be a rival to the Director of Central Intelligence.

Sen. Carl Levin (D-Mich.), ranking member on the Senate Armed Services Committee, supported creation of the position, but he noted that critics claim the job is evidence of Defense Secretary Donald H. Rumsfeld's "contest" with DCI George H. Tenet "for dominance over American intelligence operations."

At the nomination hearing on Feb. 27, Levin asked Cambone to answer those critics who have said it is Rumsfeld's bid to create "another Director of Central Intelligence, for all practical purposes."

Cambone insisted that the new undersecretary post—which oversees the National Security Agency, National Imagery and Mapping Agency, Defense Intelligence Agency, and others—is not intended as a "substitute" for the DCI. Instead, he said, it will give the DCI a single point of contact at the Pentagon.

The office will focus on getting "customer" questions answered and needs addressed in the collection and analysis process, said Cambone.

He noted that a key customer question, one that Rumsfeld has raised, concerns how the Pentagon agencies and other intelligence agencies arrived at their conclusions and what their sources of information were. These are the kinds of questions the Secretary of Defense tends to ask about "finished intelligence," said Cambone, and the answers are necessary to help Pentagon leadership act on the information they receive.

Cambone emphasized, though, that his office "is not being structured to do analysis."

His job, he said, is to provide single-point leadership to disparate intelligence organizations within the Defense Department. The impetus behind creation of the office is to streamline DOD's approach to intelligence matters, such that his office will be able to respond to any DCI "needs that can be satisfied by the Department of Defense ... with alacrity."

He added, "There have been occasions in the past—which I am sorry to say—when that has not always been the case."
—JAT

At AFA's Orlando symposium, top Air Force leaders spell out the pressures on a force in constant action.

Heavy Duty Air



THE pivotal role now being played by the Air Force in the nation's confrontation with Iraq, the global war on terror, and defense of the homeland dominated presentations at the Air Force Association's annual Air Warfare Symposium held Feb. 13–14 in Orlando, Fla.

Senior Air Force leaders and other top military officials spoke about the demands of the current war and how the Air Force is preparing to

meet its future challenges. These include—but are not limited to—an aging fleet of aircraft, inadequate numbers of specialized weapon systems, and heavy demands on the small active force as well as the Air National Guard and Air Force Reserve Command.

James G. Roche, Secretary of the Air Force

The Air Force has taken on heavy new responsibilities since Sept. 11,


2001, with no sign of a letup, according to Air Force Secretary James G. Roche.

The increased tempo begins at home. Roche noted the Air Force has flown more than 25,000 fighter, tanker, airlift, and airborne early warning sorties for Operation Noble Eagle since the 9/11 terrorist attacks.

ANG and AFRC units flew more than 75 percent of these missions to defend US airspace. The Guard and

Force

By Adam J. Hebert, Senior Editor



F-15E Strike Eagles taxi to protective shelters at Incirlik AB, Turkey, after an Operation Northern Watch mission over Iraq. USAF's Total Force has spent a decade enforcing UN sanctions against Iraq and, since 9/11, has been engaged in a demanding war on terror.

USAF photo by S/A James Harper

Reserve “have been spectacular,” Roche noted.

Overall, some 200 aircraft at more than 20 bases have been dedicated to providing continuous combat air patrols or on-call support to sensitive and high-risk areas across the United States at a direct cost of more than \$250 million a year, Roche said.

That mission—and the cost of sustaining it—is now a fact of life.

“Those who think that we can absorb these expenses into our regular

budget [need to be] somehow enlightened,” said Roche. The simple truth is “we cannot.”

Roche went on to say that the service can cover some operational expenses by using funds from other accounts, but, “at some point, you just have to go forward and say, ‘Well, what part of our Air Force would we like to do without,’ because we are going to have to shut things down” if the full range of USAF missions is not properly funded.

Roche said he is confident Congress will provide supplemental funding to cover any war costs, but the challenge is getting lawmakers to understand that certain actions are now permanent features. “What we call Operation Noble Eagle isn’t an operation, ladies and gentlemen,” said the Secretary. “It is our future. It is never going to go away.”

The war on terror has also been demanding overseas. In Afghanistan, USAF “flew more than 40,000 sor-



Air National Guard and Air Force Reserve Command forces have been instrumental in the success of the war on terror. An Ohio ANG pilot with the 178th Fighter Wing flies a training mission.

ties in 2002," Roche said. That was 70 percent of all coalition sorties. Moreover, the service carried out some 8,000 refueling missions so aircraft could reach that distant, land-locked nation.

In mid-February, Iraq continued to loom as a threat. A force of 8,000 airmen made Operations Northern and Southern Watch successful for yet another year "but at a direct cost of about a billion dollars a year," Roche noted.

Modernization accounts, already pinched, are another concern. Roche said the United States is not making sufficient use of the nation's prosperity, intellectual capital, and industrial base "to deliver the capability we need to sustain our dominance." Technology is forever advancing, he noted. Without continued investment in advanced military capabilities, the Air Force risks falling behind.

"The United States does not have a patent on progress," Roche said.

The advantage in war-fighting goes to the nation or group that uses technology to the greatest advantage, he explained.

"Let's never forget that Hitler was the first to field the jet engine fighter," Roche noted. "And his scientists were working on fission weapons when the Allies prevailed. Imagine the world today if his regime had won the technology race."

The Air Force may have been resting on its laurels in some ways—including weapon modernization.

"Too many are content to rely on yesterday's technology," Roche said, and American pre-eminence is "threatened by nations who have the capacity to develop advanced military capability and who are willing to sell those capabilities to any nation."

Roche cautioned, "The mantle of the world's most advanced Air Force" is not USAF's by birthright. "We must earn it, year by year by year." He noted that nations such as Japan, South Korea, and the United Arab Emirates are purchasing the most advanced types of military aircraft. These are built in the United States

by American contractors—but are more advanced than anything currently flown by USAF.

"The best single-engine fighter, the best twin-engine fighter, the best tanker, and the best air-battle management system will have been delivered by American aerospace companies and put into operations, except none of those aircraft will have an American flag on its tail," Roche said. "This disturbs me and it should disturb anyone who cares about giving the best our nation has to offer to the men and women of our armed forces."

The solution, Roche asserted, is not to simply play catch-up. The Air Force will largely bypass what is available in the current generation of aircraft and look ahead to the systems that will soon be coming on-line.

"Anything we buy today needs to last for the next 20 or 30 years and be ahead, and stay ahead, over that period of time," he said.

Getting advanced systems such as the F/A-22 fighter to the field is not easy, Roche noted, adding that the Air Force must stay the course. Once the F/A-22 program is stabilized, he went on, "our joint community will grow to covet it." The Raptor "will alter how we fight war and force opponents to alter how they think about war."

In addition to the ability to clear the skies of enemy fighters and defeat advanced surface-to-air missiles, the F/A-22 will give the Air Force



An Oklahoma ANG C-130 crew flies a mission to support Enduring Freedom in Afghanistan. With so much of USAF's airlift capability residing in the reserve components, Total Force capabilities have never been more critical.

Reach-Forward and Other Concerns

Airmen long have accepted a certain amount of tension between control and actual execution of air operations. Control might be centralized at a high level. Basic doctrine, however, called for pushing execution down to the lowest possible level. Such decentralization gave execution authority to those in close contact with the enemy and having the best information.

Now, that "sacred principle" is under pressure, says Rebecca Grant, a top airpower expert. In Grant's view, a flood of digital data, instant communications, and new operational realities are eroding tactical-level authority.

"The idea of centralized control is beginning to turn into something called centralized *execution*," Grant told attendees at AFA's Orlando symposium. This, she added, leads to a troubling question: "Is *decentralized* execution in danger? Are we in danger of risking part of what it is that makes air and space power the powerful force that it is today?"

Grant, a contributing editor of *Air Force Magazine*, is the president of IRIS Independent Research in Washington, D.C., and has worked for RAND, the Secretary of the Air Force, and the Chief of Staff of the Air Force. She is in regular contact with members of the operational Air Force.

"We've heard, over the course of the last 18 months, some frustrations with the way this [centralized execution] is being applied," she said.

The tensions stem from the constantly increasing level of persistent and high-quality intelligence, surveillance, reconnaissance, and communications, which offers a detailed picture of the battlespace not just to the cockpit or to forward air controllers but also to a combined air operations center or higher headquarters. "There is a greater view of the battlespace than we've ever had before," said Grant.

This has created a new phenomenon that she refers to as "reach-forward." This term refers to a situation in which a commander or his staff, possibly thousands of miles away from a theater of operations, uses high-quality battlespace pictures and advanced communications to manage tactical events in real time.

This has led in some cases to micromanagement, with negative effects on the battle rhythm of an attacking force.

According to Grant, Desert Storm offered the first instance

of centralized execution, mostly concerning stealth aircraft. "If you talk to some of the F-117 pilots who flew in that conflict," she said, "they will tell you that they got a lot of centralized direction about what to do." However, decentralized execution was still the rule in the Gulf War.

In Operation Allied Force in 1999, one saw more evidence of reach-forward. There was highly centralized control and in some cases even what might be called centralized execution through the transmission of real-time targeting changes, said Grant. A-10 pilots, for example, complained about having to call the combined air operations center for an OK to strike a tank on the ground.

Operation Enduring Freedom in 2001 was a reaffirmation of decentralized execution. Air controllers on the ground, in the mountains, and even on horseback were able to call in airpower on demand because fighters and bombers, centrally organized, had been made ready for use on demand.

However, Operation Anaconda in Afghanistan in early 2002 was altogether different. Many targets were so sensitive that attacks required approval from US headquarters at MacDill AFB, Fla. Anaconda, said Grant, points up the kinds of difficulties posed by the war on terrorism for the future.

In Grant's view, technological and operational realities now have pushed airpower into a new and much more fluid era, one in which actual control and execution will depend on what circumstances exist at the time of an operation. Airmen will have to be more flexible than ever, she believes.

"There will be times when you must have centralized execution for efficiency," said Grant. "There will be times when you must have decentralized execution for the span of control. And what we see in modern warfare is that we cannot necessarily take one template of rules and apply it."

The commander's job will be a difficult one, she went on.

"It will never be easy to know," said Grant, "whether you should give execution authority out to that pilot in the cockpit, or out to that air battle management platform, or when, due to the goals of your operation and the political constraints that are there, you have to hold it closely."

She concluded, there is "no one template that would always apply to every situation. That tension of centralization and decentralization will be with us for a long time."

—Robert S. Dudley, Editor in Chief

for the first time "a major capability" to attack mobile ground targets deep within enemy territory and give the US "an unmatched ability" to defeat cruise missiles, including stealthy ones.

The Raptor "will bring stealth into the daylight, enable a panoply of interservice operations, and will serve a critical joint warfighting mission," Roche said.

Gen. John P. Jumper, USAF Chief of Staff

The ongoing demands of Enduring Freedom and Noble Eagle have created severe shortages in certain high-demand Air Force career fields. The impact of this has been moderated but not eliminated by the rotational system of the Expeditionary Air and Space Force concept, according to Air Force Chief of Staff Gen. John P. Jumper.

Current problems are being reduced by reaching forward into later air and space expeditionary forces (AEFs) for personnel and by holding onto some forces whose period of duty should have ended, said the Chief. However, he noted, new techniques and technological advances should allow USAF to use airmen more efficiently.

"The way that you help with some of your people shortages is through technology, especially in things like security forces—and security forces are coming up with innovative ways ... to patrol the perimeters of our bases," Jumper said.

Because the war on terrorism suddenly required USAF to increase its force protection both domestically and abroad, the service is short roughly 8,000 security personnel. To help meet this need, the Air Force recently turned to the Army for help,

and about 7,500 Army Guardsmen have been mobilized to "guard our bases during this period of our shortage," Jumper explained.

The expeditionary system gives the Air Force a clear idea of its needs in stressed career fields.

"We are able to pinpoint them and able to [determine] the level of our stress," Jumper said.

According to the calendar, the Air Force should be operating in AEFs 7 and 8, he told the symposium attendees. In a steady-state condition, Jumper said, about 17,000 airmen would be deployed.

But homeland defense, the global war on terror, and the buildup in anticipation of a possible war with Iraq have forced the Air Force to retain more than 500 airmen from AEFs 5 and 6, with some of them staying as long as six months. And USAF has had to make early calls to

23,000 airmen of AEFs 9 and 10, who weren't supposed to deploy until much later.

Jumper said that, through the AEFs, leaders have been able to identify the critical, highly stressed career fields—civil engineering, medical, security forces, communications—and then shift resources more rapidly to cover those shortages.

New training and operational concepts should also improve efficiency, the Chief said.

The service is working on a new concept of operations—or CONOPS—

for global mobility. It will encompass all aspects of a rapid deployment from the United States. This includes aircraft loading and beddown of the equipment and people, where to put the bomb dump, where to place the tent city, and how to set that all up in a rapid way to get operations under way as quickly as possible, Jumper said.

The Air Force is launching the Eagle Flag program. Already set up at McGuire AFB, N.J., Eagle Flag is the support-world equivalent of the combat forces' Red Flag, said the Chief of Staff.

Organizational changes cannot by themselves meet the Air Force's needs. The service is still struggling with a backlog of modernization that Jumper described as "so urgent that it is difficult to set priorities."

On the aged KC-135 tankers, the Chief explained, aircraft skin layers are peeling apart, accelerating maintenance demands.

F-15s have had catastrophic in-flight structural failures. Tails have come off in the air. Major cracks are beginning to develop in the wings. "We've already had to place restric-

The New Direction of United States Strategic Command

By the end of this year, the newly reorganized United States Strategic Command should have its concept of operations in place. This will propel the command well beyond simply the merger of the nation's nuclear forces with US Space Command.

The new organization will have a portfolio that also includes global conventional strike, special operations, missile defense, command and control, and information warfare, according to the organization's commander, Adm. James Ellis.

There are still many questions about which of these capabilities will reside in the Offutt AFB, Neb.-based command and which will be selected, a la carte, from other operational organizations.

Addressing AFA's Air Warfare Symposium in Orlando, Fla., this February, Ellis said observers should not be fooled by the fact that STRATCOM's name hasn't changed.

As he tells it, the term "strategic" has merely been imbued with its classic definition. And global operations, Ellis said, no longer is synonymous with the term "nuclear."

STRATCOM has already had several versions of a charter, the most recent of which was signed by President Bush in January. While the focus so far has been to knit together the old Space and Strategic Commands, the emphasis for the rest of this year will be on bringing in the new missions, Ellis observed.

The frequent changes indicate that there is "a commitment to tailor things as we go, to accept that we may not have a perfect vision. We can't wait for it to become perfect."

He also told of making the mistake, when briefing Defense Secretary Donald H. Rumsfeld, of calling these "new" mission areas. Ellis recalled Rumsfeld saying: "Jim, they are not new mission areas. They were previously unassigned mission areas, and they are about to be assigned to you."

Ellis acknowledged that he faces a challenge in figuring out which commands will be support-*ed* and which supporting in performing some tasks. He is still working out which commands will be components of which organizations.

For example, the Air Force prefers to send one single officer to serve as its representative to the headquarters of a combat commander. Air Force Space Command's chief will be that component representative to STRATCOM. However, Air Combat Command provides the bombers that STRATCOM would call on for either nuclear or conventional global missions, so it would have to put those bombers at Space Command's disposal under certain conditions.

Ellis recognized the difficulties.

"My own personal view," he said, "is that we need to rethink concepts of componentcy and acknowledge that we could not have enough task force to possibly satisfy the span of control and span of responsibilities that has migrated to this command."

He even suggested that organizations might not work for a single individual.

"We have to find mechanisms that allow me to interface with senior leadership in each of these service components and, with their concurrence and cooperation, work through them to task the capabilities ... in their subordinate commands."

He added: "It is what I call capabilities-based componentcy."

Ellis said that he could not possibly replicate the capabilities resident in other commands at his own organization—"there aren't enough skilled professionals to do it all"—and said he will have to tap the expertise where it already exists.

"The service component/agency relationships will be the key to our success," he said. "We will not have the skills and the depth required to do all this in headquarters. We are not going to get the manpower. I don't want that manpower. What I need is assured access to those skills wherever they reside in our Department of Defense."

In an interview following his remarks, Ellis said, "It is my intent to draw from the [service] components to help in that regard, and I think it is entirely appropriate. While we bring the joint oversight, we ought to draw from the service capabilities and not duplicate them."

All this means "we are going to a nontraditional structure" at STRATCOM, Ellis said in his AFA remarks.

For the near term, he said, STRATCOM will be organized for "what we do that is most important," rather than for what it does most.

There will be "flag and general officers" at STRATCOM heading up "information warfare, strike warfare—both a nuclear and conventional piece of that—[and] global operations."

While the ideal approach to information operations would be to have it mixed in through the entire organization, Ellis said, the mission area is not yet mature enough for that, and "we are going to nurture it a bit in a separate category" until it matures.

Information operations, Ellis said, cannot be defined broadly enough.

The mission started with US Space Command's work on computer network defense and computer network attack. However, it also includes electronic warfare, strategic deception, operational security, and psychological operations.

"All of those pieces are a part of how we define information operations," said Ellis, "and now that is being brought together in a single, uniform organization. That is us."

Information operations does not yet provide a sufficiently reliable and likely successful "genuine alternative to a kinetic option" as an offensive weapon, Ellis asserted. Before IO attacks can substitute for real ordnance, the rates of success and dependability will have to go up "if we are ever going to get it beyond the realm of a science project."

tions" on F-15 maneuvering and speed, Jumper said.

Meanwhile, engine maintenance has increased dramatically because, in previous years, USAF did not properly fund its engine programs.

Jumper emphasized the importance of "energetic programs," such as the proposed tanker lease, to deal with these problems.

Additionally, he said, USAF plans to institute an airworthiness board "to verify and to certify" the continued suitability of these aging aircraft to fly.

Jumper said that some unmanned aerial vehicles such as the Predator are, in reality, "remotely piloted aircraft." He said aircraft nomenclature will be changed; such vehicles henceforth will be called RPAs "to fully capture the kind of things that you are doing in something like the Predator, where a pilot is required and pilot actions are necessary to take the responsibility for dropping weapons and putting aircraft on targets." It is "the same level of responsibility" as that of a pilot who actually inhabits a cockpit.

The UAV designation will apply to aircraft that do not need as much human interaction. Global Hawk is an example of this, Jumper added.

Despite recent UAV successes, the Air Force is "not going out to buy something merely for the novelty of taking the person out of the aircraft," Jumper said. Systems will be purchased for the benefits they provide.

"The thing that makes a Predator so leveraging for us is the fact that it stays airborne for 24 hours," he said. "It has persistence. It has endurance.

Ellis also said no network will ever be hack-proof, and a major network defense effort will be to limit the damage that anyone can do. STRATCOM will work to compartmentalize aspects of the military network so that areas can be isolated and damage controlled.

Global Strike, which Ellis described as a "previously unassigned" mission, will involve "the capability to plan for and deliver rapid, limited-duration precision kinetic and non-kinetic effects half a world away." The emphasis on this mission area will be speed at global distances, he said, and while there will be "full cooperation with the regional combatant commander," it is still a delicate discussion to decide who is supported and who is supporting.

As an example of where STRATCOM would supercede the regional combatant commander, Ellis said that "maybe it would be nice to bring in a capability that does not require the in-theater support, that does not pre-alert your adversary that you are coming, and still allows you to deal with the threat in a very real and capable fashion. That is what we are looking for in Global Strike."

In the interview, Ellis said that a global, rapid-strike conventional weapon could come in many forms, all of which are now being studied.

"We're brainstorming," he said. Concepts include the Common Aero Vehicle, a hypersonic or suborbital platform with one or many submunitions, as well as other "hybrid vehicles that operate in both [air and space]."

STRATCOM will focus on "accelerating, assessing, and rapidly culling ideas, trying [them] in laboratories or in concept." The idea will be to find what works rather than starting from "a preordained answer."

Another concept being considered is ICBMs with conventional warheads, he acknowledged.

"They are a very rapid response, long-range capability," said Ellis. "[But] they don't have as much precision associated with them as our current tactically delivered precision guided munitions do. The combination of those capabilities might offer some promise, but, again, it needs to be examined in the entire [STRATCOM] context. ... It's a concept that's certainly worth exploring."

The command's "global sensors" will bring an added dimension to its ability to strike targets worldwide, he added. And, in a particularly time-sensitive situation, STRATCOM has well-established lines of communication and decision with the national command authority, Ellis observed.

Ellis also took pains to say that the nuclear element of STRATCOM is not taking a backseat, either in importance or attention, to the new missions. Given the unfolding events in Korea and elsewhere, he said, the nuclear element is "an important piece of reality."

The nuclear arsenal is aging, Ellis noted, and with the exception of the Trident D-5 missile, every component of the nuclear Triad "is out of production." Coping with aging and upgrades will warrant a great deal of his attention, he said.

"It is absolutely essential that this remain as it always has been: a zero-defect program," he added.

The Minuteman ICBM upgrade program as now laid out is "satisfactory" to guaranteeing the reliability of the missile leg and is funded, Ellis reported in the interview. The responsiveness of ICBMs, the survivability of sea-launched missiles, and the flexibility of the bomber force remain unchanged, and the nuclear Triad concept is still valid "for the foreseeable future," he said. Nevertheless, the shape of the future nuclear force "is part of the discussion that needs to be held," he noted.

While he is not planning to pull the Space Command framework wholesale out of the Colorado Springs, Colo., area—some things "are legitimately and appropriately either literally or figuratively hardwired into Cheyenne Mountain"—Ellis said some aspects "need to be resident with us" at Offutt and will be moving to Omaha. Elements crucial to supporting NORAD will remain where they are, but 400 billets will be moving to Nebraska.

Missile defense will include "what I call the preboost phase, ... which is actually hitting the thing before it leaves the pad," Ellis noted.

Consolidating so many missions into a single command will allow trade-offs that have not necessarily been made in the past, he said.

"We also think there is an opportunity here to talk trade-offs, ... for the first time to be able to assess the costs of on-orbit resources vs. upgraded air breathers vs. terrestrial capabilities and maritime systems ... as we work toward those concepts of persistence and steering capability."

Ellis will be careful not to develop a wish list, since, he said in the interview, "the services have to deliver and buy these systems. They have to fund them ... out of their budgets." He added, "From a joint perspective, I need to understand those constraints and realities."

As STRATCOM commander, "I need to say what we really think, [but] it's also appropriate that I understand the competing demands and stresses the services are under," said Ellis. "We all want the same outcome, which is to genuinely enhance ... the systems that are deemed most important ... to the national security."

This, he said, "is our goal as we realign the organizational piece and draw on the components' support."

—John A. Tirpak, Executive Editor, and Adam J. Hebert, Senior Editor

F/A-22 Fixes Paying Off, Sambur Reports

The pace of flight testing on the F/A-22 Raptor is quickening, and there has been marked improvement in the aircraft's software stability since the program was restructured last year, USAF officials reported at AFA's Air Warfare Symposium in Orlando, Fla. Leadership changes and a conservative funding plan should also ensure the program's success, they asserted.

"Recent test activities show changes to the program ... are paying off," said Marvin R. Sambur, Air Force acquisition executive. He reported a fivefold improvement in the stability of F/A-22 software—now 8.8 hours between problems—and noted that this is a "very, very significant accomplishment" toward achieving an operational standard of 10 hours.

Meanwhile, flight-test points have been completed at 2.5 times the previous rate, and critical test launches at supersonic speeds of both the AIM-9 and AIM-120 missiles have been successful. The first Raptor was delivered to Nellis AFB, Nev., in January, and Air Combat Command maintenance crew training on the jet has begun, Sambur noted.

"These highlights demonstrate the Air Force-Lockheed Martin team is getting the program back on track," Sambur said, but he cautioned that the achievements simply represent "a good beginning." He said it's likely the program will encounter "unknown unknowns" that will demand aggressive management to meet an initial operational capability in late 2005.

Sambur noted that the new program and test management in place at the program level, in flight test, and at Lockheed Martin amounts to an A-Team of top performers.

The status report and the introduction of the management team to the press was part of the service's effort to demonstrate "what we are doing to turn this program around," Sambur explained.

He had harsh words for Lockheed Martin, noting that the company's F/A-22 and the Space Based Infrared System have both suffered from problems and that sub-par performance on such key systems was unacceptable.

"We've been very hard on the Lockheed management," Sambur said. "We told them how important this program is and that they needed to clean up their act because we in the Air Force were not going to tolerate that performance."

He echoed remarks from Air Force Secretary James G. Roche that if the program doesn't perform, "in spite of its importance to the Air Force, we will cancel" the F/A-22.

Lockheed Martin's "performance has to change, and it has to change very dramatically," Sambur warned.

Ralph Heath, Lockheed Martin executive vice president, said he has taken personal charge of the program and insisted that it is "without question, the ... No. 1 priority" for the company. Heath said he has at his disposal the resources of the corporation and its teammates, including Boeing, to get the program performing on time and as advertised.

Heath also said the transition from development to production is "the defining moment ... of the life of a program." Production requires "different resources, a different mind-set [and] perspective" than development, he explained, adding that Lockheed and the Air Force "effectively have made that transition."

Sambur reported that the Air Force has taken "a different approach" to this program. While budgeting rules usually call for a spending plan of 50-50, which means "you have a 50 percent probability of making it and a 50 percent probability of not making it," the F/A-22 will see an 80-20 budget, he said. "We wanted to make sure this program would succeed."

Under the revised program, the Air Force will not raid any other accounts to pay for the F/A-22. The service is taking a build-to-budget approach, which means that if there are cost overruns in development, they will be covered by production dollars. The service is operating under a \$43 billion production cap. For that money, USAF now expects to be able to build 276 of the 381 Raptors it says it needs.

The Air Force will not request additional money for the F/A-22, senior leaders told *Air Force Magazine*. (See "The F/A-22 Gets Back on Track," March, p. 22.)

Lt. Gen. (sel.) John D.W. Corley, USAF director of Global Power Programs, said 381 is "the floor, the minimum number of airplanes you should be procuring of the F/A-22," based on a Defense Planning Guidance study last summer. (See "The F-22 On the Line," September 2002, p. 36.)

The 381 is the operational requirement, while the 276, at this point, is the "fiscally constrained estimate" of what the Air Force will be able to afford, said Corley.

Sambur noted that under the "very conservative" approach to funding being taken by the Air Force, 276 is the number that now appears can be built. However, "produceability" cost savings could still kick in at a much better than expected rate, meaning "we are actually hoping we'll be able to do a lot better than [276]," he said.

It does things that a person could not do in that airplane."

The Air Force should demand "an order of magnitude increase in the capability" provided by new systems and not fall into a trap of procuring new systems that are "only attractive because of the novelty of not having a person in it," said Jumper.

Gen. Hal M. Hornburg, Air Combat Command

The use of rotating air and space expeditionary forces has enabled the Air Force to quickly transform its culture by creating an expeditionary mind-set in its airmen, according to Gen. Hal M. Hornburg, head of Air Combat Command.

Through AEFs, Air Force culture

"has been fundamentally changed in only four years," he said.

This change has allowed the Air Force to accommodate the high operations tempo it has demonstrated since 9/11. Hornburg shuddered at "the sorry state of affairs that we would be in today," had the service not implemented the Expeditionary Air and Space Force concept.

Even the AEFs have had to transform themselves. Prior to 9/11, two AEFs were used to "fill the 'diamonds and pearls' jobs around the world," including Northern and Southern Watch, Hornburg said. Those missions required a permanent party of about 6,500 airmen per year.

"Soon after 9/11, that 6,500 ramped all the way up to 20,000," said Hornburg. "And now ... it is closer

to 35,000 and it may well get bigger."

Despite the recent strains on the AEFs, Hornburg said, he looks forward to the day when AEFs are no longer considered something novel. The day will come when "we don't have to refer to ourselves as the expeditionary Air Force any more than the Navy calls [itself] the floating Navy. It is just going to be what we do," he said.

Creating AEFs and an expeditionary mind-set has improved morale and retention in the Air Force, but there is still work to be done, Hornburg said. "Why did we need to recruit 34,000 airmen a year?" he asked. "Because we were losing 36,000 trained and ready airmen out the back door."

The problem, Hornburg pointed



Top USAF acquisition officials said recent changes to the F/A-22 program represent a good beginning. They cautioned, though, that USAF will cancel the next generation fighter if the program doesn't maintain dramatic improvements.

Corley said the Air Force has considered various alternatives to the F/A-22, from extending the service life of the F-15 to the benefits that will accrue from fielding new, stealthy, more precise munitions, but nothing else will do.

While there will be "enhancements" to radar and the lethality of munitions the F-15 can carry, "it will never yield the capability that this aircraft [the F/A-22] can," Corley asserted. Likewise, he said the F-35 Joint Strike Fighter lacks the unique characteristics—supercruise and all-aspect stealth—necessary to defeat "the next two generations of double-digit surface-to-air missiles." Moreover, the F-35 will not be available in large quantities until perhaps 2014 or beyond, he added.

Cutting back on the F/A-22 "is going to create ... a capability void that can't be fulfilled with legacy types of airplanes, through upgrading F-15s or other legacy aircraft, or even the procurement of more Joint Strike Fighters later on," Corley maintained.

Canceling the F/A-22 now would add costs to the F-35, which will use systems developed for the F/A-22, such as engines and avionics. "If you truncate F/A-22 today, you will push a bill to the F-35 in the future," said Corley. "That is not what we want to do."

The maximum number of airplanes the F/A-22 program will produce is 36 a year, which will be achieved around 2005, according to the new F/A-22 program director, Brig. Gen. Thomas J. Owen.

At that rate, USAF will finish the program in 2011, but Corley said the 276 figure is "only an estimate" and more might be built. The key, he said, is "to stabilize this program." He added, "We understand we have a problem with competence and with credibility, ... and we are turning the corner on that right now."

Neither Corley nor Sambur could say what the Air Force will do to make up the difference in capability between the 381 required and 276, should that be all that actually gets built. Corley asked, "Is there a disconnect between what our requirement is and the fiscal constraints?" and replied, "Yes, there is."

However, since there are eight years till the notional program completion, he said, "We'll have an opportunity to re-examine, if you will, what the next strategy is or how the world changes between now and then."

—John A. Tirpak, Executive Editor

out, is that a sergeant with 15 years of experience cannot be replaced by an airman with six weeks of experience. "It just doesn't work," he said.

Hornburg said USAF must develop the right concept of operations to support advanced weapon systems on which Air Force operators rely. For example, the Winchester repeating rifle was patented in 1849, but more than a decade later, the Army fought the Civil War with muzzle-loader rifles.

"Why?" asked Hornburg. "It was the way that they fought." The Army lacked a CONOPS to support the new technology, so the benefits of the new weapon went unrealized until 1873.

The Air Force can transform itself through technology, through new

warfighting concepts, or through its institutions, he said, noting that "we are doing all three."

The general also said that to gain the full benefits of UAVs, USAF must take better care of them. The Air Force "can't treat these things like disposable diapers and just throw them out," he said. "These things cost money."

Hornburg noted that the annual Predator accident rate increased by more than 50 percent this year, and the accident rate for the Global Hawk is even higher than for Predators. The Air Force must do a better job caring for these aircraft, he said—they cannot be neglected just because they are unmanned.

UAVs can be truly transformational, if they are properly supported

and backed by "a concept of operations where we can take clusters of these airplanes," Hornburg said.

"They can refuel," he noted. "They can fly in formation and ... do things that airplanes can't do today. ... That is Transformation with a capital 'T.' "

Gen. Lance W. Lord, Air Force Space Command

Despite the cost and development challenges that military space has faced in the post-Gulf War years, on-orbit systems have greatly improved the Air Force's warfighting capabilities, reports Gen. Lance W. Lord, commander of Air Force Space Command.

In the early days of the 1991 war with Iraq, "missile warning was done by a phone call," Lord said. "We



USAF will purchase four new AC-130 gunships—in high demand for the war on terror—to augment the current Air Force Special Operations Command fleet. Gunners aboard an AC-130 load a 105 mm round.

called the theater and said, ‘Look cut!’ And then we tried to ... give them some idea of a launch point and a predicted impact point.”

Missile warning has improved greatly in the past decade. In 1993, AFSPC deployed a launch warning system “able to fuse some sensor information from our space-based capabilities and deliver that quickly to the theater.”

And in November 2002, AFSPC achieved initial operational capability for the 2nd Space Warning Squadron at Buckley AFB, Colo. Lord said this is the first ground station to be integrated with the Space Based Infrared System, used for missile launch early warning.

Space Command hopes that this spring it will put into orbit another Milstar satellite to strengthen the constellation that delivers protected communications. “When we get that up, we’ll have 85 percent of the theaters ... covered by medium-data-rate protected communications,” said Lord.

What the higher data-rate means, Lord explained, is that the Air Force will be able to send an air tasking order (former transmission time: about 80 minutes) in eight seconds “through protected communications.”

Lord also said space’s role in warfare may soon evolve into war in space. This is a reality brought on through the advent of Global Positioning System jammers.

“Are we going to have war in space?” asked Lord. “It has already

started. If someone tries to interfere with space-based capabilities in terms of GPS signal,” that action is an attempt to deny the United States its military advantage. “So we are already having to think about that,” he said.

However, said Lord, any adversary who believes he can jam the GPS constellation and “cause a serious impact” on Air Force munitions is dead wrong.

AFSPC is continuing to seek improved access to space, possibly through development of reusable space launch vehicles.

Lt. Gen. Paul V. Hester, Air Force Special Operations Command

Air Force Special Operations Command expects to field new gunships, tankers, and CV-22 tilt-rotors, but it also plans to derive benefits from its expertise with low-technology aircraft, said Lt. Gen. Paul V. Hester.

AFSOC’s 6th Special Operations Squadron at Hurlburt Field, Fla., keeps a Russian-designed An-2 Colt available for training. The airplane is a radial-engine, cloth wing, “tail dragger” biplane, Hester said, similar in technology to the DeHavilland DH-4 “Flaming Coffin” that flew in World War I.

This “is the kind of technology that may very well be a part of our future because it is a part of our today,” Hester said. The An-2 can take off and land on an unimproved airstrip in less than 500 feet “with a full combat

load,” Hester noted, adding that it is flown by 28 nations around the world. Familiarity with foreign aircraft the US would normally consider obsolete is important to AFSOC because the command determines how to integrate these older systems into coalition operations.

The 6th SOS trains, assesses, advises, and assists allies for missions that “local nationals can use their airplanes and their aircraft to perform,” Hester explained. This is an important step in building and integrating forces into coalitions, he said. “We are there. We train with them. We have confidence in them.”

This familiarity paid immediate dividends in the war on terrorism. Hester said a small AFSOC team “was in Uzbekistan when the attack on America of 2001 happened. Immediately, the captain and the sergeant who were there went and did business with their Uzbeki compatriots and started finding a way to beddown American forces.”

AFSOC is also looking to increase its capabilities through advanced systems. While still awaiting the outcome of the CV-22 testing program, AFSOC is receiving several new aircraft to support the larger role the command is expected to play in the future, Hester said.

Last year the Office of the Secretary of Defense gave AFSOC authority to purchase four additional AC-130 gunships, he noted. And the Fiscal 2004 budget request calls for US Transportation Command to give 10 C-130s to AFSOC. These will be converted to MC-130H Combat Talons used for aerial refueling missions. “Air refueling of C-130s, which do the route refueling for helicopters, is a shortness in our game plan,” Hester noted.

US Special Operations Command was “fortunate” to receive a sizeable budget boost over the next six years, he said, but the increase is not “a significant growth based on the additive missions that we’ve been given.”

The general also cautioned that there is “no free money.” The Air Force, Air Mobility Command, and the Guard and Reserve will all help to pay the bill as additional personnel “crosswalk” to AFSOC to fly and support the new aircraft and missions the command is supporting. “That comes at an expense across all of the services,” he said. ■

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Photography by Jim Haseltine

From bottom: An F-15E Strike Eagle, an A-10, F-15C, and an F-16C, all from the 422nd Test and Evaluation Squadron, fly with a visiting German MiG-29 (top left) in formation over the test range at Nellis AFB, Nev.

The 422nd Test and Evaluation Squadron is a composite unit that conducts operational tests of A/OA-10, F-15C/E, and F-16C hardware and software enhancements prior to release to combat forces. It is subordinate to the 53rd Wing at Eglin AFB, Fla., but is located at Nellis AFB, Nev., where the unit takes advantage of the superb training ranges at that base. The unit is responsible for bringing USAF's next generation fighter, the F/A-22, into the operational arena.

The 422nd dates to the World War II-era 422nd Night Fighter Squadron.



The 422nd tests improvements to existing technologies as well as aircraft and munitions innovations. The unit is responsible for writing the book on the use of new developments in hardware and software so that frontline crews that get the latest in warfighting technology can employ it—fast.

At left, one of the squadron's A-10s returns home from a test mission.

The 422nd also conducts foreign materiel exploitation and special access projects. Its crews frequently fly with other forces, such as the US Navy and Marine Corps and foreign air forces. One opportunity included members of the German Luftwaffe's MiG-29 squadron. The two units compared the new USAF AIM-9X missile with the older Russian-made AA-11 Archer missile.

At right, an F-16, a MiG-29, and (in back, just visible) an F-15 on the flight line at Nellis.





Above, an AIM-9X is visible against a white-tipped AIM-120 AMRAAM, both mounted on an F-15C. At right, an F-16 pilot is wearing the Joint Helmet Mounted Cueing System. JHMCS lets a pilot fire a missile in the direction in which he is looking, not necessarily in the direction the aircraft is flying.



Above, a German MiG-29 carrying an Archer missile prepares for a training sortie. The older helmet-mounted directional system, seen on the pilot at right, is effective technology, but it is aging.



The AIM-9X incorporates advanced technologies. Integration with the JHMCS will maximize its high off-boresight capability. Once the system has been integrated into the F-15, it will be inserted into the F-16, the F/A-22, and possibly the F-35 Joint Strike Fighter.

The 422nd creates training syllabi for new systems, sets employment parameters, and tests every variable that might affect mission outcome. One weapon currently in test and evaluation at Nellis is the improved, next-generation AGM-65K Maverick missile system, featuring an upgraded TV seeker and a 298-pound blast fragmentation warhead.



Above and left, crews prepare A-10s. On the ramp are weapon crates for missiles carried by the A-10, which has proved to be a formidable weapon in the war in Afghanistan.

In January, the squadron took delivery of the first Air Combat Command F/A-22. Airmen are poring over the Raptor, learning the ins and outs of its transformational technology so they can begin the tests that will enable them to predict the performance of the aircraft under every conceivable condition. At right, a crew chief from the 57th Wing checks out the laptop that contains all of the tech orders and forms for the aircraft.





A 57th Wing crew chief and a pilot from the 422nd inspect F/A-22 No. 12, the first of eight Raptors that will go to the squadron for test and evaluation.



Above, a pilot performs a walk around to familiarize himself with the aircraft and, at right, checks out the cockpit's ultrasophisticated avionics suite, which will permit simultaneous engagement of multiple targets.



At right, an F-15E crew does the paperwork before a mission. The test and evaluation crews perform missions similar to what front-line crews might encounter. Every contingency is planned for, and each aircraft and system is put through its paces, so combat units won't get a nasty surprise in the heat of battle. The 422nd conducts field visits to familiarize operational units with new developments.



At left, the crew checks out an AGM-130. This mission will evaluate improved software in the F-15E. The AGM-130 has been used to great effect by the troops performing missions in support of Operations Northern and Southern Watch, enforcing the no-fly zones over Iraq.

Many of the unit's missions take place during various exercises, such as Red Flag. The test ranges at Nellis include the Tonopah Test Range, the 5,000-square-mile Nellis Range Complex, and two emergency airfields. At right, an F-15 crew readies for takeoff.





Above, an F-15E crew releases an AGM-130. The powered standoff weapon is designed for strikes against heavily defended targets. The missile's potency—and its deadly accuracy—has been proved time and again.

At right, F-16s from the 422nd form a landing pattern on their return to Nellis after a sortie, while, below, another fighter punches out flares during a mission.



Members of the 422nd Test and Evaluation Squadron work hard to gather knowledge, test concepts, and make sure their information gets to the front lines, where it's needed most. ■

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The Joint Strike Fighter program is off to a fast start, meeting cost and technical goals and attracting foreign partners.

The F-35 Steps



By John A. Tirpak, Executive Editor

THIS month, the F-35 Joint Strike Fighter reaches its first major development milestone and does so with cost and schedule on track—a rare accomplishment these days. Plans call for the F-35 to make first flight in a mere 31 months. A raft of foreign partners already are on board.

Not all factors are positive, however. Even though the fighter's design is still being firmed up, Pentagon and service officials already are wrangling about how many F-35s will be built, who will get them, and when—despite the fact that those decisions don't need to be made final for more than a decade.

The F-35 goes into preliminary

design review on time and within the budget set at contract award 17 months ago, according to Maj. Gen. John L. Hudson, JSF program director. The aircraft is to be used by the Air Force, Navy, and Marine Corps, as well as the Royal Air Force, Royal Navy, and likely the air arms of nine other countries—so far.

"We wanted to do a 'fast break,'" Hudson told *Air Force Magazine*. "We've done it, and the evidence is that we have hit all our milestones to date. ... So far, our cost performance has been excellent."

Hudson added that, at this stage of the program, all technical requirements are being achieved. The airplane's mold line—its external shape—was frozen

last fall, and the internal configuration design will be frozen soon. The JSF's first flight-worthy engine, the Pratt & Whitney F135 power plant, already is being built. Plans call for first flight in fall 2005, with a Lot 1 production contract to take place a few months later.

Sprinting Toward Goal

As Hudson tells it, the F-35 is "sprinting" toward its principal goal: It will become the first fighter program to yield three distinct types of aircraft—a conventional takeoff version, a short takeoff and vertical landing type, and a carrier-worthy variant.

The Air Force conventional take-

Out

The F-35 will bear a strong resemblance to the experimental X-35 concept demonstrator. Thanks in part to comprehensive work done in the experimental phase, first flight of the production version is less than three years away.





Ten countries already share in the F-35 program, having contributed more than \$4 billion to its development. Each is expected to buy the fighter, with defense analysts forecasting overseas sales of as many as 3,000.

off version will be called the F-35A; the Marine Corps STOVL model the F-35B; and the naval carrier variant F-35C. All three types are to make inaugural flights in a single four-month period less than five years from project go-ahead.

The services will seek contracts covering a total of 163 airplanes by 2009. Initial operational capability is set for 2010 with the Marine Corps, 2011 with the Air Force, and 2012 with the Navy and UK forces.

Partially underwriting the \$25 billion development effort are the program's eight international partners. As a group, the partners have ponied up about \$4.3 billion to have a role in the project. The United Kingdom, having kicked in \$2 billion, is the largest contributor and the only Level 1 partner. This status allows London a voice in decisions regarding requirements and technology sharing. It also purchases the UK a place at the front of the queue for export sales.

At Level 2 are Italy, with a \$1 billion contribution, and the Netherlands, with about \$800 million. Neither country has yet committed to buying the JSF, but both contribute national know-how and receive some industrial benefits from their involvement.

Level 3 partners include Australia, Canada, Denmark, Norway, and Turkey, each of which has contributed \$125 million to \$150 million. None has committed to buying the

airplane, but all are involved in technical issues and technology transfer.

It is assumed the partner countries—all of which have purchased the US-produced F-16, F/A-18, or AV-8B fighters—will buy some version of the airplane designed to succeed those three aircraft.

Foreign contributions go directly to the US government, not Lockheed Martin, the F-35 prime contractor. The agreements are on a country-to-country basis.

Nations at any of the three levels enjoy the official title of "partners."



Roughly the size of the F-16, the F-35 has a deeper fuselage for internal carriage of ordnance. It will also be just as agile as the Falcon but with more range. The F-35 will replace the F-16, A-10, older F/A-18s, and Marine AV-8Bs.

DOD capped the number of international partners at eight last fall, but other countries that would like to purchase the airplane (or compete for a smaller work share) will be called "participants." To date, the only two nations in this category are Israel and Singapore.

The partners have assigned representatives to the JSF program office, Hudson reported, and they do real work on managing development of the aircraft. The foreign representatives, said Hudson, are "absolutely superb people" who contribute not only management know-how but knowledge derived from projects such as the Eurofighter Typhoon.

Harmonized Requirements

Hudson said the F-35, so far, has gotten "great support" from the military services that ended a prolonged period of programmatic horse-trading in the spring of 2000 by signing the joint operational requirements document for the fighter. The new document harmonized service requirements for speed, stealth, weapons payload, range, and other factors.

Doing away with shifting or competing requirements in the development phase has contributed to stability and reduction in cost.

"Their requirements for those platforms have stayed absolutely steady since ... they were signed," Hudson noted. He added that there have been

no changes in threat that would require changing the document.

The F-35 development project—called SDD, for System Development and Demonstration—will yield 22 airframes. Fourteen will be flight-test articles, a mix of all three variants. The remaining eight airframes will be used for ground evaluations such as loads testing and component fit.

Though the F-35 program is moving at a brisk pace, the military services are already embroiled in internal debates over how the JSF will fit into their future force structures.

The largest number of new F-35s—about 1,700 of them—will go to the Air Force, which needs them to replace F-16s and A-10s in its current fleet.

The service is facing a possible conflict between its premier fighter program, the F/A-22 Raptor, and the F-35. Because USAF is planning to stretch out the F/A-22 buying plan, it will overlap with initial purchases of F-35s. (See “The F/A-22 Gets Back on Track,” March, p. 22.)

It’s a situation the Air Force would like to avoid. The service’s leaders prefer to stagger aircraft purchases to prevent budget spikes for fighter procurement in any given year.

Air Force Secretary James G. Roche, in an interview, said he doesn’t anticipate a problem. He explained that the typical pattern of fighter development programs will probably allow the shift to occur painlessly.

Roche, who had a full career in the Navy and then served as a top official in the aerospace industry, said his experience tells him the F-35 may not arrive on time.

“I may, as a guy from industry, believe that the F-35 estimates today are optimistic,” Roche said.

Delays in the F-35, Roche observed, would allow the Air Force an extended buying period for the F/A-22 without causing the dreaded budgetary bow wave of two major programs running simultaneously.

However, the Air Force is not planning to tinker with its JSF plan just yet.

No Pre-emptive Surrender

Roche said that Undersecretary of Defense Edward C. Aldridge Jr., DOD’s top acquisition official, is “quite right” not to engage in “pre-emptively surrendering” and simply



The X-35 STOVL demonstrator accomplished short takeoff, supersonic flight, and vertical landing all in one mission—hence the “hat trick” insignia on the tail.

assuming the F-35 will not meet its marks on time.

“We’re going to stick to the program and let the program go” as currently structured, said Roche. However, he added, if the F-35 does arrive on time, the service would be willing to let the Marine Corps and Navy have their F-35s in larger amounts early in the program. They are in more urgent need of replacement aircraft, Roche asserted.

The JSF production line would be able to accommodate such changes, Hudson said. “Could we change the variant mix as it goes down the assembly line?” he asked. “Absolutely.”

He went on, “We’re going to build each variant on the same production line. This was one of the concepts we wanted to make sure we had taken care of, because we didn’t want to have three separate production lines, with three variants.”

Having the same production line—and using the same tooling—is possible because computer-aided design and manufacturing allows the tooling to change and adapt to the version coming along.

There are “some unique components that go into the STOVL jet,” Hudson hastened to add, meaning that a speed-up in the Marine/UK version would require a long-lead-time decision to have those parts ready when construction starts. Over all, however, the “family-of-airplanes concept makes it easier to

make adjustments in the mix over time,” Hudson concluded.

Roche said the Air Force will not directly or indirectly do anything to upset the F-35 appletart. That is because USAF, under the unique JSF leadership-swapping arrangement between the Air Force and Navy, will be the service “in charge” during any alterations to the buying profile.

“About the time this becomes a serious problem, guess who ‘owns’ the F-35?” asked Roche. “So, we have a vested interest [in seeing] that this is done right.”

When the JSF program manager is an Air Force officer, he reports to the Navy’s acquisition executive, and his deputy is a Navy or Marine officer. When he is succeeded by a naval officer, the Air Force acquisition executive assumes oversight of the program, and the deputy becomes a USAF officer.

The Navy, too, is reconsidering its buy of the JSF. As a result of a new streamlining effort that will merge Marine Corps and Navy squadrons, the services think their JSF requirement will decline as well.

“We expect it will be in the 409–419 aircraft range, something like that,” a Navy budget official reported.

However, he quickly added that the consolidation will not affect the JSF program until it is well along—“well into the out-years” of the defense budget.

Plans call for first JSF procure-

ment money to come from the Air Force in 2006, Marine Corps in 2007, and Navy in 2008.

Aldridge, asked about Navy plans and their impact on the program, said he expects there will be such overseas demand for F-35s that any reduction from the Navy's air wing reorganization would be offset by international sales.

3,000 Fighters Needed

Government and industry experts forecast a requirement for as many as 3,000 F-35-class aircraft over the next 30 years. This is more than the number required by the US armed forces.

"It wouldn't surprise me that the services are looking at the production flow quite a bit," said Tom Burbage, Lockheed Martin's JSF program director. "It would not affect the SDD contract" if the Air Force or Navy opted to change their buy numbers, he said, because such changes would affect the production portion of the project, not development.

However, Burbage went on, "I think there's a desire, at least on the part of [the Office of the Secretary of Defense] to keep the program as stable as they can."

Hudson agreed.

"We're doing everything the same in development, regardless" of the final buy target, he said. "I have consistently said that if we perform well—if we do well on our cost and

schedule performance and also our technical performance—that will help us keep great support, and, by keeping that support and keeping the stable funding, in turn we'll be able to perform well."

Burbage and Hudson noted that doing lots of groundwork in the concept definition phase helped speed things along in initial development and reduce risk. Even so, they said, serious technical challenges remain.

Though "no inventions ... have to happen," said Burbage, some new technologies such as sensor fusion

will be taken to a higher level, requiring unprecedented amounts of software. "We've got an excellent plan," he asserted, but it's too early in the program to gauge success.

The Software Challenge

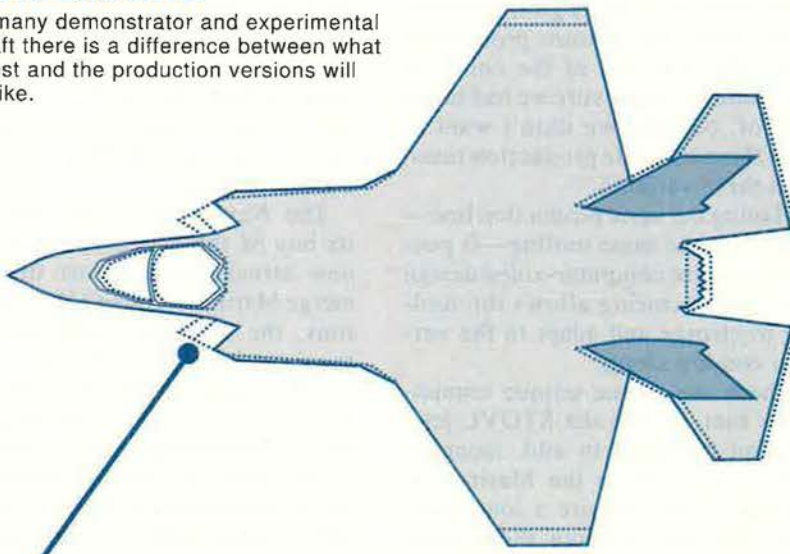
Hudson also cited software as the top challenge. He said there will be about six million lines of code in the airplane and another six million in the simulator, plus about three million in associated systems. While some of the 15 million lines of code can be lifted from other programs, the task is still



A computer rendering shows the USAF production model. Inlets were moved aft to improve visibility for the pilot, and the overall airplane grew seven inches to permit room for growth in avionics.

Before and After

Like many demonstrator and experimental aircraft there is a difference between what the test and the production versions will look like.



The dotted outline shows the shape of the X-35 demonstrator, while the shaded area shows the final shape of the production-version F-35. The aircraft benefited from substantial design refinement and wind tunnel research.

"huge," he said, and he is taking care to ensure that "we don't underestimate the time and budget required to get the job done."

Another challenge concerns "integrated subsystems," Burbage noted.

He said, for example, that the JSF program wants to produce a single hardware item to provide auxiliary power, vapor cycling, and environmental control. This will save weight, because today's aircraft have three separate devices.

"There's nothing unique about the requirements of the three machines," said Burbage. "What's unique is that we're integrating them into one machine." This is another area where "we've still got to prove" it can be done, he added.

Yet another challenge is the durability of the engine and the materials connected to it, such as the clutch

and drive shaft for the STOVL version, he said.

Finally, Burbage said foreign customers will want to add their own requirements to the airplanes they buy, complicating the assembly process. The key will be to ensure that these demands are “not disruptive to the basic program.”

Hudson said the Pentagon will have to maintain “open architecture” for avionics. This means providing for the quick pace of electronics technology and leaving the system open to accept new and better hardware as it comes along, without suffering from the problem of disappearing vendors or equipment that becomes obsolete before the aircraft even flies.



The F-35C will fly from Nimitz-class aircraft carriers, as shown at top, as well as the CVN-X next-generation carrier. The Navy version will have larger wings and a beefier structure to sustain hard landings.

The JSF is slated for several technology refreshes during development, specifically to head off avionics obsolescence. It was a key lesson learned from the F/A-22 program.

Another lesson stems from the tail buffet problem experienced by the F/A-22, the F/A-18, and other twin-tail designs, Hudson pointed out. The tail buffet problem—which led to an unexpected beefing up of the F/A-22’s tail—manifested itself just as the JSF was going through a structural analysis. It was “tremendously helpful” to have such forewarning, and what was learned from the vortex flow on the Raptor’s tail was

applied to avoid the problem on the twin-tailed F-35.

“We were early enough in the design cycle to take the lessons learned,” he said.

Other lessons include the complicated process of weapons separation from an internal bomb bay on a fighter, Hudson noted. “It’s something we absolutely have to do right on Joint Strike Fighter.”

All in all, having veterans of the F/A-22, F/A-18, and other projects in the program office has provided invaluable “corporate knowledge” for dealing with problems before they occur, Hudson remarked.

Hudson and Burbage noted that

Pratt & Whitney has made progress in getting the F135 ready for flight. Prototype versions scarcely missed a beat during the concept demonstration flight-test phase—a performance unheard of in previous programs using a new engine.

Pratt’s F135 will be installed in the initial aircraft. Around the fifth production lot, General Electric’s F136 will be brought in as an alternative, and the two companies will compete for the annual buy.

In the “great engine war” of the 1980s and early 1990s, those two companies jostled to sell power plants for Air Force F-15s and F-16s. This time, however, the two engines for the JSF must be functionally identical. One will be interchangeable with the other in terms of software, repair tools, and its function in the airplane, even though they may be quite different internally. In previous competitions, aircraft could use only one type of engine, which required unique air inlets and other features to work properly.

The F-35 is designed to use either engine at any time. This practice will reduce the number of spare engines and parts that must be taken to forward operating areas. It will also lead to streamlined training, software updates, and support gear.

Both engines have to accommodate the JSF’s single-piece air inlet. There is no plan to enlarge the inlet should either engine house develop a more powerful variant of its power plant. The existing inlet can accept



The F-35 will be able to fly with either the Pratt & Whitney F135 engine or General Electric F136 engine. The two power plants, though internally dissimilar, must be interchangeable in size, maintenance, and performance.

some growth in the generated power, Burbage said.

Since the selection of Lockheed Martin's JSF design, the length of the aircraft has grown by about seven inches. This will allow growth in the number of systems that can be carried. More area was added to the verticals for increased stability. Weapons bay doors have been enlarged so the STOVL version can carry 2,000-pound-class weapons.

New Way of Building

The JSF will be assembled in a new way, too. Lockheed will build the front of the airplane in Fort Worth, Tex., and the plant will also perform final assembly. The midsection will be built by Northrop Grumman at Palmdale, Calif. The tail will be built at BAE Systems' Sarnesbury, UK, facilities.

The midsection and aft will come "stuffed," Hudson said. That means they won't be shells to fill with equipment but will have all the necessary equipment already installed when they arrive for final assembly.

It's not accurate to say the three subassemblies will snap together, but the analogy isn't too far off, Burbage said.

Wiring harnesses—developed in the Netherlands—will be in place in each section. At final assembly, they will be joined by connectors. The approach saves time by allowing pieces to be installed before being surrounded by other parts of the airplane and also saves weight



and improves stealth by reducing the number of hatches and access panels.

Some members of Congress attacked the award of the F-35 contract to a single firm. They complained that the move would cripple the nation's capability to develop future fighters competitively. They lobbied the Defense Department to insist that Boeing, loser to Lockheed in the JSF competition, be given some of the work. The Pentagon declined, leaving the contract as a winner-take-all but allowing Lockheed Martin the option of awarding work to Boeing if it wanted to.

Boeing wanted to be a "fourth stra-

tegic partner" on the F-35, Burbage said, but "there was no way to do that." He said, "We already had the work spread across three prime contractors and across about 10 or 12 major subcontractors," with Lockheed Martin itself only having a 19 percent share of the overall work. There simply wasn't enough for another member.

"The current team members invested heavily as a team, in a winner-take-all program, and it would have meant taking significant work share away from us or Northrop Grumman or BAE Systems to bring Boeing on." Boeing will be allowed to bid on any remaining work not yet under contract, "as other people are allowed to bid," Burbage said.

The JSF gets a lot of top-level attention, Hudson pointed out.

"We have the service acquisition executives review this program every three or four months, ... and the service Secretaries and Mr. Aldridge, and the CEO-level folks from our contractors all get together about every five months and review this program," he explained.

Additionally, there are committees of warfighter flag officers that review progress and relevancy of the program, a configuration steering board, an acquisition steering board, a committee on logistics and training, and other "high-level forums," Hudson counted off.

"This," he said, "keeps a lot of bright lights on this program." ■



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Verbatim

By John T. Correll, Contributing Editor

UN Leaders

"Iraq To Chair UN Disarmament Conference."—*CNN.com headline, Jan. 29. Iraq was chosen by an automatic rotation process. Iraq's co-chair for the conference is Iran.*

Germany Is Convinced

"Iraq has complied fully with all relevant resolutions and cooperated very closely with the UN team on the ground. We think things are moving in the right direction."—*German Foreign Minister Joschka Fischer, Washington Post, Jan. 21.*

Debating Societies and Backbone

"I believe when it's all said and done, free nations will not allow the United Nations to fade into history as an ineffective, irrelevant debating society. I'm optimistic that free nations will show backbone and courage in the face of true threats to peace and freedom."—*President George W. Bush, in remarks at Naval Station Mayport, Fla., Feb. 13.*

Allons, Enfants

"Going to war without France is like going deer hunting without an accordion. You just leave a lot of useless noisy baggage behind."—*Jed Babbin, former deputy undersecretary of defense, MSNBC "Hardball," Jan. 30.*

European Support

"We in Europe have a relationship with the US which has stood the test of time. ... The transatlantic relationship must not become a casualty of the current Iraqi regime's persistent attempts to threaten world security. ... Our governments have a common responsibility to face this threat. Failure to do so would be nothing less than negligent to our own citizens and to the wider world."—*Op-ed article, signed by Prime Ministers of Denmark, Hungary, Italy, Poland, Portugal, Spain, and UK and the President of the Czech Republic, Wall Street Journal, Jan. 30.*

French Fried

"It is not really responsible behavior. It is not well-brought-up behavior. They missed a good opportunity

to keep quiet. ... If they wanted to diminish their chances of joining Europe, they could not have found a better way."—*French President Jacques Chirac, lashing out at nations (especially European Union membership candidates) who signed the op-ed article and a later letter backing US on Iraq, quoted by Associated Press, Feb. 17.*

Some of My Best Friends Are Americans

"I've known the US for a long time. I visit often, I've studied there, worked as a forklift operator for Anheuser-Busch in St. Louis and as a soda jerk at Howard Johnson's. I've hitchhiked across the whole United States; I even worked as a journalist and wrote a story for the New Orleans *Times-Picayune* on the front page. I know the US perhaps better than most French people, and I really like the United States. I've made many excellent friends there; I feel good there. I love junk food, and I always come home with a few extra pounds. I've always worked and supported trans-Atlantic solidarity. When I hear people say that I'm anti-American, I'm sad—not angry but really sad."—*French President Jacques Chirac, Time, Feb. 24.*

Customer Relations

"France, Germany, and, to a degree, Russia, are opposed to military action in Iraq mainly because they maintain lucrative trade deals with Baghdad, many of which are arms-related."—*Khidhir Hamza, former director of Iraq's nuclear weapons program, Wall Street Journal, Feb. 11.*

The Credibility of Iraq

"Of course they have no credibility. If they had any, they certainly lost it in 1991. I don't see that they have acquired any credibility."—*Hans Blix, UN weapons inspector, on Iraq, Time, March 3.*

Holes in NATO

"A map of NATO with a hole where Germany had been would look odd; but the map has looked odd for 40 years since the French went their

separate way. Now that the Soviet threat is no more, NATO does not really need Germany, except for purposes of internal communication. Germany's armed forces are in disarray, as are those of France."—*John Keegan, British military historian, London Daily Telegraph, Feb. 11.*

Japan Warns of First Strike

"It's too late if [a missile] flies towards Japan. Our nation will use military force as a self-defense measure if [North Korea] starts to resort to arms against Japan. ... We differentiate this from the concept of a 'pre-emptive strike.'"—*Japanese Defense Minister Shigeru Ishiba, quoted by Reuters, Feb. 14.*

Two-Faced

"Russia, China, and several European governments have been insisting that the United States cannot take action against Iraq without the full involvement of the United Nations. So it's curious to hear those same countries argue that in the case of North Korea, another rogue state that threatens its neighbors with weapons of mass destruction, the only solution is unilateral steps by the Bush Administration."—*Washington Post editorial, Feb. 14.*

F/A-22 Math

"Look, if I have X number of F-15s today, and I buy Y number of F-22s, and there's a delta, and the delta is downward, you tell me I've got a bow wave. But if I have X number of F-15s, Y number of F-22s, and Z number of unmanned aerial vehicles, I'm arguing I won't have a bow wave. I don't reduce my Y, but my Y plus my Z probably does better than my X."—*"Senior defense official" briefing reporters on Fiscal 2004 defense budget, Jan. 31.*

Moron on the March

"I hope we are all in agreeance that this war should go away—as soon as possible."—*Antiwar statement by Fred Durst, member of the band Limp Bizkit, uttered onstage at the Feb. 23 Grammy awards program, quoted by MSNBC.com.*

The Chart Page

By Tamar A. Mehuron, Associate Editor

The Defense Budget at a Glance

In February, President Bush presented his defense budget for Fiscal 2004. The document requests \$379.9 billion in budget authority and \$370.9 billion in outlays for the direct program (DOD activities only). The budget request for the total national defense program (DOD activities and defense activities in the Department of Energy and other federal agencies) is \$399.1 billion in budget authority and \$389.4 billion in outlays.

Funding levels can be expressed in several ways. Totals are most frequently stated in **budget authority**, which is the

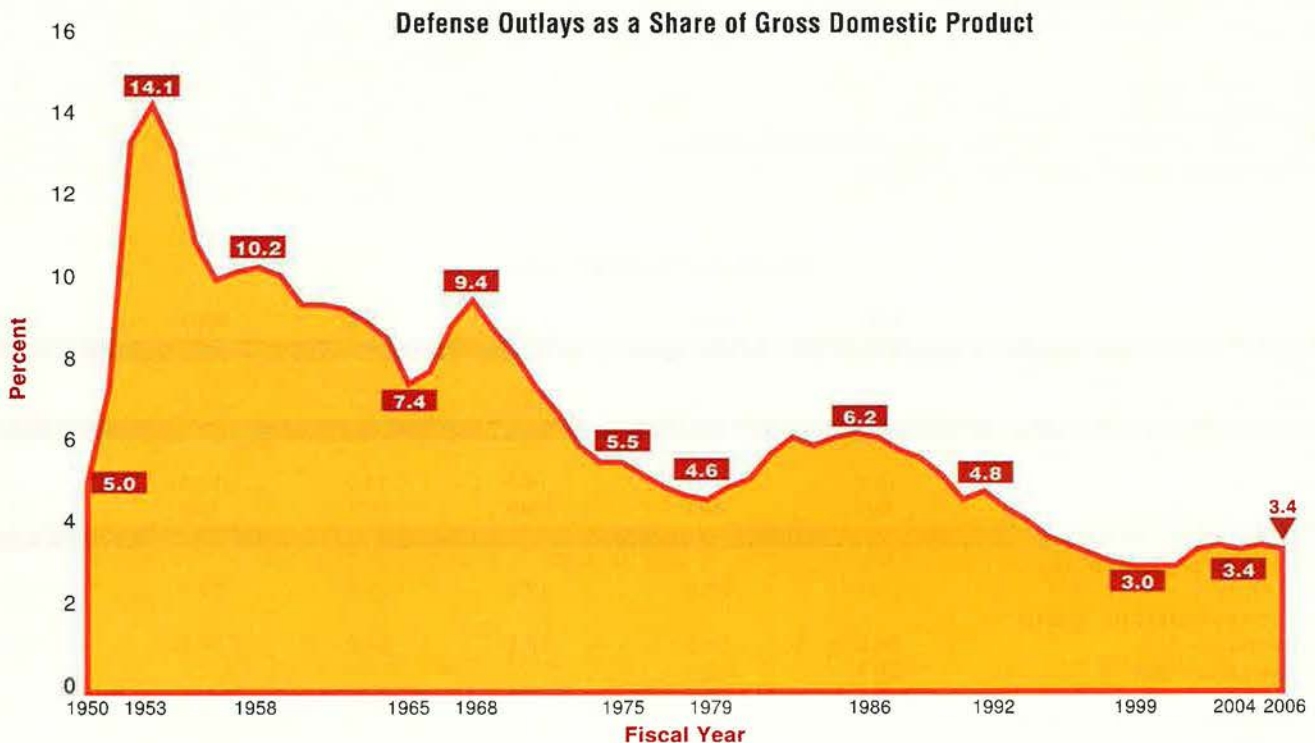
value of new obligations that the government is authorized to incur. These include some obligations to be met in later years. Figures can also be expressed in **outlays** (actual expenditures, some of which are covered by amounts that were authorized in previous years).

Another difference concerns the value of money. When funding is in **current or then-year dollars**, no adjustment for inflation has taken place. This is the actual amount of dollars that has been or is to be spent, budgeted, or forecast. When funding is expressed in **constant dollars**, or real

dollars, the effect of inflation has been factored out to make direct comparisons between budget years possible. A specific year, often the present one, is chosen as a baseline for constant dollars.

The following charts address only the Defense Department program. Numbers on the charts in this section may not sum to totals shown because of rounding. Years indicated are Fiscal Years. Civilian manpower figures are now measured in terms of Full Time Equivalents.

	2002	2003	2004	2005	2006	2007	2008
DOD Budget Topline (\$ billions)	Budget authority						
	(current)						
	\$344.4	\$364.6	\$379.9	\$399.8	\$419.8	\$440.5	\$461.8
	Budget authority						
(constant FY 2004)							
\$358.6	\$371.7	\$379.9	\$390.7	\$400.7	\$410.6	\$420.3	
Outlays							
(current)							
\$333.2	\$358.8	\$370.9	\$389.9	\$402.9	\$416.5	\$441.2	
Outlays							
(constant FY 2004)							
\$346.0	\$365.7	\$370.9	\$381.3	\$385.1	\$388.9	\$402.4	



The Chart Page / The Defense Budget at a Glance

Service Shares

(Budget authority in constant \$ billions)

FY 2004 \$ billions	2002	2003	2004	2005	2006	2007	2008
Air Force	104.2	110.1	113.7	117.7	121.7	122.8	125.5
Army	89.5	92.5	93.7	96.0	98.8	101.4	104.0
Navy/Marine Corps	105.9	113.3	114.6	116.3	119.6	121.0	124.9
Defense agencies	58.9	56.0	57.9	60.7	60.6	65.4	65.9
Total	358.6	371.7	379.9	390.7	400.7	410.6	420.3
Percentages							
Air Force	29.1%	29.6%	29.9%	30.1%	30.4%	29.9%	29.9%
Army	25.0%	24.9%	24.7%	24.6%	24.7%	24.7%	24.8%
Navy	29.5%	30.5%	30.2%	29.8%	29.8%	29.5%	29.7%
Defense agencies	16.4%	15.1%	15.2%	15.5%	15.1%	15.9%	15.7%

Force Structure Changes

	Cold War Base 1990	1993 Base Force	1993 BUR Plan	1997 QDR Goal	Plan 2003 ^d
Air Force					
Active fighter wings	24	15	13	12+	12+
AFRC/ANG fighter wings	12	11	7	8	7+
Army					
Active divisions	18	12	10	10	10 ^b
Army National Guard/Reserve	10	8 ^a	8	8	8 ^c
Navy					
Aircraft carriers					
Active	15	12	11	11	10
Reserve	1	1	1	1	1
Carrier air wings					
Active	13	11	10	10	10
Reserve	2	2	1	1	1
Marine Corps					
Active Marine Expeditionary Forces	3	3	3	3	3
Marine Forces Reserve	1	1	1	1	1

^a Comprising 34 brigades.

^b Plus two armored cavalry regiments.

^c Plus 16 separate brigades (15 of which are at enhanced readiness levels).

^d FY 2004 budget did not include force structure plans.

Operational Training Rates

	1990	2000	2001	2002	2003	2004
Air Force						
Flying hours per crew per month, fighter/attack aircraft	19.5	17.2	17.1	17.1	17.1	16.8
Army						
Flying hours per tactical crew per month	14.2	12.7	14.5	14.0	14.5	13.1
Annual tank miles ^a	800	669	849	831	849	913
Navy						
Flying hours per tactical crew per month	23.9	20.9	17.8	22.6	22.6	20.8
Ship steaming days per quarter						
Deployed fleet	54.2	50.5	56.2	54.0	54.0	54.0
Nondeployed fleet	28.1	28.0	*	*	*	*

^a Excludes National Training Center miles.

* Not given.

Major USAF Programs RDT&E

(Current \$ millions)

Program	2002	2003	2004
B-1B bomber	95.9	157.2	88.7
B-2 bomber	163.5	259.7	176.8
C-5 transport	157.5	284.7	356.6
C-17 transport	106.0	153.8	184.1
C-130J transport	0.0	9.8	13.6
CV-22 transport	652.9	484.8	543.9
E-3 AWACS	36.7	169.6	270.4
E-8 Joint STARS	147.7	60.3	58.4
F-15E fighter	100.0	60.4	112.1
F-16 fighter	107.0	81.6	87.5
F/A-22 fighter	877.3	905.9	936.5
F-35 fighter (JSF)	720.1	1,697.8	2,194.1
T-6 JPATS	0.0	0.0	0.0
AIM-120 AMRAAM	53.5	35.5	32.4
JDAM	26.3	16.2	34.1
JASSM	82.8	51.0	31.2
AEHF satellite	459.6	822.5	778.1
DSP satellite	5.9	2.0	0.0
GPS satellite	294.4	426.2	247.1
Milstar satellite	226.4	147.8	1.4
SBIRS-High satellite	524.5	775.4	617.2
Space Based Radar	0.0	47.1	274.1
Titan boosters	0.0	0.0	0.0
EELV booster	321.8	57.0	8.0
Minuteman III ICBM	85.3	121.6	184.2
Global Hawk UAV	204.0	334.0	357.0
Predator UAV	4.0	15.0	40.0
UCAV	19.0	57.0	182.0

Major USAF Programs Procurement

(Current \$ millions)

Program	2002	2003	2004
B-1B bomber	48.5	103.9	91.6
B-2 bomber	34.5	96.8	83.4
C-5 transport	17.3	57.2	92.0
C-17 transport	3,745.1	4,276.4	3,502.3
C-130J transport	159.1	295.9	446.0
CV-22 transport	18.2	97.6	233.1
E-3 AWACS	90.1	28.4	53.5
E-8 Joint STARS	364.4	287.2	36.0
F-15E fighter	247.7	281.4	204.9
F-16 fighter	236.0	290.1	314.5
F/A-22 fighter	3,031.0	4,468.5	4,233.7
F-35 fighter (JSF)	0.0	0.0	0.0
T-6 JPATS	223.4	204.0	280.6
AIM-120 AMRAAM	100.2	87.9	105.2
JDAM	581.5	477.1	427.7
JASSM	42.7	53.8	102.5
AEHF satellite	0.0	0.0	0.0
DSP satellite	97.6	113.5	113.1
GPS satellite	161.9	226.4	258.8
Milstar satellite	0.0	0.0	0.0
SBIRS-High satellite	0.0	0.0	95.4
Space Based Radar	0.0	0.0	0.0
Titan boosters	244.3	288.7	91.5
EELV booster	0.0	165.6	609.3
Minuteman III ICBM	538.4	586.2	607.0
Global Hawk UAV	162.3	165.6	252.9
Predator UAV	91.8	129.5	193.6
UCAV	0.0	0.0	0.0

Cutting the Pie: Who Gets What

(Budget authority in constant FY 2004 \$ billions)

	2002	2003	2004	2005	2006	2007	2008
Military personnel	90.5	95.2	98.6	100.4	102.1	103.1	103.9
O&M	138.3	132.0	133.3	135.9	138.4	139.9	143.1
Procurement	65.3	72.8	74.4	76.9	81.8	89.6	95.8
RDT&E	50.7	57.9	61.8	65.6	61.4	60.2	61.0
Military construction	6.9	6.4	5.0	7.1	9.9	12.3	11.1
Family housing	4.2	4.3	4.0	4.7	4.9	4.5	3.5
Other	2.7	3.2	2.8	1.4	2.1	1.0	1.8
Total	358.6	371.7	379.9	390.7	400.7	410.6	420.3

Manpower

(End strength in thousands)

	1990	2001	2002	2003	2004	Change 1990-2004	1997 QDR Goal
Total active duty	2,065	1,382	1,412	1,390	1,388	-677	1,360
Air Force	535	357	368	359	359	-176	339
Army	751	480	487	480	480	-271	480
Navy	582	372	383	376	374	-208	369
Marine Corps	197	173	174	175	175	-22	172
Selected reserves	1,128	866	874	865	863	-265	835
Civilians (FTE)	997	683	687	680	673	-324	640

Acronyms

AEHF	Advanced Extremely High Frequency
AFRC	Air Force Reserve Command
AMRAAM	Advanced Medium-Range Air-to-Air Missile
ANG	Air National Guard
AWACS	Airborne Warning and Control System
BUR	Bottom-Up Review
DSP	Defense Support Program
EELV	Evolved Expendable Launch Vehicle
FTE	Full Time Equivalent
GPS	Global Positioning System
JASSM	Joint Air-to-Surface Standoff Missile
JDAM	Joint Direct Attack Munition
JPATS	Joint Primary Aircraft Training System
JSF	Joint Strike Fighter
O&M	Operations and Maintenance
QDR	Quadrennial Defense Review
RDT&E	Research, Development, Test, and Evaluation
SBIRS	Space Based Infrared System
STARS	Surveillance Target Attack Radar System
UAV	Unmanned Aerial Vehicle
UCAV	Unmanned Combat Air Vehicle

Quail



The Quail was a decoy B-52. Although it was only 13 feet long and had a 5.5-foot wingspan, it electronically simulated a B-52 that was more than 10 times its length, with a 185-foot wingspan. Onboard equipment made this possible. The Quail duplicated the BUFF's flight characteristics and radar signature, and it simulated B-52 maneuvers at the same speeds and altitudes. Produced by McDonnell Aircraft, the Quail air decoy missile—originally the GAM-72 and later called the ADM-20—was launched from a B-52's bomb bay, as shown in the 1958 photo above. A B-52 could carry four, along with its normal bomb load. The Quail began service in 1960 and was used until 1978.



Supporters say the post-9/11 work of USAF depots underscores the value of government-owned repair centers.

Masters of Surge

By George Cahlink

AIR Force depots are not normally places you'd expect to hear talk about battle plans. Usually, the repair centers reverberate with the sounds of metal on metal, as airframes are pulled apart for upgrades, or with the jargon of technicians huddled around a workbench discussing why an aircraft's radar system is not working. The 9/11 terrorist attacks changed that.

As the US engaged in the war on terror, USAF's three depots dusted off contingency plans seldom used during the Cold War or the 1991 Gulf War.

They became "engaged, responsive, and forward thinking," said the Air Force's top warfighter in Europe, Gen. Gregory S. Martin, commander of US Air Forces in Europe, on the depots' support for Operation Enduring Freedom in Afghanistan.

"First they assured major com-



mands that support to the warfighter would continue uninterrupted," he said. "Next as we began preparing for offensive actions, they sought feedback on our highest priority requirements. As our forces engaged, they continued to focus on our priority requirements and ... [to identify] emerging requirements."

Long dormant "battle staffs" at each depot quickly went to 24/7 operations to provide on-the-fly weapon support.

When a warfighting commander tells Air Force Materiel Command—which oversees the service's three depots, or air logistics centers—that he is short a key weapon system or running low on spare parts, AFMC relays that request to a depot. The depot battle staff draws up a plan for getting the goods to the field and determines how much it will cost. Typically, cost isn't a driver in supplying a warfighter's immediate needs. Once the plan is approved, depot managers marshal the equipment and personnel needed to handle the special work.

The Air Force has three air logistics centers: Ogden ALC at Hill AFB, Utah; Oklahoma City ALC at Tinker AFB, Okla.; and Warner Robins ALC at Robins AFB, Ga.

Shifting to a surge approach has meant longer hours for the ALCs' workforces. Normally, the depots operate on 40-hour-per-week schedules. Invoking the established contingency plans meant the work week would grow to six days and 10-hour shifts. That proved, in some cases, insufficient.

Some repair shops within the depots have been running 10-hour schedules, while others expanded to 12-hour days. A few even operate around the clock, said Michael Powers, AFMC's strategy plans chief.

To turn out one of the first surge items—the ALR-46/69 radar warning receiver for fighter aircraft—Warner Robins had dozens of technicians working two, 12-hour shifts, seven days a week from September 2001 to December 2001. Prior to Sept. 11, installation of the radar systems was not a high priority. Following the attacks, however, the ALC technicians had to get hundreds to the field immediately for the fighter aircraft used in Afghanistan.

In addition to extending work hours to handle surges, the depots elimi-

nated training and reassigned personnel from lower-priority projects. Such flexibility is seen as a strong argument against those who would privatize all air logistics centers.

The post-9/11 efforts of USAF depots, said Powers, underscore the value of maintaining government-owned and -operated repair centers. He argued that, if the Air Force relied solely on commercial companies, contracts would have had to be renegotiated, private-sector workforces could have gone on strikes, and private companies might not have had the space or personnel on hand to meet increased demands.

Debra K. Walker, AFMC's deputy director of depot maintenance, agreed. She said the three ALCs offer "a known capability with government equipment to accomplish peacetime work and then surge for wartime."

Searching for Identity

Since the end of the Cold War, military depots have struggled to find a role in a downsized Defense Department. All the services maintain depots, and each has closed depots over the past 15 years under the four rounds of base closures. The number of military depots has decreased from 38 in 1987 to 18 today. Their largely civilian workforces were trimmed from about 150,000 workers to well under half that number.

The act of closing bases is always sensitive, but it was the recommended closure of two Air Force depots—the San Antonio ALC at Kelly AFB, Tex., and Sacramento ALC at McClellan AFB, Calif.—that became the most contentious issue of the 1995 round. The Air Force had five depots in 1995 and was to close two and transfer their workloads to the remaining three. All five depots had been operating at 50 percent capacity. By transferring the work to the depots in Georgia, Oklahoma, and Utah, the Air Force would save money by making each of them more efficient.

President Clinton, however, argued that California and Texas had already suffered disproportionately from the three earlier closure rounds. He tried to soften the economic blow in these two vote-rich states by declaring a "privatization in place" initiative, whereby private contractors would assume the government work on site at Sacramento and San Antonio.



Legislators from Georgia, Oklahoma, and Utah vehemently objected. They knew that, without the additional work, the depots in their states would be underutilized and vulnerable to closure in any future base reductions.

Resentment continued over the depot issue throughout Clinton's term in office. Congress refused to consider a new round of base closures until the Bush Administration, and even then there was still concern about possible politicization of the process.

The next, and fifth, round of closures will be held in 2005. All DOD facilities, including the remaining depots, once again are vulnerable. Some Administration officials suggest that all the military depots should be closed and their functions handled by private companies.

In the 1995 round, home-state lawmakers were highly successful in protecting their depots. Their efforts helped shape a new USAF depot strategy designed to make permanent the responsiveness and flexibility that the depots have shown since 9/11.

Presaging the strategy, Congress passed two key laws that strengthened the depots. The first, known as the 50-50 rule, requires that half of all maintenance work on weapon systems be performed at depots. The second requires the military services to maintain core capabilities for re-

pairing key weapon systems to ensure readiness, promote competition within industry, and guarantee a source of last resort for parts and maintenance work.

The Air Force strategy, which was announced last fall, builds upon those laws. The strategy calls for the ALCs to:

- Invest nearly \$1 billion over the next six years in modernizing equipment and rebuilding facilities.

- Attract a new generation of workers.

- Become more efficient by adopting commercial business practices.

- Gain additional repair work by forming partnerships with contractors.

A Long Overdue Investment

At the heart of the new strategy is recognition by Air Force leaders that the service has neglected both depot infrastructure and its organic depot workforce. USAF plans to make its first significant increase in capital spending for depots in more than a decade. Beginning in Fiscal 2004, the Air Force will increase spending by \$900 million over the next six years (\$150 million annually). Currently, the Air Force spends about \$140 million annually on depot infrastructure—about three percent of the overall depot budget.

With the increase, the depots will be able to spend about six percent

of their annual budget on infrastructure repairs and upgrades—an amount more in line with industry averages. The increased funding will allow depots to keep pace with technological advances and overcome a \$200 million backlog in replacing aging facilities and equipment.

According to Maj. Gen. Terry L. Gabreski, AFMC director of logistics, the additional dollars show the Air Force is committed to making the depots “world-class” maintenance centers.

Just as critical is USAF’s investment in its depot workforce—both in training and developing its current force and attracting younger employees.

USAF plans to focus more attention on attracting and retaining depot employees. Like the rest of the Defense Department, the depots have an older workforce, one with average age of 46. A decade of downsizing and hiring freezes has left the depots without a younger generation of workers.

The Air Force proposes several ways to correct that shortfall, including: creating a personnel system for depot workers that offers greater pay and hiring flexibility; establishing apprenticeship programs at each depot; developing school-to-work programs with local high schools and community colleges; and creating training organizations at each depot for both new hires and supervisors.

“The sum of these efforts should allow the Air Force to ensure access to a technically competent workforce over the long term,” states the strategy.

Working Smarter

Thought of for years as industrial dinosaurs, USAF’s depots already have begun to embrace more efficient business practices and streamline repair and maintenance procedures. Depot personnel are being told to visit commercial companies to learn about their manufacturing processes.

“We had not been going out and asking, Who does this the best in the world?” said Walker. Increasingly, depots will develop more vigorous ways to measure production and repair processes and set benchmarks for workers to meet, she added.

All the depots have had success in implementing an initiative, popular-

ized by carmaker Toyota, known as lean manufacturing. Simply put, “leaning” entails reviewing every step of a manufacturing process, pinpointing inefficiencies, and keeping only those steps absolutely necessary for production.

Leaning the C-5 aircraft routine overhaul process cut time spent walking to different areas for parts and tools, and, as a result, overtime dropped by 45 percent at the Warner Robins cargo aircraft repair shop.

At Oklahoma City, workers leaned various processes by eliminating 8,750 excess tools, freeing up 5,865 square feet of floor space, and cutting the distance parts traveled within the depot by 4,500 miles annually.

And at Ogden, the F-16 aircraft wing repair shop cut repair times nearly in half by developing a standard system for identifying problems that arise in the overhaul process. Both managers and front-line workers now use the same system.

Another key to gaining efficiency and effectiveness is to ensure full utilization of the depots. Maintaining the service’s key weapon systems—the core workload—accounts for much of the work done at the depots but not all. Additional repair and overhaul projects—known as core-plus work—are needed to fully and efficiently use the repair center facilities and their equipment.

There are two aspects to core-plus work. One has the depots taking on work for other services and working on older systems where no other source of repair exists. The other is to further develop public-private partnerships.

Extending Partnerships

Such partnerships have ranged from long-term, multibillion dollar deals for overhauling large weapon systems to short-term deals for less than \$1 million that allow contractors to lease space or specialized tooling equipment at depots.

Powers said partnering reduces weapon systems support costs by allowing industry and depots to jointly share equipment and facilities rather than buying or building duplicate space and gear. In many cases, depots have technical expertise and equipment for repairing older systems that are no longer found in industry, he added.

“Partnering with the private sec-



tor to ensure access to complementary or dual depot maintenance capabilities is an integral element of the Air Force depot strategy," states the Air Force strategy. "It allows the Air Force to simultaneously support aging weapon systems laden with obsolete hardware and software, while integrating support for new and advanced technology weapon systems now entering the inventory."

Partnerships also help the Air Force comply with the 50-50 rule. In Fiscal 2001 and 2002, when the Air Force was consolidating work from the closing depots, the service violated the 50-50 rule, forcing it to apply for a waiver from Congress. In Fiscal 2003, the Air Force expects to meet the rule. It will evenly split the roughly \$7 billion spent on weapon systems maintenance between contractors and depots.

Air Force leaders are critical of the 50-50 rule, saying it prohibits them from striking the best deals for weapon systems maintenance through full and open competition for the work.

Jacques S. Gansler, Pentagon acquisition chief in the Clinton Administration, agreed. He said the Air Force could receive the best service at the best prices if it opened all depot work to competition. "I wouldn't mind if the work was done 100 percent by government or industry," he said. "If you arrive at it through competitive processes then it's the right mix. Fifty-50 is just an arbitrary number that is politically based."

Gansler noted that the partnership system does benefit depots by increasing their workloads, which allows them to operate more effectively.

The Air Force's largest public-private partnerships were formed from the work formerly done in California and Texas. Rather than simply turning that work over to the three remaining depots, the Air Force allowed depots and private contractors to bid for the work in three competitions.

Cutting the Pie

One workload—maintenance of the C-5 airlifter—was won outright

by Warner Robins ALC. The Georgia depot independently beat out contractors, capturing a seven-year \$434 million C-5 contract. The other work went to combined government and industry teams.

The Ogden depot in Utah joined forces with a Boeing unit, operating out of the San Antonio ALC facilities, to win \$1.6 million in aircraft, hydraulic, and avionics repair work for A-10s and KC-135s over nine years. The Oklahoma City depot teamed with a Lockheed Martin unit, also based at San Antonio, to take the largest public-private depot deal to date—a \$10.1 billion deal over 15 years to repair engines.

Northrop Grumman has partnerships with two depots. In a \$7 billion, long-term deal to maintain the Joint STARS radar aircraft, Northrop Grumman pays Warner Robins about \$58 million annually for software and avionics repair work. Powers said the deal allows Northrop to take advantage of technical expertise already in place at Warner Robins, which has one of the world's largest and most diverse avionics shops, rather than having to spend hundreds of millions of dollars in house.

In another deal, Northrop Grumman partnered with the Ogden depot to repair composite airframe panels and radar domes used by the B-2 bomber. The contract is worth about \$20 million annually. As the bomber's original equipment manufacturer, Northrop Grumman has a long-term contract for maintaining and upgrading the system. However, Powers said, the deal requires the contractor to use Ogden facilities, since it is already the world's top composite airframe repair facility. Northrop does not have the expense of building such repair facilities. Ogden gains by making fuller use of its composite airframe capabilities and by generating dollars that can be used to buy the most modern repair equipment.

The Air Force wants similar partnerships for its newest weapon systems. Last fall, Boeing struck deals with all three depots, worth \$150 million over seven years, for as-



sisting in the overhaul of C-17 aircraft, the service's newest cargo airplane.

Powers said the Air Force saves more money by creating support partnerships as soon as weapon systems are developed rather than waiting until repairs are needed. The service is working on such an agreement for maintenance of its new F/A-22 fighter aircraft.

USAF sees the partnering process as essential to its depot strategy. "Weapon system support concepts are transitioning from the traditional 'organic' or 'contractor' modes of support to a more flexible mix of responsibilities based on long-term performance-based partnerships," states the strategy's master plan. It goes on, "This provides the most flexibility in providing maximum readiness and best value support to operational forces."

At issue for key lawmakers is whether the Air Force will stand by its depots and not shift too much work to industry. Service officials insist they recognize the need to preserve the three remaining organic depots to meet national defense contingencies and emergency requirements.

As Gen. Lester L. Lyles, AFMC commander, said upon announcing the new strategy, "Retaining the depots is not just an AFMC issue; it's an Air Force issue." ■

George Cahlink is a military correspondent with Government Executive Magazine in Washington, D.C. His most recent article for Air Force Magazine, "Send in the Contractors," appeared in the January issue.

Industrial Associates



Listed below are the Industrial Associates of the Air Force Association. Through this affiliation, these companies support the objectives of AFA as they relate to the responsible use of aerospace technology for the betterment of society and the maintenance of adequate aerospace power as a requisite of national security and international amity.

3M/Federal Systems Dept.	FMC Airport Systems	Northrop Grumman Corp., Mission Systems
AAI Corp.	FR Countermeasures, Inc.	Northrop Grumman Corp., Space Technology
Accenture	GE Aircraft Engines	Oracle Corp.
ACS Defense Inc.	GEICO	Orbital Sciences Corp.
Actus Lend Lease LLC	General Atomics	Orenda Aerospace, division of Magellan Aerospace
Aerojet	General Dynamics	OSI Software
Aerospace Corp.	General Dynamics Decision Systems Inc.	Parker Aerospace
Agusta Westland, Inc.	Gentry & Associates, Inc.	Pemco Aeroplex, Inc.
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Anheuser-Busch, Inc.	Honeywell Inc., Space & Aviation Control	RECON/OPTICAL, Inc.
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Armed Forces Journal International	IBM Business Consulting Services	Rockwell Collins Avionics & Communications Div.
AT&T Government Solutions	Intergraph Solutions Group Government	Rolls-Royce, Inc.
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Aviation Week	Jane's Information Group	Sabreliner Corp.
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Computer Sciences Corp. (CSC)	MBDA	Textron
Cubic Defense Systems	MCR, Inc.	Textron Systems
Cypress International, Inc.	Miltope Corp.	Titan Systems Corp.
DFI International	NavCom Defense Electronics, Inc.	USAA
DuPont Aviation	NCI Information Systems, Inc.	UTC, Hamilton Sundstrand
DynCorp	Northrop Grumman Corp.	UTC, Pratt & Whitney
EADS	Northrop Grumman Corp., AGS & BMS	UTC, Sikorsky Aircraft
EADS CASA	Northrop Grumman Corp., Information Technology	Veridian
Eastman Kodak Co., C&GS		Vought Aircraft Industries, Inc.
ECC International Corp.		Williams International
EDO Communications & Countermeasures		Zel Technologies, LLC
EDO Corp.		
EDS		
EFW, Inc.		
Engineered Support Systems, Inc.		
Evans & Sutherland		
Firearms Training Systems, Inc.		



In the face of severe political stresses, will the Western allies be able to adapt to new world circumstances?

The **NATO** Response Force

By Adam J. Hebert, Senior Editor



Long the poster child for NATO resource pooling, the alliance's multinational AWACS command-and-control fleet may serve as a model for other modernization efforts. A NATO E-3 over Denmark prepares to be refueled by an Illinois Air National Guard KC-135.

IF THE Western alliance survives the severe stresses and strains of recent months, and that's a big "if," it will have a different military look. The North Atlantic Treaty Organization, despite quarreling on Iraq, has begun reforming and streamlining its command structure, pushing investment in capabilities where the alliance now has critical shortfalls, and creating a military response force with 21,000 personnel.

These changes acknowledge security needs markedly different than those of the Cold War.

Even as NATO moves forward with its new military plan, the recent attempt by France, Germany, and Belgium to block movement of defensive weapons to Turkey—the only NATO member to share a border with Iraq—prompted some to say the alliance was dead. The US and other members prevailed. NATO sent AWACS radar aircraft, Patriot missile defense systems, and other equipment to Turkey in late February.

At the Prague summit last November, NATO members approved a new set of military priorities, known as the Prague Capabilities Commitment, that provides a narrow set of specific goals and plans to achieve them. Members pledged to work to close the capabilities gap with the US, streamline NATO's command structure, establish a new command for alliance transformation, and create a NATO Response Force.

According to a White House fact sheet, "America's NATO allies wanted to help fight the war on terror and most did, but, because of the speed with which the Afghan campaign was planned and their limited combat power projection capabilities, many NATO allies were not able to contribute as fully and meaningfully as they wanted."

The Prague Capabilities Commitment encourages NATO members to pursue niche capabilities and multinational efforts to fill gaps in airlift, air-to-air refueling, precision weapons, and weapons of mass destruction defenses, among others.

NATO invited seven nations (Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia, and Slovenia) to join the alliance as early as next year. They will add unique military capabilities.

Meanwhile, a new command structure is to replace the alliance's archaic headquarters system with two overarching entities: an Allied Command—Operations and an Allied Command—Transformation. This restructure should be finalized at a meeting of NATO defense ministers in June and will roughly mirror the split between geographic and support commands in the US Defense Department.

NATO's operations command will be headquartered at Mons, Belgium, and will oversee near-term warfighting needs. The transformation command will be at Norfolk, Va., colocated with US Joint Forces Command. The command will "be responsible for the continuing transformation of military capabilities and ... promotion of interoperability," according to a NATO release.

Also being established this year is the NATO Response Force, a group of land, air, and sea assets designed to give the alliance the ability to quickly project power beyond its borders.

Extending NATO's Reach

"Prior to 11 September, there was always a theological debate about whether NATO should ever operate outside the NATO area of responsibility," said former NATO Supreme Allied Commander Europe Gen. Joseph W. Ralston. "If 11 September did nothing else, it put to bed that argument that a threat to a NATO country has to originate in the country immediately adjacent to its border."

The NRF was a US proposal and has been strongly advocated by Defense Secretary Donald H. Rumsfeld.

The need for NATO to look beyond its borders was further validated by the experience in Operation Enduring Freedom in Afghanistan. A senior defense official told *Air*

Force Magazine that material recovered from al Qaeda showed there were “many Western European and American targets that this organization had its gunsights on.”

NATO hopes to have its response force work in a manner similar to the USAF’s rotating air and space expeditionary forces. Units will be on-call for six months at a time and will train and exercise together, remaining ready to engage in intense combat if needed. According to a White House fact sheet, the force will notionally include air assets and command-and-control capabilities to support up to 200 combat sorties per day. It would also have a brigade-sized land force and maritime forces up to the size of a NATO standing naval force. That would make the NRF roughly a 21,000-person force. Initial operational capability is slated for October 2004, if not earlier.

NATO is not waiting for new members to improve security in Europe, and officials say much progress has been made in recent years.

“NATO has done an awful lot that doesn’t appear on the front page,” Ralston said in an interview. For example, nearly 40,000 troops remain under NATO command in the Balkans, maintaining stability in the region after a decade of turbulence. “Every day, you don’t read about it, you don’t hear about it, but the troops are doing a remarkable job,” the general said. “Kosovo today is a far better place than it was three, or 20, years ago.”



USAF photo by TSgt. James R. Hart Jr.

A C-130 from Italy participates in Enduring Freedom. Germany is purchasing the Airbus A400M but won’t see the first transports until 2008. NATO may turn to C-17s to meet its 2005 goal for more strategic lift.

Even the current Kosovo force level is a vast reduction from the units in place immediately following Operation Allied Force in 1999. “We’ve been able to make those reductions because the situation has improved on the ground,” Ralston said, an improvement directly attributable to the stability NATO has brought to the region.

Allied Force also revealed some of the limitations of the alliance’s existing structure, both militarily and politically. Kosovo and Afghanistan have reinforced the need for NATO to have a force ready to respond

within or outside the alliance’s geographic area of responsibility.

“That’s what the NATO Response Force is all about—air, land, and sea [forces] that can do high-intensity conflict anywhere in the world,” Ralston said.

“Right now, NATO really doesn’t have the ability to respond on five days’ notice with a highly robust force,” another senior official noted. “We need something that’s light, mobile, that can sustain itself ... [and] can get to places quickly,” the official said.

Rumsfeld himself considers the NRF a cornerstone of the alliance’s future relevance. “If NATO does not have a force that is quick and agile, which can deploy in days or weeks instead of months or years, then it will not have much to offer the world in the 21st century,” Rumsfeld said before Prague.

Ralston said the NRF concept has been under development for years. “You don’t hear much about the High Readiness Force Land Corps Headquarters,” which oversees NATO rapid-reaction land forces. Combine the land corps with allied sea and air components, and “you’ve got the NATO Response Force,” Ralston said.

The NRF will train together to create the sort of intimacy that is “required for high-end operations, such as seizing an airfield,” another official said.

The US role in the NRF will depend upon the situation and is expected to fluctuate over time and with regular force rotations. One official

Photo by Paul Kennedy



NATO exercises, which often include Partnership for Peace countries such as Estonia (here, some Estonian troops board an airlifter), help develop common tactics and make joint operations more efficient.

Organizing for Transformation

The simplified command structure proposed for NATO is being pursued in large part to foster transformation.

When the Pentagon updated its Unified Command Plan last year, US Joint Forces Command (the former US Atlantic Command) gave up all geographic responsibilities. This was done so JFCOM could focus on transformation and experimentation priorities without being distracted by near-term warfighting requirements.

That was "the mirror image of what NATO is doing—taking the former [Supreme Allied Commander Atlantic] and divesting SACLANT of its geographic responsibilities," said former NATO Supreme Allied Commander Europe Gen. Joseph W. Ralston.

Once NATO's Allied Command-Operations assumes responsibility for combat in the Atlantic, Allied Command-Transformation will be able to focus entirely on transforming NATO's militaries.

Until last year, the JFCOM chief also served as SACLANT, but the roles have temporarily been separated. "There was no need to fill that [NATO] hat while the transformation was under way," a senior defense official explained.

Though the exact relationship between JFCOM and Allied Command-Transformation remains undetermined, officials on both sides of the Atlantic favor restoring a formal tie between the commands.

"It needs to be a very strong link," Ralston commented. "My personal view is that the commander of US Joint Forces Command should probably be dual-hatted as the commander of Allied Command-Transformation" to ensure that US and NATO priorities remain in lockstep. "Once SACLANT gives up its geographic responsibilities," the decision to decouple JFCOM from NATO should be revisited, he said.

NATO Secretary General George Robertson earlier this year cautioned against waiting too long to restore that link. By aligning US and NATO transformation and experimentation efforts, the alliance will "stop the possibility of the thinking drifting apart." NATO is a force multiplier, Robertson said, but only if "the capabilities, the interoperability, and the thinking are fully in sync."

At a defense ministerial meeting in June, NATO intends to finalize its new command structure, including the exact roles and makeup of Allied Commands Transformation and Operations. At that time, it is expected that Marine Corps Gen. James L. Jones Jr. will add the title of NATO's Supreme Allied Commander-Operations to his duties as head of US European Command.

Jones has assumed command of an alliance with ongoing operational demands in the Balkans and broad responsibilities defending against terrorism, Ralston said.

"There is not as strong an appreciation in the US as there probably should be on the role that NATO is playing," Ralston noted. "We have tried consciously to take it off the front pages of the paper and get the job done. I think NATO has done a remarkable job in the Balkans and [in] bringing stability to Europe," he concluded.

said the Pentagon is tired of bearing an inequitable burden, so the DOD contribution to the force is "certainly not going to be one-half" of the personnel and equipment needed.

The force itself will feature capabilities many individual NATO members may not have, such as precision-attack aircraft and munitions. Yet every member is able to make some sort of contribution to the force.

Whither the EU Force?

There has been some concern that the NATO Response Force may wind up in competition with the European Union's plan to create a Rapid Reaction Force for similar missions. But the competing plans are unlikely to destabilize NATO because the EU will probably only act in cases where NATO is unwilling to commit combat-oriented forces, such as for peace-keeping operations.

Last June, NATO Secretary General George Robertson noted that Europe needs options like the EU force because "there is simply no guarantee that the US or NATO as an organization will wish to get involved in each and every security crisis in and around Europe."

The concept for an EU force features the ability to deploy 60,000 troops within 60 days. The force was to have been established this year, but, as is frequently the case in European defense initiatives, wavering commitment has called the schedule into question.

According to an assessment by the British American Security Information Council, the EU Rapid Reaction Force "is falling farther behind its projected implementation date of 2003," leading some to criticize the idea as a "phantom force" that will never be realized.

With US backing and calls for niche contributions, the NATO Response Force "may be able to avoid some of the problems that have beset the EU," BASIC determined.

But American support does not mean the US is willing to foot the bill for the NRF, a senior defense official said. The US aims to be an equitable contributor—"we really want the allies to [provide] the weight, especially during the first several rotations of this force," the official said.

The goal is to avoid a recurring problem from the past in which NATO initiatives devolve into US-funded initiatives. The best way to avoid that, according to the senior official, is for the European allies to take the lead on the initial NRF rotations, with US forces cycling in once the concept is firmly established.

"With every rotation you go through, you've got a wider pool" of trained, experienced, and interoperable forces spread across Europe, the official said.

Interoperability Improves

Recent events have begun to institutionalize alliance procedures to the benefit of all of Europe. "NATO is more interoperable today than at any time in its history, and that is a by-product of the Balkans," Ralston asserted.

Nations that fought in Allied Force or that are in the Balkans today are using NATO doctrine, procedures, and tactics "24 hours a day, 365 days a year," Ralston said.

"And when that company from Bulgaria goes back home after pulling their tour, they don't forget the procedures they had used—they continue and take that back to their countries," he said. This was not always the case in the past. During the Cold War, nations would commonly use NATO procedures during exercises, then abandon them and go back to national procedures.

When Enduring Freedom came along, allies participating in the operation "immediately used NATO doctrine, NATO procedures, [and] NATO tactics—just like they had been doing with their troops in the Balkans," Ralston said.

Another official said the ability to respond quickly in Enduring Freedom, which was not a NATO operation, was largely attributable to 50 years of NATO operations and training.

The international commanders in



This Dutch F-16, flying over Afghanistan, carries laser-guided bombs, but many NATO allies lack precision weaponry. US aircraft with precision munitions, such as the F-16 below, won't always be available for NRF use.

Afghanistan know each other through NATO circles, this official noted. Common operating frameworks and interoperable equipment were available, so “even though NATO didn’t have its flag in Afghanistan, its ethos was there,” he said.

Interoperability is improving, but whether the allies will close the capability gap with the United States remains to be seen. The senior official said last November’s capability commitments are encouraging, but it would be “foolish to be wildly optimistic” about the allies catching up to US military strength.

However, niche capabilities do not mean that a nation can do “washing machine duties for the alliance and that’s it,” the official added. Members still require the “ability to send ground pounders” appropriate to their size.

“Let’s be realistic about this,” added Ralston. “What can they bring to the alliance that can be of use—that’s what specialization is all about.”

At the Prague summit, NATO pledged to improve military strength in specific areas. In a departure from 1999’s Defense Capabilities Initiatives, which laid out a laundry list of areas for improvement, the Prague Capabilities Commitment details a short list of requirements and steps to address them.

Robertson pushed cooperative efforts to fix several shortfalls, including a German-led initiative to improve alliance airlift. Germany recently committed to the Airbus



Staff photo by Guy Aceto

A400M transport program, but the aircraft is not expected to enter service until around 2008.

Recognizing the immediate need for strategic lift, 10 NATO members signed a statement of intent at the summit. The document pledges “every effort to contribute to multinational arrangements in order to provide additional outsize airlift ... not later than 2004–2005.” Boeing’s C-17 airlifter is the logical choice to meet this interim requirement, but a company spokesman said no final commitments have been made.

Also approved in Prague was an air-to-air refueling initiative, led by Spain. “The objective is to make available a fleet of 10 to 15 addi-

tional air tankers or an equivalent solution,” the statement of intent reads. The aircraft are to be obtained “in the short/medium term” for possible use by both NATO and the European Union.

This plan would create a multinational force of tankers similar to the multinationally operated NATO AWACS command-and-control aircraft force used to help defend US airspace in the days after the 9/11 terrorist attacks.

Other multinational efforts addressing alliance capability gaps include a Dutch-led consortium to pool purchases of precision guided munitions, a Spanish-Dutch commitment to buy suppression of enemy air defense weapons, and a Norwegian-German agreement to improve maritime countermeasure capabilities.

NATO members Canada, Den-

mark, Italy, Netherlands, Norway, Turkey, and UK, meanwhile, have all signed on to be partners—and financial contributors—in the F-35 Joint Strike Fighter program.

Officials agree that bringing NATO up to US warfighting standards is absolutely essential. Operation Allied Force in 1999 revealed huge capability gaps between the NATO “haves” and “have-nots” in areas such as stealth and precision strike. These capability gaps could threaten the alliance if left unresolved.

After Allied Force, Robertson said “a two-class NATO, with a precision class and a bleeding class ... would be politically unsustainable” and must be avoided. ■

The Paper Trail

By Bruce D. Callander

The Right Stuff, Circa 1913

WAR DEPARTMENT
Circular No. 10
Office of the Chief Signal Officer
Washington, October 27, 1913

The following requirements for a military aviator, effective January 1, 1914, having been approved by the Secretary of War, are published for the information and guidance of all concerned:

1. Make a cross-country flight over a triangular course not less than 100 miles in perimeter with two intermediate landings; this flight to be completed within 48 hours after the start, the same machine being used during the flight.

2. Make a straight-away cross-country flight without landing, of at least 60 miles, over a previously designated course; return flight to be made either on the same day or on the first subsequent day that the weather permits.

3. During the flight prescribed in paragraphs 1 and 2, the candidate shall remain at least 1,500 feet above the ground.

4. Make a flight during which the machine shall remain for at least 30 minutes at an altitude of between 2,500 and 3,000 feet above the ground. ...

5. Execute a volplane, with motor cut out completely, at an altitude of 1,500 feet, the motor to be cut out when aeroplane is over the landing field, and on landing cause the aeroplane to come to rest within 300 feet of a previously designated point.

6. Reports will be submitted giving the main military features observed during the flights made under paragraphs 1 and 2.

7. No test shall be made with passengers. Time of arrival at and departure from various points may be attested by military or civilian authorities; if none of these are present, by the aviators themselves.

8. The candidate will then be examined thoroughly and practically on his ability to read maps; his knowledge of the compass, and how to steer thereby; his knowledge of the aeroplane, i.e., what constitutes safe construction; how the angles of lift on the wings change in making turns, how the pressures change both on the main planes, rear elevators, and vertical rudder; and what constitutes safe flying as far as gliding, banking, etc., is concerned. He will be examined on his knowledge of gasoline motors; carburetors; the most common troubles that can occur to motors and how to correct them. He shall be able to make simple repairs, dismantle and assemble motors, and show a thorough knowledge of motors in use at the school. He shall be examined in meteorology and topography in so far as they relate to aviation.

Any aviator who has gained his military aviator's certificate previous to January 1, 1914, and who is on duty with the Aeronautical Branch of the Signal Corps from January 1 to July 1, 1914, and during this period does not make flights the equal or better than those contained in paragraphs 1 to 5, and who does not show himself conversant with the repair of motors and machines and general knowledge of them will be required to pass the above tests.

GEORGE P. SCRIVEN,
Brigadier General, Chief Signal Officer

In 1910, becoming an Army pilot was a relatively simple matter. The Aero Club of America, representing the Federation Aeronautique Internationale, "rated" individuals. Candidates had to have completed three flights totaling 3.1 miles. Each flight had to be with power off during landing, which had to be within 150 yards of a designated point.

In 1912, the Signal Corps adopted more stringent requirements. The pilot had to reach an altitude of 2,500 feet, make a flight of five minutes in a 15 mph wind, and carry a passenger to 500 feet.

By 1913, the Army had issued revised rules, as seen here in Circular No. 10. A candidate now had to have a knowledge of engines, repairs, and the basic theory of flight.

America's top spy offers an exceptionally dark view of the threats out there.

Bleak New World

George J. Tenet, as the director of central intelligence, is the head of the Intelligence Community. On Feb. 11, he delivered to the Senate Armed Services Committee his annual threat briefing. What follows are excerpts from his prepared statement, "The Worldwide Threat in 2003: Evolving Dangers in a Complex World."

Al Qaeda's "Expectation"

"The threat from al Qaeda remains. ... The network is extensive and adaptable. It will take years of determined effort to unravel this and other terrorist networks and stamp them out. ...

"Al Qaeda is still dedicated to striking the US homeland. ... Until al Qaeda finds an opportunity for the big attack, it will try to maintain its operational tempo by striking 'softer' targets, ... those targets al Qaeda planners may view as less well-protected.

"Al Qaeda has also sharpened its focus on our allies in Europe and on operations against Israeli and Jewish targets. ...

"Al Qaeda is also developing or refining new means of attack, including use of surface-to-air missiles, poisons, and air, surface, and underwater methods to attack maritime targets. ...

"The bottom line here, ... is that al Qaeda is living in the expectation of resuming the offensive."

Toward Mass-Murder Weapons

"Al Qaeda still seeks chemical, biological, radiological, and nuclear weapons. The recently disrupted poison plots in the UK, France, and Spain reflect a broad, orchestrated effort by al Qaeda and associated groups to attack several targets using toxins and explosives. These planned attacks involved similar materials, and the implicated operatives had links to one another. ...

"Bin Laden has a sophisticated BW capability. In Afghanistan, al Qaeda succeeded in acquiring both the expertise and the equipment needed to grow biological agents. ...

"Last year I also discussed al Qaeda's efforts to obtain nuclear and radiological materials as part of an ambitious nuclear agenda. One year later, we continue to follow every lead in tracking terrorist efforts to obtain nuclear materials. In particular, we continue to

follow up on information that al Qaeda seeks to produce or purchase a radiological dispersal device. Construction of such a device is well within al Qaeda capabilities—if it can obtain the radiological material."

The Search for Safe Havens

"Al Qaeda's loss of Afghanistan, the death and capture of key personnel, and its year spent mostly on the run have impaired its capability, complicated its command and control, and disrupted its logistics. ...

"Al Qaeda will try to adapt to changing circumstances as it regroups. It will seek a more secure base area so that it can pause from flight and resume planning. We place no limitations on our expectations of what al Qaeda might do to survive.

"We see disturbing signs that al Qaeda has established a presence in both Iran and Iraq. In addition, we are also concerned that al Qaeda continues to find refuge in the hinterlands of Pakistan and Afghanistan."

Watching the No-Law Zones

"[The US faces] challenges such as the world's vast stretches of ungoverned areas—lawless zones, veritable 'no-man's-lands' like some areas along the Afghan-Pakistani border—where extremist movements find shelter and can win breathing space to grow. ...

"We know from the events of Sept. 11 that we can never again ignore a specific type of country: a country unable to control its own borders and internal territory, lacking the capacity to govern, educate its people, or provide fundamental social services. Such countries can, however, offer extremists a place to congregate in relative safety.

"Al Qaeda is already a presence in several regions that arouse our concern. The Bali attack brought the threat home to Southeast Asia, where the emergence of Jemaah Islamiya in Indonesia and elsewhere in the region is particularly worrisome. And the Mombasa

attack in East Africa highlights the continued vulnerability of Western interests and the growing terrorist threat there.”

Wartime Successes

“We are having success on many fronts. More than one-third of the top al Qaeda leadership identified before the war has been killed or captured. ... The number of rounded-up al Qaeda detainees has now grown to over 3,000—up from 1,000 or so when I testified last year—and the number of countries involved in these captures has almost doubled to more than 100. ...

“[T]he worldwide rousting of al Qaeda has definitely disrupted its operations. And we’ve obtained a trove of information we’re using to prosecute the hunt still further. ...

“Combined US and allied efforts thwarted a number of al Qaeda-related attacks in the past year, including the European poison plots. We identified, monitored, and arrested Jose Padilla, an al Qaeda operative who was allegedly planning operations in the United States and was seeking to develop a so-called ‘dirty bomb.’ And along with Moroccan partners we disrupted al Qaeda attacks against US and British warships in the Straits of Gibraltar.”

Help From the Muslim World

“Muslim governments today better understand the threat al Qaeda poses to them and day by day have been increasing their support.

“Ever since Pakistan’s decision to sever ties with the Taliban, ... Islamabad’s close cooperation in the war on terrorism has resulted in the capture of key al Qaeda lieutenants and significant disruption of its regional network. Jordan and Egypt have been courageous leaders in the war on terrorism. A number of Gulf states like the United Arab Emirates are denying terrorists financial safe haven, making it harder for al Qaeda to funnel funding for operations. Others in the Gulf are beginning to tackle the problem of charities that front for, or fund, terrorism.

“The Saudis are providing increasingly important support to our counterterrorism efforts—from arrests to sharing debriefing results.

“Southeast Asian countries like Malaysia and Indonesia, with majority Muslim populations, have been active in arresting and detaining terror suspects.”

“New World” of Nuclear Peril

“For 60 years, weapon-design information and technologies for producing fissile material—the key hurdles for nuclear weapons production—have been the domain of only a few states. These states, though a variety of self-regulating and treaty based regimes, generally limited the spread of these data and technologies.

“In my view, we have entered a new world of proliferation. In the vanguard of this new world are knowledgeable nonstate purveyors of WMD materials and technology. Such nonstate outlets are increasingly capable of providing technology and equipment that previously could only be supplied by countries with established capabilities. ...

“With the assistance of proliferators, a potentially wider range of countries may be able to develop nuclear

weapons by ‘leapfrogging’ the incremental pace of weapons programs in other countries.”

Market for Nukes

“The example of new nuclear states that seem able to deter threats from more powerful states, simply by brandishing nuclear weaponry, will resonate deeply among other countries that want to enter the nuclear weapons club.

“Demand creates the market. The desire for nuclear weapons is on the upsurge. Additional countries may decide to seek nuclear weapons as it becomes clear their neighbors and regional rivals are already doing so. The ‘domino theory’ of the 21st century may well be nuclear.”

Biological Threats

“Biological warfare programs have become more technically sophisticated as a result of rapid growth in the field of biotechnology research and wide dissemination of this knowledge. Almost anyone with limited skills can create BW agents. The rise of such capabilities also means we now have to be concerned about a myriad of new agents.

“Countries are more and more tightly integrating both their BW and CW production capabilities into apparently legitimate commercial infrastructures, further concealing them from scrutiny.”

The Missile Problem

“In addition to the longstanding [missile] threats from Russian and Chinese missile forces, the United States faces a near-term ICBM threat from North Korea. And over the next several years, we could face a similar threat from Iran and possibly Iraq.

“Short- and medium-range missiles already pose a significant threat to US interests, military forces, and allies as emerging missile states increase the range, reliability, and accuracy of the missile systems in their inventories.

“Several countries of concern remain interested in acquiring a land-attack cruise missile capability. By the end of the decade, LACMs could pose a serious threat to not only our deployed forces but possibly even the US mainland.”

Missile Proliferators

“North Korea ... continues to export complete ballistic missiles and production capabilities along with related raw materials, components, and expertise. Profits from these sales help Pyongyang to support its missile and other WMD development programs and, in turn, generate new products to offer to its customers. ...

“China vowed in November 2000 to refrain from assisting countries seeking to develop nuclear-capable ballistic missiles, and, last August, Beijing promulgated new missile-related export controls. Despite such steps, Chinese firms remain key suppliers of ballistic- and cruise missile-related technologies to Pakistan, Iran, and several other countries. ...

“We are also monitoring Russian transfers of technology and expertise. Russian entities have cooperated on projects—many of them dual-use—that we assess can contribute to BW, CW, nuclear, or ballistic- and cruise-missile programs in several countries of concern, including Iran.” ■

The “new” Air Force Memorial will soar from a promontory overlooking the nation’s capital.

A Memorial on the High Ground



By Peter Grier

A campaign to establish a memorial to the sacrifices of the men and women of the Air Force and its predecessor organizations has gained substantial momentum with the unveiling of a new design and a move to a prominent new site in the national capital area.

More than 10 years of hard work by the Air Force Memorial Foundation now appears to be paying off. It is continuing its fund-raising program and stated this fall it had sufficient funds to begin to work on the project. That declaration started the “clock” running on a two-year period within which the Pentagon must prepare the new site for construction.

This new site is in Virginia, just west of the Potomac River and close to the Pentagon and Arlington National Cemetery. It is called the Navy Annex grounds. At present, federal buildings occupy part of this site, but they will be removed and the grounds cleared.

The goal: break ground in fall 2004 and complete construction of the memorial by the Air Force’s 59th anniversary date of Sept. 18, 2006.

“We’ve got tremendous support for this memorial,” said Ross Perot

Jr. of Dallas, the chairman of the Air Force Memorial Foundation. “It is a very beautiful memorial. It is going to add a huge amount to the D.C. skyline.”

Building a memorial in the Washington area always poses a challenge, said Perot, but he is optimistic that the memorial will encounter no further serious obstacles to construction.

“It’s been a tremendous team project between the Air Force, Air Force alumni, and the Defense Department,” Perot reported.

Originally, plans called for building the memorial on a site known as Arlington Ridge, a stretch of low, rolling ground in Virginia just down a slope from the Marine Corps Iwo Jima Memorial. The first Air Force Memorial structural design featured a large, inverted five-point star.

Soaring to Glory

In 2002, with the decision to relocate the memorial from Arlington Ridge to the new site, the memorial foundation realized the original design seemed inappropriate for the new venue. The new location is high on a promontory, overlooking the Potomac River and Washington to

The goal is to complete the Air Force Memorial in September 2006. The view at right shows the memorial’s location on the hill overlooking the Pentagon, with Navy Annex buildings in back of it and Arlington National Cemetery on the left.



the north. Something better suited was required.

Thus, the foundation held a new design competition, again picking the firm of Pei Cobb Freed, designers of the previous Arlington Ridge structure. In directions to the competitors, the foundation's board made it clear that the memorial should be "soaring." That, according to the president of the Air Force Memorial Foundation, is exactly what they got.

"I think we can honestly say this [design] is soaring to glory," said Maj. Gen. Edward F. Grillo Jr., USAF (Ret.). "I think it truly represents the Air Force."

The most visible aspect of the new design is its collection of three soaring, arched spires. The three taper at the top and appear to trail off in the sky. They might represent three aircraft soaring upward or three missiles. Or, perhaps, just soaring aspirations.

"We ... do not try to articulate what this represents; we only suggest some possibilities, because it can represent different things to different people," said Grillo. "It's truly a memorial for everybody in the Air Force and our predecessor organizations."

The design would set into the

ground—between the bases of the three spires—a large five-pointed star. Circumscribing the star and rising nine feet into the air will be an Air Force Memorial Chamber of glass, bearing inscriptions and images. Off to one side will be a 12-foot-tall Contemplation Chamber, also of cast glass, with inscriptions. To the other side will be statues representing an honor guard.

Overall height of the monument, to the tip of its tallest spire, is currently set at 270 feet. Because the Navy Annex site is located near Ronald Reagan Washington National Airport, the Federal Aviation Administration had to approve this aspect of the design, which it did on Feb. 17.

The foundation also is planning to present its design to the National Capital Planning Commission and the US Commission of Fine Arts, which oversee memorial construction in Washington's core monument area. Under terms of the legislation allowing use of the Navy Annex, however, the foundation does not have to win their official approval. It is going before these bodies for review and comment.

The foundation has conducted tests

of the site to determine whether and to what extent there might be ground contamination. It has also determined the overall stability of the site. Test results indicate these are not issues. At issue is what other memorials, if any, will be allowed to coexist with the Air Force Memorial on the Navy Annex site. The government of Arlington County, Va., has expressed a desire to construct nearby a tribute to the victims of the Sept. 11 terror attack on the Pentagon. It would be in the area south of the annex. The Air Force Memorial Foundation says it does not oppose this and believes the two memorials would complement each other.

The briefing process for the new memorial got under way last summer. All the relevant government boards and commissions, local legislators, Air Force leaders, and local homeowner groups have been included in detailed consultations.

The foundation is continuing to refine construction costs. At this point, the foundation has raised \$33 million and believes it is only \$5 million short of its goal. Donations have been received from more than 140,000 individuals and numerous

corporations. Boeing has contributed \$5 million; Lockheed Martin, \$4 million; Raytheon, \$2 million; Northrop Grumman, \$1.5 million; United Technologies (through Pratt & Whitney, Hamilton Standard, and Sikorsky), \$1 million; and General Electric and TRW, \$0.5 million each.

Foundation officials have more fund-raising to conduct; they say the enthusiasm generated by the design unveiling should quickly put them over the top.

"We hope that by summer or fall we'll have a general contractor on board," said Pete Lindquist, the foundation's vice president of operations.

Undisputed Need

The need for a monument near the capital honoring the millions of Americans who have served in the Air Force, Army Air Corps, and Army Air Forces has been clear for years. The Air Force is the only US military branch that does not have a memorial in the nation's capital. Yet the air arm has suffered more than 55,000 combat deaths from World War II to the Gulf War, second only to the Army among the four US armed services.

Organized efforts to erect such a memorial date back to the 1992 incorporation of the Air Force Memorial Foundation. In 1993, President Clinton signed legislation authorizing the Air Force Memorial Foundation to raise funds and pursue a building permit for a Washington, D.C., area site.

After surveying at least 18 sites, the memorial foundation decided to pursue construction at Arlington Ridge. The foundation won site approval from both the National Capital Memorial Commission and the US Commission of Fine Arts. Pei Cobb Freed developed a design molded to the meadow-like site: the five-pointed star was intended to stand only about 50 feet tall.

In April 1997, a local Arlington neighborhood group, Friends of Iwo Jima, objected to what they claimed would be a loss of green space and increase in traffic caused by the memorial. They joined forces with Rep. Gerald B.H. Solomon (R-N.Y.), a Marine Corps veteran, to fight the memorial in Congress and the courts.

Other Marine veterans rushed to defend the "hallowed ground" of the famous Iwo Jima statue. The Marine Corps itself offered support for the

protest as well, despite the fact that it had been consulted on the foundation choice years earlier and the memorial had received the explicit approval of the Commandant, Gen. Carl E. Mundy Jr.

The foundation followed the legal planning process by the book and successfully defended its choice at several points in the courts. At a dedication ceremony for the site Sept. 18, 1997, some participants noted that the Iwo Jima Memorial was more than 500 feet away and screened by a copse of trees. No part of it—even the tip of its flagpole—was visible from the foundation site.

Yet opponents continued to delay the project via Congressional action and threatened further litigation. By 2000, Gen. Michael E. Ryan, the Air Force Chief of Staff, had become actively involved and began to work with the foundation to settle the dispute. Deputy Secretary of Defense Rudy de Leon was also deeply involved.

By fall 2001, it was clear that further delay was in no one's interest. Congress in December settled the matter by directing the foundation to move the Air Force Memorial to a new location: the promontory point of the Navy Annex property.

The new site was well-known to the leaders of the foundation. It had been considered earlier in their site selection process and given high marks. However, the site was not seriously considered, said Grillo, because it did not seem it would become available in the near future.

The new site is arguably more prominent than the old one. It sits on the prow of a ridge with clear views in three directions. It is easily visible from the Pentagon, is adjacent to and overlooks Arlington National Cemetery, and sits hard against one of Washington's main thoroughfares: Interstate 395. The foundation estimates that some 170,000 vehicles pass the site each day on their way in and out of Washington's core.

Lucky Break

"Planning documents for Washington by the National Planning Com-

mission show this as a great place for a monument," said Grillo. "It is a gateway to both Washington and Arlington County."

The Navy Annex site was rejected in the first go-around principally because it provided much-needed office space for the Department of Defense.

Then two things happened. First, the long-running litigation imposed major delays on construction, more or less obviating the problem of having to wait too long. "Who would have guessed we would still be working on the memorial 10 years after the foundation was formed?" asked Grillo.

Second, planning for long-term use of Navy Annex space came into clearer focus. The Pentagon now knows it will be able to relinquish the Navy Annex buildings as Pentagon renovation phases out in specific years.

Under terms of the legislation that set up the move to the Navy Annex site, up to three acres will be set aside for Air Force Memorial use. The land will include the promontory point and the ground currently under the wing of the federal office building nearest the point. The foundation in September notified the Secretary of Defense that it has sufficient funds to commence construction, marking the start of a 24-month period in which DOD must demolish that wing and prepare the site.

Plans call for demolition of the remaining buildings by the year 2010. The site then becomes part of Arlington Cemetery.

Grillo said many audiences have been briefed, but, so far, he has not received any negative comments about the new design. That is important, he said, because the finished product will be a memorial to many people, from those who flew the first fragile military biplanes to today's more diverse and technologically oriented force.

"We have to represent not only today's Air Force but our predecessors and our future force," said Grillo. ■

Peter Grier is a contributing editor of Air Force Magazine. He is a Washington, D.C., editor of the Christian Science Monitor and a longtime defense correspondent. His most recent article for Air Force Magazine, "The Sensational Signal," appeared in the February issue.



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The tactical genius of Pete Quesada was critical to the Normandy invasion and the march across Europe.

By Rebecca Grant

Quesada the Conqueror

Just before noon on July 4, 1944, a P-51 of the 354th Fighter Group took to the air. Wedged into a makeshift observer's seat behind the pilot was Gen. Dwight D. Eisenhower, supreme commander of the Allied invasion force. At the controls was 40-year-old Maj. Gen. Pete Quesada.

"General Eisenhower wanted to see the terrain at St. Lo for himself," Quesada said. "I flew him around the area, getting low enough so he could see how rough the country was." Three P-51s clung to Quesada's aircraft as escorts.

Eisenhower urged Quesada to fly faster. Quesada flew the Mustang 50 miles beyond Allied lines. Eisenhower for 45 minutes contemplated breakout plans and watched artillery flashes below. Eventually, Quesada recalled, "I started getting anxious about the fact I had the supreme commander stuffed behind me in a single-engine airplane with no parachute over enemy territory."

Quesada brought Eisenhower back safely, though both men received reprimands for their joyride. To Gen. Omar N. Bradley, the two looked like "sheepish schoolboys caught in a watermelon patch." The next day, Eisenhower had to explain to his boss, Gen. George C. Marshall, that the flight "was pure business."

If Eisenhower, Bradley, and the other senior US Army commanders in Northern Europe had held a contest to select their favorite airman, Pete Quesada might have been the man. Quesada was the commander of fighter-bomber air support for the Normandy campaign.

"Although Quesada could have passed for a prototype of the hot pilot, with his shiny green trousers,



broad easy smile, and crumpled but jaunty hat," wrote Bradley in *A Soldier's Story*, "he was a brilliant, hard, and daring air-support commander on the ground."

Quesada was a genius of air warfare execution. His insatiable appetite for new technologies and better performance led him to push his IX Fighter Command to a stunning rate of innovation in the tactics and techniques of air warfare. He developed real-time control of his fighter-bomber forces and formed them into a weapon that could chew up German forces attempting to maneuver and pound entrenched defensive fortifications.

His employment of airpower was an essential part of Allied success during the march across the continent after Normandy.

Quesada's place among the great air warriors rests on two achievements: his ingenious, flexible support of American armies coming ashore for the Normandy invasion and his success in the summer and fall in constantly adapting tactics to the changing demands of the battlefields of Northern Europe.

Before the War

Elwood R. "Pete" Quesada was indeed a hot pilot. Son of a Spanish businessman and his Irish-American wife, he was born in Washington, D.C. Quesada signed enlistment papers in 1924 after a flight with Army pilot Millard Harmon at Bolling Field, D.C. In the decade before World War II, he flew as one of the crew of *Question Mark*, served as assistant military air attaché to Cuba, flew one of the air mail routes, and pulled duty as personal pilot to a string of high officials and generals.

Quesada survived eight airplane crashes. In one of his earliest, Quesada ran his student-pilot Jenny into his commander's aircraft as they taxied for takeoff. Along the way, however, he earned a reputation as an exceptional flier.

In 1928, he and Air Corps chief Maj. Gen. James E. Fechet flew an amphibian to Newfoundland on a well-publicized rescue mission.

In 1934 when the Air Corps was flying the air mail, Air Corps chief Maj. Gen. Benjamin D. Foulois devised a stunt in which a B-10 bomber would fly the air mail all the way from California to New York. The B-10 pilot took ill near Cleveland.

When he landed, Quesada was there, with former *Question Mark* crew chief Roy W. Hooe. Quesada and Hooe had never flown a B-10, but they took the ship on to New York. When informed of the switch, Foulois remarked that Quesada could fly anything.

In the late 1920s and 1930s, Quesada's reputation opened doors for him. He studied or flew with men such as Bradley, H.H. "Hap" Arnold, Carl A. "Tooe" Spaatz, and many others who would go on to become the influential generals and airmen of World War II. He was assigned as personal pilot to Marshall at Ft. Benning, Ga. A year at the Army Command and General Staff School at Ft. Leavenworth, Kan., convinced Quesada that "future war will require all sorts of arrangements between the air and the ground, and the two will have to work closer than a lot of people think or want."

In World War II, Arnold brought him to his headquarters and then sent him to command a fighter group. Quesada subsequently set up the First Air Defense Wing, which soon deployed to North Africa.

Bradley's later description got Quesada just right: "He had come into the war as a young and imaginative man unencumbered by the prejudices and theories of so many of his seniors on the employment of tactical air. To Quesada, the fighter was a little-known weapon with vast unexplored potentialities in support of ground troops. He conceived it his duty to learn what they were."

North Africa

For Quesada, North Africa and the Mediterranean were to be the proving grounds. Jumped up to one-star rank, Quesada's brash immaturity made dents along the way. Though he'd been a captain just two years before, Spaatz placed him as deputy to British Air Vice Marshal Hugh P. Lloyd so that he might absorb some command style. For a time, Lloyd and Quesada were barely on speaking terms. When he left North Africa, however, Quesada thanked Lloyd for his tutelage. "He had a great deal of experience," said the American, "and I was anxious to have some of that experience rub off on me. If I did have any success thereafter, a great deal of it must be attributed to the fact I was able to mimic him."

Quesada commanded the 12th

Fighter Command and served as Lloyd's deputy for the Northwest African Coastal Air Force, one of Spaatz's five commands in the Northwest African Air Forces. Here, he immersed himself in the new technologies of radar, radio communications, and signals. Part of Coastal Air Force's job was to vector fighters to attack German shipping convoys. A new microwave early warning radar could also be fine-tuned to locate lost aircraft and pass coordinates to pilots.

During the buildup for the invasion of Sicily, Quesada honed his skills in direct command and execution of air operations.

On June 27, 1943, for example, radars spotted Luftwaffe aircraft heading for an Allied convoy of more than 40 ships, code-named Tedworth. Correctly sensing this was a major attack, Quesada sent Spitfires from RAF 242 Group from Bizerte and Tunis, Tunisia, to intercept the German Ju-88s. Next he sent American P-40s to take on the second wave, FW-109s, and, at twilight, he scrambled the last of his P-40s, P-39s, and Beaufighters to meet the third Luftwaffe wave and joined them himself in his P-38. Quesada's counterattacks held off more than 220 German aircraft with no ships lost.

Some lessons were hard. The invasion of Sicily on July 10, 1943, was an air disaster for the first few days. The Luftwaffe held the skies and repeatedly attacked Allied forces; Americans received little tactical air assistance initially. High winds, smoke, and a difficult flight path caused several C-47s to drop their paratroops miles off course and led to hundreds of casualties. Gunners on both American and British ships mistakenly shot down 22 C-47s full of paratroops. The only bright spot was that Quesada's radar stations directed 83 of 87 lost or battle-damaged C-47s and other aircraft back to safe landings. As his biographer Thomas A. Hughes wrote: "From that point on, Quesada consistently recognized the importance of signal communications and radar in tactical operations." These were the lessons he took forward to Normandy.

Quesada's Tactical Air Force

In fall 1943, Maj. Gen. Ira C. Eaker, Eighth Air Force commander, called Quesada to England to take over IX

Fighter Command under Maj. Gen. Lewis H. Brereton's Ninth Air Force. Brereton was an ineffectual commander, and Quesada more than stepped into the void, exercising considerable autonomy as he prepared his forces for the upcoming invasion. "Lewy cared more for his troop carriers and medium bombers, so he gave me all the freedom in the world to do my thing," Quesada recalled.

As one of Arnold's aides, he had observed firsthand the remarkable feats of RAF Fighter Command in the Battle of Britain. "I wanted tactical air to perform in new ways that were better than the Army ever visualized," Quesada said.

In November 1943, Quesada received the first group of P-51 Mustangs to arrive in the European Theater. Soon, they were in combat, escorting bomber formations over Europe—with great success. Through the early months of 1944, the demand for long-range P-51s kept them lashed to bomber missions, but Quesada had other tasks for them. Already, troop exercises in England and rehearsals for the Normandy landings were beginning. Quesada knew his airmen were unprepared to assist in the invasion.

He made up for it, in part, by immersing himself and his airmen in ways to improve air support. More than 200 officers from his IX Fighter Command went to Italy to see how Maj. Gen. John K. Cannon was running bombing and air coordination there, while others spent time at British air support schools.

Quesada trained his pilots in the techniques they'd need for Normandy.

"A fighter pilot naturally wants to get a crack at shooting down his share of enemy planes," Quesada wrote later. "We had to teach him that air support involved low flying against tanks, even though hazardous." He forced them to work at dive-bombing, a technique that was not emphasized in Stateside pilot training. Dive-bombing missions against French targets started to outnumber escort missions in April 1944.

This was the training the fighter-bomber pilots needed. As proficiency and attitudes improved, Quesada realized the fighter-bombers could be a precision bombing tool. By May, Quesada's pilots were able to attack moving trains. On May 7, eight



Maj. Gen. Pete Quesada inspects ignition connections and vital electrical parts German forces abandoned in railcars in Cologne, Germany. The city fell to the Allies under punishing raids by IX Fighter Command dive-bombers.

P-47s, each carrying two 1,000-pound bombs, attacked a French railway bridge at Vernon and cut it in half. Quesada told Air Chief Marshal Trafford Leigh-Mallory, the Allied Expeditionary Air Force's overall air boss, that his fighter-bombers ought to join in the bridge interdiction campaign, and Leigh-Mallory approved it.

Quesada had a gift for igniting a pilot's killer instinct. "I have never had nor met a commander with such charisma," one of his group commanders told Hughes. "By the time he finished talking I wanted to forgo the dinner and rush back to my base and start the invasion."

The "dicing" missions of low-level photographic reconnaissance of the Normandy beaches also fell under Quesada's command. These extremely hazardous missions had to be flown at altitudes of 15 to 20 feet against heavy defenses. Doubts abounded until Quesada personally talked to the pilots. They then refused practice missions and diversionary tactics, telling him, "We're ready now. Just tell us what you want and we'll get it."

Time in France

In France, the job of Fighter Command's IX Tactical Air Command was to assist the US First Army. This was the first contingent of American forces ashore on D-Day, and it was the only one there until Lt. Gen. George S. Patton Jr.'s Third

Army was activated several weeks later. Heavy and medium bombers were chopped to Eisenhower for the duration of the invasion period. But for immediate response and ongoing assistance, Quesada's fighters were the main source of firepower.

The IX Fighter Command's arrangements for D-Day were sophisticated. Drawing on his own operational seasoning in North Africa and the Mediterranean, Quesada spent the months before D-Day doing all he could to improve communications and the picture of the battle. He requisitioned radar sets and crammed them into the D-Day cargo manifests for early delivery to the beachhead. He trained air controllers to go ashore with the first assault waves. At Middle Wallop, UK, he set up a signals communications center to receive calls for close air support and interdiction.

Despite the preparations, Quesada's air liaisons and aviation engineers were stuck on Omaha Beach. The larger signals unit at Uxbridge, UK, became overwhelmed on D-Day. At 1:15 p.m., Quesada's crew at Middle Wallop took over. He delegated tactical control of his 1,500 aircraft to two of his colonels on ships in the Channel and put four fighter groups on strip alert in England. With this timely intervention, Quesada's signals net enabled airmen to fill six close air support requests on June 6 and scores more in the days that followed.

Quesada himself on June 8 landed at the first invasion airfield, a 2,000-foot strip cut into the terrain just above Utah Beach. He stayed as close as possible to Bradley. The two often shared meals.

Using armed reconnaissance, Quesada's units scored their most significant successes that first week against German forces trying to move into the battle area. On June 9, Mustangs behind German lines spotted the two-division Kampfgruppe Heinz moving into place for a counterattack. Six Mustangs attacked and radioed the position of the German concentration back to Middle Wallop. Quesada realized the significance of the find and vectored other fighter-bombers to the area.

Testament to Quesada's effectiveness came from the Germans themselves. German Army Group B reported that the Allied aerial reconnaissance turned into air attack "almost immediately" and even the smallest formations were attacked. Their commander, Gen. Karl Rudolf Gerd von Runstedt, reported that the zone up to 124 miles behind his main line of resistance was entirely dominated by the Allied fighter-bombers on armed reconnaissance.

The Germans were impressed with two things, wrote historian W.A. Jacobs: "speed of attack and Allied willingness to commit resources to strike anything that moved."

When bad weather shut down his air operations, Quesada worked on a blind-bombing technique, later called "pickle barrel" bombing. A microwave radar on the ground tracked the fighters, who, by radio, transmitted their speed, altitude, and other data into a Norden bombsight mechanical analog computer on the ground. Controllers then tracked and selected the moment for weapons release.

Mr. Big

For all his success, Quesada's personality could grate on nerves. Many pilots disliked him. Some actually feared him. His IX Fighter Command pilots nicknamed him "terrible-tempered Mr. Big." An officer Quesada fired in North Africa described him to biographer Hughes as "opinionated" and biased against "West Pointers like myself." Another told Hughes, "He flew in with that toothy grin, which always seemed to be



A maintenance crew works on a P-47 in France. Quesada's pilots gained experience in air-to-ground tactics as the number of dive-bombing missions soared. In May 1944, eight P-47s attacked and cut in half a French railway bridge.

contrived and phony, and took all the credit for himself." A veteran Normandy P-47 pilot animatedly recalled long after the war how Quesada had come to visit the 36th Group in his P-38. The officers assembled to meet the boss but laughed among themselves when Quesada "busted up the landing."

Quesada was also a risk-taker. Flying Eisenhower behind German lines was not the only time he courted danger. One morning when his IX TAC forward air control station could not give him a fresh battle update, he and Col. Gilbert Meyers took a jeep forward to the front lines so he could see the situation for himself.

Rounding a corner, they spotted a German Tiger tank. Quesada remarked that the tank didn't appear to be knocked out. The Tiger opened fire, sending a shell right under the seat of Quesada's jeep. Quesada and Meyers bailed out and had to slither back to American lines. The next day, the Army division commander came upon the mangled two-star jeep and sent it back to Quesada's headquarters with a bow on it.

Quesada flew 21 operational missions in North Africa. In France, he continued to fly combat missions, usually to see for himself how new techniques were working out.

Example: 1st Lt. Philip N. Wright Jr. of the 36th Fighter Group was in Quesada's four-ship formation testing pickle barrel bombing. One pass called for straight and level flight

through German 88 mm flak. Just as the formation completed its run and spread out, "six bursts of 88 went off right where we had been," Wright remembered. "Without knowing it, the Germans had come within a gnat's eyebrow of bagging a renowned two-star general." Quesada "had a lot of guts," Wright acknowledged.

Above all, Quesada blended technologies and tactics to make airpower flexible enough for whatever challenges the war threw his way. Writing after the war, he summarized: "We had to be ready to invent new methods, try out new ways to attack, change what we had been doing to meet new conditions. The Luftwaffe lacked this flexibility, while we had it."

July Stalemate

Quesada needed all the flexibility he could muster as the Germans dug into the Normandy hedgerow terrain and held on stubbornly at Caen and other places. To break the stalemate, the American ground forces would need much better air support.

Quesada was the first to put common radio sets in the cockpits of lead tanks and fighter-bombers. The tank crew gave up the armorer's position and inserted a pilot, who then became the forward air controller for the tank formation. On the radio with his airborne pilot buddies, the controller could direct fire much more accurately and quickly. Per Hughes, Quesada promised Bradley, "This



President Eisenhower in 1958 appointed Quesada to be the first director of the Federal Aviation Administration. Commercial pilots remember him, not always fondly, as the man who imposed mandatory retirement at age 60.

way the direction from the ground will be in language the fighter boy in the air can understand.”

Armored column cover became a highly flexible mission for the fighter-bombers, and it paid off during the breakout at St. Lo in late July. Quesada kept four P-47s over an armored column at all times. The flight lead contacted the pilot controller in a lead tank. On one run, P-47s took out a German 88 mm gun positioned at a road crossing, where it was picking off tanks. In another incident, four P-47s flew to the head of the American tank column and found two big German tanks just around the bend in the road. They left both Tigers burning and American tanks advancing.

The system was flexible, too. When a lead tank took deadly fire from an 88 mm that pilots thought they'd destroyed, the column's surviving pilot controller in another tank called them back to knock out the gun for good. Teaming air with tanks also cut down on friendly fire incidents.

More innovations followed. On July 17, P-47 pilots employed rockets against locomotives. Also in mid-July, Quesada's P-38s started dropping the jellied gasoline known as napalm. Quesada had heard about rockets and napalm and applied the new weapons directly to his own ground support needs.

Quesada could also redirect his fighters even while airborne. He was at a microwave early warning radar station on July 18, observing a ra-

dar blind-bombing mission that had to be aborted, when, over the radio, he heard that medium bombers had missed a rendezvous with fighters. The P-47s from the bombing experiment were still airborne with ample fuel. The combination radio-radar apparatus gave controllers positions on the fighters and they were redirected to the medium-bomber join-up point. Primitive though it was, the technologies were there for air control. It took Quesada's tactical execution skills to put it to best use.

Questioning His Tactics

Bradley showered praise on him, but Quesada found himself less appreciated in his own American chain of command. Maj. Gen. Hoyt S. Vandenberg, who took over from Breton, complained that too much of Quesada's force was employed 30 to 40 miles in advance of the Army's front line. But Quesada's tactics were the right ones. As Patton took off with Third Army, air support by IX Fighter Command's XIX TAC for his deep drives followed the pattern set by Quesada. Interrogated German generals proved the point. “Invariably they said that Allied air-

power was one of the primary causes of their defeat,” Quesada wrote. “I am content to let it rest at that.”

Quesada saw command of Ninth Air Force go to Vandenberg. After the war, Quesada activated Tactical Air Command, placing his headquarters at Langley Field, Va. He received his third star in 1947, but the de-emphasis on tactical aviation narrowed his path to further promotion. The Air Force under Chief of Staff Vandenberg had no place for Quesada, even as the outbreak of the Korean War pointed out an urgent need for tactical air support.

Quesada retired in 1951. In 1958, President Eisenhower named him to be the first director of the Federal Aviation Administration. While there, Quesada continued to irritate pilots and set precedents by being the first to impose a mandatory retirement at age 60.

“I hope this moron [Quesada] has a special hot place reserved for him,” complained longtime commercial pilot Capt. John Deakin, “because he made an unfair, arbitrary, and illogical rule that has now clipped the wings of thousands of fine young 60-year-olds.”

Quesada later held executive positions in the defense industry. He died in February 1993, aged 88.

Quesada's World War II tactics and flexible control of airpower were mirrored in Operation Desert Storm and other combat operations since. Airmen may enjoy technologies superior to those of others, but they would do well to heed Quesada's advice, delivered in an essay he wrote after World War II. He attributed the success of the World War II tactical air operations to the kind of close liaison with ground forces that “can come only from day-by-day contact—especially at command levels; there must be almost instantaneous communication between ground and air and through all the chain of command.”

His battle instincts and demand for top performance helped the Allies deliver victory. Bradley summed it up this way: “This man Quesada is a jewel.” ■

Rebecca Grant is a contributing editor of Air Force Magazine. She is president of IRIS Independent Research in Washington, D.C., and has worked for RAND, the Secretary of the Air Force, and the Chief of Staff of the Air Force. Grant is a fellow of the Eaker Institute for Aerospace Concepts, the public policy and research arm of the Air Force Association's Aerospace Education Foundation. Her most recent article, “The Great Escape,” appeared in the March issue.



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WEST VIRGINIA: John R. Pfalzgraf, 1906 Foley Ave.,
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Far West Region

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HAWAII: Jack DeTour, 98-1108 Maluaua St., Aiea, HI
96701-2819 (808) 487-2842.

Florida Region

Region President

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State Contact

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MICHIGAN: Billie Thompson, 488 Pine Meadows Ln., Apt.
26, Alpena, MI 49707-1368 (989) 354-8765.
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NEW HAMPSHIRE: Eric P. Taylor, 17 Foxglove Ct., Nashua,
NH 03062 (603) 883-6573.
RHODE ISLAND: Wayne Mrozinski, 90 Scenic Dr., West
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North Central Region

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State Contact

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MONTANA: Al Garver, 203 Tam O'Shanter Rd., Billings, MT
59105 (406) 252-1776.
NORTH DAKOTA: Robert P. Talley, 921 1st St. N.W., Minot,
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LOUISIANA: Albert L. Yantis Jr., 234 Walnut Ln., Bossier
City, LA 71111-5129 (318) 746-3223.
MISSISSIPPI: Leonard R. Vernamonti, 1860 McRaven Rd.
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NEVADA: Robert J. Hercufelson, 1810 Nuevo Rd., Henderson,
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For information on the Air Force Association, see www.afa.org

By Frances McKenney, Assistant Managing Editor

Overdue Silver Star

The Air Force presented retired Lt. Col. David B. Van Pelt with a Silver Star in December—more than 50 years after he should have received it.

A member of the **David J. Price/Beale (Calif.) Chapter**, Van Pelt began about two years ago to investigate why he never got the award he had been told he would receive. He sought the help of retired Gen. John A. Shaud, who was then executive director of the Air Force Association, and others. Late last fall, he finally heard that he would receive the long overdue recognition for gallantry in action against the enemy.

Van Pelt earned the Silver Star as a B-26 pilot with the 8th Bomb Squadron, 3rd Bomb Group, during the Korean War. His nighttime mission on March 22, 1951, was to destroy a North Korean train. Van Pelt's bomber came under heavy ground fire during three passes at the train. The B-26's right wing and flight controls were damaged on the second pass, but the crew carried out a third run anyway to destroy the train.

While the navigator and gunner received the Distinguished Flying Cross for this mission, Van Pelt was told that his recommendation for a DFC was returned so it could be re-submitted as a Silver Star. He received neither award—until now.

The Price/Beale Chapter helped host the Silver Star ceremony for Van Pelt at the Air Force Combat Ammunition Center at Beale AFB, Calif. More than 100 guests attended the Dec. 13 celebration, including state and local government representatives.

The First C-40

The **Thomas W. Anthony (Md.) Chapter** hosted a dedication ceremony and reception for the first of USAF's newest special air mission aircraft, a Boeing C-40B, on Jan. 24 at the 89th Airlift Wing, Andrews AFB, Md.

The C-40B, a military version of the Boeing 737-700, will be used to



AFA Board Chairman John Politi (right) and AFA National President Stephen "Pat" Condon chat with cadet Brian Hellesto at Embry-Riddle Aeronautical University in Daytona Beach, Fla. The AFA leaders received an extensive briefing and tour of the school while they were in Florida in January for an Aerospace Education Foundation board of trustees meeting.

fly US senior leadership. The base newspaper reported that the Air Force will purchase two C-40Bs, to be part of a support pool for commanders of unified commands. The other C-40B will be stationed at Hickam AFB, Hawaii.

The executive transport will accommodate up to 11 crew members and 26 passengers, according to the newspaper, *Capital Flyer*. It reported that the C-40B has secure and non-secure voice and data capability, wireless local area network functions, and Internet access. It also has direct broadcast satellite TV.

For the Andrews ceremony at Hangar 3, Charles X. Suraci Jr., chapter president, headed a group of chapter officers that included Sam O'Dennis, vice president, Natalie L. Desmond, secretary, Thomas Bass Jr., treasurer, and William H. Thomas, VP for communications.

They toured the C-40B after the ceremony. Thomas said he was impressed by its extensive communications systems and noted that tables on board converted to beds. The air-

craft was "fantastic," he said—"Smells just like a brand-new car."

Rare Autograph

Robert Kovalchik of the **College Park Airport (Md.) Chapter** was surfing the Internet when he came across a Web site offering autographed photos of famous people.

He knew that autographs of military leaders such as Gen. Dwight D. Eisenhower or Gen. George S. Patton Jr. are not so hard to find, but autographs of other general officers are more rare. So when he came across an autographed copy of a photo of Brig. Gen. Frank P. Lahm, he recognized its importance. The photo had been printed in a book, Lahm had signed it, and it was this book page that Kovalchik bought for about \$45.

The chapter reimbursed him for the expense. The Maryland State AFA paid to have the page framed. In February, the chapter donated the autographed item to the College Park Aviation Museum.

It was an especially appropriate gift. College Park is where Wilbur

Wright gave flying lessons in October 1909 to Lts. Benjamin D. Foulois, Frederic E. Humphreys, and Lahm—who had also been on Wright's first official test flight for the Army airplane in July that year at Ft. Myer, Va. Lahm returned to his Signal Corps duties in late 1909 but throughout his military career continued to be involved with both aircraft and ballooning. He retired in November 1941 at Randolph Field, Tex., and died in 1963 in Sandusky, Ohio.

Technical Excellence

In February, the **William A. Jones III (Va.) Chapter** presented A1C Keith A. Smith with a \$100 bill—its "First in Class" award.

The chapter created the award as a way to spur local USAF recruits to graduate at the top of their technical training classes. Smith graduated from Fluvanna County High School in Palmyra, Va., in 2002 and went on to become the honor grad in his avionics technical training school at Sheppard AFB, Tex.

Chapter President Myrle B. Langley joined James K. Lavin, chapter VP, in presenting the inaugural First in Class to Smith in February at the office of recruiter MSgt. Douglas Hammer. Smith was back home as part of the Recruiter Assistance Program, which allows active duty personnel up to 12 days nonchargeable leave to assist recruiters in the field. Smith is now a B-1B avionics technician at Dyess AFB, Tex.

Hammer, who is assigned to the 317th Recruiting Squadron based in Oxon Hill, Md., told the chapter that between 32 and 36 recruits come from his area—around Charlottesville, Va.—each year. The chapter hopes at least three will strive to become a First in Class.

AFROTC Update

Col. Alan E. Thompson, commander of the Air Force Reserve Officer Training Corps program nationwide, was guest speaker for the **Swamp Fox (S.C.) Chapter's** February meeting. He provided an update on the AFROTC goal of preparing more than 18,000 officer candidates through programs at 144 host universities and more than 1,000 other affiliated universities.

The meeting honored some of the Community Partners that have supported the chapter for 10 consecutive years: Nancy Lee Gardner, Rick Hines, and Wayne M. Zamora. Chapter President David T. Hanson spoke about the Visions of Exploration pro-



Cathy Allen, College Park (Md.) Aviation Museum director, accepts an autographed copy of a photo of Brig. Gen. Frank Lahm from Paul Essex, College Park Airport Chapter president. At left are Frank Coorsen, state treasurer, and Robert Kovalchik, chapter treasurer. See "Rare Autograph," p. 53.

gram, sponsored by *USA Today* and the Aerospace Education Foundation to encourage young students to study math and science. Hanson pointed out that donations from Community Partners helped the chapter sponsor 34 Visions classrooms this school year.

The dinner meeting took place at the Reynolds Room of the University of South Carolina at Sumter, whose dean is chapter member C. Leslie Carpenter. Hanson said the Reynolds Room is named for aviation artist and chapter member William J. Reynolds, whose work is included in the US Air Force Art Collection.

Along with Community Partners, special guests at this dinner meeting were Stanley V. Hood, an AFA national director, and Rodgers K. Greenawalt, region president of the Southeast Region.

Into the Future

The **C. Farinha Gold Rush (Calif.) Chapter** sponsored a dinner on the theme "Soaring into the Future," with a guest speaker to match it—the commandant of the USAF Test Pilot School at Edwards AFB, Calif.

Col. George Kalliwai III, who is a member of the **Antelope Valley (Calif.) Chapter**, spoke about future USAF weapons systems, reported Chapter President Philip J. Barger. In keeping with the theme of looking forward, the more than 100 guests included AFROTC cadets from Det. 38 at California State University Sacramento. Several of the cadets performed a

POW/MIA ceremony. Farinha Chapter member Capt. Kathryn E. Stengell sang as part of the evening's program.

In December, the chapter again emphasized its ties with these cadets when Barger presented a \$500 scholarship for leadership and academic achievement to cadet Cory Voorhees in a ceremony on campus. A junior at the university, Voorhees was a distinguished graduate from AFROTC field training.

Fort Wayne's Best

The vice commander of the 122nd Fighter Wing (ANG) at Fort Wayne Airport, Ind., was keynote speaker for the **Fort Wayne Chapter's** annual awards banquet.

Col. Perry M. Collins spoke about the history and mission of the "Blacksnakes," who fly F-16s in support of Operations Enduring Freedom and Noble Eagle. Collins accepted the chapter's Military Achievement Award on behalf of his unit.

AFA national-level awards (as listed in the November 2002 issue, p. 84–85) were presented at this meeting. In addition, Chapter President Thomas Eisenhuth received the AFA Great Lakes Region Member of the Year award. Indiana State Member of the Year went to Theodore Huff Jr., chapter communications VP, who also took home the chapter's Exemplary Service award. Hyrle A. Ivy was named the chapter's Member of the Year. He is the chapter's aerospace education VP.

Republican State Sen. Thomas J. Wyss and State Rep. Ben Gia Quinta, a Democrat, received awards from the chapter for their roles in passing legislation helpful to the state's veterans and military recruiters. William R. Grider, Indiana state president, and William Howard, past state president, assisted in the awards presentations.

Named for a President

The **Piedmont (N.C.) Chapter** established a new leadership scholarship last fall for AFROTC cadets at Det. 592, University of North Carolina at Charlotte.

The first scholarship—\$100 earmarked for tuition—went to Tabitha Fullam, who is a senior, the fall semester wing commander, and a former Air Force enlisted member. Chapter Vice President Raymond A. Jones made the presentation.

The scholarship is named for the late Dermont D. Saunders, the chapter's president for many years. A retired major, Saunders served in the military from 1954 to 1986. Jones said they chose to honor Saunders because he had held several chapter offices and at times "held the chapter together." Saunders's wife, Shirley, and other family members took part

in the scholarship presentation, held during a chapter meeting in December in Charlotte.

Chapter member Lt. Col. Jamie C. Scotland headed the group at the university's Det. 592 that considered cadets for the scholarship. Chapter President Jack T. Hamrick asked Jones to make the presentation because Jones had been an assistant professor of aerospace studies at the detachment from 1994 to 1999.

Tailgating for AFA

The **Long's Peak (Colo.) Chapter** hosted a tailgate party in November at Colorado State University's "Salute to Armed Forces" football game at Fort Collins, Colo.

Col. Mark Fry, chapter president and commander of the university's AFROTC Det. 90, reported that more than 30 guests ate submarine sandwiches and drank soft drinks, served up from the van of chapter member Edmund L. Robert. Fry said the festivities even caught the attention of passersby who were interested in the Air Force.

The tailgaters included Col. Allen D. Baker—a member of the **Lance P. Sijan (Colo.) Chapter**—and Col. Debbie Baker. The couple was hon-

ored during halftime at the game as 1975 graduates of the university's AFROTC detachment.

An Army Ranger Challenge Team (the school has both Air Force and Army ROTC) presented the Bakers with the game ball at the 50 yard line, and the two colonels fired off a cannon—a tradition when the home team scores. CSU won the matchup against New Mexico State, 22 to 14.

More AFA/AEF News

■ The **Ak-Sar-Ben (Neb.) Chapter** donated \$560 to teacher Jeremy Weber in a January presentation by Col. Michael J. Cook, chapter VP. The funds will help a space club at Logan Fontenelle Middle School in Bellevue, Neb., buy supplies for projects on rocketry and hot air ballooning and also fund field trips. Donna Daly, the wife of chapter member Col. John D. Daly, asked the chapter last fall for the grant. She works closely with Weber on space club activities. "I want to get landlocked Midwest kids excited about space," she said. The Logan Fontenelle space club has about 20 members.

■ The **Mile High (Colo.) Chapter** represented AFA in the Denver community on several occasions early this year. Chapter President Barbara B. Flores addressed the graduating class of the Airman Leadership School at Buckley AFB, Colo., in February. It was a return engagement for her; she had addressed the December class, too. Chapter VP for government relations, Jack G. Powell, attended Buckley's annual awards banquet in February, presenting each award recipient with a \$50 US savings bond from the chapter. In January a local science teacher, Donald Reinke II from Laredo Middle School in Aurora, Colo., received word that AEF had awarded him a \$250 Educator Grant. Chapter VP Thomas A. Deall was scheduled to participate in a school assembly to recognize Reinke.

■ Charles E. Cruze, who retired in 1992 as associate publisher and advertising director of *Air Force Magazine*, died Feb. 25 in Fairfax, Va. He was 73. Cruze was a Marine Corps veteran of the Korean War. He had joined the magazine in December 1967 as director of international marketing.

Have AFA/AEF News?

Contributions to "AFA/AEF National Report" should be sent to *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Phone: (703) 247-5828. Fax: (703) 247-5855. E-mail: afa-aef@afa.org. ■

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1st Tactical Depot Sq., including the 1st TSS and 9th AFDS, UK. Oct. 15–19 in Tucson, AZ. **Contact:** Tom Bednarczyk, 1444 Upland Hills Dr. N., Upland, CA 95268 (909-920-3032) or Phil Untl, 3142 Brooker Creek Way, Palm Harbor, FL 34685 (727-771-7620).

2nd Bombardment Assn. Oct. 9–12 at the Holiday Inn Cincinnati Airport Conference Center in Covington, KY. **Contact:** Richard Radtke, 60 Villa Heights Ct., Algoma, WI 54201 (920-487-3343) (ektdar@greenbaynet.com).

4th Emergency Rescue Sq Assn. Sept. 17–21 in St. Louis. **Contact:** Chet Gunn (781-944-6616) (tightboot@msn.com).

9th BG (WWII). May 7–11 in Savannah, GA. **Contact:** Pat Carnevale, PO Box 1230, Sonoita, AZ 85637-1230 (phone: 800-659-8808 or fax: 520-455-5866) (carne@dakotacom.net).

20th FW/FG Assn (1930s–present). Sept. 24–27 in Dayton, OH. **Contact:** Dennis Schaan, 5645 Nicole Ct., Las Vegas, NV 89120 (dschaan@compuserve.com).

43rd BG Assn (WWII). Oct. 6–12 at the Omni Hotel in Corpus Christi, TX. **Contact:** Max Axelsen (210-681-4581) (maxelsen@satx.rr.com).

44th ARS (SAC). Sept. 2–6 in Kitty Hawk and Kill Devil Hills, NC. **Contact:** Roger Meekins (252-473-5288) (meekinsanchorage@msn.com).

62nd Troop Carrier Gp (WWII), including 4th, 7th, 8th, 51st, and Hq Sqs. Sept. 24–27 in Baltimore. **Contacts:** Andrew Tagnanelli, 634 Davis Dr., New Cumberland, PA 17070 (717-770-2037) (tigger76@earthlink.net) or Al Hoffacker, 201 Oak Ln., Cranford, NJ 07016 (908-276-9136).

64th TCG. October 2003 in Traverse City, MI. **Contact:** Aldy Glauch, 414 Washington St., Traverse City, MI (231-946-1313).

88th FTS, Sheppard AFB, TX, including USAF/VNAF pilots and students from the 1970s. May 23–26 in San Antonio. **Contact:** Leonel Absher (210-590-2768) (labsher@satx.rr.com).

94th FIS, George AFB, CA (1953–56). April 14–16 at the Monte Carlo in Las Vegas. **Contact:** Karl Fechner (310-378-3042) (sfechner@aol.com).

99th BG Historical Society. April 30–May 4 at the Daytona Beach Resort in Daytona Beach, FL. **Contact:** Mort Magee (386-673-8549) (vmmagee@earthlink.net).

310th BW, Schilling and Smoky Hill AFBs, KS (1951–65). Sept. 25–28 in Branson, MO. **Contact:** Jo Hartzell (417-538-2187) (johartzell@inter-linc.net).

351st BG, Polebrook, UK (WWII). June 12–16 at the Choo Choo Holiday Inn in Chattanooga, TN. **Contact:** Clint Hammond, PO Box 281, Mechanicsburg, PA 17055 (717-766-1489).

364th FG, Eighth AF, Honington, UK (WWII), and all support units. Sept. 15–21 at the Holiday Inn in Collinsville, IL. **Contact:** Dan Leftwich, 6630 Caldero Ct., Dayton, OH 45415 (937-890-3641).

459th BG Assn, Fifteenth AF (WWII). Sept. 18–21 at the Imperial Palace Hotel in Las Vegas. **Contacts:** Harold Sanders, 18071 Beneda Ln., Canyon Country, CA 91351-5417 (661-250-2115) or John Devney, 90 Kimbark Rd., Rochester, NY 14610-2738 (585-381-6174).

483rd BG (H) Assn (WWII). Sept. 15–20 in Pooler,

GA. **Contact:** George Stovall, 825 NE Lawndale Pl., Corvallis, OR 97330 (541-758-0009) (gstovall@peak.org).

500th BS Assn, 345th BG (WWII). Aug. 28–Sept. 2 in Reno, NV. **Contacts:** Jim Stewart (510-521-8358) (thanya@drdave.com) or Bill Cavoli (210-493-6832) (wjckjc@aol.com).

511th AC&W Gp, including the 613th, 847th, and 848th AC&W Sqs, and the 39th AD. Sept. 10–14 at the Sheraton Hotel in Colorado Springs, CO. **Contact:** Don Simmons, 704 S. Grove Rd., Richardson, TX 75081 (972-231-6518) (dona7112@iadfw.net).

Berlin Airlift Veterans Assn (1948–49). Sept. 26–29 in Tucson, AZ. **Contact:** J.W. Studak, 3204 Benbrook Dr., Austin, TX 78757-6804 (512-452-0903).

Flight Checkers. Sept. 25–28 in Kansas City, MO. **Contact:** Marlin Legault, 16000 NW 135th St., Platte City, MO 64079 (816-858-2335) (magicmarlin@webtv.net).

International Bird Dog Assn, all associated with Bird Dog aircraft. June 15–18 in Fredericksburg, TX. **Contact:** Carol Mulvihill (830-896-7604) (av8trix@omniglobal.net).

Jimmy Doolittle Raiders. April 16–18 at Travis AFB, CA. **Contact:** Jimmy Doolittle Air and Space Museum Foundation, PO Box 1565, Travis AFB, CA 94535 (707-424-5605) (www.jimmydoolittle reunion.com).

Nagoya/Komaki AB Reunion Assn, Fifth AF. June 5–8 at the Doubletree Oceanfront Hotel in Cocoa Beach, FL. **Contact:** John Campo, 8905 NE 109th Ter., Kansas City, MO 64157 (816-407-0055) (jaymcee@aol.com).

PBY Catalina International Assn. Aug. 28–Sept. 2 at the Doubletree Hotel in Arlington, VA. **Contacts:** Don Mortimer, 2245 Marlene Ln., Mattituck, NY 11952-3349 (631-298-2685) (pbydon@

optonline.net) or Jim Thompson (504-392-1227) (glotomcat@msn.com).

Pilot Class 49-B. Oct. 19–22 in Orlando, FL. **Contact:** Jack Stolly, 11323 Cotillion Dr., Dallas, TX 75228 (972-681-8290) (flyingjack@juno.com).

Pilot Class 56-Q and Nav 09. May 7–11 at the Ramada Inn in Dayton, OH. **Contacts:** Ned Derhammer, 2722 Covington St., West Lafayette, IN 47906 (765-463-4988) (ned3nola@gte.net) or Robert Marken, 562 Country Road Dr., Stonebridge, GA 30281 (770-358-0513) (bob@taidraggers.com).

Pilot Classes of 1944. Sept. 10–14 in Dayton, OH. **Contact:** Stan Yost, 13671 Ovenbird Dr., Fort Myers, FL 33908 (239-466-1473) (skypilot44@earthlink.net).

Pilot/Flying Tng Class 56-F, officers and aviation cadets. May 9–11 at the Hope Hotel in Dayton, OH. **Contact:** Richard Bowen, 1314 Trap Rd., Vienna, VA 22182 (phone or fax: 703-757-6591) (rab1203@aol.com).

Pilot Tng Class 63-G. June 10–12 in Mesquite, NV. **Contact:** Bill Wells, 578 Paseo Verde Ct., Mesquite, NV 89027 (702-346-3996) (husker@cascadeaccess.com).

TAC Missileers, Mace and Matador. June 19–21 at the Embassy Suites Denver South. **Contact:** Joe Perkins (904-282-9064) (perkster@fcol.com).

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.

AFA Conventions

April 25–26	Tennessee State Convention, Nashville, Tenn.
May 2–3	South Carolina State Convention, Charleston, S.C.
May 2–4	New Jersey State Convention, Cape May, N.J.
May 10	Kansas State Convention, Topeka, Kan.
June 6–8	Arizona–New Mexico–Nevada State Convention, Albuquerque, N.M.
June 7	Alabama State Convention, Montgomery, Ala.
June 13–14	Arkansas State Convention, Hot Springs, Ark.
June 13–14	North Carolina State Convention, Asheville, N.C.
June 13–15	New York State Convention, Fredonia, N.Y.
June 20–21	Oklahoma State Convention, Oklahoma City
June 25–28	Alaska State Convention, Fairbanks and Anchorage, Alaska
June 25–29	California State Convention, March ARB, Calif.
July 12	Washington State Convention, McChord AFB, Wash.
July 18–20	Florida State Convention, Tyndall AFB, Fla.
July 18–20	Pennsylvania State Convention, Washington, Pa.
July 18–20	Texas State Convention, Austin, Tex.
July 25–27	Virginia State Convention, Hampton, Va.
July 26	Iowa State Convention, Sioux City, Iowa
Aug. 15–16	Utah State Convention, Ogden, Utah
Aug. 16	Georgia State Convention, Robins AFB, Ga.
Aug. 22	Missouri State Convention, Lake of the Ozarks, Mo.
Aug. 22–23	Colorado State Convention, Colorado Springs, Colo.
Sept. 15–17	AFA National Convention, Washington, D.C.
Sept. 28	New Hampshire State Convention, Manchester, N.H.
Oct. 24–25	Michigan State Convention, Alpena, Mich.

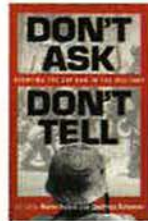
Books

Compiled by Chequita Wood, Editorial Associate

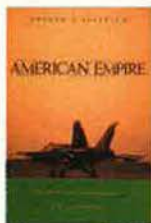
The Air-Raid Warden Was a Spy: And Other Tales From Home-Front America in World War II. William B. Breuer. John Wiley & Sons, Hoboken, NJ (877-762-2974). 228 pages. \$24.95.



Don't Ask, Don't Tell: Debating the Gay Ban in the Military. Aaron Belkin and Geoffrey Bateman, eds. Lynne Rienner Publishers, Boulder, CO (303-444-0824). 201 pages. \$18.95.



Remembrance: A Tribute to America's Veterans. Robert A. Fletcher and Robert B. Fletcher. Iron Mountain Press, New Milford, NY (845-986-9861). 133 pages. \$49.95.



American Empire: The Realities and Consequences of US Diplomacy. Andrew J. Bacevich. Harvard University Press, Cambridge, MA (800-405-1619). 302 pages. \$29.95.



First Flight: The Wright Brothers and the Invention of the Airplane. T.A. Heppenheimer. John Wiley & Sons, Hoboken, NJ (877-762-2974). 394 pages. \$30.00.



The Road to Rainbow: Army Planning for Global War, 1934-1940. Henry G. Gole. Naval Institute Press, Annapolis, MD (800-233-8764). 224 pages. \$34.95.

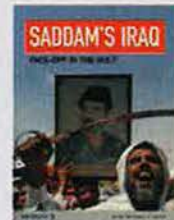
Battling for Saipan. Francis A. O'Brien. Ballantine Books, New York (800-726-0600). 370 pages. \$17.95.



A Global Access Strategy for the US Air Force. David A. Shlapak, et al. RAND, Santa Monica, CA (877-584-8642). 121 pages. \$15.00 (also available at www.rand.org/publications).



Saddam's Iraq: Face-off in the Gulf. Journalists of Reuters. Reuters Prentice Hall, Upper Saddle River, NJ (800-282-0693). 179 pages. \$19.95.



Combat Legend: F-117 Nighthawk. Paul Crickmore. Stackpole Books, Mechanicsburg, PA (800-732-3669). 96 pages. \$14.95.



The Grim Reapers at Work in the Pacific Theater: The Third Attack Group of the US Fifth Air Force. John P. Henebry. Pictorial Histories Publishing Co., Missoula, MT (406-549-8488). 210 pages. \$24.95.



Shadow Warriors: Inside the Special Forces. Tom Clancy with Gen. Carl Stiner (Ret.) and Tony Koltz. Berkley Publishing Group, New York (800-788-6262). 548 pages. \$16.00.

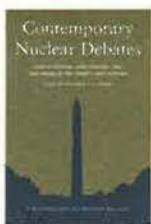
Conflict Iraq: Weapons and Tactics of the US and Iraqi Forces. David Miller. MBI Publishing Co., St. Paul, MN (651-287-5000). 128 pages. \$12.95.



Junkers Ju 52 in Action: Aircraft No. 186. Hans-Heiri Stapfer, Hans-Joachim Mau, and George Punka. Squadron/Signal Publications, Carrollton, TX (800-527-7427). 49 pages. \$9.95.



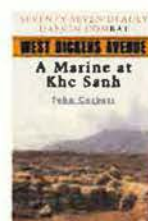
Strategic Bombing by the United States in World War II: The Myths and the Facts. Stewart Halsey Ross. McFarland & Co., Jefferson, NC (800-253-2187). 244 pages. \$39.95.



Contemporary Nuclear Debates: Missile Defense, Arms Control, and Arms Races in the Twenty-First Century. Alexander T.J. Lennon, ed. The MIT Press, Cambridge, MA (800-405-1619). 332 pages. \$24.95.



Marching Home: To War and Back With the Men of One American Town. Kevin Coyne. Viking, New York (800-788-6262). 406 pages. \$25.95.



West Dickens Avenue: A Marine at Khe Sanh. John Corbett. Ballantine Books, New York (800-726-0600). 205 pages. \$24.95.

Pieces of History

Photography by Paul Kennedy

Phantom

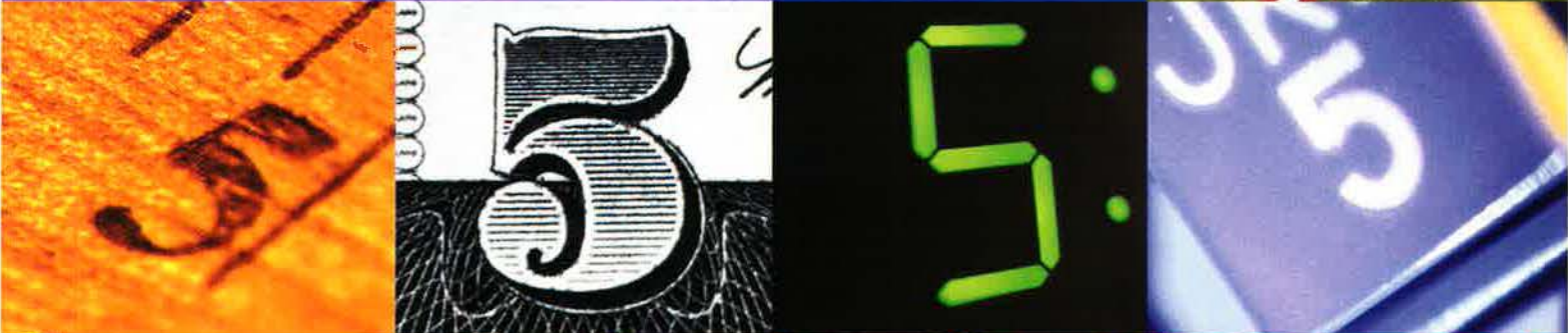


Flying this F-4 Phantom near Hanoi, Col. Robin Olds—with 1st Lt. Stephen B. Croker as his copilot—scored two aerial victories in one day, May 20, 1967. It was Olds's third and fourth kills of the Vietnam War. He had already achieved 12 victories in World War II. Phantoms such as Olds's—shown here at the US Air Force Museum, Wright-Patterson AFB, Ohio—were developed

by McDonnell Douglas for the Navy. USAF approved its version in 1962. The F-4 flew close air support, interdiction, counterair, reconnaissance, and "Wild Weasel" missions. During Vietnam, F-4s gained fame in Operation Bolo, where a dozen of them masqueraded as more-vulnerable F-105s and tricked 14 MiG-21s into a dogfight. The Phantoms scored seven kills, with no losses.



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