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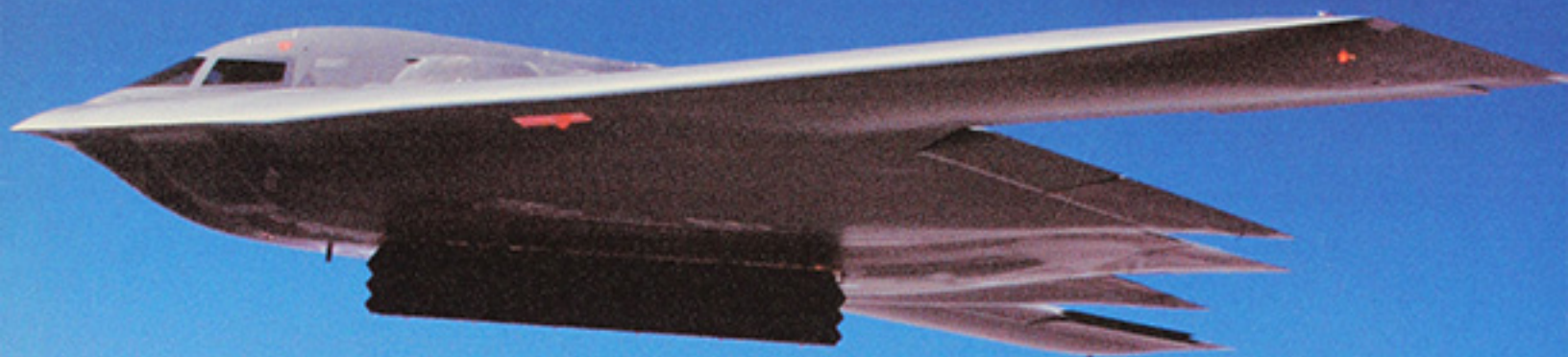
AIR FORCE

JOURNAL OF THE AIR FORCE ASSOCIATION

MAGAZINE

The Long Arm of the Air Force

New ways to hit hard over great distances



Words From the Weapons Czar

The "Reach-Forward" Problem



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October 2002, Vol. 85, No. 10

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By Robert S. Dudley, Editor in Chief

Beat the Devil

THE decisive phase of Operation Enduring Freedom lasted two months, and most of it was an air campaign. This should have—but did not—end what has become the almost routine disparagement of military airpower.

The recent successes of airmen—in the Gulf in 1991, Bosnia in 1995, Kosovo in 1999, and Afghanistan one year ago—have not been enough to satisfy airpower's critics. They continue to propagate doubts, especially in times of military tension.

This summer, as the US faced war with Iraq, the "boots on the ground" lobby favored sending 200,000 ground troops to the Gulf. Retired Army Gen. Frederick J. Kroesen called it "disturbing" to learn DOD might use airpower, special forces, and local proxy forces, à la Afghanistan. In this, Kroesen saw the "promise of disaster."

Writing in the Army War College journal *Parameters*, analyst William R. Hawkins implied Afghanistan was not even a "real war." With Iraq clearly in mind, Hawkins warned: "American leaders should not expect the next war to be as undemanding."

A surprisingly large number of people still harbor such doubts, which Yogi Berra would describe as déjà vu all over again.

In the run-up to Enduring Freedom, critics also predicted that the air war would flop. Fears of massive civilian casualties were widespread. Robert Scheer of the *Los Angeles Times* thought it pointless to fight elusive Taliban and al Qaeda jihadis. The US, he warned, could do little more than "shadowbox with the devil."

When the shooting started on Oct. 7, the hand-wringing began in earnest. Soon, there were calls for ground troops—as many as 100,000. Pundits everywhere dusted off the word "quagmire."

It had to be embarrassing to the critics when November rolled around and the foe was seen to be taking a ferocious beating from the air. The strikes of October had weakened and isolated enemy forces. The strikes of November featured heavy attacks

by bombers using precision ordnance such as the Joint Direct Attack Munition.

As special operations scouts spotted targets, precision airpower beat Taliban positions to pieces, opening huge gaps in the front lines. Irregular Northern Alliance forces took the key towns of Mazar-e Sharif, Kunduz, Taloqan, and Kabul, then turned south toward Kandahar.

One year ago, airpower proved itself—again.

Suddenly, it was over. The Taliban—Qaeda force that once controlled 85 percent of Afghanistan was, by early December, in control of nothing, on the run, and hiding in caves.

Some attributed the rout to the presence of Afghan ground forces. Defense Secretary Donald H. Rumsfeld maintained that "the air war enabled the ground war to succeed."

Each US armed service (and those of allied forces) had a hand in the victory. Still, the Air Force contribution stood out.

USAF bombers, fighters, and special operations gunships delivered some 10,000 tons of munitions—75 percent of the total—and struck more than half of all targets. The work of SOF teams—Air Force, Army, and Navy—enhanced the accuracy of these strikes.

Vice Adm. John B. Nathman, mindful that US carrier aircraft flew 75 percent of all combat sorties (and dropped 25 percent of the munitions), summed up his view in three words: "We Were Great." The Navy was great, its aviators displaying skill and fortitude. Nathman also noted, "The US Air Force provided lift, munitions, ... intelligence and surveillance, and more than 80 percent of the mission tanking to our carrier striking forces."

Civilian deaths were remarkably

few. As Rumsfeld said, "No nation in human history has done more to avoid civilian casualties than the United States has in this conflict."

The Air Force's workhorse airlifters transported everything that went into or out of Afghanistan. Its tankers flew more than 5,000 refueling sorties.

USAF spacecraft, unmanned aerial vehicles, and intelligence, surveillance, and reconnaissance aircraft gave war planners a battlefield view of unprecedented clarity.

RED HORSE units created 190,000 square yards of new ramp space—equivalent to 30 football fields—at nine Central Asia airfields.

It was a humanitarian war. Through December, 162 C-17 sorties had brought to hungry Afghans some 2.5 million individual rations.

The success of the air campaign may be, as some partisans say, an anomaly. If so, it is an anomaly that occurs again and again. Enduring Freedom marks the fourth time that this particular anomaly has appeared in a decade.

Nothing written here should be construed as claiming that joint airpower, by itself, can fight and win all of the nation's wars. As editors of this magazine have stated on numerous occasions, the United States needs to maintain the full complement of modern military capabilities—air, land, sea, space, and cyberspace. There's no need for a one-trick pony.

However, some of airpower's more strident critics would do well to show a similar open-mindedness.

One who makes the case for airpower is Army Gen. Tommy R. Franks, the commander of US Central Command and ramrod of the Afghan war. He pointed out that ground force commanders—Army and Marine—have long recognized the potential of airpower, but have questioned whether they would actually be willing to count on it in battle.

For them, Franks has an answer. "What I've told all my friends and neighbors," he said, "is, 'By God, you can count on it.'"

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INF Is Important

Having been in the nuclear business since the early 1980s, I greatly appreciated the article on Secretary [Donald H.] Rumsfeld's comments during his recent testimony on the Moscow Treaty. [See: "Rumsfeld and Russia," September, p. 55.] However, there are two points missing in the article.

First, our Chairman of the Joint Chiefs of Staff, Gen. [Richard B.] Myers, also testified at the same hearing. Second, and more important to the strategic nuclear offensive arms debate, is the omission of the intermediate- and shorter-range nuclear forces treaty in the table on p. 56 and 57. This treaty was signed in December 1987 and entered into force June 1988—it eliminated all delivery vehicles and their associated support equipment for both ballistic and ground launched cruise missiles with ranges of 621 to 3,417 miles and 310 to 621 miles.

The [Intermediate-range Nuclear Forces Treaty] continues to remain in force. Many experts argue it was the INF that paved the way for deeper reductions in intercontinental-range delivery vehicles and set the stage for the new relationship with the Russian Federation, long before anyone thought it was possible.

Lt. Col. Ed Parks, USAF
Nuclear Arms Control Div.,
Joint Staff
Fairfax, Va.

■ *The article provided excerpts of Secretary Rumsfeld's Congressional testimony, which on July 17 pertained to strategic systems. As you note, the INF Treaty was a major step in nuclear arms reductions. For more on the INF Treaty and the Intermediate-Range Nuclear Forces issue, see "The Short, Happy Life of the Glick-Em," July, p. 70.*—THE EDITORS

It's Just Common Sense

In today's world, technological advances occur with the bat of an eye, and in order to ensure long life, equipment must be expandable and up-

gradeable. The F-22 Raptor is the next-generation multitasking fighter that can conceivably sustain constant upgrading and have a life span as long as the B-52 or longer. [See: "The F-22 On the Line," September, p. 36.]

Over 50 years ago, the B-52 Stratofortress took to the skies, is still flying strong, and is a major component in air warfare even with its reduced numbers. The reason for its longevity is primarily due to the fact the B-52 lent itself to ever-increasing improvements. The F-15 has been the world's best fighter; however, it is 30 years old, requires constant maintenance, is incapable of being upgraded to today's technology, and therefore must be replaced.

One F-22 can do, in a more efficient manner, what it took four F-117s to accomplish during the 1991 Gulf War. In addition, the F-22's ruggedness, stealth, range, supercruise capability, and advanced avionics make it an extremely formidable weapons platform. If the F-22 could be carrier launched—watch out!

To ensure air superiority long into the future, along with immediate and devastating strike capabilities, USAF must have a minimum of 240 F-22s, one squadron per Aerospace Expeditionary Force, 150 for training purposes, and at least 24 for replacements, making a minimum total of 414. Ideally, 750 should be produced. This would drastically reduce production costs, making it more than affordable.

[By] incorporating 80 percent of the

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F-22's current technological capabilities into the possible FB-22, USAF would have the tremendous combined capability [to] support whatever missions could be devised. The FB-22 could conceivably replace the B-1, B-2, and the B-52. The commonality of parts, avionics, stealth, etc., between the F-22 and the FB-22 would be a manufacturer's and accountant's cost reduction dream, while saving the taxpayer countless billions and giving USAF the most powerful dual-weapons platform in the world for decades to come.

We must not allow ourselves to let USAF deteriorate to the point it has during the last decade. If we are to dissuade would-be attackers and rogue states from taking potshots, we must empower our Air Force with the best equipment available. Therefore, the F-22 and the FB-22 demand common sense.

Philip E. Giammarco
Middle Village, N.Y.

Training Gunners

I was an aerial-armor gunner and flew with the 384th Bomb Group (H) based at Grafton Underwood, UK. [See "Flashback: Training Gunners," August, p. 73.]

We did have a gunnery training hangar with half of a B-17 fuselage and a screen to project incoming fighters. [We] also had a ball turret suspended on a platform where the gunner could track the fighters on the screen.

Robert E. Sterr
Long Beach, Calif.

The Old GI Bill

The brief [news item] on the House Veterans Affairs Committee wanting to return the Montgomery GI Bill to its World War II [status] as a recruiting tool reinforces my faith in my country's

leaders' abilities to anticipate our needs. [See "Aerospace World: House Committee To Boost GI Bill," September, p. 23.]

Thanks to the World War II-era GI Bill, I live in a \$180,000 house; I have four degrees (a bachelor's, two master's, and a doctorate); and because of my country, all three of my children have master's degrees.

The GI Bill is the greatest tool our leaders have ever conceived.

CMSgt. Lloyd M. Greenwell,
USAF (Ret.)
Hot Springs, Ark.

More on Stop-Loss

I enlisted in USAF in April 1948 for three years. I was stationed at Scott Field [in Illinois] teaching in the radio mechanics course when Uncle Harry [President Harry Truman] issued his order. It was in July 1950. I had started my countdown to discharge in March 1951 and was down to 288 days when the word came out. I stopped counting. Friends of mine were in processing for discharge and were stopped. One had only to pick up his discharge! No go.

I feel lucky in that I met my future spouse that summer and was married, after I finally got out, in May 1952.

I could not see trying to raise a family on my staff sergeant's pay (\$144 per month).

Roger Collinson
Homasassa, Fla.

Correction

In September, the "Photochart of USAF Leadership," p. 86, should have listed the chief information officer as John M. Gilligan.



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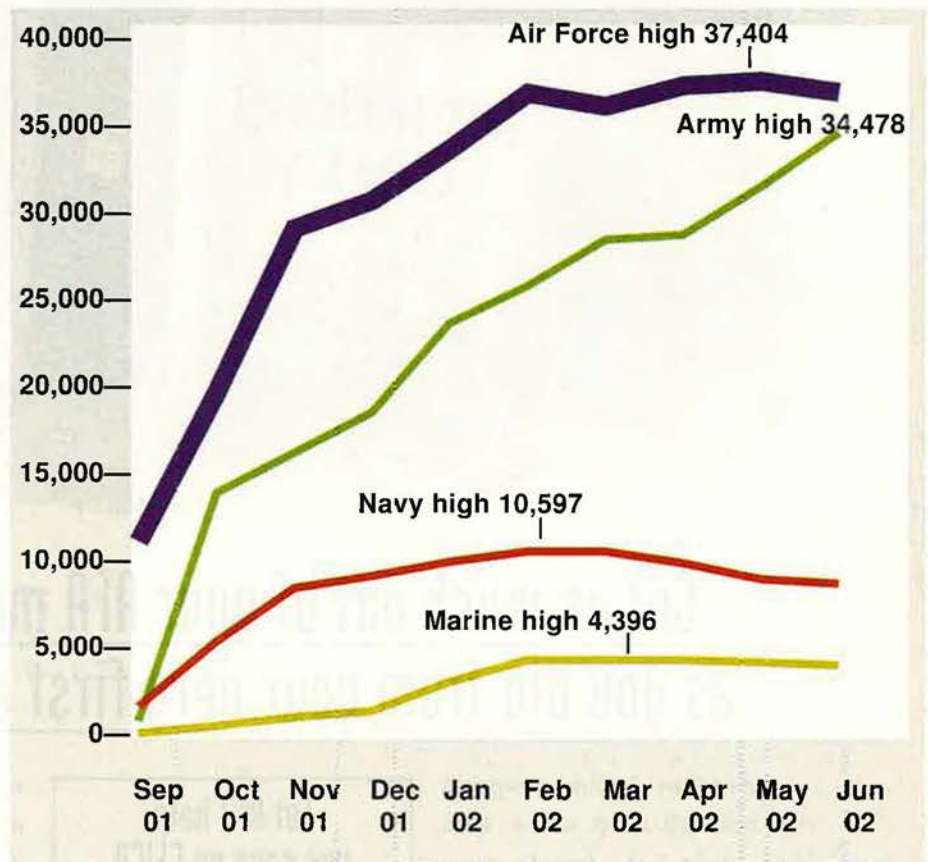
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The Chart Page

By Tamar A. Mehuron, Associate Editor

Leaning Hard on the Guard and Reserve

In the wake of the Sept. 11 terror attacks, Air National Guard and Air Force Reserve Command forces were the first reserve units to be called to active duty in large numbers. The Air Force commitment of forces for the war on terror, both at home and abroad, was immediate and extensive. As this chart shows, the use of ANG and AFRC forces ran well ahead of the other services until this summer. Called-out numbers are snapshots in time.



- Air Force
- Army
- Navy
- Marine Corps

Source: DOD



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Aerospace World

By Suzann Chapman, Managing Editor

DOD Announces Shift in Tactics

On Sept. 16, senior DOD leaders confirmed that coalition aircraft were striking higher-value targets in response to repeated Iraqi attacks on those aircraft as they patrol the no-fly zones over Iraq. Defense Secretary Donald H. Rumsfeld made the change within the past six months.

"I directed it, because it seemed right," Rumsfeld told reporters at a Pentagon briefing. "I don't like the idea of our planes being shot at. We're there implementing UN resolutions. ... The idea that our planes go out and get shot at with impunity bothers me."

The number of Iraqi provocations has remained about the same over the past two years, said Marine Gen. Peter Pace, vice chairman of the Joint Chiefs of Staff. Instead of responding by attacking a mobile radar, coalition pilots have been going after fixed air defense communications and command nodes, he explained.

The responses now, said Rumsfeld, provide a benefit that merits the risk coalition pilots are taking.

The strikes are degrading the Iraqi air defense systems, he said, but added, "Whether it is degrading it faster than it is being improved, no one not on the ground is in a position to respond to that."

Southern Watch Strikes Mount

The day before Rumsfeld's briefing, on Sept. 15, US Central Command officials announced coalition air strikes against an Iraqi air defense communications facility about 160 miles southeast of Baghdad. Since the first of the year, they said, coalition forces patrolling the southern Iraq no-fly zone have made more than 25 retaliatory air strikes.

Those strikes responded to more than 140 separate incidents of Iraqi surface-to-air missile and anti-aircraft artillery attacks on coalition aircraft this year, according to Central Command.

Command officials also reported that coalition forces conducted air strikes on four other dates last month. Following one strike on Sept. 5, the



Once Just F-22, Raptor Now Is the "F/A-22"

Gen. John P. Jumper, Air Force Chief of Staff, announced Sept. 17 a change in designation for the service's new fighter. The F-22 is now the F/A-22.

The new designation, Jumper told an audience at the Air Force Association's National Convention in Washington, D.C., more accurately describes the fighter's true role. "Secretary [of the Air Force James G.] Roche and I have decided to adopt the name F/A-22, using the A [attack] prefix to emphasize the multiple roles and many dimensions of the Raptor," he said.

In a written statement, Jumper said, "Advances in technology and emerging Air Force doctrine make today's Raptor very different from the fighter envisioned when the F-22 program was first planned."

He went on, "The Raptor's most significant contributions over the next 30 years will be its attack role, particularly against the most lethal next two generations of surface-to-air missiles."

London Daily Telegraph reported that the coalition force involved some 100 aircraft—the largest force in four years.

That claim, picked up by various news outlets, was false, according to Maj. Gen. (sel.) John W. Rosa Jr., the Joint Staff's deputy director for current operations.

"There were 12 airplanes; [they] dropped 25 weapons," Rosa told reporters Sept. 6. He added that the strike might have involved more aircraft than in recent weeks, but it was not larger than many conducted during the last 10 years.

NORAD's "View" Shifts

North American Aerospace Defense Command now has the capability to look inward at aircraft crossing the US interior. At the time of the Sept. 11 terror attacks, NORAD's view was focused outward on aircraft coming toward US borders.

The expanded view results from a new computer software program, dubbed the NORAD Contingency Suite, which officials at Electronic Systems Center, Hanscom AFB, Mass., called "one of the most significant improvements" in NORAD's history.

ESC teamed with the Aerospace

Command, Control, Intelligence, Surveillance, and Reconnaissance Center, Langley AFB, Va., to tackle the problem immediately after last year's terror attacks. ESC speeded the acquisition of the needed technology, enabling portions of the suite to be installed late last year. They were used for the Winter Olympics in February in Salt Lake City.

However, the system had to go through several months of testing before officials said it was stable. Air Force officials announced in late August that the suite was OK for interim initial operational capability.

"We have come from a Cold War capability to monitor 300 tracks per sector to the ability to view well over 15,000 radar tracks per sector—way more than would be airborne at any one time," said Maj. Eric Firkin, chief of ESC's battle management systems.

He added that the Tactical Display Framework, a key piece of software in the NCS, is under evaluation for use in USAF's Airborne Warning and Control System aircraft and other applications.

F-16 Pilot Dies in Crash

Capt. Benton Zettel, 26, died when his F-16C crashed about 50 miles west of Cannon Air Force Base in New Mexico, on Sept. 9 at approximately 8:30 p.m., according to USAF officials.

Zettel, who was with the 27th Fighter Wing at Cannon, was on a training mission at the time. He was a 1998 graduate of the Air Force Academy.

Officials said a board has been convened to investigate the accident.

USAF CV-22 Resumes Testing

Air Force officials announced that the USAF version of the V-22 Osprey tilt-rotor aircraft—the CV-22—resumed flight testing Sept. 11 at Edwards AFB, Calif.

DOD had grounded all V-22 test aircraft after a December 2000 crash of a Marine Corps MV-22. It was the second fatal crash that year. An earlier fatal crash occurred in 1992.

The Pentagon conducted several military reviews, enlisted independent investigations, and convened a special V-22 blue ribbon review panel to study the program. The panel concluded that flaws in the aircraft could be overcome with design changes.

Last year, the Pentagon approved changes to the hydraulics lines, poorly designed engine nacelles, and defective flight software.

"Today, the CV-22 complies with every one of the blue ribbon panel recommendations," said Maj. Greg

Air Force Posthumously Honors Pararescueman

The Air Force awarded the Air Force Cross, the service's highest award, to SrA. Jason D. Cunningham, who was killed in Afghanistan on March 4 while treating wounded troops under sniper and mortar fire during Operation Anaconda. He was a pararescue jumper—PJ—assigned to the 38th Rescue Squadron, Moody AFB, Ga.

Air Force Secretary James G. Roche and Chief of Staff Gen. John P. Jumper presented the medal to Cunningham's widow, Theresa, in a ceremony at Kirtland AFB, N.M., on Sept. 13.

The Air Force Cross is presented for extraordinary heroism.

Cunningham was the primary USAF combat search-and-rescue medic assigned to a quick reaction force sent to rescue two US servicemen trying to evade capture by al Qaeda and Taliban forces in Afghanistan. A rocket-propelled grenade and small-arms fire hit his MH-47E Chinook helicopter, forcing it to crash-land. Crew members formed a hasty defense but immediately suffered three fatalities and five critical casualties.

The citation for Cunningham's Air Force Cross reads:

"Despite effective enemy fire, and at great risk to his own life, Airman Cunningham remained in the burning fuselage of the aircraft in order to treat the wounds. As he moved his patients to a more secure location, mortar rounds began to impact within 50 feet of his position.

"Disregarding this extreme danger, he continued the movement and exposed himself to enemy fire on seven separate occasions. When the second casualty collection point was also compromised, in a display of uncommon valor and gallantry, Airman Cunningham brave an intense small arms and rocket-propelled grenade attack while repositioning the critically wounded to a third collection point.

"Even after he was mortally wounded and quickly deteriorating, he continued to direct patient movement and transferred care to another medic," the citation continues. "In the end, his distinct efforts led to the successful delivery of 10 gravely wounded Americans to life-saving medical treatment."

Cunningham was a former Navy petty officer, who, according to CMSAF Gerald R. Murray, considered joining the Navy SEALs. Instead, he became an Air Force PJ. Murray said his reason was that "while other special operators search and destroy, PJs search and save."

Weber, the CV-22 flight test director at Edwards. He added that the test force had worked out all mechanical, electrical, and software discrepancies.

The V-22 program is one of the defense programs under review as DOD finalizes its Fiscal 2004 budget.

New Rocket Charts New Era

The first Lockheed Martin Atlas V lifted off a launch pad at Cape Canaveral AFS, Fla., on Aug. 21. It marks the start of a new era in space launch capability, said Air Force officials.

The Atlas V is one of two new heavy-lift boosters in USAF's Evolved Expendable Launch Vehicle program. The other is Boeing's Delta IV, slated for its first launch this month.

USAF expects the EELV program to drive down the cost of lifting the

government's critical payloads into space—perhaps by as much as 25 to 50 percent over current boosters such as Titan IV.

Lockheed Martin and Boeing are under contract to launch 28 national security payloads using the new family of EELV boosters. The boosters will also be used to launch commercial and other government space systems.

The first Atlas V launched a European television and radio communications satellite—the Hotbird-6.

CENTCOM Is Not Moving

According to US Central Command, recent news reports that the command was moving from its headquarters at MacDill AFB, Fla., to Qatar in Southwest Asia were wrong. Command officials stated on Sept.

11, "US Central Command is not moving to the Persian Gulf state of Qatar."

However, a large segment—some 600 personnel—will deploy to Qatar for an exercise called Internal Look '03 set for next month. The exercise, designed to test a "standing deployable headquarters" will last one week, but personnel will stay longer, said CENTCOM officials.

"You have to allow for the advance party, set-up time, and take-down time," said one CENTCOM spokesman.

In addition to the 600 CENTCOM staff members, another 400 personnel from subordinate commands will also deploy to Qatar.

Officials would not say who would command the exercise.

F-22 Fires Missile at Mach 1.2

The F-22 #4003 test aircraft successfully fired an AIM-120 radar-guided missile while flying faster than

the speed of sound, Lockheed Martin officials announced Aug. 28.

Raptor 4003 launched the Advanced Medium-Range Air-to-Air Missile while flying at Mach 1.2 at 12,000 feet above the Pacific Ocean on Aug. 21. The test was conducted out of Edwards AFB, Calif.

There are seven F-22s undergoing developmental testing. Officials said #4009, the last Raptor slated for developmental test, is expected to join the flight test fleet at Edwards later this year.

USAF Announces Depot Strategy

The Air Force sent Congress a report on its three Air Logistics Centers spelling out the need for \$150 million more per year from 2004 through 2009. In a statement released Sept. 10, the service said the additional funding would enable the depots to replace aging facilities and equipment.

The report consists of a "Depot Maintenance Strategy" and "Depot Maintenance Master Plan." According to the strategy, "Over the course of the last decade, the Air Force depot capability eroded." It cited three contributing factors:

- Loss of skilled workers through downsizing.

- Budget driven changes that hampered effective operations.

- Unrealistically low investment in infrastructure and equipment.

"Exacerbating this situation was an increasing requirement for depot level maintenance and repair capability as a result of an aging fleet of weapon systems," according to the strategy.

In addition to increased funding to improve the in-house depot capability, the strategy also calls for increased public-private partnering. The service expects such partnering to reduce total life-cycle costs for weapons systems and overhead.

Bush: "We Cannot Stand By and Do Nothing While Dangers Gather"

In a key Sept. 12 speech at the United Nations, President George W. Bush laid the groundwork for dealing with Iraqi dictator Saddam Hussein. These are excerpts of his remarks.

"We meet one year and one day after a terrorist attack brought grief to my country and brought grief to many citizens of our world. Yesterday, we remembered the innocent lives taken that terrible morning. Today, we turn to the urgent duty of protecting other lives, without illusion and without fear.

"We've accomplished much in the last year—in Afghanistan and beyond. We have much left to do. ...

"The United Nations was born in the hope that survived a world war. ... The founding members resolved that the peace of the world must never again be destroyed by the will and wickedness of any man. ...

"Today, these standards, and this security, are challenged ... by persistent poverty and raging disease. ... Our common security is challenged by regional conflicts—ethnic and religious strife that is ancient but not inevitable. ...

"Above all, our principles and our security are challenged by outlaw groups and regimes that accept no law of morality and have no limit to their violent ambitions. ... In cells and camps, terrorists are plotting further destruction and building new bases for their war against civilization. And our greatest fear is that terrorists will find a shortcut to their mad ambitions when an outlaw regime supplies them with the technologies to kill on a massive scale.

"In one place—in one regime—we find all these dangers, in their most lethal and aggressive forms, exactly the kind of aggressive threat the United Nations was born to confront.

"Twelve years ago, Iraq invaded Kuwait without provocation.

And the regime's forces were poised to continue their march to seize other countries. ... Had Saddam Hussein been appeased instead of stopped, he would have endangered the peace and stability of the world. ...

"To suspend hostilities, to spare himself, Iraq's dictator accepted a series of commitments. ...

"He has proven instead only his contempt for the United Nations. ... By breaking every pledge—by his deceptions, by his cruelty—Saddam Hussein has made the case against himself. ...

"In 1991, the UN ... demanded that Iraq return all prisoners from Kuwait and other lands. Iraq's regime agreed. It broke its promise. ... Last year, the [UN] reported that ... nationals remain unaccounted for—more than 600 people. One American pilot is among them.

"In 1991, the UN ... demanded that Iraq renounce all involvement with terrorism. ... Iraq's regime agreed. It broke this promise. ...

"In 1993, Iraq attempted to assassinate the Emir of Kuwait and a former American President.

"In 1991, the Iraqi regime agreed to destroy and stop developing all Weapons of Mass Destruction and long-range missiles and to prove to the world that it has done so by complying with rigorous inspections. Iraq has broken every aspect of this fundamental pledge.

"From 1991 to 1995, the Iraqi regime said it had no biological weapons. After a senior official in its weapons program defected and exposed this lie, the regime admitted to producing tens of thousands of liters of anthrax and other deadly biological agents for use with Scud warheads, aerial bombs, and aircraft spray tanks. UN inspectors believe Iraq has produced two to four times the amount of biological agents it declared.

DOD Creates New Space Office

On Sept. 3, Peter B. Teets, in his role as head of national security space, announced creation of the Transformational Communications Office to coordinate military and intelligence communications requirements involving space assets.

Teets is undersecretary of the Air Force and director of the National Reconnaissance Office. The Air Force is the DOD executive agent for space.

The new office "will coordinate, synchronize, and direct execution of the Transformational Communications Architecture," said an official statement.

Rear Adm. Rand H. Fisher, head of the NRO Communications Directorate and commander of the Navy's space field activity, is the director of the new office. Christine Anderson, director of the Milsatcom Joint Program Office, was named TCO deputy director. Both individuals are also to retain their current positions.

Teets said development of the



Photo by Army Spc. Patrick Tharpe

On a humanitarian mission, TSgt. Mark Gillman, Pope AFB, N.C., greets a young boy in Kophisophi, Afghanistan. In a Sept. 5 speech, Deputy Defense Secretary Paul Wolfowitz said that through coalition assistance famine in Afghanistan was averted and more than 50 schools were built—"that is certainly one of the most far-reaching ways we can help these young Afghans build their own better world."

... Right now Iraq is expanding and improving facilities that were used for the production of biological weapons. ...

"In 1995, after four years of deception, Iraq finally admitted it had a crash nuclear weapons program prior to the Gulf War. Were it not for that war, the regime in Iraq would likely have possessed a nuclear weapon no later than 1993. ... It has been almost four years since the last UN inspectors set foot in Iraq, four years for the Iraqi regime to plan, and to build, and to test behind the cloak of secrecy. ...

"Saddam Hussein's regime is a grave and gathering danger. To suggest otherwise is to hope against the evidence. To assume this regime's good faith is to bet the lives of millions and the peace of the world in a reckless gamble. And this is a risk we must not take. ...

"We have been more than patient. We've tried sanctions. We've tried the carrot of oil for food and the stick of coalition military strikes. But Saddam Hussein has defied all these efforts and continues to develop Weapons of Mass Destruction. The first time we may be completely certain he has nuclear weapons is when, God forbids, he uses one. ...

"The conduct of the Iraqi regime is a threat to the authority of the United Nations and a threat to peace. Iraq has answered a decade of UN demands with a decade of defiance. All the world now faces a test and the United Nations a difficult and defining moment. Are Security Council resolutions to be honored and enforced, or cast aside without consequence? ...

"We want the United Nations to be effective, and respectful, and successful. We want the resolutions of the worlds' most important multilateral body to be enforced. ... Our partnership of nations can meet the test before us, by making clear what we now expect of the Iraqi regime.

"If the Iraqi regime wishes peace, it will immediately and unconditionally forswear, disclose, and remove or destroy all

Weapons of Mass Destruction, long-range missiles, and all related materials.

"If the Iraqi regime wishes peace, it will immediately end all support for terrorism and act to suppress it, as all states are required to do by UN Security Council resolutions.

"If the Iraqi regime wishes peace, it will cease persecution of its civilian population, ... again as required by Security Council resolutions. ...

"If these steps are taken, it will signal a new openness and accountability in Iraq. ...

"The United States has no quarrel with the Iraqi people; they've suffered too long in silent captivity. Liberty for the Iraqi people is a great moral cause and a great strategic goal. The people of Iraq deserve it; the security of all nations requires it. ...

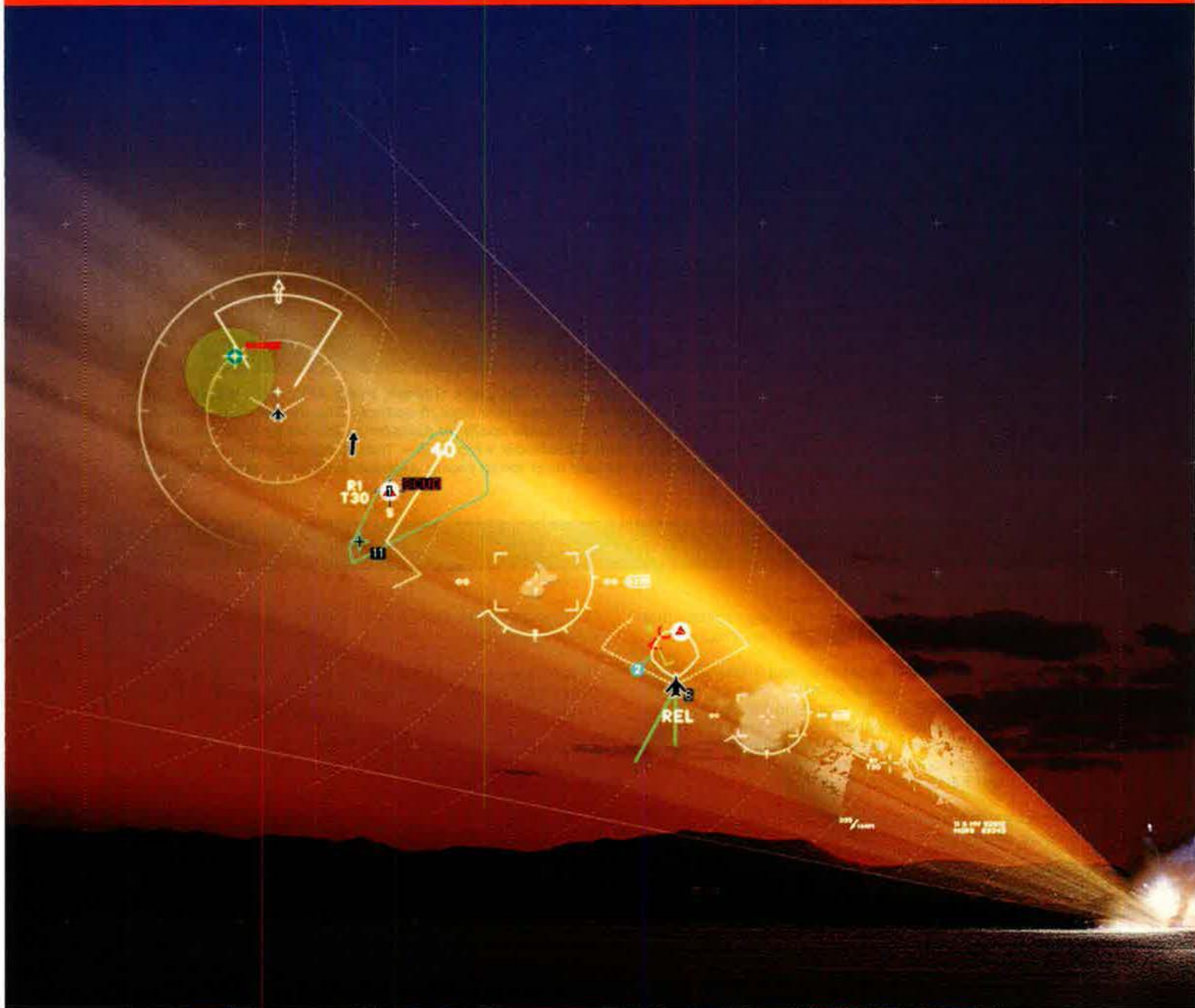
"We can harbor no illusions. ... Saddam Hussein attacked Iran in 1980 and Kuwait in 1990. He's fired ballistic missiles at Iran and Saudi Arabia, Bahrain, and Israel. His regime once ordered the killing of every person between the ages of 15 and 70 in certain Kurdish villages in northern Iraq. He has gassed many Iranians, and 40 Iraqi villages.

"My nation will work with the UN Security Council to meet our common challenge. If Iraq's regime defies us again, the world must move deliberately, decisively to hold Iraq to account. ...

"The purposes of the United States should not be doubted. The Security Council resolutions will be enforced—the just demands of peace and security will be met—or action will be unavoidable. And a regime that has lost its legitimacy will also lose its power. ...

"We must choose between a world of fear and a world of progress. We cannot stand by and do nothing while dangers gather."

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System

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

Track

AAS-52
Multispectra
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ASQ-228 Advanced
Targeting FLIR
AAJ-16
AAS-44

Navigate

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GPS Digital AE
Raptor GRAM
Lightning Strike
SAASM
GAINS
DAGR

Communicate

SADL
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Harvard Law Finally Gives Up Military Recruiting Ban

Harvard Law School, in late August, lifted its prohibition against military recruiting on its campus. The school had banned military recruiters since 1979 in protest of the DOD policy against homosexuals serving in the armed forces.

If the ban had continued, Harvard University would have lost federal money totaling some \$328 million annually—16 percent of Harvard's operating budget. A 1996 law, known as the Solomon Amendment, links federal research grants to colleges and universities with an institution's openness to military recruiting. (See "The Recruiters and the Schools," October 2001, p. 62.)

Until this year, Harvard had evaded the law on a technicality. A student organization—the Harvard Law School Veterans Association—did invite military recruiters to the campus. In 1998, when the Air Force pressed Harvard for information about its compliance with the Solomon Amendment, USAF accepted the HLSVA invitation as compliance.

However, on May 29, the Air Force notified the law school that it no longer considered Harvard in compliance with the law. The service said it would recommend that DOD deny the funding if the law school did not reverse its position.

Robert C. Clark, the Harvard Law School dean, said in a memo, "As a citizen, I am convinced that military service is both honorable and essential to the well-being of our country. ... The law school will welcome the military to recruit through OCS [Office of Career Services]. Our hospitality, however, does not imply that we endorse all of the military's personnel policies."

An associate dean at the university was more pragmatic. According to the *Wall Street Journal*, he said that the decision had less to do with warm feelings toward people who defend our freedom than with cold, hard cash.

CSIS Analyst Claims Threat of Iraqi Air Defenses Exceeds That of its Aircraft

The threat to US airpower in a confrontation with Iraq will come not from the Iraqi air force but from its redundant surface-to-air missile system, including a modern command-and-control element. So stated Anthony H. Cordesman, a senior defense analyst with the Center for Strategic and International Studies, in remarks Sept. 12 in Washington, D.C.

Cordesman, who spoke upon release of his new report, "Iraq's Military Capabilities in 2002," said that, in many ways, the Iraqi air force is a cipher. It has some 316 combat aircraft, according to the report, although only about 50 to 60 percent are serviceable.

"Air force air-to-air and air-to-ground training is limited and unrealistic," states the report. "The two no-fly zones [of Operation Northern Watch and Southern Watch] have further limited air training and combat experience."

However, the report states, "The heavy surface-to-air missile forces of the Air Defense Command are still organized into one of the densest defensive networks in the world." (See "DOD Announces Shift in Tactics," p. 10.)

Cordesman's report lists Iraq's SAMs: 6,500 SA-7s, 400 SA-9s, and 192 SA-13s. Additionally it lists a total of between 81 and 135 SA-2, SA-3, and SA-6 SAM batteries.

The Iraqi air force, while largely ineffective, has practiced penetration raids by single low-flying aircraft that could carry Weapons of Mass Destruction.

In introductory remarks, Cordesman noted that Iraq "is not a strong or unified military or nation." He continued, "An operation could prove to be relatively easy and blood free. It is not likely that Iraq will be highly effective."

His next statement, though, was unequivocal: "One does not go to war based on best or the most probably case. ... There are grave uncertainties about Iraq's Weapons of Mass Destruction."

space communications architecture will be a joint effort, involving each military service, the Intelligence Community, and NASA.

He added that military operations in Afghanistan "once again highlighted the critical importance" of communications. "Increased communications connectivity and interoperability is an imperative," he said. "This new office is going to help make that communications transformation a reality."

Services Reach Recruiting Goals

DOD officials announced in late August that each military service would meet or exceed Fiscal 2002 recruiting goals.

The Air Force had stated in May that it had already made its goal for the year—signing on 37,283 recruits. USAF officials said that was the earliest the service had met its annual goal since 1986.

The Army met its 2002 goal nearly six weeks early. It signed the 79,500th soldier on Aug. 22. The Navy was well on its way toward a goal of 46,500 sailors, said Navy officials, although the sea service doesn't count a recruit until the recruit actually ships out to boot camp.

The Marine Corps goal was 38,642. Its recruiters reported running about three percent ahead of their monthly goals for several months.

USAF Sets Up New ABL Facility

The Air Force has built a new \$18.5 million test facility at Edwards AFB, Calif., for the Airborne Laser aircraft. It will enable the test force to operate the weapons-class chemical laser on the ground.

The ABL's laser is designed to function at the lower air pressures found at altitudes of 40,000 feet. The new facility—called the Ground Pressure Recovery Assembly—will simulate that lower pressure, according to Ken Montoya, ABL project manager at Edwards.

The facility has a large, sphere-like top that acts as a negative pressure vessel. It sucks in the heat energy and water vapor generated by the chemical action of the laser. The venting process keeps the chemical reaction of the laser going.

The first ABL aircraft, a modified Boeing 747-400F, was flight-tested this summer to demonstrate its airworthiness after extensive airframe modifications. This fall, it will arrive at Edwards, where the laser will be installed.

The laser is designed to shoot down a ballistic missile while it is still over

an enemy's territory. The first in-flight test against a ballistic missile is scheduled for 2004.

Montoya said other DOD agencies or industry may be able to use the new recovery facility for other directed-energy tests. However, he said the current focus is on the 2004 ABL test.

Top Coat Peeling Gets Worse

A minor maintenance problem the Air Force discovered in 1995 regarding its B-52 bombers has become much more widespread, and it might affect other aircraft as well. The problem is Fuel Tank Topcoat Peeling. The catalyst is a higher operations tempo.

Maintainers recently reported an increase in failures of B-52 boost pumps. As of September, 53 of the service's 94 B-52s have shown signs of topcoat wrinkling, peeling, and flaking in integral fuel tanks.

Other aging aircraft, such as the Air Force's KC-135 and the Navy's P-3 have shown signs of FFTP. The problem has been linked to the switch from JP-4 fuel to JP-8.

"If what we believe is true—that age, fuel, and fuel additives are playing a role in this problem—these factors are common to all aircraft types and, therefore, other aircraft have the potential for FFTP," said Rex Cash, B-52 fuels engineer at Tinker AFB, Okla.

The heavy use of B-52s has led to more fuel running through boost pumps in weeks than would normally be the case in a year's worth of flying. The increase in FFTP damage could lead to a greater corrosion problem, said Cash.

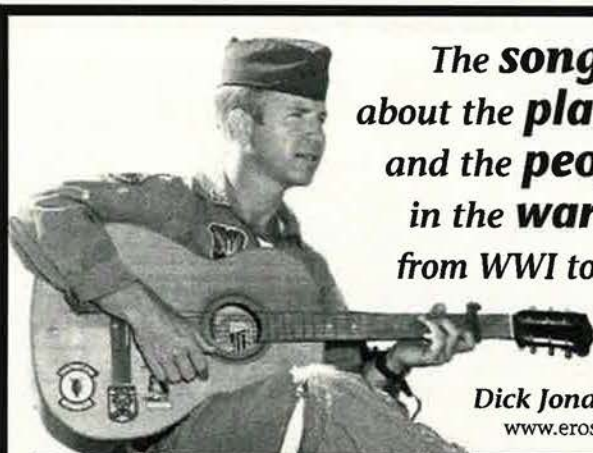
B-52 engineers are working on a \$12 million study expected to last three years to positively identify the cause and devise a solution. Potentially, the long-term solution is to remove the old topcoat from the entire B-52 fleet. That could take 20,000 man-hours to complete.

"Of all the problems I've been involved in, I think this is going to be the most challenging," said Cash. "This could be a very expensive project."

USAF Faces Tough Personnel Decisions

The Air Force is searching for a means to establish a steady state for its personnel as the service continues running both a high ops tempo and high personnel tempo. Service leaders say they will have to make some decisions about how to get to that steady state.

The issue is not just how to deal



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A B-1B touches down at the Air Force's "boneyard," the Aircraft Maintenance and Regeneration Center at Davis-Monthan AFB, Ariz. It is the first of 24 B-1s that will retire to the center under the service's plan to trim its B-1 fleet from 93 to 60.

CENTCOM Report Absolves AC-130 Crew in Afghan "Wedding Party" Deaths

US Central Command on Sept. 6 released its report concerning action by a USAF AC-130 gunship in Afghanistan in July that resulted in civilian deaths. It found no fault with the actions of the AC-130 crew.

Instead, the report said that area of Afghanistan is considered the "home" of the Taliban. "Coalition aircraft have regularly been the target of hostile fire from the Deh Rawod area," stated the report.

The day of the incident, July 1, local villagers claimed that 250 civilians had been killed and 600 injured. They said they were members of a wedding party. The report said that a village elder later admitted that those numbers were overstated by 75 percent. A coalition investigation team could only confirm 34 dead and about 50 wounded.

The incident revolved around Operation Full Throttle, which was intended to deny Deh Rawod as an enemy sanctuary. According to the CENTCOM report, two weeks prior to OFT, covert reconnaissance of the area revealed gunfire, including mortars and anti-aircraft artillery. The area appeared to be used for enemy training.

Two days before OFT, coalition helicopters inserting additional recon teams came under fire, forcing one helicopter to land at an alternate site. Every time a coalition aircraft appeared over the area, it came under attack. "From the nature and characteristics of the fires, it was clear that these were AAA and not small arms," stated the report.

Over the two day period, coalition forces identified several compounds as the sources of repeated AAA fire. The coalition forces directed an AC-130 to the targets. It struck six.

The report also noted that immediately following the incident, village elders admitted to coalition forces that villagers "regularly fired at aircraft."

"While the coalition regrets the loss of innocent lives, the responsibility for that loss rests with those that knowingly directed hostile fire at coalition forces," stated the report.

It is "not an unusual tactic" for terrorists to use civilians as cover, USAF Gen. Richard B. Myers, Chairman of the Joint Chiefs of Staff, told ABC's Sam Donaldson, on Sept. 8, when questioned about the incident.

"They have hidden behind civilians before," said Myers. "And they will do it in the future."

with today's environment, said Gen. Robert H. Foglesong, USAF vice chief of staff, it's tied to future manpower ceilings, recruiting, training, and retention.

"It is imperative that we quickly come to closure with a comprehensive human capital plan," he said in an Aug. 7 memo. "Failure to gain control of this situation will ... result in both short- and long-term recruiting and training failures that are not recoverable."

Working the problem is the Human Capital Task Force. "Our goal is to reduce the extended tour lengths facing many of our [Aerospace Expeditionary Forces] and bring them back down to the 90 days that our force is familiar with," said Mike Aimone, task force director at the Pentagon.

He said there is no silver bullet.

So far, the service has identified some short-term fixes. USAF's Fiscal 2004 budget request will ask DOD to fund conversion of about 6,300 military positions to civilian. That move would free up manpower authorizations for some of the service's most stressed career fields.

DSB: US Should Narrow Missile Defense Options

The Pentagon's Defense Science Board has urged President Bush to focus the Administration's missile defense program on just two approaches. At present the program involves at least eight different options for knocking down ballistic missiles.

The recommendation was made in August, the *Washington Post* reported on Sept. 3.

There have been some successes in flight tests for one of the proposed systems, and the Administration plans to install initial ground-based elements for that system in Alaska by 2004. Other facets of the program face technical challenges and cost overruns.

The DSB panel believes that eliminating some experimental systems from the program now would enable DOD to deploy a workable system sooner.

The *Post* reported that the panel favors two approaches. The first is the land-based system of interceptors, which began testing in 1999 and is furthest along in development. It is designed to hit incoming warheads in their midcourse phase, while outside the atmosphere.

The second is a proposed ship-based interceptor system, which would intercept missiles in their boost

and ascent phases. It reportedly has strong backing in Congress. However, unlike its supporters, the DSB panel does not believe this approach could be developed easily or quickly.

SBR Start Is a Year Away

The Air Force is at least a year away from starting work on a Space Based Radar program, according to Peter B. Teets, the Pentagon's point man for space. Development of the SBR will not be simple, he told reporters Sept. 5.

The problem, said Teets, is the need for technology development and industrial participation. Teets is undersecretary of the Air Force and director of the National Reconnaissance Office.

SBR is intended as a sensor system that will be able to track ground targets from space. The radar could replace manned or unmanned surveillance aircraft or work in combination with them. It would provide more continuous coverage and be able to view targets in mountainous terrain that might be hidden to the aircraft.

Teets said industry work on the technical challenges facing the system is slated to begin this fall.

Library Collects Vet Histories

Congress created the Veterans History Project to capture first-person accounts of individuals who served the US during wartime. The Library of Congress is overseeing the project through its American Folklife Center.

The goal, stated library officials, is to collect and preserve oral histories and documentary materials from veterans of World War I, World War II, and the Korean, Vietnam, and Persian Gulf Wars. The project also wants to collect stories from the home front for those same time periods.

"More than 1,600 veterans are dying each day, so there is an urgent need to collect their stories and experiences," said James H. Billington, librarian of Congress. "This project will also allow the next generation to learn about and speak to those who have fought to sustain the freedom that we find challenged throughout the world today."

For more information about the project call 800-315-8300 or visit the LOC Web site at www.loc.gov/vets.

CAP Names New Director

The Civil Air Patrol announced Sept. 3 that retired Air Force Col. Albert A. Allenback is the new executive director for the CAP, headquartered at Maxwell AFB, Ala. CAP is

Air Force Charges Two Pilots in Deaths of Canadians

The Pentagon announced Sept. 13 that the Air Force had filed criminal charges two F-16 pilots for the April 17 attack that left four Canadian soldiers dead and eight others injured.

A DOD statement said, "These charges are only accusations. Both officers are presumed innocent." The accidental attack occurred near Kandahar, Afghanistan.

The two pilots are from the 170th Fighter Squadron, based at Springfield, Ill. The unit is part of the Air National Guard's 183rd Fighter Wing.

Maj. Harry Schmidt was charged with four counts of involuntary manslaughter and eight counts of assault. He was also charged with failing to exercise appropriate flight discipline and not complying with the Rules of Engagement.

Maj. William Umbach was charged with the same counts. As flight commander, he also was charged with having negligently failed to exercise appropriate flight command and control and to ensure compliance with the ROE.

Preliminary results from a coalition investigation board, released June 28, had found both F-16 pilots were at fault. It also determined that failings within the pilots' immediate command structures were contributing factors.

The coalition board was co-chaired by Canadian Brig. Gen. Marc Dumais and USAF Brig. Gen. Stephen T. Sargeant, a veteran F-16 pilot.

A separate Canadian board also blamed the two pilots. In findings it also released June 28, the Canadian board said the two pilots were not aware of a planned coalition live-fire exercise. However, it also said that the weapons used by the Canadian soldiers that day were personal side arms up to and including shoulder-fired anti-tank munitions. "Though visible from the air, the armament being employed was of no threat to the aircraft at their transit altitude," the board claimed.

US Central Command released a public version of its final investigation report on Sept. 13. According to its sequence of events, the Canadian soldiers on April 17 were at the Tarnak Farms Range for nighttime live-fire training. The F-16 pilots, who were northeast of the range to rendezvous with an aerial refueling aircraft after completing their mission, reported seeing surface-to-air fire (SAFIRE) off to the right. Umbach asked for permission from an Airborne Warning and Control Systems aircraft to pinpoint the exact coordinates.

Schmidt made a turn away from Umbach and began a descent. Schmidt reported he could see the source of the SAFIRE and requested permission to lay down some 20 mm cannon fire. The AWACS contacted the Combined Air Operations Center, whose chief "immediately" told the controller to deny the request. The CAOC asked for more information. Schmidt reported that he saw men on a road "and it looks like a piece of artillery firing at us. I am rolling in self-defense." About five seconds later, Schmidt called bombs away and released a 500-pound laser-guided munition. Thirty-eight seconds after Schmidt's self-defense call, this came over the radio: "Be advised Kandahar has friendlies; you are to get ... out of there as soon as possible."

The 65-page report concluded, from numerous interviews, that other F-16 pilots faced with a similar situation would have climbed to altitude and left the area to avoid the threat. Neither of these two pilots, said the report, "aggressively maneuvered their aircraft in the face of what they presumably believed was a surface-to-air threat."

Under a heading titled "Proportionality," the report stated that, although Schmidt released a 500-pound bomb, he had requested use of a lesser amount of force, the 20 mm cannon. He "did not engage in any nonlethal means of self-defense (i.e. maneuvering away from the threat) before making the decision to use lethal force."

The CENTCOM investigation report also appeared to support findings by both the coalition board and the Canadian board about problems in the pilots' command structure. According to the CENTCOM report, "The presence of the wing's entire chain of command in the OEF [Operation Enduring Freedom] deployment was unusual, and it appeared from witness testimony that there was confusion as to exactly who was in charge in the deployed squadron environment and who had the ultimate responsibility to ensure that standards were met."

The two pilots are to be tried by military court-martial convened by Lt. Gen. Bruce Carlson, commander of 8th Air Force at Barksdale AFB, La.

It's Official: The Joint Strike Fighter Is the F-35

After months of bureaucratic wrangling, the Defense Department has officially settled on F-35 as the designation of the Air Force, Navy, and Marine Corps versions of the Joint Strike Fighter. The shared designator reflects the commonality that is the program's hallmark. To distinguish between service types, however, the Air Force's model will be the F-35A, while the Marine Corps and Navy will fly the F-35B and F-35C, respectively.

Pentagon acquisition, technology and logistics chief Edward C. Aldridge last October had said the aircraft would be the F-35. However, official adoption of the designation was not as simple as it would seem.

Defense Department guidelines stipulate that design numbers generally run sequentially within an aircraft category; for example, the F-15 was followed by F-16; the B-1 was followed by the B-2.

The Air Force's next-up fighter number was F-24 (following the fighter competition between the YF-22 and the YF-23). The Navy's next designation would have been F-19, while the Marines would have followed their AV-8B with the AV-9.

"To keep the commonality thread in the program [the Joint Strike Fighter Program Office] officially requested the F-35 designation be given to all variants, with A, B, C added for the services," explained a program spokeswoman.

The "35" derived from Lockheed Martin's successful JSF concept demonstrator aircraft, the X-35. But F designations usually don't follow X designations; the latter refers to experimental types of which typically only one or two are built. The F-15 fighter, for example, is nothing like the high-flying X-15 research rocketplane of the 1960s.

Moreover, the new JSF designation would dispense with the V that normally would have applied for the vertical takeoff/landing variant.

In May, the JSF office asked the Air Force, which is the keeper of aircraft nomenclature, to waive normal procedures and permit the blanket F-35 label for the new family of fighters.

USAF officials wrote in a June memo, "We have reviewed your request for approval of F-35 as the official Mission Design Series (MDS) for the Joint Strike Fighter (JSF). ... Your request is approved. This MDS will be included in the next update to DOD 4120.15L." That publication, titled "Model Designation of Military Aerospace Vehicles," is the official directory of aircraft designations.

The JSF program spokeswoman said the office has not yet considered how it will designate subsequent models of each variant. One likely possibility is the use of block numbers, such as those used on the F-16C.

No nickname has been picked for the fighter, and once again, service and corporate traditions are in conflict. Lockheed Martin traditionally prefers nicknames with astronomical connotations, such as Starfighter. The Air Force has selected for its most current fighters birds of prey such as Eagle, Falcon, and Raptor, while Navy and Marine fighters have been a mixed bag of cats, birds, insects, and pirates.

The Pentagon is expected to bestow an official nickname on the F-35 shortly before first flight in 2005, and the program office is collecting suggestions. Names proposed so far include Bumblebee, Defender, Gryphon, and Butterfly.

—Adam J. Hebert

the all-volunteer civilian auxiliary of the Air Force.

Allenback, a former A-10 pilot, will oversee a headquarters staff of 175 that support more than 61,000 senior and cadet CAP members nationwide.

At the Civil Air Patrol's national conference in mid-August, the organization announced several award winners. Among them was CAP Lt. Col. Diane Wojtowicz, who was named senior member of the year. Cadet Col. Jennifer Neville, who is now at-

tending the Air Force Academy, was named cadet of the year. Both are from New York CAP squadrons.

Officials at the conference also recounted CAP contributions following last year's terror attacks. New York's governor asked the Civil Air Patrol to take aerial images of the scene at the World Trade Center for the New York State Emergency Management Office. The New York CAP Wing also transported federal and state personnel and materials to New

Jersey, where they were flown by helicopter to the WTC site.

The CAP Pennsylvania Wing provided manpower and communications support to federal and local emergency management agencies. Wings in Connecticut, Kentucky, Massachusetts, and Rhode Island delivered blood and other medical supplies. Virginia members manned the state emergency operations center.

USAF Names "Pay Czar"

The Air Force announced Sept. 6 that it had appointed Dave Ashton to be the service's personnel "pay czar." His job is to fix and prevent pay problems for Air Force personnel.

Ashton, who returned to work for the Air Force as a civilian after a 30-year active duty career, is the Air Force Personnel Center's liaison to the Air Staff, base personnel and finance offices, and the Defense Finance and Accounting Service.

Air Force officials said they began seeing an "unacceptable" number of pay problems last year. Naming a pay czar is one more step, they said, in their drive to prevent errors before they happen.

"As a result of newly focused teamwork at all levels, the problems are becoming narrower in scope and easier to identify and fix," said Bruce Lemkin, co-chair of USAF's Personnel and Pay Council. He said one of the council's visions is to develop one-stop customer service so individuals don't have to shuttle back and forth between personnel and finance to get problems resolved.

"It's not their fault their pay record is not correct," said Ashton. "We shouldn't make it their burden to find the person who can fix it."

Space Pioneers Honored

Five men who worked on Air Force space and missile programs more than 30 years ago were recognized publicly by induction into the Space and Missile Pioneers Hall of Fame on Aug. 29.

The inductees were: retired Lt. Gen. Forrest McCartney, Col. Lee Battle and Frank Buzard, Maj. James Coolbaugh, and James Baker.

These men join a small fraternity of 18 individuals who can wear the official emblem of the Air Force Space and Missile Pioneers, said an Air Force Space Command statement.

Baker, Buzard, and Coolbaugh worked in the sensitive area of photoreconnaissance, the precursor of today's space surveillance



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In Run-up to Sept. 11 Anniversary, Air Defense Missiles Sprouted Around Washington

The Defense Department set up air defenses armed with live missiles around Washington, D.C., the week of Sept. 11, as a safeguard against possible terrorist actions. The defenses were a temporary measure taken as an additional safeguard against any possible airborne attacks around the anniversary of the 2001 terrorist attacks, said DOD officials.

"This is not a response to any specific threat but is a prudent precaution to increase the radar and air defense posture in the National Capital Region," DOD said in a Sept. 10 statement.

The department had air defense equipment around the capital to participate in Exercise Clear Skies II, which was to run from Sept. 10 through Sept. 14; however as an exercise, the equipment was not to involve live weapons.

Defense Secretary Donald H. Rumsfeld said in a written statement on the first day of the exercise that air defense assets from Clear Skies were being transitioned to Operation Noble Eagle—DOD's homeland defense operation. "This transition involves the movement of missiles from storage in the local area to the deployed systems," the statement explained.

That same day, President Bush's homeland security director Tom Ridge announced the government had "specific intelligence on specific attacks on US interests overseas" and elevated the threat level to the United States to orange on the homeland security advisory system. "We are now at high risk of a terrorist attack," Ridge said.

Clear Skies is a NORAD exercise that was first run in July 2001. This year's version, a DOD spokesman said, was expanded to test how NORAD, along with other federal services, could put up and command a multilayered air defense system—including both ground and air assets.

The ground troops involved were issued Stinger anti-aircraft missiles, both portable and on Avengers, a special Army Humvee armed with an eight-missile launch system. Aircraft that were to participate included USAF F-16 fighters and Airborne Warning and Control System aircraft.

A DOD spokesman noted this was not the first time missiles had been deployed in the capital area. An anti-aircraft missile battery sat atop the Treasury Building during World War II and anti-aircraft missile batteries ringed the Washington area from the early 1950s to the mid-1970s.

—Adam J. Hebert

History, NEA Style

The National Education Association's advice to teachers on the first anniversary of the Sept. 11 terror attacks took a blame-America approach, citing American intolerance as a reason for the attacks, reported the *Washington Times*, Aug. 19.

The NEA, the country's largest teachers union, placed lesson plans on its Web site under the title "Remember September 11th." The crux of their message: Help the American public avoid repeating terrible mistakes by discussing historical instances of American intolerance.

As one critic of the NEA said, "It's an ultimate sin to now defend Western culture."

Luckily teachers nationwide took their own stand—they ignored the NEA, which came under fire from educators, other teachers unions, and psychologists. According to the *Times*, educators and psychologists said the worst thing teachers could do was "sugar-coat" the terror attacks.

systems. Battle developed the Discoverer/Corona satellite imaging program. McCartney was a central figure in ballistic missile programs.

Gen. Lance W. Lord, AFSPC commander, said at the ceremony that much of the work of these men was done in secrecy because it was

groundbreaking research and development.

"We are standing on the shoulders of these pioneers," said Lord.

USAF Starts New Ad Campaign

The Air Force unveiled its new TV recruiting campaign Sept. 18 under

the title "We've Been Waiting for You." The new campaign appeals to recruits on two levels, according to Col. Frederick Roggero, director of the Air Force Integrated Marketing Division. The first is that the Air Force offers more than just jobs, while the second is that recruits will have a chance to work with the most advanced, state-of-the-art technology in the world.

There are four 30-second TV spots, scheduled to run primarily on networks that young adults watch—MTV, Comedy Central, ESPN, and BET. Each commercial tells the story of a teenager with a particular skill or interest who later applies that talent to a career field in the Air Force.

The Air Force expects its recruiting goal for 2003 to remain the same as this year—about 37,000 people.

News Notes

- An F-16 crashed near Hattiesburg, Miss., on Sept. 11. The pilot, with the Air National Guard's 187th Fighter Wing in Montgomery, Ala., ejected safely.

- Boeing began installation of new

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Mixed Signals From Four Allies

According to recent polls in five countries—the US, Canada, Great Britain, Italy, and Spain—there are major differences in how those allies view a possible US attack on Iraq. The polls showed that majorities of Americans and Canadians support such action, while the majorities in the other three countries oppose it.

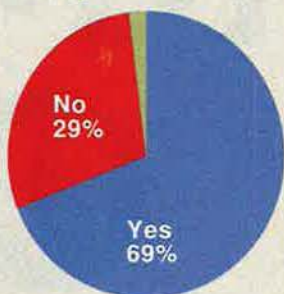
Another question asked in the same countries reveals that a majority in four of them do not feel that the Muslim world is at war with their nation. The gap was narrowest in Great Britain.

These polls were conducted prior to President Bush's speech at the UN. (See "Bush: We Cannot Stand By and Do Nothing While Dangers Gather," p. 12-13.)

On the Question of Going It Alone

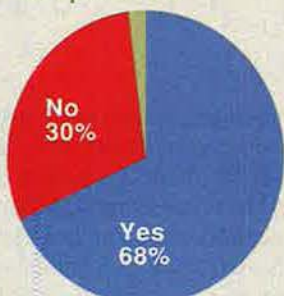
A CNN/USA Today/Gallup poll conducted Sept. 2-4 asked Americans if President Bush should get approval from Congress and the United Nations before launching an attack on Iraq. The result was nearly identical in both cases: Yes, it is necessary.

No opinion 2%

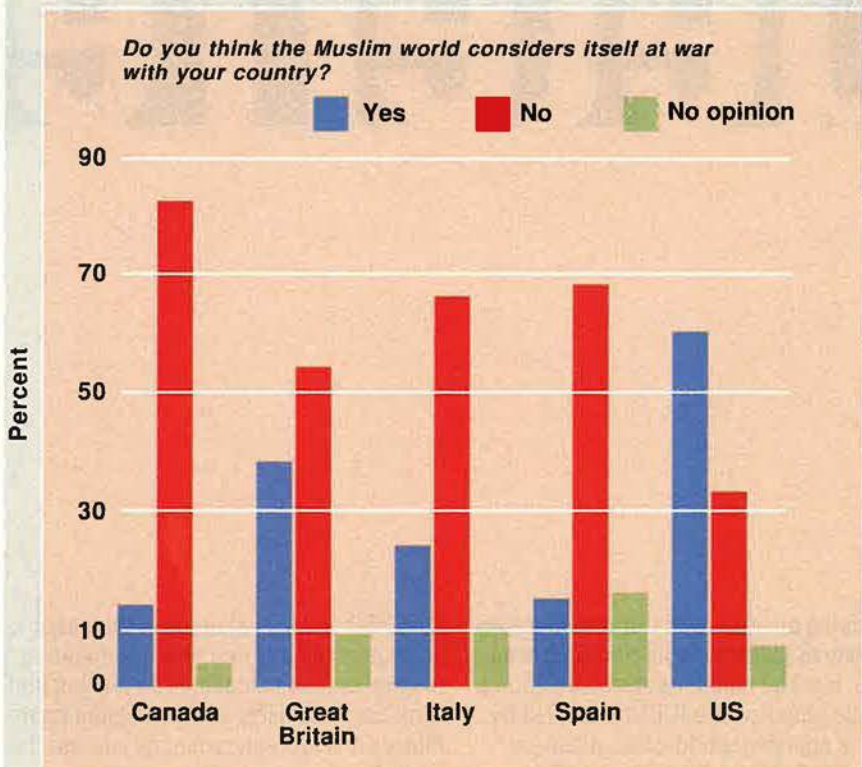
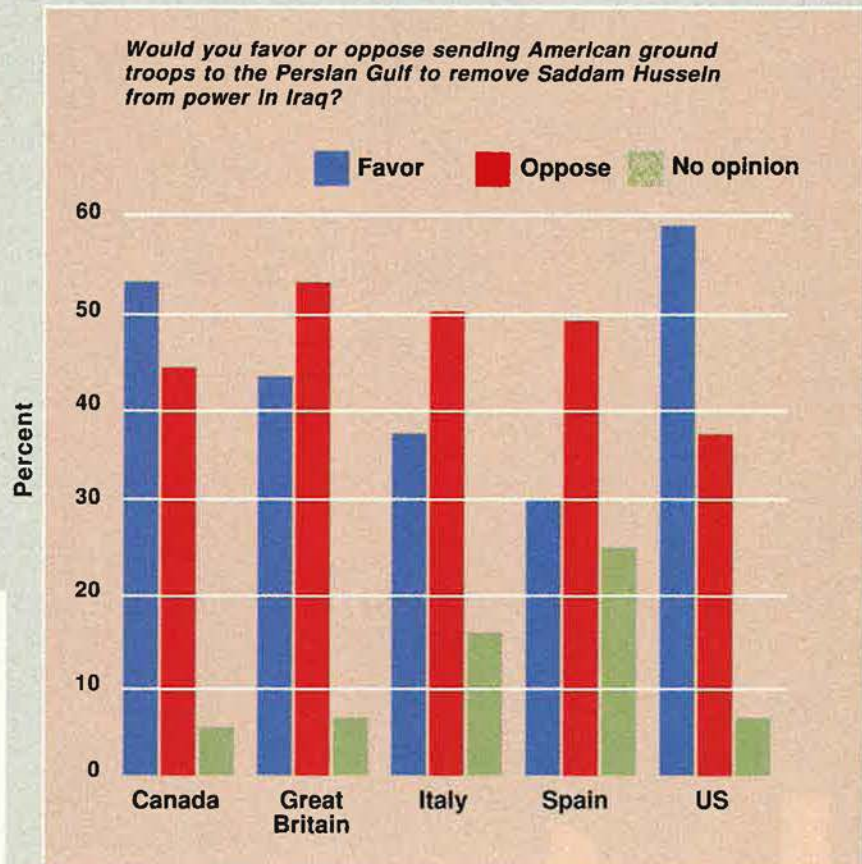


Congress

No opinion 2%



United Nations



Source: US polls by CNN/USA Today/Gallup, conducted Sept. 2-4; Canada, Gallup, Aug. 21-27; Great Britain, Gallup, Aug. 20-Sept. 2; Italy, DOXA S.p.A., Aug. 29-Sept. 2; Spain, Gallup, Sept. 2-4.



deterrence



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force is truly able to contribute to the options available to our warfighters. The ICBM team - TRW, ATK Thiokol Propulsion, Boeing, Lockheed Martin, and Pratt & Whitney - is proud to support our nation and the Air Force by enhancing and maintaining this critical part of our homeland security.

F-22 Raptor training facilities at Tyndall AFB, Fla., in mid-August. The project calls for classrooms and equipment to be set up in stages, with completion slated for 2003, when the first F-22s arrive at the base.

■ On Sept. 12, USAF announced that Col. Lorry Fenner, vice commander of the 70th Intelligence Wing, Ft. George Meade, Md., was selected as a Supreme Court fellow. Her year-long duties started last month.

■ The last three bases—Robins AFB, Ga., Tinker AFB, Okla., and Wright-Patterson AFB, Ohio—using the old civilian personnel system started the transition to the new Defense Civilian Personnel Data System on Sept. 13. USAF initially had to limit the number of users who could access the system, said personnel officials.

■ USAF announced Sept. 13 that it named Col. Douglas Raaberg and his wife Claudia as the 2002 Gen. and Mrs. Jerome F. O'Malley Award winners. Raaberg is commander of the 509th Bomb Wing, Whiteman AFB, Mo.

■ On Sept. 10, USAF recognized Teresa F. Rendon, Aeronautical Systems Center, Wright-Patterson, and Stuart L. Neset, 319th Contracting Squadron, Grand Forks AFB, N.D., as individual Small and Disadvantaged Business Program Award winners. Organizational awards went to the 437th Contracting Squadron, Charleston AFB, S.C., and the Air Force Research Laboratory, Wright-Patterson.

■ France approved a 36 percent increase in annual military spending, reported the *New York Times*, Sept. 12. The increase from \$12.1 billion to about \$16.5 billion includes money for a second aircraft carrier. The number of personnel will rise from 437,000 to 446,000 by 2008.

■ Northrop Grumman announced Aug. 27 that the company and USAF had successfully demonstrated the feasibility of releasing a Bat submunition from a Predator UAV in two drop tests.

■ AB-1B bomber from the 7th Bomb Wing, Dyess AFB, Tex., was flown to the Air Force Museum at Wright-Patterson, where it will become part of the museum's collection. Museum officials said the B-1B will be prepared for public display and placed in the museum's new hangar, set to open next year.

■ An F-15 from the 44th Fighter Squadron, Kadena AB, Japan, crashed on Aug. 21 about 60 miles south of the base. The pilot ejected safely. The cause of the accident is under investigation, said USAF officials.

■ Gen. Lester L. Lyles, commander of Air Force Materiel Command, was named to receive the 2003 Black Engineer of the Year Award for Lifetime



USAF photo by MSGT. Mark A. Suban

Some 13,000 people attended the memorial service for individuals killed by the terrorist attack on Sept. 11, 2001. True to their word, workers at the Pentagon completed the renovation in time for the Sept. 11 memorial service.

Achievement. It is presented by the Council of Engineering Deans of the Historically Black Colleges and Universities, Lockheed Martin, Daimler Chrysler, and *US Black Engineer & Information Technology* magazine.

■ On Aug. 20 at the Pentagon, TSgt. Thomas E. Fields Jr. received the Cheney Award for saving the life of a fellow loadmaster in January 2001. Fields is with the 418th Flight Test Squadron, Air Force Flight Test Center, Edwards AFB, Calif.

■ Special Operations Forces plan to run a 334-mile relay race from Fayetteville, N.C., to Washington, D.C., Oct. 14-17, to raise money for children of SOF personnel who died during an operational mission or training. The funds go to the Special Operations Warrior Foundation.

■ DOD named Timothy C. Cox as chief operating officer of the Armed Forces Retirement Home. He will replace the board that has governed the AFRH for more than 10 years. ■

Senior Staff Changes

RETIREMENTS: Maj. Gen. Larry K. **Arnold**, Maj. Gen. Robert J. **Boots**, Brig. Gen. James B. **Smith**.

NOMINATION: To be **Lieutenant General:** Carrol H. **Chandler**.

CHANGES: Maj. Gen. John A. **Bradley**, from Dep. Cmdr., JTF-Computer Network Ops., USSPACECOM, Arlington, Va., to Asst. to the Chairman, JCS, Reserve Matters, Pentagon ... Lt. Gen. (sel.) Carrol H. **Chandler**, from Dir., Aerospace Ops., ACC, Langley AFB, Va., to Cmdr., 11th AF, PACAF, Elmendorf AFB, Alaska ... Brig. Gen. David M. **Edgington**, from Cmdr., 4th FW, ACC, Seymour Johnson AFB, N.C., to Dep. Cmdr., CAOC 6, Allied Air Forces Southern Europe, NATO, Eskisehir, Turkey ... Lt. Gen. Ronald E. **Keys**, from Cmdr., Allied Air Forces Southern Europe, NATO, Naples, Italy, to DCS, Air & Space Ops., USAF, Pentagon ... Maj. Gen. Maurice L. **McFann Jr.**, from Dep. Cmdr., Jt. Command North, NATO, Stavanger, Norway, to Dir., Ops., NORTHCOM, Peterson AFB, Colo. ... Maj. Gen. Dale W. **Meyerrose**, from Dir., Command Control Sys., USSPACECOM and NORAD, Peterson AFB, Colo., to Dir., Command Control Sys., NORAD, and Dir., Architectures & Integration, NORTHCOM, Peterson AFB, Colo. ... Lt. Gen. Norton A. **Schwartz**, from Cmdr., 11th AF, PACAF, Elmendorf AFB, Alaska, to Dir., Ops., Jt. Staff, Pentagon ... Maj. Gen. George P. **Taylor Jr.**, from Spec. Asst. to Surgeon Gen., USAF, Pentagon, to Surgeon Gen., USAF, Bolling AFB, D.C. ... Brig. Gen. (sel.) Roy M. **Worden**, from Dep. Cmdr., CAOC 6, Allied Air Forces Southern Europe, NATO, Eskisehir, Turkey, to Cmdr., 31st FW and 31st AEW, Aviano AB, Italy.

SENIOR EXECUTIVE SERVICE CHANGE: Patricia M. **Young**, to Dep., Log. & Business Ops., Ops. & Log., TRANSCOM, Scott AFB, Ill. ■

Verbatim

By John T. Correll, Contributing Editor

Lock 'Em Up

"Every once in a while, there are people in the United States government who decide that they want to break federal criminal law and release classified information, and they ought to be imprisoned. And if we find out who they are, they will be imprisoned."—**Secretary of Defense Donald H. Rumsfeld, CNBC, July 15.**

Shut 'Em Up

"I never thought I'd be saying, 'Hold the information,' but will all the Pentagon and Administration sources telling us how Saddam Hussein will be brought down, please shut up."—**National Public Radio analyst Daniel Schorr, Christian Science Monitor, Aug. 2.**

Give 'Em Hell, Tiger

"The Israelis know that if the Iraqi or the Iranian army came across the Jordan River, I would personally grab a rifle, get in a ditch, and fight and die."—**Former President Bill Clinton at a July 29 fund-raising event for a Jewish charity in Toronto, as quoted in the Washington Times, Aug. 3.**

No-Think Zone

"Iraq: Why Not Do Nothing?"—**Headline, Christian Science Monitor, June 31.**

Headline A ...

"Report Calls Response at Pentagon Successful."—**Headline on article about report on 9/11 rescue operations, Washington Post, July 24.**

... Or Headline B

"Study Calls Rescue at Pentagon Chaotic."—**Headline about the same report, New York Times, July 24.**

The Trinity in Battle

"One of the things I believe fervently was probably said 175 years ago by Clausewitz: In battle, outcomes are determined by this trinity. You have to have a decision by the state. You have to have military

capacity to get the work done. And you have to have the will of the people. In my lifetime, I have not seen the enduring confluence of those three things until post-9/11."—**Army Gen. Tommy R. Franks, commander, US Central Command, Esquire, August 2002.**

Dog to Kick

"I want one dog to kick, but when it comes to intelligence, I have to go down to the pound."—**Richard Haver, the Secretary of Defense's special assistant for intelligence, quoting his boss, Rumsfeld, on the need for an undersecretary of defense for intelligence, Washington Post, July 15.**

On the Other Hand, Carriers ...

"I am absolutely convinced you can't win without dominating the battlespace. You can't do that unless you own the air, and you can't own the air when they won't let you park your airplanes in their country."—**Adm. Vern Clark, Chief of Naval Operations, The Retired Officer Magazine, July 2002.**

We Will Bury You

"All empires and bearers of the coffin of evil, whenever they mobilized their evil against the Arab nation, or against the Muslim world, they were themselves buried in their own coffin, with their sick dreams and their arrogance and greed."—**Iraqi President Saddam Hussein, quoted in the Washington Post, Aug. 9.**

Blame the Air Force

"The most amazing thing about the blame game now being played over who was at fault for Sept. 11 is that no one is pointing a finger at the Air Force. ... All the Air Force had to do was heed the ample warnings that the United States was a terrorist target, reasonably conclude that Washington probably would be among the first places hit, and plan an air defense."—**Sandy Goodman, former producer-writer for "NBC Nightly News," Los Angeles Times, July 17.**

Lethal Air Defenses

"All of Serbia could be defended against legacy aircraft by two SA-20 [surface-to-air missile] systems."—**Maj. Gen. Daniel P. Leaf, Air Force operational requirements director, on the need for the F-22, Inside the Pentagon, July 23.**

Depicting the Saudis

"The Saudis are active at every level of the terror chain, from planners to financiers, from cadre to foot soldier, from ideologist to cheerleader. ... Saudi Arabia supports our enemies and attacks our friends."—**Laurent Murawiec, who was a RAND analyst when he presented this view in a briefing to the Defense Policy Board, quoted in the Washington Post, Aug. 6. The White House disavowed the briefing.**

Consult but Act

"I promise you that I will be patient and deliberate, that we will continue to consult with Congress, and of course we'll consult with our friends and allies. ... And I will explore all options and all tools at my disposal: diplomacy, international pressure, perhaps the military. But it's important for my fellow citizens to know that as we see threats evolving we will deal with them."—**President George W. Bush, in a speech in Madison, Miss., Aug. 7.**

War Games Fixed?

"Neither the construct nor the conduct of the exercise allowed for the concepts of rapid decisive operations, effects-based operations, or operational net assessment to be properly assessed. ... It was in actuality an exercise that was almost entirely scripted to ensure a Blue 'win.'... [Similarly, in a previous exercise] my name was included in post-experiment materials stating that the concept of rapid decisive operations had been validated—a mistruth at best."—**Retired Marine Corps Lt. Gen. Paul Van Riper, who said he quit as the Opposing Force commander midway through Millennium Challenge 02, Army Times, Aug. 26.**

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Long Arm o



By John A. Tirpak, Executive Editor



Transformation studies place emphasis on long-range strike capability, but their focus is on munitions not platforms. Here, a B-2—possibly the last of the Air Force's big bombers—releases a stealthy new Joint Air-to-Surface Stand-off Missile on a test mission.

USAF is looking to new technologies and techniques to boost its power to hit hard over great distances.

f the

Air Force

THE Air Force is rethinking long-range strike, a term that used to mean only one thing: big bombers. As the service adjusts to the Pentagon's new capabilities-based strategy and focuses on desired effects rather than the platforms needed to achieve them, the eventual successor to today's bomber fleet remains intentionally unsettled.

Moreover, the distinction between long- and short-range systems is becoming increasingly blurred, as fighters, extended by air refueling, are used to conduct what could be termed "strategic" missions lasting well over a dozen hours.

To be sure, the Air Force plans to be in the big bomber business for decades to come, as its existing fleet of B-1s, B-2s, and B-52s fills out a long and robust service life armed with powerful new munitions and the latest in avionics. Bombers also have done extremely well in recent combat, giving rise to a new generation of bomber advocates.

This much seems clear, though: The Air Force won't be buying any more bombers as it has come to think of them over the last half-century.

"We are not going to spend any



The satellite-guided 2,000-pound Joint Direct Attack Munition was a star of the campaign in Afghanistan, but more precise 500- and 250-pound models will expand the number of targets that can be destroyed per sortie.

more money on buying new ‘old’ aircraft,” Air Force Secretary James G. Roche said in an interview with *Air Force Magazine*. Going back into production with, for example, the B-2 would be very expensive and add to a capability that Roche said is already more than sufficient.

“In the area of blowing things up, there are two kinds of things involved: One is fixed, the other is moving,” Roche explained. Noting a profusion of new and existing munitions—three versions of the Joint Direct Attack Munition, new stealthy standoff missiles and bombs, conventional air- and sea-launched cruise missiles—Roche said fixed targets, such as bridges and power transformers, can be hit “over and over and over. How many times do you want to bounce the rubble around?”

The thrust for the future, he said, will be on quickly finding and hitting mobile targets.

A Different Problem

“Movers—things that move, ... pop up, ... hide and expose themselves for short periods of time, and then hide again—[pose] a completely different problem” than do the targets traditionally associated with bombers, Roche said. Such targets don’t favor a solution derived from a large aircraft moving at subsonic speed. Preferably, these targets will be found quickly and a “fast mover” aircraft or missile will be swiftly dispatched to swoop in and destroy it, he said.

With surface-to-air missiles, cruise missile launchers, command posts, and weapons of mass destruction—even biological weapons labs—all now on wheels, time-critical or time-sensitive targets will be the driver of the future long-range strike requirements.

Moreover, slow bombers—even stealthy ones—will see their missions altered by the qualities of their own weapons.

Edward C. Aldridge, the Pentagon’s acquisition, technology, and logistics chief, observed that the B-2, when equipped with new, small weapons, will be in a paradoxical situation over the target area.

A B-2 could carry “hundreds” of the new 250-pound Small Diameter Bombs, Aldridge noted in remarks to defense reporters in August. “But in order to deliver those bombs on target, you [have to] open the bomb bay, and the stealth capability of the bomber goes away. And [with] hundreds of bombs in the bomb bay, your bomb bay doors are open all the time,” thus exposing the B-2 far more to enemy detection.

“While the bomber is over the target, it probably would be very advantageous to have a supersonic capability because that keeps [the aircraft] out of the target area for a given period of time,” Aldridge noted. The ability to supercruise—fly at supersonic speed without using gas-guzzling afterburners—is “one of the characteristics that you want” and is

resident “within the F-22,” the Air Force’s next air dominance fighter.

The successor to the current bomber fleet will therefore have these characteristics: high speed, stealth, extreme precision, and the flexibility to adapt to a changing battlefield virtually minute by minute.

The Air Force has a study under way on what it wants to do for future long-range strike but is purposely not assuming the answer will be a new aircraft.

“We used to call it a long-range strike aircraft, because we were doing a long-range strike aircraft study,” said Maj. Gen. Daniel P. Leaf, USAF director of operational requirements.

A New Study

“Then we realized, ‘Guess what, folks? It might not be an airplane.’ [It] might be suborbital, might be exoatmospheric, orbital, it might be an airplane. At this point, as we do our study, we don’t want to limit our horizons ... and jump to conclusions.” The study name was reduced to simply “Long-Range Strike.”

The study is looking at what kind of capability the Air Force would like to have to replace its bombers when the existing fleet falls below a certain minimum, somewhere in the 2030 time frame. According to the Air Force’s November 2001 “Long-Range Strike Aircraft White Paper”—also known as the Bomber Roadmap—a new acquisition effort would have to be launched circa 2015.

To meet that timetable, Leaf said it “would be reasonable to make an investment in the ‘06 POM” [Program Objective Memorandum, the six-year funding plan], so some sort of firm direction will be needed before working the POM. He added that the solution could be a hypersonic platform or missile, or even a directed-energy weapon, but nothing has yet been ruled out.

Aldridge told the Air Force in November 2001 that he wanted to accelerate the Long-Range Strike Aircraft program and move the start date up to sometime in the next few years.

An update to the roadmap, set for publication this fall, was reported to have moved the desired start of a new long-range strike platform forward to 2012. A variety of applicable technology demonstrations or

experiments in the interim also figure in the new roadmap.

The Pentagon's transformation studies of last year, as well as policy documents bearing the signature of Defense Secretary Donald H. Rumsfeld, put at the top of the list of needed future systems stealthy platforms that can swiftly strike at great distances with large weapon payloads. It also put strong emphasis on new standoff munitions that could pack a bigger punch in a smaller size, with greater range. (See "Bomber Questions," September 2001, p. 36.)

The 2001 Bomber Roadmap specified a fleet of just 96 combat-ready bombers out of a fleet of 157 through the mid-2020s. The force would comprise 60 B-1Bs, 21 B-2s, and 76 B-52s. Of those, 36 B-1Bs, 16 B-2s, and 44 B-52s would be ready for war at any given time, while the remaining aircraft would be in maintenance, test, or training.

Last year, the Air Force stunned Congress by asking for permission to reduce its fleet of 96 B-1Bs to 60, with the proviso that the funds saved be plowed back into the remaining aircraft to enhance their performance and capability. Earlier this summer, the plan moved forward as B-1 operations ended at McConnell AFB, Kan., Mountain Home AFB, Idaho, and Robins AFB, Ga., and the B-1s from those bases began to consolidate at Dyess AFB, Tex., and Ellsworth AFB, S.D.

The smaller overall bomber force



USAF photo by MSgt. Dave Nolan

USAF is retiring a third of the B-1B fleet. Savings are to be plowed back into the remaining 60 aircraft. The Air Force plans to give all B-1Bs structural, avionics, and weapon upgrades over the next five years.

would receive more than \$6 billion worth of upgrades during the current five-year budget cycle, according to the 2001 roadmap, and that, Roche said, includes integration of weapons such as the Joint Air-to-Surface Standoff Missile, a stealthy missile with a range in excess of 200 miles.

"A B-1 with JASSM and its three rotary launchers will become quite an exciting aircraft," Roche asserted. "With a combat radius, by the way, of roughly 1,300 to 1,400 miles and about two hours time on station."

The 2001 Bomber Roadmap outlined modifications and improve-

ments to the three bombers through 2007 that Leaf summarized as chiefly "enhancements to survivability and situation awareness." In addition, "there are always reliability, maintainability upgrades. Those are most pressing on the B-1," he said.

Spending on bomber improvements is programmed to rise steadily from about \$650 million in Fiscal 2002 to about \$1.3 billion in Fiscal 2007.

On the B-1B, principal upgrades include enhanced electronic warfare systems, radar improvements, data links, displays, and new weapons. For the B-2, digital data links, new weapons—including a unique 5,000-pound bunker buster—forward area shelters, stealth maintainability measures, engine and radar improvements, and computer upgrades are the high priorities. For the B-52, electronic countermeasures, data links, and new weapons get primary attention.

New Capabilities

The Air Force is looking at long-range strike in the near, mid-, and far term. Recent combat experience in the Balkans and Afghanistan has shown that bombers have acquired some impressive new capabilities with regard to precision and flexibility, and these are the lasting hallmarks of the long-range strike mission well into the future.

"Flexible application of precision ordnance ... in mass" is the way Leaf



Some believe the next long-range strike platform will present only modest advances and resemble today's bomber aircraft. Suborbital and hypersonic craft are also strong contenders.

summarized how the service is thinking about its bombers.

In Kosovo, Leaf pointed out, the B-2 was routinely able to achieve the destruction of 15 or more targets on a single mission, forever upending the calculus of airplanes needed per target killed, to “targets killed per airplane per mission.”

In Afghanistan, B-52s orbited the battlefield, on call to precisely deliver 2,000 pounds of ordnance to any ground unit requesting it, and B-1s were diverted to new targets while on their way to a bombing run.

“Who would have ever thought you’d have B-52s doing CAS [Close Air Support]?” Leaf asked, incredulous.

“The fact that you can dynamically retarget precision ordnance and employ [it] in mass from bombers is a very, very significant shift,” he went on. Coupled with increasing connectivity with the myriad of air- and space-based sensors, ground units in visual contact with targets, and links to “operational-level control” at a regional air operations center, “we put those three together, we get a ... dramatic force multiplication,” he asserted.

This conclusion holds despite the fact that bombers in Afghanistan enjoyed what Leaf termed a “very permissive air defense environment,” meaning that enemy air defenses were quickly destroyed or subdued and enemy fighters were never launched to challenge US aircraft.

Bombers in the early phase of Operation Enduring Freedom delivered 70 percent of the ordnance, while flying only 10 percent of the sorties.

In a less permissive combat arena, bombers will revert to the Air Force’s tiered approach. Stealthy B-2s would serve as deep penetrators, with B-1Bs serving as penetrators—aided by countermeasures and speed—after major air defenses have been reduced. B-52s would either be used as stand-off platforms or to overfly the targets directly when air dominance has been achieved and defenses completely rolled back.

For the near term, bombers are considered in good shape. Upgrades for all three types are funded, and the munitions program is moving ahead on schedule.

- The production rate of the JDAM has been trebled since stocks came perilously close to being depleted in last year’s campaign against the Taliban and al Qaeda. The weapon is now available in 1,000- and 2,000-pound versions, and a 500-pound model is expected to be fielded within a couple of years. The 500-pound JDAM will allow the B-2 to strike 80 targets on one mission.

- The JASSM has cleared its test program and is in production, and the Air Force is considering development of an extended-range version, called JASSM-ER, which would increase its standoff distance to perhaps 500 miles. Lockheed Martin, which builds the missile, believes

that a more efficient engine and using internal volume for additional fuel would allow the longer range without changing the weapon’s external dimensions, called the “mold line.” Keeping the same mold line would dramatically reduce development and test cost and time. The JASSM has a 1,000-pound warhead.

- The Air Force is continuing to convert nuclear AGM-86B Air Launched Cruise Missiles to conventional AGM-86C and D models, the latter of which have the ability to penetrate hard targets. The Conventional Air Launched Cruise Missile has a range in excess of 500 miles. However, since stocks of ALCMs available for conversion are limited, the JASSM-ER seems to be the preferred follow-on in this category.

- The Joint Standoff Weapon is a stealthy glide vehicle that carries submunitions such as the Sensor Fuzed Weapon. Each one can be released about 40 miles from the target area and, with the SFW, attack as many as 120 armored vehicles on the ground.

- The Small Diameter Bomb, a 250-pound, satellite-guided munition, will make its operational debut in the next five years. Its range is classified but expected to be extended by pop-out wings and the speed and altitude of the aircraft using it. A Phase 3 version may have the ability to loiter or autonomously seek out targets. The B-2 is set to carry between 64 and 192 SDBs on one mission. The Air Force is planning to acquire 12,000 fixed-target versions and a like number of the moving-target version. Lockheed Martin and Boeing are competing for the program.

The Small Diameter Bomb is considered one of the most significant programs on the books because it will dramatically increase the strike capability of every combat aircraft in the inventory. In the case of the F-22, it will permit the destruction of up to eight targets on a single mission.

Besides the increased “loadout” (number of weapons), the smaller SDB reduces the possibilities of collateral damage, Roche pointed out.

“If you make a mistake, you want to limit the amount of the mistake,” he said. “Or you want to blow something up, but not blow up the thing next to it.”



A test JASSM reaches impact point. Stealthy, autonomous, and long-legged, JASSM exemplifies future long-range strike munitions. An extended-range model is also being considered.

Mindful that GPS signals can be jammed, the Air Force is also readying other types of guidance for the SDB that would yield comparable precision but be resistant to jamming. These are expected to include a suite involving laser designation, other off-board sensors, and possibly millimeter-wave radar. (See "Smaller Bombs for Stealthy Aircraft," July 2001, p. 42.)

"We've pretty much got the near term covered," a senior Air Force official said, "provided the funding stream is not interrupted. These are all, every one of them, high priorities. This is our attack capability for the next decade."

For the midterm—considered the period from about 2008 to 2012—upgrades to the three bombers in the area of connectivity with off-board sensors, as well as improvements in both self-protection systems and possible escort protection, are considered sufficient to keep the fleet healthy in terms of combat effectiveness. A bigger question mark hangs over the health of the airframes themselves.

The B-2, being newest of the three, is expected to serve without any structural problems into the 2020s. The only unknown is how gracefully its composite materials will age. Although composites have been in widespread aerospace use for 20 years, it remains to be seen whether they will hold up as well as the alloys used in the B-1 and B-52.

"The Bad Teeth"

The B-1 is generally considered in the worst structural shape of the three bombers—a key fact in the decision to retire a third of the fleet. Movable wings, low-level operations, violent maneuvers, and a history of chronic parts shortages have made it a challenge to keep ready.

The reduction of 36 aircraft from the B-1 fleet was, in part, a move to "get rid of the bad teeth" in the B-1 force, Roche said. The retiring aircraft will comprise all of those built in 1983 and most built in 1984, and the remaining fleet will consist of mostly the lowest-age, least-abused aircraft. The 60 that remain will benefit from better spares stocks, the availability of some of the retired ones for cannibalization, and new, less-failure-prone avionics.

The low-level aspect of the B-52's



Staff photo by John A. Tirpak

An FB-22 model sits in Air Force Secretary James Roche's office.

The FB-22

The operational utility of bombers in the new, riskier battlefield of faster, smarter, and longer-ranged defenses is one of the top reasons the Air Force is looking at the F-22 and a larger-winged, longer-ranged variant, the FB-22, as midterm strike possibilities, according to Secretary of the Air Force James G. Roche.

"The F-22 ... has about three times the range of any fighter-attack airplane, when loaded with weapons," Roche said. Too often, he said, ranges are quoted for current aircraft that do not include the weight or drag of weapons carried externally. The F-22, with internal carriage of its full weapons load, can attack a target 600 miles away and return on internal fuel, Roche said.

Enhancing this capability by adding range and weapons load resulted in the idea for the FB-22, he said, describing it as a "regional bomber," with a role comparable to that previously covered by the F-111.

The avionics are identical for the F-22 and an FB-22, said Roche, meaning that "one of the most troublesome things" about developing a new aircraft is done. Likewise, engines, the cockpit, and much of the airframe would be similar, and it would still be stealthy, dramatically reducing the cost to fill this new niche. Optimized for ground attack, though, the FB-22 would not be a dogfighter.

"Much bigger wing, more fuel, you can carry more things—but you can't fight," Roche summed up. The payoff would be "instead of carrying eight Small Diameter Bombs on the F-22, you can carry 30 on the FB-22," with a range of 1,600 miles. Such a capability would, in a smaller aircraft, duplicate the fighting effectiveness of two B-2 bombers armed with 2,000-pound JDAMs. Like the B-2, the FB-22 would carry two pilots, since missions could last more than 12 hours.

"That complements the bomber force, the long-range strike force," Roche said. He added that "long range is a function of with or without tankers. With tankers, almost anything is long range." For time-sensitive targets like weapons of mass destruction, command posts, or air-defense nodes, the FB-22 "may be a valuable device."

The FB-22 is, however, "a notional thing," Roche said. "You have the option to start it any time you have a production line with the F-22. ... Because the more you do with the F-22 in avionics, electronics, etc., it just translates directly."

There is no need to rush into an FB-22 program, Roche said, since the immediate needs of the bomber force are met, and the focus for the near term should be on getting the F-22 into service. The FB-22 is a concept that the Air Force could "keep ... warm for a couple of years" as the service evaluates the threat and the health of the bomber force in the decade to come.



The B-52 could serve another 20 years. This BUFF is en route from Afghanistan. Its performance there—as well as that of the B-1B and B-2—spawned a new generation of bomber advocates.

mission has been eliminated, meaning the aircraft will fly mostly benign flight profiles at high altitudes. Air Force officials said the way in which the B-52 is used now, coupled with the relatively easy life the remaining aircraft have led—H models that mostly “sat alert” for nuclear missions over the last 40 years—means there is plenty of time left in the airframes.

“Based on current projections, all three bombers should be structurally sound for the next four or five decades,” according to the 2001 Bomber Roadmap.

However, Air Force officials have also said they are watching carefully the effects of corrosion—a huge problem on the KC-135 tanker fleet, which is of comparable vintage to the B-52.

The 2001 roadmap also noted that such a long life for the bomber fleet—up to 90 years in the case of the B-52, based on the most recent projections—may be radically curtailed by “significant developments in counterstealth technologies, directed-energy weapons, or proliferation of and advances in surface-to-air missiles and fifth-generation fighters.” Such advances in the hands of adversaries “have the potential to render much of [the bomber fleet] obsolete.”

The Air Force also noted that attrition losses due to combat or accidents, or sudden sharp increases in sustainment costs—such as dimin-

ishing manufacturing sources for parts, especially for the B-52—could spell an earlier end to one or all of the current bombers.

Aldridge said it’s important to think now about what kind of long-range strike capability the Air Force will need in “the 2015–2020 time frame ... because B-52s aren’t going to last forever. ... They’re 50 years old right now.”

For the near term, however, Aldridge said, “What we’re focusing on, rather than the bomber platform, is the munitions that the bombers carry. That’s the important factor.”

For the far term, he said, the next long-range strike platform should probably be “smaller than a B-2” because weapons are now smaller, and the platform should be faster.

Aldridge also said, “High speed, probably a smaller airplane that’s not quite as expensive as the B-2—those are kind of the trade-offs that have to be made. Where all that comes out, I just don’t know at this point in time.”

However, Aldridge noted that a bomber follow-on “could be unmanned, ... supersonic, ... subsonic, it could be FB-22s, ... and it could even come from space. We are not eliminating any possibility for the future. There are activities under way within the Air Force at Wright-Patterson AFB [Ohio] looking at these alternatives.”

Industry is looking at the next step in long-range strike, as well. How-

ever, George K. Muellner, vice president of Air Force systems for Boeing, observed, “There are no clear-cut solutions.” He added, “There’s no immediate path forward that says this is the right technology to pursue.”

Muellner, who was until recently head of Boeing’s Phantom Works advanced technology division, said he believes the greatest potential lies in a solution derived from next-generation launch technology.

He said that work on reusable launch vehicle technologies “is going to drive us down a path to develop a two-stage-to-orbit capability, and that first of the two stages may well be a hypersonic, long-range strike aircraft.”

The technologies necessary for the two vehicles are “the same,” Muellner said.

“The design characteristics are similar. ... You may develop this long-range strike aircraft at a hypersonic closure speed as a result of really trying to drive down the cost of getting to orbit.”

However, Muellner said the technology is not in hand, yet.

“The problem is the thermal environment,” he explained. At speeds of Mach 6 to 8.5, “the conventional materials we use are just not practical.”

“The reality is, we haven’t solved a lot of those problems. ... We have trouble providing thermal protection for these vehicles, period.” Pressed for the most promising possibility, Muellner said he thinks a scramjet-powered vehicle could be the answer.

Yet another study of the possibilities, which will examine doctrine and operational concepts as well as technology, is the subject of an Air Combat Command review, due next April, called the Long-Range Global Precision Engagement Study, or LRGPEs. It was launched at Roche’s direction last summer, after guidance from Aldridge asking for a speedier review of long-term plans for a global attack capability.

Leaf said the Air Force is being “pushed” to provide a “hard answer” on the successor to the bomber force, but he added, “We don’t know. Because we don’t want to know yet. ... It’s not time to lock ourselves into the conventional mind-set.” ■



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European critics say the US is holding itself above the law, but the Pentagon begs to differ.



Disorder in the Court

CONSIDER this scenario: The commander of a US Air Force squadron that has been hunting al Qaeda diehards in Afghanistan is returning home on regular rotation. But rather than travel with the bulk of his unit he decides to make a quick side stop in Belgium to visit a relative he hasn't seen for years.

At the airport outside Brussels a passport control official studies the pilot's documents with particular intensity. After a few minutes the guard escorts him to a holding room. Within an hour the American discovers—much to his surprise—that

By Peter Grier

he is in custody, per a request from the new International Criminal Court in the Hague.

The charge? An Afghan warlord has complained that aircraft under the USAF lieutenant colonel's command have systematically disregarded the safety of civilians on

pecially vulnerable to politically motivated prosecutions, according to the Defense Department.

Nor is the US holding itself above some canonical world "law." What it may really be doing is refusing to let assorted foreign jurists, some from countries where elections and due

modify the court's makeup from inside the system, rather than outside.

The "Unsigning"

In May, the Bush Administration decided to try another approach. The White House took the unprecedented step of "unsigning" an international

Defenders of the court say it is preposterous to think it might unfairly snag US service personnel.

the ground as the aircraft pressed attacks on scattered terrorist camps. An ICC prosecutor opposed to the continued US bombing in the region has decided that the warlord's assertion bears investigation, despite US insistence that it is frivolous.

Back in Washington, US officials react with fury. Belgium, Germany, and other allies remain adamant that the flier might be a war criminal. A crisis in the western alliance looms.

An exaggeration? Perhaps. Perhaps not. Technically speaking, such events are entirely in keeping with the charter of the International Criminal Court, which officially came into existence July 1.

Preposterous?

Years in the making, the United Nations-affiliated ICC is billed as a sort of standing Nuremberg tribunal for the modern age. Its mission is to track down and try individuals, not states, charged with crimes against humanity, without regard to the limitations of national borders.

Defenders of the court say it is preposterous to think it might unfairly snag US service personnel. Its target, they say, is the Slobodan Milosevics of the world—not USAF lieutenant colonels.

Continuing Bush Administration efforts to exempt US personnel from ICC jurisdiction are nothing less than an attempt by America to hold itself above the law, critics say.

But in the Pentagon, officials see things differently. The United States' high-profile role in peace enforcement around the world makes it es-

pecially vulnerable to politically motivated prosecutions, according to the Defense Department.

Nor is the US holding itself above some canonical world "law." What it may really be doing is refusing to let assorted foreign jurists, some from countries where elections and due process are novelties, tell it what "law" is.

"Our principal objections to the ICC treaty are that it subjects US nationals—in particular, the risk is great for our armed forces—to prosecution by prosecutors ... that are not accountable to any kind of authority that we could hold accountable as a country," said a senior defense official in a briefing for reporters in July.

The international court "creates a situation where our people could be prosecuted for crimes that are defined by the parties to the treaty," said the official. "And nobody in our Congress would have a voice in the definition of those crimes."

On July 17, 1998, in Rome, 120 nations voted to adopt a treaty that outlined the establishment of an International Criminal Court. The United States was not among them.

No official record of the vote was made public at the time, but US officials had long expressed unease about the formation of a permanent body intended to adjudicate war crimes around the world. American representatives to the Rome conference made repeated—and ultimately unsuccessful—attempts to change some of the treaty's core provisions during the weeks leading up to its adoption vote.

Virtually all of America's allies, with the notable exception of Israel, voted in favor of the new body.

Eventually, as one of its last acts before leaving office, the Clinton Administration affixed a US signature to the treaty document. The point—as officials made clear at the time—was to continue to try and

agreement, by sending UN Secretary-General Kofi Annan a letter stating that it considered the US acceptance of the International Criminal Court pact nonbinding.

US Ambassador at Large for War Crimes Pierre-Richard Prosper said then that the US will "not take aggressive action or wage war, if you will, against the ICC or the supporters of the ICC." But he also made clear that the new tribunal should not expect any cooperation from the US and that the Administration considered US citizens exempt from the ICC's reach.

Following ratification by the requisite 60 signees, the ICC was officially launched this summer. Its mandate: to try individuals and hold them accountable for war crimes, crimes against humanity, genocide, and eventually, crimes of aggression.

One might reasonably expect terrorism to be covered by at least one of these categories, but it isn't. During the 1998 negotiations surrounding the ICC treaty "there was significant interest in including terrorism in the court's mandate, but it was decided not to do so," notes a UN fact sheet. It added that the UN is drafting a comprehensive convention against terrorism and member states may add it to the list of crimes at some future date.

The court will consist of a panel of 18 judges drawn from 18 different member countries, each appointed to a nine-year term. A prosecutor elected by member states will begin and try cases.

Any nation that signs the ICC pact can refer a situation for investigation.

In addition, the UN Security Council may refer a situation or an ICC prosecutor can launch a probe on his or her own, based on information he or she receives from victims, nongovernmental organizations, or any other reliable source, according to the UN.

alike, the Bush Administration threatened to use its UN Security Council veto to block the renewal of all UN peacekeeping missions, beginning with the mission in Bosnia, if the UN did not exempt all peacekeepers from the ICC jurisdiction—permanently.

The United States' high-profile role in peace enforcement around the world makes it especially vulnerable to politically motivated prosecutions.

—DOD

The court claims jurisdiction over crimes committed anywhere by nationals of ratifying states—and over crimes committed in the territories of ratifying states. As of August, 78 countries had ratified the ICC pact, including Belgium, Canada, France, Germany, Italy, Netherlands, and the United Kingdom.

Its backers have hailed the new court's establishment as a historic event. They have emphasized that it is a truly international, permanent institution.

By "unsigning" the ICC treaty and declining to take a role in the court's operations, the Bush Administration made a grave error, said Harold Hongju Koh, a former assistant secretary of state in the Clinton Administration.

"This is an international Marbury vs. Madison moment," sniffed Koh earlier this year, referring to the seminal 1803 Supreme Court decision that gave the court jurisdiction over the other branches of government.

In other words, the US is missing an opportunity to cede sovereignty to an international body. The response to this, from both the Bush Administration and overwhelming majorities in Congress, has been along the lines of this: "Gee, what a shame! Guess we'll just bumble along with the legal system we've got."

The Challenge

Then, in July, US officials decided more drastic action was called for, now that the court was open for business. Shocking friends and foes

The ICC's European friends went into an uproar. In the end, Britain brokered a compromise. All citizens, be they military or civilian, from nations that have not ratified the ICC treaty and who are involved in UN-authorized operations, will be immune from court prosecution for one year.

The issue will be no less contentious next year when the Security Council resolution that established it comes up for renewal. Court supporters feel the exemption establishes a dangerous precedent.

"Special rules for strong countries—particularly when the issue at stake is the global pursuit of the worst human rights violations—are

inappropriate and not compatible with the principle of the rule of law," said German Justice Minister Herta and Paul Richter after the deal was struck.

Many European commentators attributed the US rejection of the ICC to what they perceive as the Bush Administration's unilateralism. In doing so, they appear not to recog-

nize that in the US, opposition to the ICC runs deep. Among lawmakers, it is not really a matter of debate, as is, say, the question of adherence to the Kyoto treaty on limiting greenhouse gases.

There was little debate in Congress this year, for instance, about the attachment of a provision called the American Servicemembers' Protection Act to a supplemental spending bill, ensuring its easy passage.

"Hague Invasion Act"

This provision authorizes the use of force to free any American held by the ICC in the Hague.

It also provides for the withdrawal of US military assistance from countries that have ratified the ICC pact and restricts US participation in UN peacekeeping, absent ICC immunity guarantees.

The legislation was softened by inclusion of language allowing a presidential waiver on national security grounds. But the "Hague Invasion Act," as some dubbed it, was a clear indication of American intent.

"Should the ICC eventually seek to detain any American, the United States would regard this as illegitimate—and it would have serious consequences. No nation should underestimate our commitment to protect our citizens," said US ambassador to the UN John D. Negroponte earlier this year.

But seriously, would an international prosecutor really want to pur-

Congress crafted legislation that authorizes the use of force to free any American held by the ICC in the Hague.

sue a case against a United States citizen? The International Criminal Court's main targets are supposed to be rogue statesmen with little regard for human life—the Milosevics and Idi Amin of the world.

The court's charter charges it with investigating only patterns of abuse, not individual incidents. It is supposed to intervene only if the al-

leged perpetrator's own nation does not pursue charges.

Such safeguards make the idea of Americans in ICC custody preposterous, according to the court's defenders.

But "preposterous" is not the same as "impossible," note Pentagon officials. Furthermore, there are a number of reasons to believe that US fears are not really preposterous at all.

The first is that there are a lot of Americans—peacekeepers, deployed troops, and diplomats—for the ICC to go after if it so chooses. America's role in the world has long required that large contingents of its personnel be deployed in difficult situations in many countries.

"The United States is more exposed, as it were, to risk under the

of crime for alliance bombing that occurred in the air war over Kosovo.

Just this summer a nationalist Croatian group asked the Hague-based Yugoslav tribunal to consider bringing former President Bill Clinton up on war crimes charges.

Many Croats were upset by the Hague court's indictment of a popular Croatian military leader, Gen. Ante Gotovina, for atrocities allegedly committed during a 1995 offensive against Serbs. The battle in question—Operation Storm—was vetted and approved by US leaders up to Clinton himself, according to a complaint submitted by the Croatian World Congress to Carla del Ponte, the tribunal's chief prosecutor.

US forces even provided secret military aid, charged the CWC. Thus "evenhanded justice" requires that

officers, threatening to bring them up before the ICC for actions taken in the occupied territories.

Legal protections inherent in the American judicial system are not necessarily reflected in the ICC's charter. It says nothing about a jury of peers, for instance. Rules of evidence will likely be different.

Finally, there is the fact that the treaty claims to apply to countries that are not parties to it.

"This is really a radical, I would say an astonishing, innovation in international law, ... that a number of countries would arrogate to themselves the right to adopt a treaty and impose it on states that haven't signed on," said the senior Pentagon official.

One way the US has tried to lessen the danger of politically motivated ICC

"We would like to stand on the long and well-thought-through traditions of international law and have our sovereignty respected."—US official

ICC than any other country in the world because we are more active all around the world in places where people want us to be," said a senior defense official at the Pentagon's July briefing.

Easy Political Targets

The second is that these Americans might present a unique political target for prosecutors opposed to US policies. They could decide that actions widely supported in America as acts of military necessity are in fact war crimes and prosecutable as such.

"We feel that we have an obligation to protect our service members from politically motivated prosecution from a court that's not accountable to the American people," said the Pentagon official.

If that seems an overreaction to the circumstances, remember that the UN's International Criminal Tribunal for the former Yugoslavia spent many months weighing whether to charge NATO leaders with some sort

Clinton stand in the dock shoulder to shoulder with Gotovina, said the group's complaint.

It's unlikely that UN security troops will be marching a handcuffed ex-President out of his Harlem offices any time soon. The Hague prosecutor's office simply filed the complaint without comment. In truth, not even the Croats want to see Clinton on trial. They just want to get Gotovina off the hook.

But the Clinton example shows the dangers of the ICC, according to the Pentagon. The Croats made their charge purely for political purposes. What if an ICC prosecutor had a similar political motive in taking it up? The US would surely never charge a former president on such grounds, and the ICC might then claim it had a right to investigate.

And there is always the chance that domestic groups might use the threat of the ICC as a sort of club to influence internal debate. That has already happened in Israel, where a small Israeli pacifist group sent letters to army of-

prosecution is through bilateral treaties. By early August, both Romania and Israel had agreed with the US that neither party would extradite any of the other's citizens to ICC custody without mutual consent.

US officials say they will continue to pursue such two-country agreements, while pressing the UN Security Council to make the one-year peacekeeper exemption permanent.

"All we're doing is saying we would like to stand on the long and well-thought-through traditions of international law and have our sovereignty respected," said the US official. ■

Peter Grier, a Washington, D.C., editor for the Christian Science Monitor, is a longtime defense correspondent and a contributing editor to Air Force Magazine. His most recent article, "The Short, Happy Life of the Glick-em," appeared in the July 2002 issue.

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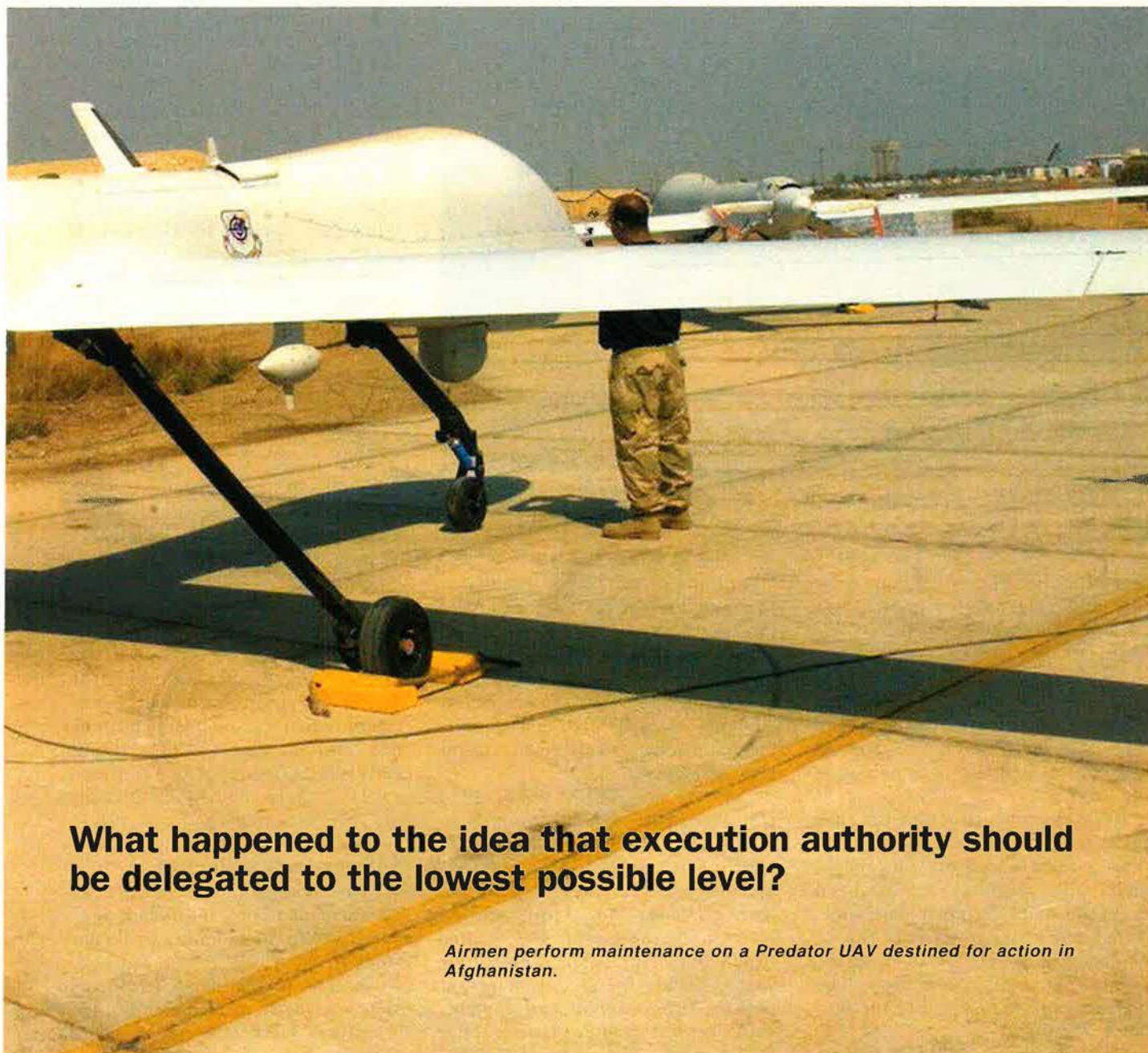
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Reach-Forw

By Rebecca Grant



What happened to the idea that execution authority should be delegated to the lowest possible level?

Airmen perform maintenance on a Predator UAV destined for action in Afghanistan.

ard

TODAY'S superadvanced technologies have conferred on America's four-star commanders the power to get down in the weeds and personally direct an air strike halfway around the world. It is not a theoretical capability, either.

In Operation Enduring Freedom, the commander of US Central Command, Army Gen. Tommy R. Franks, remained at CENTCOM's headquarters in Florida while his air boss—the Combined Force Air Component Commander, or CFACC—deployed

forward. Though the CFACC was in south Asia, powerful communications allowed him to tap into data banks, intelligence, and imagery in the United States. This capability is known to all as "reachback."

What was unexpected was the emergence of what some have taken to calling "reach-forward." This term refers to a situation in which a commander thousands of miles from a theater uses the same communication system to manage a tactical event in real time. In Enduring Freedom, Franks or CENTCOM senior staff at



E-3 AWACS mission specialists support a Southern Watch patrol over Iraq. The 1991 Gulf War featured heavy emphasis on the airborne command element.

MacDill AFB, Fla., often granted or withheld approval for tactical execution of a specific strike in Afghanistan.

This involvement of higher headquarters had a significant impact on the pace of the air campaign and raised big questions about command and control of larger campaigns in the future.

Basic air combat doctrine long has called for delegating execution authority down to the lowest level possible. This push for decentralized execution made certain that the shots were being called by those in closest contact with the enemy and with the freshest tactical information. The goal was to act fast before the moment was lost.

Once, geographically distant field commanders lacked the capability to share real-time information with headquarters types in the rear. Hours and days might pass before senior commanders learned the tactical details of engagements.

Before the June 4–6, 1942, Battle of Midway, Adm. Chester W. Nimitz, the Pacific Fleet commander, made a strategic decision to concentrate his aircraft carriers. On June 4, however, the show belonged to Rear Adm. Raymond A. Spruance, aboard USS *Enterprise*. It was Spruance, not Nimitz, who made the fateful decision to launch an all-out attack at 7 a.m. while still more than 175 miles from the Japanese force rather than wait two hours to close the distance.

US pilots caught Japan's carriers rearming their aircraft and attacked, opening the door to victory.

Through the ensuing decades, improved technologies allowed much closer monitoring of enemy and friendly forces, but for the most part, the faith in decentralized execution was unchanged.

Desert Storm

The Gulf War extended the principle of delegation of tactical and operational authority, with clear strategic guidance from Army Gen. H. Norman Schwarzkopf, the theater Commander in Chief. Control of strikes during the Gulf War rested with the airborne command element, working through three platforms: the E-3 Airborne Warning and Control System aircraft for the air picture, E-8 Joint STARS aircraft for moving ground targets, and the EC-130 Airborne Battlefield Command and Control Center aircraft to coordinate with forward air controllers to distribute the flow of air-to-ground strike sorties.

A pilot checking in with an ABCCC, for example, would be assigned a target based on the day's Rules of Engagement as well as the immediate evaluation of threats in the area and how long a strike aircraft could remain in the vicinity. The ABCCC crew was airborne near the battlespace and was thus directly attuned to the rhythm of the battle and the tempo of operations.

Senior commanders could and did pass orders to divert aircraft to new targets. Multiple feeds coming into the Tactical Air Control Center at Royal Saudi Air Force headquarters in Riyadh generated battle pictures. These enabled the Joint Force Air Component Commander, Lt. Gen. Charles A. Horner, and his deputy, Brig. Gen. Buster C. Glosson, to monitor the progress of the night's attack in real time. Glosson kept in reserve a handful of ready F-111s that could quickly exploit opportunities.

Horner and Glosson gave Schwarzkopf nightly briefings on targets struck and plans for new attacks, but Schwarzkopf did not monitor air strikes in real time or personally approve lists of targets once the war was under way. Interventions from Washington were limited to advance planning. The Air Staff's Checkmate planning cell cherry-picked key targets from intelligence sources, analyzed them, and sent the locations and descriptions to officers in the theater, sometimes within minutes. There, the targets were handled by captains, majors, and lieutenant colonels staffing the TACC planning cells, while final approval for tactical execution remained firmly under the JFACC's control.

Schwarzkopf's Support

Schwarzkopf and his airmen together made the most difficult decisions within the planning cycle and stuck to them.

Here, biological weapons storage sites provided a prime example. The cruciform bunkers were the most dangerous targets of the air war because campaign planners did not know whether bombing the bunkers would or would not release toxins. Horner, Schwarzkopf, and Defense Secretary Dick Cheney debated the issue in December 1990, before the war began. As recounted by Rick Atkinson's book, *Crusade*, Horner briefed Cheney and Schwarzkopf on how F-117s would attack the bunkers at dawn. Low winds would limit dispersal, and sunlight would cause the agent to deteriorate. "If there's collateral damage in Iraq, perhaps that's not all bad," said Horner, and Schwarzkopf firmly backed him up, saying, "CENTCOM's position is that we attack these targets."

Even the most famous incident of

friction between Schwarzkopf and his air commanders stayed within bounds. When the theater commander discovered that B-52 bombers had not yet struck Iraq's Republican Guards, he exploded at Horner and Glosston. The trio retreated to Horner's office to work out the disagreement—but it was a disagreement played out over planning, not direct execution.

The strike on the Al Firdos bunker in Baghdad—an attack reportedly resulting in the deaths of more than 200 civilians—brought intense scrutiny of targets near Baghdad but still no direct interference with execution. Under pressure from the Chairman of the Joint Chiefs of Staff, Army Gen. Colin Powell, Schwarzkopf told Glosston, "I need to go over every target in Baghdad each day so that I can explain exactly why we're striking it and what we expect to gain."

The new guidance was onerous but easy enough to carry out; RSAF headquarters was but a short drive from Schwarzkopf's office in Riyadh. And after months of planning and weeks of war, Schwarzkopf and his airmen shared theater situational awareness and the same campaign priorities. The strong working relationship of CINC and JFACC accommodated the pressures.

Most important, Schwarzkopf was back-briefing Washington, not seeking prior approval for time-sensitive strikes. The concept of reach-for-

ward—having a direct impact on tactical execution—was not yet a reality.

Operation Allied Force in 1999 put the spotlight on three factors that would ultimately come together to make reach-forward an issue.

The first factor was NATO's political target approval process. The NATO campaign required formal approval on multiple levels for all fixed targets. Allies could, and did at times, hold back approval of a target because of political sensitivities. Two infamous examples: the Serb early warning radars positioned in Montenegro and a Serb television transmitter located in a dense urban area. Collateral damage was a top concern, and most targets submitted for approval had rough collateral damage estimates appended. The process of target approval wound its way from the theater commander, Army Gen. Wesley K. Clark, to the White House and back via the allies before targets entered the Combined Air Operations Center database of approved aim points.

Clear Impact

The approval process had a clear operational impact on the campaign. For example, Allied Force kicked off in March 1999 with a total of just 51 approved targets. When NATO sought to expand the campaign, Clark scrambled to push more targets through the approval system.

On several occasions, a late veto

caused ripples in the execution process, according to Gen. John P. Jumper, Air Force Chief of Staff, who in 1999 was commander of US Air Forces Europe. "It had some effects at the tactical level," Jumper said after the war. "We turned airplanes around because of last-minute disapproval [of certain targets] by nations. We pulled four-ships out of strike packages that were already en route to the target and turned them around, causing great confusion. ... We deleted specific targets from bombers that were en route."

In short, political "reach" was beginning to interrupt the battle rhythm of the air war.

The second factor was very different. Tracking time-sensitive targets—usually mobile military vehicles or surface-to-air missile batteries—became a major element of the campaign. On several occasions, planners relayed new targets to B-2 bombers en route to the combat zone. Notification of the new targets went from the CAOC to the B-2 command post at Whiteman AFB, Mo., and then to the B-2 cockpit via satellite link. The process took time, but it demonstrated the ability of the CAOC to retarget airborne assets and was largely free of political constraint. At that time, at least, the act of reaching forward into the cockpit was a help, not a hindrance.

The third factor stemmed from intermingling of civilians and Serb military and police forces in Kosovo. This compelled the NATO forces to adopt Rules of Engagement that frequently required pilots working the Kosovo engagement zone to get CAOC permission to strike targets they had just spotted. Predator Unmanned Aerial Vehicles gave commanders a look at targets that were difficult to identify. One memorable tape showed a civilian farm tractor near a Serb Armored Personnel Carrier—a close-up look that prevented the CAOC from clearing an aircraft to strike.

Predator feeds helped sort out whether a target could be attacked under the ROE of the day—a tactical execution task. The one-star CAOC shift directors monitored the Predator feed as did the NATO air boss, Lt. Gen. Michael C. Short, on occasion.

Even so, the availability of Predator imagery was limited, and the live



USAF photo by SSgt. Reynaldo Ramon

UAVs—such as this Global Hawk—gave senior commanders a detailed and immediate picture of the Afghan battlespace. Thus, they had more latitude to reach forward into the execution process.

video did not go to Clark or out of the theater. The only significant reach-forward incident came on the night the Serbs shot down an F-117 stealth fighter. Short recalled that he received several telephone calls; the callers were “people sitting back at the Pentagon trying to micromanage the rescue.”

Even though execution authority stayed with the CAOC, the suite of communications and sensors that let the CAOC keep close control of the strikes frustrated those flying them.

Rhythm and Blues

Strike and command-and-control aircraft operated with one battle rhythm—aware, for example, that if approval for a target did not come through soon, an aircraft would have to break off to refuel or return to base. Even though execution authority stayed with the CAOC, it still frustrated aircrews. A-10 pilots tasked with hunting down Serb tanks, APCs, artillery, and other military vehicles complained of the constraints imposed and opportunities missed due to the need to call back to the CAOC for permission to engage. Pilots naturally wondered if the commanders at the CAOC understood their urgency. Just one step removed, the battle rhythm seemed different.

While Allied Force expanded the number of ways to reach forward into the process, control over tacti-

cal execution still rested with the CFACC.

All this led to a strong desire to improve the fusion of intelligence. Moreover, the Kosovo crisis raised the hope that it might be possible to keep many planners and analysts well back in rear areas. CAOC manning had grown from 300 to 1,300 over the course of Allied Force. Future expeditionary operations might not be able to accommodate that much manpower on site. Why not improve communications to the point where a rear-area AOC could handle many tasks and pump the information forward, where final planning and execution could be handled by a smaller staff?

The Expeditionary Force Experiment exercises and Air Combat Command’s Aerospace Command-and-Control, Intelligence, Surveillance, and Reconnaissance Center attempted to hone those procedures. The idea was to reach back for intelligence. Yet, in Enduring Freedom, the technology and politics turned the tables.

The crisp, detailed, and immediate picture of the Afghan battlespace gave senior commanders more latitude than ever before to reach forward into the execution process. It was a persistent, multisensor ISR picture, and it was tempting to act on it. Predator sent streaming video. Availability of the GPS-guided Joint Direct Attack Munition gave commanders the ability to call down precision strikes 24 hours a day. The

visibility and potential lethality were unprecedented. This crystalline picture of combat aircraft locations and other intelligence information gleaned from satellites and aircraft was piped directly into Franks’s headquarters in Florida.

The key to the issue was time-sensitive targeting. Guidance required the Defense Secretary, Donald H. Rumsfeld, to personally approve any strikes on pop-up on targets such as vehicles thought to include senior Taliban and al Qaeda leaders. Rumsfeld did not speak directly to the issue of target approval, but he made no secret that he was in close contact with Franks.

The first indications of a new level of tactical control came early in the war. Various members of the press reported details of an attempted strike on a compound thought to be housing Mullah Mohammad Omar, the Taliban spiritual leader. By the time the strike was approved, however, the vehicles surrounding the compound had dispersed and Omar was gone.

Later reports on the way the air component supported Northern Alliance ground forces uncovered more evidence of reach-forward. Describing the situation near Kandahar in late November, Franks said, “Every day, we have assets that watch these [roads], and the first thing that’s required is, when one sees vehicles moving, is to determine whether these vehicles belong to friends or foes. As you know, we move an awful lot of humanitarian assistance up and down the routes inside Afghanistan, and I think you’ll also agree that we’ve exercised every caution to be sure that we didn’t bomb those.”

In discussing an attempted Taliban counterattack near Kandahar, Franks admitted, “It may well be true that we watched a convoy for three-and-a-half hours before it was struck.” The fragmentary evidence of reach-forward added up to a disturbing picture. While all commanders take care to obey the laws of war, the level of caution and of direct tactical control in Enduring Freedom surpassed other recent operations.

The most obvious drawback was that strike aircraft lost opportunities to engage targets. Another issue was the difference in outlook between the in-theater CAOC and the Florida-

USAF photo by SSgt. Ricky A. Bloom



Some A-10 pilots said they missed opportunities to strike Serb tanks and other military vehicles during Allied Force because they had to call back to the CAOC for permission to engage.

based CENTCOM command center. While the picture was good enough to let Franks's staff engage in tactical and operational decisions—including weaponeering—the raw data alone did not truly capture the battle rhythm or conditions in-theater. Factors such as weather, runway availability, and host nation concerns made a big difference in outlook. The generals and admirals at the CAOC had enough difficulty generating their own clear picture of these conditions. It was all the more difficult for those sitting in Tampa.

Allied Force had shown that execution tempo depended on a full picture of every piece of the ongoing campaign, from weather conditions to asset availability and a sense of how changes today would affect tomorrow's sorties. Brig. Gen. Randall C. Gelwix, one of the CAOC shift directors in Allied Force, described how the battle rhythm affected his decisions and changes in plans.

"We found out that you can't say, 'Let's slip this package an hour-and-a-half because we think the weather is going to be good,'" said Gelwix. "You can't do that because those tankers are already rolled into tomorrow and they're coming from Mildenhall [in the UK], and it takes them four-and-a-half hours to get into the [Area of Responsibility]." Good tactical execution depended on having a campaign-level perspective and awareness of the impact on each layer of the ongoing campaign.

Reach-Forward in the Future

Reach-forward boils down to who controls tempo. Joint doctrine leaves the door open for the four-star theater commander to control whatever he wishes by specifying the broad powers behind COCOM—combatant, or theater, command. It confers OPCON—operational control—on military components. But then it favors delegating TACON—tactical control—which "allows



USAF photo by MSgt. Bill Kimble

An air operations center, such as this one at Ramstein AB, Germany, gave commanders the ability to retarget strike aircraft in the air, making the act of reaching forward into the cockpit a help, not a hindrance.

commanders below combatant command level to apply force and direct the tactical use of logistics assets." TACON is the tool for the JFACC (or land or maritime component commanders) to run the tempo of the war. "I don't care if I have OPCON as long as I have TACON," said Short after Allied Force. With reach-forward, however, the theater commander in effect takes over TACON and direct application of force.

In the case of Enduring Freedom, reach-forward was not a deal breaker. The lack of sophisticated enemy air defenses made it possible to carry on with Enduring Freedom despite the problems caused by reach-forward. The unusual politics and the relatively small number of forces in Enduring Freedom meant that reach-forward was possible and perhaps inevitable. Can this method of execution be applied on a larger scale? At some point, holding too much tactical execution authority at a high level is sure to stall a campaign. Desert Storm often saw more than 1,000 aim points hit each day. In a larger campaign with more targets

and sorties, reach-forward could take its toll.

The negative effects of reach-forward were easily measured in terms of missed opportunities for air strikes, but the problem affects more than just the joint air component. Ground operations could be similarly hampered. Live Predator video feeds may be mesmerizing, but they cover a tiny portion of the battlespace, like looking through a soda straw. Is an Army platoon supposed to delay an attack so that the theater commander can move the soda straw over and scrutinize their objective?

To airmen, reach-forward just rubs the wrong way. Political constraints aside, the frustration at not being able to strike targets rapidly transcended the airmen's ideal—rapid and even simultaneous effects. Just as tactical execution at Midway depended on the forward commander and the initiative of bomber squadron leaders, the airmen entrusted tactical execution to the flight-lead level if at all possible.

Though his remark preceded the reach-forward issue by decades, Gen. Douglas MacArthur offered a comment of sorts on the problem by reference to his Pacific air component commander, Lt. Gen. George C. Kenney. Asked by a reporter one day to state where the bombs were falling, MacArthur had a ready answer. "They are falling in the right place," he said. "Go ask George Kenney where it is." ■

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The Pentagon's top acquisition official gives his views on major programs.

Words From the Weapons Czar

By John A. Tirpak, Executive Editor

Edward C. Aldridge is the undersecretary of defense for Acquisition, Technology, and Logistics. In that position, he directs the development, fielding, and maintenance of the US military's weapons systems and also supervises the Pentagon's installation programs, nuclear, biological, and chemical programs, and its relationship with the defense industrial base.

A former Secretary of the Air Force and aerospace industry leader, Aldridge has long experience managing high-technology endeavors. In August, he met with defense reporters, including Executive Editor John A. Tirpak, in Washington, D.C., to discuss changes he has made to the Pentagon's way of buying hardware and to offer his views on acquisition programs of significant interest.



The F-22 Raptor

F-22 Is "Key"

"The F-22 is a terrific airplane. It's got tremendous technology in it. And it will absolutely dominate the air, over the air of any adversary. It's going to be a replacement of the F-15Cs and Ds, and it could, in fact, replace some of the F-15Es in the future and certainly the F-117. ... The F-22, in my view, is the air dominance capability for the future. We don't want to have any of our forces ever again be subject to attack from the air. If we're going to go into any conflict anywhere in the world, we want to have complete air dominance, and the F-22 is key to that."

How Many Raptors?

"The Air Force has ... 10 Air Expeditionary Force units. ... To fill those AEFs, you have to determine how many F-22s are the right number for that. Or, what is the mix of F-22s/F-15s, F-22s/Joint Strike Fighters—and part of the process we'll go through this summer and this fall will try to establish what that right number is. ... It's not a matter of *if* we're going to buy the F-22. It's *how many* do we want to buy and how many is the right number."

Fixing Test Delays

"We've got a test program [for the F-22] that's falling behind schedule, and we need to get that back on track. Getting the airplane to come in within its cost estimates is also very important. ...

"We are running at about half the rate we should have been to make the airplane complete the test program on

schedule. The Air Force has responded to that and has implemented a get-well plan that looks like we can get those test points completed at a much higher rate. ... I understand they are in fact flying more times and getting more airplanes delivered to get that test program back on schedule."

High Performance

"The program, in terms of its performance expectations, looks very good, and we have no indications that we'll be in any type of problem with the F-22."

Future Long-Range Strike

"What we're focusing on, rather than the bomber platform, is the munitions that the bombers carry. That's the important factor. ... We are, in fact, thinking about what is the [platform of the] 2015–2020 time frame, because B-52s aren't going to last forever. They're 50 years old right now. And we have some studies under way looking at the future of long-range strike capability. It could be unmanned, it could be supersonic, it could be subsonic, it could be FB-22s, it could be other types of technologies, and it could even come from space. We are not eliminating any possibility for the future."

Strike Requirements?

"If you look out in that time frame, what are the characteristics that you want? There are certain characteristics that exist within the F-22, for example, like supercruise [that you want]. While the bomber is over the target, it probably would be very advantageous to have a supersonic capability, because it keeps it out of the target area for a given period of time. ... The [desired] airplane is probably smaller than a B-2 and can deliver 20 or 10 or 16 [Small Diameter Bombs]."

F-35 Joint Strike Fighter Cuts

"[The Navy and Marines Corps F-35 study calling for JSF cuts] is not a radical study. It's quite reasonable. ... They've taken a look at Navy–Marine tactical air, looked at the capability of the Joint Strike Fighter—which has higher reliability and more sorties rates [than current aircraft]—and determined how many airplanes they need to buy, given the new conditions. And that number is less than what they currently [planned]."



Artist's concept of the Boeing 767 tanker



The F-35 Joint Strike Fighter

Stabilizing JSF Costs

"The cost of the Joint Strike Fighter was based upon the procurement of 3,000 airplanes—US and UK only. The Navy says they can get by with 400 less airplanes, which brings the number down to 2,600. That increases the unit price of the Joint Strike Fighter by about five percent, until you sell some beyond the Navy and UK. ... If we sell 400 more airplanes internationally, unit price goes back to where we thought it was going to be in the beginning, and I have no doubt that's what we're going to do. ... My view is that ... the unit price of the airplane is going to actually be below what we currently project, which for the conventional version in FY02 dollars is \$37 million."

JSF Demand Grows

"We now have seven partners signed up for the Joint Strike Fighter development phase and an eighth which will come on board soon. That will be Australia. ... I have very high confidence we will sell 1,000 [to] 2,000 airplanes outside of these [sold to the US and UK]. ... The Joint Strike Fighter is the largest defense program ever, and we actually implemented it. ... We now have, in the Joint Strike Fighter, \$4.5 billion of non-US money contributed to development of that program. That's unheard of."

New Tankers Needed

"Without doubt, we need additional tankers. I'm open as to the best way to achieve that. The Air Force is going through their analysis, ... and I'm kind of waiting to see what their study says. ... Someday we're going to have to replace those aircraft. So, I'm open as to the best way to do that—whether it's purchase or lease—but we will have to replace them. ... The 767 [would be] a very good platform to do this job—much cheaper to operate and much more capable [than the KC-135] of doing that job. So, I'm just [going to] wait and see."

Electronic Warfare Plans

"The [June] briefing [on EW options] ... done by a group looking at the replacement of Electronic Warfare aircraft, [for] both the Navy and the Air Force, ... was not convincing as to the plan. It included both the replacement of the EA-6B—which is having a lot of troubles both in the engines as well as structure, and it's just getting old—as well as some plans for some Elec-

tronic Warfare within the Air Force. I would say I was not convinced that was the right plan. ... The plan ... was: 'Here's an Air Force solution, and here is a Navy solution,' rather than, 'Here is a US Department of Defense solution.' ... It may be that they have the right solution. It was just unconvincing at the time that I heard it."

Platform De-emphasized

"Probably the most interesting part of it would be an electronic pod system that would do the job that could be carried on any type of aircraft, either Navy or Air Force. And I think what we have to focus on is, 'What is the problem we're trying to solve?' rather than, 'What is the platform we need to solve that problem with?' So I think ... we [need to] find a way to come to a common solution, because we're going after the same threat."

The New EW Study

"[As] part of the Defense Planning Guidance this summer, we have an Electronic Warfare study under way to see if what was proposed [in June] was the right answer. There are some other alternatives being considered."



The RQ-4A Global Hawk

Global Hawk Cost Coming Down

"The Global Hawk first came from an ACTD, Advanced Concept Technology Demonstration, [so] it's expensive, because we're not buying very many of them. And it doesn't have the reliability we like, because we didn't design it to have all the redundancy you would have in an operational system. ... If we get to the point downstream—which we plan to do—to increase the [production] rate, we will get the price down, and we will operationalize it. We will put the redundancy in it and so forth, so we hope to get the reliability back up."

Stick With the Hawk

"It [Global Hawk] is a tremendous platform. To start all over again and try to design yourself something that's a high flier like that, with its capability, it's going to cost just as much. So it's a matter of just fixing it, ... get the production rate up, get the costs down, and get its reliability up with redundancy. ... Basically, we're going to use it to replace the U-2 ... when [Global Hawk] gets enough power."

How Many Ships?

"The shipbuilding rate is not strong enough. The shipbuilding industrial base is strong enough. In fact, we're running it below capacity. If we continue to buy five ships a year, we're not going to have a 300-ship Navy. We're going to have a 230-ship Navy. So we have to get the shipbuilding rate up."

"We need to build about 10 ships a year. ... Ships last [for about] 30 years, and [if] you want to build a 300-ship Navy, you need about 10 ships a year just to sustain it."

The 375-Ship Fleet

"The Navy's talking about increasing the number of ships to 375 or thereabouts, but those are based upon going to a Littoral Combat Ship, LCS, which [is] smaller, [so] we could buy more of them. But we need to sustain those kinds of numbers to do the things we want the Navy to do. ... We need to get the number of submarines built to at least two per year. We're building one per year. We have to worry about ... the future aircraft carriers. ... Those things get built every five years or something like that. But the number of surface combatants is not sufficient and the submarines aren't sufficient."

V-22 Troubles

"I'm probably the most skeptical person in the Department of Defense at this time on the V-22. ... I have looked at this airplane more thoroughly than anybody in the acquisition business. I've gone through all the reports, the NASA reports and the Blue Ribbon reports, and I've got some real problems with the airplane."

Put V-22 to the Test

"The only way to prove or disprove my concern is to put it [the V-22] through a very thorough flight-test program. ... I am skeptical, but I cannot say that the [V-22] problems cannot be solved or be disproved in the test-flight program. ... In the meantime, we're producing the airplanes at a very minimum sustaining rate. ... We're going to have to make some decisions probably next year at this time whether or not we put money into the FY05 budget. ... So there's probably going to have to be a decision within a year."

Seeking Alternatives

"The alternatives are some other helicopter. There's the EH-101, there's the S-92, Sikorsky model, there's a CH-53X, which is an upgrade of the -53. We are looking at those alternatives right now. ... [A Pentagon Defense Planning Guidance] study is [under way] to determine what is the alternative to the V-22 if it does not pass its flight-test program. ... That's the plan at this point in time. Although the [Defense] Secretary has the authority [to say] 'I don't care if it passes the test program, it's not affordable'—he has that choice."

Ready to Change Course

"Let's say it [the V-22] doesn't pass the flight-test program: I don't want to be sitting around for another year or two waiting to decide what is the alternative. ... I want to be able to decide today what is the alternative we want to pursue."

Waiting for Comanche

"The [Comanche] airplane is now the oldest acquisition program. It's been in process longer than the F-22, and we still don't have it. ... We've gone through several cycles of restructuring, and there have been budget cuts, and it's gone through probably the most turmoil of any program now in the Department of Defense. ... The Army is going through a restructuring exercise at this point to look at how we can do this airplane and force it into spiral acquisition—not do everything up front."

Comanche Woes

"The problem I see with the program is that weight's going up; there are some problems with the integration of a lot of the mission equipment on the airplane. Cost is certainly a concern. ... [The] two biggest concerns are weight growth and mission electronics integration. Those are the two hardest things we have to do. ...

"There're 37 different antennas on this airplane. The integration of those antennas, coupled with stealth technology and having that system interface with all the other network-centric activities of the Army, is going to be difficult. That's what we have to resolve and ... ensure that we can do that effectively within cost and scheduling."

Terminating Systems

"[What] I would learn from [terminating] the [Army's] Crusader is ... do it when you send the next budget to the Hill, rather than in the middle of the process. That's what was the difficulty. [Lawmakers] were right in the middle of doing the authorization bill when we sent the thing over there, and that was hard. It was necessary to do it, but if I was going to do it again, I would have done it back in the beginning when the budget went over, and it was not in the budget."

On His Five Goals

"I came on board in this job in May of 2001, and I set myself five goals. ... The five goals were: to improve the efficiency and effectiveness and the credibility of the acquisition process; ... to improve the morale ... of the acquisition workforce; ... to improve the health of the defense industrial base; ... to rationalize the weapon systems and infrastructure that we have in the Department of Defense with the strategy that was being updated by Secretary [of Defense Donald] Rumsfeld; ... to ini-



The Army's RAH-66 Comanche

tiate those high-tech, high-leverage technologies that provide the war-winning capabilities for the future. ...

"We've been working on all those five goals. We established metrics and we've been working them all. ... We've actually reorganized the AT&L office to reflect Acquisition, Technology, and Logistics, because it was not well-organized when I took office."

Strengthening the DAB

"We revitalized the Defense Acquisition Board, which is the decision-making authority for the acquisition systems, to include now the service Secretaries ... as opposed to the assistant secretaries for acquisition. That is working very, very well. ... When the military departments come to the DAB for a decision, knowing that their service Secretary sits on that board, we find the decision-making process gets improved very rapidly. In fact, it's doing so well in many cases we don't even have to have a meeting. We can get the issues resolved in what we call a paper DAB. So the decision process and time line has been shortened."

Embracing Spiral Development

"We mandated spiral or evolutionary development in our weapon systems. What that means is we don't go for the 100 percent solution on the first [version of a] system. We go for something at 60 to 80 percent, and then we can be watching the adaptive technology as it evolves. ... We are enforcing properly pricing programs. ... The combination of spiral development and making sure the programs are properly priced up front probably has more to do with stability and credibility in the acquisition process than anything we can do."

New S&T Emphasis

"We've also elevated the role of Science and Technology. ... We've set ourselves a goal to get to three percent of the DOD budget. ... S&T has been a bill-payer in the past. ... We've pushed DARPA [Defense Advanced Research Projects Agency] back out on the leading edge of technology."

Whither Transformation?

"I think the '03 budget had a lot of transformation. ... Seventeen percent of the budget was, in fact, transformation. ... I think FY04 is going to be equally dramatic, if not more so." ■



The Marine Corps' MV-22 Osprey


USN photo by Tina M. Ackerman

Vietnam, Desert Storm, Kosovo, and Afghanistan have produced their share of muddle-headed criticisms.

More Bogus Charges Against



Airpower



By Phillip S. Meilinger

In an article in the September issue, I noted some of the major misconceptions and myths concerning the use of airpower and especially strategic bombing during World War II. The problem does not end there.

The Vietnam War has engendered more emotion, more loose talk, and more misunderstandings about airpower than any conflict since the 1940s.

Surprisingly, one even hears criticism of airpower's outstanding showings of the past decade—that is, in Operations Desert Shield and Storm in the Gulf, Deliberate Force in Bosnia, Allied Force in Serbia, Enduring Freedom in Afghanistan, and Southern Watch and Northern Watch over Iraq.

Charge: Airpower generally was a failure in Vietnam. It lost the war and let the Army down.

Response: Some 8.7 million Americans served in uniform during the Vietnam War. Of those, 4.4 million were in the Army; 1.8 million in the Navy; 1.7 million in the Air Force; and nearly 800,000 in the Marines. In addition, at any one time there were nearly one million South Vietnamese soldiers on duty. Thus, at the height of the war, there were well over one million allied ground troops continuously operating in South Vietnam—a country roughly the size of Washington state. Yet, all of those troops were unable to control the countryside. If the Air Force, with its 1.7 million personnel failed in Vietnam, the nine million personnel of the other services and South Vietnam failed even more completely.

It is also important to note who was in charge of formulating US political and military strategy during this war. There were seven key leadership positions occupied by 21 men from 1963 to 1973.

Of these 21 leaders, only one, Robert S. McNamara, had served in the Air Force (actually, the Army Air Forces). Ten others were or had been Army officers; nine others, including all three Presidents, were or had been Naval officers; and one, Ambassador Ellsworth Bunker, had no military experience. Moreover, during the Rolling Thunder air campaign against North Vietnam from 1965 to 1968, the strategy, targets, and even sometimes the tactics, were usually determined in Tuesday lunch meetings in the White House. No airman was ever invited to those meetings. Chairman of the Joint Chiefs of Staff Gen. Earle G. Wheeler, an infantryman, attended instead and purportedly gave “the air point of view.”

Certainly, there is much blame to go around regarding how the Vietnam War was planned and fought, and I am not trying to absolve airmen from sharing responsibility for defeat. But given that airpower played only one small part of an overall strategy that was fatally flawed, and given further that airmen were permitted to play virtually no direct role in formulating that flawed strategy, one cannot place the main onus for defeat on airpower. It is also noteworthy that the most vocal senior military critic of our Vietnam War policy at the time was Air Force



Linebacker II B-52s struck targets at Hanoi and Haiphong, forcing North Vietnam back toward peace talks.

Chief of Staff Gen. Curtis E. LeMay. For his pains he was forced into early retirement.

Charge: Because Rolling Thunder did not break the will of North Vietnamese leader Ho Chi Minh and his cohorts to continue the war in the south, strategic bombing failed in Vietnam.

Response: Rolling Thunder was not strategic bombing—it was an interdiction campaign and a halfhearted one at that. Approximately 90 percent of all targets struck during Rolling Thunder were transportation targets, and most of those were located south of the 20th parallel—well below Hanoi and Haiphong. The latter, North Vietnam’s major port through which it received 85 percent of all supplies, was not closed by mining until 1972. Supplies could not, therefore, be halted near their source. Indeed, both cities were usually off-limits to bombing during Rolling Thunder, and restricted zones were placed around them—up to 30 miles for Hanoi and 10 miles for Haiphong. There were also 15 bombing halts between 1965 and 1968. Finally, it is a principle of air war that achieving air superiority is a top priority: Without it, air operations become far more difficult. Yet, the Administration would not allow North Vietnamese airfields to be struck until April 1967—more than two years after the start of Rolling Thunder. Similarly, surface-to-air missile sites were often placed off-limits to American air strikes—unless and until they took hostile actions against our aircraft.

In mid- to late 1964 the Joint Chiefs of Staff proposed various plans to the Administration that included air strikes against 94 key targets in North Vietnam that would be conducted over a period of 16 days; the strike aircraft would include B-52s. In addition, the JCS—and note these were joint plans, not USAF plans—also proposed the blockade of North Vietnam and the mining of Haiphong harbor, as well as the introduction of US ground troops into South Vietnam to combat the insurgency. These plans were rejected by the Administration. Eventually, most of the 94 targets were hit, but over a period of three years, not the 16 days called for by the JCS. It was and still is a tenet of airpower doctrine that force should be used quickly and overwhelmingly to have the desired effect. A campaign of gradual escalation robs airpower of both its physical and psychological impact. Indeed, piecemeal attacks are gen-

erally counterproductive. This tenet, however, was ignored. This does not mean that the JCS plans would have been successful if they had been approved and implemented. It is simply to say that the plans submitted by the country’s top military experts were rejected. Certainly, President Johnson had cogent political reasons for doing so—his fear of Chinese intervention, for example. The result, nonetheless, was to make it extremely difficult to devise options that could navigate political shoals while also providing military success. The options that *were* implemented were failures.

The only time strategic bombing was attempted against North Vietnam was during the 11-day Linebacker II offensive of December 1972, when B-52s struck targets in and around Hanoi and Haiphong in a series of massive strikes. Linebacker II did not “win the war” for the US and South Vietnam, but it did force the North Vietnamese government to return to the negotiating table and sign an agreement that had been agreed to “in principle” but not signed two months before. At the same time, Linebacker II reassured the South Vietnamese government—erroneously as it turned out—that we remained committed to its survival.

It has long been debated whether or not Linebacker II actually coerced North Vietnamese leaders into signing an agreement. Although the December settlement was similar to the one negotiated two months earlier, Hanoi’s leaders did not *sign* that accord. It is impossible to know if they would have done so without the Christmas bombing. It is interesting to note the words of two expert observers who expressed their opinions on the significance of the air attacks:

■ “One look at any Vietnamese officer’s face told the whole story. It telegraphed hopelessness, accommodation, remorse, fear. The shock was there; our enemy’s will was broken.”—Vice Adm. James B. Stockdale, *POW and Medal of Honor recipient*

■ “I am convinced that Linebacker II served as a catalyst for the negotiations which resulted in the ceasefire. Airpower, given its day in court after almost a decade of frustration, confirmed its effectiveness as an instrument of national power—in just nine-and-a-half flying days.”—Adm. Thomas H. Moorer, *Chairman, Joint Chiefs of Staff, 1973*

Charge: Airpower was an indiscriminate weapon that killed excessive numbers of Vietnamese civilians.

Response: Guenter Lewy has provided the most authoritative statistics on casualties in the Vietnam War—although he himself admits these numbers are estimates. He states that 250,000 South Vietnamese civilians were killed in the fighting, with another 39,000 assassinated by the Viet Cong. Breaking down the casualties by cause is difficult, but based on those civilians admitted to hospitals between 1967 and 1970, Lewy estimates that 67 percent of all injuries resulted from mines, mortars, guns, and grenades. The other 33 percent were injured by shelling or bombing. *If* these percentages are used for the entire war, and *if* we assume that the number of those injured by shelling or bombing are equal (Lewy doesn’t break this category down), and *if* we assume that those killed met their fates in the same percentages as did those

who were wounded—and all of those are big ifs—then of the 587,000 Vietnamese civilians, both north and south, that Lewy states were killed during the war, around 147,000 (25 percent) died from air attacks. The other 75 percent, more than 440,000 people, were killed by ground or naval action.

Also note that ground commanders declared certain areas in South Vietnam “free-fire zones” where there was unrestricted use of artillery and mortar fire: “Anything that moved could be killed and anything that stood could be leveled.” While Air Force, Navy, Marine, and South Vietnamese aircraft dropped five million tons of ordnance on South Vietnam, the Army shot eight million tons of artillery rounds there. For example, it was the policy of Maj. Gen. Ellis W. Williamson, commander of the 25th Infantry Division, to shoot 1,000 rounds of artillery for every one received by the enemy. Of interest, the Viet Cong used the 27,000 tons of dud artillery rounds fired by the Army and Marines to build booby traps that caused 6,000 US casualties. A great deal of fire and steel was rained down on South Vietnam, but the majority of it was not dropped by aircraft.

Charge: The US Air Force was insufficiently responsive to Army needs in South Vietnam.

Response: USAF flew 3.9 million combat sorties in South Vietnam in support of the Army; of those, 633,180 were “attack” sorties, including 67,477 B-52 strikes, each delivering up to 30 tons of bombs. It is crucial to understand that Gen. William C. Westmoreland, commander, US Military Assistance Command, Vietnam, 1964–68, determined the targets in South Vietnam for USAF aircraft—including the tens of thousands of B-52 strikes usually directed against “suspected enemy locations.” Westmoreland also chose the targets in Route Package 1—the area just north of the demilitarized zone. There was only token USAF representation on the MACV staff, despite the fact that a full general, the commander of 7th Air Force, had his headquarters collocated with that of Westmoreland and was his “air deputy.” When 7th Air Force aircraft went north of Route Pack 1, the targets came from US Pacific Command headquarters in Hawaii (after they were approved in Washington, D.C.). The deputy for air also had no

control over Navy, Army, Marine, or South Vietnamese aircraft and helicopters operating in South Vietnam. During the siege of Khe Sanh in 1968, the 7th Air Force commander, Gen. William W. Momyer, pushed for control of all air assets in South Vietnam so as to protect the beleaguered Marine post most effectively. Such control was initially denied, and only a decision by the Secretary of Defense to consolidate airpower under a single air commander, temporarily, allowed a system that put the lives of the troops under fire above parochial service interests.

Despite successes in Desert Storm and thereafter, some unjustified criticisms of airpower continue.

Charge: In the 1991 Gulf War, the Air Force was too focused on strategic attack; support of ground forces was inadequate.

Response: Strategic attack made up only a small part of the coalition air campaign. In fact, the air tasking order that codes all air missions by type does not even have a “strategic attack” category. Thus, missions that struck chemical weapons bunkers in northern Iraq or an electrical power plant in Baghdad were coded as “air interdiction.” Such a classification system seems incongruous if airmen really wished to emphasize strategic attack as their primary mission.

Even so, some targets were unofficially considered as being of a strategic nature: leadership (especially telecommunications), key production facilities (electricity and oil), transportation infrastructure (railroads and bridges), and NBC—Nuclear, Biological, and Chemical research, production, and storage facilities. Using these categories, of the 41,039 strike sorties flown by coalition aircraft, only 5,692 (13.7 percent) would be classified as “strategic.” Moreover, because heavy bombers like the B-52 dropped a disproportionate share of the bomb tonnage during the war (32 percent), and most of those strikes were flown against the Iraqi army, it is apparent that the vast amount of all bombs delivered fell on enemy ground forces and their equipment.

Consider also the weight of ordnance actually falling on Baghdad—the epitome of a strategic center of gravity. In 43 days a mere 330 weapons (244 laser-guided bombs and 86 Tomahawk cruise missiles) were delivered against Baghdad targets. Those 330 weapons represent three percent of all the precision weapons used during the war, which in turn amounted to only nine percent of all the air weapons expended. As a consequence, the total tonnage falling on Baghdad during the war was a mere 287 tons—a minute fraction of the total tonnage of 84,200 tons dropped by the Air Force.

The effect of this massive air campaign directed against the Iraqi ground forces in Kuwait was enormous. US Central Command estimated that prior to the start of coalition ground operations on Feb. 24, 1991, all front-line Iraqi divisions had lost more than 50 percent of their strength; rear divisions had been reduced by 25 percent. More detailed examinations by US intelligence agencies after the war confirmed these percentages. When it is realized that a military unit is considered “combat ineffective” when it has lost 40 percent of its strength, it is small wonder that more than 80,000 Iraqi soldiers de-

USAF photo



An A-1 Skyraider performs a near-vertical dive on enemy positions in North Vietnam.



In Allied Force, precision munitions dropped from medium altitude destroyed targets such as tanks.

served during the aerial pounding and another 86,000 surrendered virtually without a fight.

Charge: Air attacks such as were conducted in Operation Allied Force constitute nothing more than “recreational bombing.” Pilots remain at such an altitude that they can’t possibly hit their targets accurately.

Response: In operations such as Allied Force, the war over Serbia to free Kosovo in 1999, political leaders deemed it fundamental that NATO casualties be kept to an absolute minimum. The alliance was shaky from the start, but it would undoubtedly split apart if heavy casualties were sustained. Hence, early on President Clinton and NATO leaders declared that a ground invasion was out of the question. The number of personnel involved—Gen. Henry H. Shelton, JCS Chairman, stated that at least 200,000 troops would be necessary—combined with the memories of the vicious fighting in the Serbian mountains during World War II, warned that an invasion would mean heavy losses for NATO, as well as massive casualties and collateral damage for the Serbs. Instead, airpower would be used as the weapon of first resort. Yet, the need to limit casualties, on both sides, remained a primary consideration for NATO leaders.

As a consequence, allied aircraft were directed to remain at medium altitude, usually above 15,000 feet, so as to stay above the range of most enemy ground fire. Some have argued that this policy induced inaccurate bombing, thus increasing collateral damage and civilian casualties.

In the vast majority of cases this was not true. A Precision Guided Munition is most accurate when it is dropped in the midaltitude range—from 15,000 to 23,000 feet—allowing enough time for the weapon to correct itself in flight. If dropped from a lower altitude, the weapon will have less kinetic energy, and its steering fins will have less opportunity to correct the aim; the weapon will usually land short of the target. From the pilot’s perspective, medium altitude is also advisable because it allows time to identify the target at sufficient

distance, “designate it” (if laser guided), and launch the weapon. In short, for PGMs against a fixed target whose position is already established—which was the case in most of the targets struck in Serbia—the optimum altitude to ensure accuracy is at or above 15,000 feet.

To ensure accuracy, the optimum drop altitude for nonguided munitions is lower than for a PGM. Even so, acquisition remains a limiting factor: Coming in too low at 575 mph makes it nearly impossible to acquire the target, line up, and place the bomb accurately. As a result, the compromise altitude for the delivery of unguided bombs is around 5,000 feet. However, this places the delivery aircraft right in the thick of fire from ground defenses. Allied Force commanders resolved this dilemma by keeping aircraft at medium altitudes but restricting the use of non-PGMs to areas where there was little or no chance there would be civilian casualties or collateral damage.

A difficulty arises in identifying and attacking mobile targets. On April 14, 1999, near Korisa, Kosovo, NATO pilots attacked what intelligence sources had identified—and which indeed appeared to be—a military column. It is now known the column also contained refugees: Several dozen civilians were killed in the air strikes. This is the only instance in the 78-day air campaign when NATO intelligence sources and aircraft at medium altitude combined to misidentify a target, thereby causing civilian casualties. Could this accident have been avoided if the aircraft had flown at a lower altitude? Probably. Indeed, NATO changed the rules after this, allowing aircraft in certain circumstances to fly lower to ensure target identification. There is, however, a trade-off in such instances: If flying lower increases the risk to aircrews due to enemy ground fire, at what point does the risk of misidentifying a target override the risk of losing an airplane and its crew? If friendly losses meant the shattering of the alliance, were they preferable to allowing Slobodan Milosevic to continue his atrocities unchecked?

Charge: Despite all the talk by airmen, airpower remains an indiscriminate use of military force that deliberately targets civilians.

Response: Various books and articles continue to perpetuate this myth. Although one must recall the caution of Mark Twain regarding lies, damned lies, and statistics, the following statistics are fairly unambiguous.

Gil Elliot in *Twentieth Century Book of the Dead* estimates that 110 million people, military and civilian, died in wars during the first seven decades of the 20th century. More than half of those died due to genocide and forced starvation. Of the 46 million who died due to “technology,” Elliot lists the causes of death as small arms, which accounted for 24 million; “big guns,” 18 million; “mixed,” three million; and aerial bombing, one million. He notes that the figure of one million dead due to air attack may be higher but certainly less than two million. Thus, even if we add the numbers of those who have died since Elliot wrote in 1972, the number of those

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dying due to air attacks during the entire 20th century would not exceed two million.

Other researchers have listed as many as 170 million dead in both internal and external wars during the 20th century. Those who advance higher casualty figures usually attribute the additional deaths to even more vicious dictators than those assumed by Elliot. Gerhard Weinberg, for example, states that 60 million people died in World War II (10 million more than most estimates), and those extra deaths occurred largely as a result of more civilians massacred and starved on the Eastern Front and in China than was originally thought.

If we are to accept these staggering figures, it means that of the 170 million people who died in wars during the 20th century, the overwhelming majority died as a result of military operations by armies, navies, and paramilitary "police" forces. Two million people, or about 1.2 percent of the total, were the victims of air attack. Below are some more statistics relative to warfare since World War II:

- According to Greenpeace, 3,000 civilians died in the six-week Desert Storm air campaign; later studies lower that figure to 1,000.

- UNICEF and the World Health Organization maintain that more than one million Iraqi civilians have died due to UN sanctions since 1990—55 percent of whom are children under the age of five.

- Milosevic told US Ambassador Richard C. Holbrooke that perhaps 25 Serbs died in the 1995 air campaign over civilians died in the 78-day NATO air campaign over Serbia/Kosovo; there were no allied casualties.

- 18 US Army Rangers died in Mogadishu, Somalia, with another 70 or so wounded, but at least 500 Somali civilians were killed and another 500 wounded during the 24-hour firefight of October 1993.

- The American Red Cross states that 200 people worldwide are killed each week by land mines, with another 100 or so wounded. The US is not a signatory of the Land Mine Ban Treaty.

Certainly, it is most regrettable that *any* civilians are



USAF photo by SSgt. Shanne Cuomo

An airman prepares a 2,000-pound bomb for a B-1B sortie during Operation Enduring Freedom.

killed or injured by air attack, but we must be realistic. Innocent people always die in war—tens of millions of them over the past century. Given that less than two percent of them were victims of air attack, it is peculiar to charge that airpower is an indiscriminate or inhumane weapon. Unfortunately, there are those who still do. Yet, the arithmetic and facts are clear. The biggest killers of the 20th century were small-arms fire, blockades, sanctions, sieges, artillery fire, land mines, and worst of all, despotic leaders who inflicted genocide and starvation on friend and foe alike.

Ordered a form of war that was less deadly, to both sides, than traditional means of war on land and sea. History has proved these prophets were correct. Moreover, the ability of aircraft to project force in a discriminate manner so as to minimize civilian casualties and collateral damage has continued to increase over the past two decades. It is not the answer to all problems and can still inflict most grievous harm. Yet, recent conflicts have made it clear that the centuries-old desire to wage war with humanity and discrimination has finally become possible. ■

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The new Chief Master Sergeant of the Air Force says his top concern is the high tempo of operations.

Top Chief

THE new Chief Master Sergeant of the Air Force says the greatest challenge he faces is to help the leadership find ways to relieve some of the pressure being imposed on the force by an intense operational tempo that was escalated by the Sept. 11 attacks.

"I join the Chief of Staff and the Secretary in clearly recognizing that the greatest challenge that we've got right now is to reduce the stress that's on our Air Force, given the optempo," CMSAF Gerald R. Murray said.

Although the Air Force leadership has been talking about a burdensome operational tempo for a long time, Murray said, "September 11 reshaped, redefined that tempo even more." And despite what the Aerospace Expeditionary Force concept has done "to provide predictability and stability for our people, that still remains the greatest challenge to us," he said.

Murray became the 14th Chief Master Sergeant of the Air Force on July 1, following the retirement of CMSAF Frederick J. Finch. He said he got the top enlisted advisor's job after a short interview with Gen. John P. Jumper, in his first meeting ever with the Air Force Chief of Staff.

Murray's background should be an asset in one of his key tasks, that of helping to persuade young airmen to make the Air Force a career. He said he never had any interest in the military while growing up on his grandfather's farm in North Carolina. He married and worked in construction until a bad economy made work hard to find. So he enlisted in the Air Force in 1977 to "make a living" but with no expectation of making it a career.

"Either I took a liking to it, or it took a liking to me, but it was enough



USAF photo by TSgt. Jim Varhegyi

Chief Master Sergeant of the Air Force Gerald R. Murray speaks at a ceremony in his honor at Bolling AFB, Washington, D.C.

By Otto Kreisher

for me to give it another look and it led to a career," he recalled.

He worked in aircraft maintenance on fighters, then moved into maintenance logistics before being asked to serve as the senior enlisted advisor, or command chief master sergeant, first for the 347th Wing at Moody AFB, Ga., next for US Forces Japan and 5th Air Force at Yokota AB, Japan, and finally for Pacific Air Forces at Hickam AFB, Hawaii. He was in the Hawaii post when selected by Jumper to be the service's top enlisted member.

Murray believes he gained a good background for the new job in his previous command chief master sergeant posts, particularly with PACAF, which had "all the diversity of the Air Force."

Coming to Washington

The new post is his first Washington, D.C., assignment in 24 years of Air Force service. He said much of his first month in the job was spent meeting with the top Air Force leaders and staff personnel and getting briefings, "to make sure we're all on the same wavelength" before he started traveling to meet the force he now represents at the highest level.

The learning experience has been like "drinking from a fire hose," he said with a laugh.

The challenges of his new job, like those facing the Air Force as a whole, have been changed by the events of Sept. 11, 2001, Murray said. Although the force always experiences a surge in effort when moving into a combat operation, he said, the leadership recognizes now that with the demands of added force protection and the war on terrorism "we really are in a new state of optempo. The thing for us is to find ways to de-stress the force and stabilize the force in the new steady state."

Air Force leaders are conducting studies to find out which of the career fields are the most stressed by the new demands and what can be done to relieve that stress. To ease the problems of the notorious low-density, high-demand specialties, they may have to move people from one field to another, change accession patterns and assignments to the technical training schools, or perhaps cross-train some personnel, Murray said.

Security forces is "a good example of a field we'll have to make some adjustments to," he said.

The Air Force began to increase security after the deadly terrorist bombing of Khobar Towers in 1996. And the deployments for Northern and Southern Watch missions over Iraq required the assignment forward of additional security personnel, Murray noted. But 9/11 brought the added requirement "to beef up security on bases here at home," he continued.

Surge Capacity

To meet that challenge, the Air Force took people out of other career fields to augment the security forces. "That's a new way of doing business that we will continue to use for surge capacity," Murray said.

There are not enough dedicated security forces personnel to meet the demands if the Air Force had to escalate to the highest security level, he explained. "But now we have trained augmentees from all our career fields who will go forward into security forces posts."

The terror attacks demonstrated "that we have a new steady state for force protection," the chief said. "We can't rely on those other career fields. Those folks are in mobility positions and we have needs there. So we may very well have to shift people out of fields that are not stressed into the security forces."

Defense Secretary Donald H. Rumsfeld has told the services they

must stay within their current authorized force strength, Murray observed. "So we have to ask ourselves, what can we do smarter? What can we do better?"

"We may increase fields, but we may decrease fields that are not as stressed," he said. "Or we might even look at outsourcing some positions." He explained, "That is one of the options we do have. We can use private sector people, contract people ... to replace blue-suiters" in some jobs and move the airmen to other fields.

Murray noted that shortly after Sept. 11, the Air Force issued a Stop-Loss order to retain personnel scheduled for separation or retirement. The service also activated about 37,000 Air National Guard and Air Force Reserve Command personnel.

"I have no doubt that out of the thousands affected by Stop-Loss there were some ... who clearly did not want to stay," he said. But the "vast majority of our people understood why we had to do it," and a surprising number of people who had been set to leave the service re-enlisted.

The Air Force leaders recognized from the start that they could not continue to use those methods to meet their steady-state operational needs and have reduced significantly the numbers of personnel affected by Stop-Loss and involuntary mobilization, he said.

Murray predicted in an August interview that by October "we'll have our force stabilized and be out of



SMSgt. Branford Edmunds escorts Murray and USAF Chief of Staff Gen. John Jumper at Murray's July 1 ceremony at Bolling.

USAF photo by TSgt. Jim Varhegyi



CMSgt. James Callander, then 11th Wing command chief master sergeant, was among those congratulating Murray at Bolling.

Stop-Loss and working toward having the Guard and Reserve down to those who volunteer” for active duty. The announcement of an end to Stop-Loss came Aug. 5; however, the Air Force announced Aug. 16 it would have to extend mobilization for about 14,000 reservists into a second year.

Quality of Life

Those steps were possible, Murray said, due to the sharp improvement in enlisted retention, which has exceeded Air Force’s goals, except for the most experienced airmen. He attributed the higher re-enlistment rates to a combination of the greater sense of mission and patriotism after Sept. 11 and the steady improvements in compensation, housing, health care, and other benefits.

However, Murray said that although recent pay adjustments have improved compensation for senior non-commissioned officers, more needs to be done. “We have brought the junior airmen up to an equitable level with the national standard,” he said, “but our midlevel and senior NCOs still fall below. We have a goal to move that up.”

Although compensation still is an issue among senior enlisted troops, he said, “I will tell you, the NCO corps is very thankful for the [added] compensation it has gotten. ... They have not taken for granted what our senior leadership and Congress have done.”

Murray also noted the progress toward the goal of increasing the

basic allowance for housing to eliminate out-of-pocket expenses and predicted that goal would be met in about two more years. He was also pleased with the progress made in improving housing conditions, for both families and unaccompanied airmen.

Although base infrastructure was “neglected for a long time in the effort to modernize the force and improve compensation, the Air Force is ahead of all the other forces because of what we did in the late ’90s for housing for single airmen and families,” said Murray.

The shift to privatization for family housing is providing larger houses and improved community services, he said. And he predicted that the Air Force would meet its goal of giving every unaccompanied airmen a single room under the 1+1 barracks design by 2009.

On the Job

There also have been improvements in aircraft availability due to increases in funding for spare parts and maintenance, Murray said. He praised Jumper’s recent change of the Air Force wing structure that restored maintenance groups as a step “to gain more efficiency in our ability to produce sorties.”

The chief said he was pleased with

his early contacts with Jumper and with Air Force Secretary James G. Roche. He had just had a lengthy talk with Jumper and was scheduled for a working lunch with Roche the next week. “We are off to a great relationship,” he said.

“The Secretary and the Chief have a great plan to improve our Air Force,” he said. As Chief Master Sergeant of the Air Force, his main responsibility “is taking care of our people,” Murray said. “And I could not imagine having two bosses who care more about our people.”

A key part of their plans is to provide Air Force people more stability, he said. Murray said the new Aerospace Expeditionary Force structure “has made a huge difference” in providing that stability and is the main reason he stayed in after completing 20 years.

On returning “from the desert the third time,” Murray said that, as he held his one-year-old daughter, he asked himself: “Is this worth doing again?” He said he was distressed by what had happened in the early 1990s, with the rounds of base closures, drawing down the force, then pushing the force “to do more with less.”

“But what I saw is that this AEF process has given us a system and a way that our airmen can identify with, that they understand what we do, when we do it, and when they’re going to be required to do it,” Murray explained. “Is it perfect? No. But we’ve gotten better every time we’ve done it.”

Each time USAF finishes one of the 15-month cycles with the AEF, the staff does a complete review, he said. “We’re in cycle three now. I guarantee you, cycle four will be much better. ... We have a constant re-evaluation going on how can we do it better, do it smarter than what we’re doing.”

Despite what he called “a tough time in our Air Force” a decade ago, Murray said, “I stayed because I believe that our Air Force is improving. And I care enough about our people to go out there and tell them that there is reason to hold on, there’s reason to stay.” ■

Otto Kreisher is a Washington, D.C.-based military affairs reporter for Copley News Service and a regular contributor to Air Force Magazine. His most recent article, “The Quest for Jointness,” appeared in the September 2001 issue.

The Point



The Lockheed X-7—a supersonic and hypersonic ramjet engine test bed—used a parachute recovery system, usually landing nose first in the New Mexico desert sand, so it could be used again. A large crane rolled up and yanked the vehicle out of the sand. Aircraft such as the B-50 or the B-29, as shown above, air launched the X-7 from a wing mounted system. The vehicle had a high-speed drag chute to slow it down and a main chute for landing. Lockheed created the X-7 for the Air Force to develop a ramjet for an anti-aircraft missile. The first full-scale X-7 flight took place April 26, 1951. By the time the program ended in July 1960, it had evolved into a much broader effort, yielding information on aerodynamics, thermodynamics, fuel, and materials performance at high speeds.

VA chief Anthony Principi is fighting two enemies—a huge backlog of claims and barriers to VA health care.

Principi's Honor

By Tom Philpott

ANTHONY J. Principi, the new secretary of veterans affairs, sometimes sounds like a commander fighting a two-front war.

On one front, he encounters tens of thousands of veterans trying to get into a besieged VA health care system, where waits for service in some portions of the country stretch beyond one year.

On the other front, he finds a huge backlog of claims—more than 490,000 of them—from vets seeking compensation for ailments or injuries they believe are a consequence of military service.

The job of VA secretary, Principi said, brought “a lot more challenges” than he anticipated when confirmed by the Senate in January 2001. He added, “I’m very pleased with the progress we have made, [though] again, I tend to be very impatient.”

Principi’s patience got a workout recently when he sent Gordon H. Mansfield, assistant VA secretary for Congressional and legislative affairs, to some clinics to test access to VA health care. Mansfield’s legs

are paralyzed from a bullet wound suffered at Ia Drang, the Vietnam battle depicted in the best-selling book *We Were Soldiers Once ... and Young* and the hit movie based on it.

In June, he wheeled himself into six different VA clinics located in Florida. Armed with his service record, he told staff that he recently had moved to the area and, as a combat-disabled veteran, sought care. Four of six clinics turned him away.

“They were too booked,” said Principi. “In one of the four clinics, one of my clerks told him, ‘Mr. Mansfield, you have to understand that Congress created all veterans equal, so if some affluent retiree who may have spent one year in uniform came in before you, we have to take him first.’”

In similar visits in Colorado in July, Mansfield was denied care at two more clinics. “One clinic told

him to go to Salt Lake City”—a distance of more than 500 miles—“to get his care,” said Principi. “And we’re talking about a guy who is 100 percent, service-connected, combat!”

Mushrooming Access Problem

As these incidents show, Principi and the VA now face an extraordinary health care access problem.

The secretary blames a spike in the number of eligible veterans, one created by the Veterans’ Health Care Eligibility Reform Act of 1996. The law directed VA to prioritize access to health care by seven beneficiary categories. It then gave the VA secretary authority to open care to every category—if resources allowed.

Principi’s predecessor in the Clinton Administration, Togo D. West Jr., used that authority in October 1998, opening VA health care to any of 25 million veterans who sought enrollment. The new eligibles included those in Priority Group 7—veterans who are not poor and have no service-related ailments. Before that, the VA mostly treated patients with service-connected ailments or low incomes.

In passing the 1996 law, Congress sought to solve some serious problems in VA health care. Patient access rules were complex and arbitrary. Physicians complained they had to turn away patients in need of care just because their disabilities were not severe enough. Some doctors began admitting patients not because they needed inpatient care but because the disability threshold was

lower for them if treated as inpatients.

On top of that, an internal VA study suggested open enrollment would have minimal impact on patient access and any added costs would be offset by reimbursements from veterans’ other health insurance. Lawmakers and VA officials dismissed warnings from the Congressional Budget Office, which projected that VA costs and patient load would skyrocket.

However, CBO was right. Clearly, lawmakers and officials underestimated the attraction to aging veterans of free or deeply discounted medications. Another factor behind patient gridlock is that VA health care transformed itself in recent years into a community-based system with 850 clinics across the country. This broadened access to care.

“Our demand has exploded,” said Principi. “They are knocking our doors down.”

VA facilities not only are inundated with new patients but also are having difficulty making services available to some of the most needy patients—combat-disabled vets like Mansfield. That is going to change, Principi promised.

“If we can’t take care of our service-connected disabled first, then as far as I’m concerned, we may as well close the doors, because that’s why we exist,” he said.

Principi has authority to tighten access again. In fact, he planned to do exactly that last fall, even in the wake of Sept. 11 and with the nation preparing for war. However, on the morning he planned to explain his decision to veterans service organizations, Principi got some surprising news. Bush and Congressional leaders had reached agreement on a way to retain open enrollment and help pay for it by pumping \$400 million into the VA health care system.

For all that, this is a problem money alone won’t solve, according to Principi. “You can’t have an open enrollment system where Congress says everybody can come in, and then you have a finite budget that doesn’t meet it.”

The Deluge

The figures are daunting. Even as the overall veteran population since 1980 has fallen by five million per-

sons, demand for VA health care has increased. In 1995, VA facilities treated 2.5 million veterans. The number of patients in 2001 hit 4.2 million and jumped another 13.5 percent through April this year. Total veterans enrolled in VA health care is now 6.6 million and rising.

This flood of enrollments has created new problems for the VA. More than 132,000 veterans find themselves on waiting lists just to *request* a medical appointment. Once an appointment is set, wait times can go beyond six months. Another 178,000 veterans are waiting for follow-up care, and many of these veterans will be on those lists six months or longer.

“I’m concerned it’s causing quality to be degraded,” Principi said. “To be told you have to wait six months or a year [for treatment] is not good medicine.”

Many veterans never expected to have access to VA health care because they are comfortable financially, have no service-connected illnesses, or both. For this category of patient, the long wait doesn’t pinch. Once seen by a VA physician, they can fill prescriptions through the VA for \$7 per 30-day supply.

“You could be the wealthiest of the wealthy,” remarked Principi, “and believe me, we have millionaires who come to the VA for health care. They don’t want to pay \$500 to \$600 a month for prescription drugs.”

Making Room

Principi suggested he will use his own authority, perhaps this fall, to block new enrollments of Priority Group 7 veterans and to set up a triage system for appointments, with combat disabled moving to the top of any list, “so that the Gordon Mansfields of this nation, who are truly disabled, can get into a clinic and can get the care they need close to their home.”

Principi’s plan does not draw universal approval, to put it mildly. Stripping veterans of benefits is not only politically risky but, as some see it, morally suspect. Both factors have come into play in recent months.

Take, for example, the fate of Principi’s move—contained in the VA’s 2003 budget request unveiled in February—to impose an annual \$1,500 deductible on category 7 en-

For the VA, Experience at the Top

Anthony J. Principi, 58, has roots that go deeply into the American military veterans community.

A 1967 Naval Academy graduate, he commanded a river patrol unit in the Mekong Delta during a combat tour in Vietnam.

He served as deputy secretary of the Department of Veterans Affairs during the George H.W. Bush Administration. Before that, he was lead Republican counsel and staff director of the Senate Veterans' Affairs Committee and, earlier, Senate Armed Services Committee.

From 1997 to 1999, Principi chaired the Congressional Commission on Service Members and Veterans Transition Assistance, which produced a comprehensive plan to overhaul veterans' benefits. Recommendations included a return to a World War II-style GI Education Bill covering all college expenses and a health care transition plan for veterans returning to civilian life.

The more costly ideas haven't been adopted, but the Principi panel also backed initiatives that have become law.

These include a military thrift savings plan and repeal of the ban on dual compensation—the so-called "double dip" prohibition—that discouraged many retired officers from working as federal civilians.

rollees. This was a direct move to limit benefits to this group. Congress refused to support the proposal.

In addition, lawmakers this summer attacked the VA after learning that Laura J. Miller, VA deputy undersecretary for health, told her networks across the country to stop the effort to market VA health care through mailings, open houses, displays at veterans service organization meetings, or health fairs. The goal was to halt the increase in enrollments. Miller warned that recent advances in quality of care are at risk if the number of patients keeps rising.

A number of veterans organizations disagree. The problem is that the White House won't supply the resources, they say. Rather than trying to conceal its services, the VA should get the resources to do the job properly.

"The recent action by [Miller] ... is wrong," declared Kenneth Goss, director of legislative affairs for the Air Force Association. "If veterans are eligible for a benefit, it is the government's obligation to ensure they know the services are available."

Goss added more broadly that Con-

gress "will not allow the VA to withdraw benefits or services now offered." Instead of trying to do that, he said, the VA should streamline its business practices, aggressively seek payment from third-party insurance payers and Medicare, and ask Congress for the amount of money it needs to do the job.

As Principi sees it, however, the problem isn't inadequate funding. He asserts that Congress has been "generous" in funding VA health care. Lawmakers appropriated \$22 billion in Fiscal 2002, and the Senate Appropriations Committee voted about \$1.5 billion more for Fiscal 2003. The problem, he contends, is open enrollment.

"We try to be all things to all people," he said. "We are a very generous country. Our [VA] budget is almost \$60 billion, bigger than the entire defense budget for Great Britain. Maintaining all of their military force, all of their veteran benefits, they [spend] about \$40 billion. So clearly our nation cares very deeply about our men and women in uniform, but we have a responsibility to continually evaluate programs."

Principi continued, "Are they difficult to [evaluate]? You bet they are. They are very politically charged

issues, and you sometimes have to have a thick skin, but you cannot shy away from your responsibilities."

The question is one of proper balance, he indicated.

"I do believe we need to look at the most deserving, the combat disabled or the training accident victim, and just ensure we are meeting their needs, first and foremost," said Principi. "I don't think we can do enough for those people. And I'm concerned we aren't doing enough."

The Once and Future Backlog

Principi has had greater success in the battle to overcome the huge backlog of claims filed by military veterans seeking a disability rating to qualify for VA compensation or pensions.

"Every day," said the secretary, "we're getting thousands upon thousands of new claims coming into the system, but we are, in fact, bringing down that backlog."

Principi has set an ambitious goal. He wants to hack down the backlog from 491,000 claims in early 2001 to only 250,000 by the start of 2004. So many claims are being processed now that Principi had to ask for (and receive) an additional \$1 billion appropriation to cover the larger number of payouts.

Principi brought to this task a secret weapon—Vice Adm. Daniel L. Cooper, US Navy (Ret.), a hard-charging administrator who serves as VA undersecretary for benefits. Cooper's effect on the problem was immediate, say officials.

In early 2001, the VA was processing about 28,000 ratings-related claims a month. Now, with Cooper prodding the system, the average has soared to close to 69,000 claims per month. Because about 59,000 ratings-related claims are filed each month, the backlog is melting by 10,000 claims per month.

Moreover, Principi's inherited backlog of 80,000 education benefit claims had been cut in half by summer 2002.

Principi said he has tried to make sure the VA "has in place the processes that give people tools to do their job." He credited reductions in the backlog to a new system of "triaging" claims, of using special strengths of individual claim processors, and of setting performance goals.

The secretary noted that he es-

tablished a tiger team in Cleveland to handle claims of veterans over 70 and those who had been waiting at least a year for decisions. The troubled claims were pulled out of home offices and sent to Cleveland for direct action. The tiger team, supported by nine other satellite teams, processed 40,000 claims over a few months.

Triage technique is also used now for routine claims. In former times, the claims, when filed, were date-stamped and put in a pile being handled by a rating specialist. Now they are opened and directed to a processor familiar with the particular type of claim.

"If you're very good at developing cases in, say, the area of diabetes, ... that's what we're going to have you do," said Principi.

For all the success, however, he warned, "We have a long way to go. We're not out of the woods by any stretch."

Through the summer and early fall, Principi worried that gains on the backlog front might be undone by an influx of new claims filed by military retirees. The number, he said, could exceed 700,000 over the next five years.

The source of Principi's concern was the strong move in Congress this year to pass legislation authorizing, for the first time, "concurrent receipt." The term means, in essence, that a military retiree would be permitted to receive both his full military retirement pay as well as a certain level of VA disability compensation, if he qualified for it.

A Matter of Equity

At present, such dual payment is not legal. The amount an individual receives in military retirement compensation must be reduced by the exact amount paid in the form of veterans compensation.

Military veterans who leave active duty service short of retirement but who later retire as federal civilians face no such limitation. Their federal government retired pay is not reduced as a result of receiving VA compensation.

"There's a real equity issue," Principi conceded.

The House version of the Fiscal 2003 national defense authorization bill called for restoring full retired pay only to the most severely dis-

abled retirees—those with ratings at or higher than 60 percent. The Senate authorization bill called for going much further, ending the offset entirely.

As the issue headed for a climax in the fall, Bush Administration officials warned repeatedly that the President would veto either provision.

As Principi openly acknowledged, "The biggest concern is cost." Projections are that approval of concurrent receipt would require new spending of \$58 billion over the next decade. That, said the secretary, "is a tremendous factor."

Principi summed up the Administration's view this way: "It's not that the President, or the Secretary of Defense, or I are opposed to military retirees getting their due. It's an issue of how do you fund that, given the constraints placed on spending?"

The concern throughout the legislative fight was that relaxation of the concurrent receipt ban would bring a flood of claims from retirees, either seeking VA ratings for the first time or reconsideration of current ratings to reach a possible 60 percent threshold.

"Now we're talking about real money, not just the tax advantage of disability compensation," said Principi. "Now we're talking about receiving both."

Any new influx of claimants would add to what already is a major long-term buildup of claims. During the 1990s, the number filed by veterans jumped dramatically. The Vietnam War dragged on for a decade, creating millions of veterans, and 768,000 veterans of that war now receive VA disability pay.

The Persian Gulf War was over in four months, the ground war in a matter of days, yet 391,000 Gulf veterans draw disability pay. Why the rise? Principi points to several factors, including expectations.

"My theory," he said, "is the World War II guys saved the world, came home, and didn't ask for anything else. ... They availed themselves of the GI Bill and housing benefits, but they just came home and got on with their lives." Many "carried the scars

of war. I met several who've had shrapnel in their bodies and don't get anything. ... That was just the culture at the time."

Today, Principi said, service people are aware that modern battlefields come with environmental hazards that previous generations didn't worry about, like the defoliant Agent Orange used during the Vietnam War.

"There's just more awareness today," Principi said, "and much more outreach to veterans about their benefits, not only by the VA but the service organizations."

Finally, Persian Gulf War veterans, unlike those who returned from Vietnam or earlier wars, were well briefed on the availability of disability benefits, and so a higher proportion of separating members knew to apply.

Principi has heard criticism that the VA disability system is too generous, compensating not only the combat disabled and victims of training accidents but persons who suffer routine life diseases while on active duty.

He won't join the critics.

"We have to care for people, whether working in the private sector, or in civilian government, or in the military," Principi said. "If you become injured, or hurt, or contract some disease while employed, there is a benefit program for you—worker's comp, insurance programs offered by corporations, by the government. And the military needs a program as well. We fill that gap." ■

Tom Philpott, the editor of "Military Update," lives in the Washington, D.C., area. His most recent article for Air Force Magazine, "Stop-Loss," appeared in the July 2002 issue.

The Paper Trail

By Bruce D. Callander

“No Extra Charge” for Training

Signal Corps Specification, No. 486
Advertisement and Specification for
a Heavier-Than-Air Flying Machine

To The Public:

Sealed proposals, in duplicate, will be received at this office until 12 o'clock noon on February 1, 1908, ... for furnishing the Signal Corps with a heavier-than-air flying machine. ...

The flying machine will be accepted only after a successful trial flight, during which it will comply with all requirements of this specification. ...

It is desirable that the flying machine should be designed so that it may be quickly and easily assembled and taken apart and packed for transportation in army wagons. It should be capable of being assembled and put in operating condition in about one hour.

The flying machine must be designed to carry two persons having a combined weight of about 350 pounds, also sufficient fuel for a flight of 125 miles.

The flying machine should be designed to have a speed of at least forty miles per hour in still air. ...

Before acceptance a trial endurance flight will be required of at least one hour during which time the flying machine must remain continuously in the air without landing. It shall return to the starting point and land without any damage that would prevent it immediately starting upon another flight. During this trial flight of one hour it must be steered in all directions without difficulty and at all times under perfect control and equilibrium. ...

The expense of the tests to be borne by the manufacturer. The place of delivery to the Government and trial flights will be at Fort Myer, Virginia.

It should be so designed as to ascend in any country which may be encountered in field service. The starting device must be simple and transportable. It should also land in a field without requiring a specially prepared spot and without damaging its structure. ...

It should be sufficiently simple in its construction and operation to permit an intelligent man to become proficient in its use within a reasonable length of time. ...

The price quoted in proposals must be understood to include the instruction of two men in the handling and operation of this flying machine. No extra charge for this service will be allowed. ...

James Allen,
Brigadier General, Chief Signal Officer of the Army
Signal Office
Washington, D.C., December 23, 1907



Lahm at far left and Humphreys at far right.

The Army turned down initial overtures by the Wright brothers after their historic 1903 flight. It would be 1908 before it officially embarked on a heavier-than-air flying machine competition.

In preparation, the Army issued Signal Corps Specification No. 486, which established parameters for actual aerial performance, assembly, transport, and operation. There was to be “no extra charge” for training two men to handle and operate the flying machine.

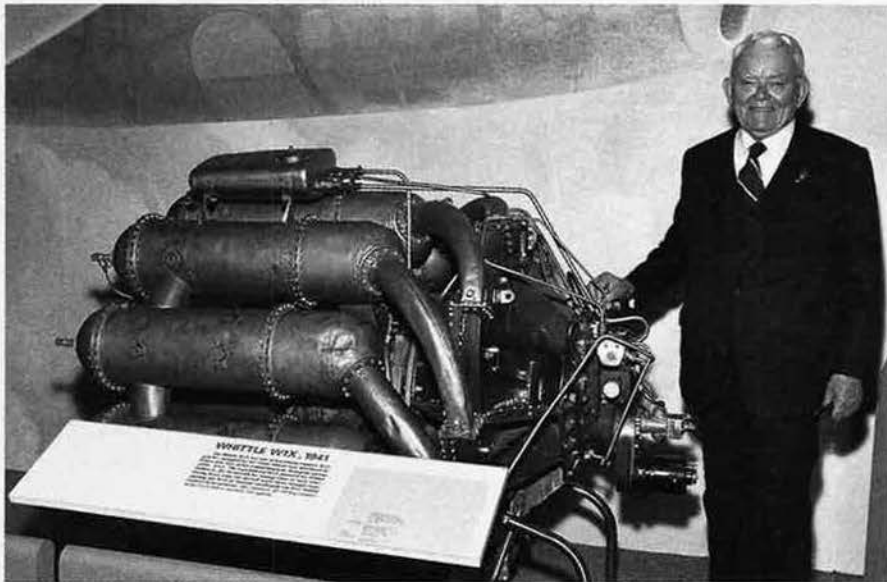
The Army bought the Wright machine for \$25,000, plus a \$5,000 bonus for exceeding the specified speed. The Wrights fulfilled the remaining condition of their contract by training Army Lieutenants Frank P. Lahm and Frederic E. Humphreys.

A 21-year-old RAF pilot and a German graduate student got the whole thing going 70 years ago.

The Jet Generations

By Bruce D. Callander





Frank Whittle stands next to the engine he designed, designated Whittle W1X, on display in the jet gallery at the National Air and Space Museum in Washington, D.C.

ton engines turned propellers that pushed or pulled aircraft through the sky, and the search for other power sources was largely forgotten.

Improved designs and more powerful engines increased performance, but it was apparent as early as the 1920s that propeller-driven aircraft would be limited, particularly in the speeds they could attain.

The solution, many designers agreed, was some form of reaction engine. There were several possibilities but all had limitations. Rocket power, already effective in unmanned weapons, burned fuel quickly and promised only limited range. The "ram" principle was almost as simple, relying on air rushing into the engine, where it would mix with fuel and be ignited to produce a rush of hot gases. However, before the ramjet would kick in, the airplane had to be in motion.

Dawn of the Turbojet

The third, and most promising, option was the turbojet, able to draw air in, compress it, mix it with fuel, and ignite it in one continuous operation. The expelled gases would both propel the aircraft and run a turbine, which turned the compressor blades. Steam turbines already were used in ships and had been tried in early automobiles. The problem was to make one strong enough to stand up to the heat and vibration they would encounter in a fuel-burning engine.

In the 1930s, two men in different countries tackled the problem.

Frank Whittle, in pilot training at the Royal Air Force College from 1926 through 1928, wrote his final thesis on the principle of jet propulsion. Two years later, in 1930, he applied for a patent on a reaction engine for aircraft. The Air Ministry showed little interest, but in 1934, the RAF sent Whittle to Cambridge University for an engineering degree. There, he was encouraged to continue his work, and before he graduated in June 1936, Whittle and some friends formed a company to produce a test model.

Meanwhile, Hans von Ohain was working on his Ph.D. in physics and aerodynamics in Germany when he conceived a similar engine. He developed his idea, built a working model, and in 1934, applied for his patent.

Two years later von Ohain was working for the Heinkel Works, where he developed a turbojet that the firm installed in a specially designed He-178. It flew for the first time in August 1939, five days before Germany invaded Poland and touched off World War II.

That same year, the British Air Ministry gave Whittle's company a contract to develop a flight engine and picked the Gloster Aircraft Co. to build an airplane to use it.

However, Britain was straining to produce conventional defense aircraft, so it was slow to exploit the

new technology. It was March 1943 before the prototype Gloster Meteor made its first flight. Sixteen of the fighters eventually were delivered to the RAF. The first saw combat in August 1944, when their pilots downed two V-1 rockets over southern England.

By then, Germany already was fielding its jet fighters in numbers. In early 1940, the German Air Ministry had given two aircraft companies—Heinkel and Messerschmitt—contracts to produce test aircraft. Heinkel took an early lead; unfortunately its airplane was plagued by engine failures. Although Messerschmitt got a slow start, the Me-262 made its first flight in July 1942 and won the competition.

Development problems and the demands of the war delayed the project, but in late 1943, Germany approved the 262 for mass production. More than 1,400 were built; however, fewer than one-fourth reached combat. Many were grounded for lack of fuel and qualified pilots or were destroyed by Allied bombs.

Bizarre Proposals

Late in the war, the Germans became more desperate and the proposals more bizarre. Several manned rocket projects were launched, including one for a fighter able to take off vertically. Another designer suggested a manned flying bomb. It was an outgrowth of the V-2 rocket program and was to be designed to reach the US, where the pilot would eject and, with luck, become a prisoner of war. Most such ideas never got beyond the thinking stages.

One that did progress was the "Volksjaeger" (People's Fighter). The Reich War Ministry invited bids on a cheap, stripped-down jet that could be built with noncritical materials and by unskilled labor. Heinkel won the job and by January 1945 was producing the He-162.

Critically short of experienced pilots, Air Minister Hermann Goering proposed to train members of the Hitlerjugend (Hitler Youth) in gliders, transition them to the jet fighters, and send them into combat. Like the airplanes, the young pilots would be expendable.

Fortunately for the Hitler Youth, the war ended before they could take on what would have been suicide missions for most. In Japan, how-



In the last months of World War II, Allied bombers were jumped by German interceptors that had no propellers but could outrun any conventional fighter. In the Pacific, the Japanese sent piloted glide bombs against ships and aircraft, their suicide dives boosted by rocket or turbojet engines. The Axis

was losing the war but was still able to inflict damage.

These desperation weapons arrived too late to have any substantial impact on the outcome of the war, but they foreshadowed a post-war transformation in military technology as dramatic in its way as the invention of the flying machine it-

self. Within a decade, the propeller-driven fighters of the major powers would become virtually obsolete, their successors powered by "reaction engines."

At the time of the Wright brothers' first flight in 1903, a relatively light internal combustion engine was available. For the next three decades, pis-

A four-ship of F-80 fighters. The Shooting Star was the nation's first combat jet fighter.

ever, thousands of minimally trained pilots were dispatched with no hope of survival. Most kamikaze pilots flew conventional aircraft loaded with explosives, while some versions of the Yokosuka Cherry Blossom piloted glide bomb had jet engines.

The Axis powers also experimented with rocket-powered aircraft. One of the most promising was the Me-163 interceptor, which actually made it into combat. Called the Komet, it could reach speeds of almost 600 mph; it carried fuel for only about 10 minutes of powered flight and had a tendency to explode. The Japanese copied the airplane for their Mitsubishi Shusui, but its engine failed on its initial flight test and the project was abandoned.

A Slow Start in the US

The United States did not field a jet in combat during the war—not for lack of trying. Three months before Pearl Harbor, Lt. Gen. H.H. “Hap” Arnold, Chief of the Army Air Forces, asked Lawrence Bell to work on a fighter using a Whittle-type engine.

By the following spring, Bell Aircraft had designed a single-seat airplane powered by two turbojets built by General Electric under British license. The first XP-59 was shipped to Muroc Army Air Base in California, where it flew on Oct. 1, 1942. Called the Airacomet, it offered little advantage over conventional fighters, and the few that were produced served mainly as test beds or trainers.



Late in the war, Germany grew desperate to turn the tide against the Allies. One proposal was the He-162 Salamander, a flimsy lightweight jet aircraft built partially out of plywood and intended to be expendable.

The second US entry, the prototype of Lockheed’s P-80, designed around a de Havilland engine, was completed within 143 days and flown at Muroc on Jan. 8, 1944. It went through several evaluations including a change to GE engines, and by 1944, the AAF had ordered several thousand production models. A few P-80s made it to Europe but too late to see combat.

Other companies were also in the running. Republic developed the P-84 Thunderjet, planned as a successor to its P-47. North American was working on the P-86 Sabre, an AAF version of a jet it was developing for

the Navy. Neither airplane flew until after the war.

If Germany had been able to send hundreds of Me-262s into combat when it was losing the war and struggling to produce anything, why had the Americans been so far behind?

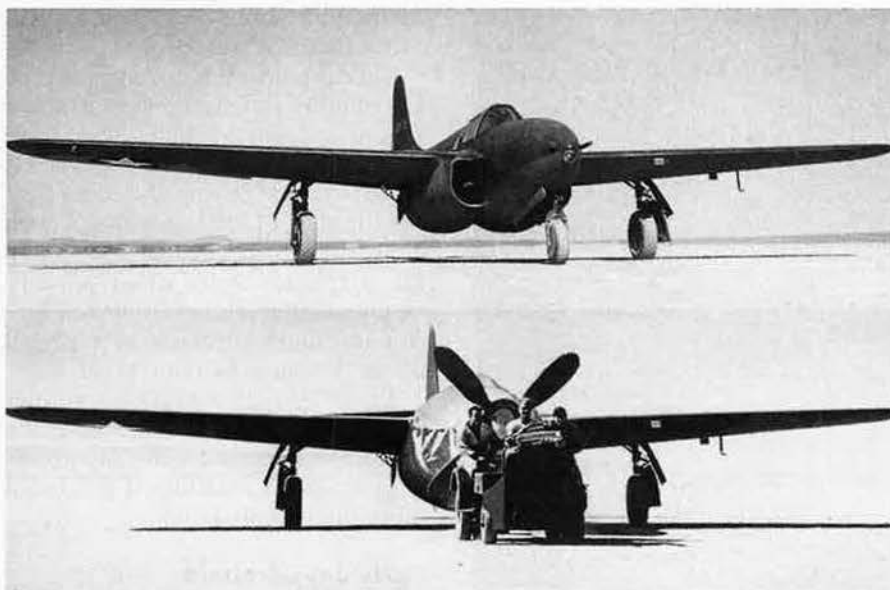
For one thing, the two countries had different priorities. What the US needed, particularly early in the war, was fighters able to escort bombers on long missions. With drop tanks, some P-51s had a range of up to 2,000 miles, well beyond that of any proposed jet fighter. By the time the Me-262 emerged, however, the Allies had shifted the war to Germany, which then needed to produce last-ditch, home-defense weapons.

The US also was absorbed in quantity production, in improving the aircraft already in hand, and in training skilled aircrews. After the initial shock of meeting the German Me-262 in combat, Allied bomber crews and fighter pilots found they could destroy many of them even with conventional aircraft.

To the Victors

Germany’s highly touted secret weapons did not change the outcome of the war; however, its new technologies helped shape the future forces of the victors.

As the fighting wound down, Allied forces moved in to recover what was left of the enemy hardware and to pick the brains of the men who had designed it. A US technical intelli-



Progress in US jet engine development during the early 1940s was a closely held secret. At Muroc AAB, Calif., Bell Aircraft employees fitted a mock propeller to the XP-59 to confound curiosity seekers.

gence team went to southern Germany to an airfield with surviving Me-262s and flew them out for study.

Shortly after the war, von Ohain, who had developed Germany's first turbojet, came to Wright-Patterson AFB, Ohio, eventually becoming chief scientist of the Aero Propulsion Laboratory there.

The Soviets also captured German jet aircraft in various stages of development. Although they had yet to develop an effective engine, they were able to buy a Rolls-Royce Nene from the United Kingdom and copy it.

With these assets in hand, Moscow called for an interceptor able to reach Mach .9 and stay aloft for more than an hour. Veteran designers Artem I. Mikoyan and Mikhail I. Gurevich answered with what became the MiG-15, which entered service in 1949. It had some characteristics of the German jets but was a major improvement over them.

One of the most important lessons the winners learned from the losers, however, did not involve engine expertise but aircraft design. The most successful German airplanes, including the Me-262, had swept wings while all the early Allied designs called for straight wings. When research data showed the speed advantages of the German airplanes, the Allied designers took notice.

North American was among the first to capitalize on the information. They redesigned the P-86 with swept wings—which cost the firm a



Photo by John Harris via Warren Thompson

The Whittle engine was installed on the Gloster Meteor, the first Royal Air Force jet aircraft. Sixteen Meteors were delivered to RAF late in World War II. The first saw combat in August 1944.

year's delay—increasing its performance dramatically. Republic later adopted the swept-wing approach for its F-84F. The Soviets already had incorporated it in their MiG-15.

The First Jet Fighter War

No opposing jet forces met during World War II, but five years later, North Korea invaded South Korea and set the stage for the first encounter of unconventional aircraft. USAF units flying with Lockheed Shooting Stars (designated F-80) were the first to engage.

Initially, parts shortages and main-

tenance problems plagued the F-80s, and some units replaced them with older F-51 Mustangs. The problems were worked out, however, and the Shooting Stars returned in force.

On Nov. 8, 1950, 1st Lt. Russell J. Brown was flying an F-80 when he shot down a MiG-15. Brown's victory was a rare one. The MiG usually won against the straight-wing F-80s.

The arrival of the F-86 Sabre in Korea in late 1950 evened the odds. North American's decision to delay production to accommodate swept wings had paid off. The Sabres went into service almost immediately, and on Dec. 17, pilots of the 4th Fighter-Interceptor Wing destroyed several MiGs in quick succession.

Both airplanes had advantages. The MiG could fly higher and reach higher speeds at those altitudes. The F-86 was faster at lower levels and stood up better to high-speed maneuvers. By the end of the war, the Sabres claimed a 10-to-one kill rate. Since the airplanes were about evenly matched, officials credited the superior training and experience of US pilots for much of their success.

The F-80, in a two-seat trainer version dubbed T-33, became the standard jet trainer for generations of new pilots. Lockheed produced more than 5,600 T-33s.

Early Jet Bombers

The evolution of jet bombers—slower than that of the fighters—also began early in World War II.



Photo by Frank Harrison via Warren Thompson

In 1953, a North Korean pilot defected with a swept-wing MiG-15, here seen at Eglin AFB, Fla., where it underwent USAF testing. A USAF pilot flying an F-80 shot down a MiG-15 in 1950 in a rare victory for the straight-wing F-80.

Work on the most successful one, the German Arado 234, began in 1940. As with the Me-262, development was slowed by want of a suitable engine. The first version had twin turbojets and was used largely for reconnaissance. A later C model had four engines and was intended as a high-speed bomber. It flew in September 1944 but only a few entered service before the war ended.

Germany had a more radical bomber in the works that never got beyond the test stage. The first prototype of the Junkers Ju-287, which used the fuselage of an He-177 and parts from other airplanes, had forward-swept wings. This V-1 model flew several times in 1944. It had four turbojet engines and, like the Arado, used rockets to assist takeoff.

A second version was nearly ready when the Allies overran the construction site. That German bomber was completed by the Soviets and tested in 1947. A third model with six engines never got beyond the design stage. It was intended to fly at more than 500 mph and carry some 8,800 pounds of bombs.

American wartime efforts in the jet bomber field were more limited. By the time reaction-engine technology reached the practical stage, the US already was producing conventional bombers able to reach any point in Europe, and the B-29 was putting Pacific targets within range.

However, US manufacturers were looking for ways to introduce the new technology into existing designs. In 1943, Douglas had proposed a radical light bomber with twin engines powering contrarotating propellers in the tail. Dubbed the "Mixmaster," it flew with conventional engines the next year. The war ended before the airplane could go into production. By then, Douglas was working on another version—the XB-43 with turbojets for power. It flew in May 1946; however, the Air Force decided to go instead for a four-engine bomber.

Northrop's plan for a flying wing followed a similar route. Proposed in 1941 as a long-range, propeller-driven heavy bomber, the XB-35



The medium-range B-47—the world's first swept-wing bomber—was developed about the same time as the long-range B-52. The design of the six-engine B-47 was so advanced that some called it futuristic.

suffered many development problems and was reduced to a test program. After the war, however, the firm fitted the wing with jets. This project also fizzled out, although the concept reappeared eventually in the development of USAF's B-2 stealth bomber.

North America's B-45 Tornado, the US's first operational jet bomber, was more successful. Its conventional fuselage and wings were like those of the firm's durable B-25, but wing-mounted engines gave it almost twice the speed. Three prototypes were ordered in 1945 and the first flew in 1947. Production models deployed overseas suffered a variety of mechanical problems and had a short career.

By the Korean War, the Air Force still was looking for an effective medium jet bomber to replace its aging B-26s. The B-45 lacked maneuverability at low altitudes. When other US contenders also fell short, USAF turned to the British Canberra, a twin-engine airplane conceived by English Electric in the last months of World War II and which was then in production. The British firm couldn't supply both the RAF and USAF, so it licensed the Martin Co. in the US to build it as the B-57.

Martin made a number of changes,

including substituting US-built engines and adding rotating bomb bay doors. The B-57 went into service in 1954. Too late for the Korean War, it flew long enough to see action in Vietnam. (Britain also sold the Canberra to other countries, including Argentina, which used them against RAF aircraft during the 1982 Falklands War.)

America's first heavy jet bomber evolved more slowly. In 1943, Army Air Forces asked builders to think about a long-range bomber using the new turbojet technology. Boeing proposed a straight-wing model similar to the B-29 but, after studying German research, opted for a swept-wing airplane with six engines.

When AAF called for an even bigger long-range jet, Boeing again entered the race with an eight-engine giant in the same general configuration. In parallel developments, the firm developed the medium-range B-47, which first flew in 1947, and the long-range B-52, first flown in 1952.

Later generations of bombers and fighters followed. Today's warplanes can outrace the speed of sound, skim the treetops, reach altitudes undreamed of in World War II, and make themselves virtually invisible to enemy defenses. Still, even these owe their existence in large part to technology conceived more than half a century ago by a 21-year-old RAF pilot and a slightly older German graduate student. ■

Bruce D. Callander is a contributing editor of Air Force Magazine. He served tours of active duty during World War II and the Korean War and was editor of Air Force Times from 1972 to 1986. His most recent story for Air Force Magazine, "Stabilizing the Force," appeared in the August 2002 issue.

By Frances McKenney, Assistant Managing Editor

Membership Recruiting

They call it "the Burger Burn." For the past three years, the **Golden Triangle (Miss.) Chapter** has hosted an informal reception for each new class of Specialized Undergraduate Pilot Training students at Columbus AFB, Miss.

The event originally featured hamburgers grilled outdoors; thus the nickname Burger Burn. These days the menu varies.

The Burger Burn comes after the students have completed their first exam in the year-long SUPT, and as Chapter Treasurer Ronald J. Vaughan described it, "It's a 'Welcome to Columbus' kind of affair." He attends every reception, along with Chapter President David M. McIntosh and Secretary Dwain Stephens, and says anywhere from 40 to 50 guests show up. This includes the SUPT class of more than two dozen lieutenants and captains and their families.

The local Chamber of Commerce has realized the potential of the chapter's Burger Burn as a venue to promote the city. Several chamber members have held the event at their restaurants, while others have donated door prizes or funds to purchase the food and beverages.

As part of Burger Burn activities, the chapter shows the Air Force Association membership video—called "The Force Behind the Force"—and distributes copies of *Air Force Magazine*.

Defending the Homeland

The **Gen. E.W. Rawlings (Minn.) Chapter** hosted a symposium on homeland defense in Bloomington, Minn., in July.

Several USAF leaders presented briefings, with Lt. Gen. Bruce A. Wright heading the list. As vice commander of Air Combat Command, he spoke about ACC and homeland security operations.

Also at the podium during the two days of information sessions: Maj. Gen. John A. Bradley, who was then with US Space Command as deputy commander of joint task force—computer network operations; Maj. Gen.



At right, John Politi, now AFA National Chairman of the Board, joins special guests Rep. Ike Skelton (D-Mo.) and USAF Chief of Staff Gen. John Jumper at Kansas City's International Military Ball in Kansas City, Mo., in August. Jumper was the keynote speaker for the evening.

Paul J. Lebras, head of Air Intelligence Agency; and Brig. Gen. John C. Koziol, now deputy director, intelligence, surveillance, and reconnaissance, in the Office of the Deputy Chief of Staff, Air and Space Operations.

The nine other presenters came from the US Navy and the defense industry and civilian sectors. Howard A. Schmidt, vice chairman of the President's Critical Infrastructure Protection Board, was among them. Together, they provided a comprehensive look at the challenges of national infrastructure protection.

Doyle E. Larson, former AFA National Chairman of the Board and a Rawlings Chapter member, began planning this symposium more than a year before the terrorist attacks in September 2001.

Gathering of Eagles

They are aerospace and aviation legends. They come from the USAF ranks, other services, and even other countries. Air Command and Staff College has been inviting them since

1982 to its "Gathering of Eagles" symposium. This gives ACSC students a chance to meet the history-makers and the **Montgomery (Ala.) Chapter** an opportunity to honor them with a luncheon.

This year, the Gathering of Eagles luncheon included retired Col. Lee A. Archer, a Tuskegee Airman; retired Canadian Air Commodore Leonard J. Birchall; US Rep. Randy Cunningham (R-Calif.) and retired Col. Charles B. DeBellevue, both Vietnam War aces; retired Rear Adm. Jeremiah A. Denton and retired Brig. Gen. Robinson Risner, who were Prisoners of War during Vietnam; test pilot Robert A. Hoover; Gen. Thomas S. Moorman Jr., retired USAF vice chief of staff; Flying Tiger Charles H. Older; Florene Miller Watson, a Women Airforce Service Pilot in World War II; and four Medal of Honor recipients: retired Col. George E. Day, retired Brig. Gen. Joe Foss, retired Col. Joe E. Jackson, and retired Army Chief Warrant Officer Michael J. Novosel. Nearly all—including Birchall and Novosel—are AFA members.

The Montgomery Chapter president, Col. Albert J. Allenback Jr., introduced these history legends to the audience of students, chapter members, Community Partners, and local leaders. Lt. Gen. Donald A. Lamontagne, Air University commander, also addressed the group. The symposium, he told them, is a way to let "our future air and space leaders hear firsthand from those who actually made history."

With the Chief of Staff

Air Force Chief of Staff Gen. John P. Jumper was guest speaker in July for the fifth annual dinner cosponsored by the **Swamp Fox (S.C.) Chapter** and the Greater Sumter Chamber of Commerce.

He spoke to an audience of more than 200 about the war on terrorism, his experiences as Chief of Staff, and about the quality of today's USAF service members.

Swamp Fox Chapter President David T. Hanson was master of ceremonies for the evening's program that included AFA honors going to the Chamber of Commerce for outstanding service; to Lockheed Martin's Eastern Region Office for support of the chapter; and to Michele Harritt, the state's Teacher of the Year. Harritt teaches in Sumter at Wilson Hall, a coeducational college prep school.

Along with Jumper, the VIP list included Lt. Gen. T. Michael Moseley, commander of 9th Air Force and Central Command Air Forces; Rodgers K. Greenawalt, Southeast Region



Staff photo by Guy Aceto

Rudy De Leon (middle), Boeing senior VP of Washington, D.C., operations, presents a check for \$1 million to Air Force Memorial Foundation President Edward Grillo. On hand for presentation of this final payment of Boeing's \$5 million contribution to the memorial were (l-r) Donald Peterson, AFA executive director; Thomas McKee, then AFA National Chairman of the Board; and Tom Owens, Boeing's director of Air Force programs.

president; and James H. Sams III, president of the **Strom Thurmond (S.C.) Chapter**.

In Honor of

The **Paul Revere (Mass.) Chapter's** annual Chief of Staff Scholarship dinner in August featured Gen. Robert H. Foglesong, Air Force vice chief of staff, as guest speaker.

He presented the \$4,000 scholarship to Kyle Gilbertson, son of re-

tired USAF Lt. Col. and Mrs. Edward Gilbertson. A June graduate of Nashua (N.H.) Senior High School, Kyle was selected from among 25 nominees.

Foglesong also presented two new awards. They are named for Charles E. Jones and Brian D. Sweeney, who both died on airliners hijacked by terrorists last Sept. 11.

Jones, a computer programmer, was aboard American Airlines Flight 11, en route from Boston to Los Angeles before it was crashed into the World Trade Center's north tower. Jones had been program director of the Electronic Systems Center's Information Operations Systems at Hanscom before retiring in 1998 as a colonel. He was a member of the Paul Revere Chapter.

Sweeney, a business consultant, was aboard United Airlines Flight 175, also going from Boston to Los Angeles, before it was flown into the south tower. He was a technical support contractor working at ESC on a mission planning system.

Sean Tynan and Courtney White, June graduates from local high schools, received the Jones and the Sweeney scholarships.

According to Joe Bisognano, chapter president, more than 200 guests from government and industry attended the banquet, which was organized by Bill Flanagan and Angela Dupont.

Bisognano said the chapter is Hanscom's biggest scholarship do-



Spouses and SUPT students at the Golden Triangle Chapter's Burger Burn reception in mid-August included (clockwise from bottom left) Hedi Wilcox, Trudy Vanhoof, and Jamie Jokhy and Lts. "Tree" Edison, Michael Jokhy, Shaun O'Donnell, and Nate Vanhoof. See "Membership Recruiting," p. 74.

Peter J. Schenk, 1920–2002

Peter J. Schenk, AFA National President from 1957 to 1959, died Aug. 8 in Pinehurst, N.C. He was 81.

Schenk served more than 12 years on active duty, resigning from the Air Force in 1954. He began his civilian career with General Electric and went on to become an executive with several corporations. He also served in the Air Force Reserve and retired as a colonel.

Born in Vienna, Austria, Schenk came to the US when he was 12 years old and settled in New York City. He graduated from Lafayette College in Easton, Pa., where he was in ROTC. He began his military career as an enlisted man in the Coast Artillery, Pennsylvania National Guard, and was commissioned when called to active duty in 1941.

During World War II, he established schools for radar technicians and commanded an aircraft warning unit. His later military assignments included vice commander of the Air Force Cambridge Research Center, executive officer to Lt. Gen. Jimmy Doolittle, and work with defense study groups.

In AFA, he was vice president of the chapter in Syracuse, N.Y., and served on national committees and on the board of directors before becoming National President. He received AFA's Exceptional Service Award in 1954 and a Medal of Merit in 1957. In 1959, he was awarded the Secretary of the Air Force's Exceptional Civilian Service Medal.



nor to personnel and their dependents.

Preserving History

Two years of organizing came together in May for the **Golden Gate (Calif.) Chapter** when Rep. Ellen Tauscher (D-Calif.) cut the ribbon for the grand opening of the East Bay Veterans History Center.

The center is located within the Veterans Memorial Building in Pleasanton, Calif. Its current main focus is to preserve the history of local veterans through videotaped interviews. These oral histories will also be distributed on CDs and formatted for the Web. Some will go to the Library of Congress for its American Folklife Center's Veterans History Project.

In Pleasanton, Chapter President Robert E. Frank led the effort to create the center and its project. Other chapter members helping out included Pete Epley, Eugene L. Cota, Dianne R. Buckhout, Robert Knapp, and Mervyn Silberberg.

Frank said the chapter first thought of the video histories as a member benefit, a method to attract new members, and a way of interesting young people in history.

As the project became more complex, the chapter pulled in numerous organizations to help. These included

Air Force Association Balance Sheet

	Dec. 31, 2001			Dec. 31, 2000		
	General Fund	Life Membership Fund	Total	General Fund	Life Membership Fund	Total
Assets						
Cash and Investments	2,871,675	12,984,899	15,856,574	2,290,274	14,040,443	16,330,717
Accounts Receivable	1,866,404	256,403	2,122,807	1,514,237	237,735	1,751,972
Prepaid Expenses	468,386		468,386	259,473		259,473
Inventory	108,589		108,589	118,067		118,067
Property and Equipment (net of depreciation)	10,318,978		10,318,978	10,675,889		10,675,889
Prepaid Pension	5,154,381		5,154,381	4,736,954		4,736,954
Other Assets	1,467,609		1,467,609	1,456,860		1,456,860
Total Assets	22,256,022	13,241,302	35,497,324	21,051,754	14,278,178	35,329,932
Liabilities and Net Assets						
<i>Liabilities</i>						
Accounts Payable	683,305		683,305	1,970,488		1,970,488
Premium Refund Payable	365,904		365,904	405,391		405,391
Accrued Expenses	697,972		697,972	605,879		605,879
Deferred Revenue	1,750,165		1,750,165	908,419		908,419
Note Payable	1,180,000		1,180,000			
Total Liabilities	4,677,346	0	4,677,346	3,890,177	0	3,890,177
<i>Net Assets—Unrestricted</i>						
Undesignated	15,779,978		15,779,978	15,462,879		15,462,879
Designated	1,798,698	13,241,302	15,040,000	1,698,698	14,278,178	15,976,876
Total Net Assets	17,578,676	13,241,302	30,819,978	17,161,577	14,278,178	31,439,755
Total Liabilities and Net Assets	22,256,022	13,241,302	35,497,324	21,051,754	14,278,178	35,329,932

other veterans groups; the Pleasanton Library's youth task force, which will conduct the interviews; a professional videographer; a web services company to aid in design and production; a computer store where chapter members receive PC training for the project; and a foundation to plan fundraising approaches. They even formed a nonprofit coalition to standardize similar efforts offered by other veterans organizations and to handle outside inquiries, for example from non-chapter members who want to be interviewed.

Recognition for Many

The **Alamo (Tex.) Chapter** hosted an awards banquet in July in San Antonio, where 29 state level and national level awards were presented. The recipients came from the active duty, Air National Guard and Reserve, AFROTC and JROTC, Civil Air Patrol, and civilian sectors.

Thomas J. McKee, then AFA National Chairman of the Board, and Dennis F. Mathis, state president, presented AFA Citations to seven members of Air Education and Training Command and two from Air Intelligence Agency. M.N. "Dan" Heth, then Texoma Region president, joined Mathis for presentation of the other awards.

The 433rd Airlift Wing, Lackland AFB, Tex., was honored as AFA Texas Military Organization of the Year. The **Concho Chapter**—headed by Nancy M. Larson—received recognition as the state Chapter of the Year. From the **Dallas Chapter**, Barbara E. Pawlowski was named Member of the Year. Thomas E. Bailey, **Northeast Texas Chapter**, received the Benjamin Foulis First Flight Award.

Among the special guests were Jack C. Price, then AEF Chairman of the Board; William D. Croom Jr., AEF trustee; and Jack H. Steed and Thomas J. Kemp, both national directors.

Convention in Virginia

The Virginia State Convention—hosted by the **Donald W. Steele Sr. Memorial Chapter** in Arlington, Va., in July—included Lt. Gen. Harry D. Raduege Jr. as guest speaker for the evening banquet and presentations by two USAF members who took part in Operation Anaconda in Afghanistan.

Raduege is director of the Defense Information Systems Agency in Arlington and spoke about the DISA and national communications systems response to the terrorist attacks of September 2001.

Capt. Michael E. Martin and TSgt. Jim Hotaling, both assigned to the

720th Special Tactics Group at Hurlburt Field, Fla., described their experiences in Afghanistan. Hotaling, a combat controller, had a direct role in the rescue of airmen and rangers whose helicopter was shot down as it landed on the ridge at Takur Gar in March. (See "The Airpower of Anaconda," September, p. 60.) He is a Reservist and a Washington state trooper in civilian life. Steele Chapter President James T. Hannam said the audience surrounded Martin and Hotaling afterward, to thank them.

Before the banquet, the chapter presented \$1,000 Steele Chapter scholarships to college students Linda Bradshaw, Sean Reed, and Kathleen Richardson.

At the convention's business meeting, these new state officers were elected: Mason S. Botts, from the

Steele Chapter, president; Lawrence A. Shellhammer, from the **Langley (Va.) Chapter**, Vice President, administration; George Golden, also from the Langley Chapter, VP programs; Hannam, secretary; and Matthew E. Monczewski, from the **Gen. Charles A. Gabriel Chapter**, treasurer.

Convention in Ohio

The **Steel Valley (Ohio) Chapter** hosted the Ohio State Convention at Air Force Reserve Command's 910th Airlift Wing, Youngstown–Warren Airport, in June.

In business sessions, Daniel E. Kelleher of the **Wright Memorial Chapter** was elected state president, with Stephen J. Dillenburg of the **Greater Cincinnati Chapter** serving as VP. Re-elected were Robert Brewster, from Greater Cincinnati, as sec-

Air Force Association Comparative Statement of Revenues and Expenses

	Year Ended	
	Dec. 31, 2001	Dec. 31, 2000
General Fund		
Revenue		
Aerospace Technology Exposition	712,338	1,306,865
Building Operations	888,872	822,285
Convention	192,218	352,616
Industrial Associates	94,550	96,800
Insurance Programs	1,806,531	1,978,604
Investments	(65,854)	1,108,220
Magazine	1,456,425	1,519,895
Membership	4,213,596	3,731,011
Patrons	287,786	228,928
Other	438,370	458,486
Total Revenue	10,024,832	11,603,710
Expenses		
<i>Program Services:</i>		
Aerospace Technology Exposition	209,144	644,600
Convention	383,310	983,170
Industrial Associates	130,971	118,892
Insurance Programs	2,787,641	3,359,564
Magazine	1,142,994	1,205,470
Patrons	177,228	254,362
Total Program Service Expenses	4,831,288	6,566,058
<i>Supporting Services:</i>		
Building	496,763	477,817
Membership	4,279,682	3,811,447
Total Supporting Services Expenses	4,776,445	4,289,264
Total Expenses	9,607,733	10,855,322
Changes in Net Assets General Fund	417,099	748,388
Life Membership Fund		
Life memberships granted	373,225	283,887
Revenue from investments	145,350	1,746,498
Less: Transfer to General Fund for equivalent annual dues and other costs	(1,555,451)	(1,288,625)
Changes in Net Assets Life Membership Fund	(1,036,876)	741,760

Treasurer's Note: The figures presented herein have been extracted from audited financial statements submitted previously to the Board of Directors of the Air Force Association. Expenses include chapter commissions, state commissions, and other direct support for field units totaling \$463,819 in 2001 and \$444,419 in 2000.

retary and Charles B. Spencer, from Wright Memorial, as treasurer.

The **Capt. Eddie Rickenbacker Memorial Chapter** was honored as Chapter of the Year, while Jack L. Ventling, Steel Valley Chapter president, received the Person of the Year honor. The state Teacher of the Year award went to Sheila Wallace. She teaches reading, language arts, and social studies to fifth-graders at Lincoln School for the Arts in Dayton, Ohio.

Following awards presentations and lunch, the group toured the base, hosted by AFRC Brig. Gen. Michael F. Gjede, wing commander and a Steel Valley Chapter member. The convention-goers learned about the wing's missions and toured a C-130. Units of the 910th include the 757th Airlift Squadron, which has the only full-time, fixed-wing aerial spray mission in DOD.

A dinner dance that evening capped convention activities.

More AFA/AEF News

■ At the June graduation ceremony at Air University, Maxwell AFB, Ala., AEF Chairman of the Board Jack Price presented the Air University-AFA Spaatz Award to Maj. Robert Ehlers. The \$5,000 award from AEF and the accompanying Spaatz Award replica (the original remains on permanent display at ACSC) goes to the Air Command and Staff College student who writes the best essay on aerospace advocacy. Ehlers's paper was entitled "Searching for the Silver Bullet: Coercion Mechanisms and Airpower Theory."

■ The **Carl Vinson Memorial (Ga.) Chapter** hosted its third Sherrill Stafford Memorial Golf Tournament in July. The chapter uses the proceeds from this tournament to fund college scholarships for enlisted members E-5 and below from Robins AFB, Ga. Last year the chapter awarded two \$1,000 scholarships.

■ In Columbus, Miss., they teed off to raise scholarship funds, too. The **Golden Triangle Chapter** held its 13th annual POW/MIA golf tournament, with 64 players competing over two days. Among those on the greens were three Vietnam War POWs who were shot down over North Vietnam in 1967: R.E. "Gene" Smith, a former AFA National Chairman of the Board and National President; Kenneth Fisher; and John M. McGrath. They were all repatriated in March 1973. The chapter earmarks funds raised in this tournament for AFROTC and AFJROTC scholarships and AEF Visions of Exploration programs in northern Mississippi. ■

Unit Reunions

reunions@afa.org

8th TFW/FG. Nov. 20-24 at the San Luis Resort in Galveston, TX. **Contact:** J.F. Knight, 15807 Brook Forest Dr., Houston, TX 77059 (281-488-4077) (martinails@aol.com).

29th FIS. Oct. 6-10 at the Beresford Arms Hotel in San Francisco. **Contact:** 29th FIS Reunion 2002, John Baczynski, 4 Romero Ct., Novato, CA 94945 (415-897-2419) (ftrjok@aol.com).

68th FS. April 24-26, 2003, in Branson, MO. **Contact:** W. Hearon, 7548 University Dr., Shreveport, LA 71105-5421 (318-797-3331) (whhaze@bellsouth.net).

81st FW. Oct. 24-26 in Fort Walton Beach, FL. **Contacts:** Chuck Wrobel (651-439-9434) (cfwrobel@worldnet.att.net) or D.C. Hanto (813-963-5328) (dch13716@aol.com).

435th APS, Rhein-Main AB, Germany. Nov. 1-4 at the La Quinta Inn in Tacoma, WA. **Contact:** Carole Paddock Lail, 8103 Steilacoom Blvd., Suite 74, Lakewood, WA 98498 (253-589-1271) (eventsbycarole@hotmail.com).

510th FS (1943-2003) and 405th FG. March 30-April 3, 2003, at Langley AFB and Williamsburg, VA. **Contacts:** Hal Bingaman, 738 Fairway Ct., Ashland, OR 97520 (541-482-0928) or Jim Colegrove, 2128 Lake Marie Dr., Santa Maria, CA 93455 (805-937-8456).

551st Strategic Missile Sq, Lincoln AFB, NE (1961-65). April 23-26, 2003, at the Holiday Inn-Downtown in Lincoln, NE. **Contact:** Ken Fisher,

2890 Lafayette Ave., Bronx, NY 10465-2231 (718-792-2360) (sms551@aol.com).

WWII troop carrier veterans. April 27-29, 2003, in Dover, DE. **Contacts:** Michael Leister (302-677-5939) or Mary Skelton or Barbara Rafte (800-233-5368).

WWII veterans, Miami Beach, FL. Dec. 7 at the Edison Hotel in Miami. **Contacts:** Julian Goldman (phone: 305-932-2024 or fax: 305-932-9389) (jul2104@aol.com) or Judith Berson-Levinson (phone: 305-531-2744 or fax: 305-868-8703) (jsberson@aol.com).

Seeking members of the **331st TCS** at Stewart AFB, TN, for a reunion next spring. **Contact:** Jarvis Adams, PO Box 213, Greenfield, NH 03047.

Seeking members of **Pilot Tng Class 57-R,** Spence AFB, GA, for a reunion. July 18-19, 2003. **Contact:** Bill Doerler, 241 Cold Soil Rd., Princeton, NJ 08540 (609-896-0773) (psdwkd@aol.com). ■

Mail unit reunion notices four months ahead of the event to "Unit Reunions," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Please designate the unit holding the reunion, time, location, and a contact for more information. We reserve the right to condense notices.

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M0105 AFA Logo Scarf
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Books

By Chequita Wood, Editorial Associate

Above and Beyond: The Aviation Medals of Honor. Barrett Tillman. Smithsonian Institution Press, Washington, DC (800-782-4612). 294 pages. \$29.95.



FH/F2H Banshee in Action: Aircraft No. 182. Jim Mesko. Squadron/Signal Publications, Carrollton, TX (800-527-7427). 49 pages. \$9.95.



Strategic Appraisal: United States Air and Space Power in the 21st Century. Zalmay Khalilzad and Jeremy Shapiro, eds. RAND, Santa Monica, CA (877-584-8642). 481 pages. \$30.00.



Angles of Attack: An A-6 Intruder Pilot's War. Peter H.unt. Ballantine Books, New York (800-726-0600). 368 pages. \$3.99.



The First Heroes: The Extraordinary Story of the Doolittle Raid—America's First World War II Victory. Craig Nelson. Viking Press, New York (800-788-6262). 430 pages. \$27.95.



Thirty Seconds Over Tokyo. Capt. Ted W. Lawson. Brassey's, Inc., Herndon, VA (800-775-2518). 223 pages. \$24.95.

Beyond the Rhine: A Screaming Eagle in Germany. Donald R. Burgett. Dell Publishing, New York (800-727-0600). 191 pages. \$6.50.



Operation Enduring Freedom: US Military Operations in Afghanistan, 2001–2002. Lou Drendel. Squadron/Signal Publications, Carrollton, TX (800-527-7427). 64 pages. \$14.95.



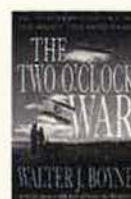
Transforming America's Military. Hans Binnendijk, ed. GPO, Supt. of Documents, Pittsburgh (866-512-1800). 394 pages. \$35.00.



Boeing B-47 Stratojet: True Stories of the Cold War in the Air. Mark Natola, ed. Schiffer Publishing, Atglen, PA (610-593-1777). 221 pages. \$35.00.



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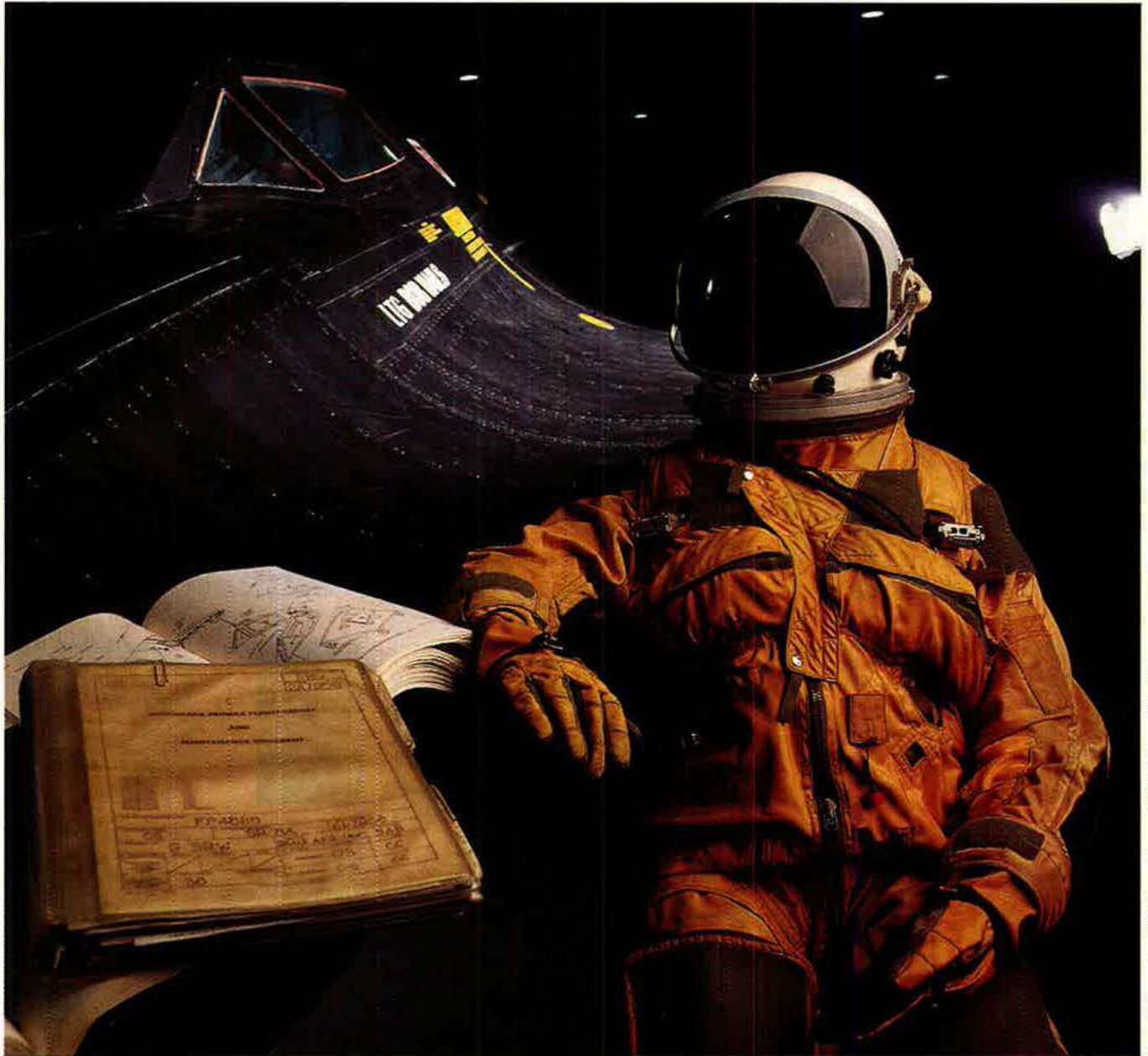


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Pieces of History

Photography by Paul Kennedy

High Flight



It's no wonder the crew wear full pressure suits when they fly the world's fastest and highest flying operational aircraft. The SR-71—shown here with a pressure suit resting on its fuselage—was designed in the 1950s to be a long-range reconnaissance airplane. Crew members suited up to endure long flights at Mach 3 and at altitudes above 70,000 feet. Indeed, on July 28, 1976,

two SR-71 crews set a speed record of more than 2,193 mph and an altitude record of more than 85,068 feet. In March 1968, Maj. Jerome F. O'Malley and Maj. Edward D. Payne flew the Blackbird pictured here on the first SR-71 operational sortie. The Air Force permanently retired its SR-71s in the late 1990s.

Memorabilia courtesy US Air Force Museum, Wright-Patterson AFB, Ohio



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