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MAGAZINE

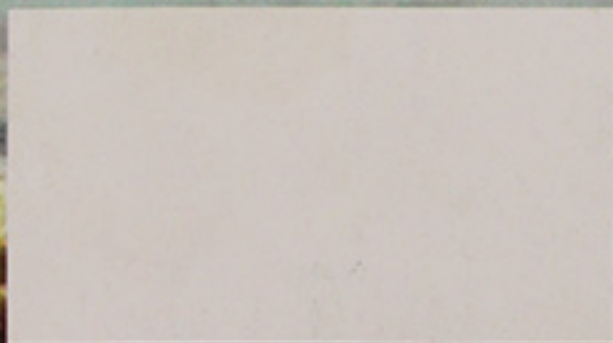


The Expeditionary Force Under Stress

Building Better "Razor Blades"

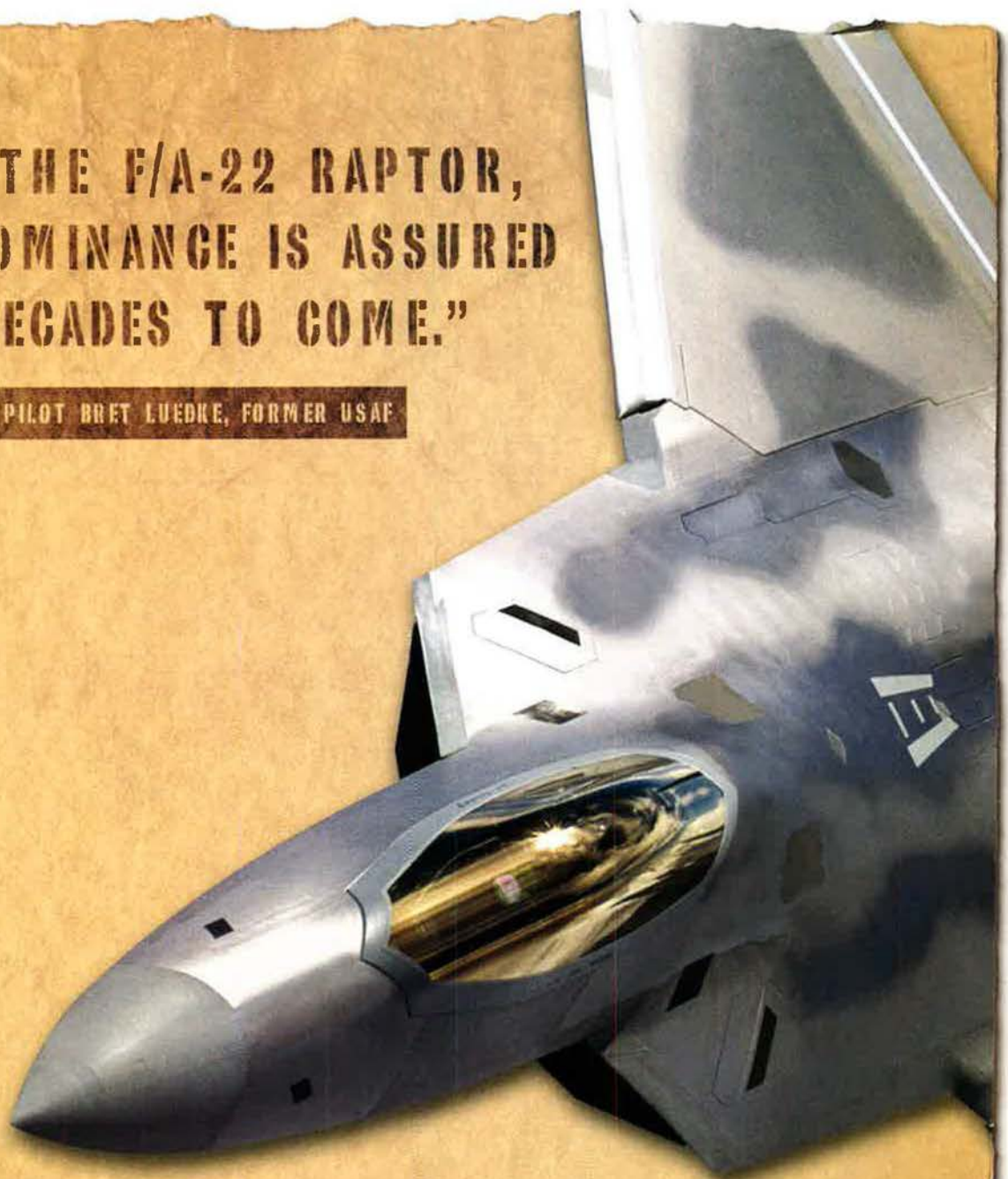
What's Left of the Defense Industry

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An A-10 Warthog takes off from Bagram AB, Afghanistan. See "The Expeditionary Force Under Stress," p. 30. USAF photo by TSgt. Adam Johnston.

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By Robert S. Dudley, Editor in Chief

Where Do UAVs Go From Here?

“WITHIN 10 years, one-third of US ... deep strike aircraft will be unmanned,” said Congress’ 2001 defense bill. This claim, while shocking at the time, seems much less so in retrospect.

Indeed, unmanned aerial vehicles, in general, have advanced further and faster than had once seemed possible. Previously, the services had only a handful of UAVs; today, they operate upwards of 1,000 remotely piloted aircraft and are clamoring for more, given that many of these systems have proved their operational worth in Afghanistan and Iraq.

While most UAVs today are non-lethal, DOD’s soon-to-be \$3 billion-per-year program aims to give them a share of the strike mission, too.

Ironically, however, the very success of UAVs—with the prospect for their heavier employment—has created serious problems which could limit their future usefulness. Gen. John P. Jumper, the Air Force Chief of Staff, argues with considerable force that the effort has become disjointed, pulled apart by the “tribal jealousies” among the various US armed services.

In fact, the Air Force has proposed to the Pentagon that it make USAF the “executive agent” to take the lead in coordinating various UAV efforts. The idea does not set well with the other armed services, but the debate isn’t over yet.

The fact that something must be done has become all too apparent.

One problem concerns UAV development. Each service has gone its own way working its UAV projects. In recent remarks to a Heritage Foundation audience in Washington, D.C., Jumper said, “We’ve got a plethora of people ... selling their UAVs [to the various services] out of their back pocket.”

At present, the UAV fleet comprises about 300 Air Force systems, 600 Army aircraft, and 150 Navy/Marine Corps vehicles.

There are currently five major UAVs in the fleet—the USAF Predator and Global Hawk; the Army Hunter and Shadow; and the Navy/Marine Corps Pioneer. Counting smaller systems, the

armed services are operating approximately one dozen UAV types. Others are on the drawing boards.

The Lone Ranger approach to UAV development, critics maintain, ensures wasteful duplication of effort that will reduce the total capability of the fleet. There are no standards for logistics, training, or ground stations.

Worse, actual UAV operations are unfolding in a dangerously improvisational fashion.

The effort has become disjointed, pulled apart by “tribal jealousies.”

Coordination is spotty. The USAF Predator and Global Hawk, for example, are controlled by a joint force air component commander, as are manned aircraft. Such is not the case, however, with Army UAVs, which directly support ground units. They are controlled by the land commander, not the “air boss.”

“We have 750 UAVs over in Iraq right now,” Jumper told the Royal United Services Institute in London. “Everybody wants their own.”

He explained that, under such conditions, it is difficult to organize the UAVs so that they can be in the right place at the right time.

With so many aircraft over the battlespace, the skies are crowded, and some pilots are unhappy about sharing airspace with the drones. They have cause; there have been at least two collisions and several near misses.

Safety isn’t the only problem. Jumper told the Heritage group that, with so many operators using the same radio frequencies, “we’re jamming each other.”

Right now, Jumper went on, the airspace is uncontested, but the problems would grow exponentially should an enemy challenge US dominance.

In the Air Force’s view, creating an executive agent for UAVs would streamline the way UAVs are acquired and managed, unifying and thus

strengthening the whole apparatus. It would also foster common operational concepts and procedures.

The Air Force believes—rightly, in our view—that it has the best claim to this role. Officials note that the Air Force has the mission of airspace control. They also claim USAF has had more and longer experience with UAVs.

USAF’s commitment seems destined to grow in years ahead. For one thing, the Pentagon has put the Air Force in charge of the Joint Unmanned Combat Air System, the goal of which is to produce at least two UAV strike aircraft.

It was Jumper himself who conceived the idea of arming the Predator with Hellfire missiles. Such innovation seems certain to go on, given the establishment of an Air Force UAV Center of Excellence near Nellis AFB, Nev.

Moreover, USAF has announced plans to expand its current Predator fleet from three to as many as 15 squadrons.

It is said that the Army, Navy, and Marine Corps believe that more coordination is necessary but that they see no valid need for an executive agent. They are worried that USAF, if given such a specific legal role, would exercise undue power over their system requirements, funding, and technologies.

At present, Pentagon officials are similarly chary about the plan. They seem to be leaning toward splitting the UAV world into two segments—one comprising small UAVs and another for larger aircraft, though this could create more problems than it solves.

Jumper doesn’t insist on any particular plan, so long as it produces coordination. “What we do have to do,” he said, “is get everybody under the same roof, talking the same language, organizing ourselves toward a single purpose, and stop worrying about ownership issues.”

We think the Air Force has a good case. It has clearly challenged some powerful interests. The outcome is uncertain. Stay tuned. ■

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The POW Factor

Kudos to Mr. Correll for his poignant and evocative article in the June issue entitled "Full Day" [p. 54].

I was privileged to serve as an F-105 mechanic at both Korat (1968) and Takhli (1970). If I may presume to speak on behalf of the tens of thousands of enlisted men who became part of the Thud community in Southeast Asia, I offer this testimonial. Perhaps more than any other factor, it was the legacy of men like Colonel Thorsness—captive, starved, and tortured up north—that drove us to generate the maximum number of airworthy aircraft for the next day's frag to end the war and bring them back home.

For myself, Colonel Thorsness and his brothers-in-arms continue to hold my deepest respect and admiration.

Dave Hansen
Oak Creek, Wis.

My husband set out "Full Day" for me to read. I always appreciate good tales of valor, and this article was no exception. Even though I am a non-flyer, I always knew how hard my husband worked in his cockpit. Which takes me to the early 1980s when, C-clamp in hand to control his head swelling, he was assigned to Hill Air Force Base to take his place in the initial cadre of F-16 pilots.

[Regarding] the picture [p. 60] of Colonel Thorsness after the last ride in the Thud, we were at the last flight. We saw the last massing of the diamond formations and heard the last scream of the engines. We were privileged to witness the end of the era.

Katie Danner
Simpsonville, S.C.

Awarding Medals, Not

I read with interest the article "Pentagon Creates New Medals" in the May issue. [See "Aerospace World," p. 32.] Will DOD exclude the service personnel who fly from countries "other" than Afghanistan and Iraq, as it did those airmen who flew into hostile country in Southeast Asia from Thailand and the Gulf of Tonkin, because they fail to put a foot on the ground?

DOD used flimsy excuses to avoid issuing a medal recognizing [aviation]

contributions in Cambodia, Laos, North (or South) Vietnam. To the combat veterans who prosecuted the interests of the United States, it continues to be a "slap in the face," when DOD's continuing silence on recognition indicates, "You did not participate in the real war."

Ben H. Allen
Colleyville, Tex.

Take That, And ...

I hope that the April editorial ["Airpower Fiction and Fact," p. 2] was sent to the offending and uneducated writers at the *New York Times* and the *New York Post*. You sure won't see editorials and columns of that type coming out of our newspaper and columnists here in "Military City USA."

Pete Siegel
San Antonio

The continuing federal budget deficit requires USAF and AFA to double their efforts in justifying Air Force expenditures. Tight money, looming inflation, terrorism, "jointness," the rising economic and military power of China, and the usually hostile press combine to make difficult times for military appropriation and spending.

Balancing dollars available with perceived needs will rule the day. Congress will be relatively stingy with any extra dollars. Cost of technology will remain high. The Air Force must search its ranks for extra leadership. Recognizing and nurturing the likes of Russell Dougherty-style commanders will be important.

My Air Force duty and years of study-

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Letters

ing military history (mostly USAF) have given me a fair insight into military affairs. I can only conclude that tough times may be ahead for USAF after being the dominant military branch for the last 50 years. To regain that dominance, USAF will have to tap leadership from rated and nonrated ranks. Too long it has ignored the potential of the latter.

Curt Hemstad
Stanley, N.D.

Not the Only One

I noted with interest in your April edition the quote by Sen. George S. McGovern that the Army Air Forces should have targeted the gas ovens and railroad tracks at the Auschwitz concentration camp in 1944. [See "Verbatim: Targeting Auschwitz," p. 28.]

In his book, *The Abandonment of the Jews*, David S. Wyman described the critical need for such an action to save the lives of Jews at the camp and offered various scenarios as to the employment of bombers from Italian bases to do the job. The War Department apparently responded that because the heavy bombers used the carpet bombing technique from high altitudes there would be no way to prevent massive casualties among the inmates in close proximity to the ovens. Also the refusal was based on

military requirements for more decisive operations elsewhere.

My interest in this controversy stems from my participation as a B-24 bombardier in the 460th Bomb Group's mission on Sept. 13, 1944, from Italy to an oil refinery in Oswiecim (was renamed Auschwitz by Germany). We experienced heavy anti-aircraft fire over the target, resulting in the loss of three B-24s, including my own. Those crew members who were captured spent the remainder of the war in a [nearby] prison camp. It may be interesting to note that during the mission briefing there was no mention of a German prison camp being adjacent to the target area.

Lt. Col. Charles H. Keutman,
USAF (Ret.)
North Stonington, Conn.

On the Almanac

I'd like to pass on a small correction to your "Guide to Air Force Installations Worldwide" listing on p. 136 in the 2005 USAF Almanac.

The Edward J. Peterson Air and Space Museum is not a tenant organization on Peterson AFB, Colo. We are a wing staff agency under the 21st Space Wing, the host unit for the base. The wing leadership gives the museum a tremendous amount of support in our mission to portray and interpret



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Jeffrey A. Nash,
Asst. Dir., Museum
Peterson AFB, Colo.

About the Warning Stars

I thought your article "The Fall of the Warning Stars," in the April issue [p. 78], was very well done and accurate.

I was a member of the 961st AEW&C Squadron, 1957-61, and flew many of those active air defense missions as an airborne radar operator. We were scheduled to fly every three days and the missions were flown 24/7.

The duty was the best, and the officers and enlisted personnel were the greatest. At that point in time, many of them were World War II veterans, and it was an honor to know them and to fly these missions with the same men who had flown combat missions in Europe and Asia. Then, of course, one of the big thrills as an 18-year-old airman was to be assigned to a flight crew and fly on those RC-121D Warning Stars. The "Connie" was loved by all who ever flew her.

Early on, we experienced the same problems as the crews later experienced. We were fortunate not to lose any crews in those first 10 years. The loss of those three crews was devastating. The members of the 551st meet every two years

and memorialize the 50 Fallen Stars.

Floyd I. Shank
Plymouth, Mass.

Sheer Madness?

In reference to the photo of Lt. Wendell Morgan wearing the new Kevlar "shorts," I must say I think the Air Force has gone over the top here. [See "Aerospace World," April, p. 24.]

In the eyes of a World War II combat vet like myself, the whole military has gone mad. They took the combat-tested Jeep and built a bigger one, one that could carry several soldiers inside. They call it a Humvee. Then armor is welded to the bottom of the thing. Why not call it a tank?

Nothing illustrates my point better than the new fighter planes. We began with the very fine F-16 and built the F-18 and the F-22 and the F-35. Each of these planes cost in the range of \$35 million to \$86 million dollars. Madness, sheer madness. Whom shall these new weapons be used against, the phantom-like terrorists?

John C. Dinou
Arlington, Tex.

Flying Telephone Poles

Having "cut my combat teeth" in the Weasel program and having been assigned to and flown the aircraft pictured and referenced (#8320) out of Korat, I would comment that your narrative im-

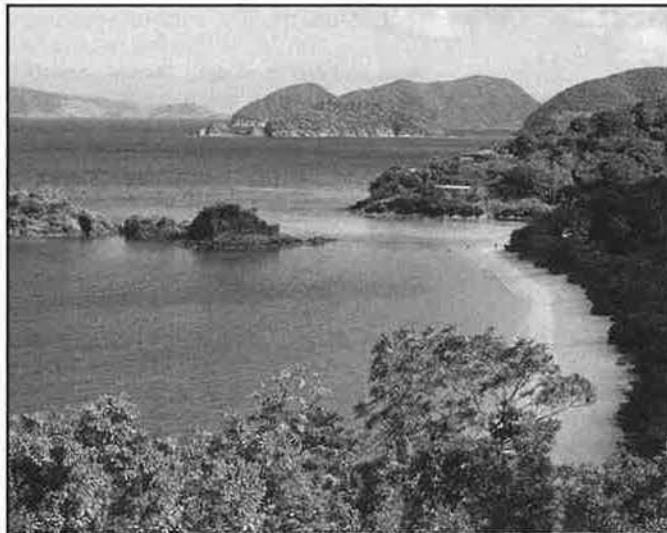
plies that the F-105F was not a Weasel. [See "Flashback," April, p. 29.] It most certainly was. It was a two-seat version of the "Thunderstick" (F-105D) with avionics in the back to assist an electronic warfare operator, commonly referred to as a "Bear" in Weasel-ese. The difference between the F and the G was typically upgraded avionics. The F models were equipped with the older, wing-mounted electronic countermeasures pod, while the G had the newer "blister-mounted" QRC system (to reduce drag).

By the way, the picture on lower right of p. 29 is of the airplane #8320 when it was still assigned as a 561st TFS asset. In 1972, after being formally configured to a G, #320 returned to Korat and was reassigned to the 35th TFS, myself, and Capt. Bill Dobbs. We named it the *Hanoi Hustler*, and our crew chief painted the name and shark's teeth on the nose section at that time. She flew like a "Cadillac" amongst "VWs," until we encountered a "Black Sam" just north of Hanoi.

Lt. Col. Dennis K. Haynes,
USAF (Ret.)
Burke, Va.

Correction

The photo caption on p. 141 of the May issue contains a typo. It should indicate the SR-71 exceeded 2,092 mph, not 2,902 mph.



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Verbatim

By John T. Correll, Contributing Editor

Bravo Sierra

"Morally bankrupt, the Air Force is willing to turn a blind eye to the pressing needs of soldiers and marines at war in order to get more of its \$300-million-apiece junk fighters."—**Ralph Peters, retired Army lieutenant colonel, now a syndicated columnist and TV commentator, New York Post, April 13.**

Another Pile of It

"The Air Force hasn't forgotten how to fight. But it only wants to fight the other services."—**Peters, New York Post, April 13.**

More for the Ground Forces

"Following the money and resource trail leads a cynic to conclude that this Administration values the lives of its pilots more than its soldiers and marines. I speak for a generation of former ground soldiers who believe that those who do virtually all of the fighting and dying in this war should receive more attention from those who are paying for it."—**Retired Maj. Gen. Robert H. Scales, former commander of the Army War College, Washington Times, May 10.**

The Force Is With Us

"Eighty percent of the force that any of the services have in place today will still be with us 15 years from now, so we'd better be paying as much attention to integrating what we already have as we do the thoughts about doing away with what we have and replacing it wholesale with something that fits more perfectly with the world that we live in."—**Air Force Chief of Staff Gen. John P. Jumper, Heritage Foundation, April 28.**

Stalin the Liberator

"Our people not only defended their homeland, but also liberated 11 countries of Europe."—**Russian President Vladimir Putin on the Soviet occupation and annexation of Eastern Europe during and after World War II, Washington Post, May 8.**

Hooligan Tool of Wall Street

"Bush is a hooligan bereft of any personality as a human being, to say nothing of stature as President of a

country. He is a half-baked man in terms of morality and a philistine whom we can never deal with."—**KCNA, official North Korean news service, quoting Foreign Ministry spokesman, April 30.**

Dear Leader's Domain

"For us, North Korea is a black hole."—**Mohamed El Baradei, director general of the UN's International Atomic Energy Agency, USA Today, April 13.**

Pearl Harbor Not Included

"In the past, Japan, through its colonial rule and aggression, caused tremendous damage and suffering to the people of many countries, particularly to those of Asian nations."—**Prime Minister Junichiro Koizumi, apologizing in Jakarta for Japan's World War II atrocities, while back in Tokyo, Japanese lawmakers trooped to the Yasukuni Shrine, where Pearl Harbor is described as a "battle for Japan's survival," Reuters, April 22.**

Newer and Fewer Nukes

"I believe we should commit to retiring all our existing nuclear warheads and building a small number of new-design weapons in their place. ... I suspect that it will be a very small inventory."—**John J. Hamre, former deputy secretary of defense, Washington Post, May 2.**

Marines Have Arrived

"What it says is that the Marines are full players at the table—that they're no longer considered officers of limited perspective and parochial concerns."—**Richard H. Kohn, former historian of the Air Force, on choice of Marine Gen. Peter Pace as Chairman of the Joint Chiefs of Staff, St. Louis Post-Dispatch, April 23.**

Future Is Unmanned

"I believe the momentum is building at an extraordinary rate toward the unmanned stuff, and [unmanned systems] will be providing the majority of combat platforms within a much shorter time frame than some people would like to see or guess."—**Retired Air Force Col. John A. Warden III, author of The Air Campaign and Gulf War I air planner, Washington Times, May 8.**

The Enemy Adapts

"To the seeming surprise of some, our enemies have brains. They're constantly adapting and adjusting to what we're doing. They combine medieval sensibilities with modern technology and media savvy to find new ways to exploit perceived weaknesses and to weaken the civilized world."—**Secretary of Defense Donald H. Rumsfeld, Senate Defense Appropriations Subcommittee, April 27.**

Who Won the War

"The CIA was ready. We knew what to do. The US military, and I'm not denigrating their activities on the ground, but they were not ready."—**Veteran CIA officer Gary Schroen, author of a book on "how the CIA spearheaded the war on terror in Afghanistan," US News & World Report, May 16.**

Oink


"Congress should be ashamed of itself for loading up the [bill] with unrequested money and unnecessary pork."—**David Williams, Citizens Against Government Waste, on adding of projects such as \$20 million for a road in Mississippi and \$5 million for a fish hatchery in Montana to funding bill for war on terror in Iraq and Afghanistan, Washington Times, May 10.**

Europe With Clout

"We do feel that Europe must count as an entity, because not one of our countries alone, singly, has the kind of clout, has the kind of strength, that the United States has or that China has. And it is in the interests of the United States to have in Europe a political structure that has clout, that is capable, that is able, because you can't go it alone."—**French Foreign Minister Michel Barnier, Washington Post, May 4.**

Significant and Sufficient

"The United States maintains significant—and I want to underline significant—deterrent capability of all kinds in the Asia-Pacific region. So I don't think there should be any doubt about our ability to deter whatever the North Koreans are up to."—**Secretary of State Condoleezza Rice, Washington Times, May 3.**



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Washington Watch

By John A. Tirpak, Executive Editor

The Meaning of BRAC; Rumsfeld's Goof Repaired; Space Launch Unity

BRAC Signals Cuts in Force Structure

The Pentagon's proposed base closings list, released in May, was not nearly as extensive as had been expected, but it highlighted significant cuts to the size of the Air Force aircraft fleet and big shifts in the Air National Guard and Air Force Reserve Command support structure. The Air Force intends to consolidate aircraft into fewer, but more capable, units.

The Pentagon forwarded its recommendations to the Independent Base Realignment and Closure (BRAC) Commission on May 13, calling for the closure of 33 of 318 major installations in the continental US but realigning—making additions and subtractions to—more than 700 others.

The closures added up to about nine percent of the domestic base structure, although a cut of 20 percent had been forecast. The Pentagon believes that it will save a net \$48.8 billion over the next 20 years by making the changes. The net is the anticipated savings after one factors out the costs to close facilities, move people and equipment, and carry out required environmental cleanup.

Michael W. Wynne, acting undersecretary of defense for acquisition, technology, and logistics, said at a Pentagon press briefing that it will cost \$24 billion to make the changes, "so we're netting about \$2 ... for every dollar invested" in the closure process.

Air Force bases on the closure list were Ellsworth AFB, S.D., which operates B-1B bombers; Onizuka AFS, Calif., which supports space activities; and Cannon AFB, N.M., which is an F-16 base. Otis ANGB, Mass., was also recommended for closure.

However, many other USAF bases and facilities will be radically realigned, giving up significant numbers of fighters and tankers to retirement. Downsized bases will send some of their aircraft to other bases, resulting in fewer, but fully equipped, flying units, while the older aircraft will be decommissioned.

Many Guard and Reserve sites were affected, and members of the BRAC commission, questioning Pentagon officials at a public hearing, wondered whether it would hurt reserve



Lockheed Martin photo

Plans to buy, base F/A-22s factored into BRAC decisions.

component recruiting if participants had to travel farther to participate in drills.

All of the actions on the list are to begin within two years and be completed within six, Deputy Undersecretary of Defense for Installations and Environment Philip W. Grone said.

Not part of the BRAC process, but directly affecting its recommendations, is the Air Force plan to reduce its ranks by 10,000 people over the next six years and retire more than 300 aircraft. Those include 12 A-10s, 193 F-16s, three F-15s, 55 C-130s, and 56 KC-135s. During the same period, it plans to buy about 100 F/A-22 fighters.

Fewer than anticipated bases were closed because large numbers of troops and their families will be brought home from overseas, Defense Secretary Donald H. Rumsfeld said prior to release of the BRAC list. However, the process of selecting overseas bases for closure and realignment—"global posturing" in Pentagon parlance—was not yet complete, defense officials said.

Representatives and Senators whose districts were hit by a closure recommendation complained that the BRAC process can't be evaluated properly until the Pentagon makes its overseas basing plans known.

New capabilities also showed up in the announcements. Wynne said that Eglin AFB, Fla., will become the joint service training base for the F-35 fighter. Plans to conduct F-35 training at Luke AFB, Ariz., Sheppard AFB, Tex., and NAS Corpus Christi, Tex., were dropped.

The BRAC Commission will evaluate the list, make visits to affected regions, and forward a revised list to President Bush, who can either approve it in its entirety or reject it. If Bush accepts the commission's final list, it will go to Congress, which then has 45 days to block the whole package; lawmakers may not change anything in it. If Congress does not move to block the package, the closures and realignments will automatically begin.

The chairman of the BRAC Commission, Anthony J. Principi, said it was virtually certain that the commission

USAF photo



USAF plans to shed 193 F-16s and other old airframes.

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will make some alterations to the plan after reviewing its impacts and visiting the areas affected. He pledged that the commission would not be "a rubber stamp" of the Pentagon's plan. However, about 85 percent of previous original BRAC proposals have been implemented, and the commission must demonstrate that the Pentagon deviated "substantially" from its selection guidelines in order to change a recommendation.

The Defense Department has established a Web site to track and explain the BRAC process. It can be found at <http://www.defenselink.mil/brac>. *Air Force Magazine* will report on the details of the final BRAC changes in the December issue.

Rumsfeld Retreats From C-130J Termination Plans

Rumsfeld has retreated from the abrupt decision to terminate procurement of the C-130J, after lawmakers demonstrated that the aircraft are not only needed but that it would cost more to terminate the contract than simply buy the airplanes.

Lockheed Martin photo by John Rossino



Rumsfeld reverses C-130J termination.

Rumsfeld wrote a letter to the Senate Armed Services Committee, dated May 10, in which he said that "new information" had come to light on the C-130J termination, and based on this, "we believe it is in the best interests of the department to complete the multiyear contract."

The decision will reinstate a plan to build about 12 C-130Js a year from 2005 through 2009.

Members of Congress had pointed out that more than \$2 billion in termination costs would attend stopping the C-130J line and produce no further aircraft, which the Air Force and Marine Corps urgently need to replace 40-year-old C-130E-series transports. In his letter, Rumsfeld said he had been unaware of the full extent of the termination costs. It would have cost more to buy no airplanes than to finish out the contract for a further 62.

Rumsfeld wrote that no changes to the Fiscal 2006 budget are needed to continue the program and that offsets to pay for it from elsewhere in the budget will be found in Fiscal 2007 and 2008.

The C-130J termination was part of the notorious Program Budget Decision 753, the late December 2004 cut of various defense projects to find an additional \$30 billion in "savings" from the Pentagon budget. The cuts were made with no apparent analysis of their impact on national strategy; the C-130J reversal indicates there was little financial scrutiny of the cuts, either.

The chief victim of PBD 753 was the F/A-22, which was

targeted for a cut of \$10.5 billion. USAF leaders have said that the F/A-22 cut was handed down with no analysis of whether the aircraft are needed, versus other programs. Rumsfeld said subsequently that the F/A-22 decision would be reviewed as part of the Quadrennial Defense Review now under way.

Responding to Rumsfeld's letter, SASC Chairman Sen. John W. Warner (R-Va.) said the C-130J restoration would be factored into the 2006 budget and that, in the absence of a Pentagon plan as to what types of C-130 variants should be bought, Congress will develop its own preferred mix.

The Air Force uses C-130s in a variety of roles, from tactical transports to gunships, electronic warfare, and "hurricane hunters." The Marine Corps and USAF both use C-130s as aerial tankers, and the aircraft is used by the Coast Guard and reserve components as well.

The C-130J contract has until recently been pursued as a "commercial off-the-shelf" program, an approach that has invited scrutiny and disapproval from Sen. John McCain (R-Ariz.). The Air Force recently shifted gears and changed the procurement to a straight military buy, which allows more Congressional oversight and involvement.

Rocket Makers Unite

Faced with insufficient work to keep two launch vehicle companies profitable, Boeing and Lockheed Martin announced in May that they would merge their rocket businesses, a move that met with approval and a sigh of relief from the Pentagon.

The deal will lower the cost of launch services while still preserving two distinct families of launch vehicles. The companies will share ground infrastructure and personnel costs wherever possible, rather than maintain two different but largely redundant capabilities. The joint venture is expected to save \$100 million to \$150 million a year, the companies said.

The new joint venture will be called United Launch Alliance and will have leadership drawn from each company. The deal will also signal the end of litigation between Boeing and Lockheed Martin over Boeing's use of Lockheed proprietary rocket data in winning a share of earlier launch



Boeing and Lockheed Martin forge United Launch Alliance.

Boeing photo by Thom Baur



May 2005

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service contracts. Boeing was suspended by the Air Force from launch services for nearly two years and stripped of \$1 billion in work as a result.

In its national space strategy, issued a few months ago, the Bush Administration said it needed to preserve two different launch vehicle companies. It doesn't want to repeat the situation that followed the 1986 space shuttle disaster, wherein large military payloads had to wait two years for a trip to orbit because there was no alternative launch vehicle. The Administration also wants a healthy rocket industrial base to support plans for a return to the moon and a mission to Mars.

Under the new joint venture, Boeing and Lockheed Martin will continue to build Delta and Atlas Evolved Expendable Launch Vehicles, respectively. However, production work largely will be located at Boeing facilities in Alabama, while engineering and management tasks will be done at Lockheed Martin offices in Colorado.

The EELV program was initially structured to provide the opportunity for competitive buys from two companies because, in the early 1990s, it seemed that there would be more than enough business; commercial satellite launch services was expected to be a booming market. When the market didn't materialize, the Pentagon and the two rocket makers were left with too much infrastructure to efficiently support the lower level of launches. Air Force leaders have openly worried since that one of the companies might decide to leave the business, leaving the nation with a sole launch services provider and the risk of a "single point failure" problem that could ground the US space program.

Then-Air Force Secretary James G. Roche suggested last fall that some sort of cooperative effort between the two companies would make the most sense for the near term. However, both Boeing and Lockheed Martin said as recently as early spring that they were not interested in such an arrangement.

The new merged effort mirrors one already in place in which the two companies jointly support space shuttle operations.

The joint venture proposal, which still has to clear federal regulators, got a warm reception on Capitol Hill. The deal conceivably leaves open the possibility that the two companies could again split up and compete for space work if the launch market heats up again.

Close the Druyun Barn Door, Says DSB

A scandal on the order of the Darleen A. Druyun affair—in which the senior civilian acquisition official in the Air Force was able to steer billions of dollars' worth of contracts unfairly to a contractor—could still happen, and safeguards to prevent such an event must be put in place, said a Pentagon task force.

A Defense Science Board panel determined that, while it is "unlikely" that Druyun-like abuse could occur again, "there are currently no structural or policy mandates in place" to prevent it, wrote DSB Chairman William Schneider Jr. in a memo on the task force findings. Even though the Air Force has abolished the position held by Druyun, the task force found no rules have been changed to keep a similar problem from occurring.

Druyun often sat at "the apex" of both the career acquisition system and the politically appointed acquisition leadership of the Air Force, the task force found. This system was not duplicated in the other services, but it was "often praised as representing a better, more streamlined way of doing business."

The result was that too much power gravitated to Druyun, who, having mastered the system over many years, was



Boeing photo

Boeing's KC-767 was at center of acquisition-gone-awry debate.

able to exploit its weaknesses. The DSB's "overarching" recommendation was that so much power—with no checks and balances—should never again reside in a single individual. While many in the acquisition system could say "no" to a program, only a very few could say "yes"—and this concentration of authority laid the foundation for Druyun's abuses.

The DSB believes that for every source selection, there should be an advisory group that presents written recommendations. The source selection authority—the official making a final choice of a contract winner—should have to document his choice and explain why he agrees or disagrees with the advisory panel. Choosing a different contractor than that recommended by the advisory group should raise procedural red flags and require extraordinary justifications.

The panel also said the Pentagon should "explicitly" set out its rules regarding ethics in the acquisition process to ensure there are no gray areas and no chance for misinterpretation of conflict-of-interest rules. Specifically, there should be new disclosure rules about the employment of the adult children of senior acquisition officials by parties with an interest in pending contracts. Part of Druyun's motivation in helping Boeing win contracts was that the company employed her daughter and son-in-law.

A further recommendation was to keep civilian career people moving around every five years to new assignments, so they can't create bureaucratic empires where they alone have all the authority. To ensure that there is always an appointed, noncareer official making final decisions, the task force recommended that the Office of the Secretary of Defense always move swiftly to fill vacancies and streamline the process of getting them filled. One of the reasons Druyun was able to exploit the system was that she was often the default decision-maker when the acquisition posts above her were unfilled.

The task force determined that OSD needs an official set of rules designating a line of succession such that, when there are vacancies, there is no question as to who is next in line to make source selections.

In the past few months, the Office of the Secretary of Defense took over the direct supervision of many Air Force acquisition programs, since the positions of service Secretary, undersecretary, and assistant secretary for acquisition were all vacant, leaving the Air Force with no senior appointed leadership for major contracting. By late May, the Bush Administration had yet to name any nominees for these posts, and Rumsfeld confessed that he had no one in mind to fill them. ■



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Aerospace World

By Adam J. Hebert, Senior Editor

Moseley Tapped for CSAF

President Bush on May 16 announced that Gen. T. Michael Moseley is his choice to be the next Air Force Chief of Staff. Moseley is currently serving as vice chief of staff, a position he has held since August 2003.

If confirmed by the Senate, Moseley would succeed Gen. John P. Jumper as USAF's top uniformed official. Jumper will likely retire in September, when his four-year term as Chief expires.

Moseley, a graduate of Texas A&M University, entered the Air Force in 1971 and began his career as a T-37 instructor pilot before transitioning to F-15 operations.

He later served as USAF legislative liaison and commanded 9th Air Force and US Central Command Air Forces during Operation Enduring Freedom and Operation Iraqi Freedom.

Four Airmen Die in Iraq Crash

Four airmen died in Iraq on May 30. The Iraqi Air Force aircraft they were flying in crashed on a training mission after departing from Kirkuk Air Base en route to Jalula, in the country's east. The Air Force fatalities were: Maj. William Downs of Winchester, Va.; Capt. Derek Argel of Lompoc, Calif.; Capt. Jeremy Fresques of Clarkdale, Ariz.; and SSGT. Casey Crate of Spanaway, Wash.

The airmen were permanently stationed at Hurlburt Field, Fla. Downs was assigned to the 6th Special Operations Squadron; Fresques, Argel, and Crate were assigned to the 23rd Special Tactics Squadron. One Iraqi aviator also died in the incident.

The aircraft was a single-engine Comp Air 751 used for surveillance and personnel transport, according to a May 31 Defense Department news release. The airplane was one of seven that the United Arab Emirates had donated to the fledgling Iraqi Air Force.

Keys Confirmed as ACC Chief

Nine months after being nominated for the post, Ronald E. Keys was confirmed by the Senate May 26 for promotion to four-star rank as head of Air Combat Command. The last four-star officer to head ACC was Gen. Hal M. Hornburg, who departed in the fall of 2004 and officially retired Jan. 1.



USAF photo by MSGT. Jim Vanhegyi

Gen. T. Michael Moseley has for almost two years been the Air Force vice chief of staff. Moseley, who led coalition air operations during Operation Iraqi Freedom, has been nominated as the next uniformed head of the Air Force. The current Chief, Gen. John Jumper, plans to retire in September. (See "Moseley Tapped for CSAF," left.)

The Senate Armed Services Committee had put "holds" on various Air Force leadership nominations pending the Air Force's turning over documents. Those documents related to the proposed lease and then purchase of 767 aerial tankers from Boeing.

After Hornburg's departure, ACC was headed by Vice Commander Lt. Gen. Bruce Wright from mid-November 2004 until February of this year. Wright was then succeeded as the vice by Lt. Gen. William M. Fraser III.

Prior to his appointment as ACC chief, Keys was deputy chief of staff for air and space operations at the Pentagon.

Virginia ANG Wing Moves On

The Virginia Air National Guard's 192nd Fighter Wing, slated to integrate with Air Combat Command's 1st Fighter Wing, will leave its current home in Richmond and move to Langley Air Force Base in Hampton, Va.

Defense Department officials in May announced the consolidation as part of the Pentagon's proposed base realignment and closure (BRAC) actions.

The Virginia ANG unit flies F-16s, and the ACC wing is soon to fly F/A-22 Rap-

tors. The Richmond-Langley integration will allow ANG personnel to participate in F/A-22 operations from Day 1. It is one of six Future Total Force test cases the Air Force is using to evaluate various FTF concepts.

Pentagon BRAC documents explain that "the Air Force distributed the F-16s from Richmond to other F-16 bases using military value and judgment." The aircraft will go to the Des Moines, Iowa, ANG station and Homestead ARB, Fla., to be used for homeland air defense.

BRAC documentation says authority over the Richmond ANG's real estate will pass to the Army, while the wing's airmen will "associate with the 1st Fighter Wing" about 70 miles away.

1st Gets First Raptor

ACC's 1st FW, Langley AFB, Va., received the first combat-ready F/A-22 Raptor on May 12. The fighter was delivered by Lt. Col. James Hecker, commander of the 27th Fighter Squadron, directly from the Lockheed Martin assembly plant in Marietta, Ga.

Air Force officials announced that F/A-22 deliveries will continue at a rate of approximately two per month

until the 27th FS has its full complement of 26 Raptors. Initial operational capability should be reached by the end of this year.

Langley already had use of three "loaner" Raptors, which soon will be returned. One F/A-22 from Edwards AFB, Calif., is used for maintenance training and is not flown. Two other F/A-22s from the training program at Tyndall AFB, Fla., are being used for follow-on pilot training.

Strykers Go to USAF Unit

Tactical air control parties and combat weathermen at Eielson AFB, Alaska, recently became the first airmen to operate Stryker armored vehicles.

The eight-wheeled Strykers are key components in the Army's effort to transform itself into a lighter, more mobile force. They fill what had been a gap between Humvees and heavily armored personnel carriers such as the Bradley Fighting Vehicle.

The Air Force's TAC-PS and combat weather teams travel, train, and work with Army units and serve with them in combat. Eielson's 3rd Air Support Operations Squadron, which received five of the vehicles, is a tenant at the Army's nearby Ft. Wainwright.

The 3rd ASOS' primary mission is augmentation of the Army's 172nd Stryker Brigade Combat Team with Air Force assets and capabilities.

Strykers are "faster than the traditional Humvee and much more survivable, especially in urban situations," said Air Force Lt. Col. Russell J. Smith, commander of the 3rd ASOS.

The vehicles also offer a "total picture of the battlespace" outside the vehicle, he said.



Lt. Col. James Hecker flies over Ft. Monroe, Va., as he delivers the first F/A-22 Raptor to be permanently assigned to Langley AFB, Va. It is one of 26 new stealth fighters destined for the 27th Fighter Squadron at Langley. (See "1st Gets First Raptor," p. 16.)

Airman Dies in HH-60 Crash

TSgt. Scott A. Bobbitt died May 11 when an HH-60 Pave Hawk helicopter crashed near Kirtland AFB, N.M. Two other airmen were injured in the midafternoon training accident, which occurred some 100 miles northeast of Santa Fe, N.M.

Bobbitt (the flight engineer), the pilot, and the copilot were assigned to the 58th Special Operations Wing's 512th Rescue Squadron at Kirtland. The Air Force will investigate the cause of the accident.

Turkey OKs Incirlik Use

Turkey in May cleared USAF to use

Incirlik Air Base as a cargo hub for C-17s supporting operations in Afghanistan and Iraq.

Six C-17s will deploy to the base, which will serve as a kind of transshipment point. Civilian cargo aircraft will bring in and drop materiel and equipment, and the C-17s will load and redistribute the cargo to forward operating locations, the *Journal of Turkish Weekly* reported.

Relations between the US and NATO ally had been strained by the 2003 Iraq War when Turkey refused to let US troops move through its territory to open a northern front in Operation Iraqi Freedom.

The agreement comes after months of lobbying by Washington.

F-16s Intercept Wayward Cessna

Air National Guard F-16s on May 11 intercepted, warned, and diverted a small Cessna aircraft that violated Washington, D.C.'s, restricted airspace. The pilot did not respond to many radio transmissions ordering him to turn away, before he finally did so.

US authorities said the wayward, slow-flying aircraft came within three miles of the White House. The interception was performed by a pair of F-16s from the 113th Wing, Andrews AFB, Md. They support Operation Noble Eagle.

The alert aircraft had to make three passes by the Cessna and drop flares before the aircraft finally diverted. By this time, the White House and Capitol Building were being evacuated.

Had this been a terrorism attempt, the air defense fighters "would have stopped" the aircraft before it could hit

Predictive Battlespace Awareness Shows Progress

The Air Force is showing signs of progress toward the long-standing goal of creating "predictive battlespace awareness," said Gen. Ronald E. Keys, chief of Air Combat Command, who was at the time deputy chief of staff for air and space operations on the Air Staff.

Tools are now in use that detect patterns even if none are readily apparent. "When you look at the data, you see no pattern—but there actually is a pattern there," he said.

Knowing where and when to look for threats would pay huge operational dividends—and also help alleviate the strain on low-density/high-demand capabilities.

The demand for intelligence-surveillance-reconnaissance capabilities "is insatiable," said Keys. "Every pixel of the Earth seems to be equally capable of having what I call the 'eureka bite,'" he said.

"We sift all of that through to find what we are looking for—but looking is not seeing and seeing is not understanding," Keys cautioned at a breakfast sponsored by the defense consulting firm DFI International.

Predictive battlespace analysis must be able to "shape the battlefield so that we're not just looking, we're actually sensing," he said.

Moving the ISR process from "one of discovery to one of confirmation" requires systems that "stare in the right places," Keys said. For example, surface-to-air missiles cannot be parked on a 45-degree slope, so there is no point in dedicating ISR assets to look there.

"We need predictive tools to do that," he said, tools that are now showing promise in Iraq.

Pentagon Clashes With Commission on US Overseas Basing

The Congressionally chartered Overseas Basing Commission recently charged that the Defense Department was moving too quickly to shut down installations worldwide. The Pentagon begs to differ.

The DOD plan to shutter excess overseas facilities, which would bring back to the US tens of thousands of troops, is "front loaded," the commission asserted in its May 9 report. "If we continue at the current pace, we are liable to handicap operational capability and run the risk of creating new vulnerabilities."

At a press conference held the same day, Raymond F. Dubois, acting Army undersecretary, noted that the overseas realignment plan lasts through 2011.

"To suggest that we need to slow that down, or we need to reorder these priorities, is ... in error," he said.

One commission concern is that DOD does not have enough mobility capability to quickly and forcefully respond to overseas contingencies. "Budgetary plans for mobility assets are inadequate to meet projected lift demand," the report notes.

Pentagon officials have said, however, that it is nearly impossible to predict where a contingency will flare up in the future, and an antiquated basing posture solves nothing. Tank brigades in Europe, for example, are there because that is where they were left at the end of the Cold War—not because of prescient planning or intelligence about future threats.

"We think that both flexibility and speed of response are critical attributes," said Christopher Henry, principal deputy undersecretary for policy, at the Pentagon briefing. "Much

of that speed can be gained by bringing heavier forces back to the United States."

Strategically, the commission made several specific recommendations concerning the Air Force.

The report called Okinawa "the strategic linchpin" for US military capabilities in East Asia. Despite the mixed reception US forces receive from Okinawans, "diminishing our combat capability on the island would pose great risk to our national interests in the region," the commission stated.

The report suggests that Marine Corps aircraft at Okinawa's Futenma air station relocate to nearby Kadena Air Base or to Iwakuni air station on Japan's main island of Honshu. "All other Marine Corps assets should remain on Okinawa," the report recommends.

The commission also calls for the US to review its defense treaty with Iceland and "update it to reflect the post-Cold War security environment." The Air Force regularly rotates air defense assets such as F-15C fighters and E-3 AWACS battle management aircraft to NAS Keflavik, Iceland, through the Air and Space Expeditionary Force system.

The commission also raises quality of life concerns, noting that tens of thousands of troops and family members will be brought "home" to domestic bases "that may not have been given adequate time or budget to prepare for their proper reception."

Dubois dismissed this concern, saying new military construction will be performed for the returning troops. "They will have the appropriate infrastructure," he said. "They're not moving into World War II, clapboard, coal-fired barracks—which I was in, in 1967."

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a target in the nation's capital, said Lt. Col. Tim Lehman, one of the intercepting pilots.

The Cessna, which contained a pilot and a student pilot, had taken off in Pennsylvania, en route to North Carolina, but became lost along the way. It was escorted to the Frederick, Md., airport by the F-16s and a Homeland Security Department Black Hawk helicopter.

UAE Gets Advanced F-16s

The United Arab Emirates on May 3 received its first 10 F-16E/F Desert Falcon multirole fighters from Lockheed Martin.

The UAE has 80 of the aircraft on order, and they are "unmatched in a broad range of capabilities," said Ralph D. Heath, Lockheed Martin vice president for aeronautics. The fighters have advanced radars, defensive systems, and engines and feature conformal fuel tanks for extended range.

The Desert Falcon is more advanced than any US Air Force F-16 and is more capable than the F-16I flown by Israel, according to the *Jerusalem Post*. The UAE purchase "is one of the few weapon systems in the hands of an Arab state qualitatively superior to that in the Israeli arsenal," the paper reported.

Desert Falcons were flown by UAE pilots recently trained at Tucson Arpt., Ariz., for F-16 operations.



USAF photo by TSgt. Soan Mateo White

Six F-16 Fighting Falcons of the US Air Force Thunderbirds aerial demonstration team fly in delta formation past the Empire State Building during an air show in New York May 26. The team's 2005 schedule includes 70 shows in 29 states, Canada, and Central America.

Army: Space Is "Critical"

The Army is "critically dependent" on space capabilities for land warfare, says a new doctrine paper prepared by Army headquarters.

Moreover, the paper asserts, the service in the future will be even more reliant on advanced space-based capabilities, most of which are provided by the Air Force.

In a foreword to the report, Lt. Gen. Larry J. Dodgen, commander of Army Space and Missile Defense Command, said that future space systems will bring to fruition the Army's "future force concepts of information superiority, enhanced situational awareness, and high-tempo, noncontiguous operations."

The service expects soldiers to make greater use of space capabilities as new

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Students at the DOD Fire Academy, Goodfellow AFB, Tex., practice extinguishing a jet fuel fire on a large-frame aircraft. Each year, about 2,000 students, including some from allied armed forces, pass through Goodfellow's Firefighter Apprentice Course. It is ranked No. 1 in the world for fire training, according to the Air Force.

Air Force Unwraps Changes for Indian Springs

One of USAF's remote outposts is getting a higher profile as the service expands its use of Predator unmanned aerial vehicles.

The site is Creech Air Force Base, located in the desolate desert northwest of Las Vegas. The Air Force announced plans to rename Indian Springs Air Force Auxiliary Field on June 16, in honor of Gen. W. L. "Bill" Creech, the late chief of Tactical Air Command, 1978-84. And as the UAV's prominence grows, so will Creech Air Force Base.

The base currently has the UAV BattleLab and a new runway. Soon, it will have larger pilot training classes, additional Predator aircraft, and a UAV "center of excellence."

All this is driving "big new investments" at the field, said Maj. Jim Ackerman, assistant operations director for the 11th Reconnaissance Squadron, which runs the Predator training.

The site may see \$200 million in Predator-related construction projects. It already has a new cross-runway, which was necessary because the lightweight Predator cannot land in crosswinds stronger than 18 mph. This had been a frequent problem.

The town of Indian Springs still has a sleepy feel to it, especially when compared to the bustle at nearby Nellis AFB, Nev. But the Air Force announced March 18 that the three-squadron Predator fleet will expand to as many as 15 squadrons.

These new units need pilots, and the three-month training courses with 15 pilots will soon grow to 20 students. Classes with 30 students have been discussed.

Maj. Sam P. Morgan, an A-10 pilot, went through the Predator training this spring. He volunteered for a three-year UAV assignment, seeing the opportunity to "get in on the ground floor of a major new creation."

Morgan and other new Predator pilots learn close air support and deconfliction techniques as part of their initial training.

However, Morgan noted, "When I graduate here, I won't know how to take off or land." Graduated pilots head straight to the operational units supporting missions over Iraq and Afghanistan, learning the takeoff and landing procedures later.

SSgt. Kimberly Farrell was a student in the Predator sensor operator program. She had worked with U-2s, but noted that Predator is different because it uses streaming video.

Farrell was preparing for "SCAR weekend" at Indian Springs, when students practice strike coordination and reconnaissance skills with visiting manned fighters.

Another former imagery analyst, SSgt. Rachel Hatfield, is now a Predator sensor instructor. She said the students typically also get to perform a live Hellfire shot before graduation.

Originally, the Predator performed only reconnaissance, but counterland operations (lasing targets for strike aircraft) began in 2001. Weaponized training, utilizing onboard Hellfire missiles, began in 2002.

All the Predators are now weaponized MQ-1s, said Ackerman. Plans call for a new squadron to stand up at the base next year, as the first jet-powered MQ-9 Predators arrive at the facility.

Aerospace World

technologies enable "more flexible and less expensive access" to the realm.

"Space-based capabilities contribute to all Army operations," the paper states. Space-enabled systems provide position, velocity, and timing data, environmental monitoring, vital intelligence-surveillance-reconnaissance capabilities, and missile warning support to the Army.

These "robust capabilities" are "necessities for success on the battlefield," said the paper.

The doctrine paper states that space is a vertical extension of the battlefield and that the realm has been "especially instrumental" during the war on terrorism.

Religious Climate Probed

The Air Force created a task force to investigate the religious climate at the Air Force Academy in Colorado Springs, Colo.

The move came in response to allegations that the academy fostered an environment hostile to cadets who are not evangelical Christians.

A May 4 Air Force news release said that the task force will assess "practices of the academy chain of command that either enhance or detract from a climate that respects both the 'free exercise of religion' and the 'establishment clauses' of the First Amendment."

The release quoted Michael L. Dominguez, the acting Secretary of the Air Force, as saying, "Mutual respect is essential to the culture of the airmen."

Dominguez was to review the task force's findings and then announce what steps, if any, the Air Force considered necessary.

Anthrax Shots To Resume

The Pentagon in May announced it would resume anthrax vaccinations, using emergency authorization granted by the Food and Drug Administration.

The Pentagon's anthrax vaccination program was halted by federal court injunction on Oct. 27, 2004. (See "Aerospace World: News Notes," December 2004, p. 18.)

According to a May 3 press release, troops will have "an option to refuse the vaccination without penalty" in the restarted Anthrax Vaccine Immunization Program.

Most vaccinations will go to "military units designated for homeland bioterrorism defense and to US forces assigned to the US Central Command area of responsibility," the release explained. Troops stationed in South Korea also will get priority.

Continued on p. 24

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News Notes

By Tamar A. Mehuron, Associate Editor

Lockheed Martin photo by Pat Corkery



Space operators at Cape Canaveral AFS, Fla., launched their last Titan IV rocket on April 29, putting into orbit a classified National Reconnaissance Office satellite. It was the second-to-last Titan IVB. The final Titan IV launch is scheduled to take place this summer, from Vandenberg AFB, Calif.

■ The Air Force Association honored USAF vehicle operators for their service in combat convoy escort duty for the US Army in Iraq, naming five as Team of the Year for 2005. Team members are: SrA. John N. Chege, Langley AFB, Va.; TSgt. Jason D. Hohenstreiter, Minot AFB, N.D.; SrA. Joshua Powell, Eielson AFB, Alaska; MSgt. Dennis A. Ross, Bolling AFB, D.C.; and SSgt. Amelia C. Solomon, RAF Mildenhall, Britain.

■ Geographically separated Air Force units in Britain now come under the 501st Combat Support Wing, activated May 12 at RAF Mildenhall. Formerly, they answered to the 38th CSW at Sembach Annex, Germany. The change caused realignment of the 420th Air Base Group and the activation of the 422nd and 423rd ABGs.

■ Col. Stayce Harris became the first African-American woman to command an Air Force flying wing. Air Force Reserve Command officials in May announced that Harris had been selected to head the 459th Air Refuel-

ing Wing, Andrews AFB, Md. The wing flies KC-135R refuelers.

■ Air Force Special Operations Command AC-130 and MC-130 aircrews on April 25 received the first 20 of a planned 400 sets of panoramic night vision goggles. The new goggles provide a 95-degree field of view, more than double that of the old goggles, which had a 40-degree field of view.

■ USAF continued to expand its expeditionary presence on Guam, bringing onto the US island four F-15Es from Mountain Home AFB, Idaho. An April 29 KUAM News report said the aircraft will be joined at Andersen Air Force Base by eight more Strike Eagles and 300 support personnel on temporary deployment.

■ MSgt. Robert Colannino Jr. received the Air Force Sergeants Association's 2005 Pitsenbarger Award for lifesaving actions that helped save his aircrew after its MH-53M Pave Low was struck by a rocket-propelled grenade during a night mission in Iraq April 12, 2004. The Hurlburt Field, Fla., flight engineer administered emergency medical aid to several wounded crew members and helped shut down the helicopter's engines, allowing the crew to escape.

■ For actions in the same incident, Capt. Steven Edwards on May 6 received the Koren J. Kolligian Trophy for his outstanding airmanship in the MH-53M Pave Low helicopter. Though badly wounded and having lost his instrument panel, windscreens, and throttle control panel, Edwards landed the Pave Low safely, saving eight crew members. The Kolligian Trophy recognizes excellence in air safety.

■ Twenty-nine enlisted airmen have earned the opportunity to become officers as the result of the most recent selection process by the Officer Training School Selection Board. The airmen were among 138 future officers chosen from a pool of 231 applications.

■ Munitions specialists got new software that integrates online munitions orders with a database of suppliers, reducing waiting time, according to USAF officials. The Operations and Sustainment Systems Group, Gunter Annex, Ala., said the Combat Ammunition System program keeps track of all munitions stored by USAF.

■ Airmen at Spangdahlem AB, Ger-

many, have begun training with a new rifle designed for urban combat. Smaller than the M-16, the M-4 carbine features a reflex red dot sighting system for rapid-response engagements and infrared imaging capability for use at night. The new weapon is expected to be better suited to close-quarters battle in urban areas.

■ E-8 Joint STARS aircraft and personnel recently marked a milestone of 10,000 combat hours while deployed with the 379th Air Expeditionary Wing in Southwest Asia.

■ Airmen traveling to or from a CENTCOM deployment location now may wear their uniforms, rather than civilian clothing, according to a USAF policy change announced in a May 13 Air Force news release. The change makes it easier for the public to recognize the service of Air Force personnel in the Global War on Terror and aligns the policy with that of the other military branches.

■ Arthur J. Myers, director of Air Force Services, was inducted into the Boys and Girls Clubs of America Hall of Fame in May. Myers was a Boys Club member in his home state of New Jersey and was saluted for his work in Air Force Services. The honor pays tribute to former members with outstanding achievements in their respective career fields.

■ Two Air Force civilians and one Air Force base garnered three of four 2004 National Awards for Federal Librarianship. The winners of the Library of Congress Awards are: Federal Librarian of the Year, Barbara Wrinkle (Air Force Library and Information System's libraries branch chief, Air Force Services Headquarters, San Antonio); Federal Library Technician of the Year, Mary Alice Mendez (Defense Language Institute's English Language Library, Lackland AFB, Tex.); and Small Library/Information Center Category (with a staff of 10 or fewer federal/contract employees), Edwards AFB, Calif., Library.

■ USAF in April completed an environmentally friendly hangar at March ARB, Calif., to house C-17s, according to an April 26 Air Force news release. The hangar features recycled construction materials, light-reflective elements, and new flooring that never needs painting and resists fuel and oil spills. The first of eight C-17 tenants arrives Aug. 9.

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The War on Terrorism

Operation Iraqi Freedom—Iraq

Casualties

By June 2, a total of 1,663 Americans had died in Operation Iraqi Freedom. The total includes 1,659 troops and four Defense Department civilians. Of those fatalities, 1,274 were killed in action by enemy attack, and 389 died in noncombat incidents.

There have been 12,762 troops wounded in action during OIF. This includes 6,395 who returned to duty within 72 hours and 6,367 who were unable to quickly return to action.

Operation Matador Targets al Qaeda

Air Force, Navy, and Marine Corps aircraft were major players in May's Operation Matador, a large-scale effort to destroy al Qaeda forces operating along Iraq's loose border with Syria. US Central Command officials said aircraft provided intelligence and close air support for the May 7-14 operation.

Marine Lt. Gen. James T. Conway, Joint Staff operations director, told reporters at the Pentagon that the operation was targeting hard-core insurgents, many of whom fled from Fallujah last year. Terrorists fought in military uniforms, including protective vests, he said.

"We know this is a determined enemy, that he has the skill and ordnance ... to be able to resist fiercely," Conway said.

Air Force aircraft supporting Operation Matador included F-15E Strike Eagles, MQ-1 Predator armed reconnaissance drones, Global Hawk unmanned aerial vehicles, and U-2 spyplanes. Helicopters also played a key role. Officials noted in a May 11 release that AH-1W Super Cobra crews "saw three armed males digging holes into the road to place explosives. The helicopters engaged and killed the terrorists."

"You never knew if you were talking to Air Force, Navy, or Marine aviators," said Marine Corps Lt. Col. Scott Campbell, commander of the 2nd Air Naval Gunfire Liaison Company. "You always had the same result—bombs on target."

"Gun Trucks" Escort Convoys

US Central Command has taken a lesson from the Vietnam War and brought back massive, armored "gun trucks" to serve as convoy escorts. By May, 31 of the trucks were operating in Iraq—and CENTCOM officials wanted more.

The five-ton converted cargo trucks are protected against small-arms fire and improvised explosive devices. They also offer offensive capability, through .50-caliber machine guns and other weaponry.

Steven J. DeTeresa, an engineer with the Lawrence Livermore National Laboratory, told the House Armed Services

Committee May 5 that Livermore and the Defense Advanced Research Projects Agency developed the trucks after officials noticed similarities between enemy tactics in Iraq and tactics in Vietnam decades earlier.

The trucks are "a much more serious convoy protection platform" than even an up-armored Humvee, DeTeresa said, "and they are saving lives." Each conversion kit costs roughly \$40,000.

Marine F/A-18s Collide, Kill Two

Two Marine Corps aviators died May 2 when their F/A-18 Hornet fighters collided in flight over southern Iraq. They were flying at roughly 30,000 feet when radio contact was lost. US Central Command officials said there was no indication that they were brought down by enemy attack.

Maj. John C. Spahr and Capt. Kelly C. Hinz were both based at Miramar MCAS, Calif. They were flying from the carrier *Carl Vinson* in support of Operation Iraqi Freedom.

Operation Enduring Freedom—Afghanistan

Casualties

By June 2, a total of 188 US troops had died supporting Operation Enduring Freedom, primarily in and around Afghanistan. The total includes 75 troops killed in action and 113 who died in nonhostile incidents such as accidents. A total of 591 troops have been wounded during Enduring Freedom. They include 161 who were able to return to duty within three days and 311 who were not.

Attempted Ambush Ends in Gun Battle

Two Marines, Lance Cpl. Nicholas C. Kirven and Cpl. Richard P. Schoener, were killed in a five-hour gun battle with insurgents May 8, Combined Forces Command officials in Afghanistan reported.

The Marines "received reports of insurgent activity near their location," explained a press release the day after the battle. As the unit "maneuvered toward the insurgents to investigate, about 25 people attacked them" with small-arms fire and rocket-propelled grenades.

"The insurgents split into two groups, one of which fled to a village while the other [hid inside] a cave on a nearby ridgeline," the release recounted.

Air Force A-10 aircraft attacked the insurgents inside the cave and performed the initial battle damage assessment.

Fifteen insurgents were killed in the battle. Six others were injured and taken into custody, according to a later press release.

Continued from p. 20

BAE Systems To Buy US Firm

Britain-based BAE Systems said it plans to purchase the American firm United Defense Industries, maker of the US Army's Bradley Fighting Vehicle.

The purchase, announced March 7, has cleared US regulatory hurdles, according to press reports.

The purchase, valued at nearly \$4 billion, will expand the size and capabilities of what is already Europe's largest defense contractor. This would be the largest-ever acquisition of a US defense contractor by a foreign firm.

Officials with both companies expect the acquisition to be completed in mid-2005. ■

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Air Warfare Center Goes Total Force

The Nevada Air National Guard and USAF's Air Warfare Center signed a memorandum of understanding May 11 outlining how Guard personnel will integrate with the AWC. Guard airmen will soon participate in every mission performed at the Nellis AFB, Nev., warfare center, but will begin by focusing on Predator operations.

The agreement formalizes one of the six Future Total Force test cases the Air Force is using to evaluate missions with integrated Guard, Reserve, and active duty personnel.

By mid-May, the Nevada Guard had 20 people stationed at its new Las Vegas detachment, with plans to grow the unit to 65 personnel by the end of 2005. An additional 98 Air Force Reserve Command airmen are expected to join the total force effort.

The initial work is with the MQ-1 Predator unmanned aerial vehicle. Guardsmen will be joining the 53rd Wing and 57th Wing at Nellis and Indian Springs AFAF, Nev., officials wrote in a news release. "This is the first step in a total force package" to support the Air Warfare Center's broad mission, officials wrote.

The AWC performs operations, training, testing, tactics development, and evaluation and had experienced man-

power shortages across the board. But Col. Pete McCaffrey, a Reservist heading the total force initiative for the AWC, said the integration plan is not an attempt to use Guardsmen and Reservists to fill active duty shortfalls.

Instead, the initiative should increase combat capability while moving Reserve Component personnel into new and growing mission areas. With many legacy fighters being retired, the reserve components cannot afford to have a "flying club" mentality, McCaffrey told *Air Force Magazine*.

Command opportunities will go total force as well. Integration provides opportunities for Reserve Component airmen to take on new missions and leadership. McCaffrey said the most qualified people will lead at the warfare center, regardless of which component they come from. But this must be handled carefully.

If, for example, a Reservist is made commander of the F-16 weapons school, his old unit will want to fill the position he vacated—potentially damaging the Reservist's career down the road. Therefore, McCaffrey said total force positions need to be managed much like general officer assignments are, or the Air Force will be "building a house of cards that's going to collapse."

Senior Staff Changes

RETIREMENTS: Lt. Gen. Brian A. Arnold, Lt. Gen. John R. Baker, Brig. Gen. Guy K. Dahlbeck, Brig. Gen. Lloyd E. Dodd Jr.

NOMINATIONS: To be **Lieutenant General:** Terry L. Gabreski, Stephen R. Lorenz. To be **Major General:** Dana T. Atkins, Ted F. Bowlds, Philip M. Breedlove, David E. Clary, David M. Edgington, Delwyn R. Eulberg, David S. Gray, Wendell L. Griffin, Irving L. Halter Jr., Kevin J. Kennedy, John C. Koziol, William T. Lord, Arthur B. Morrill III, Larry D. New, Richard Y. Newton III, Allen G. Peck, Jeffrey R. Riemer, Eric J. Rosborg, David J. Scott, Mark D. Shackelford, John T. Sheridan, Johnny A. Weida, Roy M. Worden.

CHANGES: Brig. Gen. Rosanne Bailey, from Cmdr., 435th ABW, Ramstein AB, Germany, to Cmdr., Cheyenne Mountain Ops. Center, NORTHCOM, Cheyenne Mountain AFS, Colo. ... Brig. Gen. (sel.) Michael J. Basla, from Dep. Dir., Ops. Spt. Modernization, DCS, Warfighting Integration, USAF, Pentagon, to Dep. Dir., Operational Spt. Modernization, OSAF, Pentagon ... Lt. Gen. Robert D. Bishop Jr., from Asst. DCS, Air & Space Ops., USAF, Pentagon, to Vice Cmdr., USAF, Ramstein AB, Germany ... Brig. Gen. Bradley W. Butler, from Dep. CIO, AFCIO, Arlington, Va., to Dep. Dir., Strat. Plans & Future Sys., DCS, Personnel, Pentagon ... Brig. Gen. (sel.) Herbert J. Carlisle, from Dep. Dir., LL, OSAF, Pentagon, to Cmdr., 3rd Wg., PACAF, Elmendorf AFB, Alaska ... Brig. Gen. (sel.) Judith A. Fedder, from Exec. to C/S, USAF, Pentagon, to Dep. Dir., LL, OSAF, Pentagon ... Brig. Gen. (sel.) Eric E. Fiel, from Cmdr., 58th SOW, AETC, Kirtland AFB, N.M., to Dir., Ops., AFSOC, Hurlburt Field, Fla. ... Maj. Gen. Vern M. Findley II, from Spec. Asst. to Vice C/S, USAF, Pentagon, to DCS, Strategy, Plans, & Assessment MNF-Iraq, CENTCOM, Baghdad, Iraq ... Brig. Gen. Maurice H. Forsyth, from Cmdr., 51st FW PACAF, Osan AB, South Korea, to Dep. Dir., Global Ops., Jt. Staff, Pentagon ... Lt. Gen. (sel.) Terry L. Gabreski, from Cmdr., Oklahoma City ALC, AFMC, Tinker AFB, Okla., to Vice Cmdr., AFMC, Wright-Patterson AFB, Ohio ... Brig. Gen. (sel.) Jonathan D. George, from Dep. Dir., P&P, ACC, Langley AFB, Va., to Cmdr., 55th Wg., ACC, Offutt AFB, Neb. ... Maj. Gen. (sel.) John C. Koziol, from Cmdr., 55th Wg., ACC, Offutt AFB, Neb., to Dep. Cmdr., Info. Ops., 8th AF, Barksdale AFB, La. ... Lt. Gen. Arthur J. Lichte, from Vice Cmdr., USAF, Ramstein AB, Germany, to Asst. Vice C/S, USAF, Pentagon ... Brig. Gen. (sel.) Charles W. Lyon, from Cmdr., 388th FW, ACC, Hill AFB, Utah, to Dep. Dir., Prgms., DCS, P&P, USAF, Pentagon ... Brig. Gen. (sel.) Otis G. Mannon, from Cmdr., 16th SOW, AFSOC,

Hurlburt Field, Fla., to Dep. Dir., Special Ops., Jt. Staff, Pentagon ... Maj. Gen. Roosevelt Mercer Jr., from Dir., P&P, AFSPC, Peterson AFB, Colo., to Dir., Combat & Info. Ops., STRATCOM, Offutt AFB, Neb. ... Brig. Gen. Richard Y. Newton III, from Dep. Dir., Global Ops., Jt. Staff, Pentagon, to Dir., P&P, STRATCOM, Offutt AFB, Neb. ... Maj. Gen. Michael W. Peterson, from Dir., Air Forces Strat. Command/Air Component Coordination Element, STRATCOM, Offutt AFB, Neb., to Dir., Info. Svcs., & Integration, OSAF, Pentagon ... Maj. Gen. Gregory H. Power, from Dir., C4ISR Integration, DCS, Warfighting Integration, USAF, Pentagon, to Dir., Ops. & Spt. Integration, OSAF, Pentagon ... Brig. Gen. (sel.) David E. Price, from Comptroller, AMC, Scott AFB, Ill., to Dep. Dir., Financial Mgmt. & Comptroller, AFMC, Wright-Patterson AFB, Ohio ... Brig. Gen. (sel.) Joseph M. Reheiser, from Cmdr., 314th AW, AETC, Little Rock AFB, Ark., to Vice Cmdr., 5th AF, PACAF, Yokota AB, Japan ... Brig. Gen. (sel.) Joseph Reynes Jr., from Exec. to Cmdr., CENTCOM, MacDill AFB, Fla., to Cmdr., 51st FW, PACAF, Osan AB, South Korea ... Brig. Gen. (sel.) Philip M. Ruhlman, from Cmdr., 20th FW, ACC Shaw AFB, S.C., to Vice Dir., AF Studies & Analyses Agency, Pentagon ... Brig. Gen. Kip L. Self, from Dep. Dir., Ops., AMC, Scott AFB, Ill., to Cmdr., 314th AW, AETC, Little Rock AFB, Ark. ... Brig. Gen. Michael A. Snodgrass, from Cmdr., 3rd Wg., PACAF, Elmendorf AFB, Alaska, to Dir., P&P, USAF, Ramstein AB, Germany ... Brig. Gen. Robert M. Worley II, from Dir., Mission Spt., AFSPC, Peterson AFB, Colo., to Dir., P&P, AFSPC, Peterson AFB, Colo.

SENIOR EXECUTIVE SERVICE RETIREMENT: David M. Rothery.

SES CHANGES: Charles G. Carpenter, to Dir., Prgm. & Resources, NORAD, Peterson AFB, Colo. ... Lorna B. Estep, to Dep. Dir., Supply Mgmt., AFMC, Wright-Patterson AFB, Ohio ... Gregory L. Garcia, to Dir., Ops. & Sustainment Systems Group, Operational Spt. Systems Wg., ESC, Maxwell AFB, Ala. ... Kathleen F. Graham, to Chief, Aircraft/Missile Spt. Div., DCS, Instl. & Log., USAF, Pentagon ... Edward C. Koenig, to Regional Dir., Tricare Regional Office-North, ASD Health Affairs, TMA, Rosslyn, Va. ... Richard W. McKinney, to Dir., Space Acq., UnderSECAF, Pentagon ... Richard R. Severson, to Asst. Vice Cmdr., AFRC, Robins AFB, Ga. ... Richard L. Testa, to Dir., Comm. & Info. Spt., OSAF, Pentagon ... Rob C. Thomas II, to Dep. Chief, Warfighting Integration, OSAF, Pentagon ... David Tillotson III, to Dir., Policy, Planning, & Resources, OSAF, Pentagon.

Action in Congress

By Tom Philpott, Contributing Editor

Another Pay Hike; New and Bigger Benefits; Death Benefits Made Permanent

Congress Sets 2006 Raise

The Senate in June was expected to join the House in passing a 2006 defense authorization bill that includes a 3.1 percent military pay raise, plus a higher ceiling on bonuses and special pays.

On many other new personnel initiatives, however, the House and Senate versions of the bill differ. The Senate, for example, proposes to increase 20 bonuses and special pays to help wartime recruiting and retention of active and reserve forces.

As a result of the differences, a House-Senate conference committee later this summer will have to decide which of the provisions to include in a final defense policy bill.

The 3.1 percent basic pay increase applies to all grades. It will be the seventh consecutive military raise to exceed private sector wage growth by at least a half percentage point, a measure that House lawmakers say will narrow the military "pay gap" with the private sector from 5.1 percent to 4.6 percent.

Personnel-Related Highlights

Under both the House and Senate versions, total defense spending would be pegged at \$441.6 billion, \$22.3 billion more than sought by the Bush Administration and \$21 billion more than the amount contained in the Fiscal 2005 defense budget.

The Senate was set to consider floor amendments by mid-June, but here's a rundown of personnel-related initiatives passed by the House or endorsed by the Senate Armed Services Committee:

- **Force Strength.** The Senate bill proposes increasing the active duty Army end strength by 20,000, to reach 522,400 soldiers by October 2006, assuming recruiters can make the necessary goals. The House recommends an increase of only 10,000 for the Army, plus 1,000 more active duty marines, raising Marine Corps active duty end strength to 179,000. However, the House bill also would give the Defense Secretary the authority to boost the Army by another 20,000 troops in the period 2007-09 and increase Marine Corps strength by 5,000 more marines.

- **Reserve Tricare.** The House bill

would relax in three ways the rigid rules governing the new Tricare Reserve Select program. First, it would allow demobilizing Guard and Reserve members to elect TRS for up to 120 days after leaving active duty. Under current law, they must decide to enroll in TRS before leaving active duty. Second, the House would allow TRS coverage to continue for six months for surviving family members in the event of the covered reservist's death. Third, TRS coverage would continue for the period contracted even if the reserve component member is involuntarily retired.

- **Reserve BAH.** The House bill would direct the services to pay Guard and Reserve members mobilized for longer than 30 days the same basic allowance for housing paid to active duty members. Activated reservists now are paid BAH Type II, a lesser amount, if ordered to active duty for more than 30 days but less than 140.

- **Danger Pay Extensions.** The Senate bill would direct continued payment of imminent danger pay or hostile fire pay to wounded service members for the length of their hospitalizations.

- **Hardship Duty Pay.** The House would raise the monthly maximum on hardship duty pay from \$300 up to \$750.

- **Bonus Increases.** The House proposes to raise maximum active duty enlistment bonuses from \$20,000 to \$30,000 and reserve enlistment bonuses from \$10,000 to \$15,000. The ceiling on active duty re-enlistment bonuses would climb from \$60,000 to \$90,000.

- **Reserve Affiliation Bonus.** At the urging of Army National Guard officials, the Senate bill would authorize a drilling reserve affiliation bonus of \$10,000 a year and a unit affiliation bonus of \$50 per drill for members assigned to high-priority units. The Senate bill would require annual physicals of all drilling reservists.

- **Transfer Bonus.** The Senate would authorize an interservice transfer bonus of up to \$2,500 for active and reserve members who transfer to the active or reserve component of another military service.

- **Survivors' Housing.** The House bill would extend from six months to one

year the length of time dependents of service members who die on active duty can remain in base housing or receive housing allowances. The House also would increase from one year to three the time allowed surviving family members to select a final home for transportation of household goods.

- **Commissary and Exchange Protection.** The House bill would impose a moratorium until 2011 on studies that compare the cost effectiveness of commissary operations using federal civilian employees with the cost if private sector employees ran the stores.

More Tricare Initiatives

The Senate bill would extend Tricare Prime enrollment eligibility, with no enrollment fee, to children of US military members killed on active duty. They currently are eligible for Prime for three years. The Senate wants these children covered for as long as they are eligible for a military ID card, typically until age 21 or 23.

The Senate bill also would require Tricare regional offices to have a Tricare Standard monitor to help beneficiaries, including Tricare Reserve Select enrollees, to locate health care providers who accept Standard.

And the Senate bill would require the Secretary of Defense to report to Congress by March next year on prospects for offering active duty members access to pretax savings plans to cover health and dental premiums or medical out-of-pocket expenses.

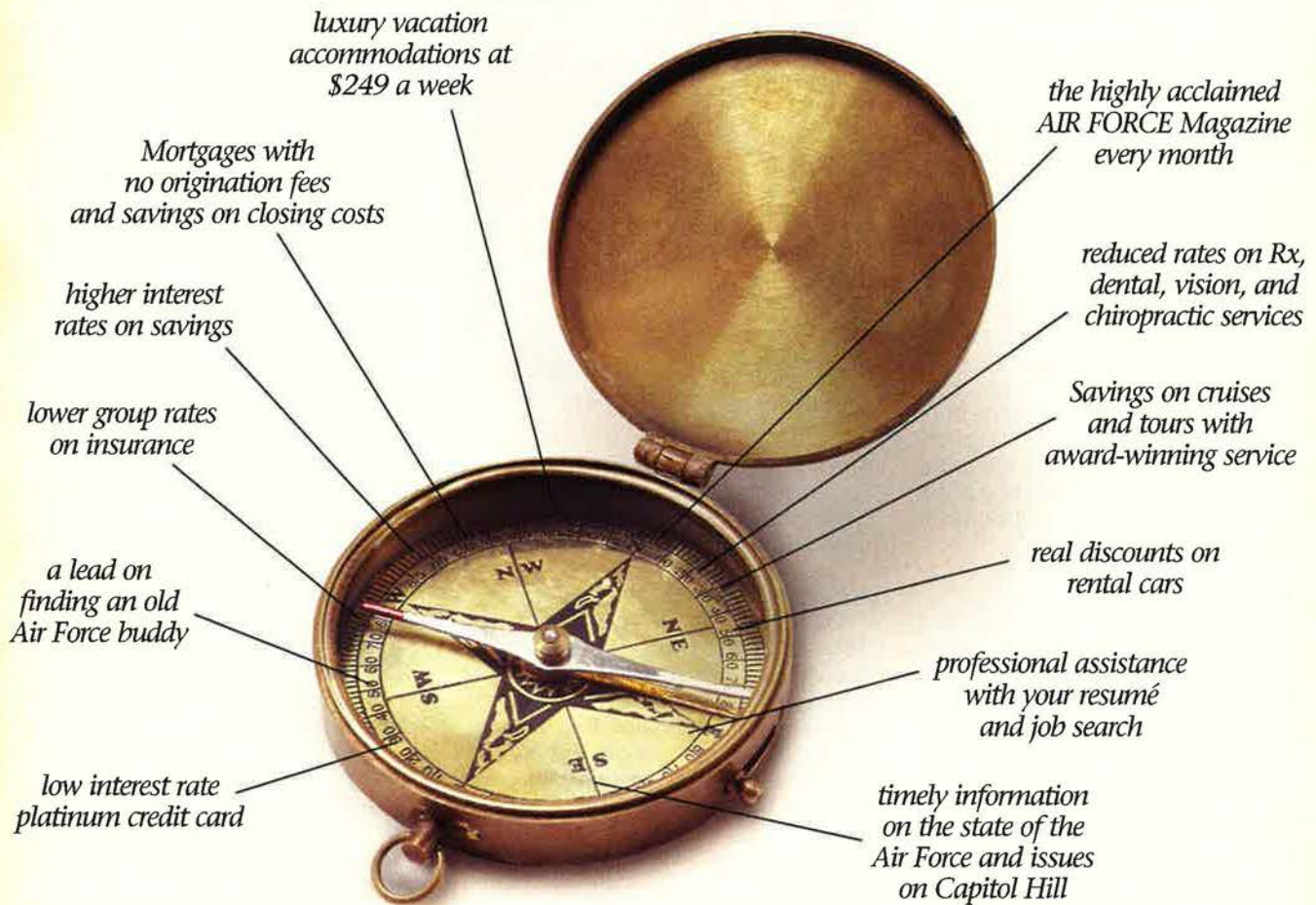
Death Benefits

The bills also would extend the substantial increases in military death benefits approved by President Bush as part of the Fiscal 2005 emergency wartime supplemental signed May 11.

Both the House and Senate versions would make permanent the increases in the military death gratuity and Servicemembers' Group Life Insurance. Those provisions were set to expire Sept. 30.

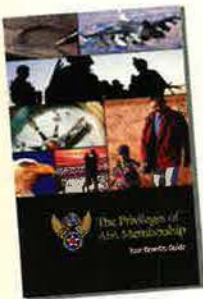
The death gratuity increase—the payment rises from \$12,400 to \$100,000—applies only to deaths resulting from wounds, injuries, and illnesses incurred in combat-related circumstances such as armed conflict, hazardous service,

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or performance of duty under conditions simulating war. It would also be payable if the death occurred in a combat operation or area designated by the Secretary of Defense.

The increase in the death gratuity is retroactive to Oct. 7, 2001, the start of Operation Enduring Freedom in Afghanistan.

The maximum SGLI coverage would rise from \$250,000 to \$400,000, effective Sept. 1, 2005. The increase will be automatic for all service members, though they can opt out of SGLI to avoid the \$26-a-month premiums or elect lesser coverage. The premium for the current \$250,000 in maximum coverage is \$16.25.

The revised death benefits package contains the controversial requirement that married service members cannot decline maximum SGLI coverage without written consent of their spouses. Also, if an unmarried service member elects not to buy maximum SGLI coverage, the Defense Department is required to notify next of kin of that choice. (See "Action in Congress: Spousal Consent Controversy," May, p. 34.)

"Traumatic Injury" Rider

US troops severely injured in Iraq and Afghanistan and those who receive traumatic wounds in any future actions in declared war zones will get cash payments of \$25,000 to \$100,000 under a rider to SGLI enacted as part of the emergency supplemental act.

The law directs the Departments of Defense and Veterans Affairs to establish a "traumatic injury" rider to SGLI by Dec. 1 and make payments retroactive to the start of Operation Enduring Freedom in Afghanistan.

The payments, which will vary based on severity of injuries, are designed to help service members with life-altering injuries, and their families, cope with financial challenges as they recover.

Three soldiers who suffered wounds in Iraq proposed the traumatic injury rider to Sen. Larry Craig (R-Idaho), chairman of the Senate Veterans' Affairs Committee, who then introduced it as an amendment to the emergency supplemental bill. About a month later, it was law.

Michael Tarzian, chief of the actuarial staff at SGLI headquarters in Philadelphia, said SGLI monthly premiums will rise to pay future costs of the traumatic injury rider. The Defense Department is responsible for retroactive payments to service members who have been severely injured in Iraq and Afghanistan since the fall of 2001.

DOD and VA officials are preparing implementing regulations. Qualifying injuries will include loss of limb, speech, or hearing; severe burns; blindness;



Taylor's reserve action undone.

traumatic brain injuries; and coma. The law leaves it to DOD and VA officials to determine the size of the payment for each particular category of injury.

Tricare Reserve Reversal

On May 18, the House Armed Services Committee voted 32-30 to open Tricare Reserve Select (TRS) to any drilling Guard or Reserve member. Two days later, however, Rep. Duncan Hunter (R-Calif.), committee chairman, pulled the provision from the bill. Hunter believes the measure violated budget rules.

Reps. Gene Taylor (D-Miss.) and Joe Wilson (R-S.C.) had persuaded a bipartisan group of committee colleagues to support opening TRS to any drilling reservists to recognize their heavy share of the fighting in Iraq and Afghanistan.

TRS, a scaled down version of Tricare Standard, currently can be used only by reservists who have deactivated from post-9/11 deployments. They get TRS coverage in return for remaining in drill status and available for recall. Also, they pay premiums of \$75 a month for member-only coverage or \$233 for family coverage.

In arguing against opening TRS to any drilling reservist, Hunter and Rep. John McHugh (R-N.Y.), the personnel subcommittee chairman, cited high cost—an estimated \$3.5 billion over five years—and the likelihood that civilian employers, on learning of the TRS option, will begin to force their reservists on staff to enroll in TRS to lower their own company medical costs.

Taylor and Wilson had told colleagues that expanded TRS would be paid for with a portion of savings realized from the new round of base closings. But after

Taylor's surprise victory during committee markup, Hunter's staff asked the Congressional Budget Office to review the cost of expanding TRS.

CBO determined that Taylor's amendment would increase mandatory government spending by \$5 million next year and by \$269 million over 10 years—by encouraging at least some of 120,000 reservists working as full-time federal civilian employees to drop their federal health insurance plan in favor of TRS.

In the Senate, Sen. Lindsey Graham (R-S.C.), chairman of the armed services subcommittee on military personnel, has promised to offer his own amendment to offer premium-based Tricare Standard to all drilling reservists.

Help for "IU" Retirees

In its markup of the defense bill, the House Armed Services Committee adopted a measure that would cut by four years and three months the 10-year phase-in schedule of full retired pay for 28,000 military retirees rated IU, for "individual unemployability," by Veterans Affairs.

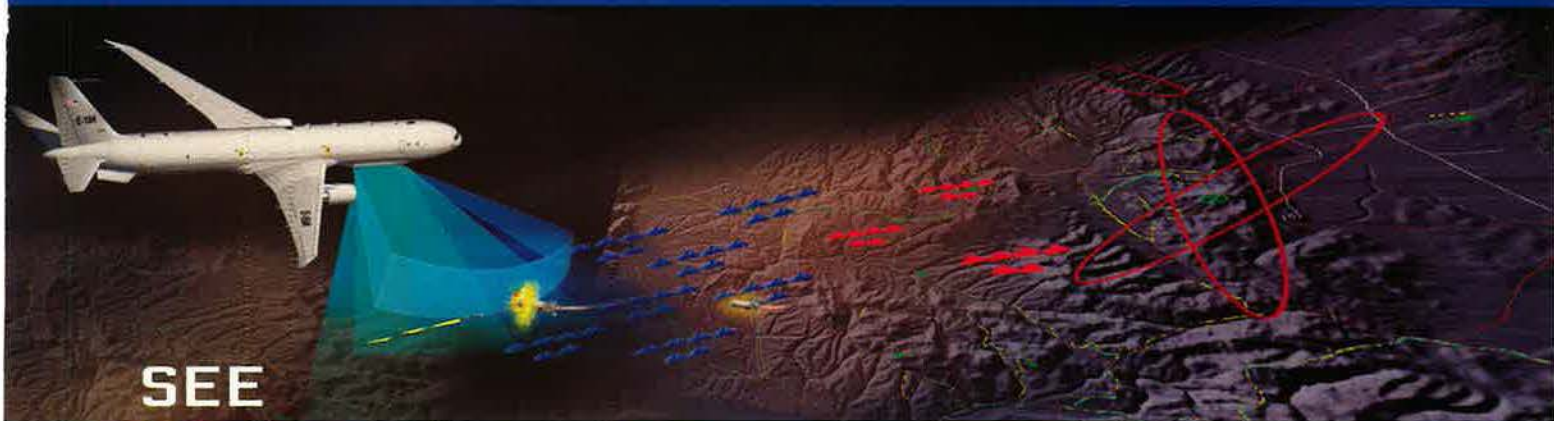
The committee approved by voice vote May 18 a proposal from Rep. G.K. Butterfield (D-N.C.) to accelerate full restoration of retired pay for these IU retirees to Oct. 1, 2009, rather than Jan. 1, 2014. Butterfield proposed paying the cost with proceeds from selling surplus defense stockpiles.

IU retirees have disabilities severe enough that they can't work but not so severe that the VA provides them with a 100 percent disability rating, although they are compensated at the 100 percent level.

Two years ago, Congress agreed to phase out over 10 years the dollar-for-dollar reduction in retired pay that disabled retirees who retire after full careers experience when they accept VA disability compensation. The phaseout applied only to retirees rated at least 50 percent disabled. Last year, Congress accelerated the phaseout plan, fully restoring retired pay for retirees rated 100 percent disabled.

IU retirees were excluded from the accelerated concurrent receipt provision, though defense officials muddied their status by saying last December that they might be eligible based on a preliminary review by department lawyers. However, DOD never released an official legal ruling. Department inaction returned the issue to Congress to decide how IU retirees should be treated regarding concurrent receipt.

It's unclear whether the Senate will agree to the House proposal when a final defense bill is negotiated. The Bush Administration has been pressuring Congress to curb entitlement growth for veterans and military retirees. ■



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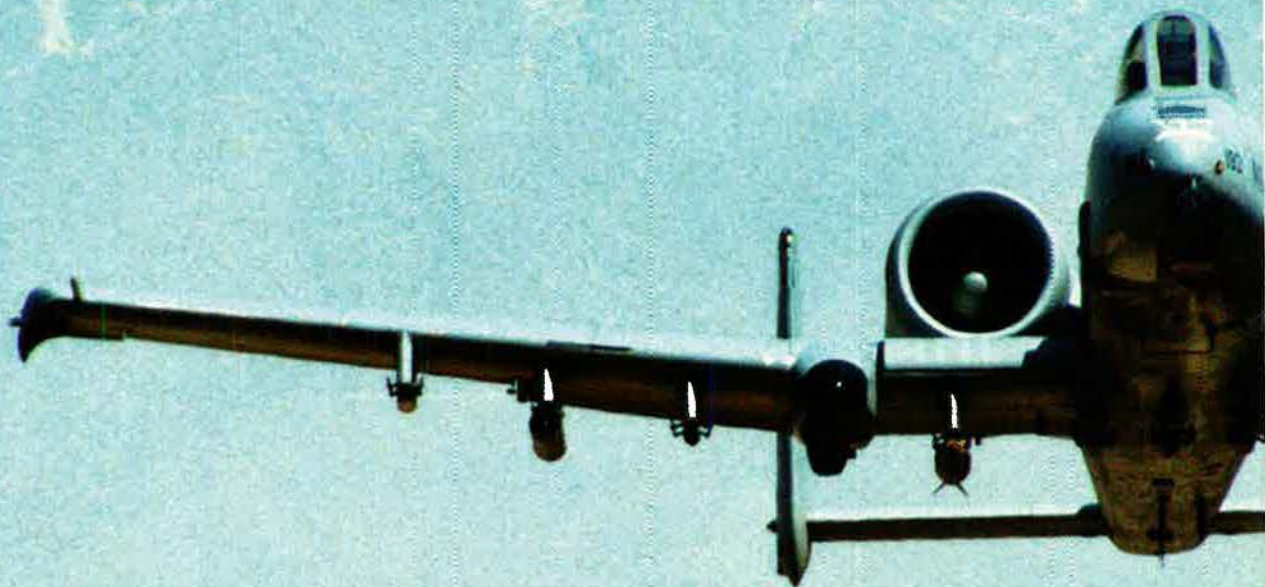
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DEFINING THE FUTURE™

Deployments have gotten longer, and so has the list of demands on airmen.

The Expeditionary



Nearly a year ago, the Air Force reconfigured the schedule for its 10 rotating Air and Space Expeditionary Forces (AEFs). The setup used since 1999 had made each airman in an AEF vulnerable to deployment for up to 90 days every 15 months. That plan was scrapped in favor of 120-day deployments every 20 months.

The change, which went into effect last September, stemmed from operations in Iraq. Airmen deployed there frequently stayed longer than the supposed limit of 90 days. The change was made to better meet the demands on the ground in Southwest Asia.

The situation has not improved. Far

from it. A year ago, the 90-day schedule was being breached by about 10 percent of airmen. Today, despite the longer tours, 20 percent of airmen stay longer than 120 days.

Air Force leaders still lay the blame on Iraq. They note that there has been a flood of new taskings from the Army and from US Central Command. Often, airmen need extensive training before they deploy and more time to master the mission in-theater. Longer tours provide more continuity, too.

These factors, they say, account for the doubling of the number of Air Force members surpassing their tour limit.

The Air Force today has a steady-

state need for 20,000 airmen to deploy overseas and carry out vital rotational assignments. That is 250 percent more than was the case before the attacks of Sept. 11, 2001. The majority of these rotational jobs—some 17,500—are in the CENTCOM area of responsibility in Southwest and Central Asia.

Another 3,000 airmen are deployed outside of the AEF system, largely on overseas training assignments. The figures do not include the many thousands of airmen permanently stationed in Europe and the Pacific.

A Steady State

This is the new steady state. The

An A-10 Warthog takes off from Bagram AB, Afghanistan, while deployed on an Air and Space Expeditionary Force rotation. The Air Force heavily supports US Central Command operations.

Force Under Stress

By Adam J. Hebert, Senior Editor

demand for airmen is “not expected to decline for some time,” said Gen. John P. Jumper, USAF Chief of Staff, in the memo announcing the AEF schedule extension last year. (See “Longer Deployments,” August 2004, p. 60.)

Today, the Air Force is heavily engaged in unconventional missions, and the service is still trying to adjust. Airmen are at work on the ground in Iraq, driving trucks, protecting convoys from insurgents, providing security forces in Iraqi prisons, and interrogating captured terrorists. The Air Force has formed teams to find and neutralize the improvised explosive devices (IEDs) that have proved so deadly in Iraq.

These are not “traditional” missions, by a long shot. The AEF system originally was designed to reduce stress on a force conducting long-term enforcement of “no-fly” zones over southern and northern Iraq. Aviation packages (primarily aircrews and maintainers) dominated the force mix, and the “watch” missions were generally dull and predictable.

Brig. Gen. Stephen L. Hoog, commander of the AEF Center at Langley AFB, Va., said aviation packages now provide only a third of the airmen deployed in a typical AEF. The other two-thirds fill combat support missions, such as those that assist Army operations.

Most aviation personnel are deploying at a “sustainable level,” but not all, said Col. Dana Hourihan, chief of the AEF matters division on the Air Staff. Unmanned systems, intelligence-surveillance-reconnaissance teams, and refueling and airlift crews continue to be heavily tasked.

The Air Force recently increased the use of C-130s for tactical transport in Iraq. The step has helped the Army get 350 trucks per day off the perilous Iraqi roads.

These C-130 crews are “flying above the IEDs and ambushes that challenge convoys,” Jumper told Congress in April, but they are heavily tasked.

New Missions, New Demands

The requirements in Iraq are not what the Air Force is used to. Officials consistently express the willingness and ability to assist on the ground in Iraq, but the new missions require that the Air Force become expert in fields that often do not translate at the airmen's home stations.

Airmen are serving as combat convoy drivers, prison guards, on counter-improvised explosive device teams, and are on the ground negotiating contracts with Iraqis and other foreign nationals.

These are not core Air Force missions. One official said that the Air Force has no prisons of its own, and while a truck driver is a truck driver, combat convoy operations are an entirely different beast.

The Army and US Central Command requirements are now fairly well understood, but there are still changes that pop up which the Air Force must meet.

The service recently received a tasking to provide 45 interrogators for CENTCOM, noted Brig. Gen. Stephen L. Hoog, commander of the AEF Center at Langley AFB, Va.

This is not a typical Air Force mission, and intelligence officers or Office of Special Investigations agents were the logical place to turn for the personnel. But both of those communities were already overtaxed, Hoog said.

In the intelligence specialties, many officials "wear the Air Force blue suit" but are funded and managed by national-level intelligence agencies, noted Joel Peterson, principal advisor for AEF matters on the Air Staff. The Air Force only "controls" about 40 percent of these intelligence personnel at any given time, he said, which can exacerbate shortages in a field that is already high demand.

The Air Force met the tasking for interrogators by finding "capacity" among communications lieutenants holding security clearances, Hoog said.

There are currently nearly 3.5 AEFs' worth of C-130 personnel deployed to CENTCOM's area. That is nearly twice the sustainable rate.

Hoog noted in an interview that 29 percent of all aviation personnel are coming from the Air National Guard and Air Force Reserve Command, where much of USAF's mobility capability resides.

Mobility forces have had to adapt quickly to operations in the war zone. The C-130s flying in Iraq "are not flying standard approaches" noted Hourihan. "They're flying tactical approaches" to minimize their exposure to ground threats such as the shoulder-fired surface-to-air missiles that have hit several military and civilian aircraft.

The AEF Center is supporting 101 operating locations worldwide, not all of which are air bases. The "driver," said Hoog, is the need to provide "Army support." Today, there are more than 2,500 airmen directly supporting the Army. Many have drawn convoy duty, where they, too, face the danger posed by IEDs and ambushes.

Airmen Convoys

The combat convoys are the most prominent example of airmen filling missions that traditionally belonged to the Army. It is dangerous work.

SSgt. Amelia C. Solomon put her convoy training to use almost daily when she got to Iraq. In an Air Force news release, Solomon explained that she volunteered

for an Iraq deployment because she had never been to the desert.

"I thought I was volunteering for a three-month deployment with the Air Force, not a six- to eight-month deployment with the Army," she said.

After undergoing initial training at Ft. Leonard Wood, Mo., Solomon headed to Southwest Asia for additional preparation—including live weapons training.

"We'd be driving down the road and shooting at targets that would pop up," said Solomon, of the 100th Logistics Readiness Squadron at RAF Mildenhall,

Britain. The training proved invaluable. Nearly every time a group of convoys would leave a base in Iraq, at least one would come under attack.

"We sent out at least five convoys a day, and ... one night all five of our convoys got hit," said Solomon, who was awarded a Purple Heart for injuries sustained in a mission last year. An IED blasted the trailer of the vehicle in front of her, and "we ended up rear-ending that truck."

She had smashed the truck's windshield with her head and injured her knees, but Solomon "jumped up on the top" to man the truck's M-60 machine gun until the convoy made it out of the town through which it had been passing.

The combat convoy training now held at Lackland AFB, Tex., is "based on what we did in Iraq," Solomon said. "We had the schoolhouse come to Iraq—the instructors actually came on convoys with us."

The success of training programs such as this is inspiring the Air Force to increase the training for all its deploying airmen.

With global requirements seemingly set at a permanently high level, officials are weighing a series of new programs. To ensure that each airman receives the proper expeditionary education, the Air Force has divided its proposed training into three categories.

The goal is to provide all deploying airmen with "a baseline skills set, based upon his or her specialty" to keep them effective and alive, said Hourihan.



Airmen at Camp Bullis, Tex., hone the combat skills they will need for some duties in Iraq. USAF's convoy course instructors went into the war zone to see enemy tactics firsthand.

USAF photo by Robbin Cressell



An F-15 prepares to take on fuel over Southwest Asia. Much of USAF's refueling and airlift capability resides in the Air National Guard and Air Force Reserve Command, and some mobility segments are overtaxed.

Jumper emphasized, "Every airman is expeditionary," so the service must prepare its personnel.

The proposed first level of training, for all expeditionary personnel, will "focus on the skills that every airman needs to deploy," said Hourihan. "This training will concentrate on basic force-protection competencies for self-defense and defense of an installation."

This is really "indoctrination training," he said. With every airman expected to be part of the expeditionary Air Force, this "really could be best achieved through [expanded] basic military training."

To that end, Air Education and Training Command favors expanding the Air Force's basic military training program by 10 days, Hourihan said.

The second training level will create "expeditionary combat airmen." This will "focus on providing the necessary skills to operate outside the expeditionary base perimeter," Hourihan said.

Engineers, combat convoy drivers, and contract specialists who go out into local communities are among those who would benefit.

Battlefield Airmen

"Classically, we've trained our airmen to operate inside the fence," said

Joel Peterson, principal Air Staff advisor for AEF matters. Hourihan added that many deploying airmen currently get their combat skills training at an Army facility, where convoy and prison missions are old hat.

The most intense training would be for the battlefield airmen—those who operate deep in hostile territory. This includes combat control teams, parares-

cue jumpers, tactical air control parties, and those with related skill sets.

In May, integrated product teams were working to determine the best training regime for the battlefield airmen and the expeditionary combat airmen. There is "a lot of momentum" for improved training, and "it is absolutely necessary that we do this," Hourihan said.

Proposals will be reviewed at the next Corona meeting of four-star generals this summer. There is a lot of "best-practices sharing going on right now," Hourihan said, and the Air Force wants to institutionalize the programs.

Aiding the Army

In terms of overall requirements, "it looks like we're at a plateau" in the CENTCOM region, Hourihan said. But in many cases, newly stressed specialties "happen to be a lot of the same ones where we are lending support to the Army."

Army and CENTCOM requirements are going to remain high, he said. "Our stressed career fields—there is no immediate end in sight to the stress they're going to feel."

The Air Force announced in February that roughly 200 airmen in "key and critical operational and joint task force staff positions" will begin deploying to the CENTCOM region for a full year.

This change comes "in response to requests from [CENTCOM] joint task force commanders seeking continuity," the press release explained, "where the local culture requires more time



Combat convoy escort duty has no direct parallel in the "traditional" Air Force. The Army has asked for more airmen to stay in Iraq for longer periods, and the Air Force has responded.



to establish meaningful ties with local people and host governments.”

In addition to these 365-day “temporary duty assignments,” the Air Force also has thousands of airmen on six-month tours. Hoog said everyone must keep the purpose of the AEF in mind. The system does not exist to get airmen home in 120 days; it exists to present forces and capabilities to combatant commanders.

There are a “whole boatload” of career fields that do not fit neatly into the 120-day deployment schedule, he noted.

Today, 20 percent (3,900) of deployed airmen stay longer, mostly on 179-day assignments. Those on extended tours include airmen in fields such as RED HORSE construction, “detainee operations,” convoy personnel, security forces, and critical medical care teams.

Building the Library

Jumper last year challenged the Air Force to get as many airmen as possible into the Air and Space Expeditionary Force “library,” the database of airmen eligible for deployment.

Having as large an AEF library as possible has long been the goal, but Jumper threw down the gauntlet with a memo last year calling for the four-stars heading the Air Force’s major commands to “aggressively review” the personnel they exclude from deployment and “take immediate steps” to increase the airmen in the library.

Hoog told *Air Force Magazine* that unless an airman is a student (30,000 are, at any given time), just returning from an unaccompanied overseas tour, or in prison, the goal is to “get them in.”

crease to roughly 325,000 in the future as entire new categories of airmen join the system. This will represent roughly 90 percent of the Air Force’s total active duty strength of 359,700.

The Air Force is creating new “posturing and coding guidance” to bring missileers, as one example, into the AEF system. Officers sitting on missile alert are already directly supporting a combatant commander—Marine Corps Gen. James E. Cartwright at US Strategic Command—so it is expected that they would actually deploy on a “very limited basis,” Hoog said. But the Air Force wants to have them available.

Forces stationed in South Korea are also directly supporting a combatant commander and are, for all intents and



USAF photo by A1C Vanessa LaBoy

Air Mobility Command has 3.5 AEFs’ worth of C-130s, such as the one pictured at top, deployed to the Middle East. C-17s (above) keep busy ferrying troops and equipment, but their crews are missing out on training for other missions.

Not all categories of airmen are equally likely to deploy, but it is important to have an “inventory” of personnel who can, Hoog said.

The center is trying to get commanders to align the Air Force’s “internal rhythms” with the AEF schedule. In the past, airmen were often exempt from deployment if it conflicted with a permanent change of station (PCS) move.

USAF is trying to “sync up” these schedules so that airmen are not ordered to move during a scheduled deployment. There are now cases where a PCS has been delayed to accommodate AEF requirements—in the past, Hoog said, “PCS won out.”

There are currently 260,500 airmen in the library. That number should in-

purposes, already forward deployed. But Hoog observed that the Army recently redeployed forces from Korea to aid in Iraq—because missions are prioritized.

Desert Duty

Central Command gets the lion’s share of USAF’s deployed forces. According to AEF Center data, CENTCOM has more than 17,500 airmen assigned for AEF 5/6, which is “on call” this May through August.

The next largest customer is US Pacific Command, which has a rotational requirement of less than 850 airmen.

CENTCOM’s demands can affect other deployment locations such as Iceland, where the US has long supplied air defense forces, and Guam,

where bombers bolster US combat power in the Pacific. These missions are ongoing, but the deployments may be curtailed to meet other requirements.

Operation Noble Eagle still demands a sizeable number of assets. The homeland air defense mission has a rotational requirement of nearly 250 airmen, and forces committed to Noble Eagle vary depending on threat levels and special events.

"The last time I checked, there was not an [air defense] alert site near Crawford, Texas," noted Hoog, referring to the President's ranch, where top government and foreign officials sometimes gather.

The Air Force is adapting to new realities in other ways as well. Northern and Southern Watch were primarily air superiority missions—the job was to ensure Saddam Hussein's air forces didn't take to the skies in violation of UN resolutions.

As of April, noted Hourihan, there were no F-15Cs (strictly air superiority aircraft) deployed to CENTCOM's region—but there were plenty of F-15E Strike Eagles.

Fighter aircraft are now heavily engaged in "urban CAS" operations—close air support missions in dense urban environments. These can be among the most stressful and demanding missions for pilots, as they typically require the Air Force to defend land forces in close contact with both enemy forces and civilians. Peterson said this "incredibly complex mission" is creating some of USAF's most skilled pilots.

That contrasts sharply with the situ-



USAF photo by MSGt. Keith Reed

SSgt. Michael Schieber, with the 455th Expeditionary Security Forces Squadron, guards an entrance at Bagram Air Base. Air Force security personnel have been busy worldwide since 9/11.

ation in 1999, when the AEF system kicked off. At that time, the goal was to spread the pain of a deployment around more personnel and to limit the time in the desert. Prior to 9/11, most AEF missions failed to challenge pilots in any meaningful way, and their skills withered.

The opposite is now often true, and an AEF deployment is when an airman's skills are sharpened. The rotations provide an unexpected benefit—they get a "large portion of the Air Force involved and combat ready," Hoog noted.

Skill loss still worries some mobility personnel. Peterson noted that "the

things that they aren't doing" are a concern in the mobility community. For example, C-17 crews are finding themselves too busy to practice airdrops with the Army. Mobility units are "just busy enough" that they cannot catch up on training, he said.

This is a reason not to lengthen the standard deployment even further to, say, six months.

There is also a limit to how long airmen can be deployed before time away from home drains morale. Even with 20 percent of those deployed away from their home stations more than four months, the vast majority of airmen are still on the standard schedule. Further, one official noted, with a shorter tour, airmen require less "downtime" to recover after a deployment and can quickly "spin up" for a new assignment if needed.

Like a Champ

Overall, Hoog said, the four-month rotation is right for the Air Force and the system is "working like a champ." The AEF system also identifies shortfalls and highlights where to find "surge" capability.

"We know how much we can support," Hoog said.

Officials say the old 90-day rotations were driven by a different requirement and that airmen have taken the change in stride. Deployments may be longer, but individuals deploy less frequently, and even those on longer tours generally know exactly how long they will be away. ■



USAF photo by MSGt. Cesar Rodriguez

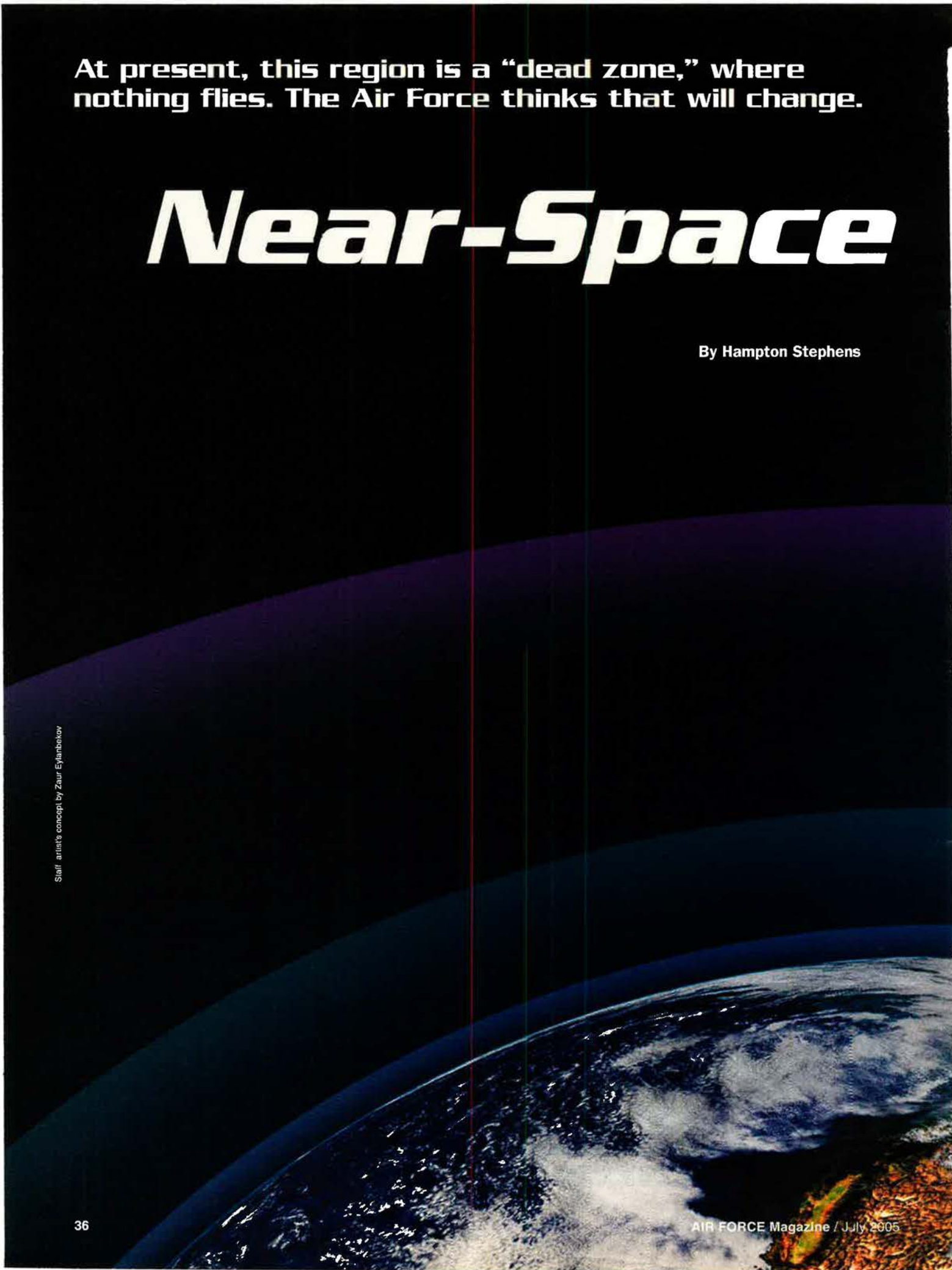
Not all AEFs are deployed to the desert. Long-range bombers, such as this B-52 from Minot AFB, N.D., routinely rotate to Guam to bolster US combat power in the Pacific theater.

At present, this region is a “dead zone,” where nothing flies. The Air Force thinks that will change.

Near-Space

By Hampton Stephens

Staff artist's concept by Zaur Eylanbekov



The Air Force's operating domain—frequently called the “vertical dimension”—traditionally has been defined as that area ranging from the surface of the Earth to geosynchronous spacecraft orbits 22,000 miles up. A large slice of that domain has been ignored—until now, that is.

The place in question is the region sandwiched between an altitude of about 12 miles (close to the internationally accepted upper limit of controlled airspace) and 62 miles (loosely defined as the lower limit of space).

At present, this region is a “no man's land.” Air is too thin to support flight by most operational military aircraft, and yet gravity is too strong for a satellite to sustain itself in orbit. As a result, very little flies there.

This region is called “near-space.” Air Force officials believe it could prove to

be a key operating area. Its exploitation constitutes part of Joint Warfighting Space, a key initiative launched by Gen. John P. Jumper, USAF Chief of Staff.

Lighter-than-air vehicles operating there could quickly and inexpensively provide the capabilities that troops and commanders demand.

Enhanced communications systems, network relays, and intelligence-surveillance-reconnaissance capabilities could all use the near-space realm to quickly meet battlefield needs.

Near-space platforms carrying critical systems into the far reaches of the atmosphere could include balloons, airships, or anything else that is “persistent, cost-effective, survivable, and responsive,” said Gen. Lance W. Lord, commander of Air Force Space Command, at the Air Force Association's February Air Warfare Symposium.

A little over two years ago, Jumper asked Space Command to explore ways to provide tailored, tactical-level space effects to combat forces.

He saw the potential for near-space

platforms to provide some of the same capabilities as space-based platforms, only for much less money and with greater flexibility. Air Force leaders tout the exploitation of near-space as an ideal example of “effects-based” thinking.

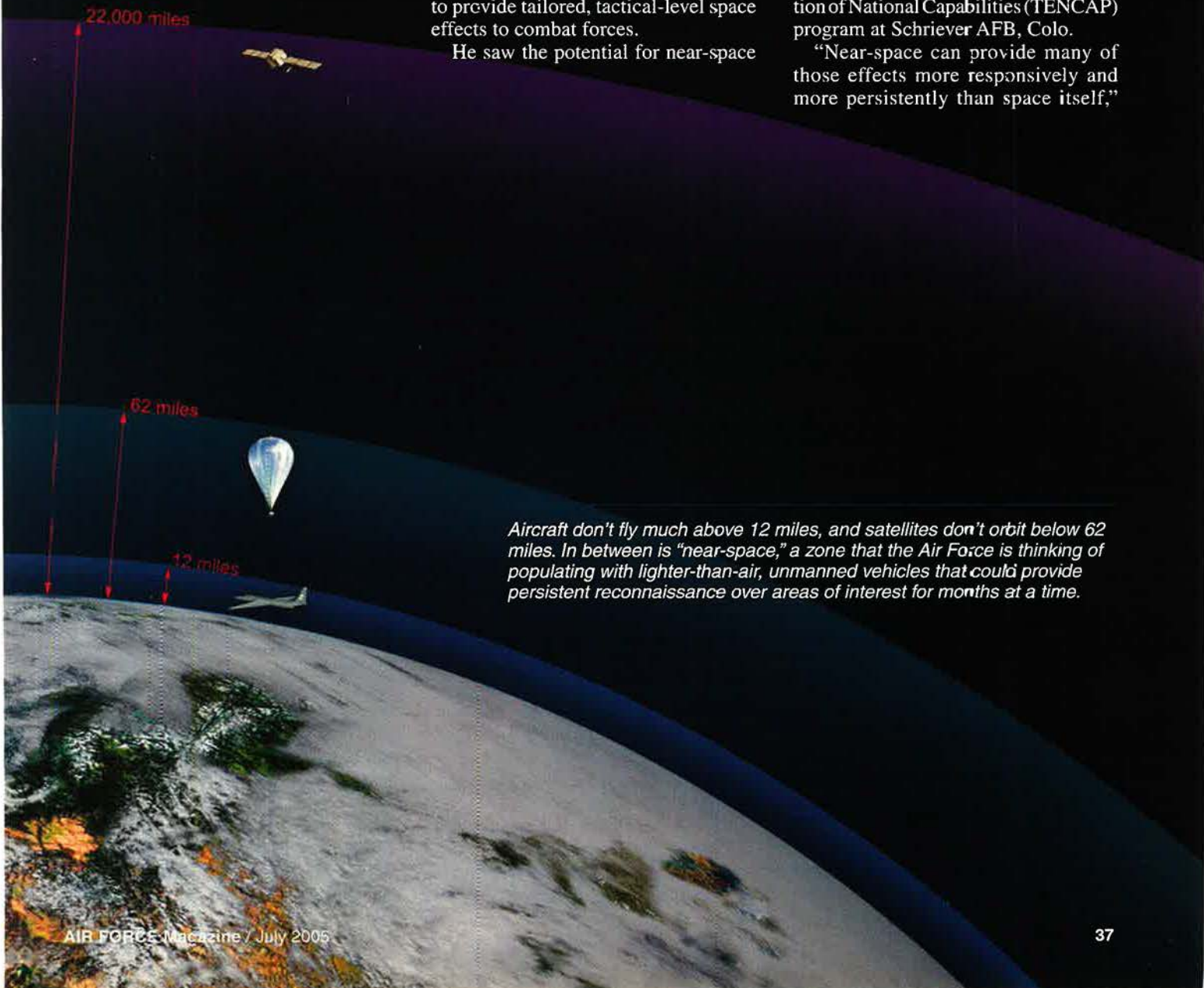
Seeing New Promise

Originally, the JWS initiative was focused on finding faster and cheaper ways to launch platforms into orbit. However, soon after Jumper introduced the idea, officials began to see promise in the neglected near-space area.

Satellites ensure access but are expensive and not very responsive. Air-breathing intelligence-surveillance-reconnaissance aircraft are perpetually overtaxed and could be denied access over hostile territory.

Near-space, however, opens up an entirely new realm of possibilities, said Lt. Col. Edward B. Tomme, deputy director of AFSPC's Tactical Exploitation of National Capabilities (TENCAP) program at Schriever AFB, Colo.

“Near-space can provide many of those effects more responsively and more persistently than space itself.”



Aircraft don't fly much above 12 miles, and satellites don't orbit below 62 miles. In between is “near-space,” a zone that the Air Force is thinking of populating with lighter-than-air, unmanned vehicles that could provide persistent reconnaissance over areas of interest for months at a time.



The U-2, with many upgrades over the years, fills the niche of responsive, high-altitude reconnaissance. However, missions can't last much longer than 10 hours. Near-space vehicles could "stare" unblinkingly at an area for months at a time.

Tomme noted in a paper released earlier this year. Jumper himself said last December that Operation Iraqi Freedom has highlighted the need for persistent ISR capabilities. (See "Aerospace World: The Case for 'Near-Space,'" February, p. 15.)

If the Air Force can build a near-space vehicle able to hover over one point, at an altitude of about 23 miles, it could remain on station for months—far longer than an unmanned aerial vehicle and a period approaching the mission duration of certain satellites. This would be an inexpensive substitute "for a low orbiting satellite constellation that would probably have 40 or 50 satellites," Jumper said.

Alternately, a geostationary near-space system could direct coverage, so that when satellites "come over the horizon they know exactly what to look at," he said. This, added the Chief, could increase the efficiency of highly expensive strategic reconnaissance systems "several hundredfold."

Dirigibles and balloons are not terribly exciting, Jumper said, and are neither airplanes nor spacecraft. He noted that this explains, in part, why near-space has been neglected in the past. In recent remarks to the Heritage Foundation in Washington, D.C., Jumper explained that, in the near-space area, "nobody's interested. Why? Because we're platform-centric."

Not Cool

Aerostats and weather balloons that operate in the near-space realm "tend to

be these lighter-than-air things that are not very appealing," Jumper said. "You never go to an air show to go watch a balloon performance. They don't put on a very good acrobatic show and it's just not very cool."

The "shift in mind-set" that it will take to make full use of near-space is "of such a magnitude that it will require a substantial rewrite of current military space doctrine," Tomme contended.

Air Force Space Battlelab officials who explore possible military applications for "off-the-shelf" technology have taken note of the growing use of high-altitude balloons in the commercial sector, said battlelab commander Col. Patrick P. Rhodes. For example, Chandler, Ariz.-based Space Data Corp. uses high-altitude balloons to transmit data gathered from remote oil platforms throughout the Southwest.

The Space Battlelab sponsored an industry forum to explore such commercial technologies and discovered near-space was a fertile research area. "It was surprising to us how many folks were out there working on near-space capabilities," Rhodes said.

Putting a platform in near-space is easier and much less expensive than launching a system into orbit. Therefore, near-space systems will probably provide responsive capabilities to warfighters much sooner than orbital platforms, said Lt. Gen. Daniel P. Leaf, AFSPC vice commander.

While USAF develops responsive orbital capabilities, near-space is "the

focus that's most likely to bear near-term fruit," Leaf said. "That's because when we talk about orbital space capabilities as part of JWS, there's more development required."

The Space Battlelab is now conducting technology demonstrations. According to its charter, the battlelab must focus on capabilities that can be fielded within 18 months, so the near-space demonstrations that began late last year have used commercial technologies that require minimal modifications.

Tomme noted that officials already see near-space as a low-threat, high-payoff environment. Military near-space vehicles would operate above the weather, be inherently stealthy, and fly above the range of nearly all threats. In terms of payoff, the vehicles would be 20 times closer to the Earth than low Earth orbit (LEO) satellites, offering large coverage areas.

So far, demonstrations have explored how balloons floating above a battlefield could be used to improve tactical communications.

By attaching off-the-shelf Thales PRC-148 radios to balloons already developed by Space Data, battlelab officials have discovered that the range of line-of-sight radio communications can be significantly extended.

In March, the battlelab demonstrated how such a setup could dramatically improve close air support operations. The platform used in the demonstration was a "beyond-line-of-sight radio repeater" that has been dubbed Combat SkySat.

Predictable Flight

Combat SkySat consists of two linked PRC-148s—radios used by many ground troops for tactical communications—floated on Space Data's balloon. In a real sense, this huge, helium-filled latex balloon is no more high-tech than "the balloons you would get at a birthday party," Rhodes said. But Space Data technology allows the balloon to fly in a predictable flight path.

The company's command and control technology uses gas venting and ballasting to control the balloon's altitude, so that its flight path can be optimized based on wind patterns in the atmosphere. The balloon operates between 65,000 and 95,000 feet.

A "repeater" balloon flying over the battlefield can relay line-of-sight broadcasts from radios on the ground and in the air. In 12 flights conducted near Space Data headquarters, the Space

Battlelab successfully extended the range of line-of-sight radio communications from about 10 miles to more than 400 miles, Rhodes said.

The March demonstrations employed members of a tactical air control party on the ground and an F-16, A-10, and E-8 Joint STARS radar aircraft in the sky to explore how such extended-range communications could improve close air support.

When a forward air controller on the ground is directing an air attack, he must make radio contact with the pilot before the attack occurs to relay precise targeting coordinates. Using line-of-sight radios forces that exchange to occur when the pilot is near the target, giving the FAC and pilot very little time to work out their plan.

In recent demonstrations, Combat SkySat changed that.

With the repeater, ground controllers were able to communicate with the strike aircraft "over hundreds of miles, so that we could initiate the 'talk onto the target'" much sooner, Rhodes said.

This could vastly improve CAS operations, according to Rhodes, because giving FACs and pilots more time to communicate makes dynamic retasking and other targeting innovations possible. "We think this near-space beyond-line-of-sight capability is a relatively easy answer to some significant problems," he said.

Before USAF can economically field Combat SkySat, it must solve one significant problem: retrieval.

In the Arizona demonstrations, the

Near-Space's Joint Applications

A Joint Warfighting Space operating concept describes ways the service will provide near-space capabilities and effects to "joint military operations conducted in support of national security objectives," according to Air Force Space Command's JWS division.

Though AFSPC leads the operational and budget planning for near-space, the effects it provides will potentially benefit all areas of Air Force operations. The other major commands, notably Air Combat Command and Air Force Materiel Command, are helping to integrate near-space into the service's missions. "While we're leading the effort, at General Jumper's direction, we're not doing it in an exclusionary manner at all," said Lt. Gen. Daniel P. Leaf, AFSPC vice commander.

As the name JWS indicates, near-space will touch the missions of each service. For example, the Air Force Space Battlelab sought the Army's input when developing a close air support demonstration.

The Navy has been the lead service for lighter-than-air vehicles since the airship was invented, said battlelab commander Col. Patrick P. Rhodes. Though the Navy concentrates on platforms that operate at lower altitude than near-space, he said there is a lot of potential for the Air Force to learn from them.

Rhodes has entered into a "gentlemen's agreement" with his counterparts at the Army Space and Missile Defense Command and the Naval Air Systems Command to establish a "near-space council" to share knowledge on demonstrations and capabilities.

Meanwhile, Air Force officials, although cautious, are keeping an open mind about how they can use near-space. While communications capabilities are the first area of exploration, what can be floated in the new frontier between 65,000 feet and the bottom of outer space is only constrained by technology. "We don't want to limit our horizons too much at the outset," Leaf said.

Like aircraft, near-space vehicles may be developed in countless forms to serve innumerable functions. "You're going to see a range of systems that become available," said Maj. Steve Staats, deputy division chief for demonstrations at the battlelab. "The idea is to really provide an integrated capability, not focusing on the systems ... but [on] what is the effect you need."

balloon easily could be retrieved no matter where it landed; it was always overflying friendly territory. Similarly, when Space Data first began providing near-space communications services to the US oil industry, the company found

an elegantly simple solution to the retrieval problem: Space Data promised a case of beer to anyone who found and returned one of their balloons. (The company now uses cash awards.)

In combat, however, there is no guarantee that a balloon will not land behind enemy lines.

This problem can be attacked in two ways, Rhodes said. Either near-space payloads can be engineered to be disposable, or a return system can be devised.

TENCAP is working on just such a round-trip system.

TENCAP's "Talon TOPPER" concept will use a glider constructed from "very high-tech polymers" to return balloons to designated locations, Rhodes said. Now being developed by a contractor in Oregon, Talon TOPPER will be demonstrated this fall. The idea is to use a "plug-and-play" cargo bay that can carry a variety of payloads and then return safely, using GPS for guidance.

Unclear Path

Despite all of this development work, when the first near-space capabilities will be fielded remains unclear. Air

Artist's concept by Erik Simonsen



High-resolution satellite imagery demands low orbit. However, low orbit means short dwell times over the reconnaissance target. Near-space systems could solve the problem, providing sustained coverage of enemy forces.

Force Space Command's JWS division is planning a two-week in-theater demonstration of some version of Combat SkySat, probably equipped with the Talon TOPPER return system, according to Rhodes.

Although the enthusiasm for its potential is palpable among senior leaders, officials are cautious about promising the moon. "We are looking before we leap," Leaf said, cautioning that the service has a lot to learn about operating in near-space. Tomme similarly said near-space may have been "oversold" and the Air Force is still validating concepts to reduce development risk.

To hasten that learning process, Lord tapped the Air Force Research Laboratory to lead an in-depth study of the promise of near-space. The 90-day study, completed in May, used a number of integrated product teams to examine aspects of near-space technology and develop preliminary concepts of operation.

The study looked at "potential CONOPS for a variety of near-space carrier/payload combinations, including small balloons, medium balloons, lightweight UAVs, and large airships," according to a JWS division official. Study results will be briefed to senior Air Force leaders this summer.

The AFRL study is important because the technical challenges posed by near-space are new to the Air Force. Near-space vehicles must be able to withstand significant ultraviolet radiation, harsh weather, and other tough environmental conditions.

The physics of near-space flight are also unique. For example, the carrying capacity of balloons depends partly on their size.

"The physics of volumetrics and the diminishing return as you increase payload capability and increase altitude are pretty challenging," Leaf explained, after cautioning that he was a political science major not a physicist. Increasing payload or time on station is not simply a matter of making a balloon bigger, he said. "It's a lot more complex than that."

If the Air Force wants near-space vehicles that can do more than just drift with the wind, which they undoubtedly will, other technical challenges will have to be overcome.

Leaf said there is a "divergence" among technical experts about the difficulty of "station keeping" in near-space. Industry is working on ways to get balloons and airships to stay put above a particular spot on the Earth—which

Platform Options Abound

Air Force Space Command has a wide range of service and contractor options to investigate as it defines exactly what it needs in its near-space vehicles.

For starters, the Combat SkySat experimental communications relay system will be evaluated during the 2006 Joint Expeditionary Force Experiment. The platform is well-suited to the homeland security mission-based focus of that event, according to Air Force Space Battlelab officials.

"The homeland defense agencies are really interested" in near-space technology, said Lt. Col. Rich Lane, the battlelab's division chief for demonstrations. "You could immediately put [something like Combat SkySat] up in Arizona and provide communications relay down there to the Border Patrol." This would be of particular interest because the Border Patrol operates in sparsely populated regions where cellular phone towers are scarce.

Another AFSPC program, called Talon SHU, is aimed at developing software to model the weather in near-space, in anticipation of the day when near-space vehicles are in regular use.

Lockheed Martin, meanwhile, has been working for several years on the Army/Missile Defense Agency High-Altitude Airship advanced concept technology demonstration, and Boeing has proposed several near-space solutions, according to AFSPC officials.

Sanswire, a subsidiary of Globetel Communications Corp., is another pioneer of near-space technology in the commercial world.

Finally, the Johns Hopkins Applied Physics Laboratory is one among several academic research organizations that are exploring near-space technology. The Johns Hopkins APL is working on air- and missile-launched near-space balloons and high-altitude tethered air vehicles, according to AFSPC.

would obviate the need to launch a continuous series of balloons to maintain persistent communications or ISR coverage of an area.

How Effective?

So while there certainly will be innovative approaches to such challenges as station keeping, "our question remains, how effective will they be—and what does that mean in terms of the operational utility of near-space systems?" Leaf said.

Rhodes believes that simple near-space systems that provide niche tactical capabilities can be developed very quickly, but more complex systems will take longer. "When you start talking about long-loiter, strategic kinds of station-keeping vehicles, I think we're a ways away," he said.

To work out the technical complexities of near-space, the AFRL-led study likely will lead to "additional demonstrations ... but, more importantly, into continuing budget commitment," Leaf said.

Space Command is eyeing the Fiscal 2008 budget for the first significant commitment of near-space funding. So far, most of the money the Air Force has spent on near-space has come out of the Air Force Space Battlelab budget.

By mid-May, the battlelab had not completed a budgetary assessment for Fiscal 2006, but the Air Force's 2006 unfunded priority list included \$10.4 million for JWS, much of which would go to near-space, if appropriated.

Although a major appeal of operating in near-space is the potential to get more bang for the buck, compared with operating in orbit, each medium has cost advantages and disadvantages. Near-space systems will not incur the cost of "booster integration or on-orbit checkout," Leaf pointed out, but the service must figure out how to recover near-space payloads to reap their full cost benefits.

Near-space platforms will be less durable than satellites that can stay in orbit for 30 years or more but also more flexible. In the end, nothing in the Air Force budget is immune from spending constraints. "We have to recognize that there are very challenging budget pressures that limit our, for want of a better word, discretionary funding in these endeavors," Leaf said. "Our desire for progress will be moderated by the availability of funds."

While the future remains uncertain, the Air Force is planning for near-space capabilities to be part of its force. ■

Hampton Stephens is the former managing editor of Inside the Air Force and is now a freelance writer and graduate student at the Institute of World Politics in Washington, D.C. This is his first article for Air Force Magazine.

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Building Better “Razor

By John A. Tirpak, Executive Editor

Joint Direct Attack Munitions await loading on F-16CJs at a base in Southwest Asia. The ubiquity of JDAMs, which offer all-weather precision with accuracy within 10 feet, has vastly improved the effectiveness of strike aircraft.

AS THE Defense Department wraps up its Quadrennial Defense Review deliberations, the state of the art in bomb technology is sure to be a big influence in its decisions. Ever smaller, longer ranged, and more precise than ever, new munitions have already changed the calculus of airpower and may do so again.

At the last QDR, in 2001, one of the few areas of military investment to win ringing endorsement from all the advisory panels were precision weapons. As President George W. Bush put it at a May 2001 Naval Academy speech, the military envisioned by his Administration would be “defined less by size and more by mobility and swiftness,



Blades

... [relying] more heavily on stealth, precision weaponry, and information technologies." (See "Bomber Questions," September 2001, p. 38.)

Then-Secretary of the Air Force James G. Roche explained at that time that new investments would emphasize "razor blades"—munitions—over more-expensive "razors"—new aircraft.

Four years later, the faith in these new wonder weapons is being vindicated. Thanks to the highly reliable, extremely accurate, and now ubiquitous Joint Direct Attack Munition (JDAM), each US combat aircraft already can successfully attack multiple targets on a single mission, turning the old calculus of "airplanes per target" on its head.

New, smaller weapons will further increase the number of targets that an aircraft can hit with precision on every mission—sometimes by a factor of four—but also confine the damage done to the desired area. This last capability has become a critical requirement as the US has engaged in large-scale urban combat in Iraq over the past two years.

On the Horizon

Other new weapons now making their way into front-line service will allow US fighters and bombers to shoot from farther away, and with greater accuracy than ever before possible, reducing their exposure and increasing the chances that the crews will get back alive.

However, these systems work so well that, like airpower in general, there is a danger they will be taken for granted and not receive the funding needed to stay at the cutting edge. Some have already been cut back, likely due to misunderstanding of their purpose. There may also be a creeping overconfidence that they can accomplish more than yet is possible.

Inventories of precision weapons—an ever greater portion of the munitions arsenal—are good, according to Maj. Gen. Robert W. Chedister, Air Force program executive officer for weapons and commander of USAF's Air Armament Center at Eglin AFB, Fla.

"We're kind of living off our stockpiles, which are pretty beefed up right now," Chedister said. The armament center is working closely with air logistics centers to make certain that munitions "are staying ... available" and at healthy inventories, he said.

The numbers of munitions on hand are classified, but Chedister said that, except for cruise missiles, "we're doing pretty good in almost all areas."

The pace of munitions development is averaging "a new weapon about every four or five years," Chedister noted, although during Gulf Wars I and II, new munitions designed for a specific type of target were rushed through development and production in about 90 days.

In Operation Iraqi Freedom, two of these were the Massive Ordnance Air Blast Bomb, intended to create deadly overpressure in caves where enemies were thought to hide, and the Passive Attack Weapon, a cluster munition that released thousands of darts. The latter was prepared to pierce fermentation

tanks and other chemical or biological weapons vessels that could not be destroyed with an explosive, because the blast would have scattered the contents over a wide area. The holes created by PAW darts would let the toxic materials drain into the ground for later cleanup.

Such efforts are not the norm, however. It usually takes about four years to bring a weapon ready to test and a few more to get it into production.

Importantly, the weapons spigot cannot simply be turned on at a moment's notice. Long lead times affect weapons just as they do more sophisticated systems, like aircraft.

Chedister noted that, as Operation Iraqi Freedom was approaching, he was given about \$1 billion to "hurry up and ... ramp up the production and buy JDAM tail kits."

However, the JDAM tail kit is not a whole bomb. The Army procures bomb bodies for the other services, and there weren't enough on hand. Nor was there adequate supply of explosive fill, then undergoing a change from standard TNT to an explosive that can be handled more easily.

There was also a shortage of crystals needed in the tail kit; these crystals came from a foreign supplier. Fortunately, "Boeing quickly went out and got an onshore source," Chedister recalled.

Holes in the Pipeline

Eventually, Chedister was able to organize all the elements of bomb assembly, and JDAM production "went from a few hundred to 3,000 in just a few months," he noted. However, the experience illustrated that substantial coordination is needed to surge bomb production and that the supply is somewhat dependent on the global marketplace.

Asked where there are "holes" in the munitions pipeline, Chedister said more money is needed in the research end.

"We could always use more development money," he said. "The munitions budget has gone down more, percentage-wise, than any other of the directorates" in the Air Force Research Laboratory, he said.

"So, some of us worry that we're not working on the new technologies of the future that we need to be."

On the top of that list is fuzes, Chedister said.

"I'm worried about the fuzes because we've taken them for granted and they've been so uncomplicated



Above, a Conventional Air Launched Cruise Missile is shown being launched from a B-52 bomber. The CALCMs, adapted from the AGM-86B nuclear ALCMs, were the first long-range, GPS-guided weapons.

over the years. That's now starting to become a major complication [given] the sophistication we're demanding of our fuzes and the price we're expecting [to pay]."

Already a requirement, he pointed out, is the need for data links between the cockpit and the fuze. In addition, bombs and their fuzes are expected to survive penetrating "some of the hardest granite overburdens" or to "count floors as [they're] going down." Some weapons can already count the voices they pass through as they penetrate a bunker, to detonate in the desired space—a spin-off of the desire to reduce collateral damage.

Chedister said that the fuzes on hand are "not smart enough, ... not rugged enough, ... not durable enough at the price we've been paying for them, and we're not putting enough money into the R&D of making them better." This is the "biggest hole in the weapons world."

Although he reported that the munitions stockpile is adequate, the Air Force is "running out" of AGM-86Cs, the Conventional Air Launched Cruise Missile (CALCM), Chedister said. No more of the long-range strike missiles are to be converted from their original, nuclear configuration. The Air Force has seen delays in fielding the replacement, the stealthy Joint Air-to-Surface Stand-off Missile. However, JASSM seems to have cleared some teething problems, is in production, and was expected to be declared operational on B-52s and possibly B-2s this year.

The Air Force plans to acquire about 4,900 JASSMs, of which 2,400 will be the "baseline" weapon, with a range of more than 200 miles, and 2,500 of an "extended range" model that can go more than 500 miles. The JASSM-ER will have exactly the same external dimensions as the baseline version, but will feature more fuel and a different engine. The stealthy JASSMs have made many pinpoint hits on targets in testing, but the program slowed due to mechanical malfunctions.

"Vigorous Involvement" Needed

The program is back on track, according to Gerry L. Freisthler, the center's director of engineering. After a Red Team examined why some missiles failed in tests, the team determined that both Lockheed Martin, the manufacturer, and the Air Force should maintain "vigorous involvement... with some of the second- and third-tier" suppliers, Freisthler said.

The fourth lot of JASSMs was recently awarded; some 700 are now on contract.

"As we start fielding more JASSMs, our cruise missile inventory is going to go 'green' again, and we'll be fine," Chedister asserted.

The JASSM is a "wooden round," meaning it can be stored until needed, without periodic teardown inspections or parts replacements. Theoretically, it can stay in storage for 20 years and still work. "All you do is run a bit test and you're ready to go," Freisthler said.

When the CALCM was first used in

Operation Desert Storm in 1991, its existence and its then-unprecedented guidance system—the use of Global Positioning System satellite signals—were kept secret for more than a year. Now, GPS-aided munitions—in the form of JDAMs, which come in 2,000, 1,000, and, recently, 500-pound varieties—equip nearly all combat wings of the service. So successful has it been in combat—not a single JDAM is known to have struck other than the programmed coordinates—that it is the targeteer's weapon of choice.

Gen. T. Michael Moseley, USAF vice chief of staff, was the air boss of Operation Iraqi Freedom in 2003. Shortly before the end of major operations, he said that, as impressive as JDAM was, there was a crying need for something smaller, to limit collateral damage, especially in urban areas where a destructive miss would pose an enormous political setback.

"I wish we had the 250- and 500-pound class JDAM now, but we don't," Moseley said in a teleconference to the Pentagon pressroom in April 2003. In the incessant effort to limit unintended damage in the urban setting, the Air Force had even used precision bombs filled with concrete, rather than TNT, relying on the sheer kinetic force of the dropping weapon to destroy the target.

The 250-pound class weapon that Moseley wished for is now in production, and it promises to again alter the way the Air Force thinks about its combat air fleet.

That weapon is the Small Diameter Bomb, which is more of a system than a specific munition. The bomb itself has about a 30-pound warhead. It is guided to its target by GPS, backed up by an inertial guidance system. Its exact expected accuracy is classified, but is characterized as "better" than the JDAM's 10 feet. To accomplish this, it relies on differential GPS, utilizing a series of ground stations that refine the GPS signal.

Tunable Accuracy

The SDB will be so accurate, and its effect so tunable, that it will be able to destroy a particular room in a building, without knocking the whole building down and maybe not even damaging the floors above and below.

The SDB contract went to Boeing in October 2004. However, the subsequent revelations in the Darleen A. Druyun scandal called the legiti-

macy of the SDB contract into doubt. Druyun, at the time the top civilian acquisition official in the Air Force, chose Boeing to develop the SDB. She later admitted she was throwing work to the company that it might not deserve. (See "Washington Watch: Acquisition Gets a Scrub Down," January, p. 9.) Druyun is in jail for assisting Boeing in getting Air Force contracts while she was still on the government payroll.

Partly in response to a protest from Lockheed Martin, which lost out on the SDB competition, the Government Accountability Office reviewed the SDB contract, along with others called into question by Druyun's revelations. It recommended that, since Boeing's development of the first phase of the program was a *fait accompli*, the second phase of the program should be competed.

"The Air Force is going to follow the GAO recommendations," said Freisthler.

"We've got a wall up, if you will: total segregation between SDB1 and SDB2," he explained. The second part of the program—previously known as Spiral 2—calls for a similar-size weapon which will also have a terminal seeker and some device, likely spring-loaded wings, to extend the range of the weapon, giving it greater standoff range, as well as the ability to find and hit moving targets.

The Air Force is still working out an acquisition strategy for the SDB program, which is expected to get a go-ahead in late summer or fall. The advanced SDB program is set to begin in Fiscal 2006.

Despite the tarnish of the Druyun affair, Freisthler praised the SDB project for its speed.

"We set out on the most aggressive weapon development program ever undertaken, as far as I know," he observed.

"In a matter of three years, we're going to go from start of development to a fielded weapon system ... able to go against fixed or relocatable—not moving—targets." The program thus far also includes a new "smart rack" that will carry the weapons in groups of four, either on a wing or in a bomb bay, and the differential GPS ground stations. The improved signal from these stations can also be used to improve the accuracy of other weapons, such as JDAM and JASSM.

"This accuracy support infrastruc-

ture will be available to anybody" with a military receiver, Freisthler said. "The Air Force bought the rights to this," so that even if Boeing does not win the second phase of SDB, the selected weapon will be able to use the same infrastructure.

In the meantime, Boeing won production contracts from the Air Force in April that call for 158 SDB units the first year and 512 the second year, with increases thereafter, Freisthler said.

New Niche

He also noted that the SDB does not replace JDAM but fills a new niche in the weapons portfolio. However, the two weapons will be weighed against each other in various scenarios to determine the right inventory objectives.

In the notorious Program Budget Decision 753—which, among other things, slashed planned production of the F/A-22—the Wind-Corrected Munitions Dispenser-Extended Range, was also terminated. The Air Force had planned to build 7,500 WCMD-ERs, Freisthler noted.

The WCMD-ER consists of a clamshell container with a tail kit on the back that corrects the drift of the weapon as it falls through the air. It extends the release range from six miles to about 40 miles, depending on the aircraft's altitude, by using spring-loaded wings, meaning the launch aircraft can keep farther away from the target and its defenses.

The WCMD carries submunitions. They can be antitank weapons, like

the Sensor Fuzed Weapon, or cluster bombs, which have been criticized in Congress and around the world because unexploded units pose a grave risk to civilians after the fighting is over.

The WCMD-ER program "does not build submunitions," he said. "It's a tail kit." There was "confusion" in the budgeting process, Freisthler said, between the generic carrier and the specific weapon.

Regardless of what's in the munition, the WCMD tail kit enables the weapon to strike targets far more accurately than it could without it, Freisthler said. "We allow a pilot to launch from 40,000 feet instead of down on the deck, ... [and] instead of launching eight or 10 of them to take out some convoy, he'll launch two or three, maybe."

If cluster bombs must be used, Freisthler said, "WCMD makes it so you use less, not more. At the same time, you keep aircrews out of harm's way. Seems like a good idea."

The Air Force and the Pentagon concurred with the armament center's proposal to finish WCMD-ER's development and produce the first 100 units. That will complete the previously funded Fiscal 2005 program but goes no further.

The Air Force had planned to use the WCMD-ER as a substitute for the stealthy Joint Standoff Weapon, from which USAF withdrew a few years ago. There is no plan to go back to JSOW, however.

The Air Force's new munitions are so good and require so much less



The Low Cost Autonomous Attack System is a technology pathfinder for small-scale cruise missiles, laser radar, and miniaturized munitions. Derivatives may include vehicles that loiter over the battlefield.

Lockheed Martin photo



The JASSM, shown here with an F-16, is the Air Force's stealthy cruise missile for the 21st century. An extended-range model, externally indistinguishable from the first version, will allow stealthy attack at a range of 500 miles.

maintenance that the service is divesting itself of interim weapons that don't work as well or as efficiently, Freisthler said.

Take, for example, the AGM-130 rocket-powered glide bomb. "We're done with those," said Freisthler. "We've taken them out of the inventory. Now that we have JASSM, we don't need those."

The same is true of the AGM-142 Have Nap TV-guided 2,000-pound bomb, adapted in the early 1990s from the Israeli Popeye missile.

Next Big Thing

Freisthler said the "next big thing" in USAF weapons development will be data links. These will allow weapons to be retargeted after they have left the launching aircraft.

Some weapons—like JASSM-ER or WCMD-ER—will fly many miles en route to the target, which might move after launch. A data link will enable the launch aircraft to send new coordinates fed by intelligence-surveillance-reconnaissance assets.

Conversely, "it could be you send [it] a new seeker image. ... It could be [that] you get video from it and can do something with that."

He said an advanced concept technology demonstration (ACTD) is being prepared that would experiment with a universal data link that would work on all weapons, so that there won't be "a gigantic pile of equipment because every data link is different."

Given that "all these weapons have

long times of flight, it makes a lot of sense," said Freisthler.

Another improvement will be anti-jam versions of the GPS antenna on the new weapons. Until now, if the GPS signal was lost, the weapon would revert to inertial navigation and try to regain the GPS signal. The anti-jam feature will cost a bit more per weapon, "but it's something the warfighter wants," Freisthler noted.

Air Force Chief of Staff Gen. John P. Jumper has described his vision of aircraft flying over the battlefield, able to dispense just the right weapon for whatever "effect" troops below call for. The ability for aircraft to carry highly dissimilar loads is another area getting the armament center's attention.

"We're getting very close to that," Freisthler reported. "I know the lab is working on the ability to 'dial an effect.'" He also said the B-52 program office "for sure [is] doing work on mixed loads."

He explained that the Air Force is now working on the Universal Armament Interface, which would allow all USAF aircraft to communicate with any new weapon hung on their racks. It would be analogous to a "plug and play" peripheral to a computer.

Cut the Tape

"Right now, if we want to put a new weapon or a major change to a weapon on an airplane, we have to get in line for the next OFP update, right?" said Freisthler. The Operational Flight Program is a periodic reloading of an

aircraft's computers with new software. The updates can be as much as three years apart. "We are trying to get a standard interface that allows that to be cut to a small number of months," said Freisthler.

Still another system that Eglin has been working on for a long time is the Low Cost Autonomous Attack System, or LOCAAS. This Lockheed Martin vehicle is an ACTD, meaning it is exploring technology that will either become a weapon or be a pathfinder for other systems that will use the technology it develops.

The LOCAAS, which is only about three feet long, has a motor, employs a laser radar seeker, and has demonstrated that it can loiter over an area and scan for objects—such as tanks, surface-to-air missiles, etc.—that match templates in its database. When it finds one, LOCAAS can either report back to the operator for instructions or attack the target. It has also demonstrated the killing of targets using a shaped copper disk charge.

So far, there is no concept of operations demanding a LOCAAS, Chedister said. However, it is a "showcase" for a concept called the Dominator, a larger weapon that would loiter around the battlefield collecting intelligence and attacking targets. The Dominator—or something like it—solves what Jumper has called the "'one time of flight' problem for fleeting targets," Chedister noted. This is the notion of being able to hit any target within a few minutes of the order, rather than hours.

"It's done everything we wanted it to do, and right now, we're just waiting to spin some of that technology off into something else."

However, LOCAAS is an example of the fact that the future is looking smaller, Chedister said.

"The rave is unmanned aerial systems," he said, and USAF has "some initiatives for weaponizing them." Such devices will need weapons "lighter than the Small Diameter Bomb—much lighter." The armament center is ready to work on "as small a weapon that anyone needs, for as small of a micro-UAV as anybody wants." He noted that there are some UAVs that can only carry a few ounces of payload, "and we'll be glad to go work on a weapon that would only weigh ounces."

The area of weaponizing UAVs is an "exploding market area, ... [and] we're going to get into it as big and furious and fast as we can," he asserted. ■



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David L. Blankenship
Tulsa, Okla.

John G. Brosky
Carnegie, Pa.

Dan Callahan
Centerville, Ga.

Robert L. Carr
Pittsburgh

George H. Chabbott
Dover, Del.

O.R. "Ollie" Crawford
Blanco, Tex.

Jon R. Donnelly
Richmond, Va.

Russell E. Dougherty
Arlington, Va.

George M. Douglas
Colorado Springs, Colo.

Charles G. Durazo
Yuma, Ariz.

Joseph R. Falcone
Ellington, Conn.

E.F. "Sandy" Faust
San Antonio

John O. Gray
Arlington, Va.

Jack B. Gross
Harrisburg, Pa.

Martin H. Harris
Montverde, Fla.

Gerald V. Hasler
Encinitas, Calif.

Monroe W. Hatch Jr.
Clifton, Va.

H.B. Henderson
Santa Ana, Calif.

John P. Henebry
Winnetka, Ill.

Harold F. Henneke
Nashville, Ind.

David C. Jones
Sterling, Va.

Victor R. Kregel
Colorado Springs, Colo.

Jan M. Laitos
Rapid City, S.D.

Doyle E. Larson
Burnsville, Minn.

Nathan H. Mazer
Roy, Utah

William V. McBride
San Antonio

James M. McCoy
Bellevue, Neb.

Thomas J. McKee
Fairfax Station, Va.

Bryan L. Murphy Jr.
Fort Worth, Tex.

Ellis T. Nottingham
Arlington, Va.

Jack C. Price
Pleasant View, Utah

William C. Rapp
Niagara Falls, N.Y.

Walter E. Scott
Dixon, Calif.

Mary Ann Seibel-Porto
St. Louis

John A. Shaud
Springfield, Va.

Joe L. Shosid
Fort Worth, Tex.

James E. "Red" Smith
Princeton, N.C.

R.E. "Gene" Smith
West Point, Miss.

William W. Spruance
Las Vegas

Harold C. Stuart
Jensen Beach, Fla.

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Hayes, Va.

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National Commander
Arnold Air Society
Clemson, S.C.

USAF says the United States must define “a minimum aircraft manufacturing industrial base.”

What's Left of the **DEFENSE INDUSTRY**

By Adam J. Hebert, Senior Editor

FIFTEEN tumultuous years of consolidations, mergers, and reforms have radically reshaped the nation's military industrial base, leaving the US with a system that scarcely resembles the vast complex that churned out advanced weapons throughout the Cold War. The change prompts questions that go to the heart of national defense.

Once, the US military industry comprised dozens of major manufacturers and subcontractors, lineal descendants of the vast “Arsenal of Democracy” of World War II. However, paltry Pentagon budgets and a resulting “procurement holiday” in the 1990s changed the landscape in dramatic fashion—and for good.

Today, after a major market shake-out, only a handful of industrial giants remain. In the aerospace field, the

amount of military business is sufficient to support only three major aircraft manufacturers.

These firms have managed to stay profitable and innovative, producing guarded optimism in some quarters.

Others, however, are far more pessimistic. The industrial trend has prompted public expressions of concern from USAF's two highest officials—Michael L. Dominguez, the acting Secretary of the Air Force, and Gen. John P. Jumper, USAF's Chief of Staff.

In an April 7 letter to Sen. John Warner (R-Va.), the chairman of the Senate Armed Services Committee, they pointed to Congress' deep unease about the decline of the US shipbuilding industry and then added: “We believe the same situation exists with regard to our nation's aerospace manufacturing industrial base.”

Earlier this year, Jumper observed, "We have more shipyards in this country than we do factories that produce airplanes. We need to think about that very carefully."

Jumper evidently has concluded that reduced US production capacity has had negative side effects, not the least in the cost of new systems. As evidence, he cited the example of the C-130 aircraft. In 1964, Jumper said, the price of a single new C-130B was \$11.5 million (as calculated in inflated 2005 dollars). The new C-130J being produced today costs five times that amount. "The capability is certainly better," said Jumper, but the C-130J "doesn't carry 500 percent more [troops or cargo]."

"Minimum" Aerospace Industry

In their letter to Warner, Dominguez and Jumper called on Congress "to define a minimum aircraft manufacturing industrial base" and develop "a strategy that ensures America remains the world leader in aerospace technology, innovation, and production."

In the 1990s, there was widespread concern that the defense industrial base would be unable to meet DOD's demands for the 21st century. As the number of programs dwindled, long-standing aerospace powers faced increasingly bleak prospects.

The most dramatic case emerged in 1996, when McDonnell Douglas, the proud producer of the Air Force's F-15 and the Navy's F/A-18, found itself locked out of the next generation fighter market. It had lost the Joint Strike Fighter competition and soon merged with Boeing.

The Pentagon encouraged such consolidation. DOD officials feared that there was not enough money to sustain a large number of contractors and that any attempt to do so could lead to an outright collapse.

Defense firms took this admonition to heart.

What in 1980 was a field of roughly 75 major aerospace-related companies had by 2001 been transformed by consolidations and mergers into a slimmed-down group of five prime contractors. In 1990, the Pentagon had eight major military aircraft suppliers. Today, it has three.

The truly major defense contractors that remain—Lockheed Martin, Boeing, Northrop Grumman, General Dynamics, and Raytheon—now account for 46 percent of the top 100 defense contracts.



Lockheed Martin photo

Despite concerns about the overall size of the program, Lockheed Martin's F/A-22 line in Marietta, Ga., pictured, is healthy, as production continues to ramp up. The total number of military aircraft is expected to decline.

Industry's consolidation drive slowed when DOD became concerned that declining numbers of prime contractors would limit competition and drive up costs. Northrop Grumman and Lockheed Martin announced plans to merge in 1997, but called it off after the government opposed the move.

In 2003, then-Air Force Secretary James G. Roche told an industry audience that he was still dealing with the consequences of the "pell-mell" industry consolidation of the 1990s. "The most direct way to drain innovation and cost savings out of programs is to deaden competitive pressures," Roche said. "Excessive consolidation, unfortunately, contributes to that problem."

Refuting Pessimists

Today, the Pentagon's civilian leadership is reasonably satisfied with its industrial situation. DOD industrial policy officials feel the competitive pressure of the marketplace is "the best vehicle to shape an industrial environment that supports the defense strategy," said the "2004 Annual Industrial Capabilities Report to Congress."

A series of 2004 Pentagon studies "refute the concerns of those bemoaning the excesses of the consolidation of the 1980s and 1990s," DOD industrial policy officials wrote last October. "Our research has changed our views about the size and composition of the industrial base."

The industry "has not" become too consolidated, officials wrote.

In 2001, most industry analysts were convinced that the F-35 Joint Strike Fighter program would be split between competitors Boeing and Lockheed Martin. Lockheed in the early 1990s had won the competition for the only other big new fighter program—the Air Force F/A-22. The need to build manned fighters, went the thinking, was too important for the government to allow Lockheed to have a de facto monopoly.

Despite Pentagon assurances that JSF competition would be "winner take all" in character, there was much speculation about how the program might be split to keep two firms in the fighter business. The loser might build aircraft under contract, it was said, or get a chance to compete separately for the Marine Corps short takeoff and vertical landing design.

It was not to be. DOD awarded the JSF contract—all of it—to Lockheed Martin. When it came to next generation tactical aircraft, Boeing was left with only a subcontractor stake in the F/A-22 and a chance at the new unmanned combat air vehicle program.

This produced a great deal of hand-wringing, yet some top officials now believe it worked out for the best. The RAND Corp., for instance, thinks so. The venerable defense-oriented think tank has on several occasions taken careful looks at the F-35 business case and has found that splitting the program would have boosted its cost by \$40 billion.

A 2003 RAND report maintained that competition might have brought down

Case Study: Munitions

In 2003, when the Defense Department was about to run out of TNT, the Air Force briefly considered buying the explosive from a source in China.

US industry had produced no TNT since the Radford Army Ammunition Plant in Virginia stopped making it in 1986, and the stockpile was about to run out. A better solution was found, but the TNT used to fill some of USAF's 500- and 2,000-pound bombs is now recycled from old weapons—or imported from Poland.

USAF's munitions industrial base serves as a warning about what can happen when manufacturing is allowed to collapse.

USAF dramatically cut its munitions buys at the end of the Cold War, and the consequences were severe. Companies left the munitions industry. By the time funding ramped up again, "it was too late to save the munitions industrial base," according to a 2003 article in the *Air Force Journal of Logistics*.

This contractor exodus created troubling situations. For many items, there is no surge capability. The Air Force was left with a single supplier of Mk 80 bomb casings, laser guided bomb tail and guidance-control kits, satellite guided weapons (the Joint Direct Attack Munition) tail kits, and magnesium-Teflon flares.

Lt. Col. Charles Webb III, writing in *AFJL*, said the lack of domestic TNT production capability was "probably the most devastating predicament to the munitions industrial base."

Webb warned of serious "political ramifications" to this, because a US armed service was "identifying a weakness in the production capability to the world and relying on a foreign source for something as critical as an explosive fill for bombs."

"It was kind of touch and go there for a while," said Dave Jacobs, an Air Force munitions budget analyst. In 2003, USAF contracted with Alliant Techsystems to solve the problem. A five-year agreement was signed, guaranteeing the company a revenue stream, with the understanding that the company would restart domestic TNT production at Radford.

The contract's "preferred method" for obtaining the explosive is through domestic production, Jacobs said. TNT output should resume later this year, for the first time in 19 years.

that figure "somewhat," but there would be a "very small chance" that DOD would have recouped all \$40 billion.

What's more, Boeing (as well as Northrop Grumman and other contractors) has continued work on unmanned aerial systems "that may require skills similar to fighter development," RAND wrote. "Northrop Grumman may also retain considerable fighter design, development, and production experience through its participation in the JSF program."

RAND further noted the likelihood that these firms will eventually challenge Lockheed's grip on tactical air systems. It pointed to a similar challenge that occurred at the dawn of the stealth era in the early 1980s.

Who's Hungry?

As RAND pointed out, Lockheed and Northrop at that time were "two extremely 'hungry' second-rank fighter prime contractors that had been largely cut out of the conventional fighter market" during 1970s fighter competitions. In response, RAND continued, they "pursued radical and innovative technologies in an attempt to dethrone the reigning leaders of the fighter market in the prestealth era: McDonnell Douglas and General Dynamics."

Lockheed Martin subsequently won competitions to produce the F-117, F/A-22, and F-35—all stealth aircraft—while Northrop Grumman produced the winning design for the B-2 stealth bomber.

Periods of technological innovation in the aerospace industry, such as the stealth revolution, are almost always led by "second-rank" prime contractors, RAND found.

That, however, was in an era of multiple aerospace firms. Large numbers of aerospace companies tend to produce an abundance of new ideas. Innova-

tive ideas may now be less numerous than before.

It is not possible to predict these long-term consequences. "With only one remaining dominant developer of advanced US fighter aircraft, and with almost insurmountable barriers to new entrants," RAND asked, "what companies in the future will play the role [played by] the second-rank firms in the past?"

Some say Raytheon or General Atomics—producer of the highly successful Predator unmanned aerial vehicle—could turn out to be the prototypical "hungry" aerospace companies that rise to prominence in the future.

Lockheed Martin, Boeing, and Northrop Grumman are the largest contractors not only for the Air Force but also for all of the Defense Department. The three are now the only companies deemed able to design and build advanced manned military aircraft, and each of the three has diversified far beyond fighters.

Lockheed Martin has a major space and missiles program. Boeing is the world's premier commercial aircraft manufacturer. Northrop Grumman has a major stake in shipbuilding.

In 1990, the US aerospace industry employed more than 1.1 million workers. This number plunged to 673,000 by 1995 and then continued to drift downward. According to the Aerospace Industries Association (AIA), aerospace employment bottomed out at 569,000 in February 2004 and rebounded to 588,000 last September.

Having a much-smaller workforce is a mixed bag. Industry executives note that it is more productive than before. In 2004, profits were the best they had been in five years. Industry sales are expected to grow again in 2005 for the seventh year in a row.



Many expected the Pentagon to split the F-35 Joint Strike Fighter program between rivals Lockheed Martin and Boeing. The Pentagon kept its word, however, and awarded the entire contract to Lockheed Martin, whose design is shown.

Lockheed Martin photo



Many legacy aircraft are now handled by new contractors. The B-1 Lancer, above, was conceived by North American Rockwell and built by Rockwell International. Those companies are now part of Boeing.

Many worried that military research and development funding was not sufficient to maintain a core of trained scientists and engineers. This situation has improved somewhat. During the Bush Administration years, R&D investments have increased. Companies also have expanded their in-house research.

Industry officials warn that the defense base still has major structural problems—small military orders, stifling export policies, and unreliable government “plans.” To cite the most egregious example: Where once plans called for building 750 F/A-22s, that number has dwindled to about 180 today.

Institutional Memory

Foremost among the current concerns is the need to protect institutional knowledge over the long term. “I’m a little worried about keeping a workforce together,” said F. Whitten Peters, a former Secretary of the Air Force and member of a recent commission formed to study the ills of the aerospace industry.

For one thing, the few development and production programs now on the books tend to last for decades. This greatly limits the opportunities for engineers to hone their craft, compared to what was true a generation ago. The F-15 and F-16 each were quickly fielded, allowing engineers on those projects to move on to other aircraft programs. In contrast, the F/A-22 has been in development since 1991.

In 2002, the Aerospace Commission (Peters was a member) determined that all of the design work for the F/A-18E/F, F/A-22, and F-35 programs will be complete by 2008.

Peters observed, by way of example, that, if you wanted someone to design a new heavy bomber, “it’s not exactly clear where you would go to do that.”

RAND has observed that there will be work on a new tanker, unmanned combat air vehicle, and intelligence-surveillance-reconnaissance aircraft, but that work will sustain design teams for only about another five years.

The number of engineering students entering aerospace has declined, and some fear students see a dead-end field. “You want a steady stream of workers coming forward,” Peters said.

In the future, another manned fighter may be needed. The commission warned that, when the time comes, the US may come face to face with a serious problem. Where will it find “experienced design teams” to create such an aircraft if the manned fighter design process “is in fact gapped for 20 years or more?”

Boeing and Northrop Grumman have major unmanned programs under way, and these may protect their expertise. Peters compared UAVs to fighters in the 1950s—“a thousand flowers are blooming out there.”

A lack of institutional knowledge can have concrete consequences. A 1999 study of space-launch failures “found that inadequate engineering expertise was a major contributing cause,” the Aerospace Commission noted. “More recently, the Secretary of the Air Force has pointed to the decline in systems engineering skills as a major contributor to cost overruns in military space programs.”

Diversification into military, civil,

and space applications helps the aerospace companies ride out slow military acquisition periods. AIA President John W. Douglass, however, said the military, space, and civil sectors have independent business cycles, and the industry can be damaged by dry spells in each of them.

Are Bailouts Good?

While the contractors have made major strides toward self-sufficiency, government spending remains critical to the health of the industry. Peters acknowledged the concern that USAF’s proposed KC-767 tanker lease from Boeing was seen as a bailout, but added that the acquisition would help the company weather some of the market’s peaks and valleys. Sometimes the government must step in to ensure that its industrial base stays healthy.

Much of the aerospace sector’s research has both military and commercial potential. But relying on the commercial sector can also be a mistake. In the case of USAF’s Evolved Expandable Launch Vehicle, the “business case” for funding two suppliers—Boeing and Lockheed Martin—was predicated on EELV boosters being used primarily for commercial space launch. DOD would buy “at the margin” launches that were expected to be low cost.

Unfortunately, “worldwide demand for commercial satellite launch has dropped essentially to nothing—and is not expected to rise for a decade or more,” the commission warned. “Reliance on the economics of a commercially driven market is unsustainable.”

It could be worse. The shipbuilding industry is probably on shakier ground than aerospace. Nuclear submarines and aircraft carriers have no commercial applications, and the government frequently resorts to expensive split-production programs and national teams to maintain a viable industry.

The most acute concerns center on maintaining specialized capabilities. Recent studies have found a wide range of these, some of which will require government protection. They include production of chemical oxygen-iodine lasers, the Global Positioning System, hypersonic propulsion, and radiation-resistant components.

The Aerospace Commission said that the government “must assume responsibility for sustaining, modernizing, and providing critical ... defense-related technologies” such as these, “when it is in the nation’s interest.” ■

Uniformed airmen aren't the only Air Force members facing risks in overseas war zones.

Civilians in Ha



AFCOSI photo

A civilian member of the Air Force Office of Special Investigations crouches among the weapons OSI confiscated in Iraq. Since 2003, roughly 1,500 Defense Department civilians have volunteered for duty in Iraq.

rm's

Way

By Peter Grier

Last Oct. 14, a civilian Air Force employee—call him Jim; his real name can't be used—had an hour to kill inside the Green Zone, the heavily fortified area in central Baghdad that contains many coalition and Iraqi government buildings.

Jim and some colleagues decided to dine at the Green Zone Cafe, a restaurant popular with Americans in Baghdad. They never saw their lunch order. As the group was waiting to be served, a suicide bomber detonated a backpack bomb in the restaurant, spewing deadly shrapnel throughout its interior. Insurgents had picked that day to strike at the heart of the US presence in Iraq.

The bombing of the cafe, and a similar attack staged at a nearby bazaar, killed four Americans. Jim and two fellow Air Force Office of Special Investigations agents were among the injured.

"I remember sitting there," Jim says now. "I saw a guy falling back in a chair, and then I went unconscious."

He woke up in Brooks Army Medical Center, Tex., severely wounded. Jim is recovering now and remains proud of what he and his unit accomplished in Baghdad.

Jim's experience illustrates a fact of life about Iraq and the Global War on Terror: Uniformed Air Force members aren't the only ones taking risks. Civilian members of the service find themselves under fire as well.

Past wars had a clear dividing line. The enemy was on one side, the good guys were on the other. It was generally easy to locate safe, rear areas—far away from the action.

"Today things have changed," said Lt. Col. William Arrington, chief of operations and joint managers branch.

"Today there is no line. The global war on terrorism is worldwide, as evidenced by the attack on [9/11]."

Civilian Volunteers

Pentagon officials estimate that roughly 1,500 civilians employed by the military services or the Department of Defense have volunteered for duty in Iraq over the last two years. They have worked alongside their uniformed colleagues, providing a range of support such as air traffic control, information technology, and criminal investigation manpower.

Civilians of the Army and Air Force Exchange Service proffer materiel from home to the troops on today's front lines. Sarah Latona, an AAFES associate from Mountain Home AFB, Idaho, was wounded by shrapnel in an insurgent attack on a convoy in Iraq last October.

She became the first AAFES civilian in the organization's 109-year history to receive the Defense of Freedom Medal, the civilian equivalent of the Purple Heart. The medal was pinned on her by the commander of Mountain Home's 366th Fighter Wing in a March 24 ceremony.

Air Force Engineering and Technical Services civilians work alongside the military in Iraq, providing maintenance services for a wide range of Air Force aircraft and computer and communications equipment.

A willingness to deploy is part of the job description for AFETS, whose civilians average 25 years of experience. Since Sept. 11, 2001, AFETS has filled more than 275 individual deployments for Air Combat Command.

AFETS personnel constitute 87 percent of ACC's designated Emergency-

Few Face Forced Deployments

Uniformed military personnel have to move out when ordered. For the most part, civilians do not.

Defense Department civilian employees are not required to go to Iraq or to deploy anywhere else they might be in harm's way, unless they have already accepted the possibility of such a deployment as a condition of a job.

"Individuals are not snatched up and sent against their wills," said James H. Carlock Jr., civilian career program management policy manager in the Air Force's Personnel Force Management directorate at the Pentagon.

According to Carlock, the procedure works like this: The theater commander gives the services his requirements to fight the war, including personnel needs. But joint manning documents do not specifically call for a civilian or a military person to fill any particular job.

The Air Force and the other services then have the option of choosing the best person to send into the combat zone. On the civilian side, that is generally a matter of asking for a "show of hands" from willing participants.

Not all deployed civilians are sent to hazardous areas. Though many do go overseas, it is possible to be deployed to another domestic location, to replace a member of the military called up for Iraq or other overseas duty.

Essential civilian employees. When hired, all E-E personnel agree to deploy or otherwise perform temporary duty in a crisis.

Fifteen to 20 Emergency-Essential personnel are away from home, on individual deployments, at any one time, officials said. Other E-E specialties include historians, air traffic controllers, protocol officers, intelligence specialists, and program analysts.

For the Air Force as a whole, the number of civilians deployed to the Southwest Asia theater at any given time is relatively small. This spring, a service official counted 10 in Iraq, five in Afghanistan, and a sprinkling of others in Kuwait, the United Arab Emirates, and Kyrgyzstan.

But while small, the contingent has already suffered a fatality.

On Aug. 8, 2004, OSI Special Agent Rick A. Ulbright had just finished conducting a polygraph examination at Kirkuk Air Base in Iraq. He was walking across the grounds to another building when an insurgent-fired rocket landed nearby, killing him.

At 49, Ulbright had joked about being an old man compared to the rest of the deployed OSI agents. The Maryland resident had put off beginning a teaching job at the Department of Defense Polygraph Institute in Ft. Jackson, S.C., to volunteer for a six-month tour in Iraq.

A 21-year Air Force veteran, Ulbright had joined OSI as a civilian in 1998.

"Rick was truly a great American," said Brig. Gen. Eric Patterson, OSI commander, last year. Ulbright was

"an outstanding civilian 'airman,' an outstanding special agent."

Ready To Go

While Air Force civilians are generally not forced to deploy into combat zones, "many of them are raring to go," said Arrington.

In this regard, Randall J. Redlinger may have been typical. A retired military man, Redlinger was the first senior civilian OSI sent into Iraq. He arrived in May 2003, to pioneer the job of counterintelligence support director for the then-ruling body, the Coalition Provisional Authority.

His task was to establish an operations footprint throughout the country.

He was told that "this was a mission that we could not fail at," he said.

When he arrived, he discovered that the small OSI contingent then in Baghdad had nothing—no electricity, no water, and no clean place to sleep. Agents' quarters were in an abandoned phone closet inside a shattered palace.

He helped acquire living accommodations, transportation, and basic tools-of-the-trade for the Baghdad OSI headquarters and four regional offices.

"It was a very daunting task just to get the capability stood up," he said.

After that, Redlinger oversaw the activity of agents and made sure their information was channeled to the appropriate units. The OSI contingent also provided some senior CPA officials with protective service details.

On several occasions, OSI agents drew insurgent fire while performing their escort duties. "When you get a radio call from your group on the ground saying they are taking fire and evacuating the area, that is a wake-up call," said Redlinger.

Most OSI personnel were staying at the Al-Rashid Hotel in Baghdad. At approximately 6 a.m. on Oct. 26, 2003, insurgents parked a small trailer near the hotel's broad side. The trailer was a mobile rocket launcher, and in seconds it launched a fusillade of projectiles into the Al-Rashid facade.

Redlinger remembers that he had just woken up and entered the bathroom when the first explosion occurred. One of his civilian agents had a solid mahogany door blown in on him, but



Soldiers and Air Force OSI special agents (center) meet with Iraqi tribal council leaders. Before deployment, civilians receive training similar to that given to uniformed troops. They typically wear camouflage gear.

AFOSI photo



Four OSI special agents, front, pose with Iraqi citizens. Most deployed US civilians are unarmed, though some jobs, such as OSI, require members to carry weapons.

otherwise the OSI troops were uninjured. One Army officer was killed in the attack.

That was the closest scrape with death that Redlinger had during his tour. He left a few weeks later.

"I would be willing to go back tomorrow," said Redlinger, now deputy executive OSI director. The Iraq mission "was the pinnacle of my career."

The Defense Department tries to prepare deploying civilians as much like uniformed troops as is possible. Prior to departure, the embarking civilians are offered training in such areas as protection against biological and chemical attack. Some even get remedial instruction in items of basic soldier skills such as how to pack a rucksack.

Living conditions for deployed civilians are the same as those for their military counterparts. In a way, it is kind of a misnomer to make a distinction between civilians and uniformed members of the armed services, since nearly all civilians also wear camouflage dress while deployed. They are simply designated as "civilian" on their name tag.

Civilians generally do not carry weapons. The major exception is for those whose duty requires it, such as OSI agents.

Focused Training

Many of those who have volunteered for deployed duty are themselves former members of the military. As such they have some knowledge of what to expect.

But some civilians in danger are not former military. Kelly—last name withheld on request—is an OSI agent who graduated from college in 2002. After an initial assignment in the Boston area, she put in her name for Iraq duty.

Once she was picked for the assignment, she spent weeks going through a series of preparatory schools. She learned everything from defensive driving techniques to firearms skills to dealing with Arabic translators.

"By the time I finished, I was more than confident," she said, that she was ready to get on the ground and start working.

When she got to Baghdad in March 2004, she was assigned to a team with five other agents.

Once she arrived, Kelly often carried out interrogations with the help of translators. She found that—as a six-foot-tall young American woman with blond hair and blue eyes—she was someone many Iraqis found unusual. Some were hesitant to talk to her. Some had the opposite reaction.

"It comes down to talking skills," said Kelly. There "was a surprise factor when they saw me."

The team's primary mission was strategic counterintelligence, and the agents spent 70 percent of their time outside the relative safety of the Green Zone, Kelly said.

The first thing that surprised her

was the driving on Iraq's streets. The only rule seemed to be that there were no rules.

"Stop signs, lights, it doesn't matter," she said. "The faster you can move, the better." Before they passed through the Green Zone's protective barriers, agents printed out the exact route to their destination—and an alternate.

The Iraqis they dealt with ranged from local police detachments to civil guardsmen. The information OSI was after could include the location and timing of planned roadside bombs, the identity of insurgents, or the location of weapons caches.

Kelly said the Iraqis "we spoke with many times were risking their lives in doing so."

She was proud of her team, which she said was an aggressive one. In general, she was impressed by how everyone—civilians, members of all the armed services, contractors—was working together.

"Everybody was about the one cause," she said.

The number of deployed civilians remains a small percentage of the US personnel in Southwest Asia. But that does not mean the civilian contribution is unimportant, say Air Force personnel.

Service officials are pushing for legislative changes, such as a combat-zone tax exemption, that would help civilians in combat areas. There is at least one benefit difference: For defense civilians in areas deemed combat zones, danger pay is calculated as a percentage of basic pay. For uniformed members of the military, it is a flat sum.

The hours are long in deployed areas, and overtime pay for civilians can become an issue. Air Force officials say that's basically something that needs to be worked out between the employee and his or her home unit.

"I don't see that as a problem right now. It's just two different systems," said Arrington. "When you are deployed, you pretty much expect overtime."

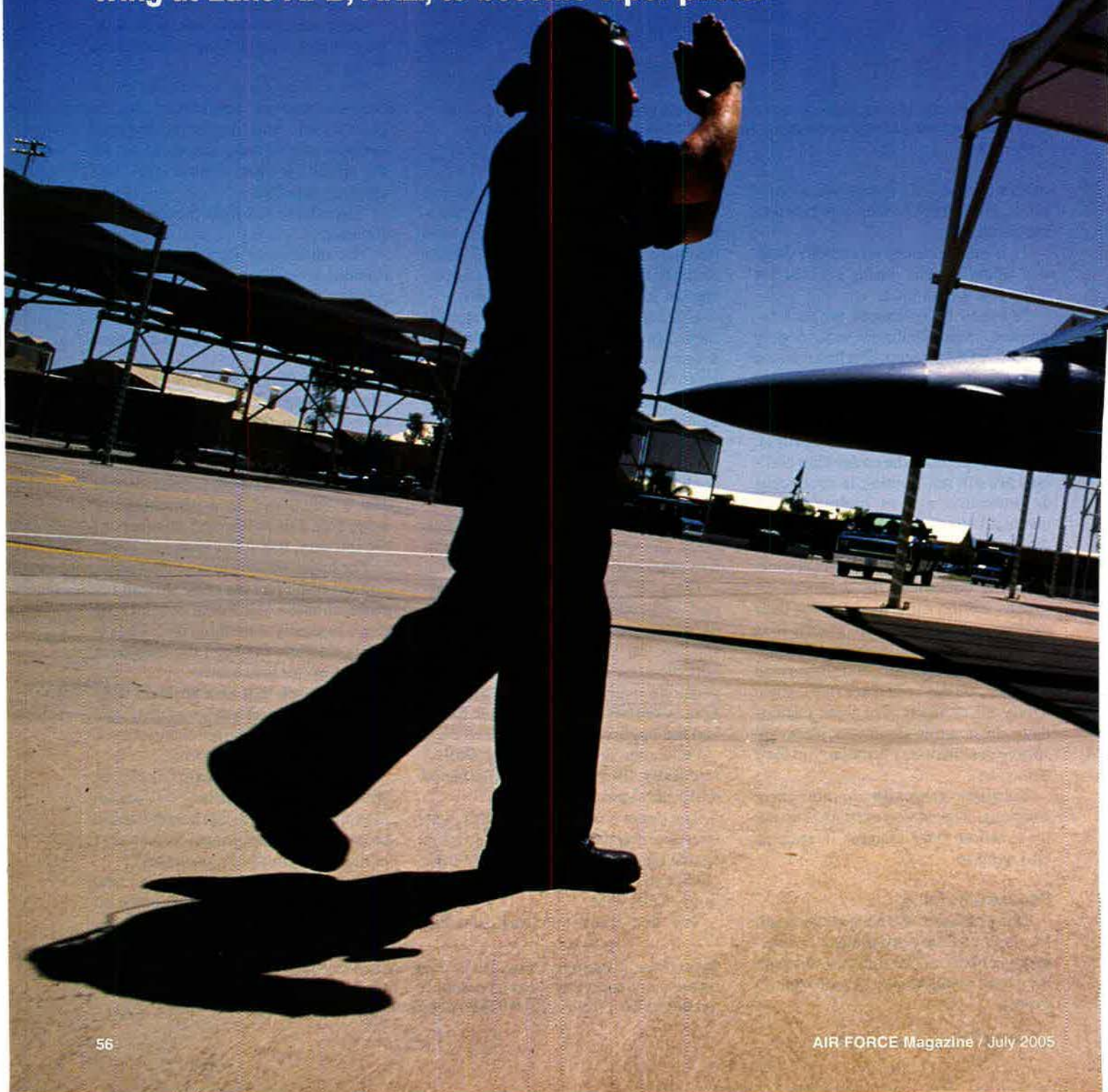
The Air Force would also like to institutionalize the process of civilian deployments. One possible change would be standardizing additional civilian slots in the deploying force packages.

"We are not at that point yet," said Arrington, describing the procedural changes as "a work in progress." ■

Peter Grier, a Washington editor for the Christian Science Monitor, is a longtime defense correspondent and a contributing editor to Air Force Magazine. His most recent article, "The Fall of the Warning Stars," appeared in the April issue.

Viper

Airmen from USAF and foreign nations come to the 56th Fighter Wing at Luke AFB, Ariz., to become Viper pilots.



University

Photo by Guy Aceto

Photography by Guy Aceto and Paul Kennedy

At Luke AFB, Ariz., SrA. Eric Hayes of the 308th Aircraft Maintenance Unit marshals a two-seat F-16D for a training mission. The sunshades protect the fighters from desert heat. Hayes' blue coveralls are an optional maintenance uniform at Luke; they are more comfortable and durable than BDUs but may not be worn with rank.

IN ARIZONA, skies are relatively empty and flying weather is good year-round, providing a highly suitable setting for USAF's 56th Fighter Wing, the largest fighter training unit in the world. The wing has some 200 aircraft on the ramp and averages about 150 flying missions per day. The huge number of sorties stems from the fact that Luke trains not only USAF F-16 pilots and maintainers, but those of many other countries as well.

Some 26 foreign nations fly the versatile F-16 fighter and most send their air and ground crews to Luke to learn alongside USAF crews. The shared training and experience strengthens the ties between the US and its allies.

At right, Vipers, as the F-16s are known by its crews, from the 308th Fighter Squadron spin up for another training sortie.



Photos by Guy Acoffo

Photo by Paul Kennedy

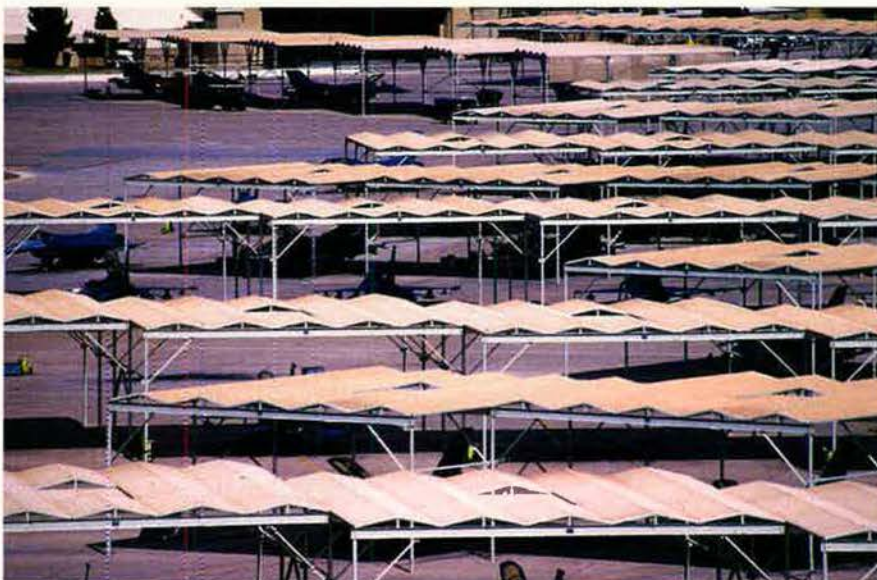


At left, one-seat and two-seat F-16s lift off. These fighters may "turn"—take off, land, undergo servicing, and launch again—three or four times on any given day. Before joining an operational Air Force unit, the typical USAF pilot will put in two years at Luke, learning the skills of both air-to-ground and air-to-air combat.

The 56th FW and Luke are part of USAF's Air Education and Training Command. Last year, the wing produced 431 F-16 pilots and 725 crew chiefs. The wing logged more than 37,000 sorties and more than 50,000 flying hours. The first F-16s arrived at Luke in 1980, and the wing has been minting fresh Viper pilots ever since.

Arizona's blistering heat and harsh, direct sunlight can cause serious problems for even the most rugged fighters and support gear. The simple and flexible sunshades, shown at right, have proved to be an effective and relatively cheap solution. They not only provide protection for the fighter aircraft but also keep the aircraft cool enough for maintainers to handle them. The maintainers also get some relief from the oppressive desert heat.

These sunshades are similar to those that the Air Force uses at bases and austere facilities in the equally harsh climate of Southwest and Central Asia.





Don Gresham (at left and below) is a civilian instructor at Luke. Civilian employees play a big role in the wing's training operation. Here, Gresham discusses the finer points of flying the F-16 with future instructor pilots.



Photo by Paul Kennedy



Classroom time is important, and everyone pays attention. Above, Maj. Shigenao Suzuki of the Japan Air Self-Defense Force listens closely during a lecture. Suzuki will take this course work home and share it with JASDF pilots flying Japan's new F-2 fighter, a larger derivative of the F-16. At right is Capt. Nadir Ruzzon, training to be an F-16 instructor in the Italian Air Force.



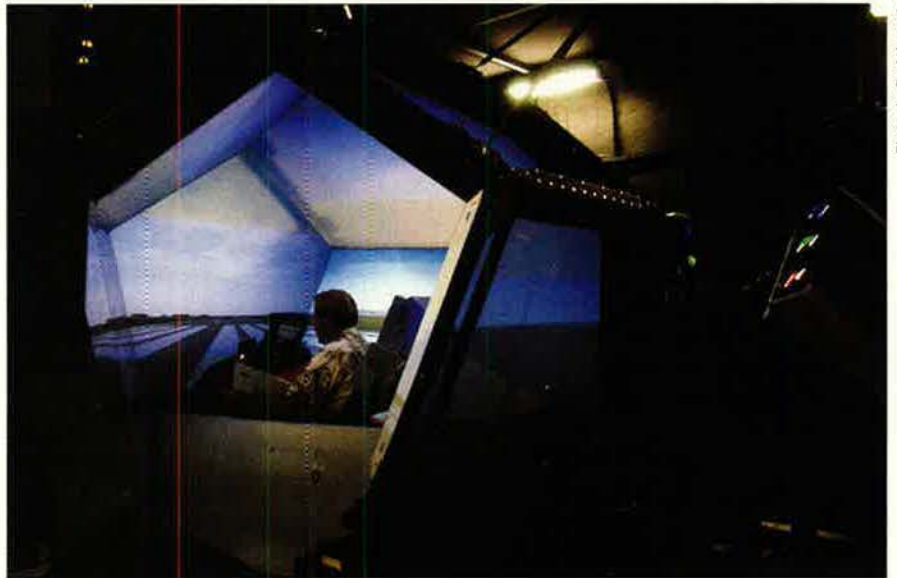
Foreign students learn side by side with USAF pilots. The classmate bonds pay dividends later, when allied pilots who trained together find it easier to communicate and cooperate over a future battlefield. While here, foreign students become part of a large F-16 community and get to sample the American way of life.

At left, Maj. Steve Harrold (right) makes a few last points to 1st Lt. Kenyatta Ruffin. Ruffin is in the basic F-16 course and is only a few short sorties away from becoming one of USAF's newest Viper pilots.

Luke boasts some of the most advanced simulators in the Air Force. The device at right and below projects imagery on pentagonal panels that simulate 360 degrees of view.

Ten of these sophisticated machines are now in USAF service. Of these, Luke has four, and they are constantly booked.

Luke also has 10 other simulator devices, though they are not as sophisticated as these full-up weapon system trainers. These WSTs can be linked to those at other bases, for exercises and practice missions, and can link with any other simulator on base to create "formation" missions.



Photos by Paul Kennedy

Photo by Guy Acosta



In the simulator above, Richard Roller, a civilian in the sim shop, sets up the machine for a night vision goggles training sortie.

Solid experience with NVGs is a must for F-16 pilots, given that nighttime operations are increasing around the world. Simulators such as these make it possible for missions to be flown under weather, lighting, or emergency conditions a Viper pilot might experience in the real world.



With 150 training sorties a day and flights by transients and other missions, Luke's tower is one of the busiest places on base. This is a challenge for air traffic controllers such as A1C Amber Miller (above and right) and A1C Anthony Pcras (background, right).





In addition to providing pilot training, Luke personnel conduct training of F-16 maintenance specialists. A1C Joseph Joynes, above, is an avionics technician with the 63rd Aircraft Maintenance Unit. Note the green star under the canopy rail—Joynes is working on F-16D tail no. 90-778, whose pilot shot down an Iraqi MiG in the days of the no-fly zones.

At right, a crew chief gets a fist-pump “salute” from a pilot taxiing out on a mission.



The sunshades make the sprawling flight-line look smaller but busier. There seems to be no letup in the taxiing of aircraft.

The 425th FS trains only the pilots of Singapore, whose jets are among the newest in the world. The two-seat Block 52 F-16 at right is recognizable by the extended avionics spine enveloping the root of the dorsal fin. While it flies here and carries the Luke tailcode and Air Education and Training Command shield, it belongs to Singapore and wears that country's roundel (on fuselage, near tail).

The 21st FS trains pilots from Taiwan, using a mixture of US and Taiwanese instructor pilots. These two units add to the international flavor of this wing.



Photo by Paul Kennedy



Not too far from Luke is the Barry M. Goldwater Range complex—nearly two million acres of isolated Sonoran desert and 57,000 cubic miles of airspace—a national asset and crucial to the training of combat pilots. Nearly as large as the Nellis complex in Nevada, the Goldwater Range supports some 45,000 sorties a year.

On the range is Gila Bend Air Force Auxiliary Field, where students practice flying against a wide variety of electronic threats.

At left, technician Debbie Root watches pilots' performance on the highly instrumented gunnery range and scores their shots against a target.



Luke is a total force base, with Air Force Reserve Command's 944th Fighter Wing located there. Above and right, 944th F-16s line up for another sortie. Note the Litening II targeting pod on the center aircraft at right.





Photo by Paul Kennedy



At top, an F-16D gets a last-chance check before launching. Behind it, a Singaporean F-16 taxis into position on the runway.

Above, an F-16C comes in for a landing. At right, an instructor in a two-seat Viper flies chase on a solo student performing a "touch and go" quick landing/takeoff. Students perform this maneuver countless times to develop a surety on the stick in the process of landing.

Proficiency in the versatile F-16 requires lots of flying—air-to-air dogfighting, air-to-ground munitions attacks, electronic warfare, defense suppression, and strafing.



Luke has been graduating F-16 pilots since 1981 and has built a reputation as a home for F-16 pilots worldwide. The camaraderie and professionalism developed here promise to build allies for years to come.

Demographic change could turn the heartland of Western culture into an Islamic redoubt.

A Crescent Over Europe?

By Peter Grier

For well more than half a century, America has enjoyed exceptionally close security ties to Europe. The relationship has been strained at times—recall the Suez Crisis of 1956 and Euro-missile fight of 1983—but common political and cultural values have always helped heal the wounds.

As a result, the Old and New Worlds have stood together when it counted.

However, this Atlantic partnership might not survive a radical change in Europe's basic nature. Few ever believed such a thing could happen, but, within the next several decades, Europe

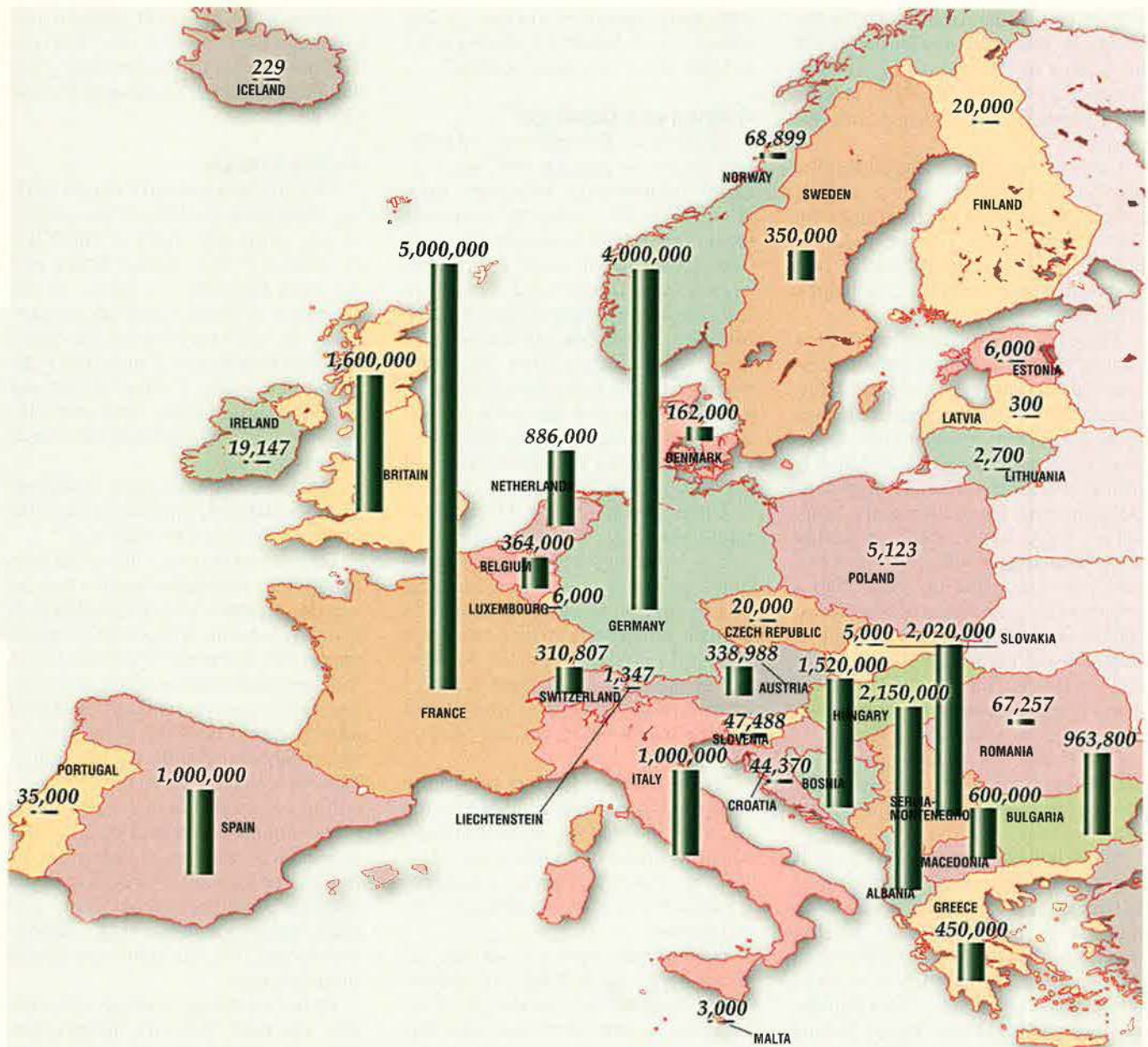
could well undergo such a change. The Continent's restive Islamic minority is poised to grow in numbers and hence political power, and it is overwhelmingly anti-American.

Incredible as it might seem, some experts predict that Europe will have an Islamic majority sometime well before the end of this century. Thus, the US may at some point look across the Atlantic and see not the familiar, nominally Christian, and largely secular partner it has known for many decades but something else entirely: an Islamic Europe.

Historian Niall Ferguson of New York University notes, "The whole of Western Europe is entering a new era of demographic transformation without parallel in modern times."

Some perspective is in order. Fear that a Muslim flood is about to overwhelm the Continent has long been a theme of fringe political activists and polemicists in Europe. It is anything but inevitable; today's population trends might shift dramatically, and the dire predictions of the death of Western civilization could well prove unfounded.

Even so, many of Europe's domestic



political problems already stem from conflict between resident Muslims and the rest of society. Just look at the rise of far-right, anti-immigrant political parties in such historically tolerant nations as the Netherlands. These cultural tensions often erupt into violence, such as the grisly murder last November of Dutch filmmaker Theo van Gogh, who had directed a movie critical of Islam's treatment of women. Van Gogh was slain on an Amsterdam street by a self-proclaimed jihadi of Dutch-Moroccan nationality.

These cultural strains have been

aggravated by the debate about admitting Islamic Turkey to the European Union. The March 11, 2004, Madrid train bombings, meanwhile, shocked many Europeans into a realization that they are not immune to the threat of Islamist terrorism.

"Part of the Arabic West"

This uneasiness was stoked further last summer by Bernard Lewis of Princeton University, the eminent scholar of Islamic and Middle Eastern studies. In an interview with Germany's *Die Welt*, Lewis predicted, "Europe

Europe today is about five percent Muslim (excluding Turkey), but the Islamic population is growing rapidly. Moreover, Europe's 23 million Muslims are concentrated in a handful of nations and in a few urban areas within those nations. The number of European Muslims might double by 2015.

will be part of the Arabic west, of the Maghreb," and added that Europe would be Islamic by the end of this century "at the very latest." The furor, at least on European editorial pages, has yet to abate.

Current overall population figures hardly seem indicative of a coming cultural phase shift. According to the State Department, Europe today is home to some 23 million Muslims. That is about five percent of the Continent's population.

These numbers, however, do not include Turkey, with its 67 million Muslims. Add Turkey to the mix and Islam's share of the European population bumps up to 15 percent. Furthermore, European Muslims are concentrated mostly in a few nations—France, Germany, Belgium, and the Netherlands—and, within these states, they are further concentrated into a few urban areas. Muslims now make up more than a quarter of the population of Marseilles, for instance. They are 15 percent of Brussels and Paris, and 10 percent of Amsterdam. For the most part, they live in enclaves in poorer sections of town, such as Berlin's Kreuzberg district.

Recruiters for radical strains of Islam find their work made easy by the poverty and prejudice many young Muslims face.

What is important, say analysts, is not so much the raw population totals but rather the demographic trends. Over the last 30 years, Europe's Muslim population has more than doubled, and its growth rate continues to accelerate. Current projections hold that the number of Muslims living in Europe might double again by 2015.

One major reason: immigration. Upward of 900,000 legal immigrants enter Europe each year; most of them are Muslim. The same is true of foreigners immigrating illegally into Europe, estimated to number 500,000 per year.

Immigration is only one factor in the emergence of Islamic Europe, however. In Muslim communities already there, high birth rates are the norm. Additional pressure comes from demographic realities in nearby Islamic lands. Fouad Ajami, a professor at Johns Hopkins University, gave the relevant figures in a recent *Wall Street Journal* article: "Forty percent of the Arab world is under 14. Demographers tell us that the fertility replacement rate is 2.1 children per woman. Europe is fruitfully below this level. ... Fertility

rates in the Islamic world are ... 3.2 in Algeria, 3.4 in Egypt and Morocco, 5.2 in Iraq, and 6.1 in Saudi Arabia."

Graying of a Continent

Meanwhile, Europe's non-Muslim population is graying and about to shrink dramatically. Low birth rates in virtually all of Europe's nations mean the number of non-Muslims is projected to fall some 3.5 percent over the next 10 years and continue to spiral downward. According to the UN, Europe's population will fall by more than 100 million by 2050. Ferguson, writing recently in the *New York Times*, noted, "There has not been such a sustained reduction in the European population since the Black Death of the 14th century."

These trends—major Muslim immigration, high Muslim birth rates, and a shrinking traditional population—point to a steady rise in Muslims as a proportion of Europe's people. In an influential article in the *Washington Quarterly* in 2004, Timothy M. Savage of the State Department's Office of European Analysis estimated that Europe would be 20 percent Muslim by 2050.

"Some even predict that one-fourth of France's population could be Muslim by 2025 and that, if trends continue, Muslims could outnumber non-Muslims in France and perhaps in all of western Europe by midcentury," he pointed out.

Demographic projections are far from being rock-solid, of course. Populations are affected by too many variables to permit precise estimating. At a minimum, however, it is clear that Europe's accommodation of its growing Muslim minority could pose a major challenge to domestic unity.

The first wave of Muslim immigrants began flowing into Europe in the wake of World War II. It generally followed prewar national relationships, colonial or otherwise. Turks flocked to Germany, Algerians to France, Indians and Pakistanis to Britain, and so forth.

The newcomers took jobs that the native-born found distasteful or unremunerative. Because of prejudice against them, poverty, and deep cultural differences, they clung to their own enclaves. This separatism was in at least one way encouraged by official policy. In the name of multiculturalism, the Dutch have long allowed immigrants extensive control over the education of their children.

Subsequent waves of Muslim immigrants have poured into Europe. The basic dynamics of the immigrant communities, however, has not changed much.

Roiling Europe

This Muslim minority is now roiling European politics. This stems, in part, from the shock of the Sept. 11 attacks in the United States and the train bombings in Spain. In the aftermath of these terrorists attacks, many in the non-Muslim European majority began to look more fearfully at the newcomers in their midst and to speak more openly and critically about the societal changes they have already wrought.

Muslims, for their part, protested that they suddenly had been turned into aliens in their adoptive homes.

Cultural differences have become flashpoints. France has tried to ban the wearing of headscarves by Muslim girls in public schools. A report on religious expression in French education found that such expression is on the increase, especially among Muslims, and that administrators deny this is happening. In a number of schools, the position of Muslim teenage girls has become precarious, according to this study, which was compiled between 2003 and 2004 by a team of Ministry of Education officials. The girls are informally banned from participating in team sports, and their conduct is monitored constantly by an informal religious police composed of young men.

In the campaign leading up to the May elections, Britain's ruling Labor Party advocated making immigrants learn English and take a "Britishness test" to qualify for permanent resident status. The test—which would be based on an existing government handout explaining life in the United Kingdom—might ask such questions as, "Where do Cockneys live?" and "What foods constitute a traditional English Christmas dinner?"

Extremists on both sides of this debate at times have resorted to violence. Last November's slaying of van Gogh shook the Netherlands and Europe at large. Van Gogh's film "Submission" depicted violence against women in Muslim societies and included scenes of a woman in see-through clothing with Koranic script written on her body. Islamic militants issued death threats in response to this perceived blasphemy.

In the wake of the murder, some Dutch

mosques were firebombed. European extremist parties such as France's National Front and Belgium's Flemish Bloc have gained at the polls as a result of an anti-Muslim backlash. Even before the latest flare-up of violence, such parties seemed to be gaining ground. National Front leader Jean-Marie Le Pen shocked France when he finished second to President Jacques Chirac in the first round of the 2002 Presidential elections.

The fear fanned by the extreme right is that the traditional European way of life is threatened by the increase in storefront mosques and shops selling halal meat. There is evidence that some non-Muslim Europeans are voting not only with their ballots but also with their feet. Dutch emigration, for instance, has bumped up from around 38,500 a decade ago to 46,000 in 2003, the latest year for which full figures are available.

Internal Jihad?

Should Europeans fear internal jihad? After all, the al Qaeda cell that spawned much of the Sept. 11 plot was formed in Hamburg, Germany. In April, Spanish authorities put more than 20 Muslims on trial in the largest criminal prosecution anywhere for Sept. 11-related crimes. The 2004 Madrid train bombings make clear that Europe could face a future not only as the terrorists' logistics base but also as one of their principal targets.

The majority of European Muslims are not radical Islamists, just as most non-Muslims are not supporters of the radical anti-immigrant parties. Writing last year in an issue of the journal *Foreign Policy*, historian Ferguson declared, "Most young Muslims in England clearly prefer assimilation to jihad," a claim that seems to apply in other nations, too.

Still, all signs are that al Qaeda has burrowed extensively into Europe. It was in 1996, long before the Sept. 11 attacks, that Spain launched its first major investigation into the presence of Islamic radicals on Spanish soil. They discovered terror support cells supplying money and men to fight for Muslim causes from Bosnia to Afghanistan. The networks were kept under surveillance, but it was not until the 2001 attacks that authorities suspected the cells of exporting terrorism and therefore rolled them up.

In its most recent annual report on terrorism, the Dutch security service

concluded that the terrorist threat has shifted from an imported strain to a homegrown variety. A number of terrorist networks now operate within the Netherlands, the report said. At an April press conference, Siebrand van Hulst, director of the security service, noted, "Before, there were international networks, but now the threat comes from within national frontiers. This trend is also evident in other European countries."

These jihadists are homegrown, according to one analyst. That means they are not radicals who have emigrated to Europe but second- and third-generation Europeans, typically jobless males whose ennui and sense of grievance make them easy marks for terror recruiters.

This is a different breed. According to the French scholar Olivier Roy, author of *Globalized Islam*, they are not concerned with typically Middle Eastern preoccupations such as the cause of Palestine or Israeli settlements. Nor, he said, are they the products of rigorous Islamic theological education. They often speak English, or Dutch, or French fluently and have spent some period of their youth living in a highly Westernized manner.

An example is Zacarias Moussaoui, the French-Moroccan would-be pilot nabbed by US authorities in August 2001 and who pled guilty to terrorist conspiracy charges this spring. Moussaoui has a master's degree from London's South Bank University. He was not radicalized until he began attending that city's Finsbury Park mosque, run by an extremist imam.

At a recent Council on Foreign Relations seminar, Roy summarized his argument thus: "Islamic radicalism is a by-product of Westernization and not a backlash [against] traditional Muslim culture." He added, "This is something which is very important."

Other analysts dispute Roy's reaction-to-Westernization theory of Islamic extremism. They place more emphasis on actions by the sources of the current terrorist ideology—Osama bin Laden and other Middle East-based radical Islamist leaders.

Social Challenge

Whatever the true cause of the prob-

lem, there is little question that assimilation into society of huge numbers of young, alienated Muslims constitutes one of the biggest social challenges that Europe ever has faced.

Of the 660 original US detainees at Guantanamo Bay, 20 were citizens of European nations; only two were US citizens. European authorities have detained 20 times more terrorist suspects in the years since Sept. 11 than have their US counterparts.

From these data and other factors, Savage drew an alarming conclusion. "The key point," he wrote in the *Washington Quarterly* article, "is not that Europe's legal environment and location offer a convenient platform from which terrorists can operate but that the chemistry resulting from Muslims' encounter with Europe seems to make certain individuals more susceptible to recruitment into terrorist networks."

Going forward, the big challenge for Europe's leaders will be to accommodate legitimate claims of Muslim minorities without sparking overreaction from the radical anti-immigrant parties.

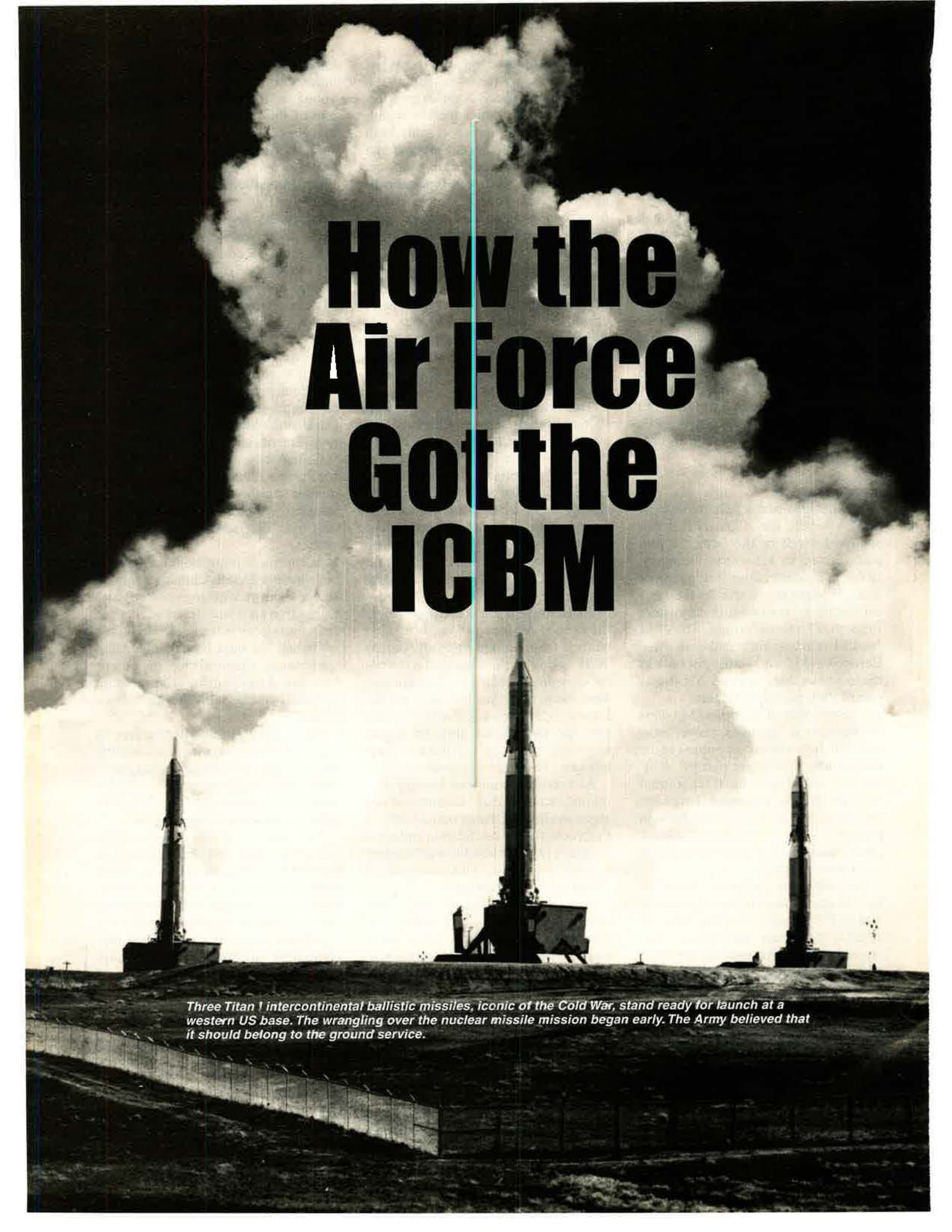
European foreign policies already have been affected. Chirac's adamant stance against Washington's drive to war in Iraq no doubt stemmed, in part, from the opposition of France's Islamic residents. "In ways both intended and subliminal," Ajami wrote, "the escape into anti-Americanism is an attempt at false bonding with the peoples of Islam."

The United States will continue to confront Islamic terrorism around the world. At the same time, Washington's oldest allies will be engaged in a different kind of struggle with Islam, one with world-significant consequences.

The outcome of this other struggle cannot be predicted. Europe may in the end be reinvigorated by its influx of Muslims, just as America repeatedly has been renewed by immigration and new cultures. At the other extreme, the Continent might be transformed into something different and unsettling, what Bat Ye'or, an eminent scholar of the problem, calls "Eurabia."

Either way, the West should probably prepare to bid farewell to the old, comfortable trans-Atlantic world of the last half-century. ■

Peter Grier, a Washington editor for the Christian Science Monitor, is a longtime defense correspondent and a contributing editor to Air Force Magazine. His most recent article, "The Fall of the Warning Stars," appeared in the April issue.

A black and white photograph of three Titan I intercontinental ballistic missiles standing on their launchers at a western US base. The missiles are silhouetted against a bright, cloudy sky. The central missile is the largest and most prominent, flanked by two smaller ones. The launchers are positioned on a flat, open field. The overall scene is dramatic and historical.

How the Air Force Got the ICBM

Three Titan I intercontinental ballistic missiles, iconic of the Cold War, stand ready for launch at a western US base. The wrangling over the nuclear missile mission began early. The Army believed that it should belong to the ground service.

The mission could have gone to the Army, which saw ballistic missiles as a new kind of artillery.

By John T. Correll

regarded it as a challenge to the manned bomber. In any case, they said, missiles were supplementary to airplanes, not replacements for them.

"For the next 10 years, long-range air bombardment will be effected by means of subsonic bombers only," Brig. Gen. Thomas S. Power, a future commander of Strategic Air Command, said in 1947.

Power was right. The early atomic bombs weighed five tons and were effective for a radius of about half a mile. They were far too heavy to be delivered by any missile then envisioned. Given the ballistic accuracy of the day, a missile warhead that traveled 5,000 miles might come down 75 miles from its target.

These problems were not resolved until the 1950s, when the development of the hydrogen bomb made warheads much smaller and lighter and when better accuracy was available.

Faced with a choice between ballistic missiles and jet-propelled aerodynamic missiles—which resembled airplanes—the Air Force bet on the aerodynamic ones and put its best efforts there.

Two Kinds of Missiles

Rockets had been around for a long time, but they did not become serious weapons until the introduction in World War II of the German Vergeltungswaffen ("vengeance weapons").

The first of these, the V-1 buzz bomb, was a jet-propelled cruise missile, not a rocket. The world's first ballistic missile was the V-2, which appeared in September 1944.

The Army Air Forces quickly produced a copy of the V-1, called the JB-2 (for "jet bomb"). The AAF also contracted with Northrop for the JB-1, which had an elegant flying wing design that anticipated the look of the B-2 bomber half a century later. The jet bombs were canceled at the end of the war and are remembered today only as historical curiosities.

No weapon symbolized the Cold War more than the intercontinental ballistic missile. It could travel thousands of miles and deliver a warhead on target in minutes. There was no defense against it.

From the 1960s on, it was the main threat in the Soviet nuclear arsenal. Air Force ICBMs, teamed with heavy bombers and submarine-launched ballistic missiles, were the leading element of the US strategic force.

Even before the Germans introduced the V-2 rocket in World War II, the coming importance of guided missiles was understood.

In 1943, Gen. Henry H. "Hap" Arnold, commanding general of the Army Air Forces, predicted, "Someday, not too far distant, there can come streaking out of somewhere—we won't be able to hear it, it will come so fast—some kind of gadget with an explosive so powerful that one projectile will be able to wipe out completely this city of Washington."

It was not foreordained, however, that the ICBM would be an Air Force weapon. It could have gone to the Army. In fact, the Army Ordnance Department made a strong bid to get it. Another solution would have been to parcel out the ICBMs among the various services. Or, the United States could have copied the approach taken by the Soviets, who made the Strategic Rocket Forces a separate service.

Air Force leaders of the 1940s were of two minds about missiles. They saw the potential of the ICBM, but they also

In 1946, the AAF had 12 guided-missile projects going. The effort was divided between aerodynamic missiles, which were jet propelled, and ballistic missiles, which were rocket propelled.

Aerodynamic missiles depended on their engines to sustain them in flight. Ballistic missiles were launched by rocket power and boosted into space, where powered flight ended. The missile then re-entered the atmosphere and followed a ballistic course to its target.

Of the Air Force missile projects under way in 1946, two were of particular significance. One of these was the Convair MX-774, which would eventually evolve into Atlas, the first American ICBM.

More favored, however, was the Northrop MX-775 Snark, a winged cruise missile that looked like a fighter. It had a 42-foot wingspan and was powered by a turbojet engine and two rocket boosters.

The Air Force believed that aerodynamic missiles would be a necessary intermediary stage before ballistic missiles came into use. (Snark would be briefly operational for four months in 1961.)

The more important program was MX-774, forerunner of Atlas. The initial specification was for a supersonic ICBM that could carry a 5,000-pound atomic warhead 5,000 miles and strike within a mile of the target.

The design was based on the German V-2 but with major modifications. It



At left, a shiny Atlas is raised into firing position at the Convair factory in San Diego in 1959. Pictured below is the first operational Atlas launch facility at F.E. Warren AFB, Wyo., circa 1960. The missiles were kept horizontal in such "coffins" until crews received an order to prepare the ICBM for firing. It took 15 minutes to set up the kerosene- and liquid oxygen-fueled missile and get it ready for launch.

eliminated some of the metal parts and relied on pressurized fuel tanks for structural stability. That reduced the weight, as did a provision for the nosecone to separate from the missile after burnout. The missile also had gimballed, swiveling engines for stability in flight.

There were three design models. According to Air Force historian Jacob Neufeld, one was called "Teetotaler" because it did not use alcoholic fuel. A second was "Old-Fashioned" because it looked like the V-2. The third and final design was "Manhattan" because it would carry the atomic bomb.

Test flights were partially successful. The missile got off the ground and flew briefly, but then it failed each time and crashed before it got very far.

When postwar budget cuts came, the Air Force preferred aerodynamic missiles to ballistic ones and canceled the MX-774 in 1947. Snark and the short-range Matador cruise missile survived the cut, as did the Bomarc air defense missile.

Convair kept the MX-774 project alive with a combination of leftover development funds and company financing.

The Fight for Control

Airmen in the 1940s regarded mis-



siles as "pilotless aircraft," with which they had been experimenting for a long time. (The Army Ordnance Department, which was also active in the field, viewed missiles as a kind of artillery.)

In an early division of labor, the War Department had made the Army Air Forces responsible for surface-to-surface pilotless aircraft and put the ground forces in charge of tactical missiles related to ground war.

The missile mission remained in dispute, however, especially when the Air Force became a separate service. The Air Force was assigned responsibility for long-range strategic missiles at least three times—in 1947, in 1950,

and in 1955—but the Army persisted in the argument that any missile launched from the ground should belong to the ground forces.

In September 1947, the Air Force was given operational control of pilotless aircraft, strategic missiles (defined as those not employed against targets directly affecting Army operations), and surface-to-air missiles for area defense. The Army kept tactical missiles and SAMs for point defense.

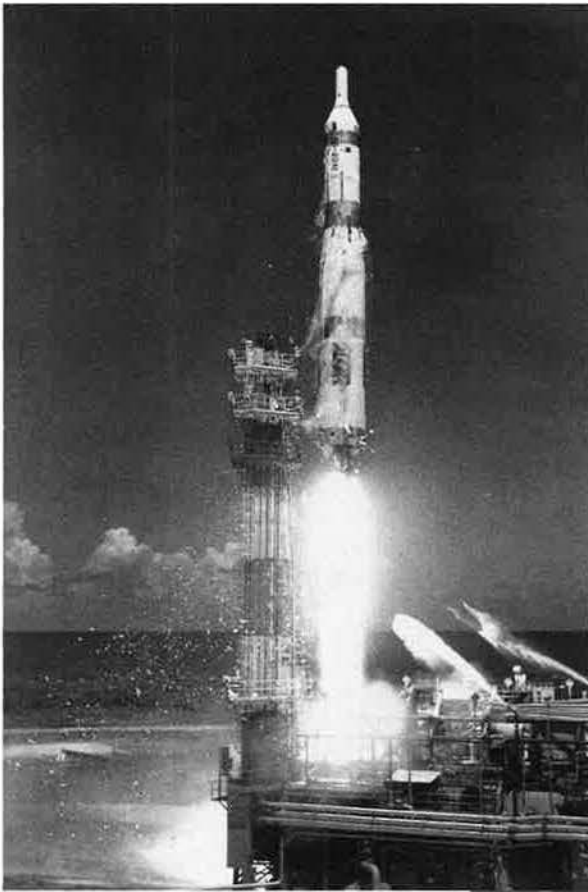
The logic of the Air Force's case was strengthened by the Key West agreement of 1948, which recognized the Air Force as the service responsible for strategic air warfare.

In March 1950, the Joint Chiefs of Staff made the Air Force responsible for developing long-range strategic missiles and short-range tactical missiles. The Department of Defense confirmed in 1955 that managing the ICBM program was the Air Force's job.

Army opposition continued. The author of one Army memo, inadvertently left behind and discovered after a meeting in 1951, took satisfaction in his belief that if the Air Force lost the missile mission, it would become just "another Transportation Corps in 15 or 20 years."

The Air Force did not help interservice harmony any when it assigned aircraft designations to guided missiles in 1951. Snark, for example, was the XB-62 (for "experimental bomber"). Atlas was the XB-65. Bomarc, being more fighter-like, was the XF-99. The designations were not lasting.

In 1956, the Army laid claim to the missile mission out to a range of



A developmental Titan, left, leaves a test pad near Cape Canaveral, Fla., in 1960. The missile went operational in 1962. Below, a Titan complex under construction. Everything visible would eventually be buried, indicating the depth of the complex.



1,500 miles. That notion was shot down by Secretary of Defense Charles E. Wilson, who ruled that the Army was not to employ any missiles with a range greater than 200 miles. In fact, the Army's Jupiter intermediate-range ballistic missile would be transferred to the Air Force, which already had its own IRBM, Thor.

The Air Force thus gained clear title to the ICBM operational mission.

ICBMs in Earnest

In the early 1950s, the ICBM gathered momentum.

The Russians had the atomic bomb, and intelligence reports said they were moving ahead in missile technology. Communism was on the march in Korea and elsewhere. US defense budgets rose, and there was more money for research and development.

In 1951, the Air Force revived the canceled ICBM program with a contract for Convair to determine the feasibility of a missile that could carry an 8,000-pound warhead for more than 5,750 miles and strike within 1,500 feet of its target. That was a tough specification. This time, the warhead was 3,000 pounds heavier than before.

However, Convair said the task could

be accomplished, given a large enough missile. It might have to be 160 feet long, with five or six engines.

The ICBM was alive again, although the overwhelming majority of the missile development money was going to Snark, Navaho, and other "pilotless aircraft."

ICBMs got another lift after the United States tested a hydrogen bomb in 1952. Scientists said it was possible to build a thermonuclear warhead weighing as little as 1,500 pounds but producing a one megaton yield.

The specification for the warhead on the Convair missile—now called Atlas—was cut from 8,000 to 3,000 pounds. The missile could be 75 feet

long, rather than 160, and three engines would lift it.

When the contract was let in 1955, Atlas was reconfigured. The combined weight of the missile and the warhead was reduced by almost half. With such a powerful warhead, less precision was needed, so the accuracy requirement was reset to between two and about three miles.

In part, the resurgence of ICBM development was the function of strong personalities and leadership.

In 1953, Trevor Gardner became special assistant for R&D to the Secretary of the Air Force. Even people who disliked him gave him top marks for energy and effectiveness. Gardner organized a committee of scientists to oversee strategic missile programs. It was called (for reasons long since forgotten) the "Teapot Committee" and was chaired by John von Neumann of Princeton.

Gardner also recruited the legendary Bernard A. Schriever—then a brigadier general—to manage the ICBM program. In 1954, Schriever became commander of the Western Development Division of Air Research and Development Command, with considerable latitude of authority.

Schriever's industrial partner was Ramo-Wooldrige (later merged with Thompson Products to become TRW), which provided the systems engineering and technical direction. It was a remarkable team, and it pushed the ICBM program ahead with vigor.

Another task for Schriever and the Western Development Division was to develop a second ICBM as an al-



For 45 years, missileers have maintained vigil in deeply buried bunkers such as the one at left. This crew, photographed in the 1970s, monitors the status of 10 Minuteman missiles, dispersed over hundreds of square miles of western prairie. Below, Gen. Thomas White, the USAF Chief of Staff (at the podium), unveils the Minuteman to the public at a 1960 AFA event at San Francisco's civic center. The Minuteman is being erected from a transporter; behind it is an Atlas. Minuteman was more accurate and, being solid-fueled, could be launched in only a few minutes.

This was good news to the Army, which was still maneuvering to build its own ballistic missile force. (It would be a bitter pill for the Army a year later when all IRBMs were given to the Air Force.)

The Air Force was concerned that IRBMs would compete with ICBMs for funding and political support. To reduce that diversion of resources, the Air Force adopted a "family of ballistic missiles" approach in which technology was shared and Thor was developed with "fallout" components and subsystems from the ICBM program.

The Navy soon backed out of the Jupiter program to pursue Polaris, a solid-fuel missile that was better suited for launching from submarines.

In 1956, the Eisenhower Administration and the Pentagon initiated another round of budget cuts. The trend would be hastily reversed a year

later to Atlas. In October 1955, the Martin Co. received a new contract to develop Titan, which would become the largest ICBM ever deployed by the United States.

Titan was a two-stage missile, just over 98 feet long. Like Atlas, it used liquid fuel. However, it did not follow the Atlas pattern of depending on internal pressurization for structural stability. It used conventional aircraft construction techniques for its two stages. Additional structural metal made Titan heavier than Atlas, as well as longer.

Common Warhead

Titan I and Atlas F used the same warhead. The second-generation Titan II was larger, heavier, and had a much larger warhead. Because of that, Titan II would remain in service well into the era of solid-fuel missiles. Newer systems would not pack the same massive punch.

Concurrently, the Secretary of Defense—on advice from the President's Scientific Advisory Committee and others—directed development of an intermediate-range ballistic missile and gave the IRBM a priority status equal to that of the ICBM.



It was a strange decision, induced by fear that the Soviet Union might produce IRBMs first and use them to target all of Europe. Furthermore, the State Department said that confidence in American technological superiority would be damaged if the Russians won the race to field a missile.

It was generally assumed that IRBMs would be operational before the ICBMs were ready. Defense planners did not want to be caught empty-handed. The Air Force was instructed to develop Thor ("IRBM #1"), and the Army and Navy were to work jointly on Jupiter ("IRBM #2"). The latter was to be an adaptation of the Redstone rocket with land- and sea-based variants.

later when the Soviet Union put its Sputnik satellite into space, but, in the meantime, the economizing claimed another casualty. Trevor Gardner, who had gotten the Air Force going on ICBMs, quit in 1956, disgusted with the reductions and slowdowns and the dissipation of technology resources over too many departments and programs.

Missile Gap

In July 1955, long before Sputnik, the White House announced plans for the United States to put a satellite into Earth orbit. The Russians announced similar plans, but nobody paid them much attention.

There were several choices of rockets to launch the proposed satellite. The Air Force offered Atlas, hoping it would not be picked. The Air Force was focused on the ICBM and did not want to scatter its concentration.

Another choice was the Army's Redstone. According to Walter A. McDougall of the University of Pennsylvania, historian of the space race, Redstone was rejected because the former German rocket scientist, Wernher von Braun, had developed it. The Administration wanted to avoid any perceived connection to the Third Reich, which might be used by the Russians for propaganda purposes.

Vanguard, a Naval Research Laboratory rocket, was selected instead.

However, the Russians got into space first. On Aug. 21, 1957, they fired an R-7 "Semyorka" ("Number Seven") missile from the Baikonur Cosmodrome near Tyuratam, across the eastern Soviet Union to the Kamchatka peninsula near the Pacific Coast. It was the world's first successful test of an ICBM.

The missile (called SS-6 "Sapwood" in the West) was huge, weighing some 280 tons. To lift off, it required five engines, each with four rocket chambers. It had been unsuccessful in three previous attempts.

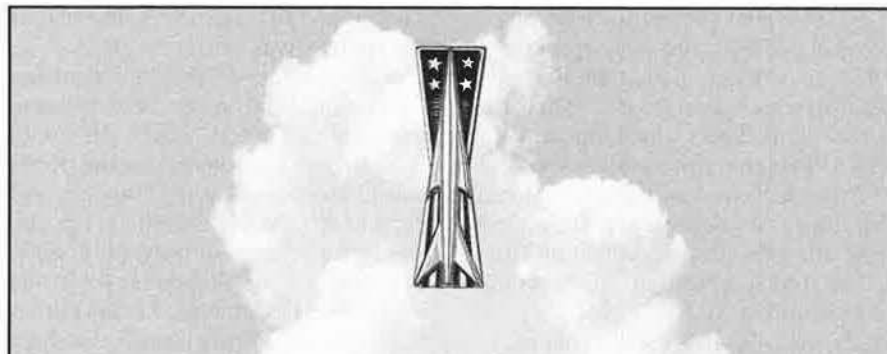
An even bigger shock to the world came two months later, when the Russians used the R-7 to launch Sputnik, the world's first space satellite. The White House tried, without much luck, to play down the achievement.

It got worse on Dec. 6, when the United States made its first effort to put up a satellite. The Navy Vanguard exploded on launch. The London *Daily Mail* dubbed it "Flopnik," and that was only one of the unflattering terms applied. The United States did not put a satellite into space until Explorer 1, Jan. 31, 1958. The launcher was a Jupiter C, a variant of the Redstone.

Meanwhile, the United States accelerated its ICBM programs. The first successful launch was of the Air Force's Atlas, on Dec. 17, 1957, after two failures.

The perception of a "missile gap" grew despite White House denials. The Democrats seized upon it as a campaign issue.

The impression of a missile gap was exacerbated by the braggadocio of Soviet leader Nikita Khrushchev. "I think I will not be revealing any military secret if I tell you that we now have



The Pocket Rocket

During the Cold War, Air Force missileers could be identified by their silver missile badges. They were called "pocket rockets" and were worn on the left pocket of the uniform.

The badge had a turbulent history. There was no fixed definition of who was a missileer, and the rules kept changing for who was authorized to wear which version of the pocket rocket.

When the badge was first authorized in 1958, anyone "directly associated" with guided missiles for three months or longer was entitled to wear it. Tighter criteria were applied later. However, as Greg Ogletree said in a monograph done for the Association of Air Force Missileers, it often seemed that everybody, including "the cook at Charlie 1," was wearing a missile badge.

Some staff and support people, whose connection with missiles was remote, were taken off the list of those approved to wear the badge, and in 1963, two variations were added. "Senior" missileers got a star at the top of their badges, and "master" missileers got a wreath around the star.

That also led to dispute when the original criterion for a senior level badge was changed from three years of duty to five. That meant those completing a standard four-year tour of missile duty could not earn the senior badge. Uproar ensued, and the criterion was changed back to three years. Still later, it was changed yet again—to seven years for senior and 15 years for master, to match the criteria for wings and now the criteria for all occupational badges.

There were numerous other changes over the years. In 1988, to distinguish combat crews from those that performed other duties, an "operations designator"—a large wreath design on either side of the badge—was added.

When the Cold War ended and the number of missileers on active duty declined, the future of the pocket rocket looked to be in serious doubt. The issue was settled in October 2004, when the Air Force ruled that both missile and space operators would wear a new badge, known as the "Space Cadre Badge." (Missile maintenance people will continue to wear the missile maintenance version of the pocket rocket.)

"While this is clearly a departure from the badge that is tattooed on the hearts and in the minds of most of us," said retired Lt. Gen. Jay W. Kelley, president of the Association of Air Force Missileers, "it is indicative of a future and not the past."

all of the rockets we need: long-range rockets, intermediate-range rockets, and close-range rockets," Khrushchev said in 1957.

He claimed that the Soviet Union had ICBMs in serial production and was turning out missiles "like sausages." In 1959, he said that one Soviet plant had produced, in one year, 250 missiles equipped with hydrogen warheads.

None of it was true. That became evident with imagery from the first photoreconnaissance satellite, the Air Force-CIA Corona, which discovered in 1961 that the Soviet Union had about six ICBMs.

The R-7, which launched Sputnik, was not successful as a weapon system. Only a few R-7 missiles were ever operational as ICBMs.

The actual missile gap in 1961 was in the US favor, but in 1957 and earlier, the Russians probably had been ahead. They just could not sustain and exploit their lead.

"There is little doubt in my mind that we started behind the Soviets in the ballistic missile program," Schriever said. "Of course, neither country had a missile, but they had started well ahead of us, and it was the combined efforts of science and industry and the military that brought about almost a miraculous program."

Fielding the Force

Contrary to expectations, ballistic missiles and aerodynamic cruise missiles made their debut about the same time.

Snark's first successful flight test, covering 4,400 miles, was on Oct. 31, 1957, six weeks ahead of the first successful Atlas test on Dec. 17. Thus, the aerodynamic Snark was technically the first US intercontinental missile.

Atlas achieved initial operational capability in September 1959, not long after the first flight test of Titan I. The first squadron of Titans would be operational in April 1962.

The early ICBMs used cryogenic—or extremely cold—fuels. Both Atlas and Titan were fueled with kerosene and liquid oxygen, which had to be stored separately, kept at a temperature of 280 degrees below zero, and loaded into the missiles just before launch.

Eventually, ICBMs would be based in hardened, underground silos and kept in vertical position for launch, but that came later.

The first operational missiles, Atlas D and E, were stored horizontally above ground in containers called "coffins." The missiles had to be raised upright to load fuel and liquid oxygen prior to launch. Atlas F was placed in an upright position in the underground silo with the fuel stored on board, loaded with liquid oxygen at the beginning of the countdown, then raised to ground level by elevator for launch. It took about 15 minutes to get it ready to fire, according to retired Col. Charles G. Simpson, executive director of the Association of Air Force Missileers.

Titan I was based underground as was Atlas F, with liquid oxygen loaded prior to raising the missile above ground for launch. The first of three missiles at a complex could be launched in about 15 minutes, with the other two following at intervals of about seven-and-a-half minutes.

The follow-on Titan II used different fuel, which could be stored in the missile, and the missile could be fired directly from the underground silo. It could launch in less than a minute, Simpson said.

Minuteman went on alert Oct. 27, 1962, during the Cuban missile crisis late that month. It used solid fuel in each of its three stages, which eliminated many of the storage and handling problems of the liquid fuels. Minuteman was ready all the time and could be launched immediately from the silo.

The IRBMs were not around long. Thor was deployed to the United Kingdom in 1960 and Jupiter to Italy and

Turkey in 1961 and 1962. The last of the IRBMs was retired in 1963.

ICBMs soon established a strong reputation, both in the Soviet Union and in the United States. In 1960, Khrushchev announced that the USSR would stop developing bombers and depend on missiles. Bombers, he said, were obsolete, good only for display in museums. In November 1960, he established the Strategic Rocket Forces as a separate military branch, co-equal with ground, air, air defense, and naval forces.

In 1961, Secretary of Defense Robert S. McNamara said that "I think the evidence points to a declining emphasis on [bombers], but I am not prepared personally at the present time to say for sure that they are on the way out."

Roswell L. Gilpatric, the deputy secretary of defense, felt no such reservations when he left office in January 1964. Writing in *Foreign Affairs* for April 1964, he predicted that, by 1970, the makeup of US strategic retaliatory forces would be "a deterrent force, consisting only of hardened and dispersed land-based and sea-based missiles, with all of the vulnerable, earlier-generation missiles deactivated and all manned bombers retired from active deployment."

ICBMs were good, but both Khrushchev and Gilpatric overstated the case. The Russians resumed building bombers after Khrushchev was deposed. Bombers continued in the US strategic force mix through the Cold War and were still operating effectively almost 50 years later.

Keeping the Peace

A final challenge to the Air Force came from an attempt by the Navy to corner the market on strategic deterrence by claiming that Polaris submarine-launched ballistic missiles were sufficient to meet the nation's needs, without the Air Force ICBMs.

In the late 1950s, the Navy had advocated a strategy of minimum deterrence (later called "finite deterrence"). Naval leaders supported Army arguments that anything beyond the capability to destroy Soviet population centers was "overkill." The Army's leaders wanted defense resources to

be reallocated, with greater emphasis on limited wars, "flexible response," and land forces.

In 1960, the Navy proposed that the entire deterrent force be put at sea, declaring that 45 strategic missile submarines would "come close" to the total deterrent required.

Relying solely on the level of deterrence offered by the Navy was judged too risky, and the attempt to strip the Air Force of strategic missiles subsided. The end result was not what the Navy had in mind.

The Department of Defense did not make a clear choice between finite deterrence and counterforce—the strategy favored by the Air Force. However, in August 1960, Secretary of Defense Thomas S. Gates created the Joint Strategic Target Planning Staff to control the targeting of both Air Force and Navy strategic weapons. The suggestion had come from the commander of Strategic Air Command, who also became director of the JSTPS.

The Air Force by 1962 had fielded four successful ballistic missiles—the Thor IRBM, the liquid-fueled Atlas and Titan ICBMs, and the solid-fuel Minuteman—and was in firm possession of the ICBM mission. By 1964, the number of ICBMs on alert pulled even with the number of bombers on alert.

After that, and until the end of the Cold War, missiles predominated in the Air Force alert force. ICBMs became the mainstay of the US strategic triad, which in 1975 consisted of 1,054 ICBMs, 656 SLBMs, and 497 bombers.

There were further developments, notably the deployment of Minuteman III with multiple warheads (called MIRVs, or multiple independently targetable re-entry vehicles) in 1970, and the introduction of the most capable ICBM of them all, Peacekeeper, in 1986. There was even a revival of the "pilotless airplane" with the Air Force's Ground-Launched Cruise Missile, deployed in Europe in the 1980s to counter Soviet SS-20s.

But by the late 1960s, the ICBM was mature, established, and the bedrock of strategic deterrence. No weapon was more influential in maintaining the peace until the Soviet Union collapsed, bringing the Cold War to an end. ■

John T. Correll was editor in chief of Air Force Magazine for 18 years and is now a contributing editor. His most recent article, "Full Day," appeared in the June issue.

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“This is going to hurt. We will see decreases in readiness status.”

The \$3 Billion Shave

By Adam J. Hebert, Senior Editor

EVEN after receiving a healthy midyear boost, the Air Force's budget will come nowhere close to meeting USAF's financial needs—and closing the gap will cause serious pain.

President Bush, with US troops in action around the world, recently signed an \$82 billion supplemental bill that aims to replace worn-out equipment and pay for operations in Iraq and Afghanistan. USAF received \$5.6 billion of that amount.

It's not nearly enough, however. USAF projects that its “must pay” operation and maintenance (O&M) bills will still exceed its newly expanded budget by a whopping \$3 billion.

The Air Force responded with something resembling a full austerity plan. Gen. John P. Jumper, USAF Chief of Staff, said that a spending slowdown is needed and, on May 10, distributed a list of places at which commanders should look for savings.

In order of priority, the major commands were to:

- Cancel noncritical travel.
- Cancel noncritical supply and equipment purchases.
- Limit contract lengths and defer new requirements.

- Limit property maintenance to safety items.

- Slow down hiring.

- Cancel changes to readiness spares packages.

- Reduce contractor logistics support to minimum levels.

- Reduce depot equipment purchases to minimum levels.

- “Reduce and reflow” peacetime flying hours.

The instructions are designed to free up funding to support wartime demands and Stateside combat preparations, but these changes will clearly come at a cost.

Jumper wrote that officials at Air Force headquarters “understand the risk to readiness from these actions.” He went on to say, “It is important to balance the need for sufficient savings against mission requirements in a

way that is ... mindful of longer-term consequences.”

“Accept Degradation”

Officials preparing real property maintenance projects, for example, are instructed to “accept degradation of quality of life.”

Air Combat Command officials said much of the savings in its command will come by cutting flying hours, a move they say will surely damage readiness.

Units preparing to deploy to combat

zones have priority funding, as do career fields that cannot put off training at this time. ACC "fenced" the funding for a handful of accounts.

The top priority is maintaining funding for deploying and returning Air and Space Expeditionary Force (AEF) personnel, to "protect AEF combat capability," said Maj. Gen. Kenneth M. DeCuir, ACC operations director, in a May 16 press release.

The second-highest priority was providing support for the new F/A-22 fighter units coming into the force.

The Air Force has also elected to protect funding for E-3 Airborne Warning and Control System aircrews. The E-3 AWACS crews are still recovering from a long period of overuse as they supported numerous operations. They simply cannot go any longer without a healthy dose of training to reconstitute their skills, officials said.

Also protected were O&M funds used for testing and training accounts and Thunderbird operations. The Thunderbirds, USAF's aerial demonstration team, have a relatively small budget line but have a "huge impact on Air Force recruiting," said Col. Jim Dunn, deputy chief of flight operations for ACC.

After selected accounts were fenced, the command looked at everything else with a "clean sheet of paper" and tried to spread the pain equally.

"This is going to hurt," Dunn said. "We will see decreases in readiness status."

Hardest hit will be funding for "average" fighter and bomber units, which represent essentially the entire nonfenced category. These units face a 60 percent cut in flying hours for the remainder of the fiscal year, which ends Sept. 30. Making these cuts to Stateside operations is "definitely not where we want to be," he said.

Overall, ACC flying hours will fall by 10 percent.

DeCuir estimated that the hardest-hit units will be able to preserve 60 to 80 percent of their combat readiness through focused training. F-16 and B-52 squadrons not scheduled to deploy, for instance, will likely fly just enough to ensure they can remain safe and efficient.

No Easy Moves

Unfortunately, Dunn said, there is not "a single instance where we can say ... 'just put this aircraft and its airmen on the ramp'" for the summer.

The situation is similar at each

of USAF's other major commands. Jumper noted that "most of these slowdown actions are already under way," as he had previously notified the majcoms, in a March memo, that these actions would probably be needed. (See "Aerospace World: USAF Faces \$3 Billion Shortage," May, p. 20.)

ACC's share of the O&M funding shortage is \$825 million for the fiscal year. In addition to \$750 million

Jumper directed planners to limit property maintenance to safety items and "accept degradation of quality of life."

in unfunded Global War on Terror expenses. ACC needed another \$75 million for other unexpected "must pay" bills.

As force provider for US Central Command Air Forces, ACC is responsible for operating 14 air bases in CENTCOM's area of responsibility. Meanwhile, fuel, munitions, spare parts, and equipment are all being used—and used up—at a rate much faster than normal.

Jumper also instructed the majcoms to "continue tuition assistance for now and fund civilian pay to a level that precludes furloughs."

Col. David J. Goossens, ACC comptroller, told *Air Force Magazine* that the command followed the Chief of Staff's guidance for the cuts, but still had to dig deep into flying hours to make ends meet. Goossens said the command:

- Increased use of teleconferenc-

ing to reduce noncritical travel, for a savings of \$6.5 million.

- Deferred contract renewals, such as putting off additional corrosion inspections for B-1 bombers until next year. This saved \$20 million.

- Reduced buys of noncritical supplies and equipment, for a savings of \$59.8 million.

- Scaled back real property and facilities spending, including delaying improvements to the air operations center at Davis-Monthan AFB, Ariz. This saved \$131.9 million.

- Deferred contractor logistics support, taking to the minimum sustainable level support for the F-117 stealth fighter, U-2, and RC-135. These actions freed up \$47.5 million.

- Postponed some noncritical depot maintenance across the board, freeing \$200 million.

- ACC was also forced to cut \$272 million from the flying hour budget.

Overall, the actions gathered \$738 million of the \$825 million needed, either through actual savings (teleconferencing) or pushing expenses into the next fiscal year (deferring maintenance).

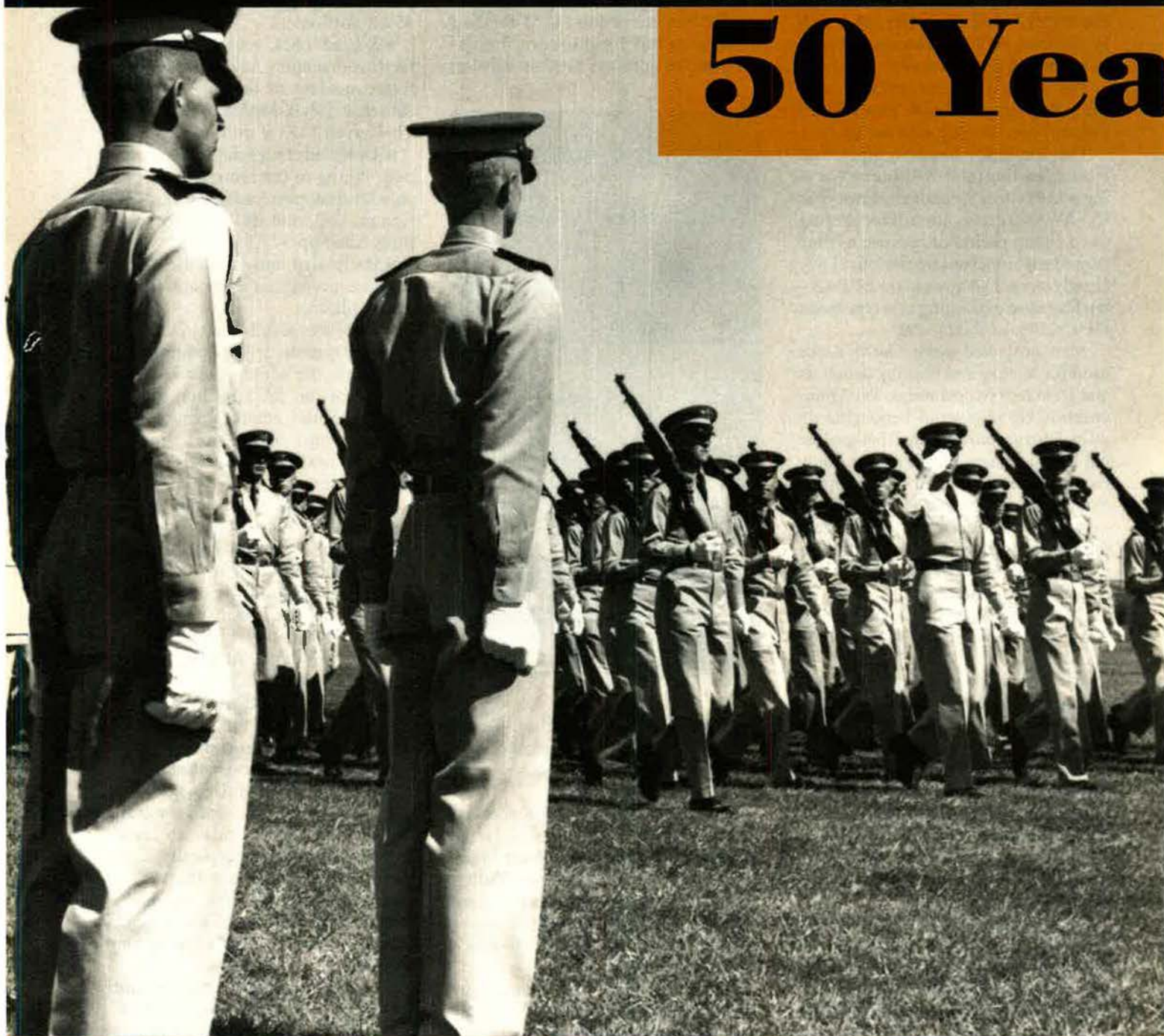
Goossens said ACC could make up the difference by pulling \$79 million from formal training unit accounts used to hone rated officer skills and by canceling \$8 million in tuition assistance, but the command has been instructed—for the time being—not to make these cuts. ACC is awaiting further guidance.

It is possible that USAF will provide additional "bridge" funding, but ACC is not expecting it to come through.

Plans call for a two-week shutdown of almost all training flights between Sept. 16 and Oct. 1, Goossens said. The move is not as drastic as it may seem. The command typically scales back flight operations at that time of year to hold flight safety days and to reduce the chance of inadvertently shooting past the year's flying hour budget.

In late May, Congress was debating the merits of an additional \$50 million bridge supplemental to pay for additional wartime expenses. Some lawmakers were opposed to the measure because they felt it allowed the Defense Department to obtain funding for ongoing operations through so-called emergency supplementals, which typically have less accountability and oversight than the President's budget.

The Class of 50 Years



The first cadets of the US Air Force Academy pass in review at their temporary home, Lowry AFB, Colo., in 1955.

In the summer of 1955, the Air Force Academy opened its doors to its first group of cadets.

rs Ago

By Bruce D. Callander

ON JULY 11, 1955—50 years ago this month—306 young men entered the gates of Lowry AFB, Colo., to become the inaugural class at a brand-new school created to train officers for the Air Force. Four years later, after moving to the Air Force Academy's permanent location in Colorado Springs, Colo., 206 of them were commissioned as second lieutenants.

Many of these Air Force ground-breakers would go on to pilot training and be ready to go during the 1962 Cuban Missile Crisis. Many later served valiantly in the Vietnam War, and more than a dozen eventually became general officers. These are the stories of some of them.

The class of 1959 began at Lowry because the permanent Air Force Academy facilities had not been constructed. Cadets lived for a time in converted World War II barracks, and commissioned officers from all services were brought in to serve as "upperclassmen."

Even when the cadets moved to Colorado Springs, things weren't quite ready. (See "First Class," June 1999, p. 56.) Construction had just begun on the landmark Cadet Chapel. Some of the academy's structures were not strong enough to withstand the strong winds that frequently buffeted the campus—leaving damaged doors and broken glass.

The Class of 1959 graduated June 3, 1959. One graduate did not receive a commission because of health problems. One was commissioned an officer in the Marine Corps.

Bradley C. Hosmer, the top graduate in the class, was named a Rhodes Scholar.

The day after the graduation ceremonies, Denver's *Rocky Mountain News* reported the event under the headline

"207 Air Cadets Are Graduated." The same issue headlined a number of other events that gave some indication of the world into which the airmen were moving. Among them: "Mice Rocketed Into Space Fail to Orbit" and "West Offers Limit on Berlin Troops."

For a short time, the new officers pursued their careers without being ordered to combat. The Korean War had ended in a stalemate, and US involvement in Vietnam still was at a relatively low level.

Missile Crisis

Then, in late October 1962, President John F. Kennedy learned that the Soviet Union was moving nuclear missiles into Cuba, within striking distance of the United States. Within days, he had ordered a naval and air quarantine of the island, blocking any further shipment of military equipment to Cuba. For the next week, the services braced for the possibility that Soviet ships would try to break the quarantine and possibly touch off World War III.

Recently, the Class of 1959 Web site asked the graduates where they were when they got news of the missile crisis. This watershed event occurred just three years after commissioning, as these future leaders were beginning their careers, and most were in operational assignments.

Several were back at the academy attending a football game. Richard E. Carr had talked his wing commander into flying from their Air Defense Command base at Otis AFB, Mass., to that Saturday's game at the school. Shortly after halftime, his commander was paged, and they headed for Florida to spend the next few weeks flying off the coast of Cuba.

James M. Reed Jr., on leave at the time, also was at the game. The following Monday, he saw the President

announcing the embargo of Cuba and headed back to his KC-135 squadron at Wurtsmith AFB, Mich. He went on alert; the family quarters was sandbagged, and the Capehart basements were outfitted as temporary bomb shelters. Soon afterward, his crew deployed to Torrejon, Spain, to fly night missions refueling B-52s.

Within days, all members of the first class had returned to their bases and were on various levels of alert.

According to the Web site, John M. Davey was in the 31st Fighter Wing, flying F-100s at Homestead AFB, Fla. Both that base and MacDill AFB, Fla., soon filled with fighters ready to strike Cuba. Several times, the pilots were told to taxi to the runway, but would then pull back without launching. Toward the end of the crisis, Davey was sent to Ft. Bragg, N.C., as a forward air controller, to prepare for a possible airdrop on Cuba.

Robert C. Oaks was flying F-100s at Cannon AFB, N.M. His wife had just come home from the hospital with their second son when he was deployed to MacDill. He sat alert at the Tampa base for about six weeks.

Cold War Tension

Fighter pilots James M. Rhodes Jr., Henry D. Canterbury, Robert D. Beckel, and Thomas G. Derrickson II all were with the 49th Tactical Fighter Wing at Spangdahlem AB, West Germany, when the crisis erupted. They had already become used to the pressure of the Cold War, but the Cuban situation heightened the tension. As the pressure built, Canterbury said, East German and Soviet aircraft took to buzzing US aircraft flying in the Berlin corridors.

In his letter to the Web site, Jon A. Gallo said he was flying an F-102 in Bangkok, Thailand, when the crisis broke. He was helping train Thai Air



Force pilots and recalls being briefed on possible trouble with the Soviets. The F-102s were unarmed, and so there was little his unit could have done. Gallo said he did not learn how serious the crisis was until he heard from his parents in Ohio.

John M. Howell Jr., stationed in Bermuda as a KC-97 navigator, was on leave when the news broke. He was ordered back to duty and flew search patterns over the Atlantic for several days. When his crew spotted a ship, the airmen took pictures with their personal 35 mm cameras—in case there were missiles aboard.

Arthur G. Elser, James T. Carpenter, and James W. Brown III all flew Strategic Air Command tankers and were



The first USAFA cadet to report in was Valmore Bourque, of South Hadley Falls, Mass., pictured at top. Officers from USAF and other services acted as "upper-classmen" for the first class, as shown in the center, while ramrod-straight cadets process in at Lowry, above.

kept busy during the crisis by refueling the SAC bombers on airborne alert.

Gares Garber Jr. was being reassigned from a navigator slot with the 431st Air Refueling Squadron at Biggs AFB, Tex., to join the first operational Minuteman ICBM wing. He said the 341st Strategic Missile Wing at Malmstrom AFB, Mont., went to alert-ready status much faster than was originally planned because of the crisis.

Frederick B. Wynn was a tanker pilot for the 429th Air Refueling Squadron at Langley AFB, Va. He was on home alert the weekend the crisis broke. Returning to base on Monday, he learned that six tankers had already been sent to Florida.

George W. Burch was stationed at Travis AFB, Calif., with an air transport

unit that was supposed to support SAC by moving supplies to a secret desert airport where B-52s could refuel and resupply when returning from missions. When the unit went on red alert, however, nobody knew where the secret base was.

After several weeks of global tension, Moscow agreed to remove its missiles, ending the Cuban Missile Crisis.

Future Leaders

Before long, however, Vietnam grew into a major conflict, and the Class of '59 was in the thick of it. Many of the 1959 graduates went to Southeast Asia, fought and survived the Vietnam War, and went on to serve long careers.

Lt. Gen. Robert D. Beckel flew with the Thunderbirds before going to Vietnam. Much later, he returned to the academy as commandant of cadets

and finished his career as commander of 15th Air Force—where he oversaw SAC's refueling force and several bomb units.

Several of Beckel's classmates also returned to their old school.

Lt. Gen. Charles A. May Jr. came back to the Air Force Academy as an academic instructor, left to fly A-37s in Southeast Asia, and became an advisor to the Vietnamese Air Force. He returned to the academy again as an associate professor of political science. He then joined SAC, completed B-52 training, and held several command assignments before ending his career at the Pentagon as assistant vice chief of staff of the Air Force.

Gen. Hansford T. Johnson flew as a forward air controller for the South Vietnamese Army and the US Marine Corps, then returned to the academy as an instructor and assistant professor of aeronautics. He later became the director of the Joint Staff, chief of US Transportation Command, and the first commander of Air Mobility Command.

Lt. Gen. Bradley C. Hosmer went to Southeast Asia as an air liaison officer and forward air controller with the

"West Point of the Air"

For some veteran airmen, the whole concept of the Air Force Academy was off. They didn't like that it was in Colorado, they didn't like its modern-design buildings, and they didn't like that a school created to prepare future Air Force officers would not even have an airfield worthy of the name.

What many old-timers wanted was for the new academy to be located at Randolph AFB, Tex., a base already known as the "West Point of the Air." (See "South Texas Roots," April 1997, p. 46.)

That had been the dream as early as the 1920s, when Congress remade the Air Service as the Army Air Corps and created a general officer position to run its training establishment. Brig. Gen. Frank P. Lahm took the job and promptly began lobbying for a separate base to train the growing number of men who were volunteering to become pilots.

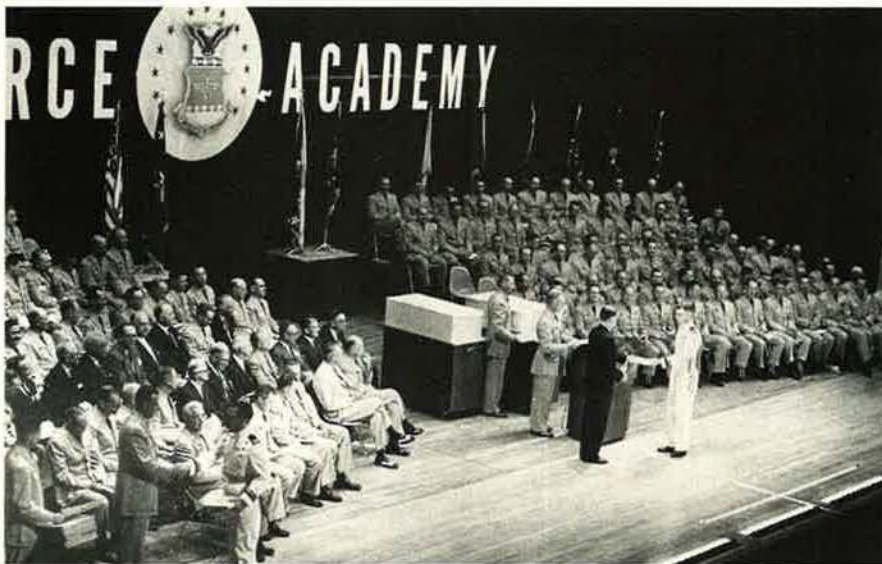
Lahm set up a site selection committee and picked a tract near San Antonio. The city raised money to buy the land and turned it over to the US government in 1928. Later, the field would be named for Capt. William M. Randolph, who had died in a training crash. Ironically, the captain had served on the committee assigned to pick a name for the field.

Much of the credit for the design of the base is given to 1st Lt. Harold L. Clark, dispatch officer at Kelly Field, Tex. Lahm was impressed with Clark's ideas for an "Air City" and brought Clark onto his staff to help build what was to become the Army Corps of Engineers' biggest construction project since the Panama Canal.

The job included erecting more than 500 Spanish-style buildings clustered around the administration building that would become known as the "Taj Mahal." Construction took more than five years to complete, but on June 20, 1930—midway through the project—the field was dedicated with a 233-aircraft fly-over.

The nickname "The West Point of the Air" captured the imagination of a whole generation of air-minded young men. When the hunt for an Air Force Academy site began, some of the officers who had trained at Randolph lobbied for it to host a real West Point of the air.

Those who made the final decision, however, had something quite different in mind. In 1954, Air Force Secretary Harold E. Talbott picked the Colorado Springs location for the academy, leaving Randolph and all other competing sites without the new Air Force's plum educational facility.



James Douglas Jr., Secretary of the Air Force, awards diplomas to the Class of 1959. Of the 207 graduates, 135 put in a full career, 15 became generals, and three acquired four stars.

Army's 1st Cavalry Division. Later, he served as Air Force inspector general and returned to the academy as its first graduate to become superintendent.

Maj. Gen. Harold W. Todd completed B-52 combat crew training and was twice deployed to the Western Pacific, where he flew missions in Southeast Asia. Later, he commanded the 25th Air

Division at McChord AFB, Wash., was chief of staff of the 4th Allied Tactical Air Force in Germany, and was commandant of the Air War College.

Maj. Gen. Larry D. Fortner flew F-100s in Vietnam. He joined SAC, where he commanded two bomb wings and an air division. His final assignment was as executive director of the Joint Strategic Defense Planning Staff at Peterson AFB, Colo.

Brig. Gen. James M. Rhodes Jr. became an F-105 instructor pilot and deployed to Thailand, where he flew Vietnam War combat missions. After a tour as a test pilot at Edwards AFB, Calif., he returned to Southeast Asia as a flight commander. He retired as commander of Tactical Air Command's Southeast Air Defense Sector.

By and large, the members of the Class of 1959 prospered. A total of 135 put in full Air Force careers, serving until they retired. Fifteen members became general officers. Three retired as full generals—Johnson, Oakes, and Michael P.C. Carns, who retired as Air Force vice chief of staff. Not bad for a group that set out a half-century ago with little other than a desire to be pioneers for their service.

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 article for Air Force Magazine, "The Search Goes On," appeared in the June issue.

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For information on the Air Force Association, see www.afa.org

By Frances McKenney, Assistant Managing Editor

Front Page News

When Air Force Association National President Robert E. "Bob" Largent spent three days in Hawaii learning about Air Force operations there, the base newspaper let its airmen know about it. "AFA President Visits Hickam," the headline proclaimed.

Largent was in the 50th State in May as part of an orientation to Pacific Air Forces and its new missions. He traveled to Alaska and Guam, as well, at the invitation of PACAF commander, Gen. Paul V. Hester.

In Alaska—where his AFA host was Alaska State President Gary A. Hoff of the **Edward J. Monaghan Chapter**—Largent received briefings at Elmendorf Air Force Base. The facility had been selected as home for two F/A-22 squadrons, so Largent learned how the base was preparing for the Raptors.

Farther north in the 49th State, **Fairbanks Midnight Sun Chapter** officials James V. Drew, president, and Steven R. Lundgren, community partners VP, accompanied Largent to information sessions on 354th Fighter Wing's missions, units, and facilities at Eielson Air Force Base.

Airmen at Hickam filled him in on preparations for C-17 operations, scheduled to begin next year. The base began constructing training simulator, operations, and maintenance buildings for the Globemaster III last summer. Both active duty and Air National Guard pilots and maintenance crews will carry out C-17 operations.

"The folks within the C-17 maintenance squadron and how they are integrating between active duty and the Guard made it look like such a seamless transition," Largent told the Hickam newspaper. "I'm so impressed with the people I had the opportunity to meet here."

His AFA Hawaii hosts were State President Jack DeTour, **Hawaii Chapter** President Virginia N. Pribyla, and Lt. Col. Stephen D. Clutter, chapter vice president.

On Guam, information sessions for the AFA leader focused on changes taking place at Andersen Air Force Base as USAF increases its presence and capabilities in the Pacific.



USAF photo by Melanie Rodgers

AFA Chairman of the Board Pat Condon presents MSgt. Sherri McGuire, Yokota AB, Japan, with AFA's CMSAF James McCoy Academic Achievement Award at the Senior NCO Academy graduation ceremony at Maxwell AFB, Ala., in April.

USAF's Team of the Year

In April, AFA named as its 2005 Team of the Year five enlisted airmen from the vehicle operations career field who supplemented Army forces on convoys in Iraq.

They are MSgt. Dennis A. Ross from Bolling AFB, D.C.; TSgt. Jason D. Hohenstreiter from Minot AFB, N.D.; SSgt. Amelia C. Solomon, from RAF Mildenhall, England; SrA. Joshua Powell, from Eielson AFB, Alaska; and SrA. John N. Chege from Langley AFB, Va.

AFA honored the airmen with a formal banquet in Arlington, Va., in May, that was attended by Air Force and AFA officials.

CMSAF Gerald R. Murray introduced the team to the audience, describing the accomplishments of each airmen, as well as the achievements of all those in the vehicle operations field. He said that vehicle operators have driven more than 3.1 million miles over the past year, in more than 3,000 convoy missions.

Murray reported that those in Iraq had been subject to nearly 400 hostile acts, including small-arms fire and improvised explosive devices. He noted two airmen from the career field who

died in Iraq last summer: SSgt. Dustin W. Peters and A1C Carl L. Anderson Jr. USAF vehicle operators, Murray said, had earned more than 75 Bronze Stars and 45 Purple Hearts. (See "AFA In Action: Team of the Year Visits Lawmakers," p. 85.)

Hometown Team of the Year

At Robins AFB, Ga., the **Carl Vinson Memorial Chapter** hosted a hometown version of the Air Force's Team of the Year during its annual awards luncheon.

More than a dozen vehicle operators from the 78th Logistics Readiness Squadron, some whom had recently returned from supporting the Army in Iraq, were singled out for special honors at the gathering. They included MSgt. Donald Payne Jr.; TSgts. William Geiger, Jody Mohler, and Jason Perrault; SSgts. Kristopher Hanson, Ronal Megginson, and Harrison Rioslopez; Senior Airmen Jacob Kaminski, Matt Schoonover, and James Starcher; Airmen 1st Class James Del-Genio and Ian Reed; and Amn. Lacy Mayeux.

Elizabeth Burris, chapter communications VP, said the chapter saluted its local version of the Team of the Year

because “not all vehicle operators will be able to attend the AFA convention in Washington this fall, and the local chapter wanted to show their gratitude for the tremendous service these dedicated professionals perform.”

Paving the Way to Gold

An AFA Certificate of Achievement from the **Mile High Chapter (Colo.)**

was displayed as part of a technology contest entry and helped a group of students in Englewood, Colo., earn a gold medal.

Of course, it helped that their entry in the state-level competition was a full-size working flight simulator that they'd assembled from scratch. Nevertheless, “the award from the Air Force Association was featured prominently in the

display and looked great,” wrote Flood Middle School technical arts teacher Tony Raymond in a thank you letter to the chapter. The flight simulator won gold in the Construction Challenge category and second place overall at the Technology Student Association state conference in Denver in April.

Colorado State Vice President Joan Sell, of the **Lance P. Sijan Chapter**, first heard about this simulator several weeks before the conference competition. She and Col. (sel.) Thomas A. Deall, the Mile High Chapter president, decided to attend a demonstration of the simulator at Flood Middle School’s “Flight Night” and presented Raymond with the AFA certificate. Deall said Raymond was so excited by this attention from AFA that he made them “featured guests” among the 200 family members, school officials, and community leaders who observed the demonstration that evening.

Deall was equally enthusiastic about the simulator. It measures nine feet long, five feet high, and five feet wide. “You actually sit in the box and go flying,” he said. The students, who are in grades six through eight, assembled it using a 54-inch television, joystick, seven speakers for “surround sound,” an Internet gaming computer that runs the software, and a ventilation system made from a bathroom fan and clothes dryer ducting. Deall “flew” the simulator and told a local newspaper that it was so realistic that he found himself leaning as he banked the “airplane.”


Baikonur to Buffalo

The **L.D. Bell-Niagara Frontier Chapter (N.Y.)** co-hosted a dinner in March for an astronaut, Lt. Col. Edward M. Fincke, and a NASA flight director, Matthew R. Abbott.

Fincke spent six months in space—from April 18 to Oct. 23, 2004—aboard the International Space Station. (See “Space Almanac,” August 2004, photo, p. 48.) As science officer and flight engineer for this mission, Fincke was launched from the Baikonur Cosmodrome, Kazakhstan, aboard a Russian spacecraft that then docked with the International Space Station. Abbott, a Buffalo, N.Y., native, was Fincke’s lead flight director.

The two were invited to the Buffalo area by chapter member Kenneth Huff, a middle school science teacher who had met them the month before at a space educators conference in Houston.

With Huff as their host, the two NASA visitors spent a week speaking at assemblies of schoolchildren, university students, Boy Scouts, and other groups. Huff reported that more than 125 people

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AFA In Action

The Air Force Association works closely with lawmakers on Capitol Hill, bringing to their attention issues of importance to the Air Force and its people.

AFA Testifies on Veterans' Disability Benefits

Kenneth Goss, AFA's director of government relations, recently testified before the Veterans' Disability Benefits Commission, covering a number of issues of interest to AFA members, including disabilities resulting from aircrew and flight operations duty.

The commission held its first meeting in May. (See "Aerospace World: Vets Disability Commission," June, p. 25.)

Among the issues Goss presented were the need for mandatory funding of the Veterans Affairs health care system, to establish compatible medical record data bases maintained by Social Security Administration, DOD, and VA, and to further refine programs that deal with concurrent receipt, survivor benefits, and those retirees the VA classifies as individual unemployables. (See "Action in Congress: Help for 'IU' Retirees," p. 27.)

He also brought to the attention of the commission the need to establish a presumption of service-connection rule for later-in-life health problems associated with aircrew and flight operations duty. Some of these problems are hearing loss from prolonged exposure to aircraft engine noise and flight line operations, medical conditions associated with operating aircraft in a high G-force environment, and disabilities resulting from prolonged exposure to chemicals in aerial spraying of defoliating agents.

Team of the Year Visits Lawmakers

AFA hosted USAF's 2005 Team of the Year on Capitol Hill during the group's week-long stay in Washington. The team comprises five airmen from the vehicle operations career field who supplemented Army forces on convoys in Iraq. They are SrA. John N. Chege, TSgt. Jason D. Hohenstreiter, SrA. Joshua C. Powell, MSgt. Dennis A. Ross, and SSgt. Amelia C. Solomon.

Each member of this year's group met with his or her Congressman, at which time the airmen were asked to explain their work. One team member, Solomon, recounted a particularly harrowing event in which a bomb went off near her truck wounding her and the Army soldiers with her. (See "The Expeditionary Force Under Stress," p. 30.)

Chege met Rep. Jim McDermott (D-Wash.). Hohenstreiter met Rep. Adam Putnam (R-Fla.). Powell was introduced to Rep. Terry Everett (R-Ala.), while Ross met with Rep. Robert Cramer (D-Ala.). Solomon met Rep. Rob Bishop (R-Utah).

After meeting with their Congressmen, the team was welcomed to a **Nation's Capitol** (AFA) Chapter luncheon at which Rep. Steve Buyer (R-Ind.), chairman of the House Veterans' Affairs Committee, spoke.

AFA Meets With Senior Democratic Leaders

AFA Executive Director Donald L. Peterson joined other military association senior executives at a meeting hosted by Rep. Nancy Pelosi (D-Calif.), House minority leader, and the House Democratic Caucus, to discuss funding for veterans health care and two other legislative initiatives important to association members.

One initiative is HR 303, reintroduced by Rep. Michael Bilirakis (R-Fla.) in the 109th Congress, which would extend concurrent receipt authority to retirees with service-connected disabilities rated less than 50 percent and adjust the fully effective date to end the ban on concurrent receipt from 2008 to 2006. The second initiative, HR 808, would continue improvements to the Survivor Benefit Program legislation enacted last year. (See "Action in Congress: Key Bills Reintroduced," April, p. 27.)

Lawmakers in attendance included Ike Skelton (D-Mo.), ranking member of the House Armed Services Committee, Chet Edwards (D-Tex.), Sam Farr (D-Calif.), Sheila Jackson Lee (D-Tex.), Jim Marshall (D-Ga.), John Salazar (D-Colo.), Adam Schiff (D-Calif.), Debbie Wasserman Schultz (D-Fla.), Gene Taylor (D-Miss.), and Diane Watson (D-Calif.).

AFA Spotlights Recapitalization

The theme of a recent Congressional education program sponsored by AFA and the Air Force for US Representatives and their professional staffs, was "Air Force Recapitalization: Air & Space Supremacy Is the Threshold to Joint Success."

Among lawmakers attending the program were several members of the House Armed Services Committee: Roscoe Bartlett (R-Md.), Thelma Drake (R-Va.), Robin Hayes (R-N.C.), Frank LoBiondo (R-N.J.), Mike McIntyre (D-N.C.), Jim Saxton (R-N.J.), Joe Wilson (R-S.C.), and Mark Udall (D-Colo.). Attendees also included House Appropriations Committee members Sanford Bishop Jr. (D-Ga.) and Kay Granger (R-Tex.); House Veterans' Affairs Committee member Stephanie Herseth (D-S.D.); House Science Committee Chairman Sherwood Boehlert (R-N.Y.); and Sam Johnson (R-Tex.), co-chairman of the House Air Force Caucus. Crossing the Hill to attend were three Senators: Kent Conrad (D-N.D.), Byron Dorgan (D-N.D.), and John Thune (R-S.D.), who serves on the Senate Armed Services Committee.

turned out for the banquet in Fincke's and Abbott's honor.

To Those Who Have Served

With funds from the Tidewater Chapter (Va.), the Aerospace Education Foundation, and the Virginia state AEF organization, more than 100 AFJROTC cadets from five high schools in the Chesapeake, Va., area traveled to Washington, D.C., in March.

Chapter President Allan G. Berg said the cadets visited Arlington National Cemetery to observe a changing-of-the-guard ceremony by the US 3rd Infantry soldiers—"The Old Guard"—who stand watch at the Tomb of the Unknowns. The students also visited the Smithsonian Air and Space Museum to learn about aviation and space history.

Berg later received a letter from the cadets at Oscar F. Smith High School, describing their windshield tour of the White House and Lincoln Memorial, excitement over the museum's Imax movie, and awe at Arlington. The cadet student commanders told Berg that the chapter's financial support gave them a chance to see their country's heritage and to see "how much honor we show to those who have served in the armed forces."

The Hall of Famers

Former AFA Chairman of the Board Maj. Gen. Doyle E. Larson, USAF (Ret.), of the **Gen. E.W. Rawlings Chapter**, and retired Col. John R. Hed, of the **Richard I. Bong Chapter**, were inducted into the Minnesota Aviation Hall of Fame in April.

Larson was honored for an Air Force career that began with his enlistment for the Korean War and culminated with his leadership of Electronic Security Command (1979 to 1983). Larson was also recognized as an advocate for veterans, a role that encompasses his AFA positions ranging from chapter president to National President and Chairman of the Board.

Hed was honored as a Korean War veteran and Duluth Air National Guard officer. With their induction, Larson and Hed joined a group of inductees that includes Charles A. Lindbergh, who grew up on a Minnesota farm, and USAF Gen. Edwin W. Rawlings, for whom the Minneapolis-based AFA chapter is named.

Rawlings Chapter member retired Lt. Col. Louis J. Martin received the Best Aviation Writing Award at the same ceremony, in recognition of his book *Wings Over Persia*.

The AEF Publicist

The **Pease Chapter's** aerospace education VP, Daniel W. Caron, borrowed a PowerPoint presentation on



Team of the Year members TSgt. Jason Hohenstreiter, SrA. John Chege, SrA. Joshua Powell, MSgt. Dennis Ross, and SSgt. Amelia Solomon (l-r) line up with Lt. Gen. Donald Wetekam (far left), who was guest speaker at the AFA banquet in their honor; CMSAF Gerald Murray; and AFA National President Bob Largent. (See "USAF's Team of the Year," p. 83.)

AEF activities from New Hampshire State President Edward H. Josephson and took it to a teachers conference in Kansas City, Mo., in April. It was part of a publicity blitz for the foundation.

Caron, who was AEF's 2004 Christa McAuliffe Memorial Award teacher of the year, set up a display at the International Technology Education Association's annual conference. He ran Josephson's AEF presentation on a laptop computer at his booth while passing out AEF information. Caron also distributed a list of AEF contacts that he created himself, illustrated with the AFA chapter locator page from AFA's Web site.

He said the teachers grabbed all of his information packets on the *USA Today*-AEF Visions of Exploration program and snapped up more than 100 applications for AEF teacher grants and recognition programs.

Visions of Exploration is a joint effort by *USA Today* and local AFA chapters to encourage elementary and middle school children to study math, science, and technology. The program provides classrooms with lesson plans keyed to 18 weeks of math, science and technology articles published in the newspaper.

Caron teaches aerospace and technology education at Kingswood Regional High School in Wolfeboro, N.H.

More AFA/AEF News

■ The **Central Florida Chapter** awarded \$10,000 in scholarships to 15 AFROTC cadets from Det. 159, University of Central Florida in Orlando in April. John Timothy Brock, chapter president, made the presentations at

the unit's 32nd annual military ball. The \$1,000 Gen. Bruce K. Holloway Memorial Scholarship went to Richard G. Kelly. Eric C. Moore received the \$1,000 Lt. Carlos Arriaga Memorial Scholarship. Additional awards, ranging from \$750 to \$425, were presented.

■ At their March meeting, the **Southern Indiana Chapter** received a briefing on the role of the Air National Guard's 181st Fighter Wing in the war on terror. ANG Maj. John Puckett described his unit's activities in Southwest Asia. The 181st "Racers" are based at Hulman Airport and fly F-16s.

■ John E. Schmidt Jr., president of the **Col. H.M. "Bud" West Chapter (Fla.)** attended a joint Air Force-Army ROTC award ceremony at Florida State University in Tallahassee to present awards and chapter scholarships to three cadets. An AFROTC Silver Medal for outstanding cadet went to Linsey Woodhouse. Chapter awards went to Michelle Smith and David Muggleberg. In addition, various chapter board members traveled to six high schools in Florida and Georgia to present AFA Bronze Medals to AFJROTC cadets.

■ A program manager from the Jet Propulsion Laboratory, Pasadena, Calif., spoke to the April meeting of the **Pasadena Area Chapter** about a combat simulation system used for training Army division and corps commanders and staffs. Joe Provenzano presented the information in the context of how military wargaming has evolved from board games to sophisticated computer simulations of a joint-operation response to asymmetric threats.

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1st Fighter Assn., including the 27th, 71st, and 94th Sqs. Sept. 18-22 at the Stardust in Las Vegas. **Contact:** Robin Hansen (928-778-7040) (robinhansen@1stfighter.org).

2nd Bombardment Assn. Sept. 29-Oct. 2 at the Renaissance St. Louis Hotel in St. Louis. **Contact:** Richard Radtke, 60 Villa Heights Ct., Algona WI 54201 (920-487-3343) (ektdar@charter.net).

5th AF, Hq & Hq Sq, 314th Composite Wing (WWII & Korea) and 5th Bomb Command (WWII). **Contact:** Louis Buddo, Box 270362, St. Louis, MO 63127 (314-487-8128).

5th/108th Station Hospital (WWII), 5th AF. **Contact:** Jeff Seabock, Box 3635, Hickory, N.C. 28603 (828-324-6464).

34th BS, Wright-Patterson AFB, Ohio (1960-75). Aug. 24-28 at the Holiday Inn in Fairborn, OH. **Contact:** Ovidio Pugnale (937-426-5754) (opug@earthlink.net).

39th BG Assn. Aug. 11-14 at the Holiday Inn National Airport in Arlington, VA. **Contacts:** James Wyckoff (607-869-2574) or Robert Weiler (941-377-2451) (bobweiler@39th.org).

43rd BG Assn., 5th AF (WWII). Sept. 14-18 at the Ramada Thunderbird Hotel in Bloomington, MN. **Contacts:** Neil Fairbanks (763-421-3076) (nrfairban@aol.com) or Arvid Hougum (218-525-0021) (arvidtx@aol.com).

48th FS, FIS, & FTS Assn. Sept. 28-Oct. 2 in San Antonio. **Contact:** Joe Onesty, 455 Galleon Way, Seal Beach, CA 90740-5937 (562-431-2901) (jonesty2@adelphia.net).

61st Tactical Control Sq, Ashiya, Japan (1950-60). Sept. 29-Oct. 2 in Little Rock, AR. **Contact:** Lt. Col. B. Hendrickson (479-582-9436) (sirben1@sbcglobal.net).

75th Air Depot Wg, Korea (1952-55). Sept. 22-25 in Asheville, NC. **Contact:** Walt Walko (719-488-1106) (wawlaw2@juno.com).

78th FS Assn. July 27-31 in Milwaukee. **Contacts:** Ken Sweet (414-541-4015) or Ed Miklavcic (262-786-1716).

80th Service Gp (WWII), 5th AF. **Contact:** Virgil Staples, 725 16th St., West Des Moines IA 50265 (515-225-8554).

317th Troop Carrier Wg/Airlift Gp. Sept. 2-Oct. 2 in Fayetteville, NC. **Contact:** George Banks, 6604 Winthrop Dr., Fayetteville, NC 28311-1011 (910-488-0422) (gjbanks@nc.rr.com).

390th BG Veterans Assn., Eighth AF, Framlingham, UK (WWII). Sept. 20-25 in Washington, DC. **Contact:** Ken Rowland, Box 28363, Spokane, WA 99228-8363 (phone: 509-467-2565 or fax: 509-467-4707) (rkenrow@msn.com).

405th Signal Co, 5th AF. **Contact:** Phil Treacy, 2230 Petersburg Ave., Eastpointe, MI 48021-2682 (810-775-5238).

433rd FIS, Truax AFB, WI, and Ladd AFB, Alaska (1954-57). Oct. 6-9 at the Hope Hotel at Wright-Patterson AFB, Ohio. **Contact:** Hiel Rockwell, 4558 Henry Dr., Saginaw, MI 48603 (phone: 989-793-7381 or fax: 989-793-6744).

435th TCG, including Hq, 75th, 76th, 77th, and 78th TCSs (WWII). Sept. 29-Oct. 2 at the Doubletree Crystal City in Arlington, VA. **Contact:** Al Forbes, 1614-B Berwick Ct., Palm Harbor, FL 34684 (727-785-6075) (for76tcs@aol.com).

450th BG. Oct. 19-23 at the Valley Forge Hilton. **Contact:** Al Goodman, 2 Portside Ct., Grayslake, IL 60030 (847-543-8381) (gobalar@aol.com).

502nd Tactical Control Gp (Korea), 5th AF. **Contact:** Fred Gorsek, 445 S. State, Greenview, IL 62642 (217-968-5411).

601st/615th ACW Sq, Rothwesten, Germany. Sept. 10, 2006. **Contact:** Nick Mascis (818-585-2788) (nickmascis@yahoo.com).

621st TCS, Udorn, Thailand (1967-68). Aug. 12-14 in

Colorado Springs, CO. **Contacts:** Vic (719-473-7951) or Ray (719-473-7850) (viprealty@adelphia.net).

Air Rescue Assn. Sept. 7-11 in Colorado Springs, CO. **Contacts:** Sandy Gonzalez, Box 300945, Fern Park, FL 32730-0945 (407-834-0105) (sgonzalez2@cfl.rr.com) or Jim Fall (951-849-3777) (jimbetf@verizon.net).

Det. 214, 3502 Recruiting Gp. Aug. 12-14 in Louisville, KY. **Contact:** Bobbie Smith, Box 742, Hardinsburg, KY 40143 (270-756-9066).

Thailand, Laos, Cambodia Brotherhood. July 8-10 at the Hilton Garden Inn in Arlington, VA. **Contact:** Dave MacDonald (202-797-8467) (www.tlc-brotherhood.org).

USAAF Pilot Classes of 1944. Oct. 7-10 in Washington, DC. **Contact:** Stan Yost, 13671 Ovenbird Dr., Fort Meyers, FL 33908 (239-466-1473).

USAF Pilot Training Class 55-S. Sept. 29-Oct. 2 at the MCM Elegante Hotel in Odessa, TX. **Contact:** Gordon Beck, 4311 Shady Ln., Wichita Falls, TX 76309 (940-696-0054) (gnbeck@earthlink.net).

Wild Weasels. Sept. 23-25 at the National Museum of the United States Air Force in Dayton, OH. **Contact:** Larry LeMieux (937-832-3684) (larlemieux@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.

■ Tommy G. Harrison, Florida state treasurer; Richard A. Ortega, state aerospace education VP; and Bryan B. Paul from the **Central Florida Chapter** congratulated some of the Air Force's newest officers at a commissioning ceremony in May at AFROTC Det. 159, University of Central Florida. Paul, who is the chapter's treasurer, presented the brand-new second lieutenants with the chapter's traditional "starter kit": gold rank bars, the USAF training ribbon, and a hat insignia.

Have AFA/AEF News?

Contributions to "AFA/AEF National Report" should be sent to *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Phone: (703) 247-5828. Fax: (703) 247-5855. E-mail: afa-aef@afa.org. Digital images submitted for consideration should have a minimum pixel count of 900 by 1,500 pixels.

■ Earlier, Ortega and Raymond Turczynski Jr., Florida Region president and **Hurlburt Chapter (Fla.)** member, presented trophies to top cadets at the 17th annual AFA Florida

AFJROTC statewide drill competition in April at Valrico, Fla. Nineteen AFJROTC units participated, and AFA chapters in the state contributed 49 trophies.

AFA Conventions

July 15-17	New York State Convention, Niagara Falls, N.Y.
July 16	Pennsylvania State Convention, Mechanicsburg, Pa.
July 16	Rhode Island State Convention, Newport, R.I.
July 23	Florida State Convention, Cape Canaveral, Fla.
July 29-31	Texas State Convention, San Angelo, Tex.
July 30-31	Washington State Convention, McChord AFB, Wash.
Aug. 9	Michigan State Convention, Mount Pleasant, Mich.
Aug. 12-13	Midwest Region Convention, Omaha, Neb.
Aug. 13	North Carolina State Convention, Raleigh, N.C.
Aug. 19-20	Colorado State Convention, Colorado Springs, Colo.
Aug. 20	Georgia State Convention, Warner Robins, Ga.
Sept. 11-14	Air and Space Conference, Washington, D.C.
Sept. 18	New Hampshire State Convention, Manchester, N.H.

Pieces of History

Photography by Paul Kennedy

Memories of Mitchell



In the National Museum of the US Air Force, located at Wright-Patterson AFB, Ohio, one finds several items of memorabilia that belonged to Maj. Gen. Billy Mitchell, the ultimate airpower legend. Shown above are two of Mitchell's uniform jackets, his Army Signal Corps K-3 camera with case, and his personal pair of binoculars (the latter two used for aerial reconnaissance). Both jackets sport nonregulation

collars—the kind early Army pilots wore to reduce chafing as they constantly craned their necks searching the sky and ground for enemies. Mitchell's forceful advocacy of strategic bombing got him court-martialed in 1925, after which he resigned.



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