November 2003/$4

AIR FORCE MAGAZINE

JOURNAL OF THE AIR FORCE ASSOCIATION

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November 2003, Vol. 86, No. 11

AIR FORCE MAGAZINE

JOURNAL OF THE AIR FORCE ASSOCIATION

About the cover: A B-2 drops a load of Joint Direct Attack Munitions in this artist's conception by Erik Simonsen. See "Precision: The Next Generation," p. 44.

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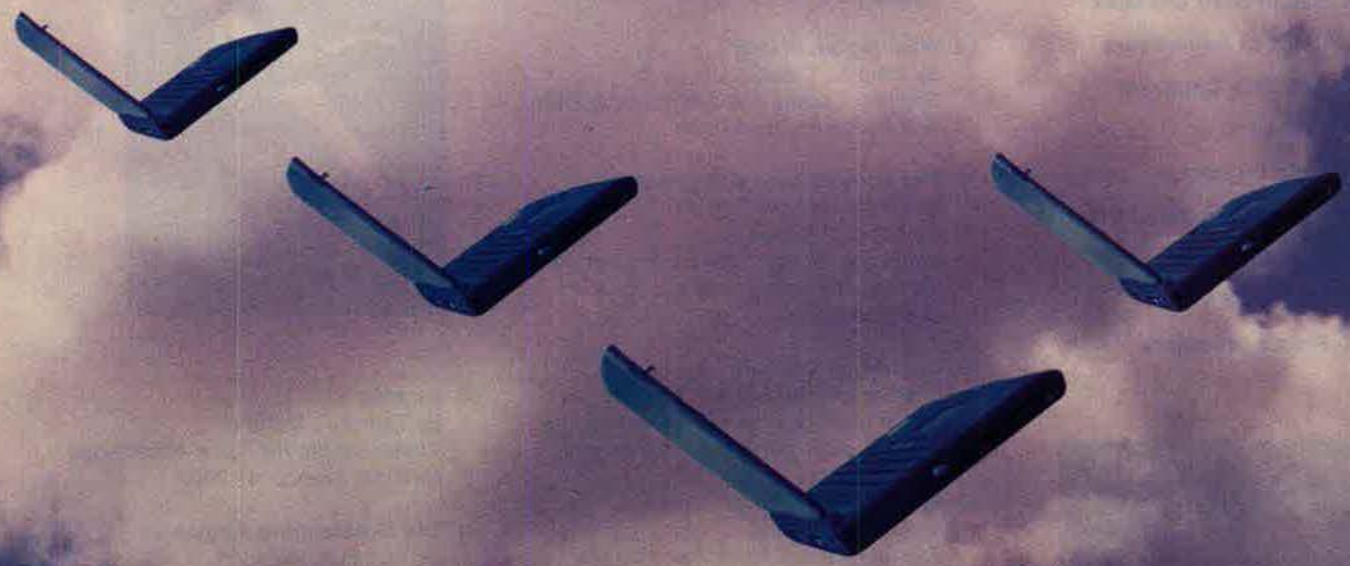

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Editorial

By Robert S. Dudney, Editor in Chief

The First Law of Holes

IT WILL come as a shock to stressed-out US troops to learn there's no shortage of manpower in the armed forces. According to defense officials, we have enough people in uniform; the problem is that many are in the wrong jobs. What we really need, they say, is personnel reform, outsourcing, and a reshuffling of forces.

That view has been pressed for years by Secretary of Defense Donald H. Rumsfeld, who recently claimed anew he is not convinced of a need for more troops to meet growing commitments. He said it would be "the easy way out" to just say, "Fine, let's increase end strength." He told *Time,* "We *do* have adequate forces."

This message is not convincing to the Air Force Association, which twice addressed the issue at its recent National Convention in Washington, D.C. AFA's 2004 Statement of Policy says, "Force structure should be sized to match the requirements." Its companion Top Issues paper flatly declared, "It is time to increase Air Force end strength to meet actual requirements."

(AFA's Statement of Policy begins on p. 64. That document and the Top Issues paper can also be found on our Web site, www.afa.org.)

This association is sympathetic to Rumsfeld's drive for more efficient use of today's 1.4 million US service members. We applaud his call to "respect" public funds.

To us, however, it does not seem plausible that the force can do everything it now needs to do, indefinitely, without more people. It seems (to us, anyway) that DOD, by postponing the inevitable, risks digging the armed forces deeper and deeper into a hole.

All services have been pushed hard, and the one we know best, USAF, has a clear need for personnel. Consider this single fact, cited by USAF's Human Capital Task Force: Today's end strength—359,000 airmen—is at least 10 percent below validated need.

This problem dates to the huge force and budget cuts of the 1990s. By late 2000, the consensus was that the armed forces, now busier than ever, were in trouble. At that time, Gen. Michael E. Ryan, Chief of Staff, said the Air Force needed 10,000 more airmen.

Soon, concerns about end strength shot up again. The Sept. 11 attacks brought a Global War on Terrorism, new homeland security tasks, and a looming mission in Iraq, on top of existing obligations.

The Air Force sought 7,000 more troops as a down payment on a larger "steady state" force. This was viewed as a minimum needed to relieve shortages in the most stressed fields.

The force can't do everything it now needs to do, indefinitely, without more people.

Surprisingly, Rumsfeld slammed the door on this and other requests. He told the services to cover needs with internal force shifts.

He targeted military support jobs that could be eliminated or given to civilians. This category, it is said, may comprise some 320,000 military spaces. Outsourcing would not, by itself, produce more operational forces, however. The services would have to keep the active duty spaces and shift them to core military tasks—all at high cost. For example, USAF identified 22,000 troops whose jobs could go to civilians. However, it would have to hire 14,000 new civilian employees at a cost of $5 billion through 2009, while still paying for the 22,000 military spaces.

As officials have studied reforms for two years, the shorthanded armed forces continued to suffer from a range of maladies.

- Operations and personnel tempos, which went through the roof after Sept. 11, declined a bit but have remained at a new, higher plateau.
- Troops have deployed with great frequency, working hardships not only on families but also on troops who remain on home station and have to work longer days to fill in for those deployed.
- The Guard and Reserve are being overused to beef up active forces—a practice which must end, Rumsfeld acknowledges.
- The Pentagon has resorted to Stop-Loss to hold certain troops on active duty long after their commitments have ended.

Gulf War II added weight to the view that the military lacks not just end strength but also sufficient force structure overall.

Gen. John P. Jumper, Chief of Staff, described USAF's wartime experience in this way: "Eight out of 10 Air Expeditionary Force packages were used. ... Our global mobility was stretched to the limit. ... Our parts and logistics distribution were certainly stretched. ... Our tanker bridge was located both east and west. ... Our space assets were constantly in demand. ... We had every aspect of our Air Force employed."

Jumper summed up, "There is a lot of stress out there." USAF won't be able to reconstitute and resume 90-day rotations before March 2004.

Rumsfeld's efficiency measures look good on paper. In proper context, they make sense. However, they promise little short-term relief.

Some lawmakers are restive. Rep. Heather A. Wilson (R-N.M.), a former Air Force officer and member of the House Armed Services Committee, has called for 150,000 more active duty troops.

Unfortunately, prospects for force expansion aren't good. The Pentagon chief asserts that, while he has an "open mind," no one has been able to "make a case" he could accept. He cited the work of a panel headed by Marine Corps Gen. Peter Pace, vice chairman of the Joint Chiefs of Staff, examining whether the military is large enough. "The analysis that's been done ... indicates that we're fine," Rumsfeld said.

One can only assume that Rumsfeld plans to keep doing what he has been doing. Someone should remind him of what has often been referred to as The First Law of Holes: When you find yourself in one, stop digging. ■

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Letters

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The Real Issue?

"Framework for Victory" *["Editorial," September, p. 4]* misses the point of the current defense policy debate, which centers more on the Army than the Air Force. The real issue is Rumsfeld's plan to reduce the Army's heavy forces, as exemplified by termination of the Crusader artillery system. Justifying Rumsfeld's plan requires more than a defense of airpower effectiveness and improved jointness. The Air Force argument must plainly state that airpower is sufficiently effective, and jointness sufficiently improved, to allow airpower to fill the role previously filled by the Army's heavy forces.

Jorge G. Avila
Covington, Ky.

Scoping the Tanker Problem

The Air Force must carefully conduct the next mobility study, particularly with regard to tankers. *[See "Editorial: The Mobility Edge," August, p. 2.]* Combat air forces are the primary customers for tankers, and they drive the requirement. ACC should play a pivotal role in the mobility study. Must the fighters deploy nonstop from CONUS to theater, or would air base hopping be equally effective for deployment and require fewer tankers? Similarly, are air refuelings before and after a strike absolutely essential, or could some portion of the strike package land at forward bases and hot pit refuel on the inbound or outbound leg, creating a smaller tanker requirement?

The defense budget is constrained. The mobility study will quantify the tankers needed, and every tanker bought is two to three fighters that are not. Buying more tankers eliminates the need to stop for gas, but it also eliminates the fighters that need gas.

Tom Anderson
Belleville, Ill.

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

On the Museum

I was especially glad to see the [mention] of the XC-99. *[See "Heritage of the Force," September, p. 62.]* I went through basic training at Lackland Air Force Base from May through July 1950, and every once in a while we would see the XC-99 flying overhead. I don't know how high it was, but it sure looked huge. I'm glad to hear that it will be part of the museum, since it was the only one built.

Clarence Leger
Natick, Mass.

Your article on the Air Force Museum was great. However, you made it sound bad when you stated that the B-1A was released like it was being scrapped. While some large planes have been scrapped (YB-36 and B-52B), the B-1A, #76-0174, is now a great addition to the Strategic Air and Space Museum at Ashland, Neb.

Eric Renth
Spring Branch, Tex.

Your article about the USAF Museum stirred some old memories for me—especially the mention of the B-36 as the largest aircraft on display. As a youngster in the 1930s, with a father working at Wright Field, I spent many hours in the museum, which was then located in Building 12 at Wright Field. Until we transferred in 1935, the largest aircraft displayed was a C-2, #26-202. It was a Fokker trimotor with a wing span of 72 feet, 2 inches.

This particular C-2 was the one which Lt. Lester Maitland and my father used in 1927 for the first successful flight from the US to the Territory of Hawaii.

As mentioned in your article, the museum was vacated when we entered World War II. I next saw Building

Letters

12 in 1952, and it had been extensively modified for offices. Supposedly, the [C-2] was disassembled, crated, and stored somewhere, but attempts to find it after the war were unsuccessful.

Col. Robert F. Hegenberger, USAF (Ret.)
Niceville, Fla.

In the listing of "particularly good" collections, I was disappointed to note that the Castle Air Museum in Atwater, Calif., was not included. Castle Air Museum has an outstanding collection of historic aircraft, including the only reconnaissance RB-36 aircraft on display anywhere in the world and one of the rare B-24 Liberator bombers.

Col. Edward R. Nacey, USAF (Ret.)
Atwater, Calif.

■ *There are many fine aircraft museums around the country, but the box in the September article only listed "official Air Force field museums."—THE EDITORS*

Tactical School

Mr. Boyne has done a solid job of emphasizing the importance of [Air Corps Tactical School] in the development of doctrine (and, unfortunately, its subsequent congealing into dogma) in the interwar years. *[See "The Tactical School," September, p. 80.]* While he is essentially correct in his analysis of Chennault's position on unescorted bombers, he should have pointed out that Chennault wanted no part of the escort mission and declared that no self-respecting fighter pilot would. He did not want the initiative and aggressiveness of fighter pilots ruined by flying escort missions and being tied to bombers.

He made his position clear in a three-part article, "The Role of Defensive Pursuit," in *The Coast Artillery Journal* in 1933-34. Chennault wasn't right about everything (he thought enclosed, heated cockpits were only for sissies), but he was right about unescorted bombers—and the big bomber brain trust, including "Hap" Arnold and the authors of AWPD-1, never forgave him for that.

Lt. Col. Frank Howe, USAF (Ret.)
Denver

More to the Story

There is, in fact, an "officer counterpart" to the ETAC. *[See "Controllers," September, p. 52.]* The commanders of the TACPs are ALOs (air liaison officers). This two-year "hardship assignment" for fighter pilots and weapons systems officers used to be rewarded by follow-on assignment to a new jet, back in the old days.

The ALO concept goes back further than the ETAC, all the way to World War II where ALOs were plucked from cockpits temporarily, and many were trained as track commanders in Sherman tanks so that they could maneuver with Army tank battalions while calling in close air.

In the 1980s and 1990s, however, in an experimental program of the Air National Guard, ALOs were assigned permanently to Army National Guard combat arms brigades and battalions. Due to austerity measures, there were no ANG TACPs in most states, and the ALOs performed their liaison duties, as well as the ground FAC duties normally associated with ETAC, alone.

Anyway, we were officers trained as terminal attack controllers.

Lt. Col. Raymond J. Castagnaro, USAFR (Ret.)
North Richland Hills, Tex.

■ *According to the US Air Force, there is not now a direct officer counterpart to an ETAC, as there is a combat controller officer category.—THE EDITORS*

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The Real Forerunners

I recall the "Acrojets" at Williams AFB, Ariz., flying F-80Cs and T-33As in the slot position with Maj. Bruce Carr, a 6-foot-5-inch pilot, and others. *[See "Letters: Before the Thunderbirds," August, p. 5.]* Acrojets were instructor pilots for aviation cadets. I believe they were the forerunners of the USAF Thunderbirds.

SMSgt. Allen W. Franks,
USAF (Ret.)
Columbus, Ohio

Re-engining the B-52

["Washington Watch: BUFFs and Bones," September, p. 11] mentioned that USAF considered re-engining the B-52s "seven years ago." Of course, that wasn't the first time the service entertained that idea. We (SAF/AQQB) worked on several interesting modifications for the venerable beasts. Unfortunately, the timing was awful since we were in the process of buying the B-1Bs.

For new engines, we strongly considered using four CFM-56s (same power plant as on the B-1B and re-engined KC-135) in place of the eight original engines. Additionally, Rolls Royce offered to lease the USAF engines warranted for 20 years. Rolls Royce claimed that their engines were so reliable, a new USAF pilot could fly the new BUFF for his whole career and never experience an engine failure.

Another interesting mod proposal was to replace the B-52's tip tanks with RAF wing-mounted drogue refueling pods. The pods were aerodynamically and weight compatible with the tip tanks. The idea was to load up a BUFF with sonabouys, mines, and Harpoons and patrol the south central Pacific—with F/A-18s supplying MiG CAP and getting a sip of fuel from the BUFF as required.

I still think this is a good idea, since we are so short of air refuelers these days. BUFFs could orbit in forward areas awaiting a target and refuel probe/drogue attack aircraft while in their orbits.

Lt. Col. Terry Van Keuren,
USAF (Ret.)
Castle Rock, Colo.

Cruising at 150

I was a copilot on B-17s at Casper, Wyo., in 1943 and flew the B-17s as a pilot later on in my Air Force career. *[See "Pieces of History: Fortress," September, p. 120.]* At the last minute at Casper, I was pulled off my crew and sent back to Boise to be pilot of my own crew. When I arrived at Boise, I found they had changed to B-24s.

I flew 30 lead missions out of England against Germany, in B-24s with the 467th Bomb Group, 2nd Air Division, Eighth Air Force. The B-24 cruised about 160 mph, the B-17 about 10 mph slower, about 150. Probably the only B-17s going 300 mph were those going straight down from high altitude after being shot down by the Germans.

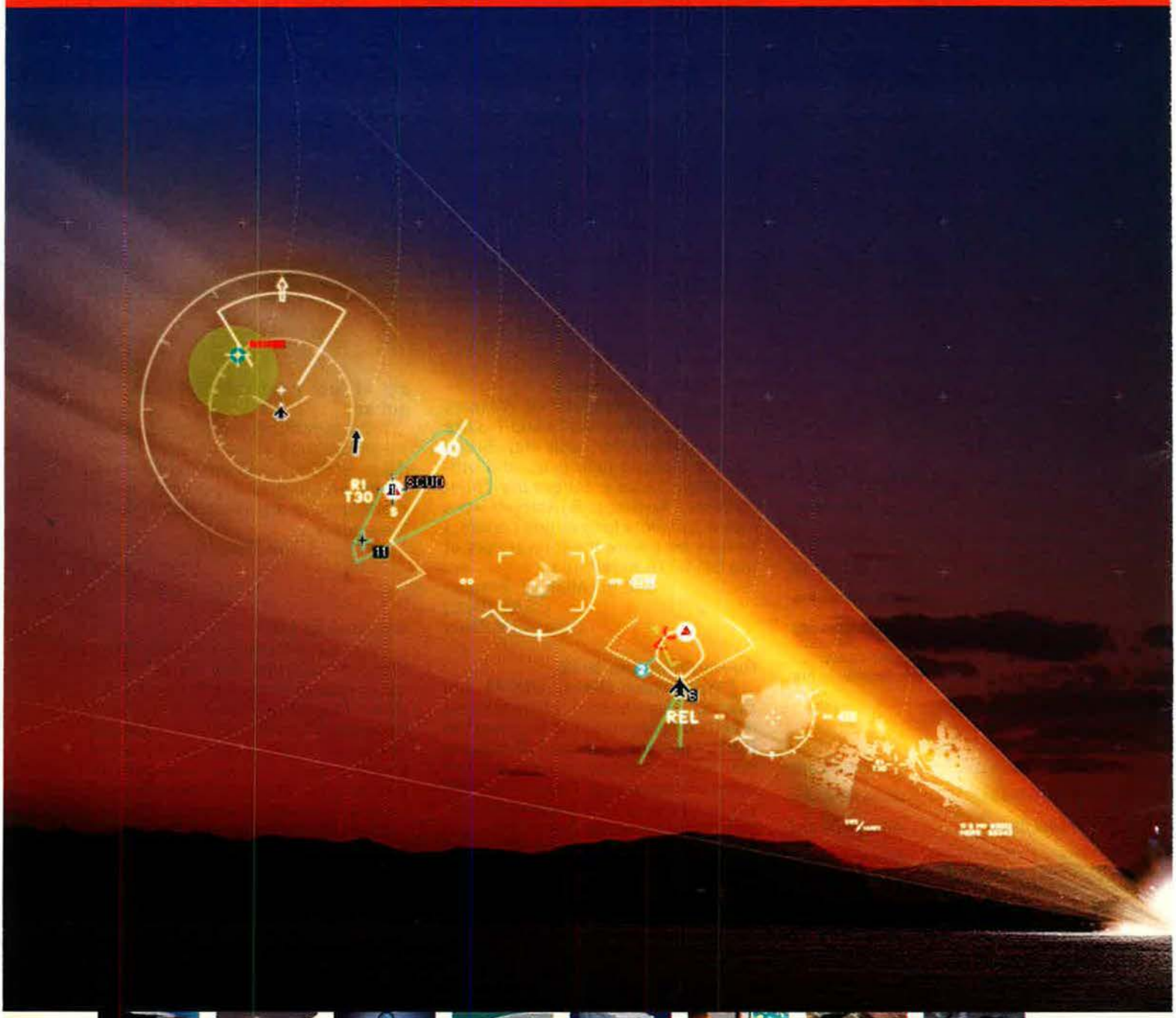
Col. George E. Tormon,
USAF (Ret.)
Merritt Island, Fla.

■ *The caption should have made clear that 300 mph was the B-17's listed maximum speed, not the cruising speed.*—THE EDITORS

Correction

Lt. Gen. John W. Rosa Jr.'s new job title should have been listed as superintendent of the Air Force Academy. ("Aerospace World: New Academy Leader Takes Over," September, p. 25.)

Precision Engagement



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ALE-50
HARM

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ID

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APG-73
APG-63 (V)1
APG-63 (V)2
APQ-181

Track

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AAQ-16
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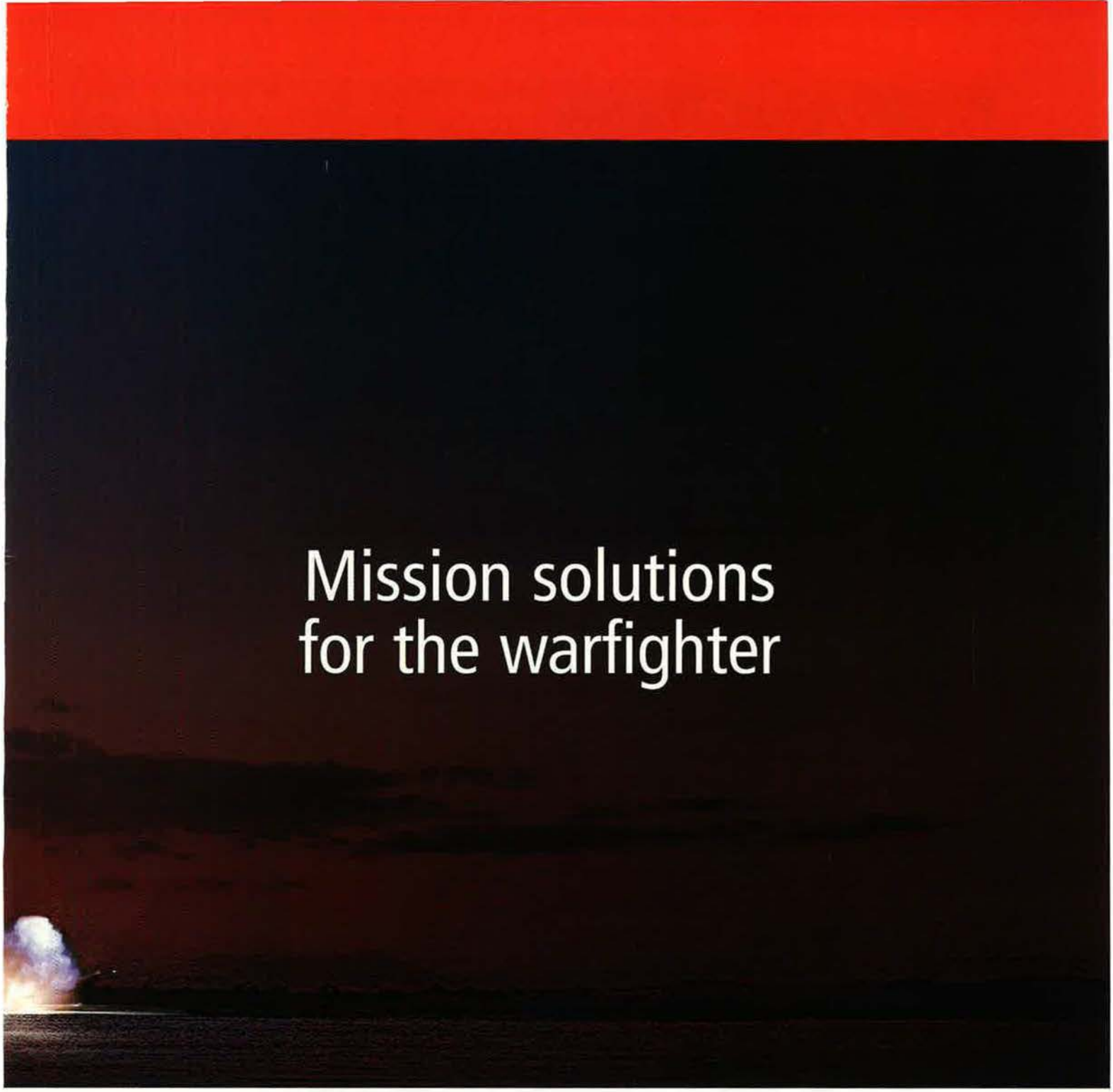

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Washington Watch

By John A. Tirpak, Executive Editor

Sagging Tanker Plan; Airpower in Gulf War II; Space Acquisition ....

Running on Empty?

By mid-September, USAF's plan to lease 100 KC-767 tankers had sailed through three Congressional panels and needed only one more approval—that of the Senate Armed Services Committee. It was at that point, however, that problems threw the plan, at least momentarily, into limbo.

The Senate panel vigorously challenged the $16.6 billion deal and then proposed other scenarios for replacing USAF's aged KC-135s. The upshot was more delay and uncertainty.

At issue was a complex deal between the Air Force and Boeing. The committee chairman, Sen. John Warner (R-Va.), called it an "end run" around normal budgeting processes. He worried that approval would set a precedent for similar maneuvers by other services.

Other members warned that widespread use of leasing would saddle future Congresses with large funding mandates. Sen. Wayne Allard (R-Colo.) said the practice would create a "hidden liability" in the budget and only defer a bow wave of bills.

Warner and Sen. Carl Levin of Michigan, the ranking Democrat, asked the Defense Department to consider other possible solutions. One called for leasing 25 aircraft and buying the rest. The Air Force warned this action would raise the per-airplane cost of the 25 leased aircraft. It further claimed that it couldn't afford the huge up-front cost to purchase 75 aircraft.

The committee asked the Institute for Defense Analyses to determine whether USAF got the best possible deal from Boeing. In addition, it asked the Air Force to provide new data on KC-135 corrosion problems—a big concern to the service.

Warner planned to put the deal to a vote soon after the Senate panel received answers to its various questions.

In a September letter to the committee, Deputy Defense Secretary Paul D. Wolfowitz re-endorsed the tanker lease as proposed by USAF. The "lease 25/buy 75" option proposed by Warner would oblige the Air Force to spend $10.5 billion more than anticipated in its five-year spending plan, Wolfowitz said. He explained that, though the Senate scheme would save $2.7 billion overall, the need for modern tankers is urgent, and the Pentagon is willing to spend more money to get them faster.

Moreover, Wolfowitz said, changing the terms now will require renegotiating the Boeing deal, which took two years of laborious haggling. This renegotiation represents "the biggest drawback" to the 25/75 idea, Wolfowitz wrote.

The favorable terms obtained from Boeing might disappear, and the whole deal could fall apart, or, as Wolfowitz put it, become "potentially unexecutable."

Of course, Congress could simply grant up-front, multiyear procurement authority for all 100 aircraft, but it has never done such a thing. It would save $5.5 billion over the life of the acquisition cycle, but USAF would have to find an additional $13 billion in up-front funding.

USAF photo by TSgt. Mike Buytas

USAF needs to replace its elderly tankers—soon.

The Pentagon appears determined to get on with the lease program as soon as possible. Wolfowitz wrote that DOD remains steadfast in its desire to do the deal now.

Airpower Unquestioned

While the lessons learned from Gulf War II can be used both to support or oppose practically any defense program, there's no argument about the value of airpower, aerial tankers, and network-centric operations, according to the nonpartisan Congressional Research Service.

That view emerged in a June CRS report, "Iraq War: Defense Implications for Congress." A group of CRS panelists found it was possible to use the events of Gulf War II to either support or undercut practically any system or concept.

However, the panelists stated unequivocally that the war "validated the effectiveness of combat aircraft armed with precision guided weapons." They went on to say that this truth might "influence discussions about current plans for investing in specific aircraft and munitions programs."

The report declared that the war "appears to have demonstrated the value of network-centric operations and timely battlefield intelligence and the potential value of psychological operations." These capabilities stemmed for the most part from operations in air and space.

The conflict "may reinforce support generated by the war in Afghanistan for increased investment in US special operations forces" and may "highlight questions concerning reserve combat divisions and the potential consequences of extended call-ups of large numbers of reserve forces," the CRS noted.

The experience in Iraq "may reinforce support for investing in aerial refueling capabilities and increase interest in potential new airlift and sealift technologies."

Elsewhere, conclusions were less than ironclad. CRS said that supporters of maintaining 10 Army divisions could point to the fact that 10 divisions plus three Marine







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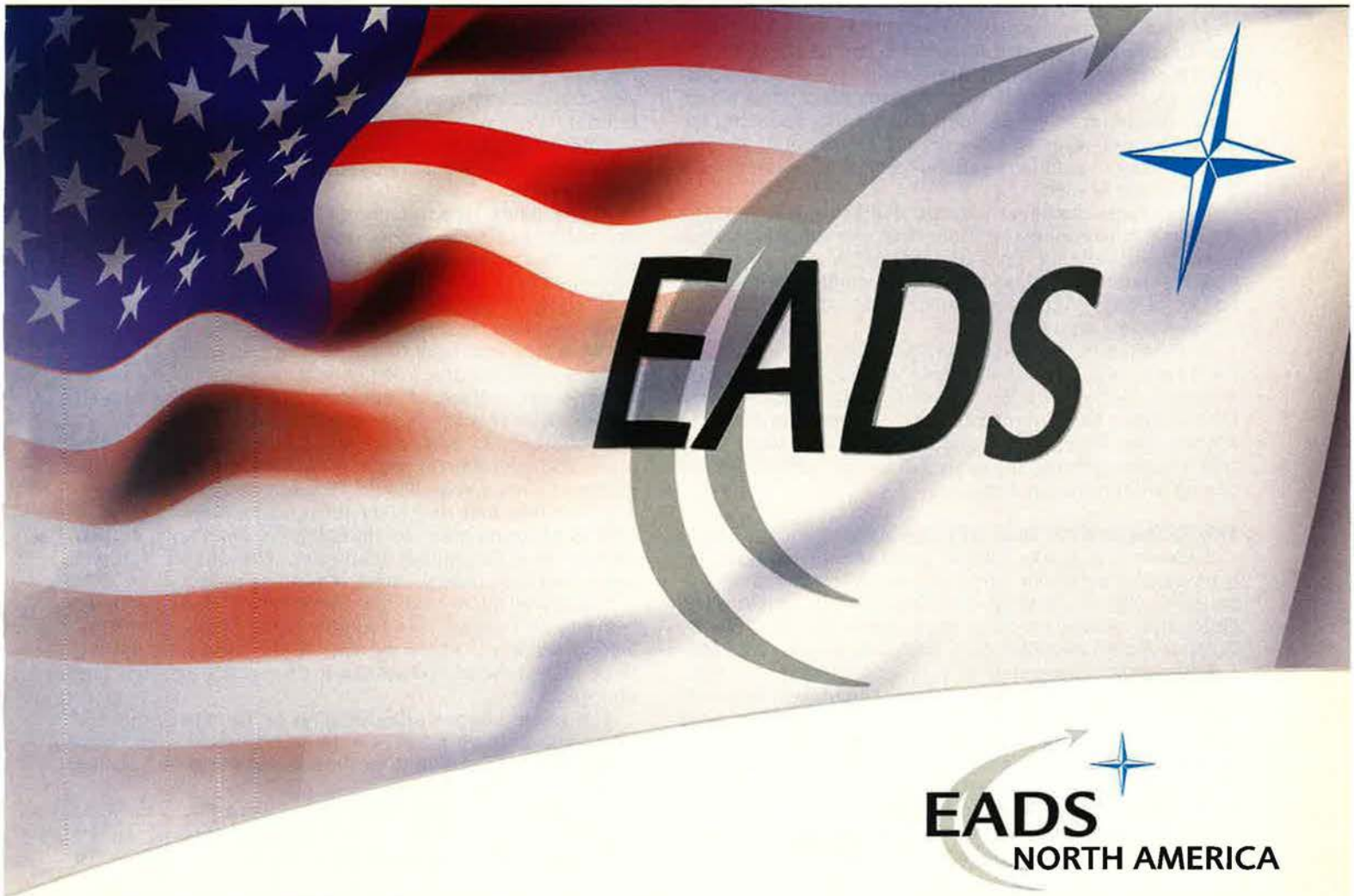

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divisions handled Iraq nicely and should be sufficient for a two-war scenario. Those wanting a larger Army could argue that too many overseas commitments have forced unduly long call-ups of National Guard and Reserve forces. Those wanting a smaller Army could argue that advances in technology, and the effects achieved with a relatively small force in Iraq, show that a smaller, lighter, faster force of only six divisions will be sufficient in the future, since only three divisions were needed to defeat one of the largest land armies in the world.

USAF photo by SSgt. Lee A. Osberry Jr.

Combat aircraft with PGMs—effectiveness validated.

Even before this war, said CRS, some experts already had begun speculating about "the degree to which airpower can substitute for ground forces in future conflicts."

The war also provided ammunition to advocates of bombers, said CRS, noting that precision guided weaponry "underscored the value of bombers for reducing the need for in-theater bases and for maintaining aircraft with precision guided weapons over the battlefield for long periods of time."

These facts, however, can be used to argue that the Air Force "has enough, or more than enough, long-range bombers for fighting regional conflicts, particularly given how precision guided weapons have multiplied the number of targets that each bomber can attack during a single sortie," said CRS.

CRS said one could make a case for buying more C-17 transports, given that they demonstrated the value of a strategic airlifter able to move directly to forward areas. On the other hand, the panel said, the wars in Iraq and Afghanistan show that the US will probably fight wars with smaller ground forces in the future, potentially reducing airlift requirements.

The Problem With Space Programs

Satellite and space launch programs of today suffer from delays, setbacks, and massive overruns mainly because of wishful thinking and excessive optimism a decade ago, according to a joint report of the Defense Science Board and Air Force Scientific Advisory Board.

The report, completed in May and released in September by Peter B. Teets, USAF undersecretary and director of the National Reconnaissance Office, says acquisition reforms, insufficient budgets, and an unduly rosy outlook for the space industry all played their roles in undermining critical satellite programs and the Evolved Expendable Launch Vehicle program.

At the same time, the demonstrated value of space systems in Operation Desert Storm and later conflicts ratcheted up demand for space support, and the military space establishment was not prepared to meet it.

"The major problems that we identified in the acquisition of national security space programs were actually embedded in choices and options ... in the decade of the '90s," said A. Thomas Young, chairman of the joint task force, in a September Pentagon press conference. Though undertaken in good faith, those choices produced effects that were "clearly unintended" but which exerted a "profound adverse impact" on the space infrastructure. These problems "are still somewhat prevalent today," Young said.

The first big problem was that programs far exceeded the budgets provided, leaving no margin for the inevitable delays and setbacks, Young said. The net result was "underfunded high-risk programs." At the same time, space leaders were urged to take on more risk in programs, trying to do more with less, because of budget shortfalls.

More risk meant that time-tested "programmatic and engineering practices were in many cases abandoned and resulted in a significant increase in cost, schedule, and mission success risk," he said.

Acquisition reform caused the near elimination of systems engineering capability in the government, he said, and functions "that are typical and uniquely government responsibilities" were handed off to the contractors—"even the control of requirements."

The result: A sharp decline in capability to ride herd on programs and keep cost and schedule from spinning out of control. During this period, "the role of the program manager was greatly reduced," Young observed.

A "robust commercial space market" was anticipated in the latter 1990s, and this was expected to "greatly reduce the cost of national security space, particularly in the space launch arena," Young explained. It didn't happen, but the assumption had already been built into the budget.

With no huge commercial demand for launches driving down costs, the unit cost of each government launch went sky-high.

At the same time, companies that wanted to stay in the space business recognized that winning some programs was a "life-or-death" situation. As a result, they lowballed their bids in order to win work. As it turned out, they couldn't deliver at the price advertised, and programs got into deep trouble.

While this was happening, the proven utility of space communications and intelligence caused military users to generate "a flood of requirements" that overwhelmed the requirements management process.

In short, "cost had replaced mission success" as the prime consideration in space programs, Young observed. Requirements were allowed to mushroom, and the government had lost its ability to manage them. The joint task force recommended changing the emphasis, setting mission success higher than cost. The quality that will result will help reduce costs, Young asserted.

The panel also said that programs should be more realistically funded. "We found way too much optimism," Young reported. At the outset, space programs tended to be underfunded "between a third and 100 percent," he charged.

The panel suggested budgeting to the most probable cost "with a 20-25 percent reserve." This extra is "not a slush fund," Young said, but a needed buffer to resolve problems as they occur.

Teets said the recommendations were taken to heart and will be central to a new national security space policy that was to be completed this fall. ■

Out of many, one. The F135 propulsion system. Created from the innovations of more than 300 companies. United by the strength of nine nations. The power behind the internationally acclaimed F-35 Joint Strike Fighter.

On October 11, 2003, the efforts of this unparalleled team achieved another major milestone: the first engine test of the production configuration F135.

Pratt & Whitney
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Aerospace World

By Adam J. Hebert, Senior Editor

Panel Cites Academy Failures

A Congressionally chartered panel tasked with reviewing procedures at the US Air Force Academy following numerous allegations of sexual assault upon female cadets found several systemic problems with the way the academy is run and overseen, according to its report, released Sept. 22.

The independent panel led by former Rep. Tillie K. Fowler determined that many of the problems at the academy can be traced back to lack of sustained attention when evidence of problems emerged in the past.

"Regular turnover of Air Force and academy leadership, together with inconsistent command supervision and a lack of meaningful and effective external oversight, undermined efforts to alter the culture at the academy," the panel's final report determined.

Since 1993, the panel found, there have been 142 allegations of sexual assault at the academy. The sexual assaults and rapes are believed to be widely underreported.

The report noted that many of the problems are being addressed through the Air Force's "Agenda for Change," implemented this spring, but the panel views it only "as the initial step in reversing years of institutional ineffectiveness."

The panel said the agenda does not address the need for "permanent, consistent oversight" by Air Force headquarters, nor does it improve the external oversight by the academy's Board of Visitors. The panel said that oversight has not been productive.

The agenda also eliminated the academy's confidential reporting policy for sexual misconduct, which could have the unintended effect of further suppressing sexual assault reports, according to the panel.

Fake BRAC E-mail Debunked

After being alerted to a falsified e-mail that purported to list facilities facing closure or realignment in 2005, the Air Force quickly moved to dispel the hoax.

USAF photo by TSgt. Ben Bloker

On Sept. 18, the main entrance to the flight line at Langley AFB, Va., appears to be ready for seaplanes rather than its typical F-15 Eagles after Hurricane Isabel blew through the base. (See "Isabel Forces Evacuations," below.)

"The e-mail takes a legitimate Air Force Print News story titled 'Air Force Releases 2004 Realignments' ... and adds a fake list of Department of Defense installations" supposedly facing base realignment and closure actions, service officials said.

Air Force officials noted that the "ongoing BRAC process is nowhere near complete."

As part of the department's 2005 budget justification, DOD will prepare a series of reports showing the need for a 2005 BRAC round, and these certifications will not be complete until around February 2004, an official said.

Isabel Forces Evacuations

Hurricane Isabel forced the evacuation of not only aircraft but also personnel from Langley AFB, Va., when the low-lying base fell in the storm's path. Langley officials say 60 F-15 Eagles were evacuated to Grissom Joint Air Reserve Base in Indiana on Sept. 16. They returned to the Virginia base Sept. 21.

Aircraft evacuations from Langley are not unusual because of the base's proximity to the Atlantic Ocean and runways that have an elevation of only 11 feet above sea level. More unusual was the personnel evacuation, which had not happened "in quite some time," said a base spokeswoman.

Approximately 6,000 airmen and their families were evacuated from Langley on the 16th and were cleared to return Sept. 20.

Initial estimates are that the base may have suffered more than $200 million in damage from Isabel, primarily from flooding.

USAF Reviews Museum Policies

The Air Force on Aug. 28 announced that it has formed a group to review the operational procedures used by the US Air Force Museum at Wright–Patterson Air Force Base in Dayton, Ohio. The assessment group will include civilian experts in museum operations.

The announcement came after a series of articles in the *Dayton Daily News* reported on a March 21, 2002, audit of the museum that found about 1,000 artifacts were missing. The Air

Force Audit Agency's area audit office at Wright–Patterson, found that museum personnel "did not always effectively manage museum property."

Scott A. Ferguson, the museum's former chief of collections, is under indictment in US District Court in Dayton, for allegedly selling an armored car in 1999 that he knew had been stolen from the museum in 1996.

The 2002 audit is the second critical review of the museum. The *Daily News* reported that a June 1996 audit found that "museum personnel did not adequately manage the acquisition, registration, and documentation of weapons."

Retired Maj. Gen. Charles D. Metcalf, the museum's director, told the newspaper that the number of missing items had been reduced to 510. He said that is a "low error rate" for a museum that maintains more than 57,000 artifacts.

The USAF review group plans to examine whether the museum's procedures "meet or exceed recognized professional standards of comparable museums," an Aug. 29 Air Force release stated.

Recruiting Holding Up

Air Force recruiting levels are holding up so far. Each of the Defense Department's four military services is on course to meet year-end recruiting goals.

Officials are reluctant to forecast what the long-term impact of continuing operations in Iraq will have on recruiting or retention, saying it's too early to tell.

Officials credited the hard work of recruiters and the rise in patriotism coupled with a downturn in the economy for helping to keep the recruiting picture rosy.

The Air Force met its recruiting goal of 37,000 new airmen before the end of Fiscal 2003, the fourth consecutive year the service has met its target.

Israel Wary of Saudi F-15 Basing

Israel asked the United States to intervene to help ensure that Saudi Arabia moves F-15s recently deployed to the northwest corner of the Arab nation to a location farther from Israel.

According to the *Jerusalem Post,* Israel was concerned the F-15Ss based at Tabuk, about 100 miles from Israel, could be used for a quick-strike attack against the Jewish state. The Saudi Arabian fighters, purchased from the US in 1991, have traditionally been based much farther from Israel.

USAF photo by TSgt. Mike Ammons

The first operational F/A-22 flies to its home at Tyndall AFB, Fla., where it will be used for crew training.

Hornburg Concerned by F/A-22 Funding Cuts

The possibility that Congress may further reduce the budget of the F/A-22 Raptor, moving the Air Force further from its goal of 381 aircraft, could have repercussions throughout the fighter force, noted the head of Air Combat Command, Gen. Hal M. Hornburg.

"If we never fight another war, [the cuts are] not a problem at all," Hornburg said in an interview at the Air Force Association's annual convention in Washington, D.C. "But my guess is, that's not the world we're going to live in."

Hornburg said that the Air Force's requirement remains 381 F/A-22s. "In fact, we need more than that," he said.

The general noted that airpower represents the leading edge of most modern combat operations. "If it's kinetic, it's going to be fighters and bombers," said Hornburg. "Unless our requirements greatly diminish, I would say that we need to look very, very closely before we start making willy-nilly cuts in the number of airplanes we acquire."

In markups of the Fiscal 2004 defense spending request this summer, House and Senate lawmakers cut the F/A-22's budget, likely reducing the number of Raptors the Air Force will be able to buy this year. (See "Aerospace World: Raptor Cuts Undermine 'Buy to Budget' Plan," August, p. 11.) Lawmakers cited reduced program costs as justification. But the Air Force had hoped to reinvest savings in the program, to increase the number of Raptors the service could buy and eventually get to 381 aircraft.

In a separate interview, USAF acquisition chief Marvin R. Sambur said the full ramifications of the cuts are still to be seen, but members of Congress may be "signaling that they want definitive budgets" in advance—and not plans with fluctuating quantities.

While the Raptor represents a small buy compared to the Air Force's plan for 1,763 F-35 Joint Strike Fighters, reduced F/A-22 quantities will still have a ripple effect, Hornburg said.

The Air Force is facing a dip in fighter numbers later this decade, when large numbers of F-16s face retirement before F-35s are ready to replace them en masse. Absent a major F-16 life-extension program to cover a relatively short time gap, the Air Force's fighter inventory will dip below requirements for several years.

"So if we don't start getting these numbers of new airplanes—the F/A-22 and F-35—that we need in the numbers that are forecast, we're going to have to look for alternatives," Hornburg said.

Israel has long been concerned about US military sales to potentially hostile neighbors with which the country has fought a series of wars. Although Israel is generally supplied with top-notch American equipment, the US has also supplied advanced F-16s to Egypt and the United Arab Emirates and Airborne Warning and Control System aircraft to Saudi Arabia, among other sales.

A 26-Nation Army

The European Union, this summer, deployed its own army for the first time, when it sent a 400-person contingent to Macedonia to participate in peacekeeping operations. This first-ever deployment for an EU force, known as EUFOR, contained troops from 26 nations—only half of them actually EU members. Six participating nations were non-EU NATO members, including Turkey.

Within the EU, however, the mission was seen as a precursor for more ambitious military operations. Asked in September whether this EU force competed with NATO and the new NATO Response Force, Gen. Charles F. Wald, deputy commander of US European Command, said probably not.

"The NATO Response Force will be, frankly, much more capable ... and probably more viable," Wald told the Defense Writers Group in Washington, D.C.

"I think the NATO Response Force will be the force of choice," he added, though, if NATO elects not to take on a particular mission, "then the EU [members] can do their job."

USAF Recasts PEO Arrangement

The Air Force has reconfigured its program executive officer structure in an attempt to improve the oversight of the service's acquisition programs. The changes, which took effect in October, give the commanders of the Air Force's product centers dual responsibility as PEOs for most programs under their purview.

For example, the new PEO for aircraft, which will include all aircraft except the F/A-22 and the F-35 Joint Strike Fighter, is the commander of the Aeronautical Systems Center at Wright–Patterson AFB, Ohio. The center will also gain another general officer or senior executive service civilian—in addition to the one filling the ASC vice commander position—to serve as the ASC deputy for acquisition.

Air Force acquisition chief Marvin R. Sambur said the new arrangement will put the PEOs more closely in touch with the programs that they oversee.

The commander of the Air Armament Center at Eglin AFB, Fla., is now the PEO for weapons, and the commander of Electronic Systems Center, Hanscom AFB, Mass., is the PEO for command and control.

The service will install a major general as the F/A-22 PEO, who will remain in Washington, D.C., a decision Sambur described as necessary, given the program's high value and visibility. If the Air Force moved the F/A-22 PEO slot to Wright–Patterson, where the program office is located, it would "probably be a disservice" to the program, Sambur said. The Raptor "has issues" and is under intense scrutiny from Congress and the Office of the Secretary of Defense, he added.

There is no change for the PEO for services and the PEO for the Joint Strike Fighter.

The F-35 fighter program alternates leadership between the Air Force and Navy. Currently, JSF is headed up by Air Force Maj. Gen. John L. Hudson, who reports to the Navy acquisition executive. In spring 2004, JSF leadership will switch to Rear Adm. Steven L. Enewold, who will report to the Air Force acquisition executive.

The Air Force also decided to eliminate any acquisition role from the duties of its three air logistics center commanders. The ALC commanders will instead focus their energies strictly on the sustainment of USAF's weapons systems. With the Air Force's aircraft fleet becoming ever older, "sustainment is becoming increasingly important," Sambur noted.

In the end, the goal of all the changes is simply to improve acquisition management. Sambur said the Air Force's programs "have to start meeting budgets," and fiscal performance will be a measure of whether the changes are a success.

A Czechoslovakian L-39 Albatross, in August, arrives at Edwards AFB, Calif., where it will remain for six months. The Air Force Flight Test Center is examining whether L-39s will be sufficiently affordable and flexible to serve in a variety of test support roles.

Airman Arrested for Espionage

SrA. Ahmad I. Halabi, who had been working as a translator with Taliban and al Qaeda detainees at Guantanamo Bay, Cuba, was arrested on charges he was spying for Syria. Halabi's arrest was part of a spate of recent investigations of personnel at Guantanamo Bay.

Halabi, who is a native of Syria and moved to the US as a teenager, was apprehended July 23 and is being held in pretrial confinement at Vandenberg AFB, Calif. A Sept. 24 Air Force release stated an Article 32 hearing, similar to a grand jury process, was held Sept. 15-18.

Halabi is accused of attempting to deliver to Syria more than 180 notes from prisoners that "concerned intelligence gathering and planning for

The Latest From Iraq

Gulf War II Deaths Surpass 1991 Total

US casualties in Iraq passed a grim milestone Sept. 13, when the number of troops killed during Operation Iraqi Freedom surpassed the number of deaths in the 1991 Gulf War. The death toll reached 294 in mid-September.

Since OIF began on March 20 (local time), 188 deaths have been in combat, while 106 stemmed from accidents and other noncombat incidents.

In Gulf War I, the 293 deaths were more evenly spread: 148 were combat related, and 145 were accidental.

President Bush declared major combat operations to be over May 1, but lower-intensity fighting has continued in Iraq since that time.

Missiles Fired at C-141 Departing Baghdad

Two man-portable shoulder-launched missiles were fired at an Air Force C-141 that was taking off from Baghdad Airport in early September. The missiles missed the transport because the C-141 was too high to be threatened, but a DOD spokesman said similar attacks have occurred "numerous times" in Iraq.

The attacks highlight both the continued instability in Iraq and the prevalence of Stinger-type missiles worldwide. The missiles, which home in on an aircraft's heat signature, are most dangerous to slow-flying aircraft without defensive systems, arriving or departing from airports.

DOD Reports Progress in "Treasure Hunt"

Defense Department officials reported in mid-September that nearly 3,500 of the Iraqi artifacts stolen from a Baghdad museum in the first chaotic days after Saddam Hussein's regime fell have been recovered.

Further, the extent of the looting is not as bad as thought. "It was widely reported that over 170,000 artifacts had been stolen or looted from the museum in Baghdad," said Marine Col. Matthew Bogdanos at a Pentagon briefing. He added that 170,000 is "wrong," though an exact accounting is difficult to come by, because many items were never photographed or inventoried.

"Five months into the investigation, we still do not have a complete inventory of precisely what is missing," said Bogdanos, who is leading DOD's recovery effort.

Officials said amnesty and aggressive recovery programs have been highly successful. The amnesty program, which allows items to be returned "no questions asked," has yielded more than 1,700 artifacts, Bogdanos said.

Worldwide raids and seizures have also been fruitful. "Raids on targeted locations in Iraq ... resulted in the recovery of over 900 separate artifacts," Bogdanos noted. The remaining artifacts, nearly 800, were seized in raids outside Iraq.

Iraqis Express Optimism

The citizens of Baghdad overwhelmingly believe the US invasion and the removal of Saddam Hussein will be good for Iraq in the long run, according to a Gallup poll. A survey of more than 1,100 Baghdad residents in 122 locations found that two-thirds of Iraqis believe their nation will be better off five years from now than it was when Hussein was in power.

Gallup reports that 35 percent of the Baghdad residents expect Iraq to be "somewhat better," while 32 percent expect their nation to be a "much better" place in five years. Only eight percent of the respondents expected the nation to be worse off than it was prior to the US-led war.

China Got Classified Info From EP-3

DOD has determined that the Chinese government probably obtained classified information from the Navy EP-3 surveillance aircraft that made an emergency landing on a Chinese island in April 2001. The classified materials were compromised despite crew member efforts to destroy them before the aircraft fell into Chinese hands, a Navy investigation found.

Chinese acquisition of undestroyed classified material is "highly probable and cannot be ruled out," stated the report, first obtained by *Jane's Defense Weekly*.

This loss of sensitive information and equipment occurred despite crew actions that included jettisoning materials while still in flight, "smashing equipment with the onboard ax and other hard objects, and, upon landing, hand-shredding classified papers."

The crew carried classified materials "as a matter of routine," because they are necessary for the EP-3 to conduct its mission, the report stated.

The EP-3 collided with a Chinese F-8 over international waters, after the fighter repeatedly flew dangerously close to the Navy aircraft. This was the culmination of what the Pentagon described as a period of increasingly aggressive intercepts of US reconnaissance aircraft by Chinese airplanes. The Chinese pilot, Wang Wei, was killed by the collision or his ensuing crash into the Pacific Ocean.

After making an emergency landing on Hainan Island, the 24 EP-3 crew members were detained by China for 11 days. They were released April 12, 2001, after the US government issued a carefully worded apology that expressed regret for the incident but accepted no blame. The by-then-disassembled aircraft was not returned to US custody until July 3, 2001.

the United States' war against terrorism," among many other actions listed on a six-page charge sheet, stated the release.

Also recently arrested was Army Capt. James Yee, a Muslim chaplain working with the detainees at the Naval facility. Yee was arrested Sept. 10 on suspicion of espionage. A third arrest involved former Army Pvt. Ahmed F. Mehalba, a civilian interpreter, also working at the Guantanamo facility. Mehalba was arrested Sept. 30 for making false statements to investigators when allegedly found with computer disks containing classified information about the terrorist holding area at Guantanamo.

Boeing Wins SDB Contract

Boeing beat out rival Lockheed Martin to develop and produce the Small Diameter Bomb, a next generation, Global Positioning System guided precision weapon.

The SDB is a 250-pound-class munition that will be fielded first on the F-15E Strike Eagle. The contract value is estimated to be $188 million, but the value could increase with additional future purchases.

The Small Diameter Bomb is one of the Air Force's top weapons pri-

News Notes

By Tamar A. Mehuron, Associate Editor

■ USAF awarded Boeing a $56 million satellite project Aug. 29, waiving its suspension of the company's bids for new space contracts. In July, USAF suspended Boeing from future contract bidding because of ethics violations during the 1998 Evolved Expendable Launch Vehicle competition. (See "Washington Watch," September, p. 8.)

■ FAA officials approved a national certificate of authorization Aug. 21 for USAF's Global Hawk unmanned aerial vehicle. The certification grants easier access to national airspace for training and military exercises.

■ USAF will receive its first panoramic night vision goggles for pilots in 2004, according to *Aerospace Daily*. The new goggles offer a 100-degree field of view rather than the current 40-degree views.

■ This fall, USAF plans to replace airmen with civilian contractors to handle air traffic control duties at four bases supporting Operation Enduring Freedom. Many of the critical ATC positions have been manned by Air National Guardsmen, who will now be able to rotate to their home stations. The bases are: Bagram AB and Kandahar AB, Afghanistan; Karshi-Khanabad AB, Uzbekistan; and Ganci AB, Kyrgyzstan.

■ The Air Force Academy's TG-14 motorized gliders began flying again Aug. 27. Brig. Gen. Johnny A. Weida, the new 34th Training Wing commander, grounded the 34 motorized gliders May 16 to "address leadership and cultural issues in the 94th Flying Training Squadron, as well as glider operations guidance shortcomings," stated an academy release.

■ An Air Combat Command accident report released Sept. 2 concluded that a major flight control malfunction caused an F-15E to crash June 4 during a training mission. The pilot and instructor pilot ejected safely. The aircraft crashed in woods west of Seymour Johnson AFB, N.C.

■ USAF awarded $4 million contracts each to industry teams led by Boeing, Lockheed Martin, and Northrop Grumman for the initial design of the Battle Management Command and Control suite for the E-10A Multisensor Command and Control Aircraft. The sole winner will be selected in April 2004.

■ Russia plans to provide Belarus with advanced S-300 anti-aircraft missiles to help protect Russia's western borders, according to the *Moscow Times*. The deployment is part of a 1996 agreement to develop political, military, and economic ties.

■ A prototype booster successfully lifted off from Vandenberg AFB, Calif., Aug. 16, as part of the Missile Defense Agency's Ground-based Midcourse Defense program. It was a ground-based interceptor prototype.

■ The last Titan IVB rocket combined with a Centaur upper stage launched from Cape Canaveral, Fla., Sept. 9, carrying a National Reconnaissance Office satellite. Following this launch, there are three Titan IV boosters and one Titan II left in Lockheed Martin's inventory.

■ Pratt & Whitney workers completed assembly of the first F135 engine for the F-35 Joint Strike Fighter Sept. 12. Completion of the engine came less than two years after the initial contract award. First flight of the F-35 is slated for 2005.

■ USAF awarded a six-member industry team an information warfare contract worth up to $252 million. The five-year contract from the Air Force Information Warfare Center, Lackland AFB, Tex., went to Titan Corp., SAIC, Computer Sciences Corp., Macauley Brown, Veridian Information Solutions, and Adtech Systems.

■ An F-16 crashed into the Yellow Sea Sept. 9 southwest of Kunsan AB, South Korea. The pilot ejected and was recovered safely. The cause of the accident is being investigated.

■ Robins AFB, Ga., is the first USAF base to test an alternative fuel cell to generate electricity by combining hydrogen and oxygen. It is one of 30 bases to test DOD's plan for developing an alternative fuel source.

■ Air Reserve Personnel Center officials announced Sept. 4 the line and health professions selection of 368 officers out of 542 considered for in-the-zone promotion to lieutenant colonel, for a selection rate of 67.9 percent. Last year's rate was 72.6 percent, with 595 officers selected from 820.

■ Four individuals on Aug. 28 received the 2003 Air Force Space and Missile Pioneers Award. They were: John Herther, a former USAF lieutenant whose 1950s engineering design of a three-axis stabilization system contributed to the Agena rocket for the Corona reconnaissance program; retired Brig. Gen. Martin Menter, an early leader in space law; retired Col. Albert Wetzel, director of the early Titan ICBM program; and retired Navy Capt. Robert Truax, who contributed to ICBM and military satellite system development in the 1950s.

■ The National Aeronautical Association honored the Civil Air Patrol as a Champion of Public Benefit Flying for 2003—a new award, and one of only five presented by NAA. The award recognizes outstanding community service. This year, CAP has already flown more than 15,000 hours, many in response to the shuttle *Columbia* disaster.

Senior Staff Changes

RETIREMENTS: Maj. Gen. Scott C. **Bergren,** Gen. Lester L. **Lyles.**

NOMINATION: To be **Brigadier General:** Marshall K. **Sabol.**

CHANGES: Brig. Gen. Bradley W. **Butler,** from Dep. Cmdr., C4ISR Enterprise Integration, ESC, AFMC, Hanscom AFB, Mass., to Dep. Chief Info. Officer, AFCIO, Pentagon ... Brig. Gen. John J. **Catton Jr.,** from Dep. Dir., Info. Ops., Jt. Staff, Pentagon, to Dir., Operational Plans & Interoperability, Jt. Staff, Pentagon ... Brig. Gen. Kurt A. **Cichowski,** from Vice Cmdr., 21st AF, AMC, McGuire AFB, N.J., to Cmdr., 21st Expeditionary Mobility Task Force, McGuire AFB, N.J. ... Brig. Gen. (sel.) Katherine E. **Roberts,** from Vice Dir., Space Ops., STRATCOM, Peterson AFB, Colo., to Dep. Cmdr., C4ISR Enterprise Integration, ESC, AFMC, Hanscom AFB, Mass. ... Brig. Gen. (sel.) Marshall K. **Sabol,** from Cmdr., 319th ARW, AMC, Grand Forks AFB, N.D., to Dep. Dir., P&P, AMC, Scott AFB, Ill. ... Maj. Gen. Gary A. **Winterberger,** from Cmdr., NATO AEW&C Force E-3A Component, NATO AB, Geilenkirchen, Germany, to Cmdr., NATO AEW&C Force Command, Casteau, Belgium.

COMMAND CHIEF MASTER SERGEANT CHANGES: CMSgt. Gary G. **Coleman,** to CCMS, USAFE, Ramstein AB, Germany ... CMSgt. Robert V. **Martens,** to Command Chief, SOCOM, MacDill AFB, Fla. ... CMSgt. Vickie C. **Mauldin,** to CCMS, AFMC, Wright-Patterson AFB, Ohio ... CMSgt. Howard J. **Mowry,** to CCMS, AFSOC, Hurlburt Field, Fla. ... CMSgt. David D. **Mimms,** to Air and Space Expeditionary Force Matters Office, Pentagon. ■

$7 Billion To Fix SBIRS-High, FIA

The Defense Department and Intelligence Community added $7 billion to the Space-Based Infrared System-High and Future Imagery Architecture programs to create management reserves for the troubled programs, senior officials announced in September.

"SBIRS-High and FIA were huge problems" and were case studies in the developmental difficulties that national security space systems often face, said Peter B. Teets. (See "Washington Watch," p. 10.)

Teets, the Air Force undersecretary and National Reconnaissance Office director, said SBIRS-High and FIA required funding boosts of $3 billion and $4 billion, respectively, to create management reserve accounts. This money was added earlier this year with the intent of "allowing or empowering the program manager to manage," Teets said Sept. 4. Reserve accounts are needed to keep from "breaking" a program when cost or schedule problems emerge.

"You have to have some flexibility to rapidly apply resources to solve problems," Teets noted, adding that "the two biggest problems by far are [now] behind us."

The SBIRS-High program is developing a next-generation, early warning missile launch detection system. FIA is a highly classified DOD/NRO/National Imagery and Mapping Agency reconnaissance system. Both programs have been plagued by cost growth and schedule slips, complicated by the lack of reserve funds to cover fluctuations.

The announcement was an unusual disclosure of information about FIA, nearly all aspects of which are classified, including total program cost and number of satellites. Teets declined to further elaborate on the adjustments to the FIA program, noting he was "walking a little farther than [he] wanted to."

orities because it will enable a single aircraft to hit larger numbers of individual targets on one sortie than is currently possible. It will also reduce the potential for collateral damage because of its smaller warhead size.

Russian Nuclear Sub Sinks

A decommissioned Russian nuclear submarine sank to the bottom of the Barents Sea Aug. 30, killing nine of the 10 sailors aboard. The sub was being towed to a scrap yard during a storm when it went under.

Russian President Vladimir Putin suspended the commander of Russia's Northern Fleet after the incident. The *Moscow Times* reported that Russian Navy chief Adm. Vladimir Kuroyedov said safety rules were disregarded when the sub was moved with the storm in the forecast.

Russian officials say there was no radiation leakage from the vessel, which had roughly 1,765 pounds of spent nuclear fuel in its two reactors. The sub came to rest 787 feet under water.

Aeromedical Evac in Bulgaria

Air Force officials set up an expeditionary aeromedical evacuation facility in Bulgaria in September, to

Gen. Charles A. Gabriel, 1928-2003

Gen. Charles A. Gabriel as USAF Chief of Staff.

Retired Gen. Charles A. Gabriel, who served as Air Force Chief of Staff under President Ronald Reagan, died Sept. 4 in Arlington, Va. He was 75 and suffered from Alzheimer's disease.

Gabriel was the first fighter pilot to serve in the Air Force's top military position. His appointment as Chief of Staff was a significant departure from the previous Chiefs, largely drawn from the strategic arena, including numerous bomber pilots.

Gabriel was born in 1928 in Lincointon, N.C., and attended Catawba College in North Carolina for two years before entering the US Military Academy, West Point, N.Y. He graduated from West Point in 1950 with a commission in the Air Force.

He entered pilot training at Goodfellow AFB, Tex., and completed advanced training at Craig AFB, Ala., in December 1951. During the Korean War, he flew 100 combat missions in F-51s and F-86s and was credited with shooting down two MiG-15s.

Subsequent assignments took him to Landstuhl AB, Germany, the Air Force Academy, Moody AFB, Ga., the Pentagon, and back to Europe, where he served as a staff officer at Supreme Headquarters Allied Powers Europe. In 1970, he became commander of the 432nd Tactical Reconnaissance Wing at Udorn RTAB, Thailand, and flew 152 combat missions in F-4s. After a second Pentagon tour, Gabriel served as deputy chief of staff for operations at Tactical Air Command, Langley AFB, Va., then, in 1977, became deputy commander in chief of US Forces Korea.

Gabriel returned to the Pentagon as deputy chief of staff for operations, plans, and readiness, and then served as commander in chief of US Air Forces in Europe from August 1980 to June 1982. He became Air Force Chief of Staff in July 1982.

During his tenure, the Air Force and Army adopted what was known as the 31 Initiatives, which outlined how the two services would fight together. The initiatives covered major topics ranging from point air defense and combat search and rescue to joint target lists and the Joint STARS radar aircraft concept. Among the more detailed items was Initiative 25, which encapsulated the focus being placed on improving the Air Force's provision of close air support to ground troops.

The initiatives were viewed as a major step in the dynamic process of building optimum air-land combat capability.

Gabriel checks out a new F-15 Eagle.

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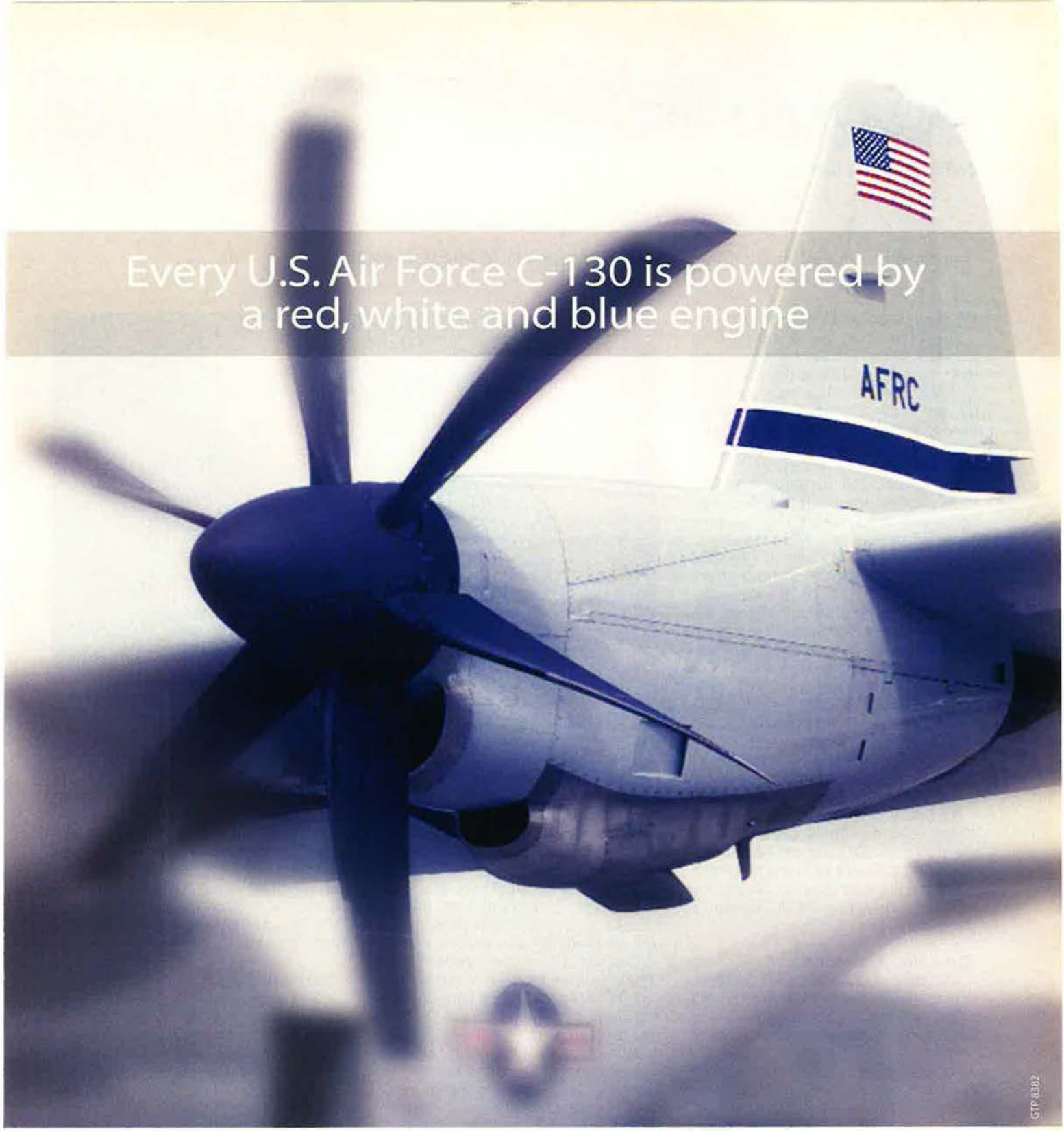
train for contingencies with NATO partners.

The 86th Aeromedical Evacuation Squadron out of Ramstein AB, Germany, established a medical facility to improve alliance interoperability as part of Exercise Cooperative Key 2003, USAF officials said.

The 86th AES is one of four squadrons in the Air Force able to set up such a facility, which would be used to quickly process and remove injured troops from a war zone.

Exercises such as Cooperative Key have paid off before, Air Force officials said. During Operation Enduring Freedom, a similar facility in Pakistan began processing patients within 30 minutes of the squadron hitting the ground, said SSgt. Marc Nelson, medical technician for the facility. ■



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Action in Congress

By Tom Philpott, Contributing Editor

Concurrent Receipt Deal; Clarifying CRSC; Military Medical Spending ....

Veterans To Get More Benefits

President Bush and Congressional Republicans in October shook hands over a 10-year, $22.1 billion deal that sharply pares back a ban on "concurrent receipt" of both military retired pay and tax-free disability compensation for injuries or illnesses traced to operational activities.

Up to 200,000 disabled retirees, including National Guard and Reserve annuitants, will see their monthly incomes rise—many by hundreds or even thousands of dollars. The deal affects those with 20 or more years of service.

Republican leaders announced the agreement Oct. 16. Backers expected enactment as part of the 2004 defense authorization.

Traditionally, a military retiree could draw tax-free disability compensation from the Department of Veterans Affairs, but that compensation had to be deducted, dollar for dollar, from the individual's retired pay—no "concurrent receipt."

The new plan benefits those with either combat-related disabilities or the most severe noncombat injuries or illnesses. These veterans no longer will see retired pay reduced by amounts they receive in disability compensation.

Three New Categories

The deal divides 550,000 disabled military retirees with 20 or more years of service into three categories and boosts the monthly income of two of them.

- Combat-related disabled—Retirees with combat- or operations-related disabilities, regardless of severity, become eligible Jan. 1 for Combat-Related Special Compensation. CRSC, an income replacement program begun last June, no longer would be limited to retirees with combat-related disabilities rated at least 60 percent.
- Seriously disabled—The federal government would restore retired pay reductions to retirees with disabilities rated at 50 percent or higher. The restoration would unfold over 10 years. Plans call for first installments, on Jan. 1, to be: $750 a month for 100 percent disabled, $500 for 90 percent, $350 for 80 percent, $250 for 70 percent, $125 for 60 percent, and $100 for 50 percent.
- Other disabled—Left out are retirees whose disabilities are rated less than 50 percent and are not related to military operations. They will continue to see retired pay reduced by an amount equal to the amount of tax-free VA disability pay.

AP photo/Rebecca Roth

Principi had continued to push alternative plans.

Rep. Lane Evans of Illinois, ranking Democrat on the House Committee on Veterans' Affairs, urged veterans' groups to reject the deal because not all disabled retirees will benefit. "This is no victory for veterans," he said.

For financial reasons, the Bush Administration has opposed a move to full concurrent receipt. However, White House budget officials proposed allowing a phase-in of full CR for 700,000 disabled retirees but only if Congress would agree to dramatically narrow the eligibility of future veterans for disability pay. Veterans' organizations quickly condemned the plan as a sellout of future veterans.

Another plan—floated by VA Secretary Anthony J. Principi in a September Senate hearing—was simply to expand eligibility for Combat-Related Special Compensation.

Principi suggested lowering the approval threshold from the original disability rating of 60 percent to an unspecified level. By mid-October, however, House leaders were near the broader agreement with the Administration

Clarifying CRSC

In negotiating the 2004 defense bill, lawmakers faced pressure to clarify two sticky issues regarding payment levels in the Combat-Related Special Compensation plan.

Pentagon lawyers and policy officials had gone back and forth for months on the proper way to calculate CRSC payments for two groups:

- Individuals with disabilities so serious the VA deems them "unemployable."
- Veterans with wounds so severe they qualify for the VA's Special Monthly Compensation

Retirees can be rated unemployable to gain higher compensation, even if their multiple disabilities don't add up to 100 percent disabled.

CRSC policy officials thought it

proper to allow higher CRSC reimbursements for "unemployability" only if that threshold were reached through combat-related disabilities alone. If a finding of unemployability rested in part on noncombat-related injuries or illnesses, CRSC would not be raised to the higher unemployability rating.

A similar policy was proposed for Special Monthly Compensation. SMC is payable on top of regular VA compensation when disabilities are disfiguring or profoundly affect a veteran's daily life. Defense officials drafted regulations that would allow CRSC to reverse a drop in retired pay caused by SMC but only if the disabilities were combat related.

For example, if the retiree lost a hand to enemy fire, any reduction in retired pay from receipt of SMC would be payable as Combat-Related Special Compensation. If the hand were lost to a home repair accident, however, the drop in retired pay would not be restored.

With more than 900 applications on hold by mid-September, DOD advised the services to make interim CRSC awards but to decide issues of unemployability and SMC when Congress or Pentagon lawyers provide more guidance.

About Hospital Food

For years, Rep. C.W. "Bill" Young (R-Fla.) and his wife, Beverly, have visited sick or injured service members at Walter Reed Army Medical Center and nearby National Naval Medical Center Bethesda, both in the Washington, D.C., area. During a recent visit, the Youngs learned something disturbing from a Marine reservist, SSgt. William L. Murwin.

After spending 26 days in the hospital recovering from grenade wounds in Iraq, Murwin was billed $210.60 for hospital meals. That is a daily rate of $8.10, which matches his subsistence allowance, but Young said that's still not fair. Hospital food should be free to service members injured in combat or in training, he said.

Young paid Murwin's food bill, and, by early October, the House had adopted language from his bill (H.R. 2998) to exempt war wounded from having to pay for hospital meals.

DOD Medical Costs Rise

A Congressional Budget Office study on rising defense medical costs may chill enthusiasm on Capitol Hill next year for opening Tricare to drilling reservists or for broadening health care options for military retirees under age 65.

Spending on military medical care, after adjusting for inflation, nearly doubled in the last 15 years, CBO said. Service medical budgets, expressed in 2003 dollars, totaled $14.6 billion in 1988. This year they reached $27.2 billion.

Because the number of active duty personnel fell 38 percent over the same period, CBO said, "medical spending per active duty service member nearly tripled, rising from $6,600 [a year] to $19,600."

Fifteen years ago, military medical spending was equal to about a quarter of all cash compensation going to active duty forces. Today, medical costs are equivalent to more than one-half of active duty pay and allowances.

CBO traces 56 percent of the cost growth to rising health care costs nationally, the result of greater use of technology, greater reliance on health services by Americans generally, and overall medical inflation.

Another 23 percent of the cost growth is blamed on the rising proportion of retirees and dependents among a beneficiary population of more than eight million. For each active duty service member in 1988, the military had three nonactive beneficiaries. Now, for each active duty member, there are almost five nonactive beneficiaries. Most of them are retirees or their spouses—a population that "consumes" more health care, CBO said.

Eighteen percent of cost growth results from a shift to accrual budgeting for military health care in 2002. That means that defense budgets now include future health care obligations of the current force. The accounting change didn't impact benefits but did boost health care budgets.

Most of the remaining three percent of cost growth stems from improved benefits such as the Tricare Senior Pharmacy program in 2001 and Tricare for Life program in 2002.

The CBO study declared that, even with no further benefit improvements, military medical costs by 2020 still will climb to between $29,000 and $38,000 per year, per service member.

Reserve Health Care

Sen. Tom Daschle (D-S.D.) and Sen. Lindsey O. Graham (R-S.C.) announced plans to try to amend the Bush Administration's $87 billion Iraq supplemental funding request to open Tricare to drilling National Guard and Reserve members.

With US national security more reliant than ever on reserve component forces, Daschle and Graham said it was time to offer them enrollment in Tricare at reasonable rates.

Reserve personnel become eligible for Tricare when they are mobilized. They lose eligibility 30 days after deactivation. An estimated 20 percent of drilling reservists have no health care coverage.

The Daschle–Graham amendment would make drilling Guard and Reserve members without employer-sponsored health insurance eligible for the same health care benefits as are available to active duty personnel, with identical co-payments and deductibles. But reservists also would pay an annual premium.

Eligible reservists who decline coverage still would receive help paying civilian health care premiums during mobilization.

Daschle said reservists deserve full-time medical coverage. Tens of thousands of them, he said, are serving in Iraq and many more protect airports and military bases.

The Bush Administration has opposed the change. Defense Secretary Donald H. Rumsfeld estimated the annual cost at more than $5 billion.

Passage of a reserve health care program this year remained unlikely, but, at a minimum, Congress was expected to ask the Pentagon for a formal study of reserve health care options and to recommend its own plan.

Tax Equity Issue

As Fiscal 2003 came to a close, House and Senate tax committees continued to drag their feet in reaching a final agreement on a bill that would restore tax equity to military homeowners and expand tax breaks to drilling reservists and National Guard personnel.

Both the House and Senate passed a military tax fairness bill by June. But Sen. Chuck Grassley (R-Iowa), chairman of the Senate Finance Committee, and Rep. Bill Thomas (R-Calif.), chairman of the House Ways and Means Committee, virtually have ignored the bills since. Thomas's decision to toss the military tax provisions into a broader child tax-credit bill slowed the action on tax equity for service members.

Grassley sent Thomas a letter in July proposing rules for a conference committee to iron out differences in the two bills. Thomas had not responded, however, and Grassley hadn't pressed him on the issue as the fiscal year drew to a close.

As long as Congress remains in session, passage remains a possibility this year. What's at stake is a series of favorable moves—capital gains protection, reserve tax deductions, a tax-free death gratuity, and homeowner's assistance. ■

Vindicated in war, USAF's long-range systems are taking new and more effective forms.

The Long Reach of the Heavy Bombers

By Adam J. Hebert, Senior Editor

IN MID-2001, the B-1B was in trouble. Years of fiscal stringencies had left the bomber with a $2 billion modernization backlog, poor reliability, rising upgrade costs, and some major combat deficiencies.

Secretary of Defense Donald H. Rumsfeld, reflecting the prevailing view, charged the B-1 "is not contributing to the deterrent or to the warfighting capability to any great extent." Indeed, the purported backbone of the Air Force heavy bomber fleet seemed destined for the scrap heap.

Then, things changed, and, just two years later, the B-1B became one of the star weapon systems in Operation Iraqi Freedom. Just 11 aircraft deployed to the combat theater. However, commanders set up and maintained B-1B "orbits" that kept at least one of the B-1Bs in the air around the clock, ready to engage emerging targets with huge loads of precision weapons.

Mission capable rates soared, and modernization programs were funded and put back on track.

For the Air Force's long-range bombers, the wars in Afghanistan and Iraq provided some of their finest hours. Their performance in many ways validated the service's bomber investment programs. USAF's B-1, B-2, and B-52 bombers were heavily tasked and proved to be highly effective in the two recent wars—and turned in several combat "firsts."

As Air Force planners describe it, the B-1Bs served as "roving linebackers," circling the battlespace and waiting for a call instructing them to unleash deadly satellite guided Joint Direct Attack Munitions. B-1Bs and B-52Hs performed close air support strikes for ground forces, and the venerable B-52H, the last of which was built in 1962, delivered laser guided bombs using newly installed Litening targeting pods. B-2s used new deployable shelters and were "turned" at a forward location to perform additional combat missions.

At least once, B-1B, B-2 and B-52H aircraft all were employed in the same strike package.

No Surprise

"It is no surprise that those aircraft and platforms were used in the way they were," said Maj. Gen. David A. Deptula, Air Combat Command's director of plans and

USAF photo by SSgt Joanna E. Hensley

At the ready. *A B-1B of the 28th Bomb Wing, Ellsworth AFB, S.D., waits for the next mission. USAF bombers flew only about five percent of the service's strike sorties in Operation Iraqi Freedom, but struck a third of the targets.*

Old Horse, High Tech. *A B-52 with a Litening II targeting pod put laser guided bombs on target close to friendly ground troops. Here, TSgt. Ken Williams, Barksdale AFB, La., and TSgt. Noel Peters, Luke AFB, Ariz., clean a pod's lenses.*

programs. He said that the results of bomber usage over the past two years have confirmed what proponents of long-range strike capabilities had said for a long time: The range, payload, precision capabilities, and flexibility of bombers make them a superb weapon whose uses go well beyond mere "carpet bombing."

Gen. John P. Jumper, the Air Force Chief of Staff, offered one example of the new way of doing business. A combat controller in Afghanistan sent enemy coordinates "up to a B-52 at 39,000 feet, and the B-52 put laser guided munitions down" on a target that was only 1,000 feet in front of friendly forces.

"That's the effect of close air support," Jumper said. "You [didn't] see the airplane or feel the heat from the engines, but the precision was even better than we were able to do in Vietnam."

"This is not a surprise," Deptula said, noting that USAF decided years ago to push for improved bomber defensive systems, data links, and the ability to deliver smart weapons, all with an eye to making long-range systems effective in the future.

In the zero-sum game of defense budgeting, however, long-range strike has clearly suffered at times.

For example, DOD's response to the chronic underfunding of the B-1 fleet was not to fully fund the program but rather was to slash its numbers. USAF announced in 2001 that it would retire one-third of the B-1B fleet—dropping it from 93 to 60 aircraft—consolidate what remained at two bases, and use the savings to eliminate the $2 billion modernization backlog.

Some bomber partisans were up in arms, but the plan has worked, so far as it goes. Within the slimmed-down fleet, 36 B-1B aircraft were kept combat ready, with the other 24 in training status, depot maintenance, or test. That has been sufficient for the wars of recent years. Officials have long maintained that they would prefer a small fleet of effective aircraft to a large fleet of deficient systems.

The B-1B's MC rate—the percentage of aircraft ready to perform their primary mission at any given time—has increased steadily since the decision.

The Institute for Defense Analyses, a federally funded research center, determined back in 1995 that B-1B MC rates are heavily dependent upon sufficient spare parts, equipment, and personnel. Until the retirements began, the Air Force was never able to give the bomber the sustained support it required.

The B-1B MC rate has risen from 61 percent in 2001 to 66 percent in 2002 and 71 percent this year. For the bombers deployed in support of Gulf War II, the rate was even better—79 percent. (The B-2 and B-52 bombers supporting OIF posted MC rates of 85 percent and 77 percent, respectively).

This marks a dramatic turnaround. In the 1990s, B-1B mission capability typically slogged around 60 percent.

When Lines Blur

The line between strategic and tactical systems—never as distinct as it may have appeared—forever has been blurred, and the bombers have proved adept at flying "tactical" missions (while some fighters have proved equally adept at the "strategic mission"). Close air support is no longer the exclusive domain of the A-10 tank-killer aircraft. F-117 fighters carried out numerous strategic strikes in Baghdad and elsewhere. Officials point to this jumbling of operational use as a success in the shift to effects-based operations.

At times, B-1s were able to use moving target indicator radars to perform the functions normally reserved for dedicated intelligence-surveillance-reconnaissance (ISR) aircraft—an airpower first, according to US Central Command.

Each bomber in the Air Force fleet now is capable of delivering JDAMs, which offer targeting flexibility. The JDAM can not only hit fixed targets with near-precision accuracy in all weather conditions but also be quickly programmed to attack a fleeting "emerging target." One strike against Iraq's Republican Guard Medina Division required a B-2 to reprogram its JDAMs, en route to the target, to take advantage of new intelligence coming in from a Global Hawk unmanned aerial vehicle.

Toward the end of major combat, a B-1B orbiting above western Iraq showed the value of the Air Force's heavy bombers in a new way. Intelligence sources on the ground got a tip on the location of former Iraqi dictator Saddam Hussein. The information was beamed to a B-1B circling in the area. Just 12 minutes later, the target lay in ruins, though Saddam may have gotten out shortly before the roof fell in. After dashing to Baghdad and programming in the coordinates, the B-1B had precisely dropped four 2,000-pound JDAMs where Saddam was thought to be.

In addition to deploying 11 B-1Bs, Air Force leaders reported they sent to war four B-2s and 28 B-52s. These 43 aircraft flew a total of 505 sorties between March 20 and April 18, but, as was true in the Afghan war, the bombers' impact was out of all pro-

portion to their numbers. One official noted that a third of all the aim points struck in Iraq were hit by that small bomber force.

Jumper made special note of the bomber impact in the now famous sandstorm that struck Iraq March 25. "You couldn't see your hand in front of your face," he said, and war commentators began to ponder the significance of the "pause" in the war.

"While the commentators were rattling on," said Jumper, USAF's bombers and other aircraft were at work. With the Air Force's ISR systems able to see through the sand, and GPS-guided weapons unhindered by the weather, "B-1s and B-52s were up there pounding the heck out of [the Medina Division]," Jumper said. "I'd like to ask the commander of the Medina Division when he thought the pause was."

"Amazing" Powers

Gen. T. Michael Moseley, who led the allied air war, had another anecdote on the effectiveness of long-range systems. From the United States, a B-2 stealth bomber for the first time delivered 80 500-pound bombs in a single run.

Moseley said the ability to fly from Whiteman AFB, Mo., and drop those 80 weapons against an Iraqi troop concentration was "an amazing capability to bring to the [commander's] quiver."

The success of the bombers in Iraq and Afghanistan has not dramatically changed the Air Force's plans for the aircraft. Because the Air Force has used only a small number of bombers in recent wars, USAF planners still say the existing bomber inventory will be adequate until around 2038. Also helpful is the fact that only one bomber was lost in the two major combat operations. In December 2001, a B-1B, doomed by numerous onboard failures, crashed in the Indian Ocean on its way to Afghanistan.

The Air Force believes an inventory of 60 B-1Bs (36 combat coded); 21 B-2s (16 combat coded); and 76 B-52s (44 combat coded) will suffice.

"About 150 bombers is the right number," said Brig. Gen. Stephen M. Goldfein, USAF's director of operational capability requirements. There has been "no sea change in the number of bombers required," because of recent experience, Goldfein said. The Air Force's inventory plan "includes some reserve," he added, but the preferred number remains stable.

In recent years, lawmakers have often disagreed and pushed for larger numbers of bombers. There have been several unsuccessful attempts to restart B-2 production, with proponents saying the aircraft could be produced much less expensively now that the research and development expenses are already paid.

Citing the lack of any new bomber production, Congress for years has been successful in forcing the Air Force to maintain 18 attrition reserve B-52s that the service considers surplus. A total of 94 B-52Hs remain in service, although only 44 are considered primary mission aircraft.

Congress, led by North Dakota lawmakers, has added funds needed to keep 18 BUFFs at Minot AFB, N.D., configured exactly the same as the rest of the B-52 fleet. Goldfein noted that, despite the service's interest in retiring the 18 aircraft, doing so wouldn't save the Air Force any money. Congress pays the bill, so the savings would be for the taxpayers.

Congress also may force the Air Force to restore some or all of its recently retired B-1Bs. By late summer, three of the four Congressional defense oversight committees had passed legislation mandating that 23 of the 32 deactivated Bones be restored to service.

In the bills, lawmakers offered the $20.3 million needed to bring the B-1s back from the boneyard—but not the much larger amount required to keep the B-1Bs in service. Officials say this unfunded mandate threatens to undo the progress the Air Force has made improving the health of the B-1B fleet.

It would likely cost somewhere between $1.1 billion and $2 billion to keep those aircraft in service through the end of the decade. That funding "has to come from somewhere," Goldfein noted.

The existing arrangement of consolidating the B-1Bs at Ellsworth AFB, S.D., and Dyess AFB, Tex., has enabled the increased mission capable rates through simplified maintenance and parts requirements. Fully funding the smaller fleet's modernization plans brought on a "host of improvements," Goldfein added.

Incremental Upgrades

With no new bomber production on the books, and old debates over restarting B-2 production or pursuing an FB-22 variant of the F/A-22 Raptor seemingly on the back burner, the current emphasis is on incremental upgrades. Numerous programs to improve bomber effectiveness are ongoing.

Situational awareness improvements, the Link 16 data link, laser targeting pods, and computer en-

USAF photo by TSgt. Michael R. Nixon

Global Power. *SrA. Jeremy Pratt, a B-2 crew chief, marshals this B-2 on its way to a combat mission over Iraq from its home base at Whiteman AFB, Mo. The stealth bombers launched from the US and within the theater.*

hancements will continue to make each bomber a more efficient war machine. And upcoming weapons such as the Joint Air-to-Surface Standoff Missile and the Small Diameter Bomb will further broaden the range and number of targets bombers can precisely attack.

ACC officials say that, at this point, almost every improvement serves a dual purpose. Upgrades are expected to both sustain and modernize. Sustainment doesn't just mean keeping the aircraft aloft, either—the aircraft must remain valuable fighting machines. "We're looking at 2040," one B-52 official said. "Unless we can come to the war, they won't need us."

The Air Force is trying to get additional targeting pods on its B-52s, Deptula said. "We're looking at using [Fiscal 2003 and 2004 funds] to get as many targeting pods as we can," by using money set aside for the war on terrorism.

Goldfein said the service is interested in increasing the availability of the B-2's deployable shelters. Because of the sensitive low observable finish on the B-2, the bomber must be maintained in a climate-controlled shelter. Deployable shelters, reportedly set up at the Indian Ocean atoll of Diego Garcia, increased the flexibility of the B-2 for Gulf War II. The Air Force is "looking to expand" their use, Goldfein said.

As Air Force officials tell it, existing bombers will continue to get better and there is no urgent need to field a new system. Recapitalization is "a huge piece" of force structure planning, Deptula said, but USAF has some time to make proper assessments and make wise decisions.

The old way of procurement—planning a new system to replace an old one—"isn't completely gone," Deptula said, "but the fact of the matter is, with respect to the long-range strike platforms formerly known as bombers, their lifetime is viable for many, many years into the future."

The Air Force does not expect to see a dramatic technological breakthrough anytime soon. However Deptula believes that hypersonics research now being done at Air Force Research Laboratory may hold the key to breakthrough strike capabilities in the future.

Transition Period

"We are in a transition period ... when it comes to technologies for long-range strike," he said. Reusable hypersonic propulsion has been difficult to develop, he noted, but it remains worth the effort because the technology offers revolutionary responsiveness, reach, and range. "We're not there yet," Deptula noted.

Improvements to existing systems are expected to bridge the gap until scientists "solve some of these technological challenges that will get us

The Roadmaps Not Taken

The Air Force's most recent servicewide white paper on long-range strike aircraft appeared in November 2001. Air Combat Command last published a bomber roadmap in 1998.

These documents laid out in detail the service's plans for its bombers, including expected modes of operation, modernization plans, and replacement timelines.

In August 2002, ACC officials completed yet another bomber roadmap, but senior Air Force leaders never signed it out for public release. That's probably the way things will be from now on.

The Air Force is "transitioning to more of a capabilities-based approach to force structure planning," explained Maj. Gen. David A. Deptula, ACC's director of plans and programs at Langley AFB, Va. "At Air Combat Command, you won't see any more individual system roadmaps or groups of system roadmaps."

Instead, ACC is putting together a "force structure flight plan" that spans the combat air forces. According to Deptula, it will examine the concept of "integrating the capabilities" of systems across categories. In short, the goal is to defeat the enemy, not wall off specific mission areas for certain systems.

Fighters, bombers, weapons, intelligence-surveillance-reconnaissance platforms, and other assets will all be integrated "into a long-term force structure plan that will identify numbers, types, and capabilities" and will serve as a roadmap for all combat aircraft, not just for long-range bombers or fighters, as in the past.

Deptula said USAF was preparing an integrated position on long-range strike, based on the recommendations of various interested parties throughout the Department of Defense. These recommendations will be evaluated against the national defense strategy to finalize plans for ACC's aircraft programs.

"You will have, at some point, a document that will lay out ... the combat air forces' intent" for investment, Deptula said. Though it is a "roadmap" of sorts, he said, it will not feature organizational stovepipes concerning bombers, fighters, or command and control and ISR platforms.

Deptula sees a disintegration of the traditional ways of achieving desired battlefield effects. Heavy bombers now perform close air support. F-15E Strike Eagles will carry the extended-range Joint Air-to-Surface Standoff Missile. In such an era, it makes sense for the Air Force to think about capabilities fleetwide and not in serial isolation.

ACC's requirements shop, however, will continue to develop specific modernization plans for the individual systems, Deptula said.

Bomber Mission Capable Rates

	FY01	FY02	FY03	OIF
B-1B	60.7%	66.1%	71.4%	79.4%
B-2A	31.6%	42.0%	44.0%	85.0%
B-52H	80.5%	79.2%	73.9%	76.7%

Mission capable rates reflect the percentage of aircraft ready to perform their primary mission at a given time.

to the next step in potential capability," he said.

In Deptula's view, the breakthrough will not come until sometime in the next decade. That timing seems to mesh cleanly with financial realities.

"Our legacy platforms are viable through 2025," said Deptula, "and when we enhance them with all these modifications, they are going to continue to increase in capability." It's a nice fit, he went on, because major funding for future long-range systems probably won't be available "until the 2010-2020 time frame, because we have such a pressing need to recapitalize our fighter force in the next decade."

The Air Force is holding to its November 2001 bomber roadmap, which laid out a notional plan to begin a new long-range strike program sometime around 2012-15. Officials say there is no need to rush into a new strike program, because USAF would spend billions developing a system that may not be significantly better than what is available today.

Features such as stealth, high speed, long loiter time, large payload capacity, and flexibility are well-understood goals for any future strike capability. However, there is great uncertainty. Officials are loath to say a follow-on system will be a "B-3" or even a bomber.

Industry, think tanks, and Air Force officials are all studying what is within the "art of the possible," and USAF wants to keep the broadest possible range of options on the table. These options include traditional bombers, unmanned systems, hypersonic air-space vehicles, conventionally armed ballistic missiles, and even space-based weapons. Current timelines give the Air Force a decade to explore the options.

USAF photos by SSgt. Cherie A. Thurlby

Retasking En Route. *At least one combat mission over Iraq saw a B-2 crew reprogram its Joint Direct Attack Munitions en route to the target area, taking advantage of real-time intelligence.*

ACC's Long-Range Global Precision Engagement Study—a look at future strike requirements—noted that the US is pushing for a capability to conduct high-speed strikes against emerging targets anywhere in the world on short notice. However, it has limited options in this area. Conventional ballistic attack missiles, derived from the nation's nuclear ICBM force, "offer increased strike flexibility," but the financial and political cost would be high, the report noted.

Another area for improvement concerns stealth. The B-2 bomber's low peacetime MC rates stem from the high-maintenance nature of its low observable coatings. The aircraft is also largely relegated to nighttime use in high-threat environments. Yet the B-2 remains the only stealthy strike system largely unhindered by distance or basing concerns.

In the future, the F/A-22 and F-35 fighters will offer around-the-clock stealthy strike capability, noted the study, but the B-2 will continue to be the only stealthy, deep strike penetrator for the foreseeable future. The F/A-22 and F-35 have more limited combat ranges.

The study did not advocate a specific course. However, it did highlight the importance of speed. The advent of hypersonic weapons and platforms would permit "prompt global strike from significant ranges and reduce the risks associated with forward basing," the report noted. Compared to ballistic missiles and cruise missiles, it went on, reusable platforms have high utility "in all lesser threat scenarios, enhancing their cost-effectiveness across the spectrum of conflict." ■

Quick Time. *A weapons load crew readies 2,000-pounders for a B-1B during Gulf War II. One B-1B dropped four 2,000-pound JDAMs on a location suspected to house Saddam Hussein—within 12 minutes of receiving the intel.*

Verbatim

By John T. Correll, Contributing Editor

That's George *W.* Hussein

"I tell you all Iraqis hated Saddam's regime. It was only George Bush who liberated us; without him it wouldn't have happened. If he hadn't done it, the sons of Saddam would have ruled us for years. He saved us from Saddam and that's why we named our son for him."***—The mother of George Bush Abdul Kader Faris Abed El-Hussein, born July 11, Associated Press, Aug. 28.***

B-52 in Moscow

"This is the plane they scared us with for all those decades. This was the plane that could have brought nuclear weapons to Russia, and now it's quietly sitting here like in a zoo."***—Magomed Tolboyev, former cosmonaut and test pilot, about a B-52 from Minot AFB, N.D., on exhibit at an air show in Moscow,*** **Los Angeles Times,** ***Aug. 21.***

Gunning for Clark?

"The White House actually back in February apparently tried to get me knocked off CNN, and they wanted to do this because they were afraid that I would raise issues with their conduct of the war. Apparently they called CNN."***—Retired Army Gen. Wesley K. Clark, KTAR-AM radio in Phoenix, NewsMax.com, Aug. 26.***

A Maxim From Creech

"Think big about what you want to achieve. Think small about how to achieve it."***—Favorite saying of Air Force Gen. W.L. Creech, quoted in his obituary (he died Aug. 26) by*** **Las Vegas Review–Journal,** ***Aug. 28.***

Not Short of Troops

"The United States can afford whatever military force level is necessary and appropriate for our national security. I'm advised that current analysis by the Joint Chiefs of Staff indicates that at the present time we have sufficient active and reserve forces to conduct and execute successfully the missions that have been assigned. ... And I can assure you of one other thing: The number of troops currently in Iraq is the number of troops that the combatant commander, John Abizaid, has asked for. He has been told directly by the President and by the Secretary of Defense that if he believes that additional troops are needed, he will have additional troops."***—Secretary of Defense Donald H. Rumsfeld, speech to Veterans of Foreign Wars, San Antonio, Aug. 25.***

Doggerel

"America is dumb. It's like a dumb puppy that has big teeth that can bite and hurt you, aggressive. My daughter is four, my boy is one. I'd like them to see America as a toy, a broken toy. Investigate it a little, check it out, get this feeling and then get out."***—American-born actor Johnny Depp, who lives in France, to German news magazine*** **Stern,** ***Reuters, Sept. 3.***

Burning Question

"Now we'll have a chance to decide whether America was at fault instead of the foreigners."***—Stephen Sugarman, law professor at University of California, Berkeley, on federal judge's ruling that Sept. 11 victims can sue airlines, the Boeing Co., and the owners of World Trade Center,*** **Wall Street Journal,** ***Sept. 10.***

Not Enough, Says CBO

"The Army does not have enough active [duty] component forces to simultaneously maintain the occupation at its current size, limit deployments to one year, and sustain all of its other commitments."***—Congressional Budget Office report, Sept. 2.***

A Platoon Will Do It

"A platoon out of any one of my battalions could defeat the threat, readily. I don't need any more forces. We need the Iraqi people to help us and give us the intelligence we need."***—Army Lt. Gen. Ricardo S. Sanchez, commander, combined joint task force in Iraq,*** **Los Angeles Times,** ***Sept. 7.***

Accommodate Them Again

"We face the strong possibility of another Korean War, with potentially devastating consequences, so the endangered multilateral talks in Beijing are of paramount importance. It is vital that some accommodation be reached between Pyongyang and Washington."***—Former President Jimmy Carter, who in 1994 interposed himself in diplomacy and set up a deal in which North Korea supposedly dropped its nuclear weapons program in return for economic and political assistance,*** **USA Today,** ***Sept. 2.***

Sacrificing the Warthog

"Supersonic planes providing close air support are only in the minds of the Air Force. They've been playing the game for years of trying to replace the A-10 with something that's a fighter. The A-10 is being sacrificed at the altar of the supersonic multirole fighter."***—Richard Aboulafia, Teal Group vice president of analysis,*** **Air Force Times,** ***Sept. 1.***

Higher Stakes Than World War II

"In my view, the stakes are much higher in the war on terror than in anything we've faced since World War II, and probably World War II as well."***—Gen. Richard B. Myers, Chairman of the Joint Chiefs of Staff,*** **Las Vegas Review–Journal,** ***Aug. 27.***

Below 300 Ships

"The difference between 299 and 300, or between 300 and 301, is not in itself tremendous, but the 300 number is a number that has taken on certain symbolic or psychological importance as a barrier or a threshold level."***—Ronald O'Rourke, Congressional Research Service, as number of battle force ships in the Navy's fleet dropped to 299,*** **Inside the Pentagon,** ***Aug. 28.***

Lieutenant Fuzz Takes Off His Mask

"I came out of OCS believing everything was exactly by the book and that I was going to take over and show everybody how things were done."***—Cartoonist Mort Walker, creator of "Beetle Bailey," revealing that Lieutenant Fuzz is based on newly commissioned 2nd Lieutenant Walker, American Forces Press Service, Sept. 2.***

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Photos by Erik Hildebrandt

Gun

C

Out in Idaho's Snake River Valley, the 366th Fighter Wing sharpens its aim.

Photography by Erik Hildebrandt

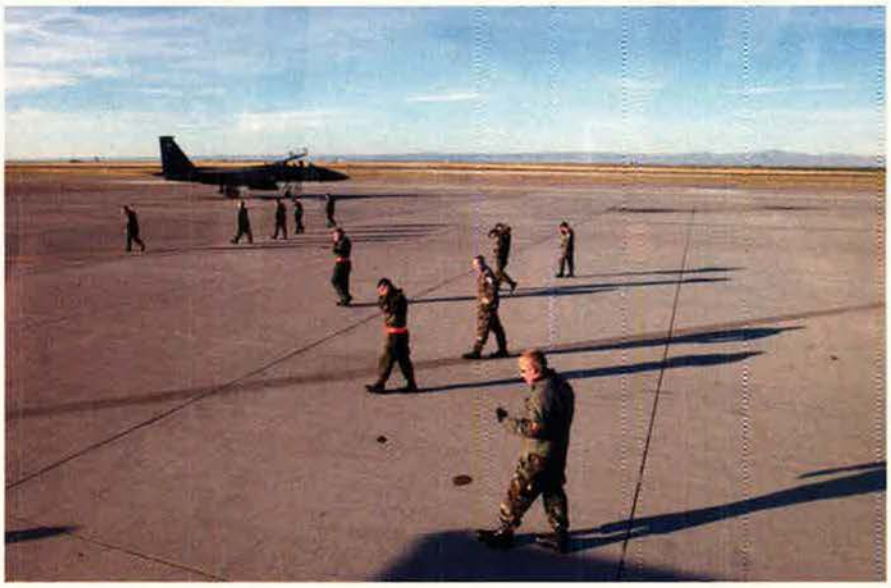
ighter ountry

F-15 and F-16 aircraft from all three squadrons of the 366th Fighter Wing at Mountain Home AFB, Idaho, are readied for public inspection as part of the unit's open house. These squadrons have been deployed so frequently that such gatherings are becoming increasingly rare.

The 366th "Gunfighters" nickname harkens back to Vietnam days. There, the unit flew F-4 Phantom fighters, equipped with external gun pods. The Vietnam-era heritage is evident in the gun-pod-toting "Phantom" logo seen in the first patch in the photo at right.

In addition to F-15Cs, F-15Es, and F-16Cs, Mountain Home hosts a detachment of EA-6B Prowler electronic warfare aircraft and an air control squadron. The Prowler, a Navy aircraft, is flown by joint USAF/ Navy crews. Mountain Home pioneered the concept of the air and space expeditionary force, now the benchmark of Air Force organization.

Photos by Erik Hildebrandt



The day begins with the "FCD walk." Flightline personnel line up and walk the tarmac, searching for any bits of debris that could cause foreign object damage to high-compression military aircraft engines. Below, a crew chief keeps an eye on his F-15 as it readies for a training sortie.

This is a view from the "pit"—the backseater position in the F-15E. The term is a throwback to the days of the F-4, whose backseat offered severely limited visibility. The F-15 was the first fighter to offer crews nearly 360-degree visibility. Ahead, two other Strike Eagles taxi out.

USAF photos by TSgt. Debbie Hernandez

Above, the lead aircraft—an F-15C—would sweep the skies of enemy fighters, while the F-15E (to the right) would focus on ground attack. The multirole F-16 is shown loaded for a defense suppression mission. The Mountain Home wing was the first designed to offer a "package" of airpower for different missions.

At right, an F-15E shows off its distinctive conformal fuel tanks, LANTIRN night vision and targeting pods, and hardpoints.

Photo by Erik Hildebrandt

An F-16CJ (far left) and an EA-6B (left) protect US aircraft from ground threats, either by blasting enemy radars and SAMs or by jamming and disrupting the foe's communications and control systems.

Like its progenitor, the F-15C, the F-15E (right) is a premier air-to-air fighter. Here, three Strike Eagles head out for training.

The F-15—all models—has an unblemished record in air-to-air combat spanning 30 years. Though the F-15 has been sent repeatedly into harm's way by US and Israeli Air Forces, no enemy fighter has ever shot one down.

Photos by Erik Hildebrandt

The F-15 was the first fighter able to accelerate straight up. It is still one of the world's friskiest aircraft, and pilots train long hours to master it.

USAF photo by TSgt. Debbie Hernandez

The EA-6B joining the flight (above) wears Navy markings but is flown by mixed USAF and Navy crews. The Prowlers are detached from their home base at NAS Whidbey Island, Wash.

The 366th once flew F-111s, but they departed for good several years ago. When it was an Air Expeditionary Wing, the unit had its B-1 bombers and aerial tankers. Over the years, this unusual, inventive wing has changed form, but ...

Photos by Erik Hildebrandt

... the Gunfighters remain on the leading edge of USAF power projection capability. ■

The lone Global Hawk flying above Iraq was one busy, busy bird.

Eyes Wide Open

By Rebecca Grant

THE US Air Force dispatched more than 600 fighters, bombers, tankers, airlifters, and intelligence-surveillance-reconnaissance aircraft to Operation Iraqi Freedom. In the pack was one loner: the RQ-4 Global Hawk unmanned aerial vehicle. The Air Force deployed to the theater just one Global Hawk and flew it 18 days in a row to provide unblinking coverage of the Republican Guard and other key targets.

The performance of this aircraft over Iraq drew praise from all quarters and marked a significant step forward for long-range, high-altitude unmanned reconnaissance.

The 1991 Gulf War dramatized the possibilities of real-time imagery. The Desert Storm coalition acquired tremendous situation awareness from new assets such as E-8 Joint STARS aircraft, but there were gaps in ISR coverage of the battlespace. Commanders wanted a platform that would provide 24-hour coverage to support the hunt for Scuds and help keep track of Iraqi forces. That new requirement in 1991 led directly to the presence of

What Global Hawk Did in the War

All told, the RQ-4 aircraft snapped 3,655 images using all sensors (radar, infrared, and electro-optical). These images helped locate and identify the following:

- 300+ tanks.
- 13 full SAM batteries.
- 50+ individual SAM launchers.
- 300+ SAM canisters.
- 70+ SAM transporters.

Global Hawk in the skies over Iraq in 2003.

The Defense Science Board's 1993 summer study called on the Pentagon to spur development of UAVs. This, it said, would help "fix the problems exposed in Desert Storm." The DSB said the use of reconnaissance UAVs would help US forces gain wide-area coverage, acquire all-weather access to the battlespace, and integrate combat information.

The challenge was to create a new type of craft, one that would build on the experience gained from decades of operating remotely piloted vehicles—or drones—and experimental high-altitude vehicles.

Drones had done yeoman's work in Vietnam. The Firebee drone was launched from a mothership such as a C-130 and guided by remote control. The Firebees streaked over targets at low altitude, snapping pictures of downtown Hanoi, pulsing electronic countermeasures, and dropping leaflets. On their return, helicopters would snag them with hooks. Although loss rates were fairly high, one drone, nicknamed Tom Cat, flew 68 missions.

In the late 1960s and early 1970s, experiments proved the feasibility of a "high-altitude, long-endurance" RPV, often referred to by the acronym HALE. In 1971, the Compass Arrow RPV flew four-hour surveillance missions to a height of 81,000 feet. However, DOD canceled the expensive program after producing 28 vehicles and never put them into operational service.

Requirements had changed. A program that was intended to produce a more sophisticated RPV, Compass Cope, featured a flyoff between Teledyne Ryan and Boeing. The concepts were to demonstrate autonomous flight from takeoff to landing. In 1974, Ryan's Compass Cope piloted itself to a series of preprogrammed way points and set an RPV endurance record with a 28-hour flight. However, when it came time to buy an operational system, the Air Force of the 1970s was not ready.

The development of the Global Positioning System and more-powerful computing power in the 1980s made the high-altitude, long-endurance unmanned aerial vehicle an attractive prospect.

In the early 1980s, the Defense Advanced Research Projects Agency began managing secret UAV programs. One was Amber, a CIA-directed project that became the father of today's Predator UAV. DARPA, however, was on the lookout for a "different, new, advanced technology that would revolutionize ISR," said John Entzminger, who was a director of DARPA's Tactical Technology Office in the 1980s.

"Long endurance, persistence—those kinds of things were in our mind at the time," said Entzminger, who added that the question was, "Why does the man have to be there in something which is going to stay up for 24 hours?"

DARPA organized its unmanned aerial vehicle research projects on the basis of planned performance. One such grouping—known as "Tier II"—contained two very different aircraft: medium-altitude (Tier II) and high-altitude (Tier II+). They were to be complementary, providing a low/high mix of forces.

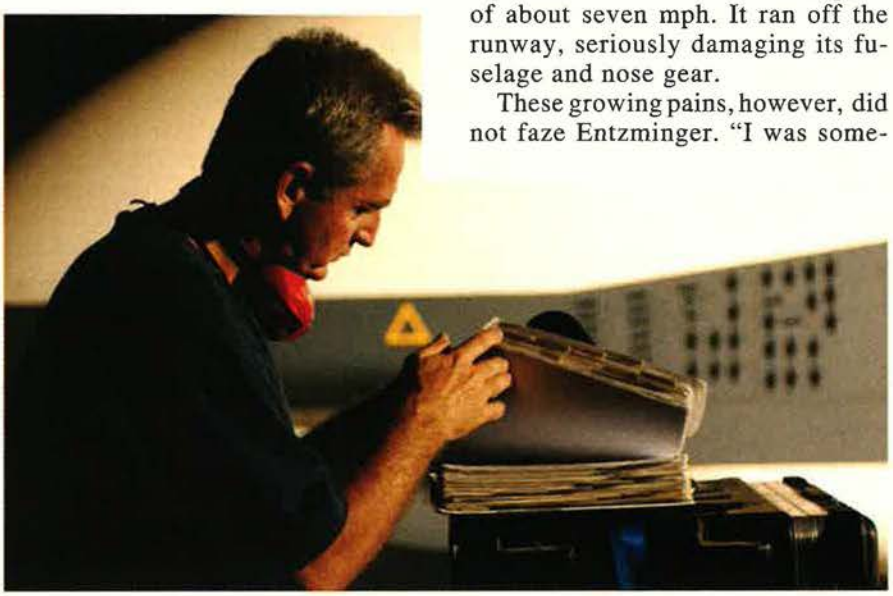
The high-altitude UAV was to merge responsive, long-duration tactical reconnaissance with the wide-area and highly survivable reconnaissance inherent in high-altitude operations. Given that demand, the Tier II+ UAV had to have endurance of at least 24 hours, carry high-resolution synthetic aperture radar and electro-optical-infrared sensors, and operate at 65,000 feet to stay above the threat from enemy surface-to-air missiles and fighters.

DARPA was the executive agent for the initial phases of the high-altitude UAV demonstration program, one of the first efforts in a new DOD plan to speed technology to the warfighter.

Fourteen companies submitted proposals. In May 1995, Ryan's Global Hawk was announced as the winner of Tier II+. Airframe designer Alfredo Ramirez had already sketched out the distinctive "swoopy curves" and long wingspan of Global Hawk. Now, engineers drew on proven technologies to build Global Hawk, shooting for effectiveness, affordability, and ease of maintenance.

Less than three years later, on Feb. 28, 1998, air vehicle-1 (or AV-1) made its first flight at Edwards AFB, Calif. Program management shifted from DARPA to the Air Force in October 1998, and, a month later, AV-2 made its maiden flight. During a March 1999 test flight of AV-2, controllers mistakenly sent a signal to terminate flight, causing the UAV to crash. It was a total loss. In May, after a short safety review, AV-1 resumed flight testing, and, by June, Global Hawk participated in Roving Sands, its first joint exercise. AV-3 began flying in September 1999, with a fourth Global Hawk waiting in the wings at Edwards and a fifth nearly complete. In December 1999, a software problem sent AV-3 careening across the Edwards runway at 178 mph instead of its normal taxi speed of about seven mph. It ran off the runway, seriously damaging its fuselage and nose gear.

These growing pains, however, did not faze Entzminger. "I was some-



USAF photo by SSgt. Reynaldo Ramon

Contract personnel deployed forward and were a big part of Global Hawk's success. Here, Terry Collins of L3 Communications checks the aircraft's satellite uplinks and downlinks.

USAF photo by SSgt. Reynaldo Ramon

The UAV also got heavy use in the Afghan war.

what surprised there weren't more," he remarked later.

Rising Need

By the time of Operation Allied Force in spring 1999, US warfighting commanders were more than eager for a solution to the problem of keeping a constant eye on the battlespace. One key frustration was having to orchestrate several systems—satellites, U-2 aircraft, and other tactical reconnaissance platforms—to get the data they needed in time. It couldn't always be done. The Predator UAV, which had first seen operational service in 1995 over Bosnia, delivered sharp real-time video, but it only provided a "soda straw" field of view.

Tracking mobile targets across the battlespace demanded assets with longer coverage times and wider fields of view—and the communications links to speed the images to a processing center for analysis and into the combined air operations center for execution.

Global Hawk (now owned by Northrop Grumman) emerged as the likely solution. It was performing well in joint exercises. In fact, in late 1999, Adm. Harold W. Gehman Jr., then head of US Joint Forces Command, described it as "the theater commander's low-hanging satellite."

In early 2001, Global Hawk crossed the Pacific for exercises in Australia. Ramirez said that the pictures it provided were so sharp that, in one exercise, Global Hawk "caught the USS *Kitty Hawk* out at sea with an F/A-18 coming in to land."

The Australia deployment demonstrated not only that Global Hawk could fly unrefueled 7,500 miles across the Pacific but also that it could be retasked while airborne. "We figured out we could actually fly off the black line," said Maj. David Hambleton. "We could go wherever we wanted to—direct steer to a point in space that we hadn't thought about going to before. That was a big revolution in our thinking."

Exciting as the exercises were, Global Hawk was still an immature system. USAF had only five vehicles—all demonstrators lacking the full-scale mission systems or reliability features that would be added to production models.

Then came the Sept. 11 terror attacks and, three weeks later, the start of Operation Enduring Freedom in Afghanistan. Commanders wanted steady coverage of widespread areas to assist in the hunt for mobile targets such as al Qaeda leaders. Global Hawk had the right combination of sensors, so Maj. Gen. Robert F. Behler, then head of the Air Force's C2ISR Center at Langley AFB, Va., put together a team to determine whether to deploy Global Hawk. Soon, the team briefed Gen. John P. Jumper, Air Force Chief of Staff, that Global Hawk was ready to go.

USAF sent a pair of Global Hawks—AV-5, the Australia veteran, and AV-3, repaired after its high-speed taxi hijinks. The service also put together makeshift control and maintenance teams of Air Force and contractor personnel. "None had ever employed Global Hawk in an operational context," said Col. Ed Walby, the Global Hawk detachment commander and a U-2 pilot.

No Joystick Here

Global Hawk is about as big as a medium-size corporate jet, but it sports a long, sailplane-like wing. It has a bulbous nose that houses a large, steerable satellite antenna. The UAV is not piloted from the ground via joystick; its flight control, navigation, and vehicle management are autonomous.

The Global Hawk system has two ground stations: a launch and recovery element and mission control element. The LRE, which deploys with the aircraft, provides precision guidance for takeoff and landing, using differential GPS. The MCE gives the vehicle its flight plan and tells it where to point its sensors. The two units can deploy alongside each other or in widely separated parts of the world. While the MCE preprograms an initial flight plan, it can dynamically retask Global Hawk at any time the UAV is in flight.

Pentagon officials have said that the Global Hawk's synthetic aperture radar can provide images of targets at a distance of 100 miles. Its electro-optical-infrared system has identified targets at a distance of 30 miles.

On Nov. 18, 2001, Global Hawk AV-5 was flying a routine check-out mission over Afghanistan when it was called to provide imagery of a brewing crisis. Taliban and al Qaeda detainees began a riot at Shebergan Prison near Mazar-e-Sharif in northeastern Afghanistan. Hambleton, who was on duty at the CAOC, said, "There was a call for some reconnaissance to go up there and figure out what was going on." Global Hawk, with its infrared sensor, was a natural choice, but AV-5 was operating near Kandahar, a few hundred miles to the south at the time. Mission control element pilots redirected AV-5 to the north.

"We got some really good infrared imagery, saw where the fires were," Hambleton said.

Dynamic retasking became Global Hawk's stock in trade, marking a major step forward from the UAV's original concept of operations. Typically, ISR assets gather hundreds of assigned images along a route worked

out well in advance. Planning guarantees the aircraft won't waste mission time flitting from point to point. Yet commanders in Operation Enduring Freedom demanded faster reaction. Global Hawk responded.

"We got ... more and more into the ad hoc tasking, because it was easy," Walby said. It took just "a few keystrokes and mouse clicks" to steer Global Hawk to a new heading while the sensor operator redirected sensors. Global Hawk flew a designated route to Afghanistan and then responded to new tasking. Classified voice, electronic chat, and e-mail functions created a real-time communications arena. The CAOC, Global Hawk mission controllers, and the image exploitation experts formed a strong and flexible network. It was able to carry out real-time tasking as events demanded.

Maj. Gen. David A. Deptula, the CAOC director, said of Global Hawk: "Because we controlled it from the CAOC, we could put it where we needed it, when we needed it, and for the duration we needed it." The infrared sensor on AV-5 proved particularly valuable in tracking an enemy that preferred to move at night.

In late November, US Central Command began preparations for an attack on al Qaeda hideouts in the mountains of Tora Bora. Working the UAV's sensors in spot mode, CENTCOM assembled a collage of images of trails and caves in the area, each image covering about 1.5 square miles. US analysts spotted al Qaeda campfires and "could, on occasion, see people on trails," said Hambleton. So good was the resolution that analysts could see al Qaeda fighters on foot.

The images revealed which caves were active and which were not. Campfires "were at locations that provided good overlook for approaches into the area," said Hambleton. Electro-optical images pinpointed possible Taliban encampments. "We essentially scanned the area, figured out who was where, where activity levels were, and that got us to vector in Predator, the AC-130, Strike Eagles, B-52s, all the different assets," he added.

During the coalition attack on Tora Bora, Global Hawk was tasked to drop its planned imagery collection profile and instead "go VFR direct straight up to Tora Bora and start taking pictures," said Hambleton. At 2 a.m. local time on Dec. 10, Global Hawk picked up Taliban campfires, lookouts on ridges, and cave entrances and then relayed the information back to the analysts. Minutes later, Global Hawk detected star-shaped infrared flashes, indicating direct AC-130 hits on those targets.

Both AV-3 and AV-5 flew missions through the end of 2001, logging 17 combat sorties in all. The partnership broke up on Dec. 31 when AV-5 ran into trouble over northeastern Afghanistan and crashed while attempting a six-hour flight back to base. USAF then grounded AV-3. A safety review cleared AV-3 and newly deployed AV-4 to resume flying in late March 2002. Both aircraft continued providing spectacular coverage of the battlespace. One IR image snapped over eastern Afghanistan on May 2 clearly showed about 50 enemy fighters on a mountain trail, strung out like pearls on a necklace.

The new pairing—AV-3 and AV-4—completed 47 flights by July.

The combat debut of Global Hawk "cracked the door open for an understanding of how unmanned systems could operate from great distances," Walby said. "It demonstrated a reach-back capability," so that "we could have the guys controlling it linked with the guys who needed it."

Over Iraq

As war in Iraq drew near, AV-3 was the only available Global Hawk. However, it had been modified with both the SAR and EO/IR sensor packages. Again, as in Afghanistan, military members and contractors partnered up. They didn't have "a chance to forget what we learned in OEF," said Walby.

As they had for Enduring Freedom, the launch and recovery team deployed to a base in Southwest Asia. However, this time, the mission controllers set up shop at Beale AFB, Calif. Global Hawk's pilots and sensor operators would be directing AV-3 from halfway around the world.

Another critical node was located in Reno, Nev. This was the Nevada Air National Guard's 152nd Intelligence Squadron, tasked with analyzing the Global Hawk imagery. The ANG analysts would push their on-the-spot analysis to the in-theater CAOC over electronic chat, voice, and e-mail communications avenues.

On March 8, 2003, AV-3 arrived in the theater and was tasked for three missions that technically fell under Operation Southern Watch, the enforcement of the no-fly zone over southern Iraq. Those missions became part of the prewar air campaign that helped strip away Iraq's air defenses. The UAV helped locate surface-to-air missile set-ups and potential Scud sites.

Night 1 of Operation Iraqi Freedom found AV-3 aloft and working just south of the 33rd parallel. That evening, as wartime rules of engagement took over, "all the fighters started flowing north," said Maj. Bill Cahill,

USAF photo

In 2001, an autonomous Global Hawk crossed the Pacific for exercises in Australia. Along the way, the aircraft demonstrated that it could be retasked in flight.

USAF photo

A Global Hawk in flight. AV-3 was one of the few sensors that operated in the late March sandstorm in Iraq. Its radar sensor permitted relentless attacks on the Republican Guard.

one of the Global Hawk liaison officers at the CAOC. Shortly thereafter, the Global Hawk team was told to push AV-3 north, too.

AV-3 kept "nibbling" a little bit farther north and a little bit farther east, so that, by the end of the mission, it was 60 miles or so north of the 33rd parallel. Cahill recalled, "We were the first ISR platform to punch north of the 33rd to work some of our target deck."

Global Hawk played a pivitol role in coalition strikes on targets such as the Republican Guard. Strike planners could dispatch aircraft such as the F-15E to conduct strike coordination and reconnaissance (SCAR) for designated target areas, known as "kill boxes." However, the F-15E was not an optimum platform for that work, said Cahill. "If you're trying to fly around in an F-15E and look through your LANTIRN pod, it's going to take you an exceedingly long amount of time to cover a [given] area," he explained.

To make SCAR work easier, Team Global Hawk organized missions that would put AV-3 over the kill boxes three hours in advance of an attack. "We'd flow [AV-3] in there and the [imagery] collection managers would say, 'Here is the area where we think there are fielded ground forces, Republican Guards units,' " said Cahill. One typical AV-3 radar image showed military vehicles dug into a field between a highway, buildings, and a belt of trees.

Operation of the UAV was a truly global process. Over Iraq, Global Hawk snapped photos and beamed images back to the ANG analysts in Nevada and secondarily to the in-theater CAOC. The analysts scrutinized the electronic take and shared data about the imagery within a special, secure online chat room. At the same time, they forwarded actual imagery over the Internet. Next stop was the interdiction desk on the CAOC floor. Then, fighters on station over Iraq got the target information by voice from either an E-3 AWACS command and control aircraft or directly via an onboard data link.

With AV-3 relaying a steady stream of imagery, precise attacks could be made within a few hours. "You're able to affect the fight that day," said Cahill.

Global Hawk also linked up with the B-1B and B-2 bombers, providing a "last-look" assessment on whether a bomber's designated mean points of impact, or DMPIs, still contained Iraqi tanks and artillery. If not, the bomber could hold its bombs for use against unplanned pop-up targets. The UAV's analysts would be looking at the same image as the bomber mission planners, leading to "a really quick chat report," said Cahill. Both elements would use common reference numbers to identify the relevant DMPIs.

Similar tactics worked with F-16CJ fighters. The fighters, flying suppression of enemy air defenses missions against the last remnants of Iraqi air defenses in the north, would carry mixed loads of weapons—Joint Direct Attack Munitions, Joint Standoff Weapons, Wind-Corrected Munitions Dispensers, and High-speed Anti-Radiation Missiles. Global Hawk was sent through earlier to spot likely targets—a process that made the air war more efficient. With cross-cuing from other platforms, the UAV would locate and capture images of suspected air defense sites and then pass the information back through Nevada to the CAOC. The CAOC contacted the F-16CJs on VHF radio to notify them of the targets.

AV-3 was also one of the key sensors allowing coalition air strikes to continue in Iraq during a fierce sandstorm in late March. While AV-3's optical and infrared sensors were blinded by the dust, the aircraft could focus its radar sensor on the Republican Guard below—checking to see if those forces were still at point A or B. Once again, Global Hawk passed updated information on to fighters and bombers using JDAMs to continue the attacks.

Gen. T. Michael Moseley, the Gulf War II air boss, praised the unmanned aircraft. "Sometimes you guys write that fighter pilots don't like UAVs," he told reporters during the war. "I love UAVs! I like them for any number of reasons. I like them because of the persistence; I like them because you can stay over a target for hours."

The ability of the Global Hawk team to integrate information rapidly for strike planners brought about new tactics. "It's just eye watering what you can do if you take advantage of all this," said Cahill.

On May 5, AV-3 touched down back home at Edwards. Like a warbird of old, it arrived home sporting a collection of nose art stencils representing each mission flown in Afghanistan and Iraq. ■

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 Redefinition of Strategic Airpower," appeared in the October issue.*

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Artist's conception by Erik Simonsen

Precision:

In this artist's conception, a B-2 drops a load of Joint Direct Attack Munitions. The JDAM is now the gold standard of guided weapons—widely available and offering near-precision accuracy. In September, the B-2 demonstrated its ability to release 80 independently targeted 500-pound JDAMS.

Smaller, highly accurate, designer weapons will increase the lethality of USAF aircraft.

The Next Generation

By John A. Tirpak, Executive Editor

IN THE rapid US victories in Afghanistan and Iraq, precision weapons were a major factor—both operationally and psychologically.

Operationally, the accuracy of new satellite guided munitions expanded the effectiveness of each strike aircraft and dramatically accelerated the pace of the ground advance. Psychologically, guided munitions demolished the enemy's confidence, replacing it with the certain knowledge that American bombs would find their targets even at night, in bad weather, or through smoke or blowing sand.

Now, the Air Force is about to usher in a new generation of precision weapons that will even further expand its power. Smaller, more accurate bombs with tailorable explosive effects will nearly quadruple the number of targets that a single aircraft can destroy in one mission. Stealthy, longer-ranged weapons will extend USAF's reach through rings of heavy anti-aircraft defenses, making it possible to strike high-value targets without undue risk to aircraft.

USAF expects this new generation of weaponry—coupled with advances in networking of sensors and instantaneous distribution of information to the warfighter—to carry it through the next two decades.

In the world of guided weapons, today's gold standard is the Joint Direct Attack Munition. The JDAM, which is guided by signals from Global Positioning System satellites, was a direct outgrowth of Gulf War I. In 1991, when a target area was obscured by smoke or bad weather, pilots often would abandon laser guided bomb attacks, returning to base with their ordnance. Before that brief war ended, USAF leaders decided the service must develop a precision or near-precision weapon that would work in any weather.

Instant Star

JDAM was ready for Operation Allied Force, the 1999 Balkans conflict. However, quantities were limited, and, at that time, it could only be used on the B-2 stealth bomber. The JDAM became an instant star and was so highly sought by strike planners that USAF quickly ran through its available stock.

By 2001, JDAM was certified on practically all combat aircraft in the fleet and was available in 1,000-pound and 2,000-pound versions. It was used extensively in Operation Enduring Freedom in Afghanistan and in Operation Iraqi Freedom in Iraq, where it took away most of the enemy's traditional defenses—weather, darkness, and camouflage.

USAF photo by TSgt. Michael Ammons

Laser guided bombs still edged out JDAMs as the most-used guided weapons in Gulf War II and are as yet unmatched for accuracy. This is a GBU-28 "bunker buster" LGB being released from an F-15E.

Moreover, it was able to take advantage of information from airborne sensors, satellites, and special operations forces on the ground.

"The rapid collapse [of the Taliban and al Qaeda] across Afghanistan ... was a direct result of being able to tie incredibly precise applications of airpower to incredibly brave people on the ground, with the capabilities to bring JDAM and [laser guided] weapons to bear on a very mobile and elusive opponent," said Gen. T. Michael Moseley, who commanded coalition air forces in both conflicts.

In Afghanistan, JDAM greatly impressed the Northern Alliance fighters, part of the anti-Taliban coalition. Gen. Charles F. Wald, who was the air boss when operations got under way in Afghanistan, said that the Afghan allies were amazed that US special operations forces could call in air strikes on advancing Taliban units and get precise results in hours or even minutes.

"The idea of bombs coming from way up in nowhere, ... at night, through the weather, is all of a sudden a psychological tool," said Wald, who is now vice commander of US European Command.

In Iraq, the JDAM effect was even more pronounced. Moseley said that, by using JDAM and other guided weapons, planners could designate air strikes against urban targets that otherwise would have been off-limits for fear of collateral damage. The ability to dismantle the Iraqi regime building by building had a powerful effect on the enemy, he said.

Throughout the theater, said Moseley, JDAMs and other guided weapons were "the primary preferred munitions."

The reason was clear. JDAM routinely exceeded its established parameters. Requirements call for the munition to hit within 43 feet of a target. Brig. Gen. Stephen M. Goldfein, USAF director of operational capability requirements, was circumspect in his praise. He said the munition was "a little bit better" than expected.

Moseley put it in more concrete terms: "The average miss distance on the JDAM has been about the length of the bomb." (JDAM is 10 to 12 feet long, depending on the variant.)

To be considered a "precision" weapon, a munition must be capable of hitting within 9.9 feet of the aim point. If it hits outside that circle, but closer than 66 feet, it is called a "near-precision" weapon. (Based on its specified circular error probable of 42.9 feet, that puts JDAM in the near-precision class, despite its performance in combat.)

During OIF, coalition forces released 29,199 bombs and missiles against Iraqi targets. About 68 percent of those munitions were guided. Of the overall total, 22.4 percent were JDAMs, and 29.5 percent were laser guided bombs. The next most-used munition was the unguided 500-pound Mk 82 general-purpose bomb.

In what has been described as a turning point in the war, the Iraqis found that there is no safety in a sandstorm. Late in March, coalition aircraft, cued by E-8C Joint STARS radar airplanes, were able to attack Iraqi forces either hunkered down or marching through a sandstorm in the belief that it was concealing them. They were wrong. While coalition ground forces slowed to a crawl, air attacks with JDAM systematically destroyed the Iraqi Republican Guard right through the storm.

A prime concern for the Air Force,

USAF photo by SSgt. Lee A. Osberry Jr.

Armed with lasers and handheld GPS units, Air Force controllers are able to call in close air support strikes from 40,000 feet and hit targets that are mere feet away from their own positions with ground forces.

as it developed its new weaponry, has been weapons that could limit any collateral damage.

Enemies know that they cannot "take us on" conventionally—because that's "commonly not in their ballpark," said Goldfein. "So the thing they want to do is make things very difficult for us, by putting targets in difficult places." Those places may be near schools, religious sites, or civilian neighborhoods, all of which offer a high risk of collateral damage.

Going Smaller

The solution is to use smaller weapons with less explosive effect, Goldfein said. The weapons might have delayed fuzes causing them to explode underground, thus limiting damage, or they might have no warhead at all but derive a destructive effect just from being dropped from high altitude.

The latter tactic was used on occasion in OIF. So-called "concrete" bombs—inert training shapes fitted with real guidance kits—were dropped into areas where even a small explosion could have done too much damage to civilian structures nearby. The force of the bomb's physical impact was sufficient in those cases to achieve the desired effect.

With a smaller munition—but one "very precise and very focused"—the question is whether you can achieve the same effect as with "a larger boom," said Goldfein.

The Air Force believes the answer is yes. In late August, the service selected Boeing as the developer of the Small Diameter Bomb, which likely will be one of the primary weapons for US airpower for the next 20 years.

Initially, Boeing will produce about 24,000 SDBs and 2,000 "smart racks" to carry them. Officials expect those numbers to go quite a bit higher. (The initial production run for JDAM was 88,000 units, but the new production target—amended several times in the last two years—is now more than 230,000.) The SDB is a 250-pound-class weapon. Four of them will hang from a smart rack fitted in place of a combat aircraft's pylon that normally would house a single 1,000- or 2,000-pound bomb. (Some aircraft will also carry them internally.)

The SDB will be a highly flexible munition because it can handle a range of dissimilar targets, according Dan Jaspering, SDB program manager at Boeing.

The company had to test the munition against 14 representative targets, Jaspering said. The toughest test called for the SDB to penetrate three feet of steel-reinforced concrete, while the easiest demonstrated a blast/fragmentation effect against a softer target, such as rocket launchers and artillery.

The bomb will have wings that, after release from the aircraft, pop out to provide a standoff range of up to 46 miles when dropped from altitude. It will be guided by an advanced, antijam GPS-aided inertial navigation system. It can further refine its GPS satellite location information by getting data from ground-based differential GPS units around the world—giving the bomb an accuracy of within 13.2 feet.

Jaspering said that all the stores management functions will be done on the SDB's rack itself, which has its own avionics system and four pneumatic weapon ejectors. Both features simplify aircraft integration, enabling it to work easily with various platforms.

The F-15E, in 2006, will be the first aircraft to receive SDB. Eventually, nearly all combat aircraft in the USAF inventory will be certified for the weapon.

Before the SDB, though, USAF will field another small, guided weapon—a JDAM-equipped 500-pound bomb.

In Gulf War II, the B-2 flew missions in which it dropped 80 Mk 82 500-pound bombs against clustered Iraqi forces. Those bombs were unguided. In September, USAF tested a B-2 dropping 80 of the 500-pound JDAM bombs. It worked. Gen. John P. Jumper, Air Force Chief of Staff, said of the test: "Each of these bombs guided to individual targets. Not one bomb was more than 10 feet away from its target." The service plans soon to certify the capability for B-2 combat operations. The stealthy bomber will be able to strike—with near precision—80 different targets on a single sortie.

The JDAM is also getting more accurate, according to Boeing's JDAM program manager, Rick Heerdt.

Heerdt said that USAF has funded a program to give all JDAMs selective availability antispoof modules and antijam electronics—capabilities that will make it harder to jam a JDAM trying to obtain position information from GPS satellites. JDAM also will be able to take advantage of the differential GPS system that SDB will use, he added.

"JDAM will be as accurate as Small Diameter Bomb," Heerdt asserted.

Goldfein said the service accelerated the 500-pound JDAM buy, and, as a result of that, USAF will buy "a little less" of the 2,000-pound version. "And, obviously, as SDB comes on, you'll see additional adjustments" to the number purchased.

Another major advancement in

Continued on p. 50

Boeing photo

Small Diameter Bombs (red) likely will become the most ubiquitous ground attack weapons in the arsenal. Shown here in an F/A-22, the SDB will quadruple the number of targets each aircraft can hit on a single sortie.

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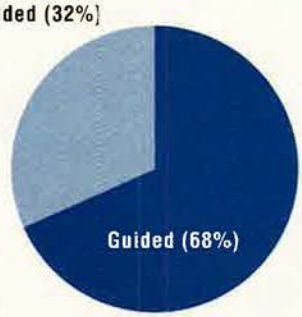
Continued from p. 47

Lockheed Martin photo

Extending the reach of bombers and fighters alike, the stealthy Joint Air-to-Surface Standoff Missile is already available on the B-52. It will go after heavily defended targets deep in enemy territory. (An F-16 flies chase during a test.)

Iraq—Munitions Expended



Guided	**19,948**
Unguided	**9,251**
Total	**29,199**

precision attack—the Joint Air-to-Surface Standoff Missile—began operational service on the B-52 bomber in September.

Long-Range Penetrator

The objective for JASSM—a stealthy, long-range missile—is to penetrate highly defended airspace and hit fixed or moving high-value targets. It is meant to be fired well outside enemy air defenses. A decision to go into full-rate production of JASSM was expected soon.

JASSM can autonomously fly an evasive route to a target more than 230 miles away. It has a 1,000-pound penetrating and blast/fragmentation warhead and uses both GPS/INS and an imaging infrared seeker for terminal guidance.

Like JDAM and SDB, JASSM's accuracy will be improved by GPS enhancements. It also has a unique feature that the Air Force may incorporate in its other high-value munitions, said Randall K. Bigum, Lockheed Martin vice president for strike weapons.

Just before impact, JASSM will feed an image of the target back to its launch aircraft, said Bigum. This will help war planners with the always-vexing problem of bomb damage assessment. If JASSM calls in and shows that it's about to hit the target, "it's a pretty good bet" that target will be destroyed, he said.

With many other cruise missiles, there's no feedback after the weapon has left the launch area, so the Air Force has to wait for poststrike reconnaissance to find out if the target was destroyed. The call-back feature will speed up the decision about whether the target has to be struck again.

Lockheed Martin also is developing an extended-range version called JASSM-ER. It will have "two to three times greater range," Bigum said. Lockheed expects to add fuel capacity without changing the outer shape of the missile, simply by changing the packaging and the engine—neither of which will slow certification of the weapon. JASSM-ER should enter production in four years, with deliveries the year after that.

USAF expects JASSM-ER to replace the Conventional Air Launched Cruise Missile, supplies of which are dwindling with each new operation. CALCMs were converted from the nuclear version AGM-86B ALCM, and, officials said, USAF has reached the end of its stock of ALCMs available for conversion.

Two other new munitions—the Joint Standoff Weapon and the Wind-Corrected Munitions Dispenser—were also used successfully in Gulf War II.

The Navy is the lead service on JSOW, an unpowered, stealthy glide vehicle that dispenses submunitions. In 1999, shortly after the Navy declared it operational, the GPS/INS-guided weapon was used by aircraft patrolling the southern Iraq no-fly zone to strike Iraqi air defenses. It was also used for Operation Allied Force in the Balkans. JSOW is already in full-rate production.

The Air Force plans to develop an advanced version of the Wind-Corrected Munitions Dispenser. The WCMD, first used in Afghanistan, is a tail kit attached to existing munitions, such as the sensor fuzed weapons, to make them steerable via INS. It also adjusts for windage on its way down. The Air Force plans to develop an extended-range WCMD by installing a wing set and GPS.

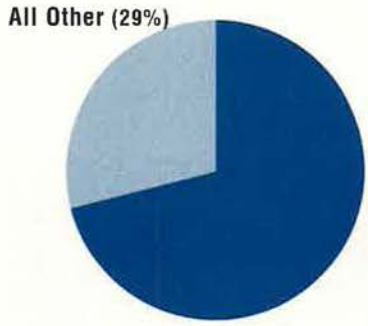
Small and Powered

Lockheed Martin independently developed the Low Cost Autonomous Attack System submunition, a small, powered missile—about three feet—that carries a laser-radar seeker in its nose. Bigum said that LOCAAS can fly "for about 45 minutes," loitering over and scanning the target area. If it sees something that matches the target it's been programmed to find, it attacks and, like JASSM, relays a message to its launch aircraft that it is doing so.

Should it not find the target, or if the attack is aborted, Bigum said, the weapon will fly high and destroy itself, rather than cause unintended destruction on the ground. At its self-destruct altitude, the blast dispersion from the small missile is so great there would be no risk to those below.

The Air Force now has funded LOCAAS as a research project that it has dubbed the Autonomous Wide-Area Search Munition. Initially, the service expected to put three AWASMs

Iraq—Most Popular Munitions



Iraq—Munitions Use By Type

LGB	8,618	**29.51%**
GPS–JDAM	6,542	**22.40%**
Mk 82	5,504	**18.85%**
Mk 83	1,692	**5.79%**
M117	1,625	**5.57%**
Maverick	918	**3.14%**
GPS–WCMD	908	**3.11%**
TLAM	802	**2.75%**
Allied guided	679	**2.33%**
Hellfire	562	**1.92%**
HARM	408	**1.40%**
JSOW	253	**0.87%**
CBU-99	182	**0.62%**
CALCM	153	**0.52%**
Allied unguided	124	**0.42%**
CBU-87	118	**0.40%**
GPS–LGB	98	**0.34%**
Other guided	7	**0.025%**
Mk 84	6	**0.021%**
Total	**29,199**	

How Many PGMs USAF Plans To Buy

System	Number
JASSM	2,853
JASSM-ER	1,426
JDAM	240,882
JSOW	3,000
SDB	24,000
WCMD	24,644
WCMD-ER	7,500

in one dispenser, but that plan may change since tests of the weapon have shown such high reliability. "You probably only need one per target," Bigum said. (The AWASM project has led the Air Force to consider adding a terminal seeker to the SDB, giving it the capability to search the target area for a moving object.)

Although there is no formal requirement for a weapon like LOCAAS yet, Goldfein said, "I think that the ability to get into a very difficult, anti-access area, to loiter and then have the sort of guidance where you can find and geo-locate targets is clearly ... attractive."

It is so attractive that USAF has given Boeing a three-year contract to work on a similar idea—a 1,000-mile-range cruise missile that could fit in the space of a 1,000-pound JDAM. Once over its target area, the missile would drop to low altitude and begin a search of up to 15 minutes to find its moving or relocatable target. It would carry three submunitions.

Goldfein believes USAF will find itself "with weaponry that has that sort of ability." One reason, he said, is that the "art of the possible helps drive your concept of operations." He said another reason is one of the "likely lessons" from the global war on terror: USAF needs to be able to strike moving targets with the same sort of precision it employs against fixed targets. In many circumstances, "the ability to get at that fleeting, moving target is going to be critical," said Goldfein.

Asked if weapons today—particularly through the employment of GPS guidance—are as accurate as they need to be, Goldfein hedged. On the one hand, he said, it would be "extremely wise" for the Air Force to take advantage of miniaturized technologies which could, in a few years, put multiple types of seekers on virtually all munitions, adding to their capability and flexibility.

On the other hand, there is a point in time when capabilities are "exceeding your real need," he said. "Clearly, we need to balance the available dollars and make sure we don't waste any."

Goldfein also pointed out that the Air Force plans to ensure it is not exclusively dependent on GPS to preclude being shut down if a GPS jamming threat succeeds. The service must start thinking about operating without GPS "just in case," he said. "You wouldn't want that to be such a long pole in our tent that you couldn't act if there was some issue with GPS."

Now that most of the munitions niches have been filled, Goldfein said, the Air Force will shift emphasis toward obtaining fine-grained, real-time battlefield knowledge to provide the new munitions with targeting information. Without real-time information, he said, no matter how good the weapon is, "it's a waste." ■

Lockheed Martin photo

Smaller, smarter, and able to loiter—that's the future of PGMs. Lockheed Martin's tiny LOCAAS attacks in swarms and ignores targets other than its own. If it can't strike its designated target, it destroys itself in air, avoiding collateral damage.

For three months, it was all the rage. Then its popularity faded fast.

What Happened to Shock and Awe?

By John T. Correll

"SHOCK and awe," Peter Arnett intoned over and over. "This is shock and awe." Arnett was reporting for NBC from Baghdad as the aerial bombardment lit up the night sky on March 21.

It was "A-day," the beginning of full air combat operations in Gulf War II. As the live television cameras watched, coalition airpower was obliterating Saddam Hussein's Presidential compound on the other side of the Tigris River and other government and military sites in and around Baghdad.

Arnett was not alone in calling it "shock and awe." That term, which had burst suddenly into public awareness in January, was by then in near-universal usage to describe the US strategy for Operation Iraqi Freedom.

"Shock and awe" was repeated endlessly. In the week the war began, more than 600 news reports around the world referred to "shock and awe," according to a count by the *Washington Post*.

Military strategists from Sun Tzu to Clausewitz have understood the value of destroying the enemy's will to resist, but Shock and Awe—introduced by a 1996 study aimed at Pentagon insiders—took it to higher levels. Shock and Awe meant an attack so massive and sudden that the enemy would be stunned, confused, overwhelmed, and paralyzed.

Harlan K. Ullman, principal architect of the concept, explained to the *Long Island Newsday* in February, "What we want to do is to create in the minds of the Iraqi leadership, and their soldiers, this Shock and Awe, so they are intimidated, made to feel so impotent, so helpless, that they have no choice but to do what we want them to do, so the smartest thing is to say, 'This is hopeless. We quit.' "

The Department of Defense did not officially or explicitly endorse Shock and Awe, but traces of it could be discerned in statements by top leaders.

For example, Gen. Tommy R. Franks, commander of US Central Command, said at a press briefing in Qatar March 22, "This will be a campaign unlike any other in history, a campaign characterized by shock, by surprise, by flexibility, by the employment of precise munitions on

Baghdad, March 27, 2003. *It wasn't Dresden in February 1945. In fact, it wasn't anything like the vast air assault of media imaginings.*

AP photo/Jerome Delay

a scale never before seen, and by the application of overwhelming force."

Franks said, "Coalition airmen [will] deliver decisive precision shock, such as you witnessed beginning last night." He said that the attack was carried out by "shock air forces."

Popular enthusiasm for Shock and Awe was high as the war began. However, the Iraqi regime was not shocked and awed into immediate surrender. The war entered a second week, then a third.

The questions were not long in coming. Where was the Shock and Awe? Was the strategy bogging down? Baghdad fell to coalition forces after 20 days, but, by then, Shock and Awe had dropped precipitously in public opinion.

Among the disillusioned was Peter Arnett, who told state-controlled Iraqi television in a cloying interview March 30 that "the war plan has failed because of Iraqi resistance." When NBC fired him, Arnett expressed—what else?—shock and awe.

Six months later, Shock and Awe had faded badly. It was showing up as a catch phrase in advertising and war games, but military people were keeping their distance and the analysis concentrated mostly on what went wrong.

Where It All Began

It started in December 1996 with "Shock & Awe: Achieving Rapid Dominance," published by National Defense University. The authors were Harlan K. Ullman and James P. Wade Jr. It was a product of Defense Group Inc., a beltway consulting firm headed by Wade, who had previously held many senior positions in the Pentagon.

Four retired military officers—Adm. Leon A. Edney, Army Gen. Fred M. Franks, Air Force Gen. Charles A. Horner, and Adm. Jonathan T. Howe—took part in the study, but the principal author was Ullman.

Colin Powell, who met Ullman at the National War College, heaped praise on him in his autobiography, *My American Journey* (1995). "A teacher who raised my vision several levels was Harlan Ullman, a Navy lieutenant commander who taught military strategy," Powell wrote. "So far, I had known men of action but few who were also authentic intellectuals. Ullman was that rarity, a scholar in uniform, a line officer qualified for command at sea, also possessed of one of the best, most provocative minds I have ever encountered."

The goal of Rapid Dominance, the 1996 NDU study said, "will be to destroy or so confound the will to resist that an adversary will have no alternative except to accept our strategic aims and military objectives. To achieve this outcome, Rapid Dominance must control the operational environment and through that dominance, control what the adversary perceives, understands, and knows, as well as control or regulate what is not perceive, understood, or known."

Four defining characteristics of Rapid Dominance were listed: knowledge of the battlespace environment, rapidity, control of the environment, and "operational brilliance in execution."

In a Desert Storm-type campaign of the future, Rapid Dominance might achieve its objectives *"in a matter of days (or perhaps hours)* and not after the six months or the 500,000 troops that were required in 1990 to

1991," the study said. *(Emphasis added.)*

"Shutting the country down would entail both the physical destruction of appropriate infrastructure and the shutdown and control of the flow of all vital information and associated commerce so rapidly as to achieve a level of national shock akin to the effect that dropping nuclear weapons on Hiroshima and Nagasaki had on the Japanese. Simultaneously, Iraq's armed forces would be paralyzed with the neutralization or destruction of its capabilities. Deception, disinformation, and misinformation would be applied massively."

Ullman and Wade acknowledged they were building on classic military theories but said that, "in Rapid Dominance, the principal mechanism for affecting the adversary's will is through the imposition of a regime of Shock and Awe sufficient to achieve the aims of policy. It is this relationship with and reliance on Shock and Awe that differentiates Rapid Dominance from attrition, maneuver, and other military doctrines including overwhelming force."

One of the early supporters of Shock and Awe was a former—and future—Secretary of Defense, Donald H. Rumsfeld. In fact, Ullman later said, "Rumsfeld was a rump member of the original shock-and-awe group, so he knew about the concept."

Rumsfeld used the expression in an April 1999 statement to CNN, criticizing the strategy for the air war in Serbia as insufficiently forceful. "There is always a risk in gradualism," Rumsfeld said. "It pacifies the hesitant and the tentative. What it doesn't do is shock, and awe, and alter the calculations of the people you're dealing with."

In October 1999, Rumsfeld joined three other former Secretaries of Defense, Harold Brown, Frank C. Carlucci, and James R. Schlesinger, in commending Shock and Awe to William S. Cohen, who was then Secretary of Defense. "We are writing to you in support and endorsement of the concept of Rapid Dominance," they said. "We believe that the concept of Rapid Dominance has sufficient merit to warrant further evaluation and experimentation."

Rumsfeld's interest apparently continued. In March 2000, Cohen wrote to Rumsfeld, thanking him "for your letter on the work being performed by Defense Group Inc. (DGI) on the concept of Rapid Dominance. We are of course interested in further developing our ability to strike promptly and induce 'Shock and Awe' in future adversaries."

The Bubble Rises

The first public report of Shock and Awe was by CBS News correspondent David Martin, last Jan. 24, two months before Gulf War II began. An unnamed Pentagon official told Martin that the strategy would be Shock and Awe. Martin went for comment to Ullman, who was then a senior advisor for the Center for Strategic and International Studies and a columnist for the *Washington Times*.

"We want them to quit. We want them not to fight," Ullman told CBS, explaining that the concept relied on a "simultaneous effect, rather like the nuclear weapons at Hiroshima, not taking days or weeks but in minutes. ... You're sitting in Baghdad, and all of a sudden, you're the general and 30 of your division headquarters have been wiped out. You also take the city down. By that, I mean you get rid of their power, water. In two, three, four, five days they are physically, emotionally, and psychologically exhausted."

Martin reported that not everybody in the Administration was a believer in Shock and Awe. "One senior official called it a bunch of bull, but confirmed it is the concept on which the war plan is based," he said.

"You'll see simultaneous attacks of hundreds of warheads, maybe thousands, so that very suddenly, the Iraqi senior leadership, or much of it, will be eviscerated," Ullman told the *Christian Science Monitor* Jan. 30.

For the next several weeks, the Shock and Awe phrase was heard periodically, mostly from television talk show guests who disagreed with it. References escalated sharply after a press breakfast on March 4 featuring Gen. Richard B. Myers, Chairman of the Joint Chiefs of Staff.

"If asked to go into conflict in Iraq, what you'd like to do is have it be a short conflict," Myers said. "The best way to do that would be to have such a shock on the system that the Iraqi regime would have to assume early on the end was inevitable."

"Top General Sees Plan To Shock Iraq Into Surrendering," said the headline in the *New York Times*. It quoted "military officials" as saying "the plan calls for unleashing 3,000 precision guided bombs and missiles in the first 48 hours."

("I don't think I ever used the term 'Shock and Awe' myself," Myers said in April, but added, "I'm familiar with the book and the author" and "some of those ideas of his have been incorporated into this plan.")

Fascination with Shock and Awe was approaching frenzy. No news report was complete without it.

Sony applied for a trademark on Shock and Awe to use as the title of a video game, but dropped the application in embarrassment when it was discovered by the news media. Others sought to trademark Shock and Awe for pesticides and herbicides, barbecue sauce, and fireworks displays.

Cautions and Concerns

Ullman made it clear he had no direct input to the war plan, but he published his views regularly in oped columns and he was interviewed often by both print and broadcast media. He told the *Washington Post* in March that one risk of a bold war plan was that it might be executed too cautiously, and expressed concern that "we may not be sufficiently audacious."

Shock and Awe alarmed those who misinterpreted references to Hiroshima and Nagasaki. For example, Ira Chernus, a professor of religious studies at the University of California, charged that Ullman "wants to do to Baghdad what we did to Hiroshima."

"People think that Shock and Awe is to destroy cities," Ullman said. "That's not the rationale. The rationale is to bring intense pressure on the enemy and do minimum damage to civilian infrastructure."

Rep. Major R. Owens (D-N.Y.) read a rap poem, titled "Shock and Awe," into the *Congressional Record*, declaring, "The war against Iraq is an unnecessary evil."

US leaders did not join in the predictions of instant victory. "It is not knowable how long that conflict would last," Rumsfeld said in February. "It could last six days, six weeks. I doubt six months."

In his address to the nation March 19, President Bush warned, "A campaign on the harsh terrain of a nation

as large as California could be longer and more difficult than some predict."

At a Pentagon news briefing March 20, Rumsfeld said: "What will follow will not be a repeat of any other conflict. It will be of a force and a scope and a scale that has been beyond what has been seen before. The Iraqi soldiers and officers must ask themselves whether they want to die fighting for a doomed regime or do they want to survive, help the Iraqi people in the liberation of their country, and play a role in a new, free Iraq."

Coalition aircraft dropped millions of leaflets urging Iraqi military forces to lay down their arms. Responding to a tip from the CIA, two stealthy F-117s struck a leadership compound in Baghdad March 19—two days before A-day—hoping to catch Saddam Hussein there. They clobbered the compound, but they didn't get Saddam.

Shock and Awe on Defensive

The full air campaign began on March 21. The spectacular bombardment the world watched on television the first night was part of a broader attack that sent 1,000 strike sorties against military targets in Baghdad, Kirkuk, Mosul, and elsewhere.

What the fires and explosions seen on the skyline did not show was the extraordinary precision of the strikes and the care taken to avoid hitting the civilian population. The effect on military and government targets was ruinous.

However, it was not what the public expected, having been spun up by hundreds of stories about Shock and Awe. Saddam Hussein's regime did not fall overnight.

"On the second day of the war, the coalition attempted to deliver a knockout punch with a bombing assault strike planners hoped would convince Iraqi leaders to surrender," said *European Stars and Stripes*. "They called it the 'Shock and Awe' campaign. It did not draw the mass surrenders planners had hoped."

The *Washington Times* reported a "problem of expectations,"noting that "the Pentagon did not dispute a news report that the allies would drop 3,000 precision guided munitions in the war's first 24 hours. In reality, after four days of bombing, the coalition had dropped 2,000 PGMs, averaging 500 every 24 hours."

The slogan was short, catchy, ideal for television.

At his Pentagon news briefing March 25, Rumsfeld was asked: "Is it possible that you did raise expectations beyond reasonable levels by talking about a Shock and Awe campaign? I mean, wasn't the impression put out that, you know, 3,000 bombs are going to fall in the first 48 hours and the regime is going to collapse?"

"Not by me, not by General Myers," Rumsfeld replied. "Why would we have put in train the hundreds of thousands of people to go do this task if we thought it was going to be over in five minutes?"

"The air campaign that the Pentagon promised would 'shock and awe' Saddam Hussein's government appears to have done neither," said Michael Gordon in the *New York Times*.

Professor Robert Pape of the University of Chicago, a frequent critic of airpower, told the *New York Times* on March 26, "The main thing we've learned from this is that 'Shock and Awe' hasn't panned out. The targeting hasn't broken the back of the leadership."

Actually, the campaign at that point—whether it was Shock and Awe or something else—had broken the back of the Iraqi regime.

The ground forces took Baghdad in three weeks without a major battle and meeting little effective resistance, mainly because the Republican Guard divisions in their path had been demolished by airpower. Interviews afterward with Republican Guard officers indicated that airpower had indeed taken the starch out of the Iraqi Army's will to resist.

Nevertheless, Ullman said, "Public reaction to the Pentagon's 'Shock and Awe' slogan was hugely negative." It was, he said, "a public relations disaster."

The public continued to support the war, but deterioration of regard for the Shock-and-Awe label could be tracked in the headlines:

- "US Plan To Convince Iraqis To Surrender En Masse Has Flopped," *Atlanta Journal–Constitution*, March 22.
- "Allies Prewar Assumptions Fall Short as Iraq Resistance Stiffens," *USA Today*, March 25.
- "War Could Last Months, Officers Say," *Washington Post*, March 27.
- "Too Little Shock, Not Enough Awe," *Los Angeles Times*, March 30.
- "No Shock, No Awe: It Never Happened," WorldNetDaily.com, April 3.

But Was It Shock and Awe?

"What they announced at the beginning of the war as Shock and Awe seems to me was largely PR," Ullman told the *Washington Times* on March 31. "It did not bring the great Shock and Awe that we had envisaged."

"The public misunderstood our concept of Shock and Awe—and so, perhaps, did the Pentagon," Ullman said in a signed column entitled " 'Shock and Awe' Misunderstood" in *USA Today* on April 8. "Our concept calls for a 360-degree, nonstop campaign using all elements of power to coerce the enemy regime into succumbing rapidly and decisively.

"That has not happened in this war for two major reasons: The opportunity to target Saddam accelerated the war's start before all of the military elements were in place, and the decision to pause to see whether Saddam's generals would choose not to fight tempered the intensity of the initial onslaught. The Administration's version of Shock and Awe turned out to be a strategic air campaign and quick ground advance. This plan soon will defeat Saddam's regime, overwhelmingly, as it now appears, but it did not cause its immediate collapse."

(Rumsfeld and Franks said the "operational pause" never happened.)

In the June issue of the Royal United Services Institute's *RUSI*

Journal, Ullman said, "Despite the prewar hoopla of Shock and Awe," the campaign was not based principally on obtaining those effects prescribed by the original concept. ...

"In the run-up to the war, it is possible that advocates of strategic bombing jumped on the term Shock and Awe as a means of publicizing that approach and in the expectation that such bombing alone could indeed bring Saddam down. ...

"Had the targeting from the beginning of the war been focused on the Iraqi Army and the arms of political power, such as the Baathist Party and its infrastructure throughout the country, who knows how long the fight might have lasted? After a few days, with the knowledge that his Army and political control of the country no longer existed, Saddam might have quit or fled the field in a matter of days or a week or two."

Deputy Secretary of Defense Paul D. Wolfowitz told CBS on April 1, "We never targeted infrastructure. We've gone to great lengths to avoid it, in fact, in contrast to 1991, when there was some deliberate targeting of those functions that had both a military and a civilian application."

Asked about Shock and Awe, Wolfowitz said, "I don't care for that phrase." Gen. T. Michael Moseley, then the Gulf War II combined force air component commander, was of similar opinion. "The term Shock and Awe has never been a term that I've used. I'm not sure where that came from," Moseley said at a press briefing, April 5.

By summer, Shock and Awe had become a cliche, applied in situations ranging from the box office boom of "The Matrix Reloaded" to a ninth inning home run by San Francisco Giants slugger Barry Bonds to (by political activist Tom Hayden) Arnold Schwarzenegger's announcement that he would run for governor of California.

The Issue of Airpower

Some critics saw Shock and Awe as nothing more than strategic airpower wearing a new hat. "Air Force theorists have long touted strategic bombing as the best way to break the will and muscle of the enemy," John Barry and Evan Thomas wrote in *Newsweek*.

Robert Pape told the *Christian Science Monitor* that "Shock and Awe is what air forces have been doing since World War I—that is always the plan. This is the 'same old.' We want to believe it is something new, because we want to believe we're always bigger and better. But the fact is, if there are new twists and turns, this won't be it."

Those sour assessments did not accurately describe strategic airpower or Shock and Awe.

Air Force doctrine recognizes (as Napoleon did) surprise as one of the major principles of war and lists shock as one of the products of surprise. Doctrine further identifies strategic attack as one the functions of air and space power. In turn, strategic attack is directed at both the capability and the will of the enemy to continue the fight. The objectives "often include producing effects to demoralize the enemy's leadership, military forces, and population."

Ullman and Wade in 1996 drew a distinction between Shock and Awe and doctrines of strategic attack. In 2003, Ullman sometimes sounded as if he regarded airpower as the antithesis of the concept.

"As I see it, this air campaign appears to come out of a book by strategic airpower advocates, who have argued that you start at the center and work your way out to disrupt and destroy whatever," Ullman told the *Washington Times* on March 31.

"We come up with the opposite view," he continued. "Take away [Saddam's] ability to run the country and the ability to fight. The argument is, that may cause a sufficient amount of 'Shock and Awe', it will force them to surrender. ... As we theoretically envisaged it, we would have gone straight after the Republican Guard and its leadership and not just with precision guided weapons."

Ullman told the *Guardian* (UK) on March 25, "The phrase, as used by the Pentagon now, has not been helpful—it has created a doomsday approach—the idea of terrorizing everybody. In fact, that's not the approach. The British have a much better phrase for it: effects-based operations."

Ullman was unaware, apparently, that the Air Force was preaching and practicing Effects-Based Operations long before the appearance of Shock and Awe. In Effects-Based Operations the objective is not always destruction of the enemy. It may be to gain a specific strategic or tactical result, such as deterring, neutralizing, or halting the enemy force. One of the Air Force advocates in the early 1990s of Effects-Based Operations was David A. Deptula, now a major general and director of plans and programs at Air Combat Command.

On March 19, one of Deptula's officers, Col. Gary Crowder, briefed the Pentagon on Effects-Based Operations. One of his slides listed Shock and Awe as a related concept.

"You don't win a war by not intimidating an adversary," Crowder said in response to a question. "I think the effects that we are trying to create are to make it so apparent and so overwhelming at the very outset of potential military operations that the adversary quickly realizes that there is no real alternative here other than to fight and die or to give up. ...What will happen is the great unknown. ... I think there's going to be a wide variety of different reactions by the Iraqi people and the Iraqi military forces."

In Desert Storm in 1991, the Air Force also inaugurated the practice of "Parallel Warfare," attacking all of the enemy's vital systems and assets at once rather than stringing the attacks out over days and weeks. It was only in recent years that technology made such an approach possible.

Strategic airpower, Effects-Based Operations, and Parallel Warfare have characteristics in common with Shock and Awe, but they are far from synonymous with it.

Lt. Col. John R. Hunerwadel of the Air Force Doctrine Center said that the phrase "Shock and Awe" does not appear in any doctrine documents and that "there is not enough 'meat on the bones' to merit inclusion in doctrine" at this point.

"Strategies that include decapitation, isolation, shock-like effects, and coercion against enemy leadership are a vital part of Air Force warfighting," Hunerwadel said. "Such effects have been used successfully to achieve objectives in many conflicts. In all cases, however, such effects are only part of a larger joint or combined strategy designed to manipulate the enemy's will. They seldom work in isolation and are not successful in all circumstances—they

are elements of strategy, not doctrinal principles.

"This is an important distinction. Strategies are specific sets of objectives, courses of action, and tools tied to a particular conflict. Doctrine, on the other hand, is the accumulated wisdom of many conflicts. It represents our central and enduring beliefs about how to wage war.

"What worked for one particular strategy in one particular conflict does not necessarily apply to others. For example, Shock and Awe-like effects may have been appropriate in Iraq. They were not appropriate against Serbia, however, where alliance concerns precluded them and evidence suggests that the growing pressure against strategic targets over time enabled successful coercion while preserving NATO's resolve. Different places, foes, and times call for different strategies. Shock and Awe-like effects were merely one element of one strategy, merely one tool in the strategist's tool kit."

How To Explain It?

A combination of factors seems to account for the three-month roller-coaster ride in public opinion for Shock and Awe.

■ "Shock and Awe" was short, catchy, ideal for television. Reporters and commentators used it as a shorthand for the strategy. Most of those mouthing the phrase had only a superficial grasp and interest.

The news media and the commentators did not know what the real strategy was. No defense leader—and least of all the secretive Rumsfeld—would announce the war plan in advance.

Relatively few military people had seen the Shock and Awe paper or heard the briefing. Most of them who used the term in offhand comments quoted by the news media had picked it up from television.

■ The Pentagon's Shock and Awe was not the same as Ullman's Shock and Awe. For the Pentagon, it was one element of the strategy—and not necessarily the most important element. For Ullman, it was the most important thing. Among other differences, Ullman called for attacking everything—including the power and water supply—to stun and intimidate the enemy. The Pentagon ruled out destruction of the civilian infrastructure.

The public had been spun up to expect something different than what happened.

In its pure form, Shock and Awe was probably not a practical candidate for an operational strategy, but the public didn't understand that, and the people stirring up the excitement didn't explain it.

■ Although top defense officials did not say the strategy was Shock and Awe, they left that impression. They may not have been talking about Shock and Awe, but they often sounded as if they were. They used words like "shock" in dramatic context. They talked about a "campaign unlike any other in history" (Franks) and conflict "of a force and a scope and a scale that has been beyond what has been seen before" (Rumsfeld).

It was not the job of the Department of Defense to correct expectations generated by others. Indeed, not doing so may have been a form of passive disinformation. The erroneous expectations were no doubt of value in keeping Saddam off balance—but they also set up a popular misunderstanding in the United States.

■ Because of the precision of the attack and the care taken to avoid collateral damage, the destruction in evidence the morning after the initial attack was not as vast as those who watched the bombardment on television the night before had anticipated. For example, the electricity in Baghdad was still on.

One report had called it "the most devastating air raid since Dresden." It wasn't—which the war planners had gone to great pains to ensure—but it wasn't what the public had been coached to expect.

So far as most people could see over the following week or two, the "campaign unlike any other in history" looked pretty much like previous operations.

■ There had also been an expectation of fast results. When the conflict was a week old, Ullman told the *Journal News* in upstate New York that people outside the military who did not understand Shock and Awe "thought it would be won in two days. That is absurd. If it is done in two months, that will be remarkably positive."

Many people had contributed to that expectation, including Ullman himself, who told CBS in January that it might take minutes instead of days or weeks to yield a "simultaneous effect" with Shock and Awe.

■ Confidence in Rumsfeld's war plan was undercut by criticism, especially from disgruntled retired officers. Since—according to the talk shows—Rumsfeld's strategy was Shock and Awe, it suffered a full share of whatever damage accrued. Lost in the shuffle was the fact that the campaign being executed was not Ullman–Wade-style Shock and Awe.

What now for Shock and Awe? It is still alive, but it is back in the insider world of studies and analysis, modeling, simulation, and wargaming.

"One assumes that there will be extensive examination and lessons-learned exercises of this war and its aftermath done both within Ministries and Departments of Defense as well as in the press," Ullman said in his *RUSI Journal* piece. "It would be unfortunate, based on the negative publicity, to abandon any reconsideration of Shock and Awe as part of these exercises."

Defense Group Inc. said that "Rapid Dominance: Shock and Awe" has continued to mature. Studies for the Department of Defense have expanded on several aspects of it, and DGI is currently working with the Defense Advanced Research Projects Agency to look more closely at the concept "in operational art and with emerging DARPA technologies." ■

John T. Correll was editor in chief of Air Force *Magazine for 18 years and is now a contributing editor. His most recent article, "The Legacy of the Bottom-Up Review," appeared in the October issue.*

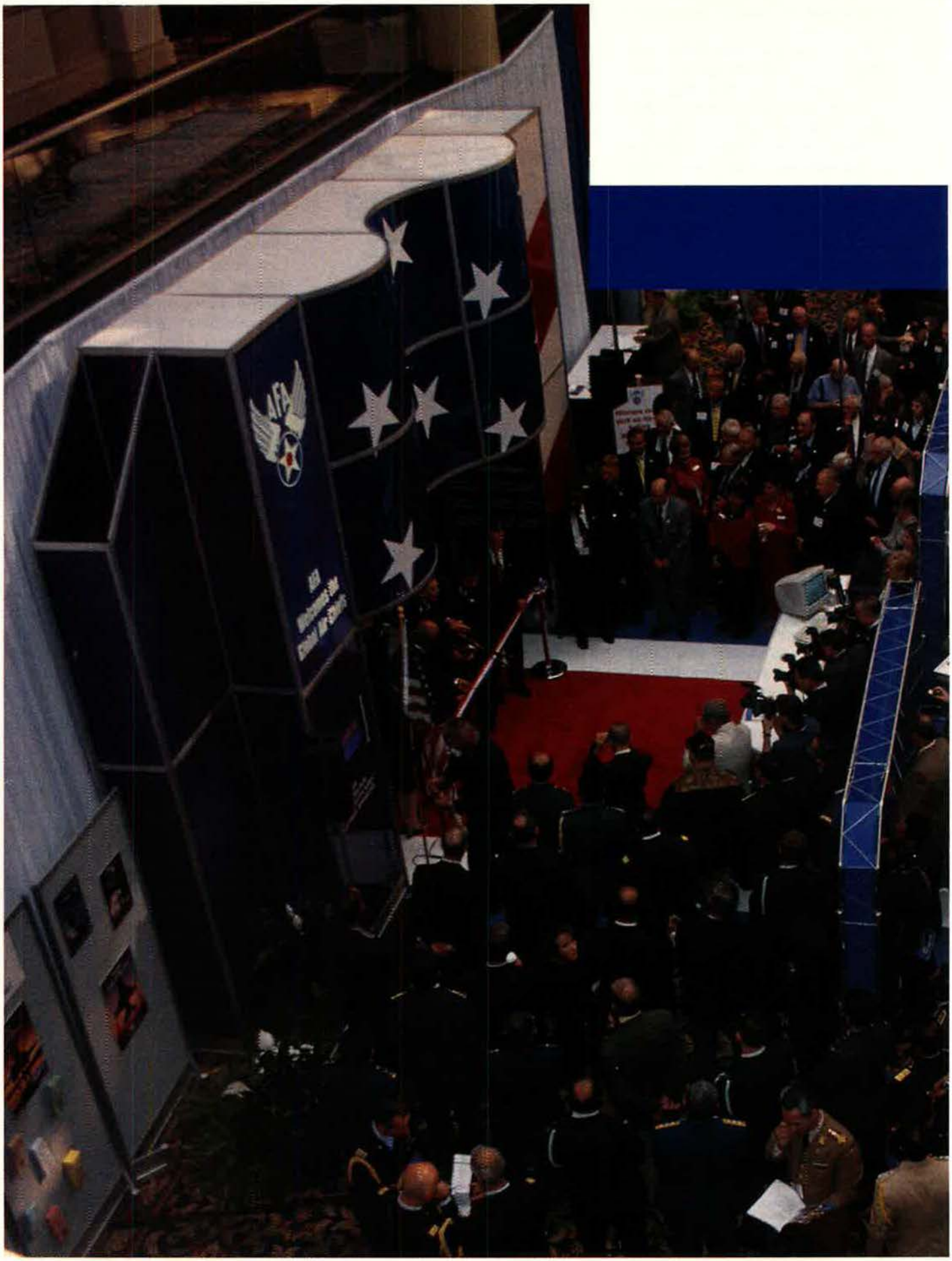


Photo by Paul Kennedy

National Convention

By Tamar A. Mehuron, Associate Editor

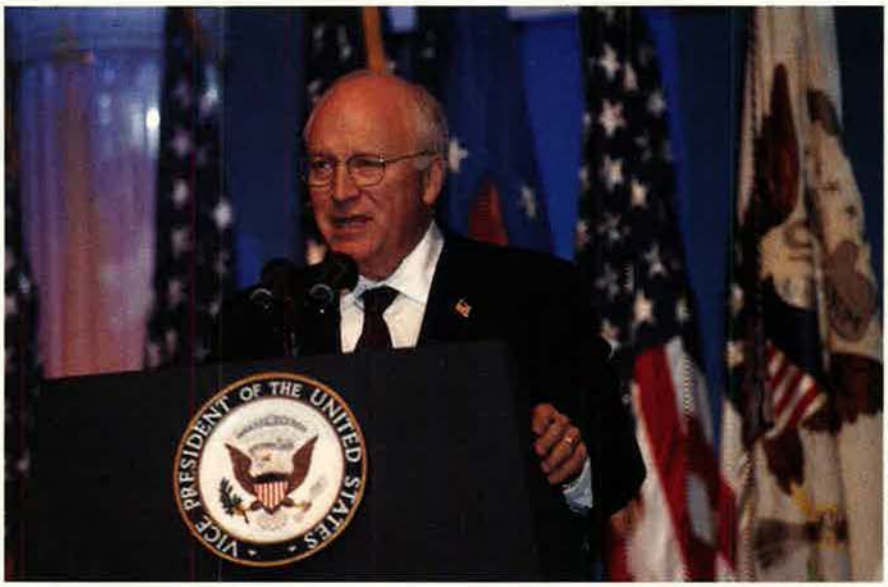
AFA's 2003 National Convention accentuated the international aspect of air and space power.

THE air chiefs of more than 90 countries joined Air Force Association delegates from 45 states and Washington, D.C., to celebrate 100 years of powered flight at AFA's National Convention held Sept. 14-17 at the Marriott Wardman Park Hotel, Washington, D.C. The festivities featured an International Airpower Symposium, Aerospace Technology Exposition, and Global Air Chiefs Conference.

Many delegates traveled by bus to Arlington National Cemetery for a memorial service held on Sept. 14. Donald J. Harlin, AFA National Chaplain, gave the invocation and closing prayer. The 2003 Memorial

Attendees at AFA's 2003 National Convention gather for the opening of the Aerospace Technology Exposition.

Photos by Paul Kennedy



Vice President Dick Cheney, speaking at one of two convention symposia, delivered a ringing defense of the need to stay on the offensive to prevent new terror atrocities. (See "Toward a New Style of Warfare," p. 80.)

Tribute List was read by AFA Chairman of the Board John J. Politi and National President Stephen P. "Pat" Condon.

The Air Force Anniversary Dinner was held on Sept. 17, the day before the Air Force turned 56. The event celebrated aerospace accomplishments of the past century and honored those individuals and organizations who made possible those achievements. Gen. T. Michael Moseley, vice chief of staff of the Air Force and the Gulf War II air component commander, was presented with the H.H. Arnold Award, AFA's top award for contributions to national security by a military member.

In that same evening, AFA named Secretary of the Air Force James G. Roche as the 2003 recipient of the W. Stuart Symington Award, AFA's highest award for contributions to national security by a civilian.

The Joint Direct Attack Munition Industry Team, led by Boeing, was honored with the John R. Alison Award for industrial contributions to the nation's security.

AFA presented Lifetime Achievement Awards to Maj. Gen. John R. Alison, USAF (Ret.); Maj. Gen. Jeanne M. Holm, USAF (Ret.); Col. Charles E. McGee, USAF (Ret.); and Gen. Bernard A. Schriever, USAF (Ret.). Col. John H. Glenn Jr., USMC (Ret.), also received a Lifetime Achievement Award but could not attend the presentation ceremony.

An Aerospace Industry Salute noted the achievements of four key aerospace companies: Boeing, Lockheed Martin, Northrop Grumman, and Raytheon. Highlighting the festivities was a musical presentation, "It Can Happen When You Are Driven by a Dream," narrated by Tim White and featuring Juanita Williams, soprano, and the Alexandria Harmonizers Quartet.

Gen. John P. Jumper, Air Force Chief of Staff, launched the convention with opening remarks on the morning of Sept. 15. Gen. Hal M. Hornburg, commander, Air Combat Command, was the guest speaker for the awards ceremony. Later that day, AFA recognized the Air Force's 12 Outstanding Airmen of the Year at a dinner in their honor, with CMSAF Gerald R. Murray as toastmaster. Moseley was the dinner speaker.

The convention's theme—"Up From Kitty Hawk: 100th Anniversary of Powered Flight"—carried through two symposia.

The first session of the symposium, on Sept. 16, featured Jumper; Gen. Gregory S. Martin, commander, Air Force Materiel Command; and Rebecca Grant, president of IRIS Independent Research and author of "Gulf War II: Air and Space Power Led the Way," produced for the Aerospace Education Foundation. The morning session on Sept. 17 featured remarks by Vice President Dick Cheney, Secretary of Transportation Norman Y. Mineta, and Roche.

In a second symposium, the Office of the Air Force Chief Scientist co-sponsored with AFA a series of speakers on Sept. 17 who discussed a wide range of developments and accomplishments of the last 100 years of flight. Presentations covered topics such as precision munitions, remote sensing, directed energy, satellites, and launch vehicles.

An estimated 7,500 attendees participated in one or more convention-

AFA Chairman of the Board John Politi (far right) and National President Pat Condon flank four recipients of AFA's Lifetime Achievement Award: (l to r) John Alison, Bernard Schriever, Jeanne Holm, and Charles McGee. (See "Awards," p. 68.)

Photos by Paul Kennedy

Air Force Secretary James Roche (left) chats with AFA Chairman John Politi (right), National President Pat Condon (center), and former National Secretary Daniel Hendrickson.

dent of the Air Force Association for a second term. Thomas J. Kemp, Fort Worth, Tex., was elected National Secretary for a first term, and Charles A. Nelson, Sioux Falls, S.D., was elected National Treasurer for a fourth term.

Other Elections

Elected to the Board of Directors for three-year terms were M.N. "Dan" Heth, Hurst, Tex.; Michael J. Peters, Auburn, Calif.; Victor Seavers, Eagan, Minn.; Thomas G. Shepherd, Capon Bridge, W.Va.; Brad Sutton, Mountain Green, Utah; and Richard C. Taubinger, Roseville, Calif. In a special election, Kathleen Clemence, Reno, Nev., was elected to a two-year term to fill the uncompleted term of Scotty Wetzel, who died this year.

AFA National Treasurer Charles Nelson and his wife, Kristine, tour the exhibit halls.

Thomas Kemp, newly elected AFA National Secretary, addresses AFA delegates during one of the business sessions. Delegates unanimously approved the new AFA Statement of Policy. (See "Imperative of Air and Space Power," p. 64.)

related activities. The 263 registered delegates representing 45 states and the District of Columbia were joined by senior military and government officials for the Aerospace Technology Exposition, speeches, and social events. The three-day exposition was subscribed to by 119 exhibitors. On hand to cover the convention were 120 reporters and news representatives.

Holding meetings concurrently were trustees of AFA's affiliate, the Aerospace Education Foundation, as well as Air Force Memorial Foundation trustees and Air Force Command Chief Master Sergeants. Also meeting were AFA's Air National Guard Council, Civilian Advisory Council, Enlisted Council, Company Grade Officers Council, Reserve Council, and Veterans/Retirees Council.

Election of Officers

John J. Politi, Sedalia, Mo., was elected Chairman of the Board of the Air Force Association for a second term. Stephen P. "Pat" Condon, Ogden, Utah, was elected National Presi-

Three new Leadership Development Directors joined the AFA Board. They are Vivian P. Dennis, Centerville, Ga.; Joseph Price, Newport News, Va.; and James F. Shambo, Niceville, Fla.

Ten new Region Presidents were elected, and four Region Presidents were re-elected. Newly elected are James Hannam (Central East Region), O. Thomas Hansen (Northwest Region), Robert E. Largent (Southeast Region), J. Ray Lesniok (Great Lakes Region), Peter Robinson (Southwest Region), Robert P.

Talley (North Central Region), Eric P. Taylor (New England Region), Raymond Turczynski Jr. (Florida), John Wickman (Far West Region), and Charles P. Zimkas Jr. (Rocky Mountain Region).

For a complete list of AFA National Directors and Region Presidents, including those re-elected, see "This Is AFA" on p. 95 and "Field Contacts" on p. 89.

AFA's Aerospace Education Foundation elected the following officers: L. Boyd Anderson, Ogden, Utah, Chairman of the Board; Mary Anne Thompson, Oakton, Va., President; David R. Cummock, Daytona Beach, Fla., Secretary/Treasurer. The foundation trustees have made major changes to their structure, to include reducing the number of trustees and eliminating one officer position. AEF no longer will have separate officers for Secretary and Treasurer.

Photos by Paul Kennedy

Coleman Rader (left), a former AFA National Director, and Doyle Larson, former Chairman of the Board, huddle with Mary Anne Thompson, newly elected President of AFA's Aerospace Education Foundation.

Conventioneers hit the dance floor at AEF's festive Sept. 14 gala, billed as a "Squadron Reunion." Several individuals resurrected old "party suits" adorned with squadron patches.

Another gala attendee, Gerald Chapman, brought a copy of his orders—signed by Gen. Douglas MacArthur.

AEF trustees newly elected to two-year terms are: Bonnie B. Callahan, Winter Garden, Fla., and Victoria W. Hunnicutt, Gray, Ga. Max Stitzer, Fort Worth, Tex., was elected for a one-year term.

Other AFA Business

Delegates unanimously approved the AFA Statement of Policy (see "Imperative of Air and Space Power," p. 64) and Top Issues for 2004.

Congressional Activity

AFA state delegations sponsored Congressional Breakfasts on Tuesday of convention week, with 14 members of Congress participating. Among them were Sen. Wayne Allard (R-Colo.), Sen. Saxby Chambliss (R-Ga.), Sen. Jim Talent (R-Mo.), all members of the Senate Armed Services Committee, Sen. Craig Thomas (R-Wyo.),and Sen. Michael Enzi (R-Wyo.), co-chairman of the Air Force Caucus.

Also participating in the AFA breakfast meetings were Reps. Rob Bishop (R-Utah), Jeb Bradley (R-N.H.), and John Kline (R-Minn.), all members of the House Armed Services Committee.

Other Congressmen attending the breakfasts were Reps. Randy Neugebauer (R-Tex.), Steve Pearce (R-N.M.), Jim Matheson (D-Utah), Dutch Ruppersberger (D-Md.), Pete Sessions (R-Tex.), and Charles W. Stenholm (D-Tex.).

USAF Vice Chief of Staff Moseley attended the Congressional Breakfast hosted by Texas, while ACC commander Hornburg attended breakfasts

hosted by Arizona, California, New Mexico, Utah, and Washington. Gen. Lance W. Lord, commander, Air Force Space Command, attended the breakfast hosted by the Wyoming delegation, and Lt. Gen. Paul V. Hester, commander, Air Force Special Operations Command, visited the breakfasts hosted by delegations from Florida, Georgia, North Carolina, and Virginia.

Aerospace Education Foundation

A video on the theme of a century of military and commercial aviation accomplishments won AEF's annual Jimmy Stewart Aerospace Education Award. The winning entry was from Unit GA-871 at Shiloh High School, Snellville, Ga. The video presented a retrospective on the story of aviation through its early years, two world wars, and up through Operation Iraqi Freedom. The video noted that the US did not have one combat-worthy aircraft at the start of World War I, but when it ended, the lesson learned was "if you control the air, you cannot be beaten. If you lose the air, you cannot win."

Photos by Paul Kennedy

Delegates gave special recognition to four charter AFA members who are still very active in the association. They are (left to right): Carl Beck, George Aguirre, Harold Henneke, and Sam O'Dennis.

David Blankenship (middle), an AFA Director Emeritus, congratulates Michael Peters, a newly elected National Director, as Peters talks with Julie Petrina, a current National Director.

Sally Gwaltney, from Wilson, N.C., received the Christa McAuliffe Memorial Award as the year's outstanding aerospace science, mathematics, and computer science teacher. The Lincoln Chapter, Lincoln, Neb., received the Sam E. Keith Jr. Aerospace Education Award of Excellence. The award is named in honor of the late AFA leader and former Board Chairman and National President from Fort Worth, Tex. Jeri Ann Martin, Hurlburt Field Chapter, Fla., won the George D. Hardy Memorial Award. The winner is nominated by an AFA chapter for outstanding contributions to furthering the scientific, technical, and aerospace education of the nation's youth.

On Tuesday afternoon, Moseley presented the Chief of Staff Team Excellence Awards for 2003 to: the C-5A Galaxy Torque Deck Repair Team, 433rd Airlift Wing, Lackland AFB, Tex.; Commercial Air Resource Evacuation Team, 374th Aeromedical Evacuation Squadron, Yokota AB, Japan; F100 Engine Supply Chain Process Improvement Team, Tinker AFB, Okla.; Night Operations Team, Air Mobility Command's Directorate of Operations, Scott AFB, Ill.; and Solid State Phased Array Radar Trainer Team, 381st Training Group, Vandenberg AFB, Calif.

Acknowledgments

Parliamentarian for the AFA National Convention was Joan L. Blankenship. Inspectors of Election for the National Directors were James Callahan (Chairman), William D. Duncan Jr., and Robert Rutledge. Inspectors of Election for National Secretary were Mark Worrick (Chairman), J. Ray Lesniok, and Edward I. Wexler. Judy K. Church chaired the Credentials Committee, serving with Bonnie B. Callahan and George C. Pankonin.

The association is particularly grateful to a corps of volunteers who assisted the staff in convention support: Cecil G. Brendle, Jimmy R. Canlas, Charlie Tippett, Debbie and Greg Snyder, and Leola Wall.

The 2004 convention will be held at the Marriott Wardman Park Hotel, Washington, D.C., Sept.13-15, 2004. ■

Imperative of Air and Space Power

The Air Force Association 2004 Statement of Policy adopted by the delegates to the AFA National Convention meeting on Sept. 14, 2003, in Washington, D.C.

A century ago, near Kitty Hawk, N.C., Orville and Wilbur Wright ushered in the age of sustained powered flight. Later, visionaries such as Mitchell, Andrews, Arnold, Eaker, Spaatz, Doolittle, and others advanced the military application of the airplane. They are the forefathers of today's United States Air Force—a 21st century Air and Space Expeditionary Force.

Throughout USAF's history, its people, technology, and culture of transformation have served it and the nation remarkably well. In World War II, it took nearly 3,000 air sorties to eliminate a single target. Today, an aircraft can destroy multiple targets in a single sortie. The Air Force continues to transform, as was seen most recently in Operation Iraqi Freedom.

Airmen, fighting alongside soldiers, sailors, Marines, and allied forces, attacked Iraq on March 20, 2003, local Baghdad time. Together, they ended the ruthless, decades-old dictatorship of Saddam Hussein.

The Air Force Association (AFA) and the nation salute all the men and women of the armed forces for their service during Operation Iraqi Freedom and in the ongoing war on terrorism. AFA is especially proud of the Air Force. The courage, commitment, and skills of airmen today are truly phenomenal. Their bravery and outstanding decision-making abilities were on full display in Iraq.

USAF photo by SSgt. Lee A. Osberry Jr.

"The courage, commitment, and skills of airmen today are truly phenomenal."

US and coalition airpower forces achieved air dominance at the outset of the war. Together, airmen delivered debilitating air strikes against Republican Guard divisions, their command and control systems, and key leadership.

Iraqi Freedom was the first major military operation since the announcement in 2002 of the new National Security Strategy of the United States. In essence, the strategy states America will take action against emerging threats before they are fully formed. This places a premium on intelligence capabilities, especially

space and airborne systems primarily funded and operated by the Air Force.

Most Americans saw the war through the eyes of 630 "embedded" journalists—admittedly, a soda straw view of the battlefield providing virtually no perspective on air and space contributions. The media experienced firsthand the professionalism and heroics of US ground forces as they advanced on Baghdad. The extraordinary achievements of air and space personnel went largely unreported, mainly because of host country restrictions on news coverage of US air operations.

USAF photo by SMSgt. Edward E. Snyder

"Global power projection forces in air and space played a pivotal role" in joint operations.

Thirty Days Over Iraq

In the first 30 days of Operation Iraqi Freedom, the Air Force:

- Flew more than 24,000 sorties, 58.4 percent of the coalition total.
- Conducted about 9,300 strike and counterair sorties, 45 percent of the coalition total.
- Carried out more than 13,600 air mobility sorties, 81.3 percent of the coalition total.
- Provided aerial refueling that offloaded more than 376 million pounds of jet fuel, 90 percent of the coalition total.
- Flew approximately 880 intelligence-surveillance-reconnaissance and command and control sorties.
- Executed more than 190 combat search and rescue sorties.
- Flew approximately 110 Unmanned Aerial Vehicle ISR or strike sorties, with Predator and Global Hawk systems.
- Conducted more than 1,500 Global Positioning System satellite uploads, providing enhanced GPS accuracies for coalition operations throughout the theater.

By mid-April 2003, the Joint Air Component had dropped on enemy targets 19,948 munitions, 68 percent of which were precision guided. Additionally, Air Force aircrews dropped more than 31 million leaflets in support of psychological operations and other activities and carried out approximately 136 aeromedical evacuation sorties.

Beyond the view of the cameras, global power projection forces in air and space played a pivotal role in the success of joint operations that demonstrated speed, range, flexibility, lethality, and precision—all fundamental attributes of modern airpower. Moreover, specialized USAF forces working near and behind enemy lines aided precision bombing by directing devastating air strikes.

Air and Space Dominance

Air operations in Operation Iraqi Freedom used virtually all Air Force combat aircraft types: B-1Bs, B-2s, B-52s, F-15s, F-16s, F-117s, A-10s, AC-130s, and Combat Search and Rescue and Special Operations Forces helicopters. In a combat first, one force package included all three bomber types—B-1Bs, B-2s, and B-52s. Another first entailed the B-1B's use of moving target indicator data from ISR aircraft.

E-3 AWACS, E-8 Joint STARS, RC-135 Rivet Joint, U-2, and EC-130 aircraft provided round-the-clock command, control, communications, surveillance, and electronic warfare capability. Unmanned systems such as Global Hawk and Predator UAVs also provided remote surveillance. For the first time, Global Hawk was used for strike coordination and reconnaissance. In another first, four Predators flew simultaneously in support of combat operations.

The contributions of space systems were substantial. While this war featured 40 percent fewer troops than were deployed in 1991, the amount of available bandwidth increased by almost 600 percent. The Global Positioning System (GPS) satellite constellation provided accuracies to about 10 feet and allowed the delivery of 5,500 GPS-guided Joint Direct Attack Munitions (JDAMs) with pinpoint precision and minimal collateral damage. Some 50 US satellites provided communications, surveillance, warning, and weather forecasting to the Combined Force Air Component Commander (CFACC). For the first time, the CFACC was designated as space coordinator.

Workhorse C-17 and C-130 aircraft, along with C-141s and C-5s, staged a massive airlift. In one major nighttime operation, 15 C-17s air-dropped approximately 1,000 Army paratroopers and 40 vehicles into northern Iraq—the first time the C-17 had been employed operationally in a combat personnel drop.

A USAF tanker contingent of 149 KC-135s and 33 KC-10s formed the backbone of air operations and kept combat and support aircraft from all services fueled and on station. Combat search and rescue assets flew more than 190 sorties. Air Force Special Operations Forces aircraft also operated effectively in the skies over Iraq.

The war plan was a success. As the operation unfolded, Iraqi forces were not able to initiate attacks on US and coalition forces, mount an attack against neighboring countries, or destroy Iraqi oil fields. There was no refugee crisis, and the number of Iraqis who fled the war was much less than anticipated.

In the first six months of action,

USAF photo by MSgt. Terry L. Blevins

"Air and space power can ... shorten a conflict and help to minimize casualties."

more than 290 US service members were killed, and more than 1,000 had been wounded. While major combat operations were declared over on May 1, 2003, postwar Iraq remained a dangerous place. US military forces have transitioned from combat to restoration of civil order and basic services and the delivery of humanitarian assistance in a country with little functioning infrastructure. It is apparent that long-term stability in Iraq will require considerable resources and a lengthy commitment of US military forces.

Those who made the ultimate sacrifice in Iraq, and others who continue to do so in the ongoing war on terrorism, have the eternal gratitude of the nation. Their families and loved ones deserve our continuing support.

The loss of life might have been greater were it not for the airmen who helped shape the battlefield, protect the flanks of rapidly advancing US ground elements, and decimate whole divisions of enemy forces. Airpower operated 24-hours a day, in all weather conditions, including sandstorms. Targeted by overhead satellites, manned and unmanned aircraft, and specialized forces on the ground, the enemy could not escape as precision strike was brought to bear. Iraqi forces that survived the bombings were cut off from their leaders, left without command and control, and made vulnerable to ground attack.

Lifting the Fog of War

The imperative of modern airpower in the 21st century is now apparent. It can deliver the appropriate amount of firepower on enemy locations, in day or night, in all weather, and with a precision unparalleled in the history of conflict.

The Combined Air Operations Center, or CAOC, helped display information from C4ISR aircraft such as AWACS, Joint STARS, Rivet Joint, Global Hawk, Predator, and satellites in space. These assets produced a near real time view of the battlefield.

The fog of war is beginning to lift, an event spurred by vastly improved situational awareness within the common battle space. Concurrently, sensor-to-shooter time is shortening, making it possible to apply lethal force more swiftly and effectively.

Fundamental differences between Gulf War I and Gulf War II included the maturation of information operations, the prevalence of precision strike, and the compression of operational timelines. Air and space power provided the key infrastructure that made the difference in Operation Iraqi Freedom—ISR, communications links, mobility, strike, and security.

The introduction of Effects-Based Operations has furthered a new American way of war, one that has moved beyond strategies of annihilation and attrition. The goal now is to achieve rapid dominance by obtaining effective control over systems an adversary relies on for power and influence. The new American way of war gains leverage from modern military capabilities such as information superiority, mobility, and precision strike and uses them to achieve US goals.

In modern warfare, ground forces have a vested interest in maintaining a strong Air Force. Because of its superior airpower, the US has not lost a single soldier to enemy aircraft attack since the early 1950s.

Joint warfighters know the significance of air dominance and the impetus it lends to rapid decisive operations. Operations Iraqi Free-

USAF photo by A1C Mike Meares

"We face the danger of major theater war as well as possible challenges in space."

dom, Enduring Freedom, Allied Force, and Desert Storm confirm the rising imperative of air and space power and its pivotal role in the security of the nation.

AFA does not advocate airpower going it alone. The services have unique and complementary capabilities, all of which are essential to successful joint operations across the spectrum of combat situations. Properly applied air and space power can, however, shorten a conflict and help to minimize casualties.

USAF photo by TSgt. Richard Freeland

"Force structure should be sized to match the requirements of ... strategy."

Vigilance

As time blurs our memories of the terrorist attacks of 9/11, we must resist the tendency to let down our guard. Terrorist attacks on the homeland and US interests abroad are still possible. We also cannot afford to neglect other current and future threats. We face the danger of major theater war as well as possible challenges in space. Potential adversaries are looking everywhere—including in cyberspace—for vulnerabilities. Given our nation's ever-increasing reliance on computer networks, cyber attack could cause damage comparable to that from use of a weapon of mass destruction.

AFA believes nuclear deterrence provided by the triad of land-, air-, and sea-based nuclear forces is essential to our national security. The United States should maintain flexible, reliable, and survivable nuclear forces while continuing to press ahead with research and testing that could lead to a comprehensive missile defense capability.

As the world's only superpower, this nation must maintain strong and balanced military capabilities in order to respond effectively across the spectrum of conflict. Potential adversaries will draw their own lessons from Iraq, and one will be the need to try to counter or disrupt US air dominance in the future, perhaps with the use of next generation surface-to-air missiles. The emergence of a serious adversary—not necessarily even a peer adversary—should be a concern.

Daunting Challenge

Now and for the foreseeable future, the Air Force must provide integrated and interoperable capabilities for executing joint and combined operations in support of the war on terrorism, deterring the use of weapons of mass destruction (WMD), dissuading regional threats, and supporting peacekeeping operations.

Current commitments, especially those growing out of the global war on terrorism, have substantially increased the operations and personnel tempo across the Air Force. AFA believes force structure should be sized to match the requirements of our national security strategy. Although funding for Air Force personnel, readiness, and modernization is up, more resources are needed.

Infrastructure funding also remains a concern. Recapitalization of aging and deteriorating facilities requires sustained additional funding. AFA believes the Administration and Congress should fund the equipment, training, and facilities required for the mission. Also, a fair and efficient method of identifying and reducing excess infrastructure must be pursued.

The impressive combat power brought to bear against Iraq was the result of years of sound leadership decisions affecting the acquisition structure and depots and our unmatched military, civilian, and aerospace industry workforce.

Air Force equipment performed well in Iraqi Freedom, in large part because of superb maintenance crews and logisticians. Still, the wear and tear on aging systems must be addressed, and replenishment of the munitions stockpile will be critical to preparing the Air Force for the next conflict.

DOD has indicated that it wants to reshape and not just reconstitute the force for the future. Nonetheless, servicing and repairing the Air Force inventory of equipment—from aircraft to communication equipment—cannot be postponed.

The Air Force is optimizing its capability within resource limits. Air Force investment plans directly support rapid global mobility, precision engagement, aerospace superiority, focused and sustained logistics, and agile combat support for future wars. By developing the skills of its airmen, fielding new technologies, and introducing new warfighting concepts, USAF maintains itself as the world's premier air and space force. Still, air dominance cannot be sustained without adequate investment.

DOD must have access to military ranges and operating areas so as to provide the necessary training and testing environment for airmen seeking to prepare for combat today and in the future. The commitment to comprehensive and realistic training is, and should continue to be, compatible with the Air Force's strong stewardship of the environment.

One hundred years after Kitty Hawk, rapid advances in air and space are possible but will require a sustained national commitment. Air and space power plays a central role in joint and combined military operations and holds the key to military transformation. ■

Awards

These are the Air Force Association National Awards for 2003.

National Aerospace Awards

Award	Recipients
H.H. Arnold Award *AFA's highest honor in national security to a member of the armed forces*	**Gen. T. Michael Moseley,** Commander, USCENTCOM Air Component, and 9th Air Force, Shaw AFB, S.C.
W. Stuart Symington Award *AFA's highest honor in national security to a civilian*	**James G. Roche,** Secretary of the Air Force
John R. Alison Award *AFA's highest honor for industrial leadership*	**Joint Direct Attack Munition Industry Team,** Boeing
David C. Schilling Award *Outstanding contribution in flight*	**The Men and Women of the US Air Force**
Theodore von Karman Award *Outstanding contribution in science and engineering*	**823rd RED HORSE Squadron,** Hurlburt Field, Fla.
Gill Robb Wilson Award *Outstanding contribution in arts and letters*	**Victoria Clarke,** ASD for Public Affairs, Pentagon
Hoyt S. Vandenberg Award *Outstanding contribution in aerospace education*	**Technical Training Division,** Air Education and Training Command, Randolph AFB, Tex.
Thomas P. Gerrity Award *Outstanding contribution in logistics*	**Col. (sel.) Frank Gorman,** Chief, Agile Combat Expeditionary Support, HQ USAF, Pentagon
Department of Veterans Affairs Employee of the Year	**Bob Williamson,** VA Medical Center, Durham, N.C.

Lifetime Achievement Award

Maj. Gen. John R. Alison, USAF (Ret.)
World War II ace; Flying Tiger; special operations.

Col. John H. Glenn Jr., USMC (Ret.)
Pioneering astronaut; Senator.

Maj. Gen. Jeanne M. Holm, USAF (Ret.)
First USAF female general officer.

Col. Charles E. McGee, USAF (Ret.)
Tuskegee airman, flew 136 missions in World War II.

Gen. Bernard A. Schriever, USAF (Ret.)
Architect of USAF ballistic missile and space programs.

Photo by Paul Kennedy

At the convention, Gen. Michael Moseley, now Air Force vice chief of staff, greets four recipients of AFA's Lifetime Achievement Award. They are (left to right) Maj. Gen. John Alison, USAF (Ret.); Gen. Bernard Schriever, USAF (Ret.); Maj. Gen. Jeanne Holm, USAF (Ret.); and Col. Charles McGee, USAF (Ret.). Former Sen. John Glenn Jr. (a retired USMC colonel) was not able to attend.

Crew Awards and Special Citations

Award	Recipients	Achievement
Airborne Battle Management Crew	Crew 13, 963rd ACS, 552nd ACW, Tinker AFB, Okla.	Best ABM crew
CMSAF Thomas N. Barnes Award	SSgt. Russell O. Bledsoe, 317th AMS, Dyess AFB, Tex.	Crew chief of the year
Lt. Gen. Claire L. Chennault Award	Lt. Col. David R. Stephenson, 131st FS, Barnes Arpt., Massachusetts ANG.	Best aerial warfare tactician
Brig. Gen. Ross G. Hoyt Award	Crew Ditka 02, 9th SOS, Eglin AFB, Fla.	Best air refueling crew
Gen. Curtis E. LeMay Award	Crew Chill 41, 40th Expeditionary BS, Diego Garcia, 5th BW, Minot AFB, N.D.	Best bomber aircrew
Gen. Jerome F. O'Malley Award	Rivet Joint Crew Kobie 35, 38th RS, 97th IS, 55th OSS, Offutt AFB, Neb.; 343rd RS, 488th IS, RAF Mildenhall, UK; 755th OSS, Davis–Monthan AFB, Ariz.	Best reconnaissance crew
Gen. Thomas S. Power Award	Crew S-201/S-202, 91st OG, Minot AFB, N.D.	Best missile combat crew
Space Operations Award	Bravo Crew, 1st SS, 21st SW, Cheyenne Mountain AFS, Colo.	Best space operations crew
Lt. Gen. William H. Tunner Award	Capt. Nathan A. Allerheiligen and crew, 61st AS, Little Rock AFB, Ark.	Best airlift aircrew
USAF Test & Evaluation Team of the Year	Quick Reaction Test Team, HQ AFOTEC, Kirtland AFB, N.M.	Best test team
Special Citation	Randy Black Sr., President, Nellis Support Team, Nellis AFB, Nev.	Outstanding support of USAF and men and women of Nellis AFB, Nev.
Special Citation	US Space Foundation's 20th Anniversary, Colorado Springs, Colo.	Twenty years of space advocacy and education

Air National Guard and Air Force Reserve Command Awards

Award	Recipient	Achievement
CMSgt. Dick Red Award	TSgt. Joel Conrad, 116th AW, Georgia ANG	Best ANG aerospace maintenance
Maj. Gen. Earl T. Ricks Award	Capt. Richard D. Watson and crew, 210th RQW, Alaska ANG	Best ANG airmanship
Best Air National Guard Unit	107th FS, Michigan ANG	Top ANG unit
Best Air Force Reserve Unit	711th SOS, Eglin AFB, Fla.	Top AFRC unit
President's Award	Lt. Col. Jerry A. Davidson and crew, 315th AW, Charleston AFB, S.C.	Best Reserve aircrew

USAF Team of the Year

Recipient	Unit
SSgt. Scott T. Ball	2nd ASOS, Wuerzberg, Germany
TSgt. Scott J. Grotbo	169th ASOS, Illinois ANG
SSgt. Joseph S. Hren	25th FS, Osan AB, South Korea
TSgt. Shawn J. Minyon	13th ASOS, Ft. Carson, Colo.
TSgt. Kevin D. Vance	17th ASOS, Hunter Army Air Field, Ga.

USAFA Outstanding Squadron

Cadet Squadron 21
"The Blackjacks"

Fall Cadet Commander
Cadet 1st Class Todd S. Garner

Spring Cadet Commander
Cadet 1st Class Jeffrey Cameron

Citations of Honor

Recipient	Achievement
Capt. Gregory C. Bainum, 91st Space Wing (AFSPC), Minot AFB, N.D.	Led No. 1 missile operations crew for 2002. Instrumental in wing's achievement of an excellent combat capability assessment.
Lt. Col. Mark E. Cline, 9th Air Force/ CENTAF, Shaw AFB, S.C.	Innovative tactics and weapons employment helped revolutionize the use of airpower in Operation Enduring Freedom and for future operations.
Col. Duane A. Jones, CENTAF, Shaw AFB, S.C.	Visionary approach to conceiving, building, and sustaining—on short notice—coalition air bases and the logistics capability needed to sustain the air war.
NATO AWACS Component, Air Force Element, Geilenkirchen AB, Germany	More than 450 USAF personnel assigned to NATO's only AWACS unit deployed with their aircraft to the US for Operation Eagle Assist.
7th Special Operations Squadron (AFSOC), RAF Mildenhall, UK	Provided critical MC-130H Combat Talon II airdrop and air-land support for OEF, evacuations in Africa, and crisis reponse actions in the Balkans.
16th Special Operations Squadron (AFSOC), Hurlburt Field, Fla.	AC-130H Spectre unit provided critical support to ground forces engaged in Operation Anaconda, the most intensive ground offensive in Afghanistan.
39th Airlift Squadron (AMC), Dyess AFB, Tex.	C-130 unit supported back-to-back air expeditionary forces before shifting to OEF operations. Developed new night-vision-goggles procedures.
39th Operations Group (USAFE), Incirlik AB, Turkey	Provided flight, intelligence, maintenance, and weather support for 40 deployed flying units covering Operations Northern Watch and Enduring Freedom.
41st Rescue Squadron (ACC), Moody AFB, Ga.	Integrated CSAR with AFSOC and Army in Afghanistan and Iraq; set up CSAR at two bare bones bases—piloted new rapid, smaller footprint deployment capability.
75th Maintenance Group (AFMC), Hill AFB, Utah	Provided extensive logistics support for 2002 Olympics and logistics and munitions support for OEF, including processing some 14 million pounds of munitions.
374th Operations Group (PACAF), Yokota AB, Japan	Provided C-130, C-9, C-21, and UH-1N support—intratheater airlift, including OEF-Philippines, and medevac for operations in Iraq.

Professional, Civilian, and Educational Awards

Award	Recipient
Gen. Billy Mitchell Award for C4 Excellence	MSgt. Brian A. Chisholm, Hurlburt Field, Fla.
Paul W. Myers Award for Physicians	Maj. J. Scott Calder, Spangdahlem AB, Germany
Verne Orr Award for Human Resources	66th Rescue Sq., Nellis AFB, Nev.
Juanita Redmond Award for Nursing	Capt. Scott F. Sanders, Lackland AFB, Tex.
Stuart R. Reichart Award for Lawyers	Col. Thomas L. Strand, Maxwell AFB, Ala.
Personnel Manager of the Year	Maj. Guy E. Parker, Pope AFB, N.C.
Civilian Wage Employee of the Year	Robert N. Hall, Hill AFB, Utah
Civilian Program Specialist of the Year	Tommy L. Baldwin, Langley AFB, Va.
Civilian Program Manager of the Year	Megan Horn, SAF/IQ, Pentagon, Washington, D.C.
Civilian Senior Manager of the Year	Dennis Love, Eglin AFB, Fla.
AFROTC Cadet of the Year	Christina Jean Croy, University of Colorado–Boulder
CAP Aerospace Education Cadet of the Year	Maxwell C. Sissman, National Capital Region
Joan Orr Award for Air Force Spouse of the Year	Tammie Lynn Bocook, Robins AFB, Ga.
Christa McAuliffe Memorial Award for Teachers	Sally Gwaltney, Wilson, N.C.
Sam E. Keith Jr. Aerospace Education Award of Excellence	Lincoln Chapter, Lincoln, Neb.
George D. Hardy Memorial Award	Jeri Ann Martin, Hurlburt Chapter, Fla.
Jimmy Stewart Aerospace Education Award	GA-871 Unit, Shiloh High School, Snellville, Ga.

Management and Environmental Achievement Awards

Award	Recipient
AFMC Executive Management Award	Col. Ross E. Roley, Edwards AFB, Calif.
AFMC Middle Management Award	Maj. John C. Kubinec, Hill AFB, Utah
AFMC Junior Management Award	Capt. Jeffrey R. King, Wright–Patterson AFB, Ohio
Gen. Edwin W. Rawlings Award for Environmental Excellence (Management)	Maj. Patrice A. Melancon, NAS JRB Fort Worth, Tex.
Gen. Edwin W. Rawlings Award for Environmental Excellence (Technical)	TSgt. Ronald C. Carden, Andersen AFB, Guam

2003 AFA Membership and Activity Awards

AFA Member of the Year

W. Ron Goerges, Ohio

AFA Member of the Year Ron Goerges of Ohio during a break in the September Board of Directors meeting.

D.W. Steele Sr. Memorial Award

(AFA Unit of the Year)

Hurlburt Chapter, Fla.

Accepting the award for the Hurlburt Chapter was Richard Schaller, chapter president, flanked by Chairman of the Board John Politi (left) and National President Pat Condon.

Photo by MSgt. John Manna

Maj. Timothy Nesley (far right) took home the Arthur C. Storz Sr. Membership Award for an individual. Here, Nesley and the Chief of Staff, Gen. John Jumper (second from left), pose for a photo with other Carl Vinson Memorial Chapter (Ga.) members at the exhibits. They are (l to r) Maj. Vivian Dennis, Capt. Latasha Dunn, and SSgt. Anthony Guzzardo. Dennis is a newly elected Leadership Development Director, and Guzzardo signed up 35 new members.

Jack Gross Award

Small Chapter

Gen. Robert E. Huyser, Colo.

Medium Chapter

Mount Clemens, Mich.

Large Chapter

Ute–Rocky Mountain, Utah

Extra Large Chapter

Montgomery, Ala.

Chapter Larger Than 1,500

Carl Vinson Memorial, Ga.

Arthur C. Storz Sr. Membership Awards

Chapter Award

Gen. Robert E. Huyser, Colo.

Individual Award

Timothy Nesley, Ga.

2003 AFA Membership and Activity Awards

Unit Activity Awards

Outstanding State Organization
New Hampshire

Outstanding Small Chapter
Pioneer Valley, Mass.

Outstanding Medium Chapter
No award given.

Outstanding Large Chapter
Ute–Rocky Mountain, Utah

Outstanding Extra Large Chapter
Lance P. Sijan, Colo.

Exceptional Service—Best Single Program
Utah State

Exceptional Service—Communications
Gen. E.W. Rawlings, Minn.

Exceptional Service—Community Partners
Enid, Okla.

Exceptional Service—Community Relations
Paul Revere, Mass.

Exceptional Service—Overall Programming
Central Florida, Fla.

Exceptional Service—Veterans' Affairs
Wright Memorial, Ohio

Community Partner Membership Awards

Gold Award

Altus, Okla.
Carl Vinson Memorial, Ga.
Col. H.M. "Bud" West, Fla.
Contrails, Kan.
Diamond State, Del.
Eagle, Pa.
Enid, Okla.
Fairbanks Midnight Sun, Alaska
Fort Wayne, Ind.
Gen. B.A. Schriever Los Angeles, Calif.
Gen. David C. Jones, N.D.
Happy Hooligan, N.D.
High Desert, Calif.
Hurlburt, Fla.
Leigh Wade, Va.
Llano Estacado, N.M.
Lloyd R. Leavitt Jr., Mich.
Mercer County, N.J.
Mount Clemens, Mich.
Richard D. Kisling, Iowa
Richard S. Reid, Ariz.
Robert H. Goddard, Calif.
Steel Valley, Ohio
Swamp Fox, S.C.
Total Force, Pa.
Ute–Rocky Mountain, Utah
Wright Memorial, Ohio

Achievement Award

Alamo, Tex.
Antelope Valley, Calif.
Ark–La–Tex, La.
Cape Canaveral, Fla.
Charles Hudson, Calif.
Chautauqua, N.Y.
Cheyenne Cowboy, Wyo.
Cochise, Ariz.
Concho, Tex.
David D. Terry Jr., Ark.
Delaware Galaxy, Del.
Earl D. Clark Jr., Mo.
Edward J. Monaghan, Alaska
Gen. Charles L. Donnelly Jr., Tex.
Highpoint, N.J.
Joe Walker–Mon Valley, Pa.
Lance P. Sijan, Colo.
Long's Peak, Colo.
McChord AFB, Wash.
Monterey Bay Area, Calif.
Montgomery, Ala.
Northeast Texas, Tex.
Palm Springs, Calif.
Panhandle AFA, Tex.
Pope, N.C.
Thunderbird, Nev.
Tidewater, Va.
William A. Jones III, Va.

Special Recognition—Sustained New Member Recruitment

Ark–La–Tex, La.
Bill Harris, Ore.
Blue Ridge, N.C.
Capt. William J. Henderson, Wis.
Carl Vinson Memorial, Ga.
Central Florida, Fla.
Charles Hudson, Calif.
Chautauqua, N.Y.
Cochise, Ariz.
Col. H.M. "Bud" West, Fla.
Columbia Gorge, Ore.
Columbia Palmetto, S.C.
Concho, Tex.
David D. Terry Jr., Ark.
Eglin, Fla.
Fairbanks Midnight Sun, Alaska
Gen. Charles A. Horner, Iowa
Gen. David C. Jones, N.D.
Gen. Robert E. Huyser, Colo.
Golden Triangle, Miss.
Happy Hooligan, N.D.
Harry S. Truman, Mo.
High Desert, Calif.
Hurlburt, Fla.
Iron Gate, N.Y.
Joe Walker–Mon Valley, Pa.
John W. DeMilly Jr., Fla.
Lance P. Sijan, Colo.
Langley, Va.
Leigh Wade, Va.
Lt. Col. Philip Colman, Ga.
Metro Rhode Island, R.I.
Miami, Fla.
Montgomery, Ala.
Mount Clemens, Mich.
Newport Blue & Gold, R.I.
Paul Revere, Mass.
Pioneer Valley, Mass.
Richard D. Kisling, Iowa
Richard S. Reid, Ariz.
Roanoke, Va.
Scott Berkeley, N.C.
Shooting Star, N.J.
Ute–Rocky Mountain, Utah

Named in Memorial Tribute

Deaths during the past year that were formally recognized at the convention

Patricia Accetta
CMSAF Thomas N. Barnes, USAF (Ret.)
Karl W. Berg
Roland L. Butler
Maj. Gen. Richard Carr, USAF (Ret.)
Lt. Gen. Martin G. Colladay, USAF (Ret.)
Gen. W.L. Creech, USAF (Ret.)
Walter J. Cronin
Charles E. Cruze
Lt. Col. James Davidson, USAF (Ret.)
Lt. Gen. Roger G. DeKok, USAF (Ret.)
Gen. Robert J. Dixon, USAF (Ret.)
Hector Evans
Joe Foss
Gen. Charles A. Gabriel, USAF (Ret.)
Mary Anne Gavin
Col. James Grant, USAF (Ret.)
CMSgt. David B. Hansen
Bernard L. Hanlon
Bob Hope
Col. Rick D. Husband
Mary Sue Keith
Brig. Gen. David L. Ladd, USAF (Ret.)
Charlotte Loos
George Mattson
Edward J. McCormick
Karl Miller
Col. Samuel F. Miller, USAF (Ret.)
Alfred R. Musi
TSgt. Jake S. Nelson, USAF (Ret.)
Lt. Col. R.H. Ottman, USAF (Ret.)
Lt. Col. Frank A. Pfeffer, USAF (Ret.)
Earl G. Pingel
Julian B. Rosenthal
MSgt. Stephen D. Rudloff, USAF (Ret.)
Peter J. Schenk
Col. Henry R. Smith, USAF (Ret.)
Thomas F. Stack
SMSgt. C.J. Tanner, USAF (Ret.)
Brig. Gen. R.E. VanHousen, USAF (Ret.)
Lt. Col. Daniel J. Vogel, USAF (Ret.)
Scotty Wetzel
John E. Zipp

Individual Activity Awards

Presidential Citation

John Timothy Brock, Fla.
David T. Buckwalter, R.I.
Edward M. Bullard, Washington, D.C.
Winston S. Gaskins, Mass.
Ted Kerr, Colo.
Robert E. Largent, Ga.
Steven Lundgren, Alaska
Bruce Marshall, Fla.
Coleman Rader Jr., Minn.
Ray Turczynski Jr., Fla.

Central East Region

Medal of Merit

Jeff Barnett, Va.
Julie L. Bowles, Va.
Jim Hardenbrook, Va.
William D. McGuth, Washington, D.C.
Matthew Monczewski, Va.
Fred Richardson, Va.
Randolph W. Royce, Va.
Jerry Wright, Va.

Exceptional Service Award

Henry M. Hobgood, Va.
Linda Lerner, Va.
Ellen Merilic, Va.
Miles Sawyer, Va.
Thad A. Wolfe, Va.

Far West Region

Medal of Merit

Dayna Castro, Calif.
Seb Coglitore, Calif.
Brenden J. Davis, Hawaii
James H. Gates, Calif.
Norton B. James III, Calif.
Dick Jeffreys, Calif.
Ken Nishiyama, Calif.
Rick Randall, Calif.
Rick Reaser, Calif.
Arthur J. Stengell, Calif.

Exceptional Service Award

Rick Jones, Calif.
Ed Lewis, Calif.
Don Tomajan, Calif.
Charles E. Whited, Calif.

Florida Region

Medal of Merit

Dave Andrews, Fla.
Mark D. Chapman, Fla.
Gary L. Gilchrist, Fla.
Earl W. Harden, Fla.
Doug Hardin, Fla.
Grady Jordan, Fla.
Dave Miller, Fla.
Richard Schaller, Fla.
Stan Siefke, Fla.

Exceptional Service Award

Hugh L. Cox III, Fla.
E. Max Friedauer, Fla.
Deborah Hatch, Fla.
William Kirk, Fla.

Great Lakes Region

Medal of Merit

George V. Back, Ohio
Stephen J. Dillenburg, Ohio
Samuel E. Greenwood, Ohio
James R. Heitz, Ohio
Fredrick L. Pumroy, Ohio
Michael Winslow, Ohio

Exceptional Service Award

Everitt Padgitt, Ind.
William J. Schaff, Ohio
Ron Thompson, Ohio

Midwest Region

Medal of Merit

William S. Clifford, Kan.
Senlo B. Distin, III.
Bill Florich, Mo.
Bryan Hutchings, Mo.
Kevin Lewis, Mo.
Bob Mass, Mo.
Fred Niblock, Mo.

Exceptional Service Award

Judith K. Church, Mo.
Jerome E. Hughes, Mo.
Thomas Stark, III.

New England Region

Medal of Merit

Sue Alexander, Mass.
Joe Bisognano, Mass.
Brad Butler, Mass.
Kevin S.C. Darnell, R.I.
Carolyn Fitch, Conn.
Edward H. Josephson, N.H.
Cheryl Kristant, Mass.
Jay Waller, R.I.

Exceptional Service Award

Wayne R. Mrozinski, R.I.
Eric P. Taylor, N.H.
Donald B. Warmuth, Mass.

North Central Region

Medal of Merit

Conrad Burns, Mont.
Edwin C. Culbert, Minn.
Christopher R. Ferrez, N.D.
Paul Groskreutz, Minn.

Exceptional Service Award

Richard P. Giesler, Minn.
Ronald W. Mielke, S.D.

Northeast Region

Medal of Merit

John Fabricatore, N.J.
James A. King Jr., Pa.
Dorothy Stone, Pa.
William E. Stone, Pa.

Exceptional Service Award

Fred Di Fabio, N.Y.

Northwest Region

Medal of Merit

Becky Craig, Ore.
Stan Gohl, Alaska
Gregor J. Leist, Ore.
Helen (Fran) McGregor, Wash.
Art Mussman, Wash.
Glenda J. Smth, Wash.
Karen S. Washburn, Alaska

Exceptional Service Award

Bryon R. Fessler, Ore.
O. Thomas Hansen, Wash.
Gary Hoff, Alaska
Fred Rosenfelder, Wash.

Pacific Region

Gary L. McClain, Japan

Rocky Mountain Region

Medal of Merit

John Boone, Colo.
Thomas A. Deall, Colo.
Mark Fry, Colo.
Sherry L. Gardner, Colo.
Michael Jewett, Utah

Exceptional Service Award

Janet L. Cowley, Wyo.
Gary A. Strack, Utah
Kit Workman, Utah

South Central Region

Medal of Merit

Larry Boese, Ala.
Thomas W. Gwaltney, Ala.
Don Karle, Ala.
Cynde Maddox, Ark.
Pat McCoy, Ala.

Exceptional Service Award

Ray Bean, Ala.
Marleen Eddlemon, Ark.
Jim Ridling, Ala.
Rick Zehrer, Ala.

Southeast Region

Medal of Merit

Larry Fowler, N.C.
Michael S. Hunsucker, N.C.
Jeane W. Paris, Ga.
Stephen R. Pingel, N.C.
Robert H. Robertson, Ga.
James Rogers, S.C.
David Snodgrass, S.C.

Exceptional Service Award

Michael J. Bolton, Ga.
Rodgers K. Greenawalt, S.C.
Roger Rucker, S.C.
Roy Vice, N.C.

Southwest Region

Medal of Merit

Robert D. Anderson, Ariz.
Luisa C. Bailey, Ariz.
Daniel P. Bounds, Ariz.
Peter J. Morris, Ariz.
David Sanderson III, Ariz.

Exceptional Service Award

Thomas E. Rowney, Ariz.
Duane C. Wyles, Ariz.

Texoma Region

Medal of Merit

Ron Beezley, Tex.
Clayton A. Church, Tex.
Mary Feightner, Okla.
Lee Hayes, Okla.
Bruce Jackson, Okla.
Ross B. Lampert, Okla.
Lisa Anne Merritt, Okla.
William J. Redmond, Tex.
Helen Seidel, Tex.
Robert Slaughter, Tex.

Exceptional Service Award

William P. Bowden, Okla.
Michael G. Cooper, Okla.
Carlos Massiatte, Tex.
Daniel O'Neal, Tex.
Jackson Smith, Tex.
Bill Sparks, Tex.

The Outstanding Airmen

By Tamar A. Mehuron, Associate Editor

SrA. (now SSgt.) Omar Ali Abed. Security Forces Craftsman, 37th Security Forces Squadron (Air Force Reserve Command), Lackland AFB, Tex.—Helped relocate al Qaeda and Taliban prisoners from Afghanistan to US holding facility. ... Trained with joint service personnel. ... Selected for initial entry team into Afghanistan to extract captured combatants. ... Language skills (Arabic and Spanish) aided work in Afghanistan and Stateside border patrols during a homeland security deployment.

MSgt. Douglas A. Ackerman. Superintendent, Aerial Port Operations, 726th Air Mobility Squadron (Air Mobility Command), Rhein–Main AB, Germany—Led stand-up of Rhein–Main as main airlift hub for Operation Enduring Freedom in Afghanistan. ... Ran loading operations for record troop movements—nearly 36,000 in one month. ... Directed first strategic-to-strategic load shift from C-5s to C-17s—done in six hours. ... Wrote plan to phase out passenger operations for scheduled closure of Rhein–Main.

SrA. Hector G. Bauza. Biomedical Engineering Journeyman Apprentice, 18th Medical Group (Pacific Air Forces), Kadena AB, Japan—USAF's Outstanding Biomedical Equipment Repair Airman of the Year 2002 ... Consistently improved operations—surpassing unit and command workflow goals despite manning shortage. ... Revamped equipment inventory system. ... Initiated paperless record archiving system. ... Designed sterilizer maintenance program, greatly reducing repair cost and time.

The Air Force Outstanding Airman award is an annual program that recognizes 12 outstanding enlisted personnel for superior leadership, job performance, community involvement, and personal achievements.

The program was initiated at the Air Force Association's 10th annual National Convention, held in New Orleans in 1956.

The Chief Master Sergeant of the Air Force and the command chief master sergeants from each USAF major command form the selection board. The selections are reviewed by the Air Force Chief of Staff.

The 12 selectees are awarded the Outstanding Airman ribbon with the bronze service star device and wear the Outstanding Airman badge for one year.

SrA. (now SSgt.) Jason R. Blodzinski. Combat Control Journeyman, 23rd Special Tactics Squadron (Air Force Special Operations Command), Hurlburt Field, Fla.—Directed precision air strikes against al Qaeda and Taliban forces in Afghanistan. ... Volunteered to reconnoiter enemy front line to increase the precision of air strikes. ... Led all-night tactical movement up an 11,000-foot peak to call in close air support strikes to aid ground forces. ... Secured and prepped a remote airstrip used for combat sorties.

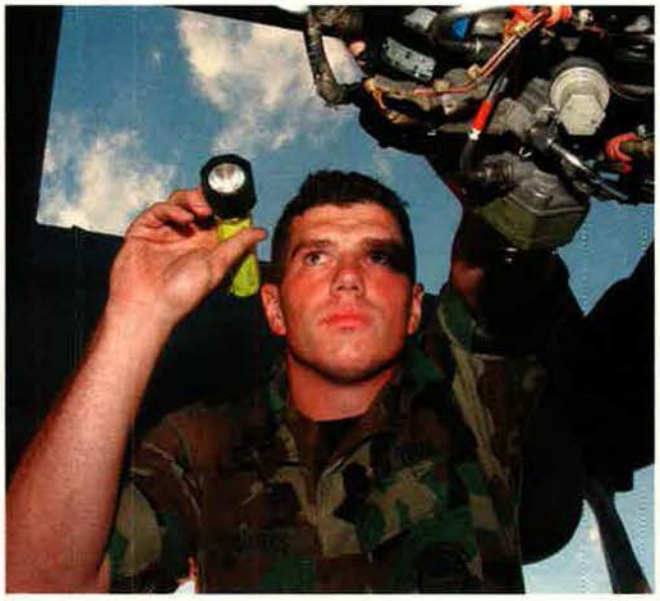
TSgt. James H. Coffey III. Flight Chief, 50th Security Forces Squadron (Air Force Space Command), Schriever AFB, Colo.—Led unit to excellent operational readiness inspection. ... Expert trainer—produces high scoring, exceptionally qualified troops. ... Appointed chief of security forces operations for portion of NATO's Operation Joint Forge. ... Identified and recommended improvements to security arrangements at Istres AB, France. ... Led force protection survey of hotels housing 130 US personnel—relocating some from hotel vulnerable to vehicle explosion.

SMSgt. Keith D. Finney. Chief of Heavy Repair, 51st Civil Engineer Squadron (Pacific Air Forces), Osan AB, Korea—Pointman for all tent city support. ... Managed beddown preparations for 1,500 personnel deployed for critical exercises. ... Led renovation of aircraft hangar for deployment processing. ... Created a five-year maintenance plan for airfield and base pavement. ... Directed repair of Osan's damaged airfield, eliminating foreign object damage hazard. ... Led work to remove aircraft tire rubber from runways to improve aircraft braking action.

TSgt. Tara A. Marta. Noncommissioned Officer in Charge, Surveillance, Standardization, and Evaluation Flight, 932nd Air Control Squadron (US Air Forces in Europe), NAS Keflavik, Iceland—First junior NCO to hold mission crew commander technician position—qualified in record time. ... Holds six combat mission-ready positions—instructs in five. ... Reduced training time, alleviating combat mission-ready personnel shortage. Served as lead air surveillance technician for a joint Air Force–Navy exercise. ... Directed first electronic radar attack test against Iceland's four radar sites. ... Picked to lead NORAD link recertification testing team.

SMSgt. Thomas O. McConnell. Munitions Material Superintendent, 39th Wing (US Air Forces in Europe), Incirlik AB, Turkey—Directed munitions support for 3,700 Operation Northern Watch sorties. ... Managed shipment of 1,750 short tons of special forces munitions to Afghanistan. ... Led digital encryption conversion of wing's entire weapons inventory. ... Shepherded beddown of Joint Direct Attack Munition stores at Incirlik. ... Coordinated munitions shipments to sites throughout Southwest Asia. ... Developed dynamic explosive ordnance disposal weapons trainer.

SrA. Nathan H. Summers. C-130H Crew Chief, 317th Aircraft Maintenance Squadron (Air Mobility Command), Dyess AFB, Tex.—Received commendation for excellence from Air Force Chief of Staff. ... Key to unit earning 15 Air Force and command safety awards. ... Generated more than 600 combat sorties for Afghanistan operations. ... Led crew in producing 100 percent aircraft launch reliability for 110 straight days. ... Flew on several combat airlift missions. ... Handpicked for expeditionary combat support deployment to Aviano AB, Italy. ... Worked transport of critical repair parts for F-16 stranded on Sardinia.



SrA. Harold J. Tolbert II. Heating, Ventilation, Air-Conditioning and Refrigeration Apprentice, 9th Civil Engineer Squadron (Air Combat Command), Beale AFB, Calif.—Installed new HVAC system at combined air operations center during deployment to Prince Sultan AB, Saudi Arabia—24-hour emergency upgrade eliminated chronic overheating problem. ... Repaired another HVAC that averted shutdown of PSAB's main dining hall. ... Helped to keep PSAB's SATCOM link intact by repairing leaking refrigerant circuit. ... Aided coalition forces—repairing or replacing cooling units throughout base. ... Led unit in preventive maintenance.

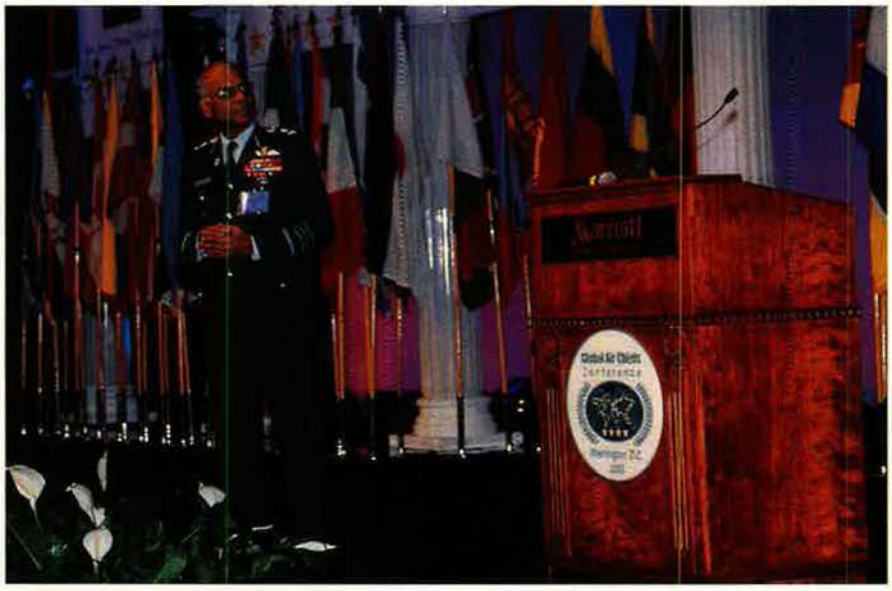
SSgt. Christopher D. Tuck. Contracting Specialist, 325th Contracting Squadron (Air Education and Training Command), Tyndall AFB, Fla.—Handled 40 R&D contracts for state-of-the-art robotics used in Afghanistan. ... Deployed to Southwest Asia with expeditionary contracting team. ... Identified US vendors and thereby helped expedite deliveries—cut lead time from 24 days to five days—of war materiel to Southwest Asia. ... Conducted first local vendor survey, identifying previously unknown vendors. ... Led efforts to carry out short-notice beddown of RED HORSE unit.

SSgt. (now TSgt.) Kevin D. Vance. Terminal Attack Controller, 17th Air Support Operations Squadron (Air Combat Command), Hunter Army Air Field, Ga.—Exhibited great skill and bravery. ... Two tours in Afghanistan. ... Earned Silver Star for gallantry under hostile fire during intense action in mountain warfare at an altitude of 10,000 feet. ... Directed numerous successful air strikes within 250 feet of friendlies. ... Provided covering fire for team members. ... Considered by Army Rangers as one of their own. ... Praised by both Air Force and Army Chiefs of Staff.

A Gathering of Global Air Chiefs

Photography by Paul Kennedy

For a week, the Air Force and AFA hosted the world's most senior uniformed airpower leaders.

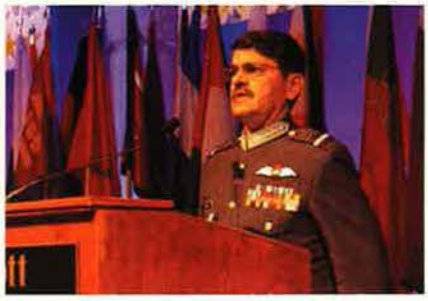


In recognition of the centennial of flight, air chiefs of some 90 nations convened in Washington, D.C., for a conference and a chance to interact with fellow airmen. At left, the Chief of India's Air Force, Air Chief Marshal Srinivasapuram Krishnaswamy, addresses the conference. Linguists provided simultaneous translations into six languages, piped in via headsets.

Lt. Gen. Gerhard Back, Luftwaffe Chief of Staff, prepares for his talk on post-Sept. 11 air security measures in Europe. Attendees heard addresses from nine air leaders. They were, in order of appearance:

- *Air Marshal Jonah Domfa Wuyep, Nigeria.*
- *Air Chief Marshal Kaleem Saadat, Pakistan.*
- *Lt. Gen. Gerhard Back, Germany.*
- *Gen. Carlos Alberto Rohde, Argentina.*
- *Air Chief Marshal S. Krishnaswamy, India.*
- *HRH Maj. Gen. Prince Feisal bin Al-Hussein, Jordan.*
- *Gen. Richard Wolsztynski, France.*
- *Maj. Gen. Leif Simonsen, Denmark.*
- *Gen. Yoshimitsu Tsumagari, Japan.*

The chiefs pose for a "class reunion" photo at the conference site. The air leaders had not met as a group since 1997, when they gathered in Las Vegas to honor the 50th birthday of the US Air Force. Their host, Gen. John P. Jumper, USAF Chief of Staff, is in the center of the front row.
In the photo at right, the RAF's Air Chief Marshal Sir Jock Stirrup converses with HRH Maj. Gen. Prince Feisal bin Al-Hussein of Jordan, who spoke about Gulf regional security issues. The Japanese Air Chief, Gen. Yoshimitsu Tsumagari, spoke about the changing missions of the Japan Air Self-Defense Force.



Air Chief Marshal Kaleem Saadat of Pakistan told the gathered chiefs that, despite ups and downs, Pakistan remains a "steadfast ally" of the US in the war on terror.

Toward a New Style of Warfare

At AFA's Washington symposium, Air Force and national leaders measure progress in the war on terror.

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

SENIOR Air Force and national leaders as well as top private experts gathered at AFA's International Airpower Symposium held Sept. 16–17 in Washington, D.C., to review and assess the progress of and lessons from the Global War on Terrorism. Among the more significant topics were the development of USAF's expeditionary capabilities, the emergence of true jointness as a critical force multiplier, and the power of precision weapons and information to transform operations in the modern battlespace.

Secretary James G. Roche

The Air Force rapidly adjusted to the challenges posed by the war in Iraq—a testament to its "expeditionary operating concepts" as well as "the airmen who have adopted this mind-set as the norm rather than the exception," said James G. Roche, Secretary of the Air Force.

Operation Iraqi Freedom in Iraq and Operation Enduring Freedom in Afghanistan changed the Air Force "footprint around the world ... substantially," said Roche. The service set up "new bases and renewed relationships" and proved "remarkably flexible in adapting to these new demands."

Roche said that "teamwork and trust" made Gulf War II a coordinated "warfighting effort from planning to execution." One example was the joint planning effort of the Air Force and Army to iron out air-ground coordination problems that surfaced during Operation Enduring Freedom. As a result, USAF placed an air component coordinating element—led by then Maj. Gen. Daniel P. Leaf—with the land component commander for Gulf War II.

However, Roche emphasized the need to refrain from becoming "complacent" because, he said, "there are still many areas where we need to improve."

One area of particular concern, he said, is the battle damage assessment process, something Gen. John P. Jumper, USAF Chief of Staff, also emphasized in his remarks (see below).

Roche said that the BDA system must be "as dynamic and responsive as our ability to strike" because good BDA is essential for rapid decision-making. "Anything less undermines the inherent deterrence and compelling effects airpower brings to our warfighting team," he said.

Another necessity, said Roche, is to establish a "balanced and streamlined approach to space knowledge." He said that the Air Force must make sure it has the "right staffing" in the combined air operations centers to support space missions such as space control. "And we need a space common operating picture," he declared, "not a series of PowerPoint slides representing one."

Roche also said that current events and trends in Iraq and Afghanistan are providing additional "powerful lessons." Attacks in Iraq have not been limited to coalition military targets but to the very institutions that would help rebuild Iraq into a functioning nation. These events "confirm the persistent threat posed by those who oppose freedom and tolerance," said Roche, adding, "The rising insurrectional alliance between radical Islamic groups and the Baathists will prove to be yet another front in the war on terror."

He called the re-emergence of small Taliban elements in Afghanistan and the "expanding presence of terror groups in Morocco, Yemen, Indonesia, and other locales" a "persistent threat." Therefore, he said, "we must continue to invest in the capabilities that will allow us to prevail in conflict—whether in a major conventional war or [in] the asymmetric battles we increasingly face these days."

To that end, Roche said, the Air Force will continue to pursue not only next generation systems, such as the F/A-22, but also "innovations that create new capabilities from legacy systems." Among those innovations are the addition of laser targeting pods on the venerable B-52 bomber and the real-time video link from the Predator unmanned aerial vehicle to the AC-130 gunship. He also cited a recent adaptation for the B-2 stealth bomber that enabled it to drop 80 satellite guided bombs in a single run.

"Every weapon hit within 10 feet of its intended target from over 35,000 feet and 10 miles away," he

Vice President Dick Cheney

The Sept. 11 terrorist attacks on American soil "demonstrated how vulnerable we are as a nation" and how terrorists can "take advantage of our open borders and open society and use them against us," Vice President Dick Cheney told attendees at one of AFA's National Convention symposia.

To counter this threat, the vice president said the Administration had to look beyond the "old, Cold War remedies" and devise a new viable national security strategy—one that recognizes the unique nature of terrorism and "puts us on the offense."

Simply put, he said, "there is nothing they value highly enough that we can put at risk to keep them from launching an attack against the United States." A defensive posture is inadequate, he said, because even if almost all attacks are prevented, the one that "gets through can still kill you."

Cheney said, "We need a strategy ... that lets us go after those who pose a threat to the United States or our friends and allies, a strategy that allows us to destroy the terrorists before they can launch attacks against us."

There are those who say the United States is wrong to take the offensive in the war on terror. However, Cheney maintained, "We cannot wait to act until after another day like 9/11—or a day far worse." He quoted President Bush, who has said, "If the threat is permitted to fully and suddenly emerge, all actions, all words, and all recriminations would come too late."

Cheney continued, "We will be much more secure if we aggressively go after the terrorists and after the nations and the mechanisms that support them than if we lay back and wait for them to strike us again here, in the United States."

He emphasized that this is a war "that involves not just the United States but all of the nations of the civilized world." Cheney underscored how evidence found in Afghanistan, where al Qaeda had the support of that nation's now-deposed Taliban regime, revealed that US enemies "are determined to acquire weapons of mass destruction—chemical, biological, or nuclear weapons." He went on, "We have every reason to believe that if they succeed, they will use them, launching attacks far more deadly than anything we've ever experienced."

The vice president noted that the Air Force's role in the war on terror has been "crucial."

Cheney said: "The Air Force's global reach enables us to project our power anywhere in the world within a matter of hours. Its new tactics and precision weapons help us achieve our military objectives while minimizing collateral damage. It provides umbrella coverage for the defense of our homeland."

Although the US and its allies are "making steady progress," he said, "the work goes on." Ultimately, Cheney said, the war on terror is against an enemy that "rejoices in the murder of innocent, unsuspecting human beings," adding, "That is why people in every part of the world and of all faiths ... can settle for nothing less than total victory."

said. And it took "less time to target these 80 weapons than the usual eight hours it takes us to target 16 [Joint Direct Attack Munitions]," said Roche, explaining that the feat was made possible by using "machine-to-machine integration."

Adaptation also applies to new systems. Roche said the Air Force continues to adapt the new F/A-22 fighter, even before it is fielded. "The F/A-22 has changed in major ways," he said, listing its suite of avionics, new weapons, and enhanced, active, electronically scanning antenna radar. "We are transforming the world's greatest air dominance fighter into the world's supreme multirole attack system—one that is nearly invisible to the enemy and one able to hold hostage virtually any target," said Roche.

"When this aircraft is fielded in numbers, and the combatant commanders learn of its incredible capabilities, we will produce as many as we need to ensure our nation's continued security," Roche predicted.

Gen. John P. Jumper

The recent war in Iraq showcased the Air Force's push to go back to its roots as an expeditionary force and its continuing rapid evolution as it applies new thinking to old hardware and doctrine, according to Gen. John P. Jumper, USAF Chief of Staff.

During the Cold War, the Air Force lost the "expeditionary habits" developed in World Wars I and II, but it has reclaimed that heritage and is now flexible enough to go anywhere on short notice, he said.

Gulf War II saw USAF set up 36 provisional bases—so many that "we couldn't have opened even one more" due to a shortage of such mundane things as tents, said Jumper. He now deems it "a basic core competency" for the Air Force to be able to swiftly move in and set up operations at austere locations. Eight of 10 Air Expeditionary Forces were needed for the fight, Jumper observed. It will take until next March to get the system back into its normal deployment rhythm.

Jumper acknowledged, too, that despite the stunning successes of Gulf War II, the war also showed up the fact that air mobility assets were "stretched to the limit." He said there's been no decision about seeking more than 180 C-17s, though, and likely won't be until it is better understood whether the C-5 fleet can be economically upgraded and whether the Air Force will get new aerial tankers.

Operation Iraqi Freedom demonstrated that USAF is thinking about things in "new ways"—delivering close air support from B-52s aided by Global Hawk sensor unmanned aerial vehicles and forging tight links between satellites, pilots in the air, special forces on the ground, and land force commanders to rapidly plow a path through enemy defenses.

"The first lesson is the importance of not losing sight of the fact that joint warfare is the imperative," said Jumper. USAF worked "very closely" with the Army and Marine Corps and was able to "mature the relationship" between the land component commander and the air component commander, he added. The days are over, Jumper asserted, when any service assumes it can win a war by itself.

By going back to square one and discussing the means of fighting in conceptual—rather than equipment—terms, the services have a common language and can develop better ways to address emerging and chronic needs, he said. The Air Force is now thinking in terms of how it will fight before addressing what it will buy to

fight with. Putting concepts ahead of programs "puts some discipline into our system," said Jumper.

Bomb damage assessment proved to be something the service continues "to do badly," Jumper noted. His goal is to rework the definition of BDA so that it doesn't require such detailed analysis, enabling the Air Force to get a more useful assessment to the commander "more quickly." And he said that one way to expand BDA coverage is to use aircraft returning from strikes. They could be routed over sites attacked by other aircraft to take images with sensors they already possess. This would involve no new purchases of gear but speed up the process of deciding if an urgent target has actually been destroyed or needs to be attacked again.

"In the future, as we continue to try to transform, we will see the traditional way we think about intelligence—where you collect it, then you analyze it, and then you report—is also going to be used inside the kill cycle to find and fix and kill targets in real time," explained Jumper. "We have to find ways to shift those assets back and forth across the traditional lines so that those assets can be used both ways and can make that transition seamlessly."

Space programs will continue to receive emphasis, said Jumper, noting "a great upsurge" in 2004 funding. The Air Force has "really not done a bad job of keeping our space capabilities modernized," he observed, because space systems are so critical "you have no choice. Once they stop, you've got to put something up there to replace it." In fact, he said, "we've done a better job" modernizing space systems "than we have on modernization in our airborne force."

The science and technology budget is and will remain under pressure he warned, adding that USAF is only spending "the minimum level that we need."

Jumper provided a status check on the F/A-22, saying USAF has "wrestled to the ground" the fighter's software instability problems. The airplane is proving to be a hit with operational testers, he reported.

"This is going to be the most amazing air machine that has ever been developed," he asserted, quoting test reports describing the Raptor as able to deliver a consistently and "grossly one-sided fight" against top-rated F-15s and their pilots.

Transportation Secretary Norman Y. Mineta

"The United States Air Force has a proud aviation history, one that has long been intertwined with commercial aviation," said Transportation Secretary Norman Y. Mineta.

Commercial aircraft made gains in performance following the Air Force lead, and the development of bombers "helped evolve commercial passenger aircraft," he said, adding, "America's first military jets were the precursor to commercial jets."

Mineta went on to describe the ongoing efforts between the Federal Aviation Administration and the Defense Department to refine aviation safety practices. DOD "provides about 15 percent of the nation's air traffic services," he noted. "Working together, we are standardizing our procedures and integrating a transparent delivery of service to the consumer," said Mineta.

Speaking about the future of aviation, he said that the Transportation Department is working with DOD, NASA, Homeland Security, and Commerce "to develop a shared vision of the air transportation system ... as far out as the year 2025." The agencies are working together to build, possibly as early as this fall, "a national plan to help determine what the system of the future should look like," he said.

Gen. Gregory S. Martin

The Air Force has marvelous technology to collect battlefield information but must now speed up the process of turning that information into action, according to Gen. Gregory S. Martin, commander of Air Force Materiel Command.

Martin, who had just taken the helm at AFMC, said lessons learned from Gulf War II point up a need to "break the time barrier" in translating collected intelligence into touch-screen information that decision-makers can use to make quick choices during an unfolding operation. The battle presentation must show, at the touch of a button, what an object is, who it is, how old the information is, how it was collected, and what a target is likely to do, Martin said. It must also be easy to understand by all who must use the data so that fleeting targets can be reached "before that target is gone."

The overarching goal, he said, is to "achieve desired effects near-instantaneously."

Another lesson of Gulf War II is that "there is absolutely no question about the force-multiplying effect of a combined air operations center," Martin said. It is a capability that must also be put through constant exercises that include allies.

The Air Force learned—more so in Operation Iraqi Freedom than any other conflict—about the importance of a fully integrated planning and execution capability, he said. "You must exercise that. You must train to it." Only when such skills are developed "under the stress of a serious exercise or a major contingency [will you] find out what kinds of connectivity [exist], where the seams are, and how you work together as different cultures."

Cooperation with allies will continue to be essential, Martin said, because the war on terrorism is one where "we are not defining the battlespace on our own terms. More often than not, we are reacting." The ability to network information from many sources and coordinate action will "give us a chance" to stop terrorists before they launch their attacks.

"It can't be done by one nation alone," said Martin. "It can't be done by one service alone. It has got to be done in a joint, in a combined, and in a very partnered and collaborative way. This is our challenge, I think, in the Free World."

Programmatically, said Martin, AFMC will be pursuing many forms of directed energy—both lasers and high-powered microwaves—which not only offer speed of effect but the ability to deliver only the amount of energy needed to achieve the minimum effect desired. He said there will continue to be an emphasis on improving the stealthiness of airframes and extending their range through more efficient propulsion.

In sensors, he said, a key effort will be hyper- and multispectral systems that, when combined, can give the Air Force the ability to see things in places where "we have never been

able to sense them before." Part of this will be achieved through nanotechnologies and microelectronic mechanical systems, which will cut weight and volume of systems, but also through biometrics, which seek a means to mimic the sensory systems of living things.

The Air Force continues to look into hypersonic flight, but the capability must be pursued at the "right pace," said Martin. Right now there are no "processes that will use it as effectively as perhaps other capabilities," he explained, adding that it is also "very expensive." He said that he expects to see a hypersonic demonstration vehicle "within the next five years or so," but it will take longer to have a system with "military utility." In fact, it has not been decided whether hypervelocity systems are needed.

However, Martin maintained that while "it is important for us to pursue," the costs to sustain that technology must be balanced against other emerging capabilities that have great promise, such as directed energy programs.

Martin also said the Air Force is looking hard at its aging aircraft, trying to discern where it makes sense to simply upgrade old airplanes and where it's more economically logical to just buy new ones. "We are not as far along as we would like to be in making those assessments," he noted.

To help that process, the service established a new airframe viability board. The C-5A Galaxy is the first aircraft under the board's scrutiny. So far, "we don't have the answer, but we understand the potential problems and are now beginning to harness some resources that way to give us some insights," Martin said.

Rebecca Grant

Air and space power made the conduct of Gulf War II nothing less than "a new style of warfare" which will set the tone for armed conflict in the 21st century, according to Rebecca Grant, an airpower analyst and president of IRIS Independent Research.

Briefing AFA convention attendees on a white paper called "Gulf War II: Air and Space Power Led the Way," Grant said Operation Iraqi Freedom abolished the warfare modes of the 19th and 20th centuries that involved setting up sequential fronts, attrition warfare, and lines of engagement with the enemy. Instead, Gulf War II took place on five separate fronts simultaneously and fluidly, removing virtually all of the enemy's initiative.

"This style of warfare is so new that we don't have good words for it yet," Grant explained. "We tend to talk about what it isn't: nonlinear, nonsequential, noncontiguous operations. What that all is saying is that there is a change in how we built the framework of victory."

In previous wars, ground forces have had to protect their flanks along a long front, Grant said, but Gulf War II saw airpower alone protecting the flanks of advancing ground forces, allowing concentration of power and unprecedented speed of advance.

The 1991 Gulf War began with an intense 38-day air campaign. In Gulf War II, there was no need for a protracted attrition of half the enemy's forces before the ground offensive could be launched. One reason, said Grant, was that battlefield preparation actually began as early as June 2002 when Operation Southern Watch air patrols systematically eliminated much of the Iraqi air defenses in response to heightened attacks on coalition aircraft.

The Iraq war also built on successes in Afghanistan, where it was impossible to establish any front, Grant said. Instead, connections between coalition ground forces and aircraft, armed with very precise ordnance, made it possible to locate and destroy concentrations of Taliban and al Qaeda forces.

With intelligence-surveillance-reconnaissance, command and control, and strike aircraft working together and with ground forces, she explained, "you could bring in as much air-delivered firepower as you needed."

In Gulf War II, the "overwhelming airpower available" gave commanders a far wider array of choices than in earlier wars, Grant asserted.

There were really "five air wars" going on in Iraq, she pointed out. There was the Scud-hunting mission in the western desert, which had been practiced in Nevada beforehand. There was the strategic campaign against leadership targets in Baghdad and elsewhere. In the north, there was the airlift of ground forces and air attacks against Iraqi defenses and, in the south, support for the advancing Army V Corps and 1st Marine Expeditionary Force.

The "level of precision and discrimination" demonstrated by the air strikes, tempered by a dedicated effort to prevent civilian casualties "is entirely new," Grant said, as was "the ability to track and prosecute time sensitive targets."

Aided by satellites, USAF was able to predict the March sandstorms in advance, and, while ground forces were obliged to slow down at that point and wait for their supply train to catch up, there was no pause in air attacks. Because of systems that could see through the blowing sand, it offered no sanctuary to Iraqi forces.

While there did evolve a front of sorts—the leading edge of the ground force—"it happened within a framework that was radically changed" from earlier wars, Grant asserted. Air and space assets were able to tell ground forces almost exactly what lay ahead and, in most cases, destroyed threats before the ground units reached them.

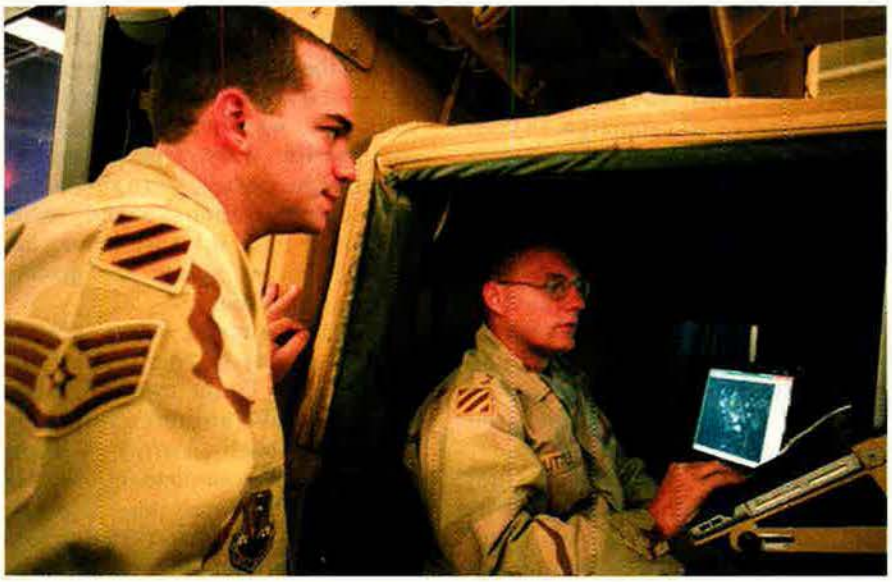
Another new and unique feature was the ability to "dial a weapon" from the sky, Grant noted. So many were the strike aircraft above Iraq, armed with such an array of munitions, that the commander could ask for—and immediately get—anything from a two-ton bunker buster to a 30-pound antivehicle missile.

Overall, air and space power allowed "the whole joint force to function at its most optimum level," she asserted. The emplacement of USAF controllers with ground and sea units smoothed out the bumps and allowed unprecedented coordination of effort.

"What we've seen in Operation Iraqi Freedom," Grant said, "is that through air and space power, we have an ability to be more efficient in that Global War on Terrorism; to prosecute it in a way that holds with some of our core values, such as minimizing collateral damage, such as minimizing loss of life—not only on the friendly side but on the opposition side as well—and such as trying to run this in a way that is sustainable and plays to the strengths of an expeditionary military force." ■

Aerospace Technology Exposition

Photography by Guy Aceto, Art Director, **and Paul Kennedy**

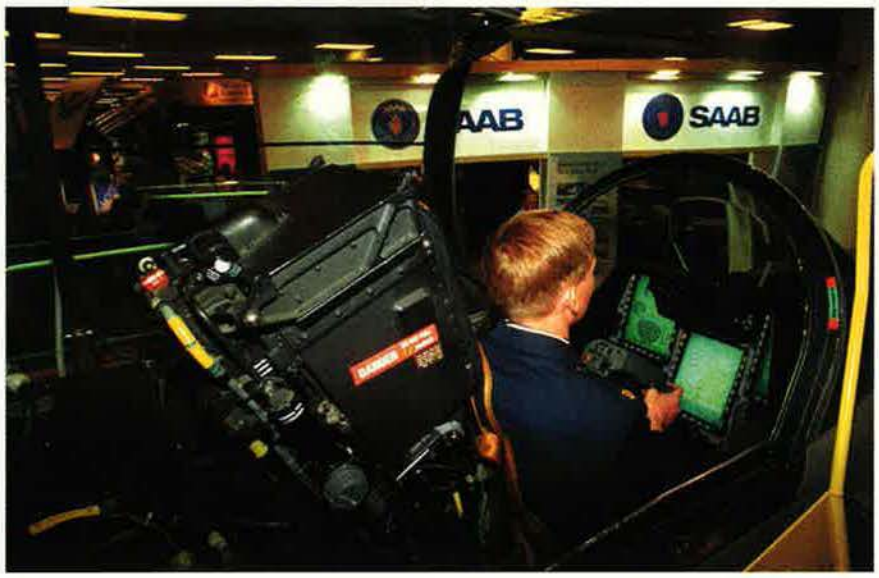


The Aerospace Technology Exposition at AFA's 2003 National Convention featured more than 100 exhibitors. At left, SSgt. Brad Giese and 1st Lt. Chad Little demonstrate some of the latest technology used by one exhibitor, the Air Force Weather Agency. Some visitors checked in daily to track Hurricane Isabel's progress (below).

Boeing's model of the E-10A Multisensor Command and Control Aircraft served to emphasize not only the importance of C2ISR but also the integration of systems and platforms.

The exhibit by Saab brought a little of the flight line indoors with this full-scale mock-up of its Gripen fighter. The booth was popular with exposition visitors from foreign countries.

Below, aircraft models illustrate how far we have come since the Wright brothers' 1903 Flyer.



Staff photos by Guy Aceto

The Air Force Research Laboratory's Propulsion Directorate, from Edwards AFB, Calif., showed off an engine involved in hypersonic testing and a model of a craft that would benefit from such technology. Hypersonics research at AFRL could yield breakthroughs in responsiveness, reach, and range.

At the GE display, several visitors receive a quick overview on the latest in aircraft engines.

Staff photos by Guy Aceto

A representative from Pratt & Whitney talks to visitors about the F135 propulsion system. P&W is the prime contractor for the engine, to be used on the Joint Strike Fighter.

CMSAF Gerald Murray (left) was among the many VIP visitors at the exposition.

Below, USAF's new battle dress uniform attracts attention. The BDU begins a six-month wear test in January.

Lockheed Martin's exhibit highlighted the success of its F/A-22 fighter, the Air Force's top weapon priority. The Raptor is scheduled to achieve initial operational capability in 2005. In remarks at the convention, Gen. John Jumper, Chief of Staff, said, "This is going to be the most amazing air machine that has ever been developed."

Staff photos by Guy Aceto

Munitions such as the Sensor Fuzed Weapon at right and precision weapons were the topic of a lot of conversations, given their high profile in recent operations.

Below, a 500-pound laser guided bomb, an AGM-65 Maverick, and a Joint Air-to-Surface Standoff Missile are suspended over Raytheon's exhibit space.

Below, Walter Smith and Harold Harris, vice president for government relations and veterans affairs at the Thomas W. Anthony Chapter (Md.), chat with an exhibitor.

A "web of light" at Northrop Grumman's exhibit illustrates the concept of a tight network of constantly updated information that is key to the Air Force's success in combat operations.

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For information on the Air Force Association, see **www.afa.org**

AFA / AEF National Report

afa-aef@afa.org

By Frances McKenney, Assistant Managing Editor

AEF Names Teacher of the Year

The Aerospace Education Foundation named Sally J. Gwaltney as recipient of the Christa McAuliffe Memorial Award for Teachers.

She was nominated by the **Scott Berkeley Chapter (N.C.)** and received the award at the Air Force Association's annual National Convention in Washington, D.C., in September.

Gwaltney teaches algebra, computer engineering, and technology for grades nine through 12 at James B. Hunt Jr. High School in Wilson, N.C., and has integrated aerospace activities into these classes. David A. Klinkicht, chapter president, said Gwaltney guides her students in researching the history of flight and space exploration and principles of aerodynamics. Among their many hands-on projects, Gwaltney's students have built wind tunnels, a Wright Flyer replica from a kit, and a radio-controlled airplane.

Gwaltney has been a teacher for 27 years and has incorporated aerospace topics into her classes for the past 17. She was "a gem waiting for us to find," said William D. Duncan Jr., state president, in recommending her for the AEF honor.

AEF's Teacher of the Year award is named for S. Christa Corrigan McAuliffe, the New Hampshire schoolteacher who died in the January 1986 explosion of the space shuttle *Challenger,* on which she was a crew member.

Gwaltney is the 18th recipient of the award.

Photo by Robert Cummings photography

Sally Gwaltney receives the Teacher of the Year award from Richard Goetze (left), then AEF Board Chairman, and Boyd Anderson, then President, during the AEF "Squadron Reunion Party" held at AFA's convention. Gwaltney later said receiving the award was "the pinnacle" of her teaching career.

C4ISR Summit

When the **Paul Revere Chapter (Mass.)** held its second annual C4ISR summit in August, it took over the entire Sheraton in Danvers, Mass., and had to house the overflow of guests in three other hotels.

Chapter President Joe Bisognano said 900 people—including representatives from the Army, Navy, Marines, and the UK—came to hear the presentations on command, control, communications, and computers and intelligence-surveillance-reconnaissance. Another 130 had to be turned away for lack of space.

Principal speakers at the summit were Gen. Richard B. Myers, Chairman of the Joint Chiefs of Staff; Secretary of the Air Force James G. Roche; Gen. Gregory S. Martin, now commander of Air Force Materiel Command; and Lt. Gen. William T. Hobbins, USAF's deputy chief of staff for warfighting integration.

Myers told the audience that the Joint Chiefs have three priorities: win the war on terrorism, transform the force, and improve joint warfighting capabilities. He said, "I would submit

Special Recognition

Among the awards presented at the AFA National Convention were two that honor members of the Air National Guard and Reserve and their civilian employers.

George W. Bush Awards honoring traditional ANG officer and enlisted members and their employers went to Capt. Eric N. Erickson, 177th Medical Group, Atlantic City Airport, N.J., and his employer, the JFK Johnson Rehabilitation Institute Center for Head Injuries in Edison, N.J.; and to TSgt. Kevin P. Combs of the 176th Wing, Kulis ANGB, Alaska, and his employer, Federal Express.

Air Force Reserve Citizen Airman Awards for Reservists and their employers went to Maj. Janey Worth, 908th Aeromedical Evacuation Squadron, Maxwell AFB, Ala., and Managed Access Inc., of Tampa, Fla.; and to Sgt. George Pizarro III, 944th Mission Support Group, Luke AFB, Ariz., and the Phoenix Police Department.

The recipients received an AFA Certificate and $500. The awards were made possible by donations from the Aerospace Education Foundation and from William W. Spruance, an AFA national director emeritus and AEF trustee.

that what holds all of those areas together is C4ISR." Roche spoke about how C4ISR is used today and what it could bring to the battlefield in the future.

Martin, who became AFMC commander a few days after the symposium, called his presentation "A Vision for Commanding Air and Space Power." It covered past Air Force operations, the challenges posed by today's adversaries, and USAF's response.

Over the course of the summit's two days, the audience heard four panels on C4ISR topics that are critical to warfighters today. The sessions began with an Effects-Based Operations panel, led by Brig. Gen. (sel.) Michael A. Snodgrass. He is the USAF deputy director for operational requirements.

Maj. Gen. Charles E. Croom Jr., who is the C4ISR infostructure director, and Brig. Gen. Dan R. Goodrich, the director of C4ISR integration, led panels on network operations and on predictive battlespace awareness.

Terrance M. Drabant, president of Lockheed Martin Mission Systems, led the fourth panel, which gave an industry perspective on the topic.

The summit also featured an exhibit hall, where 55 vendors set up booths. There would have been more, said Bisognano, but the chapter had to turn down numerous exhibitors for lack of space. Companies with displays included Boeing, Lockheed Martin, Northrop Grumman, Raytheon, and Titan Corp.

AFA Chairman of the Board John J. Politi and Massachusetts Gov. Mitt Romney were among the VIPs attending the symposium events.

The chapter posted the symposium presentations and papers on their Web site at http://paulrevereafa.horizons.com.

AFA In Action

The Air Force Association works closely with lawmakers on Capitol Hill, bringing to their attention issues of importance to the Air Force and its people.

- In September, more than 450 AFA delegates, members of Congress and professional Congressional staff members, and DOD officials attended the 2003 Congressional Breakfast program held in conjunction with the AFA National Convention. The Capitol Hill breakfasts provided an opportunity for AFA members to discuss Air Force issues informally with elected representatives. Hot topics included concurrent receipt and the Armed Forces Tax Fairness Act.

At the breakfasts, AFA Chairman of Board John J. Politi and National President Stephen P. "Pat" Condon spoke with several lawmakers, discussing topics ranging from increasing USAF manpower authorizations to equipment procurement and modernization. (See "AFA 2003 National Convention," p. 58, for a complete list of Capitol Hill attendees.)

- Politi later met with Sen. Jim Talent (R-Mo.) to discuss one of AFA's top issues for 2004: Increasing defense spending from 3.4 percent of gross domestic product to a minimum of four percent.

The association's Government Relations staff then followed up by meeting with Talent's military legislative assistant, **Lindsey R. Nease,** reviewing materials such as AFA's 2003 study "Strategy, Requirements, and Forces." These AFA efforts led Talent to agree to address the issue in submissions he plans to make to the Fiscal 2005 Defense Authorization Act.

- AFA brought some of the Air Force's best and brightest to Capitol Hill during the convention, introducing the 12 Outstanding Airmen of the Year to several members of Congress.

SMSgt. Thomas O. McConnell, a native of Tennessee, met with **Sen. Lamar Alexander** (R-Tenn.). MSgt. Douglas A. Ackerman and TSgt. James H. Coffey III met their home-state Senators, Ohio Republicans **Sen. George V. Voinovich** and **Sen. Mike DeWine.**

Sen. Patty Murray and **Sen. Maria Cantwell,** Democrats from Washington state, were introduced to TSgt. Kevin D. Vance, a terminal attack controller who earned the Silver Star, among several other awards, for gallantry during Operation Anaconda.

TSgt. Tara A. Marta, born in Pocatello, Idaho, paid a call on **Sen. Michael D. Crapo** (R-Idaho), while SSgt. Christopher D. Tuck and his wife, SrA. Billie S. Tuck, met **Sen. Elizabeth Dole** (R-N.C.).

SSgt. Omar Ali Abed, a San Antonio native; SrA. Nathan H. Summers, stationed at Dyess AFB, Tex.; and SrA. Harold J. Tolbert II, whose family settled in San Antonio, got together to meet the Lone Star State's Republican Senators: **Kay Bailey Hutchison** and **John Cornyn.**

Marcus Dunn, military legislative assistant to **Rep. Jeff Miller** (R-Fla.), met SMSgt. Keith D. Finney, SSgt. Jason R. Blodzinski, and SrA. Hector G. Bauza, all from Florida.

The Outstanding Airmen are now members of AFA's Enlisted Council.

Viewpoints on Transformation

In a symposium in August at Warner Robins, Ga., the **Carl Vinson Memorial Chapter (Ga.)** looked at the concept of transformation from several viewpoints.

Stephen A. Cambone, the first undersecretary of defense for intelligence, and Gen. Gregory S. Martin headed the list of guest speakers.

Cambone appeared through a video teleconference connection. He told the symposium audience at the Museum of Aviation that transformation is not always about developing new weapons systems, said Maj. Michael M. Pierson, a chapter member who reported on the symposium for the base newspaper at Robins AFB, Ga. Cambone said, "Transformation is sometimes about using old things in new ways."

Martin spoke on lessons learned in past conflicts and the need for coordination among the services and allies.

Three panel discussions during the course of the day addressed transformation at the unit level; its effect on the total force of active duty, Guard, and Reserve personnel; and the viewpoints of senior leaders in the Air Force and industry.

Panelists included Lt. Gen. Michael E. Zettler, deputy chief of staff for installations and logistics; Maj. Gen. Donald J. Wetekam, commander of Warner Robins Air Logistics Center; and Lt. Gen. James E. Sherrard III, chief of Air Force Reserve. Industry panelists included William F. Moore, program manager for Northrop Grumman's Joint STARS program, and Ross Reynolds, VP for Lockheed Martin's C-130J program.

AFA National President Stephen P. "Pat" Condon and Arthur D. Bosshart, state president, were among the AFA notables at the symposium, which was organized by chapter member George Falldine.

On the Run

It was AFA National President Pat Condon's 24th marathon, so race officials set aside bib no. 24 for him to wear in running the seventh annual Air Force Marathon on Sept. 20 at Wright–Patterson AFB, Ohio.

Condon was among more than 3,300 runners who came from 49 states and eight foreign countries to

compete in the race. He finished ninth in his age group, completing the 26.2-mile course in four hours, 27 minutes. The winner, Hendrick Vanloon of Kleine–Brogel, Belgium, crossed the finish line in two hours, 37 minutes. The overall female winner, Jill Metzger, came from Ramstein AB, Germany. Her time was three hours, five minutes.

Condon, who has been running marathons for seven years, managed to train for this one despite a busy AFA travel schedule. He went on to complete another 26-miler, two weeks after the USAF event, in St. George, Utah. That one, he said, was his last.

Armed Forces Host

The **Thomas W. Anthony Chapter (Md.)** hosted several activities during the Joint Service Open House at Andrews AFB, Md., in May, and at one of them, the chapter president received personal thanks from the Secretary of Defense.

Donald H. Rumsfeld was keynote speaker for the opening ceremony at the base's Hangar 3. After his remarks, Rumsfeld began walking through the audience and was introduced to Chapter President Charles X. Suraci Jr., who was seated in a VIP section. Suraci said afterward that he was introduced because the chapter has been hosting a growing list of receptions and activities that help the base carry out ceremonies and also honor its airmen. Rumsfeld thanked Suraci for the chapter's support of Andrews personnel.

During the three-day open house, for example, the chapter put on a breakfast at the officers' club for more than 100 guests. The chapter also helped sponsor the appearance of aerobatic pilot Sean B. Tucker at the air show.

As part of the open house festivities, chapter officers Sam O'Dennis, Thomas Bass Jr., and William H. Thomas joined Suraci in manning an AFA exhibit featuring AEF posters and *Air Force* Magazine.

The base newspaper reported that 55,000 attended the open house, despite heavy rain for most of the weekend.

With the Coast Guard

In September, the **PE-TO-SE-GA Chapter (Mich.)** met at the US Coast Guard facility in Traverse City, Mich., for what has become an annual visit.

It was the best one yet, according to Patrick M. Hobbins, communications VP, who said the chapter has been going on these field trips since 1995.

Coast Guard Cmdr. Paul S. Ratte, who assumed command of USCG Air Station Traverse City in June, gave the visitors a comprehensive presentation on the service's missions. He included video footage of a rescue on Lake Superior the previous week, when unit members retrieved a 14-year-old boy stranded overnight on a 14-foot aluminum boat.

Ratte escorted the 31 guests around the facility, taking them into areas they'd never visited before. His information on the station's HH-65 Dolphin helicopters was so complete that Hobbins called it "Helicopters 101."

Air Station Traverse City was established in 1946 as a one-airplane detachment for search and rescue missions. Now its duties encompass homeland security, as well as winter

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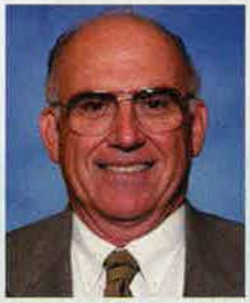

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Pieces of History

Photography by Paul Kennedy

Jenny

World War I broke out in 1914. In that same year, Curtiss Aeroplane and Motor Co. merged its J and N series to produce a new airplane called "JN"—better known as the Jenny. Also in 1914, the Army ordered Jennys as trainers and observer craft. When the US went to war in 1917, purchases soared. The Army bought 6,000, making the Jenny this nation's most famous Great War aircraft.

After the 1918 armistice, war surplus Jennys flooded the civilian market, and the airplane enjoyed a flamboyant second career as a mainstay of the "barnstormers" who crisscrossed America in the 1920s. This JN-4D is on display at the US Air Force Museum, Wright–Patterson AFB, Ohio.

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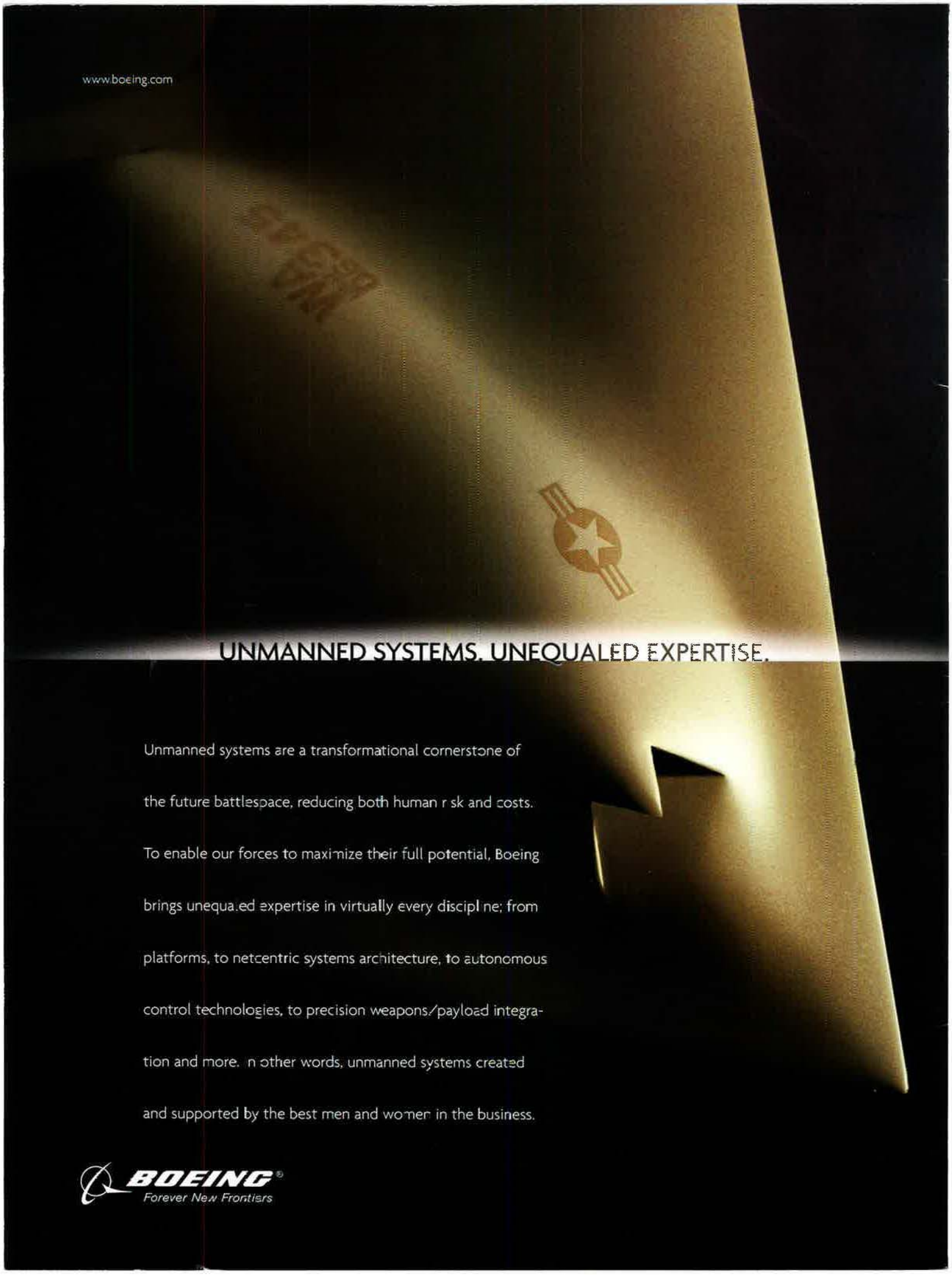
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