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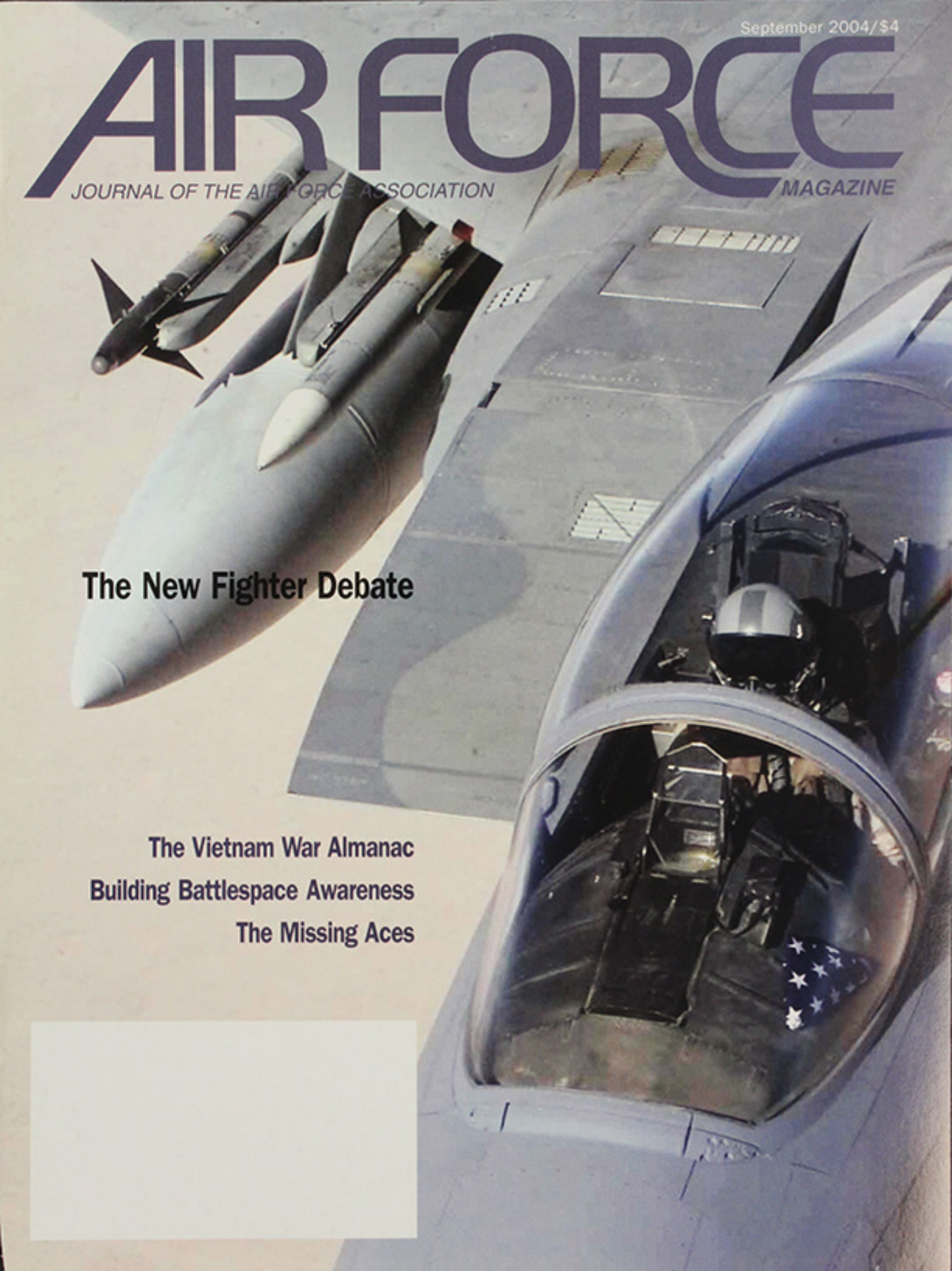

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September 2004, Vol. 87, No. 9

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About the cover: An F-15C flies over Iraq. See "The New Air Force Fighter Debate," p. 34. USAF photo by TSgt. Jack Braden.

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Editorial

By Robert S. Dudney, Editor in Chief

Listening to General Franks

Gen. Tommy R. Franks suddenly has a lot to say. In his new 590-page memoir, *American Soldier,* the usually tight-lipped Texan unburdens himself about war in Southwest Asia. Along the way, he throws some sharp elbows, some of which are aimed at former senior uniformed colleagues.

Franks, now retired, was commander of US Central Command from mid-2000 to mid-2003, where he orchestrated US operations in Afghanistan and Iraq. He was a fierce advocate of high-intensity warfare. His words carry considerable weight.

In one respect, that is unfortunate, because those words paint a most unflattering portrait of the services and the Chiefs of Staff. They come off as nitpicking meddlers, scrambling for advantage. Anyone reading his book would think General Franks was up against a pretty "un-Joint" bunch.

- Page 207: "Regional combatant commands depended on the 'Title 10 Community'—the separate armed service branches. ... The Title 10 Service Chiefs could be inflexible bean counters."
- Page 207: "Each of the services was focused on winning wars—alone. They ... had no real inclination to fight together as part of a joint team."
- Page 274: When the Chiefs critiqued his Afghan War plan at a Sept. 20, 2001, Pentagon meeting, all General Franks heard was "parochial bull****."
- Page 440: General Franks says his Afghan War plan "had been nitpicked by the Service Chiefs and the Joint Staff," but, in Iraq, "Tommy Franks wasn't about to be treed by Chihuahuas."
- Page 441: General Franks says he asked that the Chiefs be excluded from daily Iraq War conferences because "they do not have sufficient Joint background or understanding to be operationally useful."

Coming from a warrior of General Franks' stature, such commentary is strange. Bean counters? Chihuahuas? Please. Some of the senior officers to which he refers—sometimes by name, but frequently not—have been among the most distinguished and innovative military men of recent decades.

Moreover, these uniformed leaders all have been active public proponents of joint warfare, even as they have worked to strengthen their own branches. They have served at one time or another in key joint assignments. Some of them also directed joint combat operations.

General Franks himself, in other venues, seems to concede that things

There can be no powerful Joint Force without strong services.

weren't quite as out of joint as he made them out to be in his book. On Aug. 4, he told an interviewer: "The evolution of technological capability and state of training in armed forces for multiservice warfare ... advanced a lot over the previous 10 years." He is right about that.

General Franks appreciates the power contributed by the services. He is a huge fan of airpower. *American Soldier* justifiably heaps praise on two USAF officers who served as his air bosses—Gen. Charles F. Wald, now deputy commander of US European Command, and Gen. T. Michael Moseley, now vice chief of staff of the Air Force.

General Franks' remarks do, however, underscore a broader problem: It has become fashionable and acceptable to discount the contributions of the individual services—as institutions—to the nation's defense.

Frequently, the services are perceived as impediments to some idealized state of Joint Force harmony. The basic idea is that there are good Joint "warfighters" and narrow-minded Title 10 "services," as if the two can be separated.

In his book (page 531), General Franks himself, perhaps inadvertently, promotes that view: "I'm a warfighter," he quotes himself as telling Secretary of Defense Donald H. Rumsfeld, "not a manager. I wouldn't do well in the Title 10 community."

Jointness has been growing steadily stronger since the Defense Reorganization Act of 1958, by which each of the services ceded operational control of forces to commands organized on geographic and functional lines.

Each service now organizes, trains, and equips forces for basic "core competencies" related to air, space, land, sea, or amphibious power. When Congress passed the Goldwater-Nichols Act of 1986, unified theater commanders gained authority, with a corresponding decline in service power.

This, however, does not mean that the services and their leaders have become incidental factors in defense. The opposite is true.

It is unwise to emphasize acquisition of "joint" items—common communications and other types of systems—without giving equally strong support to "core" systems—aircraft, warships, vehicles, and satellites.

Instructive words are offered by Gen. Hal M. Hornburg, commander of Air Combat Command. He is a self-declared "believer" in jointness. He probably has had as much "joint" time as any Air Force general. He has served on the Joint Staff, run a combined air operations center in Italy, commanded the Joint Warfighting Center, and headed the air component of US Central Command.

"Joint warfare works best with strong service components," Hornburg told a June 23 session of the Defense Writers Group in Washington, D.C. "Let's not get so joint so fast ... that we dilute the core competencies of the Army, Navy, Marine Corps, and Air Force." True jointness, he said, requires the United States to "bring the best Army and the best Air Force and the best Navy" to the battlespace.

In a presentation some years ago, retired Maj. Gen. Charles D. Link, then USAF assistant deputy chief of staff for plans and operations, described the services as the nation's "keepers of operational art." This is still true.

Diligence in the pursuit of strong service competence is a virtue, not a vice. It is definitely not "parochial" or "un-joint." There can be no powerful Joint Force without strong services, and the Chiefs, in pressing to maximize such strengths, are doing their duty to the nation. ■

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Letters

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Remembering Lance Sijan

Thank you so much for the article about Lance Sijan. *[See "The Courage of Lance Sijan," July, p. 50.]* We need to know about people like him because there are so few in his class. Like Pitsenbarger [A1C William H. Pitsenbarger, also a Medal of Honor recipient], he is on the cover—completely fitting and proper. *[See "Pitsenbarger, Medal of Honor," February 2001, p. 26.]* Please continue to tell the stories of these extraordinary airmen.

Garland O. Goodwin
Columbus, N.C.

You failed to mention one memorial of significance. At Mountain Home AFB, Idaho, home of the 366th Fighter Wing, to which Sijan was assigned when shot down, an F-4 is on static display. To my knowledge, it is marked with the same tail number and unit markings that would have been on his aircraft.

Also, a few years ago, in an effort to honor many former Air Force heroes, one of the streets in base housing was renamed Sijan Street. I was stationed there from 1996-2002 as a member of the then 22nd Air Refueling Squadron. It would be a shame to overlook this memorial to a fellow "Gunfighter" who gave his life for all of us.

Former TSgt. Brian Thayer
Tucson, Ariz.

The Old Workhorse Lives

It must be official. The C-141 is dead in everyone's eyes, including those of the Air Force Association. In your July 2004 article titled "Guard and Reserve in a Time of War" *[p. 22]*, the C-141 Starlifter did not have one kudo. Granted, the active duty has written it off, and most of the guys I see or talk to out on the road don't realize that we are still flying them, but we have a vital mission and are doing it very well.

The C-141 has been charged with moving the wounded out of the theater, back to Germany, and then back home. No other aircraft can do the job as well, not even the C-17. I know this frustrates and angers many, but it is true. Since February 2003, crews from March ARB, Calif., Wright-Patterson AFB, Ohio, and Andrews AFB, Md., have been flying the 40-year-old aircraft in and out of the Operation Iraqi Freedom theater. I know that it isn't a glamorous aircraft like the fighters, C-17, or C-130, but it has moved thousands of wounded soldiers, Marines, and airmen when they needed it the most.

Capt. Kevin M. Sullivan, USAFR
Wright-Patterson AFB, Ohio

C-124s Were First

There was a quote from an active duty colonel that basing the C-17s in Hawaii was the first time that strategic airlift was stationed permanently outside the continental US. *[See "Airpower for a Big Ocean," July, p. 36.]* During the 1950s and 1960s, strategic airlift C-124s were located at Tachikawa, Japan, and in Hawaii.

The squadrons in Hawaii were moved back to CONUS. The C-124 was a strategic airlifter that certainly was the mainstay for cargo during those years and certainly made us love the C-141 when it made its appearance.

Col. Al Vivona, USAF (Ret.)
Sarasota, Fla.

■ *Retired Col. Ron Ham of New Mexico also noted that C-124s were stationed in Hawaii. He and Colonel Vivona are correct: C-124s were stationed in Japan (1950s-60s) and Hawaii (1960s).*—THE EDITORS

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

Dumbing Down Training

It has been USAF's practice to "dumb down" adversarial equipment and training to simulate what the service believes to be the level of enemy competence. *[See "Washington Watch: Trumping the F-15," July, p. 6.]* Much to USAF's surprise, during Cope India, F-15C pilots faced an IAF opponent who was very proficient in his aircraft and smart on tactics. In light of the foregoing, George Santayana's philosophical insight is applicable: "Those who cannot remember the past are condemned to repeat it."

In 1941, Allied air forces greatly underestimated Japan's pilots and aircraft. For months after the successful attack on Pearl Harbor, Japanese pilots flying various fighter types swept the skies with near impunity. A generation later, North Vietnamese pilots, flying lower-tech MiGs, began taking advantage of USAF pilots' reliance on electronics and thrust; the eventual result was an alarmingly unacceptable USAF victory/loss ratio of 2.41-to-1.

At Gwalior, USAF "discovered" that older aircraft (MiG-21s) upgraded with sophisticated new avionics and missiles can pose a formidable challenge. After years of Red Flag and other "red air" exercises the foregoing fact should be gospel.

Possession of F/A-22 Raptors alone will not always guarantee USAF's dominance in hostile airspace. One must not forget the following adage attributed to legendary World War I German ace Baron Manfred von Richthofen: "The quality of the crate matters little. Success depends upon who sits in it."

John T. Stemple
Dayton, Ohio

Justifiably Proud

In the May issue you talked extensively about the AEF Rotation Cycle and our Expeditionary Combat Sup-

port Forces. *[See "USAF Almanac 2004: The Air and Space Expeditionary Force," p. 35.]* On p. 38, you documented AEFs 1 through 10 and listed all active, Air National Guard, and Air Force Reserve Command forces and the AEF cycle to which they are assigned.

However, your article completely missed Ogden Air Logistics Center's role in the AEF construct. Our center plays an important role in this process and is a key contributor to both AEFs 3 and 7.

Please help me correct this error as the men and women of Ogden Air Logistics Center are proud of the role they play as Expeditionary Combat Support Forces supporting AEFs 3 and 7.

Maj. Gen. Kevin J. Sullivan,
Commander, Ogden ALC,
Hill AFB, Utah

■ *We apologize for the error. The data provided by USAF lumped all ECS forces at Hill Air Force Base under the 388th Fighter Wing. We'll ensure due recognition next year.—THE EDITORS*

Rhythm and Blue

I enjoyed the article by Bill Getz regarding military songs and music. *[See "Rhythm and Blue," July, p. 78.]* Mr. Getz should have mentioned Bob Stevens' *There I Was ... Flat on My Back*. This delightful book not only has dozens of Colonel Stevens' great cartoons, but has dozens, if not hundreds, of military songs and ballads, most irreverent, some bordering on obscene, but all authentic.

There was a perhaps significant song missing from Getz's article. I remember—I believe it was in the 1960s or there about—a song which I believe was an official Air Force song at the time. It has not been heard in decades, most likely due to the politically incorrect nature of some of its sentiments. Actually, I like it a lot. The first lines go, "They took the blue from the skies, and a pretty girl's eyes, and a touch of old glory too ... and gave it to the men who proudly wear the US Air Force blue."

Interestingly, at the US Air Force Museum in Dayton, Ohio, one of my favorite places, there is video monitor showing a loop of historic scenes, and part of the music on the video loop is the music from the aforementioned song, without lyrics.

Lt. Col. S. Bruce Olson,
USAF (Ret.)
Pensacola, Fla.

"Rhythm and Blue" got me remembering my Air Force basic training in

October 1957. During the classroom phase of training, we were taught that the "official" Air Force song was "US Air Force Blue."

A few months later, while at Scott AFB, Ill., tech school, we were entertained by the Airmen of Note, who sang "US Air Force Blue." And to be sure my memory wasn't failing, I found in my archives a recording of the United States Air Force Band and the Singing Sergeants. Again, "US Air Force Blue" was presented, but, unfortunately, neither the recording nor the jacket contains a credit for the author nor the date of composition.

Ernst H. Linnemann
Shamong, N.J.

Bill Getz writes a very interesting article on the cultural history of the Air Force through songs. Unfortunately, he made an error in transcribing the lyrics of the third verse of the chorus [to "The Air Force Song"].

The correct lyrics for that verse are: "To a friend we will send a message of his brother, men who fly."

Col. Hector Andres Negroni,
USAF (Ret.)
Vienna, Va.

■ *The version provided by the US Air Force Band omits the comma.—THE EDITORS*

While stationed in Diyarbakir, Turkey, in 1967, we had a song that started, "We come to this place big D, the Air Force, Tumpane, GE." (Tumpane, a civilian contractor, ran most base functions, and GE operated the operational aspects of the base.) Also, while assigned to Korat AB, Thailand, with the College Eye task force, singers at the Officers Club used to sing a song called "Butterfly." We made some changes and came up with: "College Eye, my College Eye, How I love my College Eye."

Don't forget the many Air Force songs sung by Oscar Brand. I still have several of his LP records. Your article certainly covered the more famous songs, but there were also the little known homegrown ones.

Col. William C. Koch Jr.,
USAF (Ret.)
Raleigh, N.C.

The article "Rhythm and Blue" brought back many memories. I was reminded of the evening in the spring, or early summer of 1939, when all officers on the base were assembled in the Officers Club to vote their choice between the three or four songs that had been selected as finalists in the competition to become the official song for the Air Corps. As I recall, the Army Air Corps Song won by unanimous vote. That was at a place then known as Barksdale Field, home of the Twentieth Pursuit Group and the Third Attack Group. Thanks for the memories.

Gen. Seth J. McKee,
USAF (Ret.)
Rancho Mirage, Calif.

I found the article to be quite interesting. It reminded me of the "Air Force Airs" songbook that came into existence primarily due to Gen. Henry H. "Hap" Arnold's efforts. I have a copy of that rare songbook.

Lt. Col. Burnett W. Porter Jr.,
USAF (Ret.)
Hopkinsville, Ky.

■ *Colonel Porter included a note written to him from the Air Force History Support Office that said Mildred Yount pushed to have songs that were collected during the Air Force song contest published in a book, which now is "rather rare."—THE EDITORS*

I thoroughly enjoyed "Rhythm and Blue." My husband, Andrew Russell Jr., joined the Army Air Corps in August 1940 and served for five years, discharged with the rank of captain. He was a member of the 486th Bomb Group, stationed with Eighth Air Force in Sudbury, Suffolk, England, and a member of the "Tin Can Quartet."

Rose Russell
Roswell, Ga.

The article caused me to look at some sheet music that I have stored away. I found that I had a copy of "The Army Air Corps" song, as well as "Comin' in on a Wing and a Prayer," "He Wears a Pair of Silver Wings," and other World War II patriotic songs, such as "Praise the Lord and Pass the Ammunition." Now, they were inspiring. They do not write them like that any more. Thanks to Bill Getz for causing me to dig out these sheet music copies of some 60-plus years ago.

Maj. Jack Ingles,
USA (Ret.)
Denver

Thank you for acknowledging it was, originally, "The Army Air Corps Song" and remained that way until the special song composed for the Air Force after September 1947 was generally rejected. "The Army Air Corps Song" had a lilt that attracted, was easy to remember, and stirred the blood of

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those of us who served during World War II.

All too often today, I have heard/read references to this song as if it was that of the Air Force exclusively, with no recognition of its history. Even the reference to "scouts before and bombers galore" should have triggered minds to the fact this was somewhat misrepresented—we no longer had scouts in 1947, and not a whole lot of them during World War II, either.

Lt. Col. Walter H. Little, USAF (Ret.)
Marshall, Tex.

A 61-Year-Old Myth

Your obituary of Col. Robert Morgan, pilot of the B-17 *Memphis Belle* was incorrect when it stated, *"Memphis Belle* was the first Army Air Forces bomber to complete 25 missions, and its crew returned to the United States." *[See "Aerospace World: Obituary," July, p. 18.]* An accurate statement would have read: "Memphis Belle was the first Army Air Forces bomber to return to the United States *after* completing 25 missions."

The honor of being the first bomber to complete 25 missions belongs to the B-17 *Hells Angels* (S/N 41-24577, 303rd Bomb Group), piloted by Capt. Irl E. Baldwin and his crew. *Hells Angels* and its crew flew their 25th mission on May 14, 1943. (Other crews flew it—an 23 additional missions—before it returned to the States on Jan. 20, 1944.)

Memphis Belle completed its 25th mission five days later on May 19, 1943. The pilot on the last mission was Lt. C.L. Anderson. Captain Morgan had flown his 25th mission on May 17, 1943.

I'm writing to try to give credit where credit is due, but I probably won't be successful in correcting a 61-year-old myth.

Lt. Col. Jetty R. Cook, USAF (Ret.)
Hunt, Tex.

■ *Colonel Cook is correct. We should have said that* Memphis Belle *was one of the first B-17s to complete 25 missions.*—THE EDITORS

Back to the Yak

Your piece "Purloined Yak" *[June, p. 78]* by Bill Getz was cause for reflection. I was there. I suspect that crediting CIA with the acquisition was taken from the "cover story" documentation. I am sure that this caper originated with a young captain assigned to the Air Technical Intelligence Center's European detachment. I assure you that the Yak-23 was neither the first nor the last major ATIC acquisition.

A significant omission in the article was the role of Brig. Gen. Harold E. Watson, a remarkable senior officer and motivator for air intelligence capability and expertise. From flight test in Air Materiel Command, Watson gravitated to technical intelligence, with an assignment to Europe at the end of World War II to assess the performance of captured German aircraft and their shipment to the States. As a lieutenant colonel, Watson prevailed upon the British to participate by loaning the use of an aircraft carrier to transport the German equipment to the US.

Watson's ATIC complement of military and civilian technical specialists revered the man. He is responsible for there being a technical intelligence career field for the military. The ATIC mission under General Watson was "to prevent technological surprise"—short and direct, but totally meaningful. By the way, the Yak-23 was powered by a Soviet copy of the Rolls-Royce Derwent engine, the predecessor of the Roll-Royce Nene, the latter also copied by the Soviets. Yak power management and flight tests were a story unto themselves.

Jack Wendling
Filer, Idaho

Chimps in Space

The ["50 Years of Space and Missiles"] chronology begins with July 1, 1954, and continues year by year. *[See June, p. 70.]* However, beginning in 1960 and through 1961, nothing is reported about the chimpanzee program at Holloman AFB, N.M., specifically the first suborbital flight of Ham (really Chang) and Enos' two orbital flights.

[We worked] to establish a Manual Workspace Standard for Chimpanzees, so capsule manufacturers could redesign the original capsule to conform to chimpanzee anthropological standards.

Lester M. Zinser
Bakersfield, Calif.

Correction

The 314th Troop Carrier Wing mentioned in the August issue's "The Immortal Hercules" was stationed at Sewart AFB, Tenn.

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Washington Watch

By John A. Tirpak, Executive Editor

Taking C-5As to 2029?; SBR Has Something for Everyone; B-52s Could Go Another 40 Years; DOD Releases Tanker Documents ....

USAF: C-5As Could Be Upgraded

Investigators could find no reason that the giant C-5A airlifters can't be modified to last through 2029 or later, according to the Air Force's new Fleet Viability Board. The finding is the first of many hurdles the C-5A must pass if USAF is to go ahead with a major upgrade of the fleet.

When USAF established the board in August 2003 to examine aging aircraft issues in critical mission areas, its first task was to evaluate the life expectancy of the C-5A, an aircraft that the Air Force hopes to retain to haul outsize/oversize cargo. The C-5As, which were built from 1968-73, have a long history of reliability woes.

Following an 11-month review, the board found that the C-5A "has at least 25 years of service life remaining" if the aircraft receive a planned $3 billion upgrade to avionics, structure, and engines. The panel found that the early Galaxys have about half their potential service lives ahead of them, based on structural and statistical analysis. The C-5As average 32.2 years old and have racked up an average of about 18,000 flight hours. The board said the C-5As could probably go to 30,000 flight hours.

The board cautioned that, even with the C-5A Avionics Modernization Program and Reliability Enhancement and Re-engining Program, the Air Force won't get quite the reliability it would like. Panel members believe the upgraded C-5A will fall short of the 75 percent desired reliability rate by about five percent. And, they said, the C-5As would need another avionics upgrade around 2020 "to deal with technology obsolescence and future operational requirements."

The board does not have decision-making authority, however, and its finding does not mean a C-5A upgrade will go forward.

In a July 14 letter sent with a report to defense committee lawmakers, Air Force Secretary James G. Roche said that the board's analysis is a "significant data point,"

photo by PH3 J. Zopf

Upgraded C-5As could last until 2029.

but any decision about how long the C-5A is to be retained will depend on at least three additional factors. One is a Pentagon Mobility Capability Study. A second is the results of current testing of a C-5A that has been given prototype upgrades. Finally, USAF wants the results of the more extensive C-5A "teardown" analysis now under way at Warner Robins Air Logistics Center.

Currently, the Air Force plans to take 10 of the most problem-prone C-5As out of service by the end of Fiscal 2005. That will leave 60 C-5As and 50 of the younger C-5Bs in USAF's total C-5 fleet.

SBR: Something for Everyone

The Air Force is seeking ways to make the Space Based Radar program serve all elements of the Intelligence Community, an approach that is technically challenging and likely to be costly, according to Peter B. Teets, Air Force undersecretary and DOD's space acquisition executive.

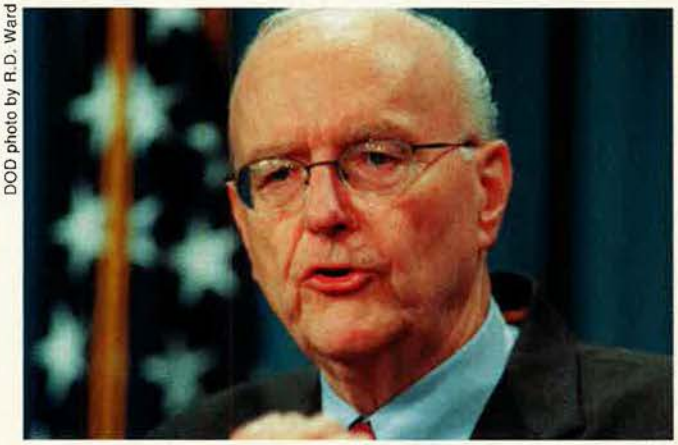
In a late June meeting with reporters, Teets said that the Air Force is working with contractors to develop an SBR concept of operations (CONOPs) comprising the synthetic aperture radar (SAR) imagery requirements of both the Intelligence Community and DOD as well as its principal mission of surface moving target indications.

Teets said the Intelligence Community, "at least at the moment," is more interested in SAR imagery, while the armed services lean more toward the moving target indicator function. He believes it will be possible to satisfy both groups of users, provided the Air Force develops a CONOPs in which the SBR system could be "dynamically retasked" using machine-to-machine interfaces.

There is "huge interest" in shared and distributed access to SBR data, said Teets.

USAF is contemplating a nine-satellite SBR constellation, he said, but that notional arrangement could be An

DOD photo by R.D. Ward



Teets: SBR can satisfy all users if "dynamically retasked."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changed as program analysis and concept development proceeds. The final arrangement could be larger or smaller and could be at medium or low Earth orbit, "or some mix thereof," said Teets.

"We haven't picked a specific architecture," he said, referring to the nine-satellite constellation as a "baseline" from which USAF can establish the true cost of the system.

However, in the 2005 defense spending bill, House and Senate appropriators slashed the Administration's $328 million request down to $75 million and ordered the Pentagon to restructure the program. Lawmakers fear that SBR will be too expensive, costing, as presently envisioned, $34 billion over 12 years—more than all other USAF satellite programs combined. They also believe that maintaining constant worldwide surveillance will require far more than nine satellites and could boost the cost to $60 billion.

The Administration has appealed the cut to the SBR program, which Pentagon officials have touted as a key transformation effort. The Pentagon says that appropriators were relying on outdated information. The authorization committees in both the House and Senate signed off on the full Administration request for SBR.

Teets acknowledged that the Space Based Radar will be "an expensive system." However, he said it would not be one-stop shopping for radar surveillance, rather part of a network of sensors. It need not be globally persistent at all times, he said.

"It is true that you can't do continuous target tracking with a nine-ball low Earth orbit" system, Teets explained. "There will be times when there won't be continuous coverage of a certain area."

The space czar said that the Air Force does not plan to develop SBR "in a vacuum." The system will be designed to provide "tips and cues" for E-8 Joint STARS ground surveillance aircraft, as well as other airborne assets. Joint STARS provides combatant commanders with a picture of moving wheeled and track vehicles. The picture is refreshed every few minutes, but Teets noted, even Joint STARS "loses track" of ground targets when the aircraft turns around. The system picks up the track again in short order, he said.

Moreover, Teets asserted, the systems the Air Force is contemplating should have revisit rates that are measured "in minutes, not hours." Consequently, satellite overlap is not necessarily required. "That's a big plus," said Teets.

Toward an 80-Year-Old BUFF

The Air Force and Boeing are working on upgrades that will permit the 40-year-old B-52H fleet to remain a viable combat platform for nearly another 40 years, company officials said in July.

"The limiting factor is the upper wing skin," according to Scot Oathout, Boeing's bomber programs manager. Boeing believes that if the B-52s fly an average of 380 hours a year, the upper wing skins will last until the aircraft reach 30,700 hours, which would be in 2040. After that, the wing skin would need to be replaced and it would no longer be "economical to operate the airplane," Oathout told defense reporters in Washington, D.C.

Right now, USAF's 94 B-52Hs have an average of about 16,000 hours each.

"There's a lot of life left in this airplane," Oathout said. Boeing's prediction that the bomber can reach 2040 assumes that USAF will fly the B-52 in a benign, high-altitude flight profile, with no violent low-altitude maneuvering.

The B-52 continues to prove its worth in combat, he said. The venerable bombers dropped 29 percent of all the bomb tonnage delivered in Operation Iraqi Freedom but only flew about three percent of the sorties. Oathout also noted that the platform is "evolving ... and adapting to new missions," having performed close air support for the first time in Iraq.

USAF photo

B-52H may last 40 more years, if flown carefully.

The Air Force plans to adapt the rotary launchers used in the B-2 to the bomb bays of the B-52. The change would allow the B-52 to carry two-thirds to 100 percent more precision weapons, which now can only be carried on the aircraft's wing pylons.

In another change, USAF will replace some of the bomber's large external fuel tanks with airborne electronic attack pods. These "EB-52s" will perform standoff jamming, replacing some of the capability the service lost when it retired its EF-111 some six years ago. This new capability would be complemented by jamming decoys and the Joint Unmanned Combat Air System.

The Air Force expects to have its first four EB-52s in 2009. Sixteen aircraft could be available for the mission by 2013. However, they would not be dedicated jamming platforms.

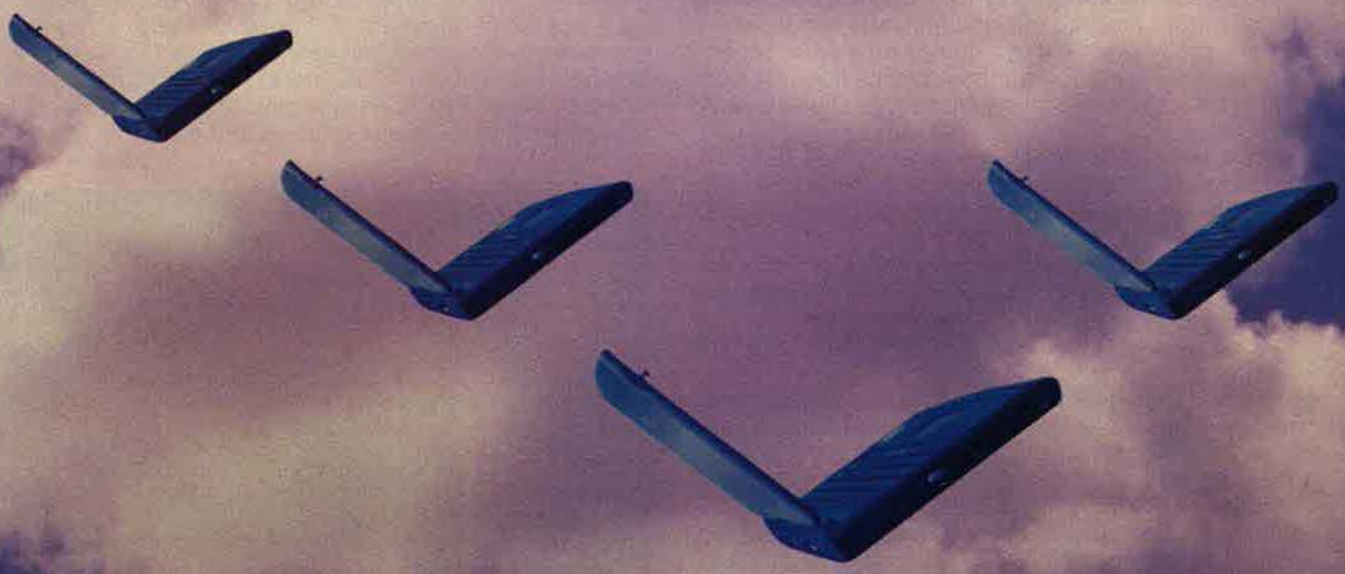
"The Air Force has made it clear, the jammers still have to be able to carry bombs," Oathout said. The pods would be new aerodynamic units, not simply converted fuel tanks. They would be interchangeable with any B-52 equipped with the wiring to operate them.

The aircraft also would receive new wiring, structural improvements, and new cockpit displays, among other enhancements or service life extensions.

The Air Force has been testing changes made under the avionics midlife improvement program for more than a year, Oathout reported. The upgrade would be installed throughout the fleet during this decade.

Expected to be released this fall is a study USAF began in 2002 to determine the feasibility of re-engining the B-52s. Although Oathout said the existing TF-33 engines are "performing really well" and could last until 2040, the Air Force is considering new engines that would provide increased range, loiter time, fuel efficiency, and power generation capability.

Flying In formation.



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An Air Force official said the service has looked at replacing the eight TF-33s with either four or eight engines. The big issue is how to pay for it, he said. The cost to re-engine would be around $50 million per aircraft—about $4 billion above and beyond the cost of the currently planned upgrades.

Kadish: Stick With the ABL

The Airborne Laser is over budget and behind schedule, but Congress and the Pentagon should stick with the program and give it time to work, according to USAF Lt. Gen. Ronald T. Kadish, former director of the Missile Defense Agency, which oversees the ABL program.

Kadish, in several press interviews in July given before he retired, acknowledged that the ABL is having problems, but he insisted the problems are the result of trying to invent wholly new technology on a strict schedule. The focus of the program has always been on performance, he said, with cost and schedule as secondary considerations.

Emphasizing that the program is making slow but consistent progress, Kadish said that, if it succeeds, the ABL will provide a powerful and unprecedented capability.

He said MDA did not plan to have the ABL included in the Administration's 2004 menu of missile defense capabilities slated for the fall. However, he did not rule out some sensor role for the ABL in the Block 2004 suite.

Kadish said that MDA prefers to focus on two intermediate goals. One is to successfully integrate and demonstrate the laser's optics, achieving so-called "first light" with the laser later this year. The other is integrating the laser on the 747 aircraft that will carry it.

Kadish told the House Armed Services Committee's Strategic Forces Subcommittee in March that he planned to focus the program on the two smaller goals and defer, if necessary, the first test against an actual tactical ballistic missile that had been planned for next year. That shot is now expected to slip into 2006 or later.

The MDA also has postponed indefinitely the acquisition of a second ABL airframe, citing program delays that make the second aircraft premature until technology issues are resolved.

The Government Accountability Office, in a report released in May, said ABL program cost has doubled from initial estimates, now reaching $2 billion. However, the GAO praised the MDA for its decision to switch to "a sound and ... more cost-effective development strategy." The GAO said the new strategy follows "a knowledge-based rather than a schedule-driven approach" to development of the ABL. The program will advance by achievements—and not by the calendar.

GAO attributed the cost growth primarily to planning that did not "fully anticipate the complexities in developing the system." Further problems stemmed from trying to meet schedule, skipping the process of fully testing subcomponents, and using rapidly prototyped parts. MDA itself has complained that some parts suffered from poor workmanship, setting the program back several months and delaying testing.

Kadish told *Defense News* that MDA was "not in any way, shape, or form ready to give up on the ABL" and that "it will have a tremendous multiplying effect, if it works."

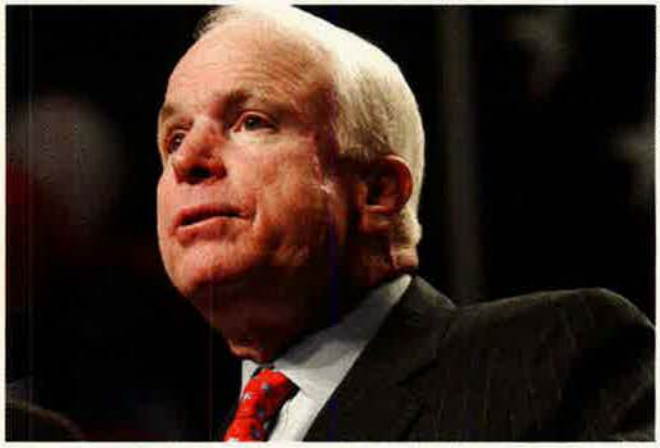
McCain Gets Tanker Documents

The Pentagon in late July began turning over to the Senate Armed Services Committee a number of documents regarding the controversial lease-buy of 100 Boeing 767 aerial refueling aircraft. Officials hoped the turnover would persuade Sen. John McCain (R-Ariz.) to lift a year-long hold on nominees to a number of Pentagon posts.

On July 14, DOD spokesman Lawrence Di Rita said DOD had passed "several thousand pages" on the tanker issue to the Senate committee. He added, "I expect there will be more."

The turnover came after several high-level meetings, the last conducted at the White House, between Senate leaders and senior defense officials.

McCain, who had been pushing for the documents, has been the chief opponent of the tanker deal, which was approved by Congress last year and called for leasing 20 Boeing 767s and buying 80 more. McCain wanted to see whether there had been any improprieties reflected in communications between defense and company officials.



AP photo/Al Goldis

McCain has the tanker documents.

(See "Washington Watch" columns in June and July for more background on the tanker controversy.)

The Pentagon—and the White House—initially had declined to turn over the documents, citing executive privilege. However, an agreement was reached regarding who could see the documents, who could have copies, and how they would be handled, Di Rita said.

"There are documents that offer secondhand references to other individuals, and it's our general belief that since it's secondhand information ... you want to try and limit the distribution of those kinds of documents as much as possible," he said.

McCain did not immediately make any announcement as to whether he would lift the hold as a result of the turnover, and his office did not return calls.

The confirmations of 10 Defense Department nominees had been held up during the impasse. They included those of Michael W. Wynne, nominated last September to be the Pentagon's acquisition, technology, and logistics chief; Tina W. Jonas, nominated in March to be DOD comptroller; and Di Rita himself, the Pentagon's chief spokesman.

The hold also affected Air Force Secretary James G. Roche, who had been nominated last year to be the new Army Secretary. In March, Roche asked to have his name withdrawn. ■







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By Adam J. Hebert, Senior Editor

OSI Civilian Agent Killed

Air Force Special Agent Rick A. Ulbright, 49, died Aug. 8 from injuries sustained during a rocket attack on Kirkuk AB, Iraq.

Ulbright, who was assigned to the Air Force Office of Special Investigation's 33rd Field Investigation Squadron, Andrews AFB, Md., deployed to Iraq in June to conduct polygraph examinations.

Ulbright had retired from active duty in July 1998, after 21 years in the Air Force. He first served as a helicopter maintenance technician, then transferred to the OSI in 1986. He began to work with the OSI as a civilian in August 1998.

F/A-22 Delayed Five Months

The Air Force is postponing by five months the delivery of the first operational F/A-22 Raptors to Langley AFB, Va. The first deliveries from Lockheed Martin's production facility in Marietta, Ga., were to have been made at the end of this year.

The first Raptors now will reach Langley in May 2005, according to the Air Force in a July 21 response to query.

The delay will allow Lockheed Martin to use its own factory to make any modifications that are identified during developmental testing. Otherwise, the contractor would have to make such changes in the field.

In previous deliveries to F/A-22 test and training units, modifications were completed after the aircraft were delivered. The time it took to modify these aircraft after delivery "significantly impacted unit training and test," said the Air Force.

For example, USAF said, aircraft had to be given their low observable treatments twice—once before and once after modifications were made.

By delaying deliveries up front, the Air Force said, the fighters "will be ready for the warfighter" once they arrive at Langley.

B-2 Gets New Stealth Coating

The Air Force this summer received the first B-2 bomber modified with an updated stealth coating. With B-2s being modified at a rate of three aircraft per year, the entire B-2 inventory will receive the upgrade by 2011.

USAF photo by SSgt. Alan Port

SrA. Gregory King, 8th Logistics Readiness Squadron, Kunsan AB, South Korea, pumps fuel into an F-117 fighter which deployed this summer to Kunsan from Holloman AFB, N.M. Some 300 Holloman airmen participated in a peninsula combat employment readiness exercise.

Northrop Grumman applied its specially developed Alternate High Frequency Material (AHFM) low observable coating to *Spirit of Washington* when the bomber went through programmed depot maintenance at the company's Palmdale, Calif., facility. The rest of USAF's 21-aircraft B-2 fleet will receive the AHFM coating during regularly scheduled depot overhauls.

The new coating, which is applied via a robotic spray paint system to areas where routine base-level maintenance is performed, significantly reduces the maintenance time needed to get the stealth bomber ready for combat. Originally, the B-2 was designed to have specially formulated tapes and caulks applied to the surfaces near maintenance access panels. Each time routine maintenance was performed, the ground crews had to remove the tapes and caulks, then reapply them and let them cure before returning the aircraft to operational status.

AHFM will replace about 3,000 feet of tape and reduce maintenance time from several days to several hours, said Northrop Grumman.

Airman Dies in Accident

TSgt. Joseph Gardner III, of Eight Mile, Ala., died July 18 after being crushed under the spoiler on a C-17 wing while performing a maintenance inspection at Charleston AFB, S.C. The Air Force is investigating the accident.

Gardner, 37, was an integrated avionics technician with the 437th Aircraft Maintenance Squadron at Charleston. He had entered the Air Force in August 1988.

Luke Buys Land as Buffer

Luke Air Force Base in Arizona recently completed a $950,000 purchase of 143 acres adjacent to the base's munitions storage area. The purchase is the first step in a plan announced last March to protect the base from encroachment and ensure access to the Barry M. Goldwater Range.

The Air Force plan includes purchasing a total of 273 acres and install-

USAF To Stand Up STRATAF for STRATCOM

The Air Force has said it plans to create Strategic Command Air Forces (STRATAF) as the single focal point for global strike capabilities for US Strategic Command. The new command will provide bombers, intelligence-surveillance-reconnaissance systems, and information operations (IO) capabilities to STRATCOM.

USAF recognized the need to create an organization similar to CENTAF, Central Command Air Forces, the Air Force component to US Central Command. CENTAF draws primarily on capabilities provided by 9th Air Force, Shaw AFB, S.C. STRATAF will draw primarily on the forces of 8th Air Force, Barksdale AFB, La.

Eighth Air Force has responsibility for the nation's nuclear bombers and the intelligence-surveillance-reconnaissance systems needed to conduct global operations. When STRATCOM's mission was enlarged to include global strike and military information operations, 8th Air Force was tasked to supply these capabilities as well. However, STRATCOM did not have a single point of contact.

In the past, such forces had been provided through a series of task forces, noted Brig. Gen. Michael W. Peterson, who is Strategic Command's deputy commander for global strike and the air component coordinator for STRATAF at Offutt AFB, Neb. Rather than stick with individual task forces, the Air Force decided to move toward "an integrated capabilities approach," said Peterson.

Air Combat Command chief Gen. Hal M. Hornburg said in an interview that 8th Air Force is "in a perfect position to be the [air and IO] component commander" for STRATCOM.

As commander of 8th Air Force, Gen. (sel.) Bruce Carlson is the first STRATAF chief. The job reflects USAF's recent push to more closely align numbered Air Force (NAF) commanders with their warfighting missions, so that they are not overwhelmed with organize-train-equip responsibilities.

STRATAF will have both an air operations center and a network operations and integration center at Barksdale. Hornburg said some personnel shifts will be made as "we identify or ear-tag these people that are going to be 100 percent dedicated to the warfighting mission."

Earlier this year, the Air Force had considered including all USAF capabilities provided to STRATCOM under the new warfighting entity, STRATAF, which at one point was identified as AFSTRAT for Air Forces Strategic Command. In addition to global strike and IO, it was to include space forces provided by 14th Air Force, Vandenberg AFB, Calif., and the ICBM forces of 20th Air Force, F.E. Warren AFB, Wyo. Instead, USAF elected to continue to provide those forces through their respective NAFs.

ing security fences around the munitions storage area. The move will enable the Air Force to connect the storage area with the base, thus providing a continuous security buffer zone.

The service also included purchase of easement rights for nearly 1,800 acres of land in the base flight departure corridors.

Arizona Sens. John McCain (R) and Jon Kyl (R) have supported the plan. Kyl said in July that the "partnership" of local and state officials, landowners, and USAF was "well on its way toward executing the necessary strategy to prevent encroachment and preserve operations at Luke Air Force Base for years to come."

Luke is USAF's primary training facility for F-16 fighter operations.

DOD Installs Missile Interceptor

The first ground-based interceptor for the new national missile defense system was installed at Ft. Greely, Alaska, on July 22. Plans call for Greely to have six missiles and Vandenberg AFB, Calif., another four by the end of the year.

The missiles are part of the Missile Defense Agency's Ground-based Midcourse Defense System. They will give the United States its first realistic defense against enemy ballistic missiles.

The system is still immature, but Army Maj. Gen. John W. Holly, who leads the program for MDA, noted that four of the last five test shots have been successful. "While this system will constitute an initial limited capability, it is a vast improvement over our current defensive posture—which is nonexistent," Holly said.

Army Seeks Separating Airmen

As the Air Force moves to "balance its books" by cutting a net of more than 20,000 airmen from its active duty rolls by the end of next year, the Army is stepping in to recruit many of these former airmen to fill its high-demand jobs. The effort is dubbed "Operation Blue to Green."

USAF announced in January that it

Boeing photo

The Missile Defense Agency lowers into place the first Ground-based Midcourse Defense System interceptor at Ft. Greely, Alaska, in July. (See "DOD Installs Missile Interceptor" at left.)

U.S. Air Force photo by Kevin Robertson

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The Fiscal 2005 Budget at Midyear

House and Senate appropriators in July approved a $416.2 billion money bill for Fiscal 2005. The total is slightly less than the President's amended request of $417.8 billion, and billions more than was appropriated for 2004.

When President Bush, on Aug. 6, signed the defense spending bill, he noted the 3.5 percent across-the-board pay raise for military personnel, saying it brought the total pay raise over the last four years to 21 percent. Bush said, "This money is well earned, well deserved, and well spent."

By major account, the appropriations bill includes $103.7 billion for military personnel; $121.1 billion for operations and maintenance accounts; $77.7 billion for procurement; and $69.9 billion for research, development, test, and evaluation. The total also includes $25 billion in supplemental funding to pay for the cost of ongoing combat operations in Iraq and Afghanistan.

Yet to be completed before Congress took its summer recess was the companion defense authorization bill.

Aircraft Procurement

The Air Force's premier fighter program fared well in the spending bill. The appropriators agreed to $3.6 billion for procurement of 24 F/A-22 Raptors, the number the Air Force sought. On the authorization side, the House met the Air Force's request, but the Senate would cut two Raptors.

The F-35 Joint Strike Fighter saw a slight reduction in funding, with appropriators trimming the $4.6 billion request to $4.4 billion. According to DOD, even a relatively small cut, at this critical juncture in the program, could undermine the Pentagon's efforts to fix the fighter's weight problems. House and Senate authorizers met the budget request.

Appropriators raised the number of C-17 airlifters requested by one for a total of 15, setting procurement funding at $2.7 billion. The two authorization committees recommended meeting the Administration's request for 14 C-17s in 2005 and left procurement funding at $2.5 billion. The Senate version of the authorization bill recommended that USAF exercise an option on the current multiyear contract to extend production from 180 C-17s to 222, the minimum number that US Transportation Command believes the Air Force should purchase.

With the lease/buy arrangement for KC-767 tankers on hold, the appropriators created a $100 million "Tanker Replacement Transfer Fund" that could be used to begin a tanker modernization program. On the authorization front, the House cited concerns about the age of the KC-135 tanker fleet and added $98.5 million for KC-767s—$80 million for development and $15 million for advance procurement. However, the House stipulated USAF must enter into a new contract and DOD must review the contract. The Senate included nothing for the program.

Space Programs

A pair of major Air Force military space programs currently under development saw their budgets dramatically cut by appropriators. The Transformational Satellite Communications (TSAT) system had its $774.8 million request reduced by $300 million, to $474.8 million.

Lawmakers cited technical immaturity and the need for risk reduction as reasons for the cut. House and Senate authorizers already passed identical $100 million cuts to the TSAT budget request.

The Space Based Radar Program, meanwhile, was almost killed. Appropriators left just $75 million in place from an Air Force request of more than $327 million. Claiming the program was neither affordable nor likely to perform as claimed, lawmakers instructed the Pentagon to take SBR out of demonstration and validation and "return this effort back to the technology development phase."

must reduce its force level by 16,000 airmen to meet its authorized end strength. That figure had grown to 24,000 by May. (See "Force Shaping," July 2004, p. 58.) The Navy also plans to trim its force—by about 8,000 sailors.

Meanwhile, the Army has been given the green light by DOD and Congress to increase its end strength by as much as 30,000 personnel. At issue, still, is whether it will be a permanent increase or a temporary one that might last several years. To help speed new troops to the field, the Army wants to recruit honorably discharged airmen and sailors.

Officers and enlisted members are eligible. Applicants in grades E-1 through E-4, if accepted, will retain their same grade; eligibility for those in grade E-5 will be determined by the Army's Human Resources Command. Some enlisted applicants, depending on their specialty, may receive bonuses.

The Army said that those potential soldiers whose current field exists in the Army will only undergo a four-week warrior transition course. Others must take a retraining course in addition to the basic transition course.

USAF Names Top 12 Airmen

The Air Force on July 17 announced its 12 Outstanding Airmen of the Year for 2004. They were selected from among 45 nominees "based on their superior leadership, job performance, and personal achievements," said the service.

The airmen will be formally recognized at the Air Force Association's Air and Space Conference this month. They are:

- SMSgt. Michael David, 437th Communications Squadron, Charleston AFB, S.C.
- SMSgt. Trace Edinborough, Defense Supply Center, Philadelphia.
- SMSgt. Valise Godley, 735th Communications Sq., Ramstein AB, Germany.
- MSgt. John Knipe, 1st Air Support Operations Group, Ft. Lewis, Wash.
- MSgt. Jonathan Rosa, Kentucky ANG 123rd Special Tactics Sq., Louisville, Ky.
- TSgt. Stephanie Clark, 88th Aerial Port Sq., McGuire AFB, N.J.
- TSgt. Miguel Ortega-Llarena, 96th Security Forces Sq., Eglin AFB, Fla.
- SSgt. Aaron Davenport, 56th Civil Engineer Sq., Luke AFB, Ariz.
- SSgt. Teresa Mossoni, 90th Space Wing, F.E. Warren AFB, Wyo.
- SSgt. Terri Palmer, 15th Air Support Operations Sq., Pope AFB, N.C.
- SrA. Kurt Marunick, 347th Maintenance Sq., Moody AFB, Ga.
- SrA. William Moore, 31st Rescue Sq., Kadena AB, Japan.

Should F-35 Be Scaled Back?

Pentagon officials say the F-35 Joint Strike Fighter is so much better than the aircraft it will replace that DOD could trim requirements. That would help reduce the program's current weight and schedule problems. That, at least, was the view of the Navy's acquisition executive, John J. Young Jr., who oversaw the F-35 until program responsibility switched back this summer to the Air Force.

Young told *Inside the Navy* in late June that the Pentagon should take a new look at the fighter's requirements. The short takeoff and vertical landing (STOVL) variant of the airplane is worth a special look, he noted, as it is currently the version of the strike fighter with the worst weight problem.

Compared to legacy aircraft, the F-35 is "significantly more capable ... in terms of range, signature, main-

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tainability," Young noted. "If we lower that [requirements] bar a little bit, we're still putting an enormous warfighting capability in the hands of the pilot," he said.

DOD recently slowed the F-35 development program to give DOD and contractors time to solve the weight issues.

Three variants of the fighter are being developed for the Air Force, Navy, and Marine Corps; some of these variants will be sold to international partners. The Air Force plans to purchase both the conventional and STOVL variants as replacements for its F-16 and A-10 fighters.

US Spirits Nuclear Materials Out Of Iraq

The United States secretly airlifted more than a ton of potentially dangerous nuclear materials out of Iraq in June, Spencer Abraham, Secretary of Energy, announced July 9. The operation was conducted jointly by DOE and DOD.

Twenty DOE nuclear experts "packaged 1.77 metric tons of low-enriched uranium and roughly 1,000 highly radioactive sources" from Iraq's Tuwaitha nuclear complex just outside Baghdad, according to a DOE release.

The Defense Department airlifted the radioactive materials to the United States on June 23. DOD also "provided security, coordination, planning, ground transportation, and funding for the mission," the release stated.

Abraham said the operation will "keep potentially dangerous nuclear materials out of the hands of terrorists." He added, "It also puts this material out of reach for countries that may seek to develop their own nuclear weapons."

The uranium would have been usable in a radiological dispersion device, commonly known as a "dirty bomb," or for reprocessing in a more advanced nuclear weapons program.

First Quad Dormitory Opens

The Air Force opened its first "quad" dormitory July 17 at Nellis AFB, Nev., giving 144 junior airmen an immediate quality-of-life boost.

The quad dorm features apartments with four private bedrooms, each with its own full-size bathroom, a common kitchen, and a small social area with a table and balcony. Each apartment also has a full-size washer and dryer.

"It's almost like living off base," commented A1C Brian Clement, a crew chief with Nellis' 57th Equipment Maintenance Squadron.

Gary Faron, the base civil engineering facility projects team chief, said the new dorm took 16 months to construct at a cost of about $10 million.

The Air Force adopted the 4+1 style in 2002 as its new standard. At the time, eight bases elected to construct new quad dorms. The DOD standard is 1+1, in which only the bedrooms are separate, but the department approved more floor space and private baths if the building can be constructed at no greater cost.

Navy Tests Seven-Carrier Surge

The Navy in late July successfully completed a major test of its ability to

News Notes

By Tamar A. Mehuron, Associate Editor

■ USAF Lt. Gen. (sel.) Henry A. Obering III became the new director of the Missile Defense Agency July 2. He succeeded Lt. Gen. Ronald T. Kadish, who retired Sept. 1.

■ Lockheed Martin's Fort Worth, Tex., plant began assembling the fuselage of the first test F-35 in early July. The fuselage and wings are slated to be joined in May 2005. First flight is scheduled for early 2006.

■ Air Force Secretary James G. Roche approved the use of the "V" device (for valor) for any Distinguished Flying Cross awarded for heroism. Any active duty, Guard, or Reserve airman who received a DFC for heroism on or after Sept. 18, 1947, is eligible to wear the device.

■ A new three-year test program puts noncommissioned officers in Air Force ROTC classrooms as instructors in 10 universities. USAF hopes the move will foster an earlier understanding of the relationship between enlisted members and officers. If the program is effective, it will be expanded to all 144 USAF ROTC detachments.

■ USAF officials concluded that standing water on the runway caused a B-1B accident Feb. 27 in Southwest Asia. The accident report, released June 16, noted that the aircraft hydroplaned off the runway. It noted, too, that the accident might have been avoided if the aircrew had been told of the landing conditions, but, the co-pilot's premature release of aircraft controls used to counter crosswinds also contributed to the accident. Damage was estimated at $7.6 million.

■ Spatial disorientation and the inability of the pilot, Capt. Jonathan P. Scheer, to recover caused the fatal nighttime crash Feb. 25 of an A-10 north of Eielson AFB, Alaska, concluded an accident report released June 23. (See "Aerospace World: A-10 Pilot Dies in Crash," May 2004, p. 18.) According to other pilots, weather conditions created a situation where there was little or no horizon visible. Lacking an external reference, Scheer had to depend on cockpit instruments. The investigation board president noted that Scheer may also have had to contend with an onboard instrument problem.

■ All military personnel assigned to US Central Command's theater of operations and to Korea, under US Pacific Command, will soon be receiving anthrax and smallpox vaccinations, DOD announced in late June. Previously, only those serving in Iraq and Afghanistan received the shots, but greater availability of the vaccines led DOD officials to conclude additional troops could be protected.

■ A Delta II rocket boosted a replacement Global Positioning System satellite, GPS IIR-12, into orbit June 23 from Cape Canaveral AFS, Fla.

■ Indian Springs Air Force Auxiliary Field, Nev., is the new home for the Unmanned Aerial Vehicle Battlelab, formerly located at Eglin AFB, Fla. USAF currently bases its three Predator UAV squadrons at Indian Springs.

■ Boeing engineers began assembling the aft fuselage of the Navy's newest electronic warfare aircraft, the EA-18G, in early July. A variant of the F/A-18F Super Hornet, the aircraft is slated for first flight in 2006 and will begin replacing the EA-6B Prowler in 2009.

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"surge" seven aircraft carrier battle groups worldwide on short notice. During Summer Pulse 2004, the Navy deployed the carriers to five theaters simultaneously—the first test of the Navy's new Fleet Response Plan operational concept.

The plan calls for developing Navy capability to put six aircraft carriers and their strike groups into action within just 30 days. They would be followed by two more strike groups within three months.

Historically, carrier battle groups have deployed according to fairly rigid schedules that allowed three groups to deploy at a given time.

"Friendly Fire" Pilot Loses Appeal

Less than two weeks after Maj. Harry Schmidt was found guilty of dereliction of duty, the Air National Guardsman lost his appeal to set aside the punishment imposed. Schmidt faces a letter of reprimand and a fine of $5,672—the maximum allowed under the Uniform Code of Military Justice.

The saga began April 17, 2002, when Schmidt, an Illinois Guardsman flying an F-16, mistakenly bombed Canadian troops participating in night exercises in the Tarnac Farms area of Afghanistan. Four Canadians were killed and eight injured.

Gen. (sel.) Bruce Carlson, commander of 8th Air Force at Barksdale AFB, La., was the presiding authority for Schmidt's nonjudicial hearing. (See "Aerospace World: ANG Pilot Found Guilty of Dereliction," August, p. 13.) Schmidt immediately appealed to Carlson to set aside the punishment meted out July 6, but Carlson denied his request.

Under Article 15 of the UCMJ, the appeal was sent to the next superior

The Iraq Story Continues

Casualties

By July 26, a total of 908 Americans had died while officially supporting Iraqi Freedom—906 troops and two Defense Department contractors. Of those casualties, 673 were killed by hostile action, while the other 235 died in noncombat incidents, such as accidents.

President Bush declared major combat operations in Iraq complete on May 1, 2003. Since that time, 768 troops have died in Iraq: 562 in combat and 206 in nonhostile incidents.

The two DOD civilians were killed in the line of duty earlier this year.

Philippines Caves to Terrorists ...

The government of the Philippines withdrew its force from Iraq ahead of schedule to meet the demands of terrorists who had kidnapped a Filipino working in Iraq. The decision was immediately condemned by Defense Secretary Donald H. Rumsfeld and other international leaders.

"When a country negotiates with and acquiesces" to terrorist demands, Rumsfeld said, "it encourages that type of behavior on the part of terrorists, and that's unfortunate." Speaking on Fox News, Rumsfeld added that sovereign states will make their own decisions, but other nations with captured citizens had refused to "make a separate peace" with the terrorists.

The Philippines had planned to remove its contingent of 51 troops by Aug. 20. Truck driver Angelo de la Cruz was captured by militants who threatened to behead him if his country did not remove its troops by July 20. The Philippines complied on that date, and Cruz was released.

... More Hostages Promptly Taken

Following the withdrawal of the Philippine troops, terrorists took six more civilians hostage the very next day.

A terror group on July 21 took three Indians, two Kenyans, and an Egyptian hostage and threatened to behead one every three days unless their private employer left Iraq. The six were reported to be truck drivers. None of those nations has military forces in Iraq.

By July 22, Secretary of State Colin L. Powell was urging governments to show restraint and resist dealing with terrorists. In a meeting with the Bulgarian foreign minister, Powell noted Bulgaria "stood fast" after one of its citizens was kidnapped and murdered. Another Bulgarian is still unaccounted for, and Powell thanked the country for its "clear understanding" that terrorists cannot be negotiated with.

"This kind of activity cannot be found acceptable and cannot be negotiated with," Powell said.

Senior Staff Changes

RETIREMENTS: Maj. Gen. Franklin J. **Blaisdell,** Lt. Gen. Timothy A. **Kinnan.**

NOMINATIONS: To be **Brigadier General:** Dana H. **Born,** Brent E. **Winget.**

CHANGES: Brig. Gen. (sel.) Brooks L. **Bash,** from Cmdr., 437th AW, AMC, Charleston AFB, S.C., to Spec. Asst. to Cmdr., 18th AF, AMC, Travis AFB, Calif. ... Maj. Gen. (sel.) Curtis M. **Bedke,** from Dep. Chief, Central Security Service, NSA, Ft. Meade, Md., to Cmdr., AFFTC, AFMC, Edwards AFB, Calif. ... Brig. Gen. (sel.) Herbert J. **Carlisle,** from Chief, Prgm. Integration Branch, DCS, P&P, USAF, Pentagon, to Dep. Dir., LL, SECAF, Pentagon ... Brig. Gen. (sel.) Gary S. **Connor,** from Dir., Recon SPO, ASC, AFMC, Wright-Patterson AFB, Ohio, to Dir., Battle Mgmt. Sys. Wg., ESC, AFMC, Hanscom AFB, Mass. ... Brig. Gen. Andrew S. **Dichter,** from Dep. Cmdr., Canadian NORAD Region, Winnipeg, Canada, to Dir., Homeland Security, DCS, Air & Space Ops., USAF, Pentagon ... Maj. Gen. (sel.) Raymond E. **Johns Jr.,** from Dep. Dir., Prgms., DCS, P&P, USAF, Pentagon, to Dir., Prgms., DCS, P&P, USAF, Pentagon ... Brig. Gen. (sel.) Stephen P. **Mueller,** from Cmdr., 52nd FW, USAFE, Spangdahlem AB, Germany, to C/S, Jt. Warfare Center, NATO, Stavanger, Norway ... Brig. Gen. (sel.) Mark H. **Owen,** from Cmdr., 91st SW, AFSPC, Minot AFB, N.D., to Cmdr., 45th SW, AFSPC, Patrick AFB, Fla. ... Brig. Gen. (sel.) Melissa A. **Rank,** from Cmdr., 99th Medical Gp, ACC, Nellis AFB, Nev., to Asst. Surgeon General, Medical Ops. Agency, Bolling AFB, D.C. ... Brig. Gen. Eric J. **Rosborg,** from Cmdr., 4th FW, ACC, Seymour Johnson AFB, N.C., to Spec. Asst., Warfighting Headquarters Implementation Office, Vice C/S, Pentagon ... Maj. Gen. (sel.) Winfield W. **Scott III,** from Spec. Asst. to DCS, P&P, USAF, Pentagon, to Dep. Dir., Prgms., DCS, P&P, USAF, Pentagon ... Brig. Gen. Thomas B. **Wright,** from Cmdr., 9th Recon Wg., ACC, Beale AFB, Calif., to Dir., Intel., ACC, Langley AFB, Va. ▪

Panel Links al Qaeda to Khobar Towers Blast, Other Attacks

The national commission investigating the 9/11 terrorist attacks on the United States found "strong but indirect evidence" that al Qaeda played an "as-yet unknown role" in the 1996 attack on the Khobar Towers complex in Saudi Arabia.

The attack killed 19 airmen and injured 372 other Americans. Many had blamed the bombing on the Hezbollah terrorist group. In a staff report released at the end of June, however, commission members noted that "ambiguous" evidence of involvement by Osama bin Laden's terrorist organization had been present from the beginning. Evidently, bin Laden was not considered a prime suspect at the time because of the "historical animosity between Shia and Sunni Muslims." Many had concluded that al Qaeda would not align with Hezbollah.

"Later intelligence, however, showed far greater potential for collaboration ... than many had previously thought," the report stated.

The commission noted that the US had intelligence reports prior to the Khobar Towers bombing that bin Laden "was seeking to facilitate a shipment of explosives to Saudi Arabia." And, on the day of the attack, bin Laden "was congratulated by other members of the Islamic army," a loose coalition of terror organizations with al Qaeda at its core.

According to the report, bin Laden had in fact sent al Qaeda operatives to visit Hezbollah camps in the years before the Khobar Towers attack. The commissioners said that bin Laden "reportedly showed particular interest in Hezbollah's truck bombing tactics in Lebanon." In 1983, such an attack killed 241 US servicemen, primarily Marines. The attack on the Khobar Towers high-rise residence was conducted using an explosive-laden truck.

The report cited several other plots against Americans in the 1990s, plots in which bin Laden may also have had a previously unknown role. First, the December 1992 explosions outside two Yemen hotels frequented by US troops headed to Somalia were linked to a Yemeni terrorist organization whose leader was "close to" bin Laden, the report noted.

In October 1993, stated the report, bin Laden probably contributed to the attacks on US forces operating in Mogadishu, Somalia. Eighteen soldiers died after two Black Hawk helicopters were shot down over the city by rocket-propelled grenades (RPGs). According to the report, al Qaeda, prior to the attack, sent experts in the use of RPGs to the city with instructions to "kill US troops."

Next was a November 1995 car bombing in Riyadh, Saudi Arabia, that killed seven, including five Americans. Three of the four perpetrators who were arrested and executed by the Saudi government said they had been influenced by bin Laden.

Finally, the commission refused to rule out an al Qaeda factor in two other deadly attacks: the 1993 World Trade Center bombing and the 1995 plot to blow up a dozen US airliners over the Pacific Ocean. Bin Laden's role in both "remains a matter of substantial uncertainty," the commission reported.

authority, which, in this case, was Gen. Hal M. Hornburg, commander of Air Combat Command. Hornburg, Schmidt's last recourse, denied the appeal on Aug. 3.

Obituary

Retired Maj. Gen. Charles W. Sweeney, who led the atomic bomb mission over Nagasaki, Japan, near the end of World War II, died of a heart ailment July 16 in Boston. He was 84.

Sweeney, a 25-year-old Army Air Forces major and commander of the 393rd Bombardment Squadron, piloted the observation/photographic aircraft that accompanied the B-29 *Enola Gay* on its Aug. 6, 1945, atomic bombing of Hiroshima. When Japan failed to surrender, Sweeney piloted the B-29 *Bockscar* on a second atomic bomb mission against Japan. The Aug. 9, 1945, attack destroyed 60 percent of Nagasaki. Japan surrendered shortly thereafter.

During the historic mission, *Bockscar* experienced weather and mechanical problems, and the aircraft's special bomb-bay fuel tanks were unable to pump fuel to the engines. According to Sweeney's official biography, "only his special training on how to squeeze every possible mile from his initial supply kept the plane aloft." The mission originated on Tinian in the Mariana islands.

In 1946, Sweeney left active duty as a lieutenant colonel, and then served with the Massachusetts Air National Guard, where he rose to the rank of major general. In the 1960s, Sweeney coordinated civil defense work in Boston. He was also co-owner and operator of a leather brokerage business. He retired from the Guard in 1979. ■

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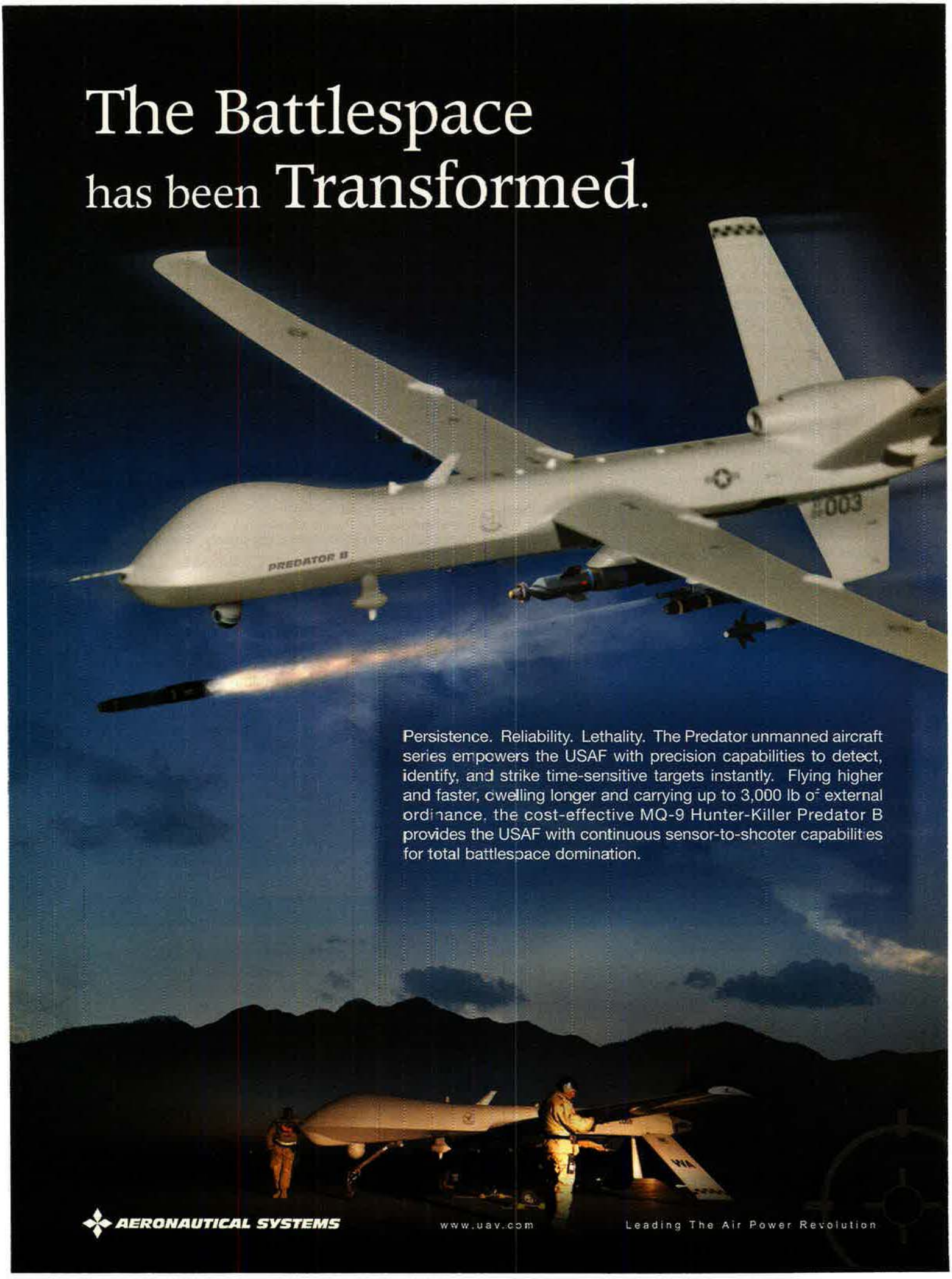

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Action in Congress

By Tom Philpott, Contributing Editor

Cliff-Hangers Await Congress; Wrangling Over SBP Phaseout; Family Housing Dispute; Fixing Service Members' Protections

....

Authorization Bill Cliff-Hangers

The $416.2 billion defense appropriations bill for Fiscal 2005 that President Bush signed Aug. 5 includes a 3.5 percent military pay raise in January and other quality of life benefits. However, lawmakers left for August recess before completing final action on the companion defense authorization bill.

That bill contained several cliff-hanger issues. When Congress reconvenes after Sept. 7, House-Senate conferees will begin to negotiate:

- How to improve the military Survivor Benefit Plan (SBP).
- Whether to allow retirees with 20 or more years of service and disability ratings of 100 percent full concurrent receipt immediately or to continue them under the 10-year phase-in schedule set for any 20-year retirees with disability ratings of 50 percent or higher.
- Whether to open Tricare to all drilling reservists and their families.

SBP Reform Alternatives

Authorizers agree there should be a phaseout of the age-62 offset in the Survivor Benefit Plan, but they disagree on the length. Defense officials, on the other hand, have argued for keeping the offset.

At age 62, the SBP benefits paid to surviving spouses of retired military personnel typically fall from 55 percent of covered retirement down to as low as 35 percent.

The House bill would phase out the age-62 cut within four years of passage. Also, retirees who had not enrolled in SBP at retirement would get a second chance during a year-long open season. They would pay a penalty on premiums proportional to years that have passed since they retired, but the penalty could not exceed 4.5 percent of monthly retired pay.

The Senate version would phase out the age-62 reduction over 10 years, not four, and retirees enrolling late would have to pay all missed premiums since their retirement, plus interest. The House plan would cost $6.8 billion over 10 years. The Senate's would cost a third of that, or $2.2 billion. Either plan, or a compromise between the two, would offer significant SBP changes.

AP photo/Gerald Herbert

Rep. Duncan Hunter (R-Calif.) promises continuation of successful privatized military housing.

Meanwhile, defense officials have presented lawmakers with a package of appeal documents with some alternative approaches. These ideas probably came in too late to be adopted this year, but they could stimulate support for the Senate's cheaper SBP plan.

One DOD proposal simply would delay the age-62 offset by three or more years, until the surviving spouse reaches full retirement age under Social Security.

Another proposal would be to make the SBP program more affordable for enlisted retirees by lowering premiums. Currently, only about 65 percent of enlisted retirees enroll in SBP, while some 80 percent of retired officers enroll. Officials recommended "substantial discounts for those with lowest retired pay."

Proponents of SBP reform, including major service associations, believe the DOD alternatives may be purely cosmetic, rather than true reform.

Housing Fight

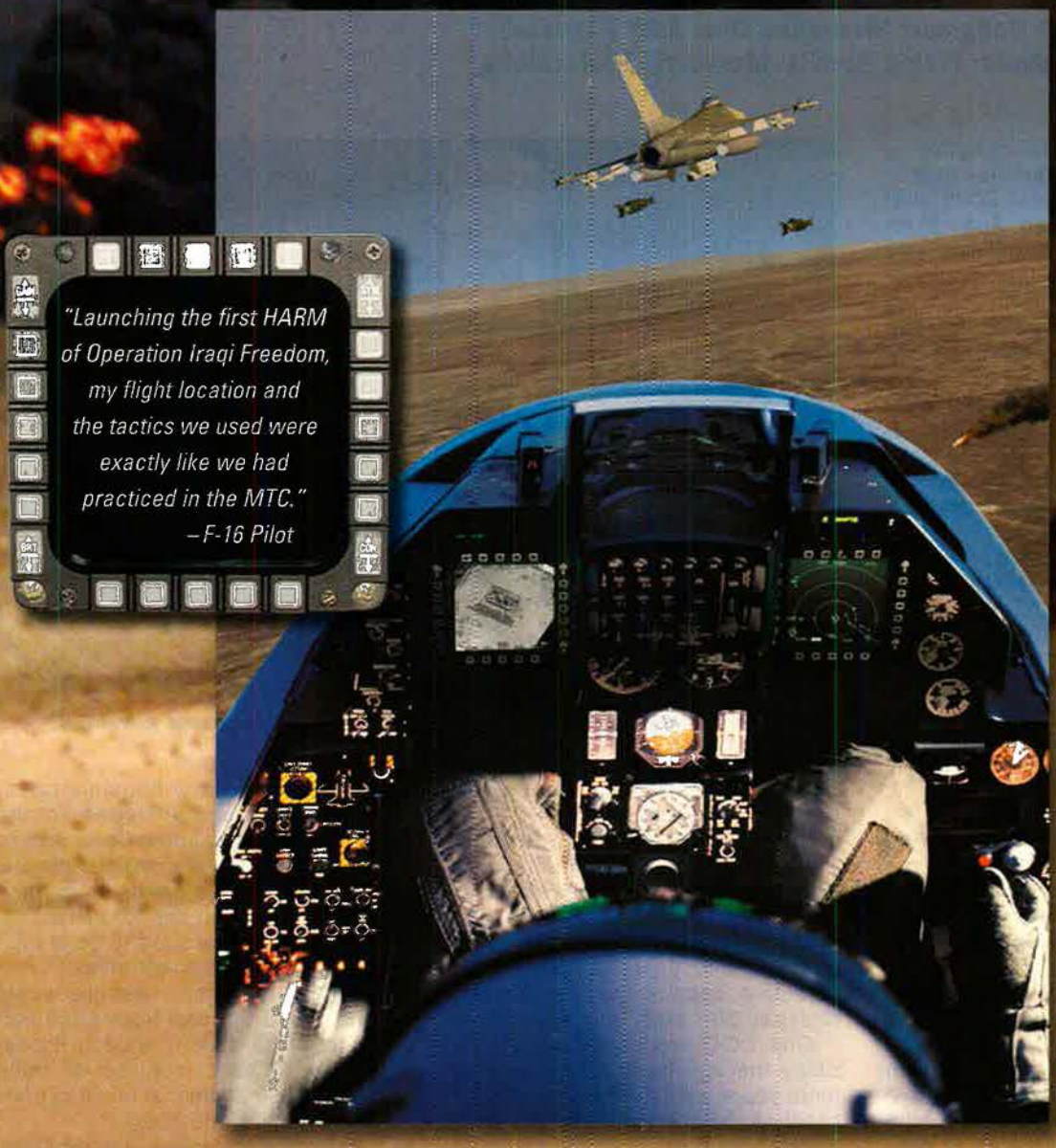
Lawmakers in late July debated raising the spending ceiling on the successful military housing privatization program. Included in the House Appropriations Committee's $10 billion military construction bill (H.R. 4837) was a provision to raise the total spending cap for private industry contracts issued to build military housing on and off base.

If supported, the measure would have raised the cap from $850 million to $1.35 billion, making it possible for DOD to contract to build about 50,000 additional housing units in Fiscal 2005 and 2006.

According to House Budget Committee Chairman Jim Nussle (R-Iowa) the provision posed two problems. First, the $500 million increase was not enough to cover planned housing projects. The Congressional Budget Office had said the projects would require an increase of $1.2 billion. Second, said Nussle, raising the cap would push the construction bill allocation above budget resolution guidance, making it a matter for the defense authorization bill, not construction appropriations.

Nussle suggested Congress could find offsets to cover the increase or pass a separate authorizing bill not subject to appropriation limits. The

IF THE MISSIONS WERE ANY MORE REAL, WE'D HAVE TO ACTUALLY BRING IN THE BAD GUYS.



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latter is what Nussle did in introducing the Military Housing Improvement Act of 2004 (H.R. 4879).

The House promptly passed Nussle's bill, 423-to-0, but Rep. David Obey (Wis.), ranking Democrat on the appropriations committee, called it "an outrageous charade." He said there was no "guarantee whatsoever that it will be passed in the Senate."

Oddly, both House Democrats and the Bush Administration opposed Nussle's point-of-order challenge, which, after a single vote, removed the $500 million from the construction bill.

Rep. Ike Skelton (Mo.), ranking Democrat on the armed services committee, said, "We just saw 24,000 military families getting their just housing delayed for a long time." However, Rep. Duncan Hunter (R-Calif.), armed services committee chairman, said that something will get worked out to avoid housing project delays. By the time "the dust clears in this process," he said, "we are going to have these 24,000 units released for construction."

Making Part B Automatic

By early fall, Tricare beneficiaries entitled to Medicare Part A (hospital insurance) will be enrolled automatically in Part B (doctor and outpatient insurance) coverage. The change implements a provision of 2003 legislation affecting older or disabled Tricare beneficiaries.

These beneficiaries, according to the Social Security Administration, will receive in the mail this fall a form inviting them either to change their Part B entitlement date to another month in 2004 or to formally opt out of Part B, thus reversing automatic enrollment. If they decline Part B, however, that means they have declined to participate in Tricare for Life, which requires enrollment in Medicare Part B.

The automatic Part B enrollment is part of a plan to implement, simply and efficiently, two provisions of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (P.L. 108-173).

The first provision allows Medicare Part A-eligible military retirees and their family members who want to participate in Tricare for Life, but who have not yet enrolled in Medicare Part B, to enroll in Part B without facing a penalty, or surcharge, on premiums. This one-time open enrollment period runs through Dec. 31, 2004.

A second provision brings relief to TFL beneficiaries who enrolled in Part B from January 2001 through December 2004 and had to pay surcharge premiums of more than $66.60 a month for late enrollment. Those beneficiaries will have Part B premiums reduced to $66.60 and automatically will receive refunds back through January 2004.

CRSC Backlog To Ease

After months of wrangling among the Defense Finance and Accounting Service (DFAS), Pentagon policy-makers, and Defense Department lawyers, the Combat-Related Special Compensation (CRSC) payments made to retirees rated "unemployable" or who are eligible for Special Monthly Compensation (SMC) from the VA were set to be raised early this fall.

According to DFAS, those veterans who lost retired pay based on Individual Unemployment (IU) entitlements would be paid retroactively back to June 1, 2003, beginning around Aug. 30. Higher CRSC payments for those affected by SMC offsets were expected to begin by Sept. 30.

DFAS said the SMC-related CRSC payment "requires additional time due to required coordination" with the services.

New Service Members' Protections

Before summer recess, the House Veterans' Affairs Committee approved and sent to the floor the Service Members Legal Protection Act of 2004 (H.R. 4658), to strengthen legal, economic, and job rights for activated reservists and deployed service members.

A key feature of the bill closes loopholes found in the Service Members Civil Relief Act (SCRA), regarding lease protection for deployed active duty and reserve members. The new bill ensures the residential and motor vehicle protections also apply to joint leases with dependents.

The new bill also would:

- Clarify lease termination provisions for cases of individual deployments as well as unit deployments.
- Increase from 18 months to 24 months the maximum period that mobilized employees can elect employer-provided health coverage under the Uniformed Services Employment and Re-employment Rights Act (USERRA).
- Require employers to provide notice to employees about employee rights and benefits and employer obligations under USERRA.
- Establish a demonstration project for expedited handling of alleged violations of USERRA for veterans employed by the federal government.
- Authorize the VA to pay for the cost of care for newborn infants of women veterans enrolled in VA health care.

The House committee also approved the Veterans Medical Facilities Management Act (H.R. 4768). It would provide funding authority for the VA to open 16 new outpatient clinics and to better manage capital assets by allowing VA to keep proceeds from the sale, leasing, or transfer of excess property.

Behind Rare IRR Call-Up

Army officials in July said unexpected violence in Iraq, with insurgents attacking roads and bridges and interrupting supply lines, was behind the rare, involuntary recall to active duty of 5,674 soldiers in the Individual Ready Reserve.

Labeled as a "back door draft" by some lawmakers, the IRR call-up was a central focus of a special House Armed Services Committee hearing in July. David S.C. Chu, undersecretary of defense for personnel and readiness, testified that IRR service "is part of the obligation of military service that each entrant into the military assumes."

The IRR comprises those former service members who completed their extended active duty or reserve drill obligations but who still have some time left before they have completed their statutory eight-year service obligation. They remain in a nondrilling status for the term of that commitment and can be recalled, if needed. Some IRR members were activated for the 1990-91 Persian Gulf War, Chu said.

Gen. Richard A. Cody, the Army's vice chief of staff, blamed the recall on a level of violence in Iraq that had forced changes in deployment requirements several times over the last year. The Army continues to impose a Stop-Loss order, barring certain troops being sent to Iraq or Afghanistan from leaving service, even after their commitments are up.

Cody acknowledged that the Army can benefit from a provision in the House-passed defense authorization bill to raise active duty numbers by 30,000 soldiers—10,000 a year over three years.

Chu said the Bush Administration supports a "temporary" increase that could "last several years during this period of Army transition." Both Republicans and Democrats have criticized that stand, saying the increase should be permanent. ■

THE F/A-22 AND F-35 ARE VITAL, ALL AGREE. EVERYTHING ELSE—NUMBERS, TYPES, MIX—IS UP FOR GRABS.

THE NEW AIR FORC

By John A. Tirpak, Executive Editor

OVER the next 15 years, the size of the Air Force's fighter fleet will decline by at least 10 percent but perhaps as much as 25 percent. This will constitute the largest reduction in the fighter force since the end of the Cold War, but it is not driven by a diminishing threat. It will be the result of increasing combat capability.

Improvements in weapons, sensors, and data-sharing powers now being added to current fighters and designed into future ones will bring greater combat effectiveness, even though the number of aircraft will be reduced.

At the same time, though, the Air Force must have a fighter fleet large enough to satisfy the demands of a transformed US military. Fighters are increasingly linked to small, geographically dispersed ground units and often must cover more ground in order to quickly destroy fleeting targets. The service also must hold enough aircraft in reserve for contingencies, training, test, and depot maintenance—collectively called the "rotation base" of the fleet.

The Air Force also will factor in the capabilities of its bomber fleet. Bombers now are able to destroy large numbers of targets per sortie and perform missions—such as close air support—once viewed as the exclusive realm of fighters.

The Air Force would like to save money by consolidating its forces at fewer bases, but it cannot make such force structure changes until completion of the 2005 Base Realignment and Closure action.

As a result of all these factors, the precise size and composition of the future fighter force is a matter of spirited debate. However, senior Air Force officials agree on one thing: The transition to a smaller, more capable fighter force hinges totally on acquiring sufficient numbers of stealthy F/A-22 and F-35 fighters—and without any further delay.

The future fighter force now taking shape also assumes that the world political and military situation does not change radically in the next 20 years. Should there be an unexpectedly large shift in the threat, the size of the force relative to its responsibilities would undoubtedly have to be reassessed.

Only a few years ago, Air Force leaders believed that a crisis would

E FIGHTER DEBATE

Staff photo by Guy Aceto

The F-15 has been the fighter world's heavyweight champ for 30 years. During the Cold War, it symbolized the ascendance of quality over quantity. Now, the growing capability of all Air Force fighters leads the service to believe it can get along with even fewer airframes. Success will depend on swiftly bringing on line a host of stealthy new fighters. These F-15s are from the 95th Fighter Squadron, Tyndall AFB, Fla.

engulf the fighter force. They warned lawmakers that the fighter fleet would begin a sharp decline around 2007, when large numbers of 1980s-vintage aircraft would begin retiring in blocks. They would be replaced only slowly with newer, stealthy models eventually restoring the size of the fleet. The gap appeared as a valley on a line graph and became known as the "fighter bathtub." The Air Force wasn't sure it could meet all its commitments during that period.

Since then, circumstances and thinking have changed. The Air Force will see a fighter decline—from about 2,500 airplanes to perhaps 1,900 by 2020—but USAF leaders believe the service will retain sufficient combat punch.

"I predict that we will be significantly smaller in the next 20 years than we are today but with the same capability—or better," said Gen. Hal M. Hornburg, head of Air Combat Command, in a recent statement to military affairs writers.

Extending the Legacy Fighters

Speaking on June 23 in Washington, D.C., Hornburg said today's "legacy" fighters—A-10s, F-15s, and

USAF photo by TSgt. Keith Brown

A recent exercise with India showed that foreign air forces are quite capable of fielding and effectively employing new combat aircraft. India's Su-30s and MiG-21s did surprisingly well against USAF F-15s in Cope India '04.

F-16s—are being given powerful new capabilities that will enhance their effectiveness, which will allow them to serve as a bridge to the next generation of fighters.

New targeting pods, radars, munitions, and data links, coupled with structural upgrades to keep these fighters airworthy, will create "a great leveraging force over the battlefield," Hornburg said.

"Every year, the fighters we have today, even though they may be one year older, are one year more capable," said Maj. Gen. Donald J. Hoffman, ACC's director of requirements. For each fighter, the combination of upgrades, munitions, connections to a sophisticated network "really magnifies the effect it can have on the battlefield," Hoffman explained.

Today's F-15s and F-16s were purchased in large quantities during the mid- to late-1980s, with estimated 20-year service lives. Experts predicted they would start "aging out" of the inventory in large numbers in the mid-2000s. That hasn't happened, though, according to Hoffman.

During a decade of Northern Watch and Southern Watch combat air patrols over Iraq, the fighters were flying fairly benign flight profiles, skipping the "nine-G training sorties" they would have flown at home, he noted. Predictions about wear and tear were worse than the realities experienced by the fleet.

There's no rule of thumb, though, for how much longer each fighter can hang on. Hoffman said each type of fighter—and each block within types—has its own history and quirks, and some are aging better than others. It's not possible to make judgments about their condition until "we open up these aircraft" and subject them to a thorough analysis, he said.

There are known problems. Many of the air superiority F-15s, for example, are under flight restrictions. They can't fly at top speed because engineers worry that their control surfaces will delaminate and rip apart. The problem is being fixed, but it will take six years to make the changes throughout the F-15 fleet. Each F-15 will receive new vertical and horizontal stabilizers as it goes through programmed depot maintenance.

The Air Force has launched service life extension programs (SLEPs) that will add stiffeners and structural components to keep the current generation of aircraft in fighting trim until replacement aircraft arrive. The F-16 fleet, for instance, is receiving the Falcon STAR upgrade to strengthen spars and control surfaces. Upgrading the entire fleet will take eight years.

By tailoring SLEPs, the Air Force can put off the day when the "iron that we bought in the '80s reaches the end of its service life," Hoffman said.

Some present day fighters—multirole F-15Es and small lots of F-16s—were purchased fairly late in the last fighter buying cycle, so they will last well into the future. F-16s bought in the 1990s, for instance, should reach 2025 without too much difficulty.

The Air Force must equip the F-15E and F-16 with new radars, said Hornburg, who speculated the F-15Cs would also need new radars "in due course." He said the service is modernizing legacy airplanes, "as much as we can afford."

The B-1B Model

In the quality vs. quantity debate, the Air Force has a test case that suggests it's best to push for quality. The service recently took out of service nearly a third of its B-1B bombers—those suffering the most fatigue, damage, and chronic maintenance problems. The money saved by not flying, manning, and maintaining those airplanes was redirected to-

HORNBURG ON COPE INDIA

Early in 2004, an Air Force F-15 unit flew in simulated dogfights against Indian Su-30s, Mirage 2000s, and MiG-21s. Various news accounts reported that the F-15s had been defeated in many of the engagements. (See "Washington Watch," July, p. 6.) Gen. Hal M. Hornburg, commander of Air Combat Command, said the results of that exercise are classified, but he admitted they raised some concern.

It's sobering, he said, "when we find that some of our advantages aren't as great as we thought they might be." Such an event "leads me to remind people we need to continue to modernize our air-to-air capability," he added.

There is no doubt that some foreign aircraft are "nearing the capability of ours," and that "we're going to be fighting a larger and more capable surface-to-air threat," said Hornburg. "We need stealth technology and ... other capabilities" of the type that will be provided by the F/A-22 and F-35.

Hornburg said that USAF's current F-15s and F-16s are "still very good," but they are "becoming dated."

He warned that the Cope India exercise was a reminder "that the first thing that needs to happen in a combat situation is [to gain] control of the air." The ACC commander added, "If we want air superiority, it doesn't come cheap, and it's not automatic."

ward upgrading and fully funding spare parts and support for all of the B-1Bs. The result—seen during Gulf War II—was a more capable, combat-ready weapon system.

"We were able to make the rest of the B-1 fleet much more healthy than it ever could have been if we had kept all of [them]," Hoffman said.

The B-1B experience provided a model for USAF's handling of its A-10s, the first of which entered service in the late 1970s. Some number of today's 350 A-10s will be retired soon, Hoffman said. The savings will be used in two ways. First, USAF will improve or replace the engines of the remaining A-10s, so they can fly higher, carry a heavier load, and perform better at higher altitudes. Second, the A-10 also will receive new munitions and targeting systems, a modern cockpit, and systems that allow it to become part of the battlefield network.

"The only networking to the aircraft right now is a voice radio to the pilot, and the pilot does all the networking in his head," Hoffman noted.

There will be fewer A-10s in the future, but they'll be much more capable than today's A-10s, he said. With these upgrades, the A-10 could serve well into the 2020s.

Other platforms likely will undergo the same "retire some, upgrade the remainder" approach, said Lt. Gen. Duncan J. McNabb, who was USAF's deputy chief of staff for plans and programs until he was confirmed July 22 to be the Joint Staff director of logistics.

According to McNabb, the Air Force must proceed this way with its current fighters because simply leaving large numbers of unusable airplanes on the ramp "just eats your lunch" on operation and maintenance cost. Fully funding a smaller number of fighters will provide "much better bang for the buck for the taxpayer," said McNabb.

USAF's Fiscal 2005 defense budget submission included a plan to retire 10 F-117s. "We felt we could live with that risk," said Hoffman. However, the step was not an easy one, and the proposed reduction "gives you an indication of what the fiscal environment is right now," he noted. Such a move also depends on buying the new stealth fighters—F/A-22s and F-35s.

"The F-117 is a wonderful platform," Hoffman said. However, he went on, "as we get new air-to-ground stealth capability" with the B-2, F/A-22, F-35, and Joint Air-to-Surface Standoff Missile, "I think we can afford to replace the F-117."

By 2009, said McNabb, all USAF combat aircraft will be capable of employing precision weapons. He noted, "That really does change the equation of how much you need in order to satisfy the combat commanders and the strategy that they have."

Sizing for Effect

Hoffman said that ACC is doing "what if" drills to estimate the future total force structure requirement. He explained that the drills are based on "alternative futures" driven by varying budgetary assumptions. However, current fighter types will be useful for decades. "We've got time to study this and do it right," Hoffman said.

Air Force Secretary James G. Roche and Gen. John P. Jumper, Chief of Staff, want to get the service thinking about the battlefield effects, rather than individual systems.

Roche and Jumper have insisted that planners focus on effects, rather

F-35 STATUS REPORT

The Pentagon is facing a one-year delay in the F-35 program primarily because of weight problems. The F-35 design is overweight by about 2,000 pounds, and engineers are looking at ways to either reduce the weight or improve performance of the aircraft.

Navy acquisition executive John J. Young Jr., who until recently oversaw the program, said in an interview with *Inside the Navy* that the F-35 will be so much more capable than the aircraft it replaces that DOD should consider reducing some of its performance requirements in order to keep the program on schedule and on budget. The F-35 is slated to replace the A-10 and F-16 in the Air Force, early F/A-18s in the Navy, and AV-8Bs in the Marine Corps.

Michael W. Wynne, the Pentagon's top acquisition official, has directed program managers to put first priority on development of the short takeoff and vertical landing (STOVL) version of the F-35, shifting the conventional takeoff and landing (CTOL) version to second priority. The carrier-capable Navy version will remain the third development priority. The STOVL version is being developed for the Marine Corps and UK military forces.

The Air Force, last spring, announced it will purchase a mix of both the CTOL and STOVL versions of the F-35. The service has not released details on the numbers of each version it will buy.

USAF photo by SSgt. Lee O. Tucker

Smaller and more-precise weapons mean each aircraft can destroy more targets per mission. USAF believes it can preserve the capability it has now with a smaller fighter force, but the demands of a rotation base create doubts.

than "numbers ... or types of platforms, or different combinations of platforms," said McNabb.

This philosophy has spread throughout the Defense Department, McNabb said, noting, "It was probably the most profound thing that they have done in the Air Force."

From this effects-based thinking came development of new concepts of operation and smarter ways to employ assets already in hand.

McNabb said that the Air Force is using a series of simulations and computer modeling to establish the right size and mix of fighters. Change the adversary and conditions and the answer will change, he said.

He emphasized that the simulations conducted under a broad range of circumstances, do not look at the performance of fighters "in a vacuum." They take into account the impact of intelligence-surveillance-reconnaissance assets, unmanned aerial vehicles, bombers, precision munitions, and capabilities of other services.

Hoffman said the simulations are run with "all the analytical rigor that's at our disposal." However, he noted, decisions sometimes hinge on the subjective judgment of skilled warriors.

"I wish there was one machine where you could take all the information, put it in there, turn the crank, and get an answer, but, a lot of times, it becomes a subjective assessment, a military body of expertise," said Hoffman.

The assessment pays close attention to the Army's shift to small, widely dispersed, combat operating groups. According to McNabb, these Army units are going to depend heavily on airpower, much like today's special operations forces.

Even so, Air Force leaders believe the future fighter force can be smaller because the F/A-22 and the F-35 are so much more capable than the F-15 and F-16. Replacing them one-for-one is not required, said Hornburg.

The new fighters will offer dramatic advances, not only because of combat prowess, but also because they will require less maintenance and thus will be able to fly more frequently, producing more sorties.

Operational tests of the F/A-22 were conducted during the summer. These tests pitted F/A-22s against superior numbers of F-15s and F-16s. In such mock engagements, the Raptors consistently beat a larger force of the other fighters. The F/A-22s were able to spot and shoot their adversaries without being spotted themselves, and they could fly more missions in a day.

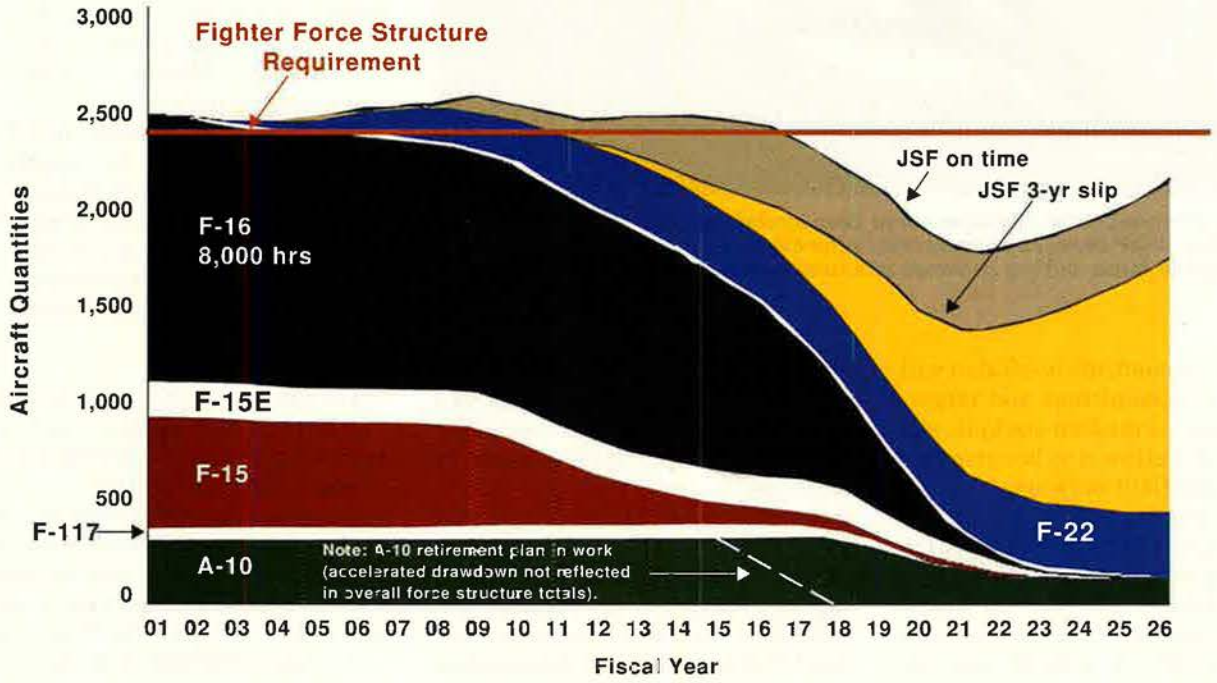
The stealthy F/A-22 will be able to fly stealthy attack missions deep behind enemy lines and survive against the toughest air defenses. In addition, it will collect battlefield data that can be passed instantly to other aircraft in a coordinated air and ground battle. Collectively, these attributes mean that each F/A-22 will be worth several F-15s, the reigning world air superiority champ.

Similarly, the stealthy F-35 is being designed to surpass the F-16 in capability, reliability, and ownership cost. Designers say the F-35 will fly more sorties per day than the F-16, at lower cost and with greater effectiveness.

The ability of both the F/A-22 and F-35 to generate more sorties in a given period is key to determining the right size of the overall fighter fleet.

To ensure USAF gets maximum value from its F/A-22s, said McNabb, it will increase the fighter's crew ratio. Currently, USAF assigns 1.25

CY 2000 AIR FORCE PROJECTED FIGHTER INVENTORY



The "Fighter Bathtub." *This USAF chart from 2000 showed how the Air Force expected its fighter force to sink below a required 2,500 aircraft through the mid-2020s and then grow again. The service is re-evaluating its fighter needs in light of new capabilities. Each aircraft will be able to do more—fly more missions, defeat more enemies, destroy more targets—than the current generation of F-15s and F-16s. If true, then the whole fighter bathtub concept is now obsolete.*

USAF photo by TSgt. Ben Bloker

It's no contest when F-15s go against F/A-22s in mock combat: Though outnumbered, the Raptors win every time. The Air Force doesn't plan to replace F-15s one-for-one, but it still needs more than the 277 F/A-22s for which it has funds.

pilots per aircraft. That figure will rise to between 1.5 and two pilots per aircraft. He explained that raising the crew ratio means USAF won't have "empty iron sitting on the ramp."

This would give USAF an opportunity to form more associate units, with Air National Guard and Air Force Reserve Command pilots, ground crews, and maintainers using and servicing the aircraft that belong to active duty units. This would ease the pain as the service retires its oldest fighters, most of which reside in the reserve components.

The experience of a Guard or Reserve pilot is also a force multiplier, McNabb noted. An experienced pilot "doesn't take as much to keep up" as a brand-new fighter pilot, and his battle seasoning will make him that much more effective.

McNabb said that the Air Force is looking for the best mix of munitions, crew ratio, crew experience, numbers deployed, and onboard capabilities of each fighter type. The goal is to deliver the combat power the Air Force needs—no more and no less.

If USAF maintained fewer than 1.75 pilots per Raptor, the Air Force "wouldn't be taking full advantage" of what the Raptor can do, said McNabb.

Blurred Lines

Hoffman recalled that the Air Force, in the early 1990s, merged the bombers of Strategic Air Command and fighters of Tactical Air Command to form Air Combat Command. Distinctions between bomber and fighter combat had become "kind of blurred" he said. The lines are even less distinct now, he added.

In recognition of that reality, USAF gave up two traditional documents—the Fighter Roadmap and Bomber Roadmap. In their place has come a single "Flight Plan 2025," which lays out a collective combat force plan, comprising all aircraft.

McNabb said he has no simple "bumper sticker" to replace the easy-to-understand fighter bathtub chart. The picture only becomes clear "if you put in all the parts of the puzzle," he said. Focusing on any one piece in isolation provides "a different solution," he noted.

Despite the F/A-22's advanced capabilities, McNabb said, USAF cannot buy fewer than 381. The service needs that number of F/A-22s to ensure it can put a squadron's worth of Raptors into each of its 10 air and space expeditionary forces and still have enough left over for training, test, and depot maintenance.

Once the capabilities of the F-35 are better known, he said, there could be a "different mix" of the two fighters "as we go forward."

Hornburg agreed, saying USAF's fighter fleet would be "too small" if the service could not "fully equip 10 air expeditionary forces." He said that planning requirement comes from DOD.

If the Pentagon needs the Air Force to do something, and it doesn't have the wherewithal to do it, "then we're too small," he said.

According to Hornburg, it is essential to shift the debate away from numbers and focus instead on what effects can be achieved.

"We need to talk [in terms of] capability, not airplane management," he said. "Capability and effect have to be the driving factors, not just the numbers of things that it takes to give you that capability."

Given such an approach, Hornburg said, "I can tell you that I do not believe we will be too small in the year 2020 or 2025." ■

F/A-22 STATUS REPORT

The F/A-22 continues to excel in operational testing at Nellis AFB, Nev., winning lopsided victories in contests in which it has sometimes been outnumbered 8-to-1 by F-15s. Plans called for the classified tests to conclude in August. A report on whether the F/A-22 meets requirements for operational deployment is due in December.

The first operational F/A-22s are to be delivered in May 2005 to Langley AFB, Va. That's about five months later than planned, but the change was made to allow prime contractor Lockheed Martin to incorporate any changes dictated by the operational flight tests.

Initial operational capability for the Raptor is set for December 2005. However, Marvin R. Sambur, USAF's top acquisition executive, said in May that this date may slip "a couple of months."

In January, the Pentagon will determine if the aircraft is ready to enter full-rate production, currently set at a maximum of 38 F/A-22s per year.

The Air Force wants to build a total of 381 F/A-22s, but service officials admit they can only afford about 277 under the cost cap mandated by DOD. An additional cost cap imposed by Congress would limit the Raptor fleet to only 218 aircraft.

Verbatim

By John T. Correll, Contributing Editor

Developing Space Warfighters

"The job is not yet complete in preparing space officers to be warfighters. Space career paths have tended to be insular, with fewer chances to expand professional horizons beyond managing space assets. This has a two-fold effect. Not only are space warfighters less likely to broaden into professionally enhancing major combatant commander staff jobs to develop strategic vision, but it also reinforces the perception that space folks work primarily in a supporting role."***—USAF Lt. Gen. Norton A. Schwartz, director of operations, Joint Chiefs of Staff, at Space Warfare Symposium sponsored by AFA's Lance P. Sijan Chapter,*** **Aerospace Daily & Defense Report,** ***July 1.***

Blair Still Convinced

"We know Saddam Hussein had weapons of mass destruction, but we know we haven't found them. I have to accept that we have not found them, that we may not find them."***—British Prime Minister Tony Blair,*** **New York Times,** ***July 7.***

It Takes Time

"I can't tell you how long that's going to take. It's dangerous. I remember when people were up here eight years ago, saying we'd be in Bosnia only for a year. We are finally about to end the Bosnia mission—what is it?—eight years later. This is a vastly more important mission for our national security, and it's important to stay and finish it."***—Deputy Secretary of Defense Paul D. Wolfowitz, on how long the mission in Iraq might last, House Armed Services Committee, June 22.***

White vs. Rumsfeld

"Rumsfeld is a very strong Secretary of Defense, and he made it very clear early on what his druthers were about troop levels. It's a tad disingenuous of him at this late date to say, 'Well, gee, I told them all along they could have what they wanted.' "***—Former Army Secretary Thomas E. White,*** **Dallas Morning News,** ***July 13.***

No Butts About It

"More people are leaving technical training as tobacco users than those who enter [basic training]. It's very difficult once people are addicted to nicotine to get them to quit. We want to prevent them from ever starting."***—Col. Russell Eggert, AETC health promotion branch chief, on new policy that bans tobacco use or possession by airmen in training while on base or in uniform, Air Force Print News, June 21.***

Inequity of Draft Calls

"You just can't go out equitably and grab five percent of the young people and force them into uniform without making all the young people begin to do something comparable."***—Sen. John Warner (R-Va.), chairman of the Senate Armed Services Committee, on problems with conscription to fill today's relatively small military force, NBC's "Meet the Press," July 4.***

Panjandrum, Maybe?

"Five hundred years of rigidity and stupidity followed by Bolshevism isn't a good model for the management of the American Intelligence Community."***—Former CIA Director James Woolsey on term "intelligence czar" to describe "director of national intelligence," who would oversee all US intelligence agencies, House Select Homeland Security Committee hearing, June 24.***

The Great Moviemaker

"We are furious that Greg was in that casket and cannot defend himself. ... I'm sure he would have some choice words for Michael Moore. Michael Moore would have a hard time asking our family for a glass of water if he were thirsty."***—Kandi Gallagher, aunt of USAF Maj. Gregory Stone, killed in Iraq, on Michael Moore's use, without permission, of video footage of Stone's burial at Arlington National Cemetery for Moore's movie, "Fahrenheit 9/11,"*** **Washington Times,** ***July 13.***

Handful for a Brother ...

"When a rich brother goes to visit a poorer brother, the rich brother should not go empty-handed."***—Former South Korean President Kim Dae-jung, acknowledging secret payments to North Korea to induce participation in inter-Korean summit four years ago,*** **London Financial Times,** ***June 19.***

... But Not From This Brother

"We are not prepared to compensate North Korea somehow for not doing something that they never should have done to begin with."***—State Department spokesman Richard A. Boucher on suggestion of compensation to entice North Korea to end its nuclear weapons program, Associated Press, June 22.***

Bad Planning for Civilian Force

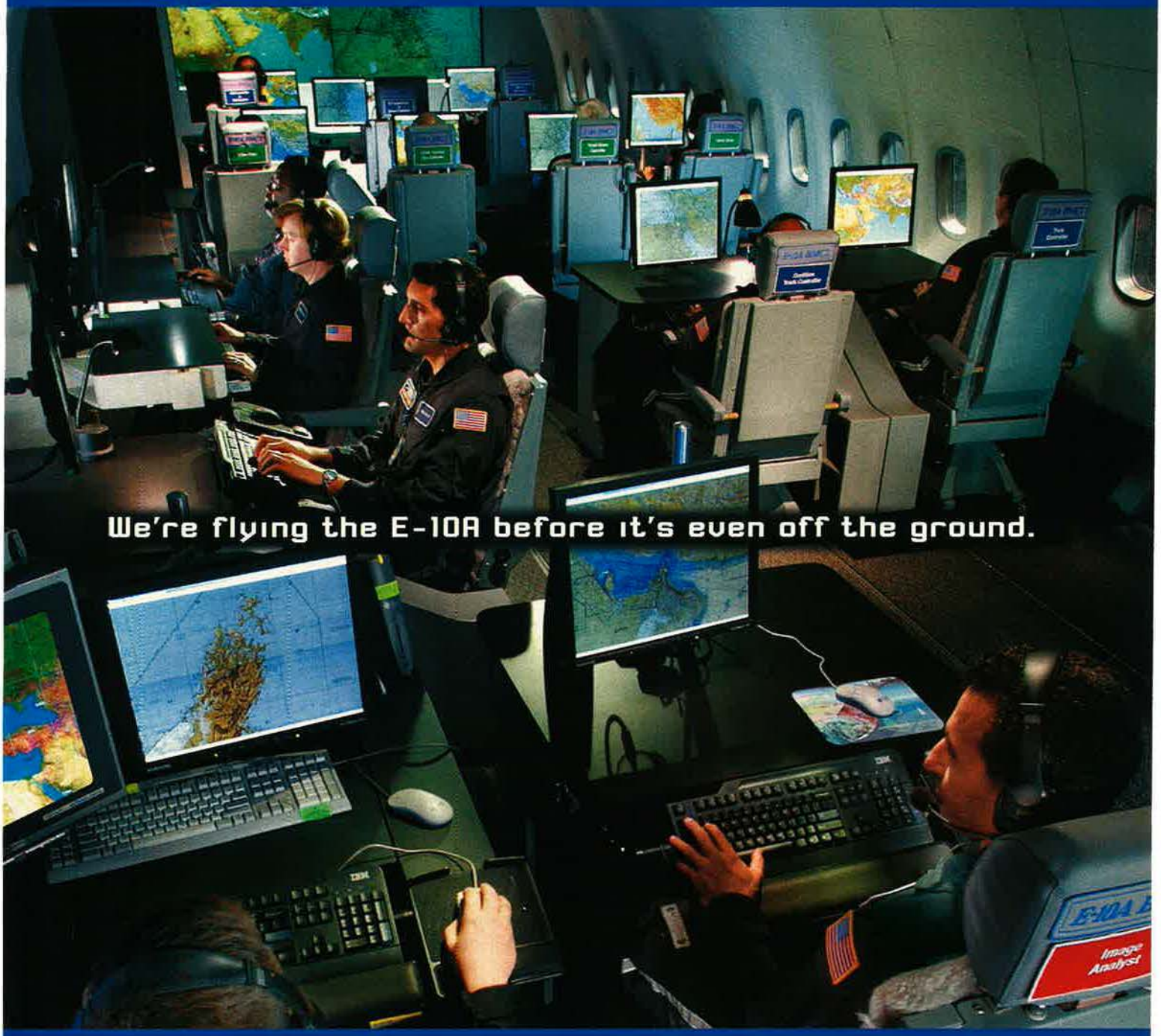
"During its downsizing in the early 1990s, DOD did not focus on reshaping the civilian workforce in a strategic manner. ... With more than 50 percent of its civilian personnel becoming eligible to retire in the next five years, DOD may find it difficult to fill certain mission-critical jobs with qualified personnel."***—Government Accountability Office report, quoted by GovExec.com, July 1.***

Force, However, Is Big Enough

"The fact that [the Ready Reserve call-up] is rare ... does not, of course, mean it is inappropriate."***—David S.C. Chu, undersecretary of defense for personnel and readiness, on recall of 5,600 veterans to fill needs in Iraq and Afghanistan, House Armed Services Committee, July 7.***

A Father's Duty

"As I see it, a father has to do his best to help raise children who will be good citizens, good leaders, and good parents in their own right. He also has a responsibility to make the world a better place for his children and grandchildren."***—USAF Gen. Richard B. Myers, Chairman of the Joint Chiefs of Staff, named a "Father of the Year" by the National Father's Day Committee,*** **European Stars and Stripes,** ***June 19.***



Developing the best network-centric solution for the Air Force E-10A Battle Management Command and Control (BMC2) subsystem requires experience, vision, leading-edge tools and team commitment to industry and the customer. Our enterprise-wide BMC2 team has demonstrated what it takes. "Live-Fly" testing, using our corporate Crew Area Virtual Environment as the E-10A component in our Cyber Warfare Integration Network, is validating early measures of performance and effectiveness to refine our BMC2 solution. By integrating combat proven simulation models with live events, we've created realistic future battle environments — providing tomorrow's warfighter with superior vision and decision-quality knowledge.

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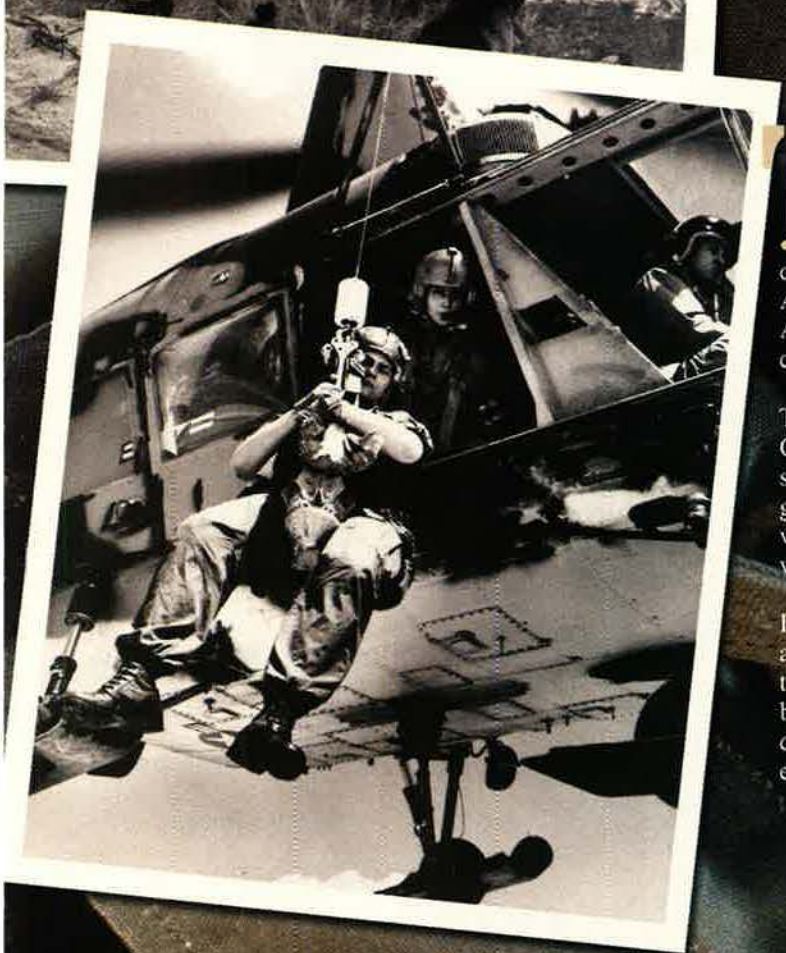
THE VIETNAM WAR ALMANAC

By John T. Correll



To those who fought there, it seems like yesterday, but it was 40 years ago this August that the US Air Force deployed in fighting strength to Southeast Asia. The Air Force and the Navy flew their initial combat missions in late 1964 and early 1965.

The Vietnam War began in earnest in March 1965 with Operation Rolling Thunder, which sent US aircraft on strikes against targets in North Vietnam. Soon, our ground forces were engaged as well. Eight years would pass before US forces withdrew from the war, which had by then claimed 47,378 American lives.

It was a war we didn't win but one in which the US armed forces performed with honor, courage, dedication, and capability. On the 40th anniversary of its beginning, this almanac collects the numbers, the dates, and the key facts of the US Air Force experience in that war.

Southeast Asia

PEOPLE

US Military Personnel in Southeast Asia

	South Vietnam		Thailand	
	Air Force	All Services	Air Force	All Services
1960	68	875	44	319
1961	1,006	3,164	57	542
1962	2,429	11,326	1,212	4,353
1963	4,630	16,263	1,086	4,126
1964	6,604	23,310	2,943	6,505
1965	20,620	184,314	9,117	14,107
1966	52,913	385,278	26,113	34,489
1967	55,908	485,587	33,395	44,517
1968	58,434	536,134	35,791	47,631
1969	58,422	475,219	32,901	44,470
1970	43,053	334,591	27,858	36,110
1971	28,791	156,776	26,851	31,916
1972	7,608	24,172	35,856	43,168
June **1973**	14	49	35,135	42,469

The American military presence in Southeast Asia peaked in 1968. "Vietnamization" of the war began the next year, with the first US troop withdrawals in July 1969. All told, some 3.4 million troops from all branches of the armed services spent time on duty in Southeast Asia. Except for 1973, the figures on this chart are as of Dec. 31 each year. The "All Services" totals include Air Force, Army, Navy, Marine Corps, and Coast Guard.

Sources: MACV, MACTHAI, Department of Defense.

Forward air controllers directed air attacks in Vietnam.

Pilots and crew chiefs worked together closely, preparing for air operations over Southeast Asia.

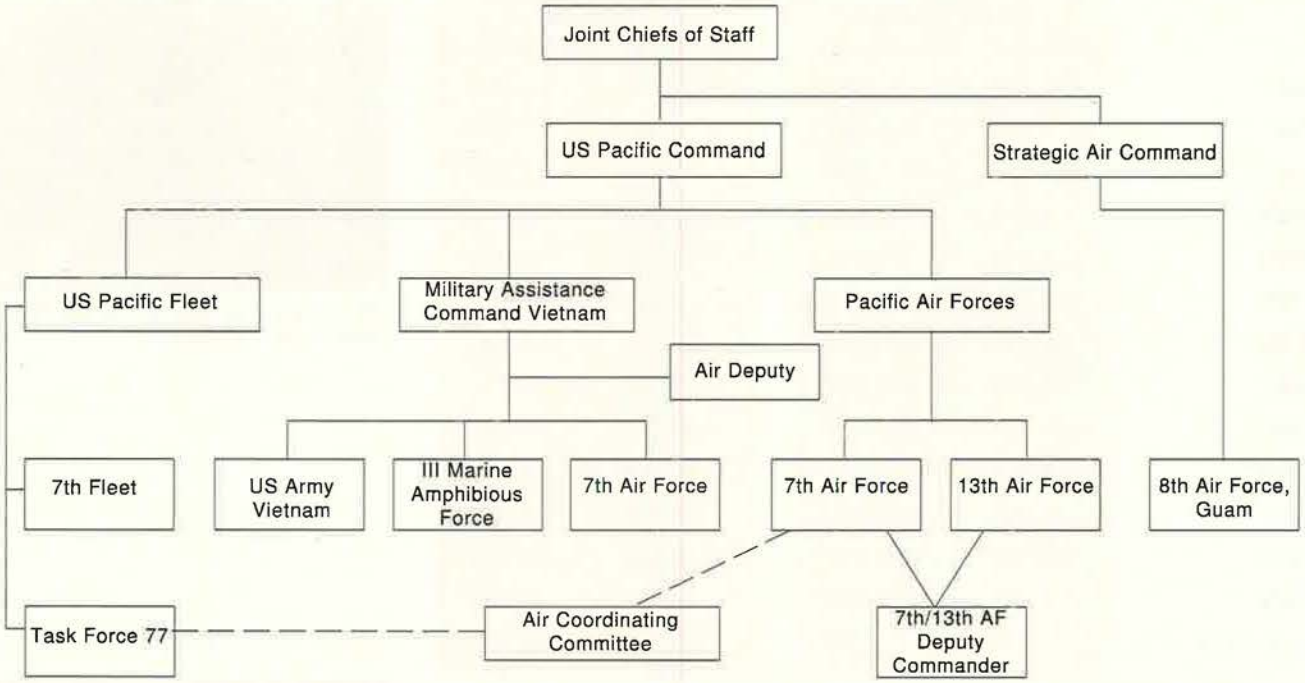
Security forces maintained a constant vigil against insurgent attacks on USAF bases.

A1C Gale Mobley from the Medical Civic Action Program innoculates a Vietnamese child.

ORGANIZATION

Lines of Command

1966-72



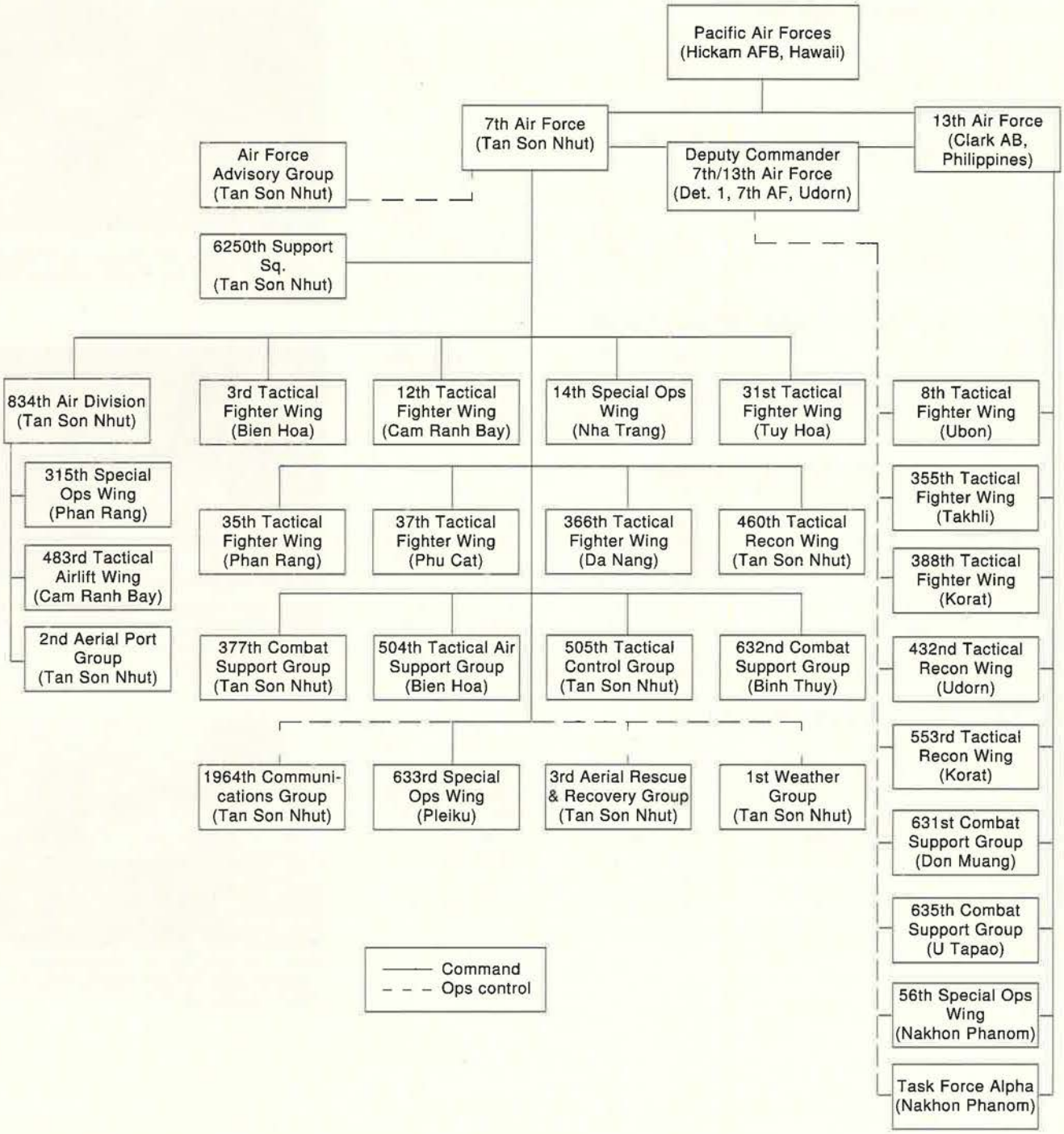
Source: Gen. William W. Momyer, USAF (Ret.), *Air Power in Three Wars.*

Military Assistance Command Vietnam was a subunified command of US Pacific Command, with Army, Marine Corps, and Air Force elements. MACV controlled the war in South Vietnam, but Pacific Command in Hawaii retained control of the war in North Vietnam, via Pacific Air Forces and Pacific Fleet. The commander of 7th Air Force was chairman of a coordinating committee for key operations in North Vietnam.

Seventh Air Force in Saigon was under operational control of MACV for operations in South Vietnam and Route Pack 1 (the southern part of North Vietnam), but 7th Air Force was controlled by PACAF for operations in North Vietnam (Route Packs 5 and 6A). Air Force wings in Thailand were part of 13th Air Force in the Philippines, but were under the operational control of 7th Air Force in Saigon. At Udorn AB, Thailand, 7th/13th Air Force was headed by a general officer who was deputy commander of both 7th and 13th Air Forces. Aircraft based in South Vietnam were used primarily in South Vietnam. Aircraft in Thailand were used in North Vietnam and Laos. Strategic Air Command retained control of B-52 bombers, tankers, and strategic reconnaissance aircraft.

7th Air Force and 7th/13th Air Force

July 15, 1969



Source: Carl Berger, *The United States Air Force in Southeast Asia, 1961-1973* (USAF).

The Commanders

US Pacific Command, Honolulu

Adm. Harry D. Felt	July 31, 1958	June 30, 1964
Adm. U.S. Grant Sharp	June 30, 1964	July 31, 1968
Adm. John S. McCain Jr.	July 31, 1968	Sept. 1, 1972
Adm. Noel A.M. Gayler	Sept. 1, 1972	Aug. 31, 1976

Pacific Air Forces, Honolulu

Gen Hunter Harris Jr.	Aug. 1, 1964	Jan. 31, 1967
Gen. John D. Ryan	Feb. 1, 1967	July 31, 1968
Gen. Joseph J. Nazzaro	Aug. 1, 1968	July 31, 1971
Gen. Lucius D. Clay	Aug. 1, 1971	Sept. 30, 1973
Gen. John W. Vogt Jr.	Oct. 1, 1973	June 30, 1974

PACAF Commander Gen. John Ryan (l) meets with 7th Air Force chief Lt. Gen. William Momyer.

Military Assistance Command Vietnam, Saigon

Gen. Paul D. Harkins	Feb. 6, 1962	June 20, 1964
Gen. William C. Westmoreland	June 20, 1964	July 1, 1968
Gen. Creighton W. Abrams	July 1, 1968	June 29, 1970
Gen. Frederick C. Weyland	June 29, 1970	March 29, 1973

Army Gen. William Westmoreland (l) and Army Gen. Creighton Abrams (r) pin a fourth star on USAF Gen. William Momyer.

7th Air Force, Tan Son Nhut AB, Vietnam

Organized April 1, 1966, replacing 2nd Air Division

Lt. Gen. Joseph H. Moore*	April 1, 1966	June 30, 1966
Gen. William W. Momyer	July 1, 1966	July 31, 1968
Gen. George S. Brown	Aug. 1, 1968	Aug. 31, 1970
Gen. Lucius D. Clay Jr.	Sept. 1, 1970	July 31, 1971
Gen. John D. Lavelle	Aug. 1, 1971	April 6, 1972
Gen. John W. Vogt Jr.	April 7, 1972	Sept. 30, 1973

*Moore was commander of 2nd Air Division from Jan. 21, 1963, to March 31, 1966. Seventh Air Force left Vietnam and moved its headquarters to Nakhon Phanom AB, Thailand, in March 1973.

7th/13th Air Force, Udorn AB, Thailand

Maj. Gen. Charles R. Bond Jr.	Jan. 6, 1966	March 31, 1967
Maj. Gen. William C. Lindley Jr.	June 1, 1967	May 31, 1968
Maj. Gen. Louis T. Seith	June 1, 1968	May 31, 1969
Maj. Gen. Robert L. Petit	June 1, 1969	March 5, 1970
Maj. Gen. James F. Kirkendall	April 15, 1970	Oct. 11, 1970
Maj. Gen. Andrew J. Evans Jr.	Oct. 12, 1970	June 30, 1971
Maj. Gen. DeWitt R. Searles	July 1, 1971	Sept. 8, 1972
Maj. Gen. James D. Hughes	Sept. 9, 1972	April 19, 1973

The commander was a deputy commander of both 7th Air Force and 13th Air Force. In March 1973, 7th/13th Air Force reverted to Det. 7 of 13th Air Force.

Gen. Lucius Clay Jr. (l) transfers command of 7th Air Force to Gen. John Lavelle in 1971.


DIFFERENT BRANCHES.
DIFFERENT MISSIONS.
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USAF ORDER OF BATTLE

USAF Aircraft in Thailand and South Vietnam

	All Aircraft	F-105	F-4	B-52
1965	460	79	18	—
1966	889	126	188	—
1967	1,429	129	182	10
1968	1,768	108	218	28
1969	1,840	70	288	39
1970	1,602	65	212	44
1971	1,132	12	216	44
1972	989	30	355	54
1973	675	24	218	53

Figures are as of June 30 each year. Additional B-52s were based on Guam, the number varying from about 30 in 1965 to about 150 in 1972. In Thailand, the attack force included 65 A-7s and 45 F-111s by late 1972.

Source: Wayne Thompson, *To Hanoi and Back* (Smithsonian/USAF).

SAC B-52 bombers were the work-horses of the Vietnam War.

The F-105 Thunderchief was a key factor early in the war.

USAF Squadrons in Southeast Asia

	In 1968		In 1972	
	Squadrons	Aircraft	Squadrons	Aircraft
Vietnam				
Tactical Fighter/Bomber/Attack	23	408	—	14
Special Operations	11	204	1	24
Tactical Airlift	7	167	1	56
Tactical Air Control	6	280	2	125
Recon/EW	6	101	2	37
Rescue	3	40	2	18
Total Vietnam	**56**	**1,200**	**8**	**274**
Thailand				
Strategic Bombers, Tankers	2	66	—	142
Tactical Fighter/Bomber	13	239	11	371
Special Operations	5	85	4	45
Tactical Airlift	—	12	—	8
Tactical Air Control	2	41	3	58
Recon/EW/Drone Support	6	104	2	61
Rescue	1	21	1	30
Total Thailand	**29**	**568**	**21**	**715**
Total Southeast Asia	**85**	**1,768**	**29**	**989**

Figures are as of the end of FY68 and FY72.

Source: USAF Management Summary Southeast Asia, September 1973.

USAF Attack Aircraft

July 1968-December 1972

Bases in South Vietnam		1968 July 31	1968 Dec. 31	1969 June 30	1969 Dec. 31	1970 June 30	1970 Dec. 31	1971 June 30	1971 Dec. 31	1972 June 30	1972 Dec. 31
Bien Hoa	A-1	3				2	2				
	AC-47	5	5	5							
	AC-119									4	5
	F-100	47	55	50	22	19					
Binh Thuy	AC-47	4	3								
Cam Ranh Bay	F-4	54	49	47	42						
Da Nang	A-1		2	3	11	9	2	2	2	2	
	AC-47	4	4	5							
	AC-119				6	9	8	4	5	3	15
	F-4	55	53	57	47	48	48	55	55		
Nha Trang	AC-47	7	9	13							
	AC-119			7							
Phan Rang	AC-47	3	3								
	AC-119			6	11	9	9	13			
	B-57	23	15	9							
	F-100	68	66	67	77	65	75	59			
Phu Cat	AC-47	4	3	3							
	AC-119				3	6	1				
	F-4			34	34	30	32	36			
	F-100	69	65								
Pleiku	A-1	18	18	17							
	AC-47	3	4	3							
Tan Son Nhut	AC-119			5	5	5	9	10			
Tuy Hoa	AC-119				4						
	F-100	88	74	86	88	86					
Total South Vietnam		**455**	**428**	**417**	**350**	**288**	**186**	**179**	**62**	**9**	**20**
Bases in Thailand											
Korat	A-7										67
	F-4		20	40	34	32	27	32	38	53	31
	F-105	55	34	18			11	12	14	30	24
Nakhon Phanom	A-1	33	39	54	70	47	25	25	19	16	
	A-26	12	17	16							
	F-105						5	7	11	8	
Takhli	F-4									96	
	F-105	55	55	54	74	65	55				
	F-111										47
Ubon	A-1					2	1				
	AC-130	1	4	4	7	3	10	8	18	12	13
	B-57						9	10	10		
	F-4	74	72	73	67	67	73	56	73	100	106
Udorn	AC-47			2	3						
	AC-119					3					
	F-4	39	40	35	35	34	27	37	42	104	121
Total Thailand		**269**	**281**	**296**	**290**	**253**	**243**	**187**	**225**	**419**	**409**
Grand Total		**724**	**709**	**713**	**640**	**541**	**429**	**366**	**287**	**428**	**429**

Source: Col. Perry L. Lamy, Air War College, 1995.

OPERATIONS

Notable Air Operations

Operation	Dates	Description
Farm Gate	Oct. 1, 1961-July 28, 1963	Training and support for South Vietnamese Air Force.
Ranch Hand	Jan. 7, 1962-Jan. 7, 1971	Defoliation of jungle to expose Viet Cong sanctuaries, movements, and ambushes.
Barrel Roll	Dec. 14-April 17, 1964	Support of ground forces in northern Laos.
Flaming Dart	Feb. 7-11, 1965	Precursor to Rolling Thunder. Air strikes against North Vietnam in reprisal for Viet Cong attacks on US bases.
Rolling Thunder	March 2, 1965-Oct. 31, 1968	Sustained air campaign over North Vietnam.
Steel Tiger	April 3, 1965-Feb. 21, 1973	Interdiction of Ho Chi Minh Trail.
Arc Light	June 18, 1965-Aug. 15, 1973	Strategic Air Command B-52 strikes in Southeast Asia.
Bolo	Jan. 2, 1967	"MiG Sweep" in which seven North Vietnamese aircraft are shot down in 12 minutes.
Eagle Thrust	Nov. 17-Dec. 29, 1967	Huge airlift of troops and cargo from Ft. Campbell, Ky., to Bien Hoa.
Commando Hunt	Nov. 1, 1968-March 30, 1972	Intensified air strikes in southern Laos.
The "Menus"	March 18, 1969-May 1970	Covert bombing of Cambodia; series of missions named Breakfast, Lunch, Dinner, Snack, Supper, and Dessert.
Linebacker I	May 10-Oct. 23, 1972	Resumed bombing of North Vietnam, almost four years after end of Rolling Thunder.
Linebacker II	Dec. 18-29, 1972	Massive air strikes on Hanoi and Haiphong.

Attack Sorties in Southeast Asia

By US Air Force, Navy, Marine Corps, and South Vietnamese Air Force

	1966	1967	1968	1969	1970	1971	1972	January 1973
In North Vietnam								
USAF	44,482	54,316	41,057	213	699	1,195	16,785	729
USN	32,954	42,587	40,848	72	404	510	26,754	787
USMC	3,695	8,672	10,326	—	10	—	459	44
VNAF	814	127	—	—	—	—	—	—
In South Vietnam								
USAF	70,646	116,560	134,890	96,524	48,064	11,842	40,322	1,303
USN	21,610	443	5,427	5,744	3,895	2,124	23,505	4,149
USMC	32,430	52,825	64,933	49,823	24,146	2,250	13,833	1,160
VNAF	31,632	29,687	22,817	36,217	28,249	30,693	48,569	4,429
Other SEA								
Laos, Cambodia	48,469	44,450	75,274	144,343	125,120	116,790	45,608	5,751
B-52	5,235	9,686	20,568	19,498	15,103	12,554	28,380	2,769
Total	**291,967**	**359,353**	**416,140**	**352,434**	**245,690**	**177,958**	**244,215**	**21,121**

Source: Department of Defense report, November 1973.

The Route Packs

In December 1965, US Pacific Command divided North Vietnam into "route packages." Route Pack 6 was later divided into 6A and 6B. The Air Force route packs were 5 and 6A. Navy packs were 2, 3, 4, and 6B. Route Pack 1, initially assigned to the Navy, was placed under operational control of MACV in April 1966.

An RF-101 took this reconnaissance photo while passing over North Vietnamese AAA batteries.

Photo via Martin Winter

The F-100 Super Sabre performed close air support.

Photo via Martin Winter

An F-4 was armed with a new weapon that would change warfare—the laser guided bomb.

USAF Sorties in North Vietnam

	Attack		CAP/ Escort	Recce	Combat Support	Total
	Fighters	B-52s				
1965	11,599	—	5,675	3,294	5,554	26,122
1966	44,482	280	9,041	7,910	16,924	78,637
1967	54,312	1,364	5,617	11,714	28,078	101,089
1968	41,057	686	3,015	7,896	24,027	76,681
1969	213	—	939	2,905	3,965	8,022
1970	699	—	2,806	3,320	4,849	11,674
1971	1,195	—	3,419	2,044	2,924	9,582
1972	17,096	4,440	9,658	1,965	4,655	37,815
1973	755	533	526	132	381	2,327
Total	**171,408**	**7,303**	**40,696**	**41,180**	**91,357**	**351,949**

Five gunship sorties (four in 1967, one in 1972) have been added to the "Total" column.
Source: Wayne Thompson, *To Hanoi and Back* (Smithsonian/USAF).

Air Operations in Laos

"Barrel Roll" in northern Laos and "Steel Tiger" in the south referred both to operations and to geographic designations. Steel Tiger East—also called "Tiger Hound"—was considered an extension of the fight in South Vietnam and was under the operational control of MACV. Pacific Command retained control in the rest of the country. The US ambassador to Laos exerted strong influence and constraints on all operations in Laos. Air operations, both south and north, were conducted by 7th Air Force, employing aircraft based in Thailand and South Vietnam. SAC B-52s also operated extensively in Laos.

Sources: Col. Perry L. Lamy, Air War College, 1995; Gen. William W. Momyer, USAF (Ret.), *Air Power in Three Wars* (USAF).

USAF MiG Victories

by Aircraft and Weapon

Aircraft	Weapons/Tactics	MiG-17	MiG-19	MiG-21	Total
F-4C	AIM-7 Sparrow	4	0	10	14
	AIM-9 Sidewinder	12	0	10	22
	20 mm gun	3	0	1	4
	Maneuvering tactics	2	0	0	2
F-4D	AIM-4 Falcon	4	0	1	5
	AIM-7 Sparrow	4	2	20	26
	AIM-9 Sidewinder	0	2	3	5
	20 mm gun	4	0	2	6
	Maneuvering tactics	0	0	2	2
F-4E	AIM-7 Sparrow	0	2	8	10
	AIM-9 Sidewinder	0	0	4	4
	AIM-9/20 mm gun (combined)	0	0	1	1
	20 mm gun	0	1	4	5
	Maneuvering tactics	0	1	0	1
F-4D/F-105F	20 mm gun	1	0	0	1
F-105D	20 mm gun	22	0	0	22
	AIM-9 Sidewinder	2	0	0	2
	AIM-9/20 mm gun (combined)	1	0	0	1
F-105F	20 mm gun	2	0	0	2
B-52D	.50 cal. gun	0	0	2	2
Totals		**61**	**8**	**68**	**137**

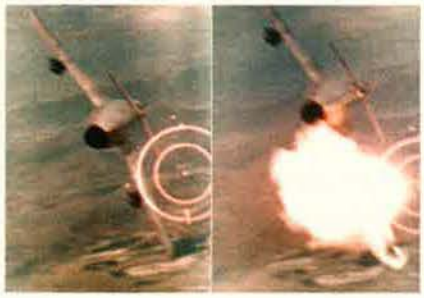

Photo via Martin Winter

Maj. Ralph Kuster shot down this MiG-17 with his F-105's 20 mm guns.

The Air Force fighter most successful against the MiGs in aerial combat was the F-4. The radar-guided AIM-7 Sparrow accounted for more of the victories than any other weapon.

Source: Carl Berger, *Aces & Aerial Victories* (USAF).

Bombing Halts and Pauses in Air Operations Over North Vietnam

May 12-May 18, 1965.
Purpose was to test Hanoi's response and willingness to negotiate.

Dec. 24, 1965-Jan. 31, 1966.
Christmas cease-fire, extended by Lyndon B. Johnson's "peace initiative." Hanoi failed to respond.

Feb. 8-13, 1967.
Cease-fire for Tet religious holiday. Perception was that Hanoi might be willing to negotiate. Instead, North Vietnam took the opportunity to move 25,000 tons of war materiel south.

Aug. 24-Sept. 4, 1967.
Cessation of attacks around Hanoi.

Jan. 29, 1968.
Unilateral 36-hour cease-fire for Tet. On Jan. 31, North Vietnam and the Viet Cong launched the Tet Offensive against bases all over South Vietnam.

March 31, 1968.
Halt of bombing north of 20th parallel. Under political pressure, the line was moved south to the 19th parallel.

Nov. 1, 1968-April 6, 1972.
Halt of all bombing of North Vietnam. Reconnaissance flights continued and attacks on them led to "protective reaction" strikes.

Jan. 15, 1973.
Suspension of mining, bombing, and other offensive operations against North Vietnam as Paris peace talks approached conclusion.

Jan. 28, 1973.
Cease-fire, prior to US disengagement from the war.

In addition, there were routine halts of 48 hours at Christmas and New Years, 1966-67 and 1967-68.

USAF Bomb Damage Assessment Claims in North Vietnam

	March 1965-October 1968		April 1972-January 1973	
	Destroyed	Damaged	Destroyed	Damaged
Vehicles	5,455	3,469	1,635	869
Tanks	—	—	38	20
Locomotives	17	59	1	6
Rail Rolling Stock	1,036	775	56	32
Watercraft	89	128	221	162
Bridges	1,305	1,794	250	55
Railroads	—	1,464 cuts	—	20 cuts
Roads	—	19,324 cuts	—	36 cuts
Ferry Slips	53	166	—	—
Oil Tanks	‡	‡	2,760	86
Buildings	5,938	4,570	1,207	369
Construction Equipment	—	—	35	32
Aircraft	96	25	36	6
Runways	—	19	‡	‡
AAA Sites	1,682	1,196	217	89
Field Artillery Areas	‡	‡	9	1
SAM Sites	80	93	40	5
Radar Sites	109	152	55	19

A Linebacker II strike by B-52s in December 1972 decimated this rail yard north of Hanoi.

Bomb damage assessment is both difficult and imprecise. These figures are better taken as a distribution of bombing effort rather than as an exact tally of the damage inflicted.

‡Targets bombed but not tallied in this period.

Source: Wayne Thompson, *To Hanoi and Back* (USAF).

USAF Air Munitions Consumption

vs. World War II and Korean War

	Millions of Tons
World War II	2.150
Europe (1.613 million tons)	
Far East (0.537 million tons)	
Korean War	0.454
Vietnam War	6.166

Source: USAF Management Summary Southeast Asia, September 1973.

At left, airmen prepare bombs for loading aboard a B-52. The BUFF at right had the capacity to carry all the bombs pictured.

THE ENEMY

North Vietnamese Air Force Combat Aircraft Inventory

	MiG-15/17	Il-28	MiG-19	MiG-21	Total
August 1964	36				36
December 1964	53				53
May 1965	56	8			64
December 1965	62	6		7	75
April 1966	63	8		15	86
December 1966	50	6		16	72
April 1967	75	6		16	97
December 1967	28			12	40
May 1972	80		33	93	206
October 1972	66		40	39	145

North Vietnam's aircraft losses were promptly replaced. The MiG-19, supplied by the Chinese, did not appear until after the 1968 bombing halt. Deployment of the Il-28 light bomber in 1965 created concern that it might be used to attack bases in South Vietnam, but that never happened.

Source: Gen. William W. Momyer, USAF (Ret.), *Air Power in Three Wars* (USAF).

MiG-17s such as these photographed in 1966 were mainstays of the North Vietnamese Air Force.

North Vietnamese AAA

Number of Guns in Each Route Pack

October 1967–March 1968

Route Pack	1	2	3	4	5	6A	6B	Total
Oct. 24, 1967	1,411	533	550	784	693	2,238	910	7,119
Nov. 29, 1967	1,270	514	525	707	686	2,084	784	6,570
Dec. 20, 1967	1,190	526	539	673	698	2,104	815	6,545
Jan. 10, 1968	1,177	529	561	540	695	2,140	815	6,457
Feb. 10, 1968	1,137	340	418	615	695	2,124	962	6,291
March 20, 1968	1,065	360	440	609	672	1,712	937	5,795

Although the SAM and MiG threats got more attention, about 68 percent of the aircraft losses were to anti-aircraft fire. As of March 20, 1968, North Vietnam had anti-aircraft artillery at 1,158 sites. A total of 5,795 guns were deployed, of which 4,802 were 37 mm to 57 mm and 993 were 85 mm to 100 mm.

Source: Gen. William W. Momyer, USAF (Ret.), *Air Power in Three Wars* (USAF).

North Vietnamese SAM Effectiveness

	Missiles Fired	Aircraft Lost	Effectiveness
1965	194	11	5.7%
1966	1,096	31	2.8%
1967	3,202	56	1.75%
1968	322	3	0.9%
1972	4,244	49	1.15%

North Vietnam deployed the Soviet-built SA-2 Guideline surface-to-air missile in 1965. Its effectiveness diminished as US airmen developed defensive tactics, added electronic countermeasures, and sent "Wild Weasel" aircraft to destroy, deter, and intimidate the SAM batteries. A few SA-3s, effective at lower altitudes, were introduced later in the war, as were shoulder-fired SA-7s, which were deadly against slow-flying aircraft in South Vietnam.

Source: Gen. William W. Momyer, USAF (Ret.), *Air Power in Three Wars* (USAF).

Enemy SAMs were a deadly threat. Shown here is the wreckage of a B-52 shot down near Hanoi.

CASUALTIES AND LOSSES

US Casualties in the Vietnam War

Aug. 4, 1964–Jan. 27, 1973

	Battle Deaths	Other Deaths	Wounds Not Mortal
Army	30,922	7,273	98,802
Navy	1,631	931	4,178
Marines	13,084	1,753	51,392
Air Force	1,741	842	931
Total	**47,378**	**10,799**	**153,303**

Totals for "wounds not mortal" do not include 150,332 persons who did not require hospital care.

Source: Department of Defense.

Many lives were saved by effective aeromedical evacuation. Here, an Air Force flight nurse attends to wounded Marines transported from the battlefield.

USAF Aircraft Losses in Southeast Asia

Feb. 1, 1962-Oct. 31, 1973

	Combat Losses				
Aircraft	North Vietnam	Other SEA	Total Combat Losses	**Operational Losses**	**Total Aircraft Losses**
A-1	18	132	150	41	191
AC-47	—	17	17	2	19
AC-119	—	2	2	4	6
AC-130	—	6	6	—	6
B-52	18	—	18	12	30
B-57	5	33	38	18	56
C/UC-123	—	21	21	32	53
C-130	2	32	34	21	55
F-4	193	189	382	63	445
F-100	16	182	198	45	243
F-105	282	52	334	63	397
HH-3	3	7	10	4	14
HH-43	1	9	10	4	14
HH-53	1	8	9	1	10
O-1	2	120	122	50	172
O-2	3	79	82	22	104
OV-10	—	47	47	16	63
RF-4	38	38	76	7	83
RF-101	27	6	33	6	39
Other	16	132	148	107	255
Total	**625**	**1,112**	**1,737**	**518**	**2,255**

A special operations forces gunner observes an HH-53 used for combat search and rescue missions.

"Other SEA" includes Laos, South Vietnam, Thailand, and Cambodia. B-52 losses include two at Kadena AB, Japan, and two at Andersen AFB, Guam, while supporting Arc Light operations.

Source: USAF Operations Report, Nov. 30, 1973.

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USAF Aircraft Losses by Cause

Feb. 1, 1962-Oct. 31, 1973

Fiscal Year	Ground Fire	Ground Attack on Air Bases	Surface-to-Air Missiles	Aerial Combat	Other Combat	Operational	Total
1962-66	298	21	9	4	—	125	457
1967	276	6	26	16	—	77	401
1968	275	45	19	22	10	91	462
1969	234	14	—	—	1	77	326
1970	177	3	—	1	—	76	257
1971	73	1	2	—	—	27	103
1972	72	2	24	14	1	19	132
1973	38	4	30	10	9	25	116
1974	—	—	—	—	—	1	1
Total	**1,443**	**96**	**110**	**67**	**21**	**518**	**2,255**

Seven of the "other combat" losses shown here are listed in some accounts as aerial combat losses, which would raise that total to 74.

Source: USAF Operational Summary, November 1973.

Base security was critical. There were enemy incursions such as the one that destroyed this F-4.

USAF Sortie/Loss Rate in Three Wars

	Sorties	Aircraft Losses	Loss Rate/ 1,000 Sorties
World War II	2,362,800	22,948	9.7
Korean War	710,886	1,466	2.0
Vietnam War	5,226,701	2,257	0.4

In Southeast Asia, the Air Force flew twice as many sorties as the Army Air Forces did in World War II, but sustained less than a tenth as many aircraft losses.

Source: John Schlight, *The War in South Vietnam* (USAF).

Photo via Martin Winter

Lines of Air Force F-4s sit in their hardened revetments and hangars at a Southeast Asian base.

ACES AND HEROES

Vietnam War Aces

Number of Victories	Airman	Aircraft and Unit
6	Capt. Charles B. DeBellevue USAF, weapons system officer	F-4D (4), F-4E (2) 555th Tactical Fighter Squadron
5	Capt. Richard S. Ritchie, USAF, pilot	F-4D (3), F-4E (2) 555th TFS
5	Capt. Jeffrey S. Feinstein, USAF, WSO	F-4D (4), F-4E (1) 13th TFS
5	Lt. Randall H. Cunningham, USN, pilot	F-4J VF-96
5	Lt. William Driscoll, USN, WSO	F-4J VF-96

Sources: USAF, Internet.

Captains Charles DeBellevue (far left) and Richard S. Ritchie, and Capt. Jeffrey Feinstein (right).

Note: USAF awarded a full credit each to a pilot and his WSO for one enemy aircraft shot down.

Air Force Medal of Honor Recipients

Name	Hometown	Date of Action	Place of Action
Bennett, Capt. Steven L.	Palestine, Tex.	June 29, 1972	Quang Tri, S. Vietnam
Day, Maj. George E.	Sioux City, Iowa	Conspicuous gallantry while POW	
Dethlefsen, Maj. Merlyn H.	Greenville, Iowa	March 10, 1967	Thai Nguyen, N. Vietnam
Fisher, Maj. Bernard F.	San Bernardino, Calif.	March 10, 1966	A Shau Valley, S. Vietnam
Fleming, 1st Lt. James P.	Sedalia, Mo.	Nov. 26, 1968	Duc Co, S. Vietnam
Jackson, Lt. Col. Joe M.	Newnan, Ga.	May 12, 1968	Kam Duc, S. Vietnam
Jones, Lt. Col. William A. III	Warsaw, Va.	Sept. 1, 1968	Dong Hoi, N. Vietnam
Levitow, A1C John L.	South Windsor, Conn.	Feb. 24, 1969	Long Binh, S. Vietnam
Pitsenbarger, A1C William H.	Piqua, Ohio	April 11, 1966	Cam My, S. Vietnam
Sijan, Capt. Lance P.	Milwaukee	Conspicuous gallantry while POW	
Thorsness, Maj. Leo K.	Seattle	April 19, 1967	N. Vietnam
Wilbanks, Capt. Hilliard A.	Cornelia, Ga.	Feb. 24, 1967	Dalat, S. Vietnam
Young, Capt. Gerald O.	Anacortes, Wash.	Nov. 9, 1967	Khe Sahn, S. Vietnam

Maj. Bernard F. Fisher was the first airman to receive the Medal of Honor in the Vietnam War.

First Lt. James Fleming (l) and SrA. John Levitow receive their Medals of Honor from President Nixon.

CHRONOLOGY

USAF and the Vietnam War
From the Tonkin Gulf Incident to the Cease-Fire

US forces had been engaged in South Vietnam in support and advisory roles since 1961. The Tonkin Gulf incident in 1964 was the spark that led to combat operations. Within months, American forces were at war.

Aug. 2, 1964.
The destroyer USS *Maddox* is attacked by North Vietnamese patrol boats in the Gulf of Tonkin.

Aug. 4, 1964.
Maddox and USS *Turner Joy* report being attacked by several fast North Vietnamese ships far out to sea, though claims of an attack were soon disputed.

Aug. 5, 1964.
In response to events of Aug. 2 and Aug. 4, President Johnson orders retaliatory air strikes against North Vietnam.

Aug. 7, 1964.
Congress passes Tonkin Gulf Resolution, authorizing "all necessary steps, including the use of armed force," to repel attack, prevent further aggression, and assist allies.

August 1964.
USAF moves into Southeast Asia in force: B-57s from the Philippines to Bien Hoa; additional F-100s to Da Nang; F-105s from Japan to Korat, Thailand.

Nov. 1, 1964.
Viet Cong mortar attack on Bien Hoa.

Dec. 1, 1964.
National Security Council forwards options—including reprisals in North Vietnam for attacks in the south and increased air activity against North Vietnamese infiltration routes in Laos—to President Johnson.

Photo Shelly Hilliard via Warren Thompson

A 1965 Viet Cong attack on a base in South Vietnam.

Photo Bob Amos via Warren Thompson

F-105s refuel on their way to enemy targets.

Dec. 14, 1964.
US Air Force flies the first Operation Barrel Roll armed reconnaissance mission in Laos.

Feb. 7, 1965.
Viet Cong attack air bases in South Vietnam.

Feb. 7-11, 1965.
US and South Vietnamese aircraft strike targets in North Vietnam in retaliation for Feb. 7 attacks on bases in the south.

March 2, 1965.
Operation Rolling Thunder, the sustained air campaign against North Vietnam, begins.

March 8, 1965.
US Marines deploy to Da Nang to defend the air base. First US ground forces in Vietnam.

April 3-4, 1965.
Air Force F-105s strike the Thanh Hoa Bridge, one of the most difficult targets of the war. They inflict damage, but fail to drop a span.

April 5, 1965.
SAM sites first detected in North Vietnam. US loses first aircraft to SAM on July 24.

April 3, 1965.
Operation Steel Tiger, interdiction of Ho Chi Minh Trail in the Laotian Panhandle, begins.

June 18, 1965.
First Arc Light mission: SAC B-52s strike Viet Cong targets near Saigon.

Dec. 23, 1965-Jan. 23, 1966.
In Operation Blue Light, 231 C-41 flights airlift 3,000 troops and 4,700 tons of cargo from Hawaii to Pleiku.

C-130s resupplied the Marine garrison under siege at Khe Sanh.

April 1, 1966.
Seventh Air Force, with headquarters at Saigon, is organized as a subcommand of Pacific Air Forces.

Jan. 2, 1967.
In the famous "MiG Sweep" Bolo mission, F-4s from Ubon, Thailand, shoot down seven MiG-21s over the Red River Valley in North Vietnam.

Aug. 11, 1967.
Air Force F-105s bomb and temporarily close the mile-long Paul Doumer Bridge over the Red River at Hanoi.

Nov. 17-Dec. 29, 1967.
In Operation Eagle Thrust, C-141s and C-133s airlift paratroopers and equipment from Ft. Campbell, Ky., to Bien Hoa.

Jan. 1, 1968.
Battle of Khe Sanh begins. Air Force airlifters bring in an average of 165 tons of materiel daily during the 77-day siege.

Jan. 31, 1968.
North Vietnamese and Viet Cong launch Tet Offensive, attack bases all over South Vietnam, and undercut confidence and support for the war by the American public.

March 31, 1968.
President Johnson announces a partial halt of bombing missions over North Vietnam and proposes peace talks.

Strategic airlift, as provided by these C-141s, was critical to the war effort.

Nov. 1, 1968.
President Johnson halts all bombing of North Vietnam. Reconnaissance missions continue, as do "protective reaction" strikes if reconnaissance flights are fired upon.

March 18, 1969.
"Menu" operations begin. B-52s, operating under "special security and reporting procedures," bomb North Vietnamese and Viet Cong sanctuaries in Cambodia.

October 1969.
Air Force Magazine cover story, "The Forgotten Americans of the Vietnam War," ignites national concern for the prisoners of war and the missing in action.

March 6, 1970.
US military involvement in Laos is publicly acknowledged for the first time in a statement by President Nixon.

A flight of B-52s drops bombs on targets in North Vietnam.

Nov. 21, 1970.
Army-Air Force task force makes a daring attempt to rescue American servicemen from the Son Tay POW camp about 20 miles west of Hanoi.

March 30, 1972.
North Vietnam launches Easter Offensive, crossing the DMZ with more than 40,000 troops and 400 armored vehicles. The invasion is stopped and then turned back by US airpower.

April 6, 1972.
Bombing of North Vietnam, halted since Nov. 1, 1968, resumes.

April 27, 1972.
USAF F-4s strike Thanh Hoa Bridge with 2,000-pound TV-guided bombs, closing the bridge to traffic. Previously, 871 conventional sorties resulted in only superficial damage to the bridge.

May 10, 1972.
Operation Linebacker I, the sustained bombing of North Vietnam, begins.

May 11, 1972.
Air Force F-4s close the Doumer Bridge to traffic.

May 13, 1972.
Fourteen Air Force F-4s, with varying loads of 3,000-pound and 2,000-pound laser guided bombs, plus 500-pound gravity bombs, strike Thanh Hoa Bridge, taking out a span. The bridge is unusable for rail traffic for the rest of the year.

Dec. 18, 1972.
The US begins Operation Linebacker II, the 11-day bombing of Hanoi and Haiphong. Massive air strikes help persuade North Vietnam to conclude Paris peace negotiations.

Jan. 27, 1973.
The United States, South Vietnam, North Vietnam, and Viet Cong sign cease-fire in Paris. It becomes effective Jan. 28 in Vietnam.

Feb. 12, 1973.
Operation Homecoming, the return of 591 American POWs from North Vietnam, begins. All of the ex-POWs, who come from all military services, are processed through Clark AB, Philippines, to military hospitals in the United States, and from there they are quickly reunited with their families.

Feb. 21, 1973.
Laotians sign cease-fire. Bombing operations are halted, but communist cease-fire violations lead to B-52 strikes, which continue into April.

March 29, 1973.
MACV disestablished. Seventh Air Force moves to Nakhon Phanom AB, Thailand, and takes on dual role as US Support and Activities Group and 7th Air Force. Seventh/13th Air Force reverts to Det. 7 of 13th Air Force.

Operation Homecoming saw the return of 591 US POWs who had been held until war's end.

Aug. 15, 1973.
Air Force A-7Ds fly last US combat mission of the war, attacking targets near Phnom Penh, Cambodia, late in the afternoon. An EC-121 from Korat, landing after the A-7s, earns the distinction of flying the last US mission of the war.

April 30, 1975.
Saigon falls to North Vietnamese forces, finally bringing the long conflict in Southeast Asia to an end.

PERSPECTIVES

Recommended Reading

"*Air Force* Magazine Perspectives on Vietnam," *www.afa.org/magazine/perspectives/vietnam.asp* (Links to more than 50 articles).

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2 April 2003.
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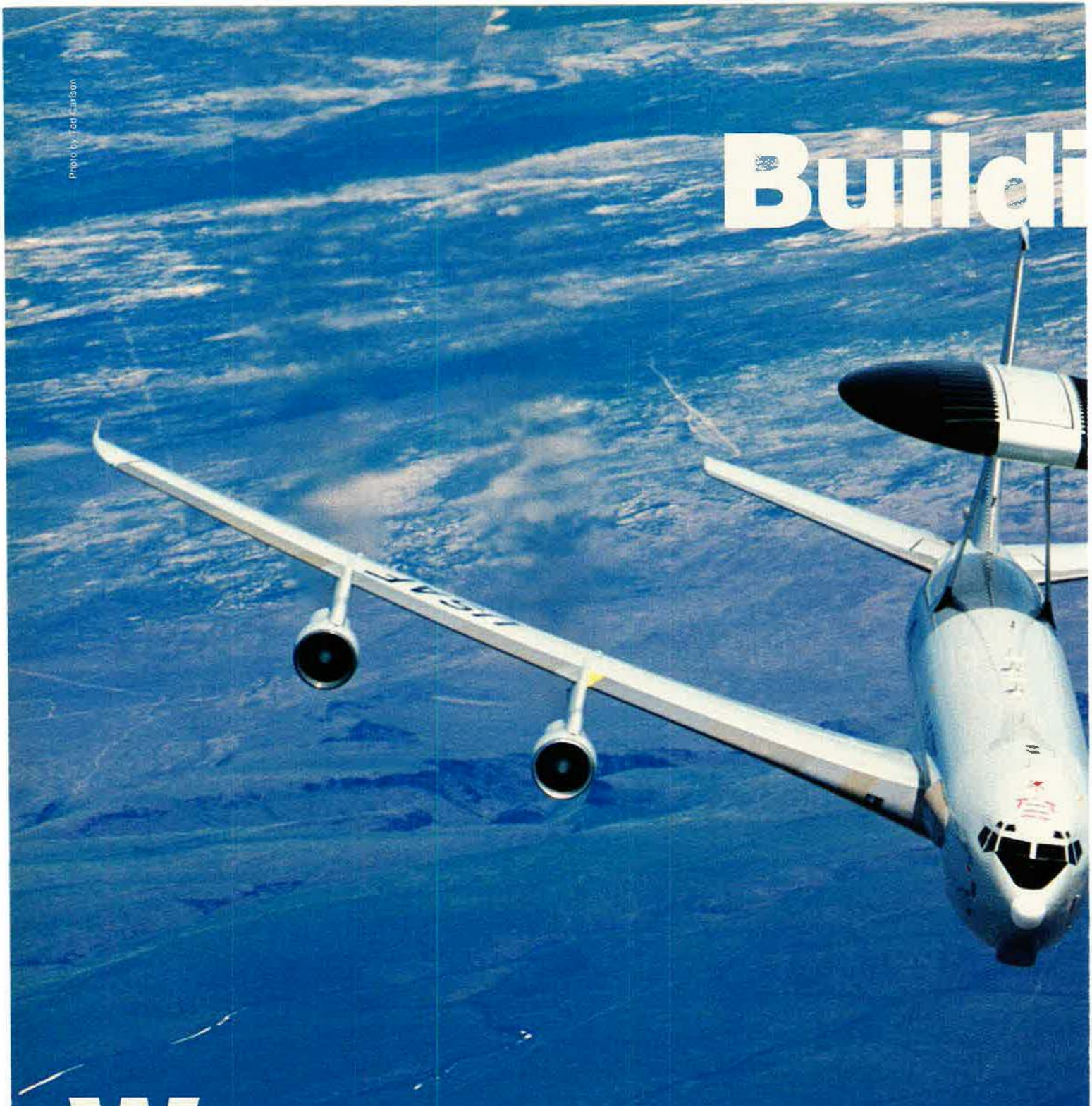


Photo by Ted Carlson

Buildi

When it comes to intelligence-surveillance-reconnaissance (ISR) operations, wartime lessons tend to be definitive. The US military learned quickly in Afghanistan and Iraq what it did not know, what it could not do, and what took too long to accomplish. These lessons are being rapidly incorporated into the Air Force's plans for improving its ISR capabilities.

US strategy today is based not on "mass" but on "overmatching power," which stems from speed and precision. War planners must quickly know exactly what things are and where they are located. This is the essence of the ISR mission.

Because fleeting targets must be struck quickly, the Air Force has placed a high priority on shortening the "kill chain," the sequence of steps taken to detect, find, and attack such a target. The Air Force's standing goal is to compress the required time to single-digit minutes, a standard that, today, cannot be met consistently. The key to shortening the kill chain is use of machine-to-machine connections, so that attacks are not slowed by human intervention at every stage of the process.

At other times, the key is persistence. USAF Maj. Gen. (sel.) Donald C. Wurster, intelligence director for US Special Operations Command, noted in Congressional testimony

ng Battlespace Awareness

USAF has a plan to improve its intelligence-surveillance-reconnaissance capabilities.

By Adam J. Hebert, Senior Editor

The United States has unmatched ISR capabilities, built in large part on manned Air Force's systems such as this E-3 AWACS aircraft, shown during a Red Flag exercise. The AWACS monitors and directs air traffic over combat zones

earlier this year that "persistent observation of a target" can sometimes be more important than a quick strike because of the "need to be able to locate and track a specific person."

He told lawmakers, "We need to find a person and then dwell on that individual to gain information about who he interacts with, where he goes, and what he does until we arrive at the point where either we want to pick him off or take him out to achieve our objectives."

There is an offensive aspect to good ISR as well. In 2003, the Unified Command Plan was updated to give US Strategic Command authority over the global information operations and command, control, communications, computer, and ISR (C4ISR) missions. STRATCOM quickly identified a need to give the US a lopsided advantage in this area.

Adm. James O. Ellis Jr., STRATCOM's recently retired commander, noted that DOD's "desired end state" is to have an ISR capability so good that it has a deterrent character all its own. The Air Force agrees, and the obverse is also true. In its latest "Transformation Flight Plan," released in February, officials note that denying ISR effectively forces an enemy to "fight blind, deaf, and dumb."

The US currently has "limited" ability to disrupt adversary C4ISR assets and the flow of information, the flight plan concedes, but keeping good ISR data from potential enemies

USAF photo by SSgt. Shane Cuomo

The E-8C Joint STARS provides detailed knowledge of the modern battlefield. The E-8 can identify and track moving ground vehicles for targeting behind enemy lines.

will help bring information superiority "under most circumstances."

This is a never-ending cycle. Ellis said that the US is "already in the ISR campaign" for future wars.

USAF Gen. Richard B. Myers, Chairman of the Joint Chiefs of Staff, considers the term "ISR" obsolete. He favors "battlespace awareness" to describe the intelligence-surveillance-reconnaissance mission.

Speaking at a conference earlier this year, Myers said, "I don't think that there's a distinct enough difference between the terms I-S-and-R anymore." He went on, "They're not really helpful as we try to define our own current strategic environment."

Improvements at Work

The lessons derived from recent conflicts are being studied closely, and, in some cases, they have yielded quick improvement. A case in point: Airmen operating ISR assets such as unmanned aerial vehicles have been given the ability to communicate with troops in the field.

During Operation Anaconda in Afghanistan, Predator UAV operators, working in the United States, watched the battle unfold in real time but were unable to relay critical tactical information to the battlefield airmen and soldiers who needed it most. This need for real-time intelligence in the field brought a change. US-based intelligence personnel interpreting UAV data can now communicate directly with fielded forces via laptop computers that the troops carry into battle.

US Joint Forces Command, during its review of lessons from Operation Iraqi Freedom, found that the hardest task was getting critical data into the hands of the "shooters"—those who need it most. Improving tactics and procedures is a big part of the solution, but new and improved systems will continue to play a vital role.

Brig. Gen. (sel.) Paul A. Dettmer, deputy director of ISR operations for the Air Staff, noted that the service is "investing heavily" in better systems. Global Hawk and Predator UAVs, for example, are now combat proven and are being procured aggressively.

Much of USAF's current ISR strength comes from its existing network of manned systems such as E-3 AWACS and E-8 Joint Surveillance Target Attack Radar System aircraft and unmanned spy satellites. Existing systems will remain in service for decades. The Air Force has extensive modernization and sustainment programs in place.

Officials also are hard at work on the next generation of capabilities. Air Force Secretary James G. Roche noted last year that space systems "are integral to modern warfighting forces, providing critical surveillance and reconnaissance information, especially over areas of high risk or denied access."

Ambitious plans for the bandwidth-enhancing Transformational Communications System and the Space Based Radar (which will take a portion of the Joint STARS' ground-surveillance mission into space) promise to offer new options to the warfighter in the next decade. However, Congressional appropriators in July slashed the Administration's 2005 funding request for these programs. Lawmakers cited concerns about cost and the technology challenges facing both programs. The Administration is appealing the cuts.

The Air Force hopes to introduce the next air-breathing ISR platform—the E-10A—sooner than originally

Northrup Grumman photo by Gene Yano

Unmanned systems are taking on a larger share of the ISR mission. Global Hawk, shown here, is so good at collecting intelligence that USAF must automate the processing of its vast information "take."

scheduled. The service now plans to field the system in three blocks—A, B, and C.

The E-10A will offer urgently needed cruise missile defense capabilities and an advanced ground moving target indicator capability. This variant will, eventually, assume the mission currently performed by Joint STARS.

The next variant, the E-10B, will provide an air battle management capability to complement and then replace the E-3 AWACS, when that platform needs to be retired.

Finally, the E-10C will provide a new signals intelligence capability to follow what is currently offered by the RC-135 Rivet Joint.

In an interview, Maj. Gen. (sel.) Stephen M. Goldfein said it was "past time to be very specific about a requirement" for this aircraft. Early support for E-10 development within DOD and on the Hill had languished because of a lack of understanding of the E-10's mission. Goldfein said lawmakers and the regional warfighting commanders have all been briefed on what the program offers, such as a level of ground-target "clarity" that Joint STARS sometimes cannot offer.

The Office of the Secretary of Defense has directed the Air Force to have an "orbit" of four E-10s ready for combat use in 2013. Under current plans, this orbit of E-10As would offer round-the-clock fly-in ISR coverage.

The Defense Acquisition Board in summer 2005 will decide whether the program is ready to move forward to the system design and development phase. Pending approval, production could begin in 2008.

Total quantities of E-10s required have not yet been decided, but officials have said in the past that the aircraft will probably not replace the 69 existing E-3, E-8, and RC-135 aircraft on a one-for-one basis.

The E-10, Goldfein said, will offer commanders a "huge networked node in the sky," which will lead to an overall improvement in ISR capabilities. It will provide "things we'd all desire but just can't do right now," he noted.

The Constellation

The E-10 serves as the centerpiece for the Air Force's proposed command and control (C2) constellation. The C2 constellation will cut

Boeing artist's conception

Plans call for the E-10, shown here in a Boeing artist's conception, to be the focal point of USAF's future command and control constellation. The E-10 may become operational in about a decade.

Meeting an Insatiable Demand

Officials have said for years that restraining demand is the key to moderating overuse of intelligence-surveillance-reconnaissance (ISR) systems, the lion's share of which are bought and operated by the Air Force. The Joint Staff, for example, has attempted to regulate calls for the Air Force's ISR systems, such as E-3 AWACS aircraft.

Combatant commanders are encouraged to ask for capabilities needed to accomplish their missions, not for specific platforms. Officials say some theater commander requests, particularly for AWACS, have actually been declined by the Joint Staff. (See "It Means 'We Didn't Buy Enough,' " July 2003, p. 62.)

The insatiable demand for battlefield knowledge means that today almost all the systems dedicated to ISR missions are considered low-density, high-demand (LD/HD). The demands are only expected to grow, and one official said the last thing the Air Force wants to do is create additional LD/HD capabilities.

The Air Force is now working more closely than ever with the combatant commanders to keep ISR demands and requirements in check. There is both a push and a pull to this coordination.

On the one hand, the Air Force went to the warfighting commanders to brief them on the E-10 program. This was done to ensure that the ISR "customers" understood the E-10 and its benefits and to ensure they would be on board and supportive of the program.

On the other hand, US Strategic Command was recently given oversight of DOD's global information and ISR operations (as part of the recent Unified Command Plan update). This should help align the Air Force's ISR plans with those of the primary warfighting customer.

As Adm. James O. Ellis Jr., then STRATCOM commander, told lawmakers in March, "Strategic Command is uniquely positioned to provide a global view of both intelligence needs and required future capabilities."

Ellis said that "combining a composite list of theater requirements with emerging technologies allows us to develop a comprehensive list of capabilities" needed to support the warfighter.

STRATCOM is "actively engaged in determining future airborne ISR needs," Ellis said, but "to be truly effective, we must find a more efficient means to influence the shape of DOD ISR procurement programs."

After dealing with a shortage of ISR capability and funding for years, USAF probably appreciates the support. But the Air Force also needs cooperation and input from the other services, as USAF's latest "Transformation Flight Plan" makes clear.

"What the Air Force needs from the other services and agencies," the plan explains, is a common, coordinated understanding of what the joint ISR requirements really are.

across systems to solve DOD's long-standing problem: "stovepiped" systems that were not designed to work together efficiently.

Col. Norman Sweet, the Air Force's C2 constellation group leader, described the situation in a paper: "An F-16 is a technological marvel capable of traveling several times the speed of sound and delivering pinpoint lethality," because weapons, avionics, engines, and other systems all "efficiently interact."

Achieving the same integration of multiple systems has been "lacking in military technology development," he wrote. "Multiple systems, with multiple missions [must] interact seamlessly together," continued Sweet.

The C2 constellation will help make this happen by ensuring that F-16s, E-10s, air operations centers (AOCs), and other systems can all coordinate. Horizontal integration (building connections between previously stovepiped systems) is the first step in connecting the various nodes needed to create an effective constellation.

The notional future C2 constellation will include "all the Air Force systems that provide input or receive and correlate" command, control, and ISR information, Sweet wrote. The ultimate goal is for everyone from combatant commander to battlefield air controller to have instant access to all necessary information.

An effective constellation will also address the problem of information overload. Senior officials have noted that some assets, such as Global Hawk, are so effective at collecting intelligence that they can't be used at full capacity. Processing all Global Hawk data is simply beyond the means of the available intelligence personnel, noted Brig. Gen. Kelvin R. Coppock, intelligence director for Air Combat Command.

Coppock said automatic target recognition systems should greatly streamline the process, allowing USAF to use Global Hawk at more than the one-third capacity that was possible during Iraqi Freedom. Automation will help turn streams of data into actionable intelligence and quickly send it across systems to the desired users.

Sweet said the benefits of horizontal integration include optimal use of constrained resources, improved situational awareness, enhanced time critical targeting, and reduced theater footprint—which in turn means less risk to deployed airmen.

USAF is adding the Link 16 data link to combat aircraft, providing a good example of horizontal integration. Link 16 transmits targeting information electronically, rather than through voice communication, which slows the process and increases the possibility of human error. Targeting information is sometimes passed by voice from a surveillance system to an AOC to an AWACS to a strike aircraft.

An initiative at the Air Force's Command and Control Battlelab, Hurlburt Field, Fla., could further speed things by linking the AOC directly to fighters equipped with Link 16. Col. Bruce Sturk, battlelab commander, has said that the Data Link Automated Reporting System (DLARS) will "give operators unprecedented levels of situational awareness." DLARS was to be evaluated this summer at the Joint Expeditionary Force Experiment 2004 and could be pushed into the field in less than six months, if deemed a worthwhile initiative.

This sort of integration, which allows information to be sent efficiently across systems, long has been a priority of the Chief of Staff, Gen. John P. Jumper, who has been an outspoken critic of "tribal" mentalities and systems that are only integrated internally. The Air Force's creation of a three-star office of warfighting integration at the Pentagon, led by Lt. Gen. William T. Hobbins, is but one example of the priority being placed on big-picture solutions to ISR limitations.

High Priority

The Pentagon also is counting on process improvements to help address tactical-level problems. Chief among those is a requirement to reduce fratricide, or friendly fire accidents. After operations in Afghanistan and Iraq, DOD identified fratricide prevention as its top priority. Although the rate of fratricide was low during the major combat phases of these two operations, military leaders believe the armed forces must do more to prevent such accidents. In its review of lessons from Gulf War II, JFCOM found that fratricide prevention "fell short of expectations."

Army Brig. Gen. Robert W. Cone, who led JFCOM's lessons learned study, said that eliminating fratricide requires two advances: accurate combat identification and advanced blue force tracking. (See "Better 'Blue Force' Tracking," June, p. 66.)

"In terms of combat ID, I don't think we've made a lot of progress in the last 10 years," Cone said last October. He also noted that tracking capabilities are good at the operations center level, but the shooters are too often in the dark about where friendly forces are.

In nonlinear battlefields with

USAF photo by Capt. Patricia Lang

High-quality ISR enhances the power of precision guided munitions. Here, Maj. Craig Baker (left) and Capt. Mitch Simmons assess the damage caused by a PGM at a palace once used by Saddam Hussein.

mingled forces, friendly force tracking, known as blue force tracking, becomes more important and yet more challenging, Cone said. He emphasized that the information should be pushed down to the "lowest level"—to those pulling the triggers and releasing the bombs.

Emerging technologies will help. Radio frequency "dog tags" that broadcast positions and infrared "bug lights" visible only under night vision goggles are being deployed. DOD also is attempting to push the best practices developed in the combat zones into common use.

Officials at the Air Force's C2ISR Center at Langley AFB, Va., note that there is still a lack of standardization in these blue force tracking systems but that much progress has been made.

A center fact sheet stated that the time in which updates of the locations of ground units are sent to the AOC, in some cases, has been "reduced from six to 12 hours to minutes." Current intelligence about the location of friendly forces is the critical first step in eliminating fratricide.

The fact sheet continued: "Although friendly fire incidents cannot be totally eliminated, [the use of blue force trackers] will greatly reduce fratricide caused by improper combat identification."

Center officials added, however, that technology is no cure-all. Doctrine, tactics, techniques, and procedures must also be refined to further reduce the number of friendly forces being accidently killed.

The BDA Delay

The Air Force wants to take ISR assets in a new direction to provide better and more timely battle damage assessment (BDA). The longstanding BDA process dictates that US forces confirm that a target has been destroyed before moving on to the next target. Historically, this served two purposes. Planners would know a target had been missed and send a new strike to finish the job. Conversely, planners would not waste sorties "killing" a dead target.

A new era of weapons effectiveness has now turned the existing BDA protocols into a limitation, however. As Maj. Gen. Tommy F. Crawford, C2ISR Center commander, said, the Air Force now has access to precision guided munitions offering better than 90 percent reliability. Perhaps the time has come to "make a leap of faith" and presume that targets have been destroyed, he said.

USAF photo by Capt. Roger Burdette

Battle damage assessment needs to be faster. Here, SSgt. Tony Newbern (left) and MSgt. Eddy Dominguez, explosive ordnance disposal technicians, find an unexploded bomb embedded in a Baghdad roof.

In most cases, performing BDA is a lower priority than eliminating additional targets. Yet, Crawford said, the ISR systems needed to plan the next attack are frequently held back to support BDA.

Jumper frequently has stated that operations planners must take into consideration the fact that a Global Positioning System-guided bomb will hit its target "more than 90 percent of the time" even though "you still don't know if you did the job or not until you have a chance to look to see if the [desired] effect was achieved."

In the current era of nonlinear battlefields—meaning battlefields with no fronts—incrementally stepping from one target to the next can slow things down to an unacceptable degree. Jumper said USAF needs to consider innovative ways to get its BDA information faster.

In combat, the Air Force often has hundreds of airplanes with advanced sensors flying over target areas. USAF carefully plans missions into a target area, so it follows that the same care can be used to plan missions out of a target area. "We can send those same airplanes over certain places ... to check the damage," said Jumper. He added, "Something as simple as that, using equipment that we have today, could profoundly help our BDA problem."

The Air Staff's Dettmer said that Jumper has instructed Dettmer's office to check into its BDA assumptions, because "federated BDA" had tremendously slowed down target planning and impacted operations in recent years.

"You couldn't get an agreed-to position [on whether a strike was successful] out of the federation of BDA producers," Dettmer said, even for targets the Air Force was "98.9 percent" confident had been destroyed.

Unfortunately, "because of the lengthy BDA process we traditionally go through, you may wind up having to restrike [the target]," he said.

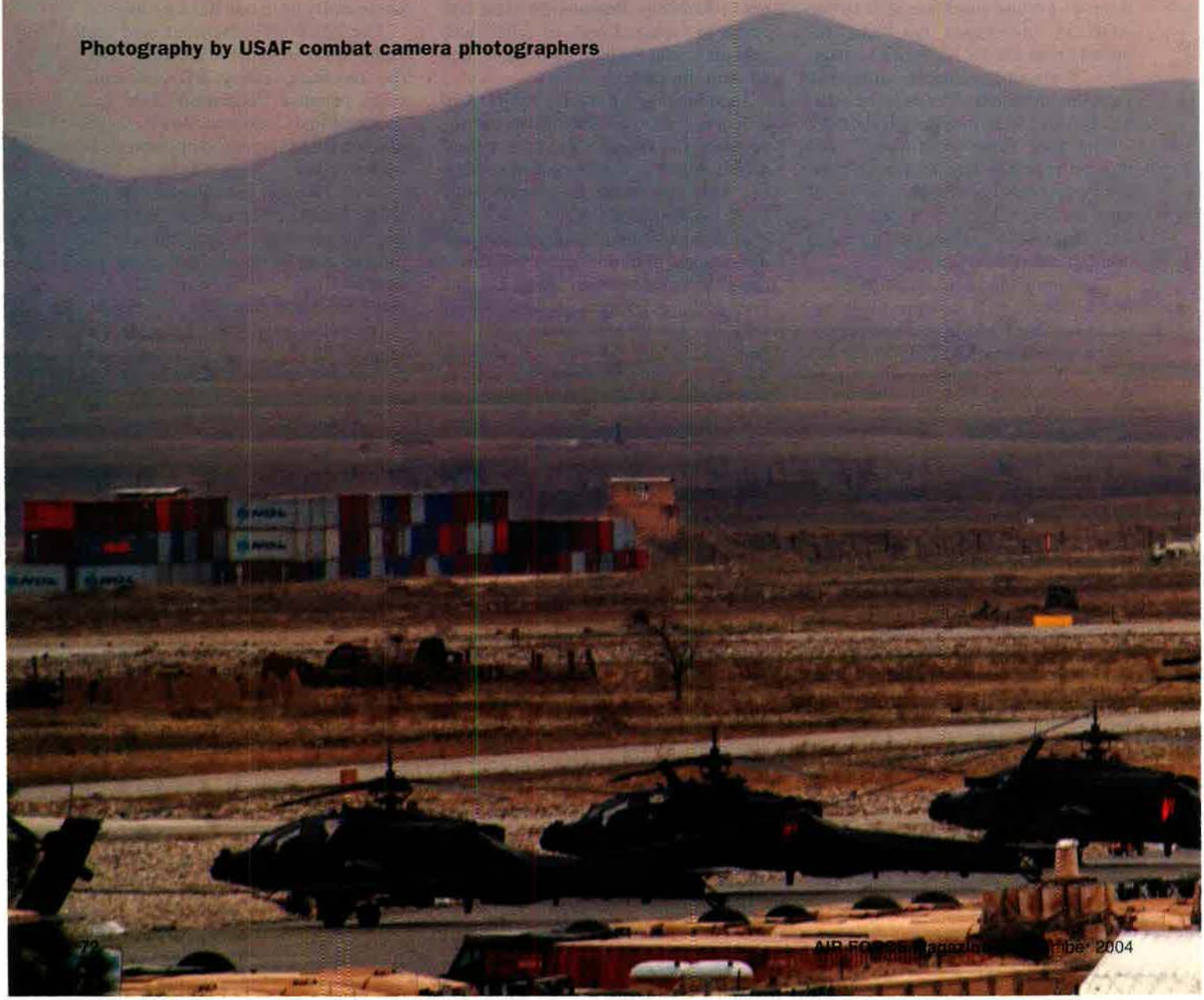
The problem also aggravates future planning. When a Global Hawk unmanned surveillance aircraft or a U-2 spyplane is tasked to do BDA, "you've taken that asset away from target development and time-critical targeting and impacted a whole preplanned problem set," Dettmer noted.

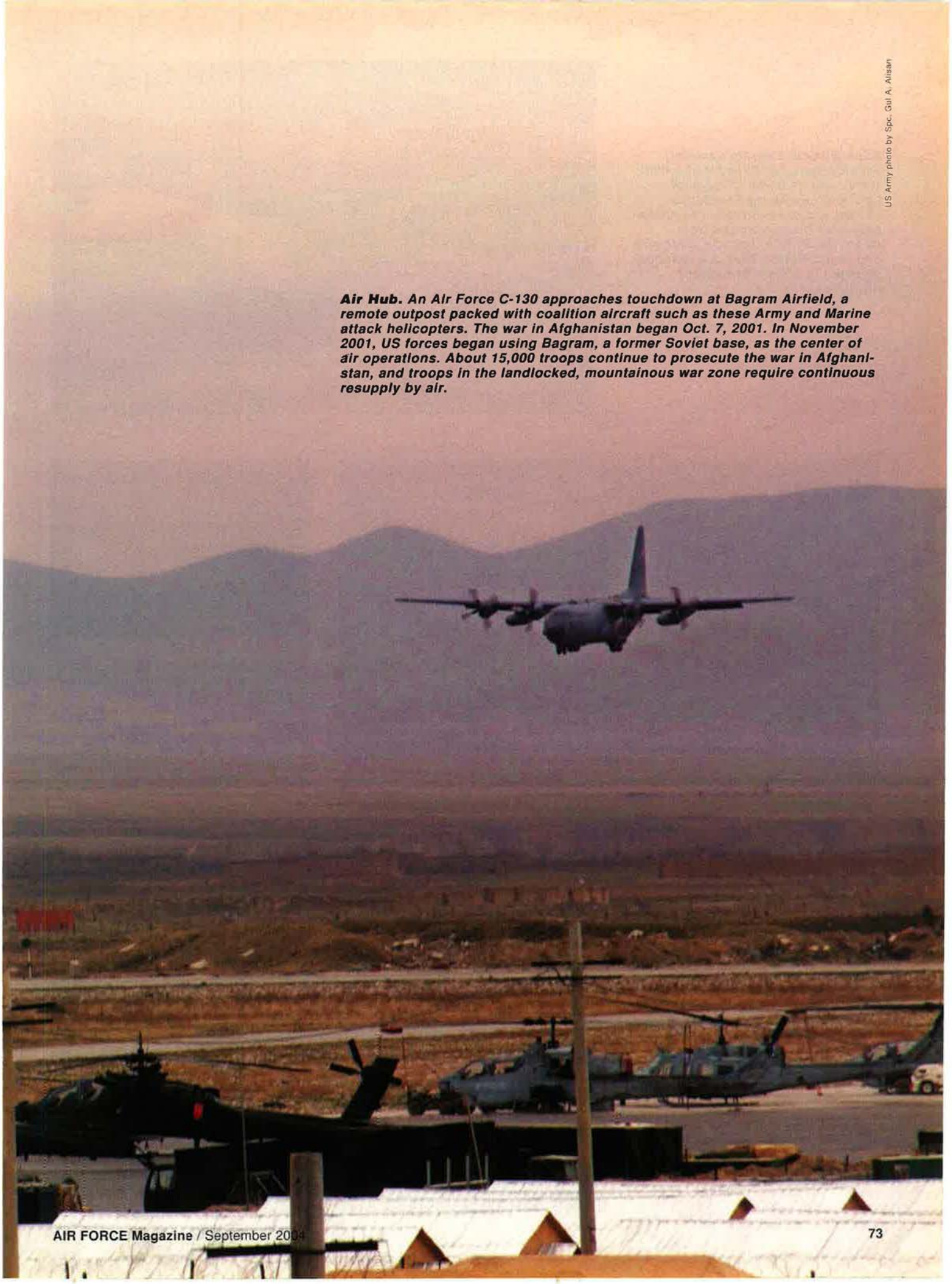
Smoothing out BDA is not a systems problem, he said. It is a problem primarily of tactics, techniques, and procedures. The means for collecting the intelligence are out there. The solution is in "breaking down long-existing barriers, in a lot of cases within elements of the Intelligence Community that ... refused to share what we call 'crown jewels' of intelligence for a variety of good reasons—and in some cases a variety of bad reasons," Dettmer said. ■

In the badlands of Afghanistan, USAF airmen and their allies continue Operation Enduring Freedom.

Afghan Duty

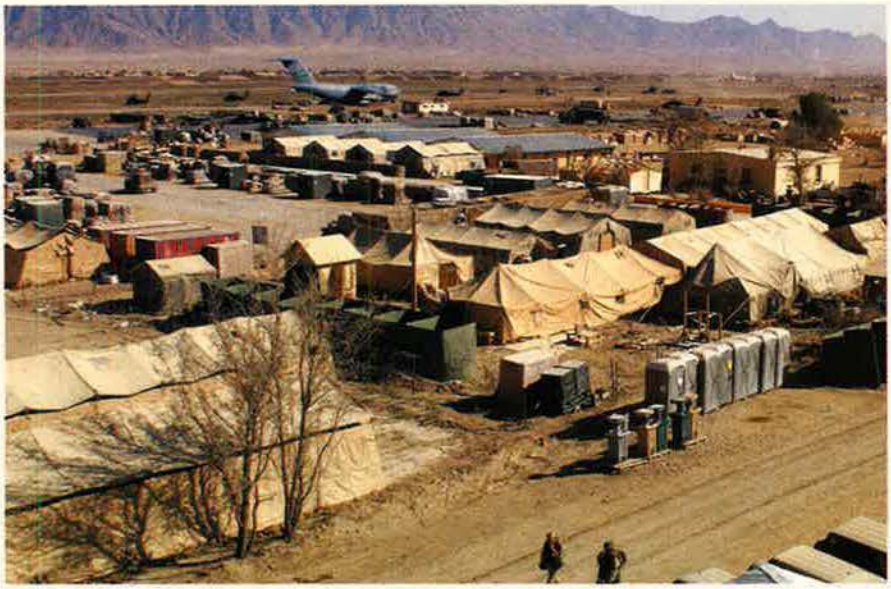
Photography by USAF combat camera photographers





US Army photo by Spc. Gul A. Aisan

Air Hub. *An Air Force C-130 approaches touchdown at Bagram Airfield, a remote outpost packed with coalition aircraft such as these Army and Marine attack helicopters. The war in Afghanistan began Oct. 7, 2001. In November 2001, US forces began using Bagram, a former Soviet base, as the center of air operations. About 15,000 troops continue to prosecute the war in Afghanistan, and troops in the landlocked, mountainous war zone require continuous resupply by air.*



USAF photo by SSgt. Derrick C. Goode

Bare Bones. *Bagram's military encampment, reminiscent of a Wild West town, is home to many of Operation Enduring Freedom's airmen and other forces. The austere base also houses troops from Australia, Britain, Canada, Germany, and South Korea. They are routinely engaged in action throughout Afghanistan.*

US Army photo by Sgt. 1st Class Joe Belcher

US Army photo by Sgt. Marlin K. Newton

On-Call Airmen. *At Bagram, hard by the soaring mountains of Afghanistan, the Air National Guard and Air Force Reserve Command are ever-present. Pictured at left is an AFRC C-130 being tended by Bagram ground personnel. Above: A C-130 brings out patients injured in a bomb blast in Kandahar.*

US Army photo by Spc. Gul A. Aiisan

Warthog War. *The Air Force's A-10 close air support aircraft have been workhorses in Afghanistan. Because of their age, they require steady upkeep. Here, an unidentified Air Force crew chief puts an A-10 engine through its 400-hour maintenance routine.*

US Army photos by Sgt. 1st Class Joe Belcher

On Expedition. *The durable A-10 is ideally suited for action in the extreme conditions of Afghanistan. Above, Warthogs with the 354th Expeditionary Fighter Squadron sit on the flight line at Bagram. These aircraft were deployed from Davis-Monthan AFB, Ariz. At right, an A-10 departs for yet another mission against Taliban and al Qaeda fighters.*

US Army photo by Spc. Gul A. Alisan

USAF photo by SSgt. Derrick C. Goode

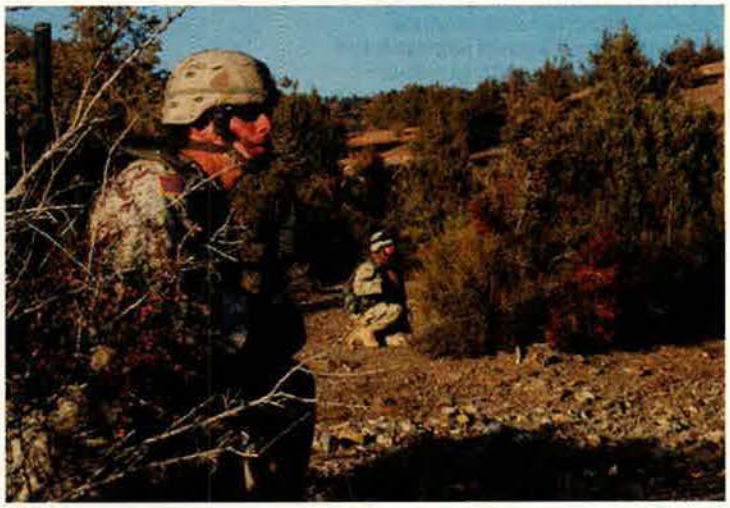
Hard Duty. *Large numbers of airmen have cycled through Bagram over the past three years. Far left, A1C Nicholas W. Canankamp, weapons loader, readies weapons for an A-10 in 2002. In 2004, Capt. Michael C. Harrell, A-10 pilot (at left), goes through his preflight checklist.*

USAF photo by SSgt. Cherie A. Thurlby

USAF photo by Capt. Allen Heritage

Allies. *A Norwegian F-16 (top) goes into action over Afghanistan. Airmen from Norway have provided air cover for the cargo aircraft operating out of Bagram. At right, USAF Maj. Beau Rogers displayed an American flag while refueling his Dutch F-16 in 2003. Rogers was an exchange pilot serving with the Royal Netherlands Air Force.*

USAF photo by 2nd Lt. Rebecca Garland



US Army photo by Spc. Jory C. Randall

Eyes and Ears. *USAF's battlefield airmen play an especially prominent role in Afghanistan. At far left, Capt. Danny Stout, a B-52 pilot serving as an air liaison officer, looks up as he guides an A-10 to a target. Stout is serving a two-year tour with Army units.*

SSgt. Jason Hoover (above, foreground), a tactical air control party airman, is on patrol near the Afghanistan-Pakistan border. Hoover, part of the 20th Air Support Operations Squadron, was attached to the Army's 10th Mountain Division.

US Army photo by Sgt. 1st Class Joe Belcher

Lifeline. *Now about to enter its fourth year, the war in Afghanistan shows no signs of ending any time soon. C-17 transports (such as the one shown above, arriving from Charleston AFB, S.C.) have proved invaluable because of their range, payload, and ability to operate from rough airfields. In the photo at right, US airmen and soldiers prepare a C-130 for the first airdrop of heavy equipment to forces in a combat zone since the Vietnam War. The 2003 airdrop was requested by Army forces operating in a remote, nearly inaccessible area of Afghanistan. The photo below shows one of the C-130s that delivered more than 49,000 pounds of materiel in that effort.*

USAF photos by SSgt. Cherie A. Thurlby

War Continues. *At left, a C-130 delivers fuel, ammunition, and supplies to ground forces by low-altitude airdrop. Largely out of the public's eye, airmen in Afghanistan continue to mount effective operations in the Global War on Terror, and they will for some time to come.* ■

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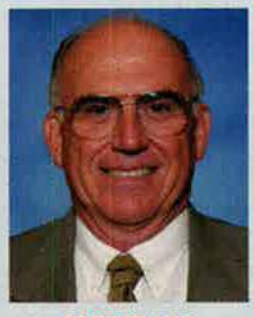

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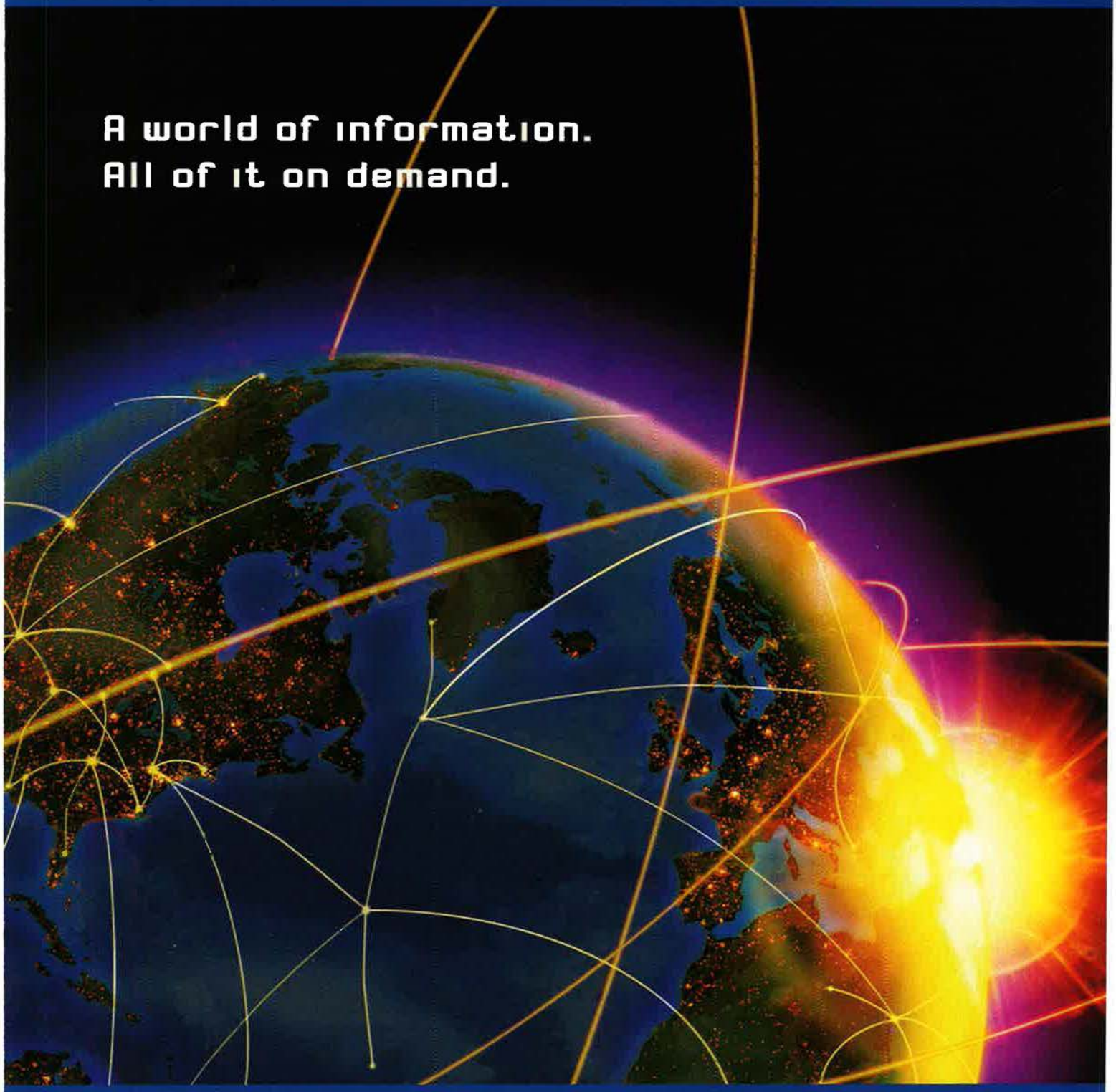

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Air Force pilots today are far more likely to tangle with SAMs than with enemy aircraft.

By Rebecca Grant

Lockheed Martin illustration by K. Price Randel

The Missing Aces

On Feb. 28, 1994, USAF Capt. Robert Wright, flying in an F-16, shot down three Serb Galeb aircraft over Bosnia. The outcome of the engagement is depicted here in this painting by Lockheed Martin's K. Price Randel.

THE TERM "ace" has been around since the early days of World War I. Evidently, it was first used in reference to Adolphe C. Pegoud, a Frenchman who, after downing several enemy aircraft, was himself killed in 1915. The word itself is likely an English corruption of the French expression "l'as," used at the time to mean "the best" or "the top." Indeed, French newspaper writers of the day mourned the fallen Pegoud as "l'as de notre aviation."

Becoming an ace—scoring five aerial victories—long has been a badge of high achievement. Across its 97-year history, the Air Force (including predecessor organizations) has recognized a total of only 816 of these airmen.

And the achievement has become increasingly rare. From a high of 708 in World War II, the USAF ace count fell to 39 in the Korean War and three in the Vietnam War. On Oct. 13, 1972, Capt. Jeffrey S. Feinstein, an F-4 weapons system officer, used an AIM-7 missile to down his fifth North Vietnamese MiG-21. Since then, there have been no new aces.

Thus, the Air Force has gone for three decades without minting a new ace. Just 10 USAF airmen since Vietnam have recorded even as many as two aerial victories. Of those 10, only three are credited with three kills. No one has four.

The prime reason is only too obvious: Air Force aircrews today are far more likely to tangle with surface-to-air missiles than with enemy fighters. During Operation Iraqi Freedom in 2003, the Iraqi Air Force stayed on the ground—much to the chagrin of coalition fighter pilots. Challenges from enemy fighters have been nearly as scarce in other recent US operations.

Is the age of the ace finally over? Is the ace standard still the best way

to recognize achievement and motivate aircrews?

By mid-World War I, all belligerents had accepted the standard of five aerial victories to denote an ace, and the concept was well-established by the time American forces entered the war.

The First Ace

A few American pilots flying for France or Britain had already registered five aerial victories, but the first American ace with American training and flying with an American squadron was Capt. Eddie V. Rickenbacker. At the time, Lt. Douglas Campbell was declared the first ace, but Rickenbacker's fifth kill, confirmed a few days later, took place before Campbell's fifth. According to Rickenbacker, Campbell was "a silent and self-possessed fellow" who often went on voluntary patrols "looking for trouble."

Rickenbacker soon surpassed Campbell. Rickenbacker had all the qualities of the early aces: outstanding mechanical aptitude, superb vision, aggressive but thoughtful tactics. To avoid jams at critical moments, he meticulously loaded his own ammunition. He logged the last two of his 26 victories on Oct. 30, 1918, ending the war as America's leading ace.

For sheer scope and magnitude, World War II stands as the peak of aerial combat. Airmen of the US Army Air Forces amassed nearly 16,000 aerial victory credits, and 708 pilots became aces.

They found rich hunting grounds. The skies were full of aircraft, and there ensued a prolonged, bloody contest to control the air and dictate the terms of combined arms campaigns.

In the 1940s, the Army Air Forces had tightened the rules determining who got to call himself an ace. In World War I, the US had followed the more-liberal French crediting rules; when an enemy aircraft was shot down, all pilots who took part in the engagement received a whole victory credit. Thus, a single downed aircraft could result in several "credits." In World War II, however, the US adopted the more-restrictive British system, in which the number of victory credits was equal to the number of aircraft shot down. If two pilots participated in a single shootdown, each would receive a half credit.

The aces of World War II became newsreel heroes back home. These men shared many of the traits that led Rickenbacker and his World War I comrades to success. Spotting the enemy first was paramount. Good gunnery counted, too. In fact, top USAAF scorer Maj. Richard I. Bong was a gunnery instructor before he got into combat.

Capt. Eddie Rickenbacker was the leading US ace of World War I, with 26 victory credits. Pictured are: (l-r) 1st Lt. Joseph Eastman; Capt. James Meissner; Rickenbacker; 1st Lt. Reed Chambers; and 1st Lt. Thorne Taylor.

Leading aces such as Bong and Col. David C. Schilling took on several enemy aircraft at once. Schilling, flying a P-47 with the 56th Fighter Group, was already an ace three times over when he encountered nearly 100 German aircraft on a big mission on Dec. 23, 1944. He attacked and downed three Bf-109s and two FW-190s in that single engagement. Schilling wound up his war with 22.5 aerial victories in just 132 sorties.

It took months and years for the leading scorers to amass their kills. In the Southwest Pacific, Maj. Thomas B. McGuire Jr. shot down 38 enemy aircraft, the first in August 1943 and last in December 1944. Flying in Europe, Lt. Col. Francis S. Gabreski produced his total of 28 kills between August 1943 and July 1944. Bong, who also flew in the Southwest Pacific, scored his first two kills in late December 1942 and his 40th and last on Dec. 17, 1944, following a five-month publicity tour. After that, Gen. George C. Kenney pulled Bong permanently from combat.

World War II's huge victory counts owed much to the intense nature of that "total war" and the gigantic scale of its air combat. The struggle for air superiority took unending effort and used up thousands of aircraft. For example, the Germans produced more than 33,000 of their mainstay Bf-109 fighters, but few survived the war.

Into Korea

The next conflict to produce USAF aces was the Korean War. Some World War II luminaries such as Gabreski became aces all over again.

Gabreski added 6.5 victories in Korea to bring his two-war total to 34.5 victories, making him third on the list of all-time USAF aces. Five others on that list also had credits in both World War II and Korea.

Overall, Air Force aircrews (including a few allied pilots attached to USAF units) shot down 897 enemy aircraft during the Korean War, and 39 airmen became aces. Included in these numbers were "jet-to-jet" aces, the first of whom was Maj. James Jabara, who scored his fifth and sixth MiG kills on May 20, 1951.

The Vietnam War brought even more change, much of it resulting from the Air Force's use of two-man fighter aircrews. Whenever a fighter crew shot down an enemy fighter aircraft, both the pilot and the backseat weapons system officer (WSO) would receive a full victory credit.

In this way, the title of ace was conferred upon two Air Force WSOs: Feinstein and Capt. Charles B. DeBellevue. Air Force pilots, weapons system operators, and even two B-52

gunners scored victories, with a combined total of 247 aerial victory credits. Vietnam aircrews scored most of their kills with heat-seeking air-to-air missiles like the AIM-7 or AIM-9.

There were also several gun kills with the 20 mm and a few "maneuvering" victories in which airmen simply flew their opponents into the ground.

The Vietnam War produced only three official USAF aces: Feinstein, DeBellevue, and Capt. Richard S. Ritchie. All three won their laurels in 1972, a period of intensified air activity.

The need to improve its air combat skills was one of the biggest lessons that the Air Force took away from its experience in Vietnam. Red Flag, aggressor squadrons, and other programs pushed pilots to a higher level of skill. New fighters such as the F-15 and F-16 were designed to guarantee American airmen the advantage.

World War II produced far more air combat—and aerial victories—than any other war. Some 700 Army Air Forces pilots became aces. One of them was Maj. Richard Turner, who was credited with 11 kills.

Col. Francis "Gabby" Gabreski had victories in two wars—28 kills in World War II and another 6.5 in the Korean War. His total of 34.5 victories is third-highest in Air Force history.

"Near Aces"

These factors all came together over Iraq in the 1991 Gulf War. F-15C pilots scored 31 kills of Iraqi aircraft ranging from top-line MiG-29 and Mirage F-1 fighters to Soviet-built helicopters.

There were a few "near aces." Two F-15C pilots topped the list with three kills apiece, but one victory for each came after operations technically had ceased.

Capt. Thomas N. Dietz and 1st Lt. Robert W. Hehemann were both members of the 36th Tactical Fighter Wing. On Feb. 6, 1991, they were on combat air patrol (CAP) east of Baghdad when an E-3 AWACS notified them of Iraqi aircraft taking off from a nearby airfield. The Iraqi fighters were on the deck at 100 feet and trying to flee to Iran—as several dozen had since late January.

"The trick was to get to them before they got to the border," Dietz recalled. The F-15s ran north and then did a right-hand turn to close in behind the Iraqis. Hehemann shot down two Su-25s and Dietz shot down a pair of MiG-21s, all with AIM-9s.

"We were at the right place at the right time," said Dietz.

On March 22, 1991, after the war had ended but while Desert Storm was still running, the pair again found themselves in the right place. Coalition pilots were patrolling a no-fly zone, which at that time covered all of Iraq and only applied to fixed-wing aircraft.

"We'd see a lot of helicopters," said Dietz. "The difficult part was finding a fighter or a bomber."

Dietz and Hehemann spotted a Su-22 and a PC-9 light turboprop flying at about 1,000 feet. As they later learned, the Su-22 was on its way home from bombing Kurds in northern Iraq and the PC-9 was acting as the forward air controller for the Su-22. Dietz engaged the Su-22 at 3,000 feet, sending an AIM-9 "right up his tailpipe." When the Su-22 exploded, the PC-9 pilot ejected. Since Hehemann had still been pressing the engagement of the PC-9, he was awarded the victory.

Six other Gulf War pilots had two aerial victories. Capt. Robert E. Graeter took down two F-1 Mirages on Jan. 17, 1991, the first night of the war. He hit one with an AIM-7 and maneuvered the other into the ground. Ten days later, Capt. Jay T. Denney shot down two MiG-23s with AIM-9s. That same day, Capt. Benjamin D. Powell killed an F-1 Mirage and a MiG-23. Capt. Anthony R. Murphy eliminated two Su-22s

on Feb. 7, 1991. Capt. Rhory R. Draeger claimed a MiG-29 on Jan. 17 and a second victory, a MiG-23, on Jan. 26.

Capt. Cesar A. Rodriguez downed his first enemy aircraft, a MiG-29, without firing a shot. On Jan. 19, Rodriguez and his wingman, Capt. Craig W. Underhill, were on a daylight mission tracking two MiGs that darted back into the safety of a SAM belt around Baghdad. Then, a second pair of MiG-29s closed in on them. Suddenly a MiG-29 had a radar lock on Rodriguez at a distance of about eight miles—"well inside his missile range," Rodriguez said of the Iraqi pilot. Rodriguez executed defensive maneuvers and used the F-15's electronic countermeasures. "I kept him off until [Underhill] could target him and take him out," said Rodriguez.

One MiG-29 was gone, but now Rodriguez was in a visual merge with the second MiG-29. "I had to get a visual ID on him," Rodriguez said. "It turned into a single circle type of fight," with the F-15 and MiG-29 locked in a dogfight that began at 8,000 feet. "By the time it was all over, we were both below 300 feet," said Rodriguez. But the F-15 pilot held the advantage. When the Iraqi MiG-29 tried a Split-S to get under Rodriguez, he miscalculated and hit the ground.

"The total was one missile expended, two MiG-29s killed," Rodriguez later said of the engagement.

A week later, on Jan. 26, 1991, Rodriguez was on CAP when an AWACS spotted three MiG-23s taking off out of H-2 airfield in western Iraq. The Air Force four-ship spread out line abreast, headed west, and killed all three MiG-23s, giving Rodriguez and flight lead Draeger their second kills.

The near-aces of the Gulf War found that training and opportunity made for success. Yet the overall numbers of aerial victories were less than many anticipated, especially given that Iraq had more than 700 combat aircraft at the time.

The Balkan Conflicts

In the mid-1990s, the Air Force was engaged in a number of air combat operations over the Balkans in Europe. It was during one of these engagements that an airman scored three victories in a single day—something not seen since Maj. George A. Davis Jr. pulled it off during the Korean War.

In 1994, Bosnia-Herzegovina, once a province of Yugoslavia, was entering its third year of civil war. The United Nations had ordered the imposition of a no-fly zone over the area.

In the predawn hours of Feb. 28, 1994, Capt. Robert G. Wright, in an F-16, was conducting a patrol within that no-fly zone when six Serbian Galeb aircraft took off from Udbina, an airport in a Serb-held part of Croatia. The Galebs were en route to bomb a Bosnian Muslim munitions factory near the town of Novi Tarvnik.

A US AWACS radar aircraft picked up the flight and so did Wright, who came to lower altitude to see the six Galebs forming up for their bombing runs. Wright later said he joined up as No. 7 in trail.

Wright was in position to shoot down all six of the slower Galebs, but, because this was a UN operation, he needed clearance to fire. He also had to read to the Serb pilots a warning, printed on his kneeboard.

By the time the AWACS cleared Wright to engage, all six Galebs were headed north. Wright got the first Galeb with an AIM-120 fired over a distance of 5,000 feet. "The missile jumped off the rail and there was a huge fireball," Wright remembered. Moments later he bagged the second Galeb with an AIM-9.

Air Force Aerial Victory Credit Totals by War

World War I	1,471
World War II	15,863.6
Korean War	897
Vietnam War	247
Gulf War I	37
Bosnia	4
Kosovo	5
Afghanistan	0
Gulf War II	0
Total	18,524.6

Air Force Aces by Conflict

World War I	70
World War II	708
Korean War	39
Vietnam War	3
Total	816

Source: Air Force Historical Research Agency. As of Aug. 9, 2004.

In Vietnam, USAF Capt. John Madden (l) had three victories. Capt. Charles DeBelleveue (center) had six, making him USAF's top ace. Capt. Richard Ritchie (right) had five, and was USAF's first Vietnam ace.

Wright then lined up the third. He was so close that he started to go for the F-16's guns "just out of instinct," he said in a 1998 interview. Then Wright noticed the outline of a city in the background behind his target. If he gunned the Galeb, stray 30 mm rounds might hit houses, so Wright used another AIM-9 for the third kill.

By now he was low to the ground and low on fuel and had to break off the attack. Behind him was another flight of F-16s. Capt. Stephen L. Allen fired an AIM-9 and brought down a fourth Galeb.

Opportunity Forgone

With a faster clearance from the AWACS, Wright might have had time to shoot down all six Galebs. But that was the nature of combat operations in the no-fly zones of the 1990s. Tight rules of engagement demanded double validation of targets.

The same rules applied five years later during Operation Allied Force, NATO's 78-day air campaign over Serbia and Kosovo. In that war, only four Air Force pilots were cleared to engage Serbian MiG-29s.

Capt. Michael K. Shower, an F-15C pilot, was part of a 16-aircraft escort for F-117s and B-2s on the first night of the war. The air operation was divided into northern and southern packages. Shower was in the northern package when he heard an AWACS call out "splash one MiG-29" and knew someone in the southern package had scored.

It was none other than now-Lt. Col. Cesar A. Rodriguez, bringing his combined Desert Storm-Allied Force total to three victories. Rodriguez and his wingman marked a MiG-29 taking off from Pristina airfield, heading north then turning back to the southwest. "It was obvious he [the MiG-29] was on a prebriefed vector to intercept the strike package," said Rodriguez. Once he ensured a clear field of fire, Rodriguez launched his AMRAAM. The MiG-29 "exploded over the western mountains of Kosovo," said Rodriguez. Snow on the mountains reflected the tremendous flash. "It was like 10 or 15 football fields right next to each other. It just lit up the night sky like nothing I've ever seen before."

Airman Magazine photo by TSgt. Jack Braden

Aerial victories have become rare. Col. Cesar Rodriguez recorded three kills in the 1991 Persian Gulf War and Operation Allied Force over Kosovo. Rodriguez is shown here at Langley AFB, Va.

Two minutes later, Shower spotted an unidentified aircraft launching out of Batajnica airfield north of Belgrade—a known MiG-29 base.

Cleared to engage, Shower fired two AIM-120s but missed. Now the MiG-29 was closing in on him and nearby F-117s. Adrenaline surging, Shower held his ground. "I didn't think I had a choice of turning and running away," he later told the Nellis base newspaper. "You've got a MiG-29 running around in the area, and there is a chance he could get lucky and find a stealth."

No one knew that better than an F-117 pilot who saw Shower's first two missiles streak past him. The F-117 was just 2,000 feet from Shower's F-15C. Shower took one more shot and this time, the AIM-120 found its mark.

Two days later, ANG Capt. Jeffrey C. Hwang chalked up two victories. He engaged a MiG-29 leader and wingman, both at close range, with AIM-120s. Lt. Col. Michael H. Geczy, flying an F-16CJ, also got a MiG-29 several days later on April 5, 1999. Geczy's kill brought USAF's Balkans total to nine.

The count has not changed in five years. In neither Enduring Freedom (2001-02) nor Iraqi Freedom did any enemy aircraft come up to challenge coalition fighters.

US dominance does not mean other nations have given up on air combat. In the recent Cope India exercise, advanced US F-15Cs took on fighters from the Indian Air Force. The F-15s had their hands full. USAF officials have reported that the Indian Air Force came out ahead much of the time.

A peacetime exercise is not the same as full-fledged combat. Still, talented pilots come from all nations. The existence of capable foreign-built fighters and a core of dedicated pilots will keep the air combat game alive.

Anointing aces in past wars was all about motivating warriors. In modern air and space operations, ace status is not the only possible standard of excellence. Rodriguez said he believes in finding other ways to motivate warriors, be they aircrews in the air or security forces on the ground.

Perhaps never again will USAF pilots see what World War II aces Schilling or Bong saw—five, 10, even 50 enemy fighters coming out of the sun or lurking under a cloud layer, but the consensus is to keep the historical ace standard.

"I think five victories should remain the standard," said Wright. "There were a lot of brave pilots who have earned the honor of being an ace, and any other standard would in my opinion degrade the honor. No need to lower the bar." ■

Rebecca Grant is a contributing editor of Air Force *Magazine. She is president of IRIS Independent Research in Washington, D.C., and has worked for* RAND*, the Secretary of the Air Force, and the Chief of Staff of the Air Force. Grant is a fellow of the Eaker Institute for Aerospace Concepts, the public policy and research arm of the Air Force Association's Aerospace Education Foundation. Her most recent article, "Dien Bien Phu," appeared in the August issue.*

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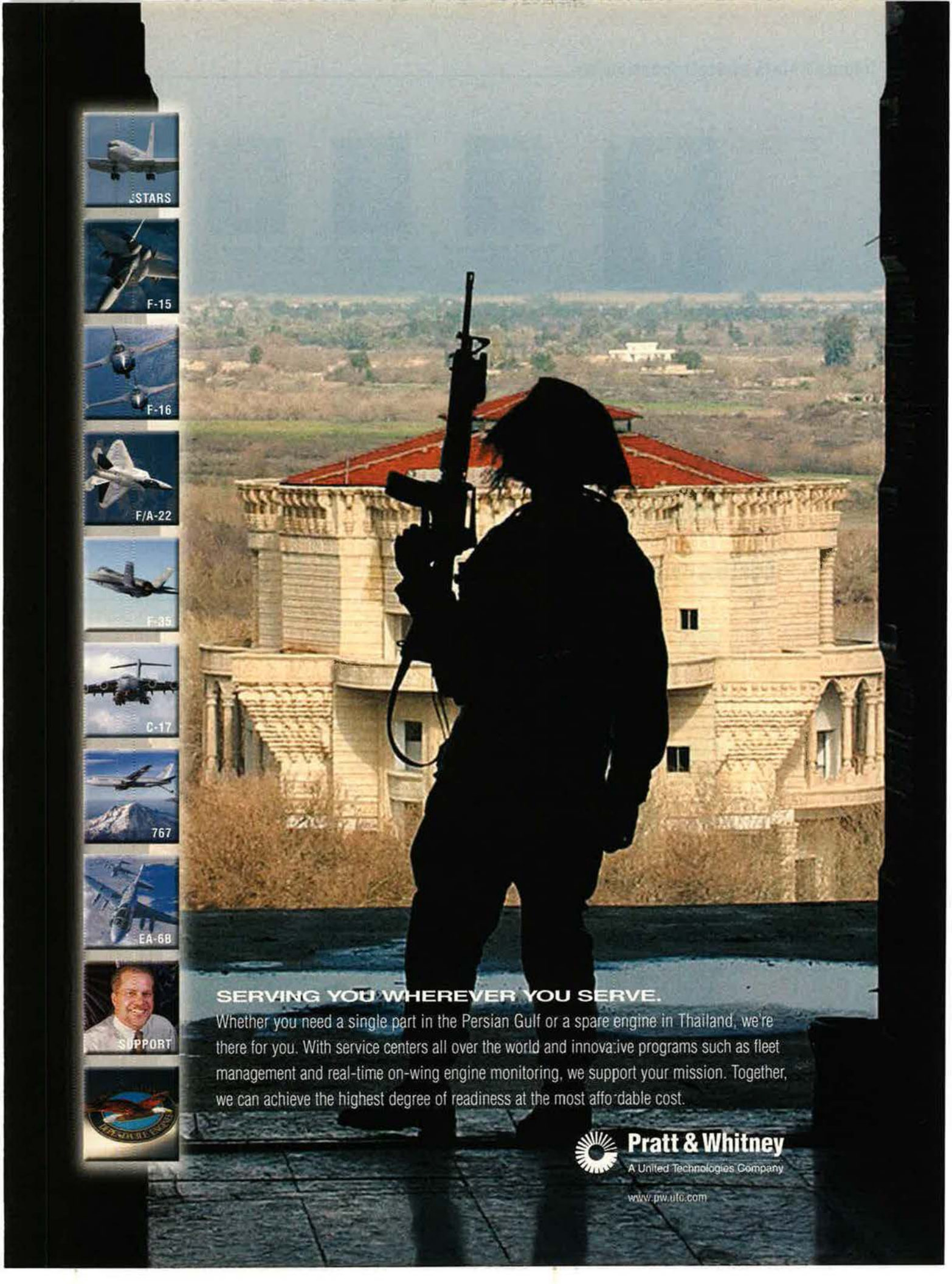
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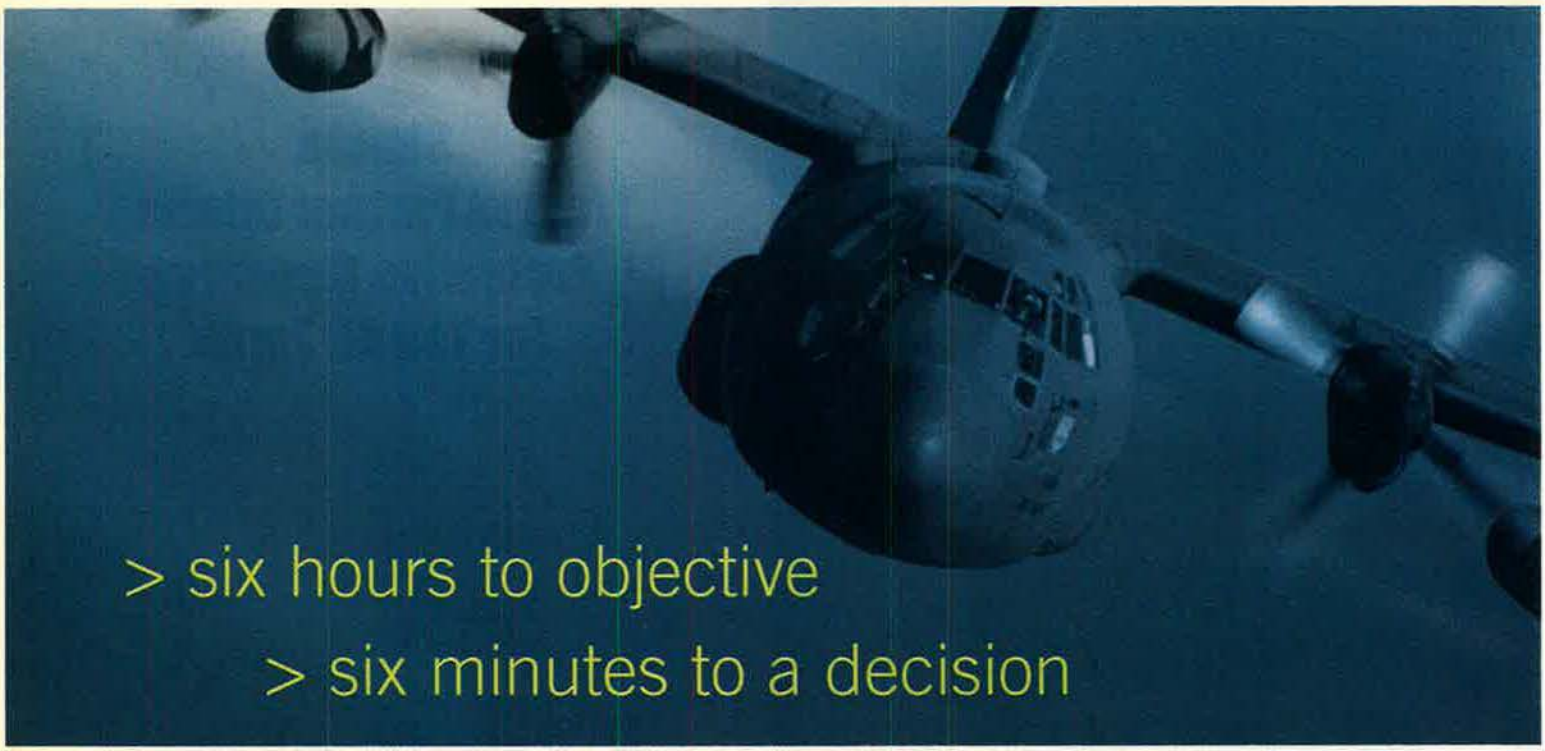

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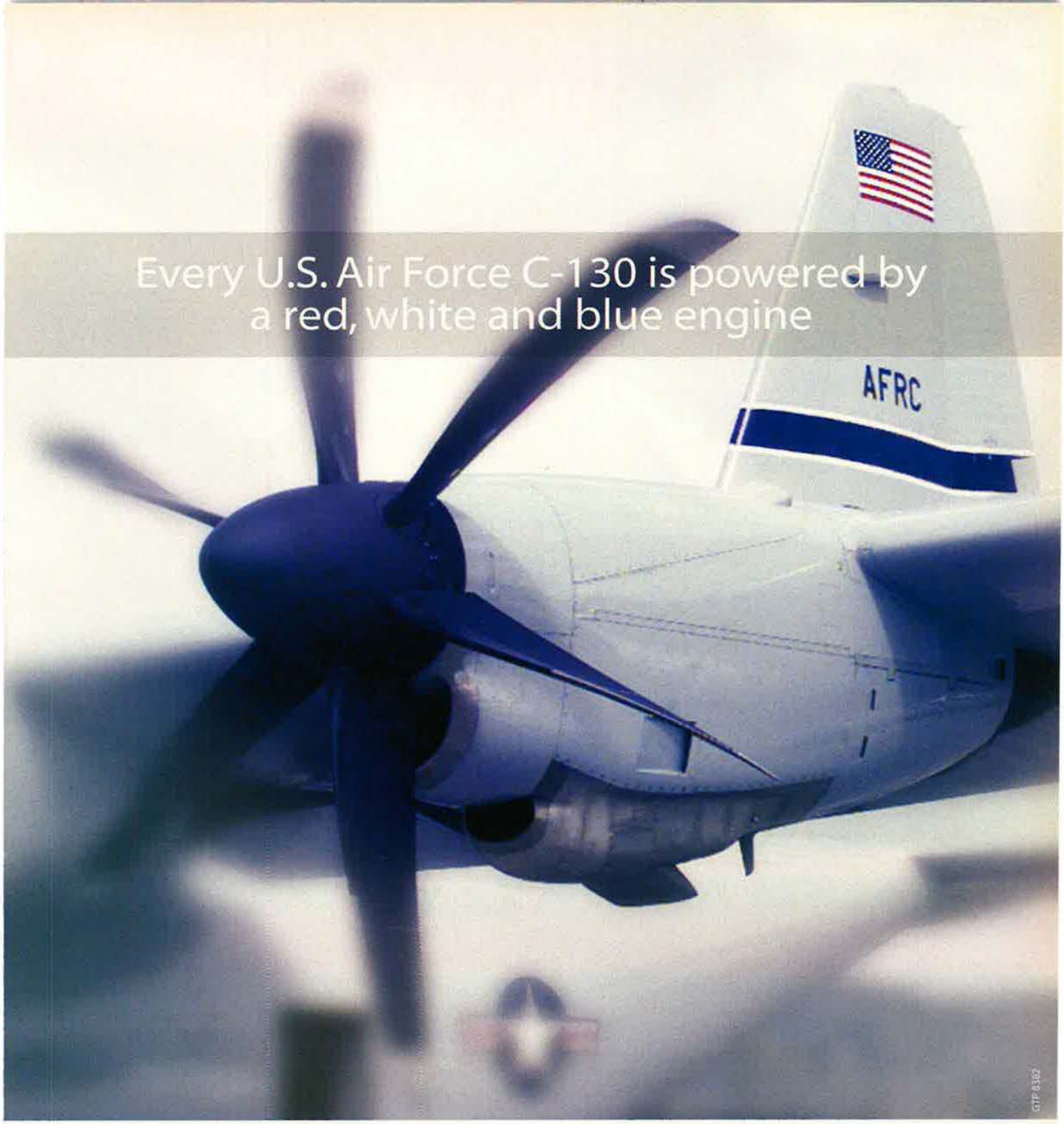

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The work of three Germans in the late 1920s had a lasting impact on air and space flight.

The Rocket Men

By Walter J. Boyne

CHARLES Lindbergh's spectacular 1927 New York-to-Paris flight set the aviation world afire, making the public receptive to new aerial adventures. Many caught the fever. Three young Germans—Fritz von Opel, Max Valier, and Friedrich Sander—were especially affected, and their ensuing 1928-29 experiments with aircraft and rocket power cast a long shadow on aviation.

Von Opel, heir to a German automotive empire, financed and led the experiments. By sponsoring early tests of rocket-powered transport, he popularized the idea of rocket propulsion in Germany. The work, though short-lived, had a tremendous effect on the development of air and space flight.

Fritz A.H. von Opel was the only child of Wilhelm von Opel and was the grandson of Adam Opel, founder of the Adam Opel A.G. firm, a manufacturer of sewing machines and bicycles. In 1899, the company turned to the manufacture of automobiles and, by the 1920s, had become the largest automaker in Germany.

Then, as now, the stature of an automobile was often determined by its performance in races. Von Opel's uncle prepared and personally raced Opel cars in major events such as the Targa Floria, Kaiserpreis, and Gran Prix. Through this experience, the young von Opel saw that the racing publicity was good for sales, and he

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Max Valier shows off the fuel tanks of a liquid-powered rocket racer. Valier was, in 1927, one of the founders of the German "Spaceflight Society." Valier, Fritz von Opel, and Friedrich Sander developed the first rocket cars and aircraft.

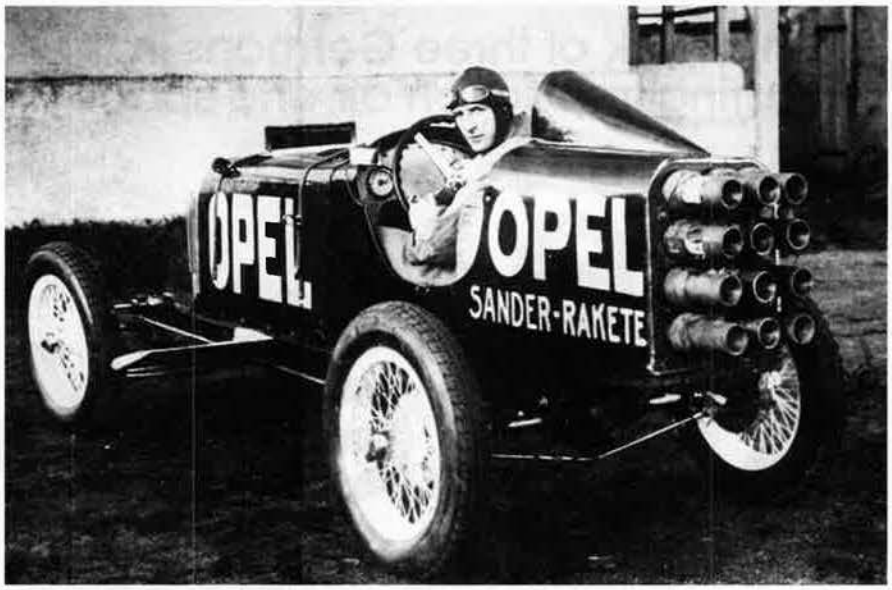
was quick to seize an opportunity which shortly came along.

The idea was to build and race a rocket-powered car. This was suggested to von Opel by Max Valier. Austrian by birth, Valier was studying physics at the University of Innsbruck when the World War broke out in August 1914. He served in the imperial Austro-Hungarian Air Force as an observer. After the war, he became highly interested in rocketry.

Valier, in 1927, became one of the founders of the famous German Verein für Raumschiffahrt, or "Spaceflight Society," a group of brilliant scientists who would play a major role in making rocket spaceflight a reality.

Everyone understood that Valier was more interested in publicizing rocketry than marketing Opel automobiles. However, he was quick to point out that building a successful rocket-powered car would achieve both goals.

Von Opel soon confirmed that he was interested in pursuing Valier's project. Valier then contacted Friedrich W. Sander, a German pyrotechnical engineer who, in 1923, had purchased H.G. Cordes, a Bremerhaven firm famous for its manufacture of black-powder rockets used for harpoons and signal devices.



Von Opel, Valier, and Sander ceveloped the Rak 1 rocket car, converted from an Opel racer. In its first public test, it reached 62 mph in eight seconds. It was a public relations winner, but von Opel insisted that rocket-powered flight was the goal.

Triple Threat

The group combined into one entity the financing, the theoretical knowledge, and the practical capability necessary for success. Moreover, von Opel, Valier, and Sander said from the start that their experiments with cars were but a prelude to grander experiments with air- and spacecraft. They were working on rocket-powered aircraft at the same time they were building their famous rocket cars.

It was logical to begin with autos; the extremely wealthy Opel had at his disposal his father's factory and testing track in Germany. The three men began their experiments using a standard Opel automobile. Von Opel wanted to be the test driver, but Sander and Valier talked him out of it. If something happened to him, they pointed out, all Opel backing would be lost. A regular Opel test driver, Kurt C. Volkhart, was pressed into service.

The members of the group set March 12, 1928, as the date for the car's first trial run. They fitted the car with only two rockets, which were to be ignited by conventional string fuses. When they were lit off, the rockets propelled Volkhart and the car a distance of about 500 feet, reaching a top speed of three miles per hour.

It was not much—but it convinced von Opel that they were on the right track. After two tests, they went to an Opel race car, which they christened "Rak 1." "Rak" was short for the German word "rakete," which meant rocket.

Rak 1 was stripped of its engine and radiator to reduce weight. To help keep the car's wheels on the ground at expected high speeds, the group attached behind each front wheel a small, wing-like stub, set at a negative angle of attack.

For propulsion, they elected to use 12 black-powder rockets, each 3.5 inches in diameter, mounted in four rows of three rockets each and ignited electrically. The propellant was similar to gunpowder, in that it burned in a subsonic deflagration wave and not in a supersonic detonation wave.

Acting in his role of publicity director for Opel, von Opel arranged for a demonstration for the press on April 11, 1928.

The group took Rak 1 to the Opel track—this time in view of the German media. Valier signaled "Go," and Volkhart pressed the firing pedal to the floor, igniting the first bank of rockets. These were quick firing and intended for acceleration; they shot the car forward in a cloud of smoke. Volkhart pressed the pedal again and other rockets fired. Slower burning, they kept the car rolling for a longer distance.

Only seven of the 12 rockets actually ignited, but the acceleration proved to be excellent. Rak 1 reached a speed of 62 mph in just eight seconds.

Eye on the Prize

Von Opel and his group were immensely pleased by Rak 1's performance—and even more so by the resulting storm of favorable publicity. They made it plain, however, that they had no plans to produce rocket cars for the commercial market. Their real goal was to fly a rocket-powered aircraft.

In the meantime, they continued their land projects and built Rak 2, designed from the ground up as a rocket car. It was far larger and more streamlined than its predecessor. The Rak 2 was powered by 24 rockets packing 264 pounds of explosives.

On May 23, 1928, von Opel himself got behind the wheel. Before 2,000 spectators at a Berlin race track, he drove the car to a record-setting speed of nearly 148 mph. The resulting international publicity more than repaid every cent the Opel firm had invested. Moreover, it gave the science of rocketry a major boost.

There followed a series of Earthbound rocket experiments. One featured a specially built motorcycle,

It was in the Rak 1 airplane that von Opel finally made a rocket-powered flight, achieving around 90 mph on Sept. 30, 1929. The aircraft didn't survive the landing, but von Opel did. Apparently satisfied, he walked away from rocketry.

equipped with six rockets, which reached a speed of 124 mph. Another was the Rak 3, a rocket car designed to run on railroad tracks. On June 23, 1928, the car attained a top speed of 157.5 mph over a three-mile stretch of straight track near Hanover. Some 20,000 spectators lined the track to watch Rak 3 break the existing world speed record of 133.5 mph for railcars.

Not surprisingly, the press and the public were quick to assume that commercial rocket vehicles would follow in due course. This was never the intent of the trio, who saw a genuine practical application for rockets only in aviation and space projects.

In fact, in March 1928, von Opel, Valier, and Sander went off to Wasserkuppe, the highest peak in Germany's Rhön Mountains, from which glider experiments had been staged since 1910. Gliding took on a new importance when the Treaty of Versailles prohibited Germany from maintaining an air force. A glider club was established, and, in 1922, Arthur Martens introduced the sailplane with a one-hour flight of his "Vampyr."

Opel and company contacted Alexander M. Lippisch, the director of Rhön-Rossitten Gesellschaft, a glider research group. They knew that Lippisch, starting in 1921, had produced some 50 swept-wing, tailless glider designs. In the view of the Opel group, such an aircraft would be ideally suited to the installation of Sander rockets. Lippisch agreed to build a tailless glider for experimental purposes.

Enter the Duck

After testing out a Lippisch model, von Opel and his associates in June 1928 purchased a full-size Lippisch aircraft, the "Ente" (Duck). The group selected one of Lippisch's test pilots, Fritz Stamer, to fly it.

With a wingspan of just under 40 feet, and a length of some 14 feet, the Ente featured a canoe-like fuselage, canard surfaces, and rudders mounted outboard on a straight rectangular wing. Each of the aircraft's two 44-pound-thrust rocket engines were tightly packed with about eight pounds of black powder. They were at the top of the rear end of the fuselage.

Designed to fire in sequence, the rockets were ignited electrically by the pilot. An automatic counterweight system was set to adjust the aircraft's center of gravity as the rocket fuel was consumed. An elastic launching rope was used to catapult the Ente into the air.

The first test of the Ente came on June 11, 1928. It was a failure; the glider did not become airborne and the rocket simply fizzled out.

A second launch that day, however, was successful. After being slung into the air, Stamer reported, he ignited one rocket and heard it "hiss threateningly" behind him. When the first rocket burned out, he ignited the next. In such a way he was able to fly a complete circle of about 4,900 feet in circumference, landing just as the rocket thrust expired.

Stamer was quoted as saying that

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Fritz von Opel was heir to the Opel automobile empire. With his personal wealth and access to the company's design, construction, and test facilities, he was critical to the rocket enterprise.

the first rocket flight had been "nothing special."

On Stamer's second flight, however, the rocket exploded, punching holes in the wing and damaging the fuselage. Stamer then had to make a quick emergency landing from an altitude of about 60 feet. He abandoned the airplane immediately, after which fire consumed the Ente.

Heartened by the first flight of the Ente and not dismayed by the second, von Opel immediately contracted with Julius Hatry for a specialized rocket plane. Hatry, a glider builder and regular at the Wasserkuppe gliding competitions, was engaged at the time in building the Mü 3 "Kakadu." With a span of 65 feet, it was the largest sailplane yet built.

Hatry's design for Opel was rather more elegant than the Ente. With a wingspan of 36 feet and length of 16 feet, the new aircraft had a conventional high-aspect-ratio glider wing and twin rudders mounted on booms that lifted the tailplane well out of the line of rocket thrust.

The glider has often been referred to as Rak 3, but von Opel designated it Rak 1.

Wreck of the Rak

Sander installed on Rak 1 a battery of 16 rockets, each with 50 pounds of thrust. The first flight came on Sept. 30, 1929. Before a large crowd assembled outside of Frankfurt, the intrepid von Opel made a successful flight of almost two miles in 75 seconds, reaching an estimated top speed of around 90 mph. Rak 1 made an extremely hard landing and was destroyed, but it had made an emphatic point about rocket aviation.

At that point, the work of the Opel group—as a group—came to an abrupt end. The impact, however, was long-lasting.

Their work had led directly to use of jet-assisted takeoff for heavily laden aircraft. Germany was first to test this when, in August 1929, a battery of solid rocket propellants helped a Junkers Ju-33 seaplane get airborne.

Von Opel quit Germany before World War II, but his work led to the Me-163 Komet, the world's first combat rocket airplane. The notorious V-1 and V-2 missiles were also partly inspired by von Opel's rocket experiments.

The German experiments had a tremendous influence upon Lippisch, whose experience with the Ente helped pave the way for the Messerschmitt Me-163, the first and only operational rocket fighter.

The experiments excited the interest of what was then a clandestine German military, which provided funding for further development of rockets as a substitute for artillery. This led to a host of weapons, the most important being Germany's V-2 terror weapon, the world's first ballistic missile.

After World War II, these German rocket and missile designers would have a great influence on America's own missile and space programs.

What happened to the original members of the von Opel group?

The brilliant scientist, Max Valier, came to an unfortunate end. He was killed when a new, alcohol-fueled rocket he had built blew up during a 1930 experiment.

Friedrich Sander, the group's pyrotechnician, also met an unpleasant fate. After secretly manufacturing military rockets for the German Army, he contracted to sell some to Italy but was denounced in 1936 as a traitor. Imprisoned for a year, his company went bankrupt. A second company was nationalized in 1938, and he died the same year.

As for Fritz von Opel, his flight in the Rak 1 evidently satisfied his appetite for rocket flight. In 1929, he abandoned the rocket and aircraft projects and settled in Switzerland, adopting Swiss citizenship.

It was in some ways an odd move, though there was no lack of possible political and economic motives.

Though Adolf Hitler was still four years from seizing control of Germany, the Weimar Republic was already tottering and showing signs of collapse. Fascism was on the rise.

Sensing approaching trouble in Germany, Wilhelm von Opel had already arranged a two-stage sale of Opel to General Motors, with a payout of some $30 million. Wilhelm gave his son Fritz nominal control (Wilhelm remained the real power) of this huge fortune, allowing him 20 percent of income generated by its investments.

The younger von Opel presumably went on to lead a long life of opulence. He died in Switzerland in 1971, more than 40 years after his famous flight in his rocket plane.

During those four decades, von Opel must surely have watched with wonder the endless developments that his experiments had spurred. Working together, von Opel, Valier, and Sander had thrown a big rock of publicity into the mill pond of science. The ripples have not yet ceased to spread. ■

Walter J. Boyne, former director of the National Air and Space Museum in Washington, is a retired Air Force colonel and author. He has written more than 400 articles about aviation topics and 29 books, the most recent of which is The Two O'Clock War: The 1973 Yom Kippur Conflict and the Airlift That Saved Israel. *His most recent article for* Air Force *Magazine, "The Immortal Hercules," appeared in the August issue.*

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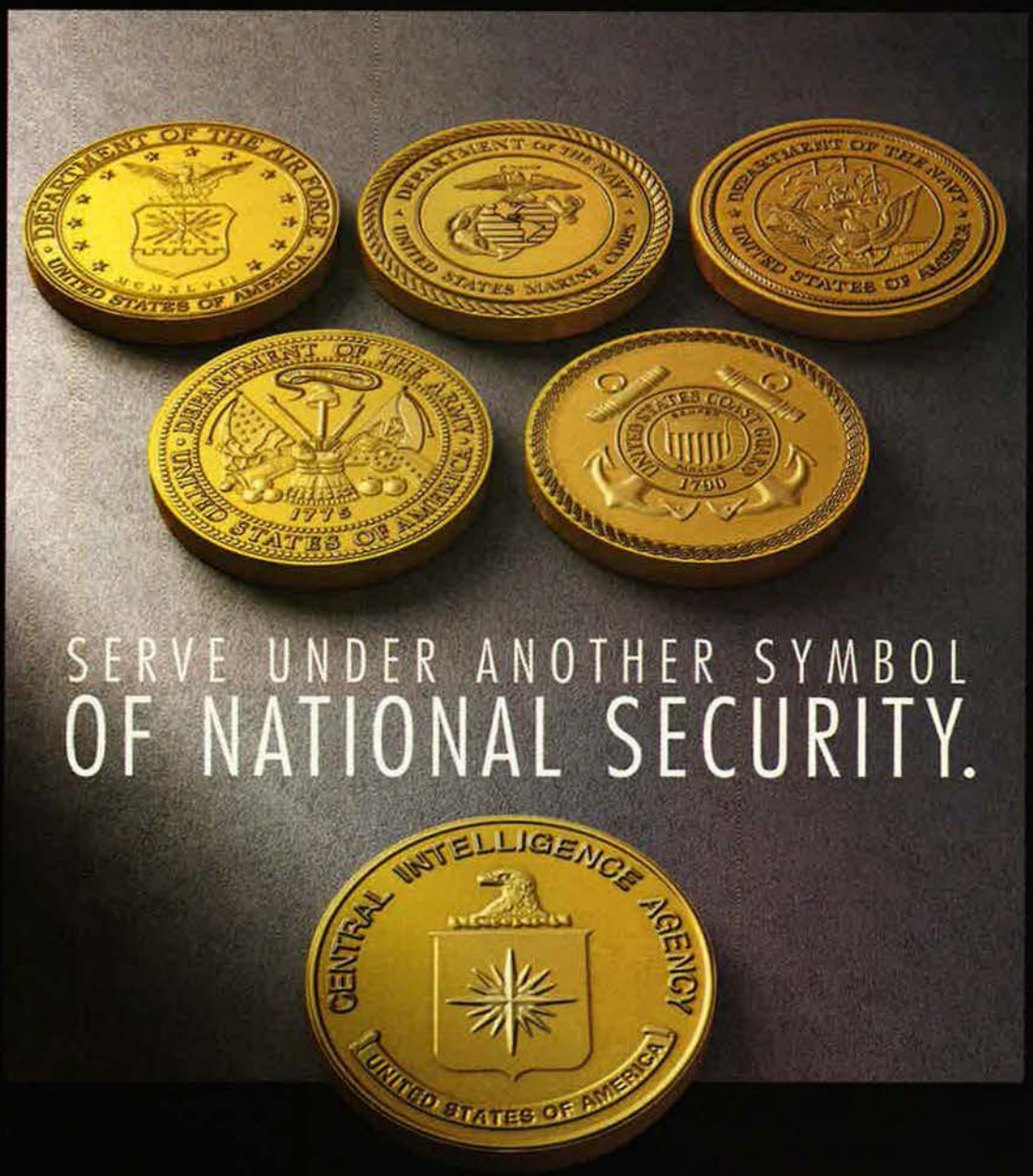

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THE WORK OF A NATION. THE CENTER OF INTELLIGENCE.

AFA/AEF Almanac

By Frances McKenney, Assistant Managing Editor

Chapters of the Year

Year	Recipient(s)
1953	San Francisco Chapter
1954	Santa Monica Area Chapter (Calif.)
1955	San Fernando Valley Chapter (Calif.)
1956	Utah State AFA
1957	H.H. Arnold Chapter (N.Y.)
1958	San Diego Chapter
1959	Cleveland Chapter
1960	San Diego Chapter
1961	Chico Chapter (Calif.)
1962	Fort Worth Chapter (Tex.)
1963	Colin P. Kelly Chapter (N.Y.)
1964	Utah State AFA
1965	Idaho State AFA
1966	New York State AFA
1967	Utah State AFA
1968	Utah State AFA
1969	*(no presentation)*
1970	Georgia State AFA
1971	Middle Georgia Chapter
1972	Utah State AFA
1973	Langley Chapter (Va.)
1974	Texas State AFA
1975	Alamo Chapter (Tex.) and San Bernardino Area Chapter (Calif.)
1976	Scott Memorial Chapter (Ill.)
1977	Thomas B. McGuire Jr. Chapter (N.J.)
1978	Thomas B. McGuire Jr. Chapter (N.J.)
1979	Brig. Gen. Robert F. Travis Chapter (Calif.)
1980	Central Oklahoma (Gerrity) Chapter
1981	Alamo Chapter (Tex.)
1982	Chicagoland-O'Hare Chapter (Ill.)
1983	Charles A. Lindbergh Chapter (Conn.)
1984	Scott Memorial Chapter (Ill.) and Colorado Springs/Lance Sijan Chapter (Colo.)
1985	Cape Canaveral Chapter (Fla.)
1986	Charles A. Lindbergh Chapter (Conn.)
1987	Carl Vinson Memorial Chapter (Ga.)
1988	Gen. David C. Jones Chapter (N.D.)
1989	Thomas B. McGuire Jr. Chapter (N.J.)
1990	Gen. E.W. Rawlings Chapter (Minn.)
1991	Paul Revere Chapter (Mass.)
1992	Central Florida Chapter and Langley Chapter (Va.)
1993	Green Valley Chapter (Ariz.)
1994	Langley Chapter (Va.)
1995	Baton Rouge Chapter (La.)
1996	Montgomery Chapter (Ala.)
1997	Central Florida Chapter
1998	Ark-La-Tex Chapter (La.)
1999	Hurlburt Chapter (Fla.)
2000	Wright Memorial Chapter (Ohio)
2001	Lance P. Sijan Chapter (Colo.)
2002	Eglin Chapter (Fla.)
2003	Hurlburt Chapter (Fla.)
2004	Carl Vinson Memorial Chapter (Ga.)

Profiles of AFA Membership

As of June 2004 (Total 133,812)

55%	One-year members
13%	Three-year members
32%	Life members
16%	Active duty military
49%	Retired military
17%	Former service
6%	Guard and Reserve
7%	Patron
3%	Cadet
2%	Spouse/widow(er)

Of AFA's service members (who account for about six percent of USAF total strength):

70% are officers

30% are enlisted

Of AFA's retired military members:

73% are retired officers

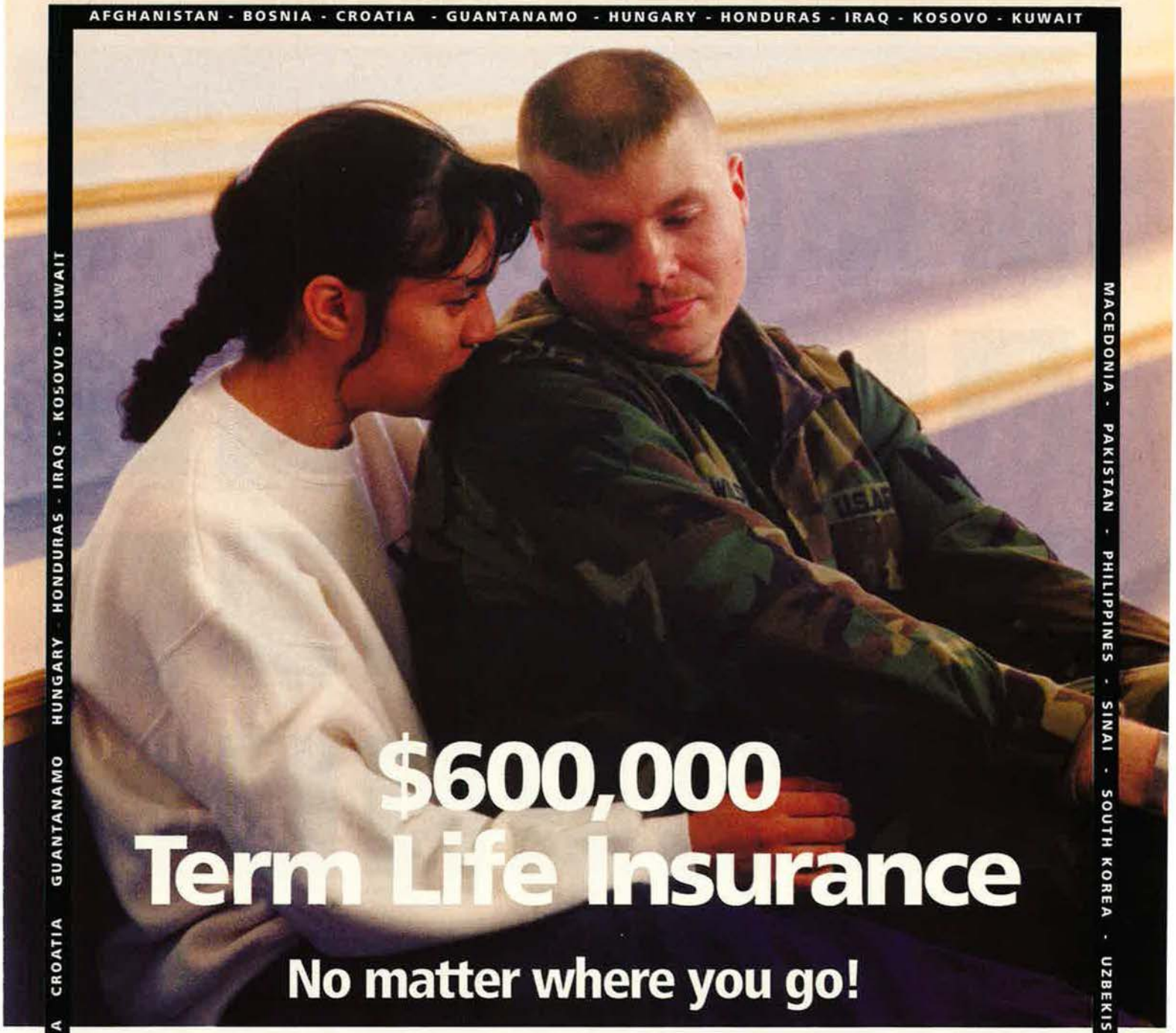
27% are retired enlisted

AFA "Member of the Year" Award Recipients

State names refer to recipient's home state at the time of the award.

Year	Recipient(s)
1953	Julian B. Rosenthal (N.Y.)
1954	George A. Anderl (Ill.)
1955	Arthur C. Storz (Neb.)
1956	Thos. F. Stack (Calif.)
1957	George D. Hardy (Md.)
1958	Jack B. Gross (Pa.)
1959	Carl J. Long (Pa.)
1960	O. Donald Olson (Colo.)
1961	Robert P. Stewart (Utah)
1962	*(no presentation)*
1963	N.W. DeBerardinis (La.) and Joe L. Shosid (Tex.)
1964	Maxwell A. Kriendler (N.Y.)
1965	Milton Caniff (N.Y.)
1966	William W. Spruance (Del.)
1967	Sam E. Keith Jr. (Tex.)
1968	Marjorie O. Hunt (Mich.)
1969	*(no presentation)*
1970	Lester C. Curl (Fla.)
1971	Paul W. Gaillard (Neb.)
1972	J. Raymond Bell (N.Y.) and Martin H. Harris (Fla.)
1973	Joe Higgins (Calif.)
1974	Howard T. Markey (D.C.)
1975	Martin M. Ostrow (Calif.)
1976	Victor R. Kregel (Tex.)
1977	Edward A. Stearn (Calif.)
1978	William J. Demas (N.J.)
1979	Alexander C. Field Jr. (Ill.)
1980	David C. Noerr (Calif.)
1981	Daniel F. Callahan (Fla.)
1982	Thomas W. Anthony (Md.)
1983	Richard H. Becker (Ill.)
1984	Earl D. Clark Jr. (Kan.)
1985	George H. Chabbott (Del.) and Hugh L. Enyart (Ill.)
1986	John P.E. Kruse (N.J.)
1987	Jack K. Westbrook (Tenn.)
1988	Charles G. Durazo (Va.)
1989	Oliver R. Crawford (Tex.)
1990	Cecil H. Hopper (Ohio)
1991	George M. Douglas (Colo.)
1992	Jack C. Price (Utah)
1993	Lt. Col. James G. Clark (D.C.)
1994	William A. Lafferty (Ariz.)
1995	William N. Webb (Okla.)
1996	Tommy G. Harrison (Fla.)
1997	James M. McCoy (Neb.)
1998	Ivan L. McKinney (La.)
1999	Jack H. Steed (Ga.)
2000	Mary Anne Thompson (Va.)
2001	Charles H. Church Jr. (Kan.)
2002	Thomas J. Kemp (Tex.)
2003	W. Ron Goerges (Ohio)
2004	Doyle E. Larson (Minn.)

AFGHANISTAN - BOSNIA - CROATIA - GUANTANAMO - HUNGARY - HONDURAS - IRAQ - KOSOVO - KUWAIT



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AFGHANISTAN - BOSNIA - CROATIA - GUANTANAMO - HUNGARY - HONDURAS - IRAQ - KOSOVO - KUWAIT

Air Force Association Chairmen of the Board

Edward P. Curtis
1946-47

Jimmy Doolittle
1947-49

C.R. Smith
1949-50

Carl A. Spaatz
1950-51

Thomas G. Lanphier Jr.
1951-52

Harold C. Stuart
1952-53

Arthur F. Kelly
1953-54

George C. Kenney
1954-55

John R. Alison
1955-56

Gill Robb Wilson
1956-57

John P. Henebry
1957-58

James M. Trail
1958-59

Julian B. Rosenthal
1959-60

Howard T. Markey
1960-61

Thos. F. Stack
1961-62

Joe Foss
1962-63

Jack B. Gross
1963-64

W. Randolph Lovelace II
1964-65

George D. Hardy
1966-67

Jess Larson
1967-71

George D. Hardy
1971-72

Joe L. Shosid
1972-73

Martin M. Ostrow
1973-75

Joe L. Shosid
1975-76

Gerald V. Hasler
1976-77

George M. Douglas
1977-79

Daniel F. Callahan
1979-81

Victor R. Kregel
1981-82

John G. Brosky
1982-84

David L. Blankenship
1984-85

Edward A. Stearn
1985-86

Martin H. Harris
1986-88

Sam E. Keith Jr.
1988-90

Jack C. Price
1990-92

Oliver R. Crawford
1992-94

James M. McCoy
1994-96

Gene Smith
1996-98

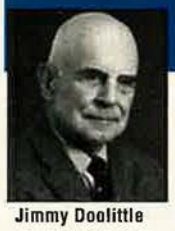
Doyle E. Larson
1998-2000

Thomas J. McKee
2000-02

John J. Politi
2002-04


Budweiser

Air Force Association National Presidents



Jimmy Doolittle
1946-47

Thomas G. Lanphier Jr.
1947-48

C.R. Smith
1948-49

Robert S. Johnson
1949-51

Harold C. Stuart
1951-52

Arthur F. Kelly
1952-53

George C. Kenney
1953-54

John R. Alison
1954-55

Gill Robb Wilson
1955-56

John P. Henebry
1956-57

Peter J. Schenk
1957-59

Howard T. Markey
1959-60

Thos. F. Stack
1960-61

Joe Foss
1961-62

John B. Montgomery
1962-63

W. Randolph Lovelace II
1963-64

Jess Larson
1964-67

Robert W. Smart
1967-69

George D. Hardy
1969-71

Martin M. Ostrow
1971-73

Joe L. Shosid
1973-75

George M. Douglas
1975-77

Gerald V. Hasler
1977-79

Victor R. Kregel
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1992-94

Gene Smith
1994-96

Doyle E. Larson
1996-98

Thomas J. McKee
1998-2000

John J. Politi
2000-02

Stephen P. Condon
2002-04

AFA's Regions, States, and Chapters

These figures indicate the number of affiliated members as of June 30, 2004. Listed below the name of each region is the region president.

CENTRAL EAST REGION 12,268
James Hannam

Delaware 631
Delaware Galaxy 457
Diamond State 174

District of Columbia 603
Nation's Capital 603

Maryland 2,494
Baltimore* 752
Central Maryland 429
College Park Airport 100
Thomas W. Anthony 1,213

Virginia 8,193
Danville 59
Donald W. Steele Sr. Memorial 3,354
Gen. Charles A. Gabriel 1,267
Langley 1,616
Leigh Wade 161
Northern Shenandoah Valley 236
Richmond 573
Roanoke 299
Tidewater 376
William A. Jones III 252

West Virginia 347
Brig. Gen. Pete Everest 77
Chuck Yeager 270

FAR WEST REGION 13,571
John F. Wickman

California 12,695
Antelope Valley 447
Bob Hope 898
Brig. Gen. Robert F. Travis 963
C. Farinha Gold Rush 1,557
Charles Hudson 147
David J. Price/Beale 497
Fresno* 381
Gen. B.A. Schriever Los Angeles 628
General Doolittle Los Angeles Area* 1,422
Golden Gate* 728
High Desert 270
Maj. Gen. Charles I. Bennett Jr. 331
Monterey Bay Area 298
Orange County/Gen. Curtis E. LeMay 884
Palm Springs 483
Pasadena Area 370
Robert H. Goddard 704
San Diego 983
Tennessee Ernie Ford 704

Hawaii 876
Hawaii* 846
Maui 30

FLORIDA REGION 11,446
Raymond Turczynski Jr.

Florida 11,446
Brig. Gen. James R. McCarthy 406
Cape Canaveral 1,196
Central Florida 1,485
Col. H.M. "Bud" West 320
Col. Loren D. Evenson 556
Eglin 1,721
Falcon 451
Florida Highlands 363
Gainesville 333
Gen. Nathan F. Twining 495
Gold Coast 738
Hurlburt 753
Jerry Waterman 1,224
John C. Meyer 332
John W. DeMilly Jr. 302
Miami 367
Pensacola 187
Treasure Coast 217

GREAT LAKES REGION 9,008
Joseph R. Lesniok

Indiana 1,634
Central Indiana 427
Columbus-Bakalar 110
Fort Wayne 251
Grissom Memorial 191
Gus Grissom 130
Lawrence D. Bell Museum 258
Southern Indiana 267

Kentucky 752
Gen. Russell E. Dougherty 476
Lexington 276

Michigan 2,085
Battle Creek 158
James H. Straubel 750
Kalamazoo 429
Lake Superior Northland 146
Lloyd R. Leavitt Jr. 154
Mount Clemens 344
PE-TO-SE-GA 104

Ohio 4,537
Capt. Eddie Rickenbacker Memorial* 722
Frank P. Lahm 537
Gen. Joseph W. Ralston 286
North Coast* 341
Steel Valley 225
Wright Memorial* 2,426

MIDWEST REGION 8,224
Keith N. Sawyer

Illinois 3,117
Chicagoland-O'Hare 1,273
Heart of Illinois 215
Land of Lincoln 386
Scott Memorial 1,243

Iowa 737
Fort Dodge 65
Gen. Charles A. Horner 270
Northeast Iowa 219
Richard D. Kisling 183

Kansas 886
Contrails 62
Lt. Erwin R. Bleckley 544
Maj. Gen. Edward R. Fry 280

Missouri 1,816
Earl D. Clark Jr. 340
Harry S. Truman 643
Spirit of St. Louis 833

Nebraska 1,668
Ak-Sar-Ben 1,413
Lincoln 255

NEW ENGLAND REGION 4,208
Eric P. Taylor

Connecticut 836
Flying Yankees 140
Gen. Bennie L. Davis 168
Gen. George C. Kenney 174
Lindbergh/Sikorsky 187
Sgt. Charlton Heston 167

Massachusetts 2,057
Boston 125
Maj. John S. Southrey* 164
Minuteman 324
Otis 194
Paul Revere 732
Pioneer Valley 175
Taunton 169
Worcester* 174

New Hampshire 808
Brig. Gen. Harrison R. Thyng 405
Pease 403

Rhode Island 283
Metro Rhode Island 237
Newport Blue & Gold 46

Vermont 224
Burlington 224

NORTH CENTRAL REGION 3,839
Robert P. Talley

Minnesota 1,258
Gen. E.W. Rawlings 1,023
Richard I. Bong 235

Montana 323
Big Sky 323

North Dakota 492
Gen. David C. Jones 230
Happy Hooligan 133
Red River Valley 129

South Dakota 538
Dacotah 245
Rushmore 293

Wisconsin 1,228
Billy Mitchell 538
Capt. William J. Henderson 386
Madison 304

NORTHEAST REGION 8,192
Raymond "Bud" Hamman

New Jersey 2,160
Brig. Gen. E. Wade Hampton 166
Brig. Gen. Frederick W. Castle 174
Hangar One 165
Highpoint 130
John Currie Memorial 87
Mercer County 200
Sal Capriglione 313
Thomas B. McGuire Jr. 684
Shooting Star 241

New York 3,134
Albany-Hudson Valley* 401
Chautauqua 73
Forrest L. Vosler 385
Gen. Carl A. "Tooey" Spaatz 234
Gen. Daniel "Chappie" James Jr. Memorial 103
Genesee Valley 254
Iron Gate 172
L.D. Bell-Niagara Frontier 377
Long Island 617
Queens 343
Thomas Watson Sr. Memorial 175

Pennsylvania 2,898
Altoona 60
Brandywine 158
Eagle 73
Greater Pittsburgh* 371
Joe Walker-Mon Valley 126
Lehigh Valley 268
Liberty Bell 617
Lt. Col. B.D. "Buzz" Wagner 121
Mifflin County* 108
Olmsted 336
Pocono Northeast 203
Total Force 172
York-Lancaster 285

NORTHWEST REGION 5,220
O. Thomas Hansen

Alaska 907
Edward J. Monaghan 677
Fairbanks Midnight Sun 230

Idaho 130
Snake River Valley 130

Oregon 1,128
Bill Harris 166
Columbia Gorge* 733
Willamette Valley 229

*These chapters were chartered prior to Dec. 31, 1948, and are considered original charter chapters; the Maj. John S. Southrey Chapter of Massachusetts was formerly the Chicopee Chapter; the North Coast Chapter of Ohio was formerly the Cleveland Chapter; and the Columbia Gorge Chapter of Oregon was formerly the Portland Chapter.

Washington	**3,055**
Greater Seattle	1,074
Inland Empire	717
McChord	1,264
ROCKY MOUNTAIN REGION	**6,804**
Charles P. Zimkas Jr.	
Colorado	**4,819**
Gen. Robert E. Huyser	197
Lance P. Sijan	2,769
Long's Peak	259
Mel Harmon	151
Mile High	1,443
Utah	**1,599**
Northern Utah	618
Salt Lake	431
Ute-Rocky Mountain	550
Wyoming	**386**
Cheyenne Cowboy	386
SOUTH CENTRAL REGION	**7,322**
George P. Cole Jr.	
Alabama	**2,071**
Birmingham	399
Montgomery	1,309
Tennessee Valley	363
Arkansas	**1,150**
David D. Terry Jr.	782
Ouachita	130
Razorback	238
Louisiana	**1,197**
Ark-La-Tex	795
Maj. Gen. Oris B. Johnson	402
Mississippi	**1,072**
Golden Triangle	363
Jackson	182
John C. Stennis	527
Tennessee	**1,832**
Chattanooga	136
Everett R. Cook	457
Gen. Bruce K. Holloway	581
H.H. Arnold Memorial	166
Maj. Gen. Dan F. Callahan	492
SOUTHEAST REGION	**9,035**
Robert E. Largent	
Georgia	**4,198**
Carl Vinson Memorial	1,774
Dobbins	1,701
Lt. Col. Philip Colman	51
Savannah	341
South Georgia	331
North Carolina	**2,753**
Blue Ridge	383
Cape Fear	265
Kitty Hawk	79
Piedmont	475
Pope	452
Scott Berkeley	492
Tarheel	607
South Carolina	**2,084**
Charleston	555
Columbia Palmetto	433
Ladewig-Shine Memorial	198
Strom Thurmond	390
Swamp Fox	508
SOUTHWEST REGION	**7,650**
Peter D. Robinson	
Arizona	**4,148**
Barry Goldwater	172
Cochise	104
Frank Luke	1,096
Phoenix Sky Harbor	1,106
Prescott	201
Richard S. Reid	137
Tucson	1,332
Nevada	**1,832**
Dale O. Smith	400
Thunderbird	1,432
New Mexico	**1,670**
Albuquerque	1,163
Fran Parker	329
Llano Estacado	178
TEXOMA REGION	**14,165**
Michael G. Cooper	
Oklahoma	**2,689**
Altus	251
Central Oklahoma (Gerrity)	1,365
Enid	612
Tulsa	461
Texas	**11,476**
Abilene	338
Aggieland	206
Alamo	3,810
Austin	904
Concho	344
Dallas	946
Del Rio	131
Denton	406
Fort Worth	1,854
Gen. Charles L. Donnelly Jr.	450
Ghost Squadron	119
Heart of the Hills	150
Northeast Texas	412
Panhandle AFA	263
San Jacinto	1,143

AFA's Overseas Chapters

CHAPTER	LOCATION
	United States Air Forces in Europe (USAFE)
Charlemagne	Geilenkirchen, Germany
Dolomiti	Aviano AB, Italy
Lufbery-Campbell	Ramstein AB, Germany
Spangdahlem	Spangdahlem AB, Germany
United Kingdom	Lakenheath, UK
	Pacific Air Forces (PACAF)
Keystone	Kadena AB, Japan
MiG Alley	Osan AB, South Korea
Miss Veedol	Misawa AB, Japan
Tokyo	Tokyo, Japan
	Supreme Headquarters Allied Powers Europe (SHAPE)
Gen. Lauris G. Norstad	Mons, Belgium

AFA's First National Officers and Board of Directors

This panel of officers and directors acted temporarily until a representative group was democratically elected by membership at the first national convention, in September 1947.

OFFICERS

President Jimmy Doolittle
First Vice President Edward P. Curtis
Second Vice President Meryll Frost
Third Vice President Thomas G. Lanphier Jr.
Secretary Sol A. Rosenblatt
Assistant Secretary Julian B. Rosenthal
Treasurer W. Deering Howe
Executive Director Willis S. Fitch

BOARD OF DIRECTORS

John S. Allard
H.M. Baldridge
William H. Carter
Everett R. Cook
Burton E. Donaghy
James H. Douglas Jr.
G. Stuart Kenney
Reiland Quinn
Rufus Rand
Earl Sneed
James M. Stewart
Forrest Vosler
Benjamin F. Warmer
Lowell P. Weicker
Cornelius Vanderbilt Whitney
John Hay Whitney

The Twelve Founders

John S. Allard, Bronxville, N.Y.
Everett R. Cook, Memphis, Tenn.
Edward P. Curtis, Rochester, N.Y.
Jimmy Doolittle, Los Angeles
W. Deering Howe, New York
Rufus Rand, Sarasota, Fla.
Sol A. Rosenblatt, New York
Julian B. Rosenthal, New York
James M. Stewart, Beverly Hills, Calif.
Lowell P. Weicker, New York
Cornelius Vanderbilt Whitney, New York
John Hay Whitney, New York

H.H. Arnold Award Recipients

Until 1986, AFA's highest aerospace award was the H.H. Arnold Award. Named for the World War II leader of the Army Air Forces, it was presented annually in recognition of the most outstanding contributions in the field of aerospace activity. In 1986, the Arnold Award was redesignated AFA's highest honor to a member of the armed forces in the field of national security. It continues to be presented annually.

Year	Recipient(s)
1948	W. Stuart Symington, Secretary of the Air Force
1949	Maj. Gen. William H. Tunner and the men of the Berlin Airlift
1950	Airmen of the United Nations in the Far East
1951	Gen. Curtis E. LeMay and the personnel of Strategic Air Command
1952	Sens. Lyndon B. Johnson and Joseph C. O'Mahoney
1953	Gen. Hoyt S. Vandenberg, former Chief of Staff, USAF
1954	John Foster Dulles, Secretary of State
1955	Gen. Nathan F. Twining, Chief of Staff, USAF
1956	Sen. W. Stuart Symington
1957	Edward P. Curtis, special assistant to the President
1958	Maj. Gen. Bernard A. Schriever, Cmdr., Ballistic Missile Div., ARDC
1959	Gen. Thomas S. Power, CINC, SAC
1960	Gen. Thomas D. White, Chief of Staff, USAF
1961	Lyle S. Garlock, Assistant Secretary of the Air Force
1962	A.C. Dickieson and John R. Pierce, Bell Telephone Laboratories
1963	The 363rd Tactical Recon. Wing and the 4080th Strategic Wing
1964	Gen. Curtis E. LeMay, Chief of Staff, USAF
1965	The 2nd Air Division, PACAF
1966	The 8th, 12th, 355th, 366th, and 388th Tactical Fighter Wings and the 432nd and 460th TRWs
1967	Gen. William W. Momyer, Cmdr., 7th Air Force, PACAF
1968	Col. Frank Borman, USAF; Capt. James Lovell, USN; and Lt. Col. William Anders, USAF, Apollo 8 crew
1969	*(No presentation)*
1970	Apollo 11 team (J.L. Atwood; Lt. Gen. S.C. Phillips, USAF; and astronauts Neil Armstrong and USAF Cols. Buzz Aldrin and Michael Collins)
1971	John S. Foster Jr., Dir. of Defense Research and Engineering
1972	Air units of the Allied Forces in Southeast Asia (Air Force, Navy, Army, Marine Corps, and the Vietnamese Air Force)
1973	Gen. John D. Ryan (Ret.), former Chief of Staff, USAF
1974	Gen. George S. Brown, USAF, Chm., Joint Chiefs of Staff
1975	James R. Schlesinger, Secretary of Defense
1976	Sen. Barry M. Goldwater
1977	Sen. Howard W. Cannon
1978	Gen. Alexander M. Haig Jr., USA, Supreme Allied Commander, Europe
1979	Sen. John C. Stennis
1980	Gen. Richard H. Ellis, USAF, CINC, SAC
1981	Gen. David C. Jones, USAF, Chm., Joint Chiefs of Staff
1982	Gen. Lew Allen Jr. (Ret.), former Chief of Staff, USAF
1983	Ronald W. Reagan, President of the United States
1984	The President's Commission on Strategic Forces (the Scowcroft Commission)
1985	Gen. Bernard W. Rogers, USA, SACEUR
1986	Gen. Charles A. Gabriel (Ret.), former Chief of Staff, USAF
1987	Adm. William J. Crowe Jr., USN, Chm., Joint Chiefs of Staff
1988	Men and women of the Ground-Launched Cruise Missile team
1989	Gen. Larry D. Welch, Chief of Staff, USAF
1990	Gen. John T. Chain, CINC, SAC
1991	Lt. Gen. Charles A. Horner, Cmdr., CENTCOM Air Forces and 9th Air Force
1992	Gen. Colin L. Powell, USA, Chm., Joint Chiefs of Staff
1993	Gen. Merrill A. McPeak, Chief of Staff, USAF
1994	Gen. John Michael Loh, Cmdr., Air Combat Command
1995	World War II Army Air Forces veterans
1996	Gen. Ronald R. Fogleman, Chief of Staff, USAF
1997	Men and women of the United States Air Force
1998	Gen. Richard E. Hawley, Cmdr., ACC
1999	Lt. Gen. Michael C. Short, Cmdr., Allied Air Forces Southern Europe
2000	Gen. Michael E. Ryan, Chief of Staff, USAF
2001	Gen. Joseph W. Ralston, CINC, EUCOM
2002	Gen. Richard B. Myers, USAF, Chm., Joint Chiefs of Staff
2003	Lt. Gen. T. Michael Moseley, Cmdr., air component, CENTCOM, and 9th Air Force
2004	Gen. John P. Jumper, Chief of Staff, USAF

John R. Alison Award Recipients

Established in 1992, the John R. Alison Award is AFA's highest honor for industrial leadership.

1992	Norman R. Augustine, Chairman, Martin Marietta
1993	Daniel M. Tellep, Chm. and CEO, Lockheed
1994	Kent Kresa, CEO, Northrop Grumman
1995	C. Michael Armstrong, Chm. and CEO, Hughes Aircraft
1996	Harry Stonecipher, Pres. and CEO, McDonnell Douglas
1997	Dennis J. Picard, Chm. and CEO, Raytheon
1998	Philip M. Condit, Chm. and CEO, Boeing
1999	Sam B. Williams, Chm. and CEO, Williams International
2000	Simon Ramo and Dean E. Wooldridge, missile pioneers
2001	George David, Chm. and CEO, United Technologies
2002	Sydney Gillibrand, Chm., AMEC; and Jerry Morgensen, Pres. and CEO, Hensel Phelps Construction
2003	Joint Direct Attack Munition Industry Team, Boeing
2004	Thomas J. Cassidy Jr., Pres. and CEO, General Atomics Aeronautical Systems

W. Stuart Symington Award Recipients

Since 1986, AFA's highest honor to a civilian in the field of national security has been the W. Stuart Symington Award. The award, presented annually, is named for the first Secretary of the Air Force.

Year	Recipient(s)
1986	Caspar W. Weinberger, Secretary of Defense
1987	Edward C. Aldridge Jr., Secretary of the Air Force
1988	George P. Schultz, Secretary of State
1989	Ronald W. Reagan, former President of the United States
1990	John J. Welch, Asst. SECAF (Acquisition)
1991	George Bush, President of the United States
1992	Donald B. Rice, Secretary of the Air Force
1993	Sen. John McCain (R-Ariz.)
1994	Rep. Ike Skelton (D-Mo.)
1995	Sheila E. Widnall, Secretary of the Air Force
1996	Sen. Ted Stevens (R-Alaska)
1997	William Perry, former Secretary of Defense
1998	Rep. Saxby Chambliss (R-Ga.) and Rep. Norman D. Dicks (D-Wash.)
1999	F. Whitten Peters, Secretary of the Air Force
2000	Rep. Floyd Spence (R-S.C.)
2001	Sen. Michael Enzi (R-Wyo.) and Rep. Cliff Stearns (R-Fla.)
2002	Rep. James V. Hansen (R-Utah)
2003	James G. Roche, Secretary of the Air Force
2004	Peter B. Teets, Undersecretary of the Air Force

Gold Life Member Card Recipients

Awarded to members whose AFA record, production, and accomplishment on a national level have been outstanding over a period of years.

Name	Year	Card No.
Gill Robb Wilson	1957	1
Jimmy Doolittle	1959	2
Arthur C. Storz Sr.	1961	3
Julian B. Rosenthal	1962	4
Jack B. Gross	1964	5
George D. Hardy	1965	6
Jess Larson	1967	7
Robert W. Smart	1968	8
Martin M. Ostrow	1973	9
James H. Straubel	1980	10
Martin H. Harris	1988	11
Sam E. Keith Jr.	1990	12
Edward A. Stearn	1992	13
Dorothy L. Flanagan	1994	14
John O. Gray	1996	15
Jack C. Price	1997	16
Nathan H. Mazer	2002	17
John R. Alison	2004	18

Aerospace Education Foundation Chairmen of the Board

W. Randolph Lovelace II
1963-64

Laurence S. Kuter
1964-66

Walter J. Hesse
1966-69

J. Gilbert Nettleton Jr.
1969-73

George D. Hardy
1973-75

Barry M. Goldwater
1975-86

George D. Hardy
1986-89

James M. Keck
1989-94

Walter E. Scott
1994-96

Thomas J. McKee
1996-98

Michael J. Dugan
1998-2000

Jack C. Price
2000-02

Richard B. Goetze Jr.
2002-03

L. Boyd Anderson
2003-

Aerospace Education Foundation Presidents

John B. Montgomery
1963-64

Lindley J. Stiles
1964-66

B. Frank Brown
1966-67

Leon M. Lessinger
1967-68

L.V. Rasmussen
1968-71

Leon M. Lessinger
1971-73

Wayne O. Reed
1973-74

William L. Ramsey
1975-81

Don C. Garrison
1981-84

George D. Hardy
1984-86

Eleanor P. Wynne
1986-87

James M. Keck
1988-89

Gerald V. Hasler
1989-94

Thomas J. McKee
1994-96

Walter E. Scott
1996-98

Jack C. Price
1998-2000

Richard B. Goetze Jr.
2000-02

L. Boyd Anderson
2002-03

Mary Anne Thompson
2003-

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AFA Executive Directors

Willis S. Fitch
1946-47

James H. Straubel
1948-80

Russell E. Dougherty
1980-86

David L. Gray
1986-87

John O. Gray
1987-88

Charles L. Donnelly Jr.
1988-89

John O. Gray
1989-90

Monroe W. Hatch Jr.
1990-95

John A. Shaud
1995-2002

Donald L. Peterson
2002-

AFA National Secretaries

Sol A. Rosenblatt	1946-47
Julian B. Rosenthal	1947-59
George D. Hardy	1959-66
Joseph L. Hodges	1966-68
Glenn D. Mishler	1968-70
Nathan H. Mazer	1970-72
Martin H. Harris	1972-76
Jack C. Price	1976-79
Earl D. Clark Jr.	1979-82
Sherman W. Wilkins	1982-85
A.A. "Bud" West	1985-87
Thomas J. McKee	1987-90
Thomas W. Henderson	1990-91
Mary Ann Seibel	1991-94
Mary Anne Thompson	1994-97
William D. Croom Jr.	1997-2000
Daniel C. Hendrickson	2000-03
Thomas J. Kemp	2003-

AFA National Treasurers

W. Deering Howe	1946-47
G. Warfield Hobbs	1947-49
Benjamin Brinton	1949-52
George H. Haddock	1952-53
Samuel M. Hecht	1953-57
Jack B. Gross	1957-62
Paul S. Zuckerman	1962-66
Jack B. Gross	1966-81
George H. Chabbott	1981-87
William N. Webb	1987-95
Charles H. Church Jr.	1995-2000
Charles A. Nelson	2000-

AFA Membership

Year	Total	Life Members	Year	Total	Life Members
1946	51,243	32	1976	148,202	975
1947	104,750	55	1977	155,850	1,218
1948	56,464	68	1978	148,711	1,541
1949	43,801	70	1979	147,136	1,869
1950	38,948	79	1980	156,394	2,477
1951	34,393	81	1981	170,240	3,515
1952	30,716	356	1982	179,149	7,381
1953	30,392	431	1983	198,563	13,763
1954	34,486	435	1984	218,512	18,012
1955	40,812	442	1985	228,621	23,234
1956	46,250	446	1986	232,722	27,985
1957	51,328	453	1987	237,279	30,099
1958	48,026	456	1988	219,195	32,234
1959	50,538	458	1989	204,309	34,182
1960	54,923	464	1990	199,851	35,952
1961	60,506	466	1991	194,312	37,561
1962	64,336	485	1992	191,588	37,869
1963	78,034	488	1993	181,624	38,604
1964	80,295	504	1994	175,122	39,593
1965	82,464	514	1995	170,881	39,286
1966	85,013	523	1996	161,384	39,896
1967	88,995	548	1997	157,862	41,179
1968	97,959	583	1998	152,330	41,673
1969	104,886	604	1999	148,534	42,237
1970	104,878	636	2000	147,336	42,434
1971	97,639	674	2001	143,407	42,865
1972	109,776	765	2002	141,117	43,389
1973	114,894	804	2003	137,035	42,730
1974	128,995	837	2004	133,812	42,767
1975	139,168	898			

Dottie Flanagan Staff Award of the Year

A donation from Jack B. Gross, national director emeritus, enables AFA to honor staff members each quarter. Those members become eligible for the staff award of the year.

1992	Doreatha Major
1993	Jancy Bell
1994	Gilbert Burgess
1995	David Huynh
1996	Sherry Coombs
1997	Katherine DuGarm
1998	Suzann Chapman
1999	Frances McKenney
2000	Ed Cook
2001	Katie Doyle
2002	Jeneathia Wright
2003	Jim Brown

AFA / AEF National Report

afa-aef@afa.org

By Frances McKenney, Assistant Managing Editor

Outstanding "Blackjacks"

The US Air Force Academy's Cadet Squadron 21, nicknamed the "Blackjacks," has earned the Outstanding Squadron trophy for the third time in 45 years.

Presented at the annual Outstanding Squadron Banquet—sponsored by the Air Force Association and the academy's Assocation of Graduates—the AFA award recognized the best team among 36 cadet squadrons.

AFA Chairman of the Board John J. Politi attended the May 28 banquet in Colorado Springs, Colo., along with Rocky Mountain Region President Charles P. Zimkas Jr., Colorado State President David Thomson, and **Lance P. Sijan Chapter** President Gayle White.

Photo courtesy US Air Force Academy

AFA Board Chairman John Politi (far left) joined Lt. Gen. John Rosa (far right) in presenting the Outstanding Squadron trophy to Cadet Squadron 21, commanded by Chris Marron (next to Politi) and Michael Chmielewski (next to Rosa).

Gentlemen, Start Your Engines

One newspaper called it a slam fest: an 18-car pileup, followed later by a car slipping on oil and slamming into a wall. Yellow flags slowed down the drivers 11 times. Twice, red flags brought everything to a halt. It was a NASCAR race at Dover International Speedway in June—and several **Delaware Galaxy Chapter** members witnessed the action firsthand, while working to raise funds to support aerospace education activities.

These Galaxy Chapter members, including Richard Bundy (far left) and Ronald Love (second from right), and AFJROTC cadets from Dover, Del., performed many jobs at the Dover International Speedway in May. They donated their wages to the chapter's aerospace education activities.

The AFAers took tickets at the gates, stamped hands for re-entry, checked picnic coolers carried in by the fans, and helped people find seats and facilities at the racetrack nicknamed "The Monster Mile." The chapter members later donated their wages to fund the chapter's scholarships and aerospace education projects, benefitting cadets in five AFJROTC units in Delaware high schools.

Stephen W. Welde, chapter president, said the members work at the speedway twice a year and this time raised a record $1,200 for their Sunday afternoon's labor.

Working with Welde in June were Richard B. Bundy, Delaware state president; John J. Kotzun, chapter vice president; John K. Murphy, treasurer; Daniel A. Alvarez III; Ronald H. Love; and Charles H. Peck Jr.

They were joined by AFJROTC cadets who always work alongside them, helping with the heavy lifting. "Young backs," Welde called them. He added, "I must admit, their favorite part is

when we let them go out and watch parts of the race or meet drivers."

Play Ball!

In Germany, the **Charlemagne Chapter** hosted the second annual AFA Softball Tournament at NATO's Geilenkirchen Air Base in May.

After two days of play—during which they were undefeated—the team from Sembach, Germany, won the tournament, beating five other teams from Germany and the Netherlands. The Sembach "Tigers" had traveled for three hours to get to Geilenkirchen, located on the Netherlands border, about 25 miles west of Cologne. MSgt. Bethann Fleming, chapter president, and CMSgt. Gregory M. Fleming, treasurer, presented the team with the first-place trophy and tournament t-shirts proclaiming them as "Top Dogs."

Home team GK-1—including chapter members SMSgt. Curtis A. Burton and SMSgt. Jackie D. Green Jr.—took second place. The AFNORTH team, representing Allied Forces North in Brunssum, Netherlands, finished third.

Fleming, whose USAF job is executive support in the office of the US senior national representative at Geilenkirchen, credited TSgt. Troy D. Hintermeister with organizing a group that carried out the tournament logistics, marking the fields, rounding up umpires, arranging publicity, and even designing the winners' shirts. Hintermeister also hit a two-run homer during one of the games.

Hintermeister wasn't an AFA member at the time, Fleming pointed out, but he is now.

Self-Education

Alfred Rodriguez, the new aerospace education VP for the **Jerry Waterman Chapter (Fla.),** retired from the Air Force after 34 years in logistics. He knew the loggie field well, but he realized his AFA work was in an area totally new to him, and he had a lot to learn. He tackled the challenge head-on.

As one of his first steps, Rodriguez met with Aerospace Education Foundation director Danny L. Marrs. He wanted to find out more about AEF and how to handle the Waterman Chapter's own education foundation.

He also visited the Hillsborough County (Fla.) Education Foundation for help on how to reach local teachers and inform them about AEF. He was put in touch with Lynn McDaniel, a teacher at Stewart Middle Magnet School in Tampa. Her husband, David, not only turned out to be a Waterman Chapter member, but it happened that Lynn McDaniel was organizing a teachers workshop on aerospace education.

Rodriguez attended one of the sessions, held in June at McDaniel's school. It was, he said, an opportunity to find out what teachers know about aerospace education and how they teach the topic. Ten teachers attended the workshop. They spent three days learning about the Wright brothers; aerospace education Web sites and field trip possibilities; the US space program; and a space simulation experience available through www.space-explorers.com.

Rodriguez gave a short presentation on the workshop's final day, speaking about AEF, the Jerry Waterman Education Foundation, and AFA. His

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 Participates in Capitol Hill Press Conference

Officials from the Air Force Association and veterans service organizations (VSOs) joined **Reps. Nancy Pelosi (D-N.Y.), Ike Skelton (D-Mo.),** and **John Spratt (D-N.C.)** for a Capitol Hill press conference in June on veterans health care legislation. Pelosi is the House minority leader, Skelton is the ranking member on the House Armed Services Committee, and Spratt is the ranking member of the House Appropriations Committee.

AFA and the VSOs urged lawmakers to support legislation to maintain and improve the quality of health care in the Department of Veterans Affairs medical system. The VSO agenda also included recommending that Congress establish a mandatory funding program for the VA.

"teaching aids" included 10 of his own back issues of *Air Force* Magazine. The teachers were enthusiastic, he said. This surprised him because they did not all teach science and math; some taught history and language arts.

Rodriguez followed up this workshop by meeting with McDaniel to come up with ideas on how to interest more teachers in teaching aerospace topics.

Leadership

The recipient of the **Savannah (Ga.) Chapter's** first Edward I. Wexler Excellence in Leadership award knows all about excellence and leadership, not to mention awards.

TSgt. Kevin D. Vance, a terminal attack controller with the 17th Air Support Operations Squadron at Hunter Army Airfield, Ga., received his latest honor at the chapter's annual awards banquet. At age 27, he is described by his unit commander as "a highly decorated combat warrior."

In 2002, Vance earned a Silver Star, Bronze Star, Purple Heart, and Army Commendation Medal for actions in Afghanistan and was Air Combat Command's NCO of the Year. In 2003, the White House invited him to President Bush's State of the Union Address at the Capitol. Later that year, he was named a USAF Outstanding Airman as well as a member of AFA's Team of the Year.

The chapter award that he received is named for ANG Col. Edward I. Wexler, an AFA national director and longtime AFA leader in Georgia, who shepherded the chapter through its early years.

Among other awardees at the chapter banquet, held in April at the Mighty Eighth Air Force Museum, were SMSgt. Russell Carpenter, from the 15th Air Support Operations Squadron at Hunter, and several Air National Guard personnel: Capt. Chad Hilde and TSgt. Monte Cook, both from the 165th Airlift Wing, Savannah Arpt.; SMSgt. Arthur Flanders and MSgt. Brenda Garrett, both from the 117th Air Control Squadron at Hunter; and MSgt. Stephen Mixon, from the Combat Readiness Training Center.

Lone Star License Plates

Through the persistence of **Panhandle AFA Chapter** member Robert P. Balliett, AFA supporters in Texas can now boast of their affiliation on car and light-truck license plates. The plates feature AFA's "wee wings" logo on the left side, with the words "Air Force Association" across the bottom.

Chapter communications VP George F. Moore said Balliett has been work-

AFA Conventions

Sept. 11	**Rhode Island State Convention,** North Kingstown, R.I.
Sept. 13-15	**Air and Space Conference,** Washington, D.C.
Sept. 26	**New Hampshire State Convention,** Manchester, N.H.

MSgt. Bethann Fleming, president of the Charlemagne Chapter, presents the second-place trophy to the home team's captain, TSgt. Troy Hintermeister, at the second annual AFA Softball Tournament in Geilenkirchen, Germany. See "Play Ball!" p. 124.

ing since 1998 to secure legislative approval for these license plates. "Robert was not deterred by the bill failing to make it to the floor in either 1999 or 2001," Moore said. Balliett kept on working with state lawmakers and the Texas Department of Transportation, and "Lone Star State" legislators finally authorized the plates late last year.

According to the Texas DOT, the specialty license plates cost $30—in addition to the regular registration and other applicable fees—with $22 of that amount credited to the AFA of Texas account in the state treasury. The money is earmarked for AFA Texas aerospace education efforts, such as academic scholarships.

Balliett is a former chapter president and now serves as chapter membership VP.

Scholarships

The June meeting of the **Donald W. Steel Sr. Memorial Chapter (Va.)** highlighted aerospace education, with AFA Chairman of the Board John J. Politi and AEF President Mary Anne Thompson among the honored guests at the Army-Navy Country Club in Arlington, Va.

Steele Chapter scholarships of $1,000 were presented to college students TSgt. Tony Goldstrom, TSgt. Tommy Rutherford, Taylor Halbert, Janelle Richardson, and Karen Richardson.

The chapter also named Carrie Strasburger as its Teacher of the Year. Strasburger teaches sixth-grade science and math at Williamsburg Middle School in Arlington. She received an AEF grant, a personalized AFA jacket, and AFA certificates.

Strasburger's award prompted guest speaker Gen. Gregory S. Martin to open his presentation by recalling his elementary school days in Arlington County. Now commander of Air Force Materiel Command at Wright-Patterson AFB, Ohio, Martin was born at Ft. Myer, Va.

His formal remarks covered AFMC's contributions to the technical superiority of USAF forces in recent conflicts.

Chapter President James Lauducci joined Thompson in honoring Martin with an AEF fellowship. The award included a copy of *Crusade for Airpower: The Story of the Air Force Association,* written by James H. Straubel, AFA executive director from 1948 to 1980.

A color guard of AFJROTC cadets from Virginia Squadron 821, Arlington Career Center, conducted a flag presentation ceremony. Lauducci reported that the audience of more than 130 included foreign air attaches.

More AFA/AEF News

■ In June, **Thomas Anthony Chapter (Md.)** officers and members received a lithograph signed by the Canadian Forces Snowbirds aerial demonstration team. It was thanks for helping sponsor the team's performance at the Joint Service Open House held at Andrews AFB, Md., in May. Canadian Forces Capt. Mark Wuennenberg, an exchange officer at the Air Force Flight Standards Agency at Andrews, presented the gift to Charles X. Suraci Jr., the chapter president, at the base. Other chapter members on hand to receive the memento were Maryland State Treasurer Frank M. Coorsen, Chapter Vice President Natalie L. Desmond, Chapter Treasurer Thomas Bass Jr., John A. Thomas, and Spann Watson. ■

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.

Teachers at a workshop in Tampa, Fla., hear a presentation by Al Rodriguez, the aerospace education vice president for the Jerry Waterman Chapter. See "Self-Education," p. 124.

Reunions

reunions@afa.org

49th FG Assn. Oct. 20-24 in Las Vegas. **Contact:** Doug Melzer, 1915 Country Club Dr., Redlands, CA 92373-7305 (909-793-4957).

67th RTS Assn (Japan). Oct. 27-30 at the Hilton Beach Front Hotel in Cocoa Beach, FL. **Contact:** Richard Blanchard, 2530 Edward, Salina, KS 67401 (785-827-4145) (dlblanch@cox.net).

75th FIS. Oct. 1-3 at the CAF AirSho 2004 in Midland-Odessa, TX. **Contact:** John Williams, 1606 W. Texas Ave., Midland, TX 79701 (432-694-9663) (williamsandassociates@cox.net).

94th BG (H) Assn. Oct. 5-10 at the Westin Crown Center Hotel in Kansas City, MO. **Contact:** Mort Robinson (707-578-8663) (robbie94@pacbell. net).

352nd FG/1st SG, Eighth AF. Oct. 9-12 in Savannah, GA. **Contact:** Bob Powell, 1545 Rainier Falls Dr., Atlanta, GA 30329 (404-636-3747) (bluenoserbob2@juno.com).

435th OMS Enroute MX Sq. Oct. 8-10 at the Crowne Plaza Hotel in St. Louis. **Contact:** Stanley Miller, 7213 Avila Dr., Fayetteville, NC 28314 (910-867-6508) (flymiller@mindspring.com).

438th Troop Carrier Gp. Oct. 4-7 at the Ramada Beach Resort in Fort Walton Beach, FL. **Contact:** Bob Gates (850-243-7465) (bobgates@cox.net).

493rd BG (H), Eighth AF (WWII). Oct. 5-10 in Kansas City, MO. **Contact:** Jack Rude, 2609 S. Bowie, Amarillo, TX 79109 (806-353-2486).

525th FIS, Landstuhl, Germany (1954-59). April 8-10, 2005 at the Holiday Inn in Cocoa Beach, FL. **Contact:** Albert and Carol Mikusi, 89 Pond Rd., Vernon, VT 05354 (802-254-6297).

556th Recon Sq. April 27-28, 2005, at the Gold Coast Hotel & Casino in Las Vegas. **Contact:** Buck Buchanan, 330 Vine St., Vacaville, CA 95688-8703 (707-446-2825).

6091st Recon Sq. April 27-28, 2005, at the Gold Coast Hotel & Casino in Las Vegas. **Contact:** Buck Buchanan, 330 Vine St., Vacaville, CA 95688-8703 (707-446-2825).

AC-119 gunship, including aircrew and maintenance. Oct. 1-3 at the Hope Hotel in Dayton, OH. **Contacts:** Roger Stevens (304-584-4506) (rogac119@aol.com) or Wayne Laessig (707-592-4492) (qadvocate@sbcglobal.net).

Pilot Class 47-C. Oct. 21-24 in Kahului, HI. **Contact:** Ray Sailor, 80 Laenani St., Haiku, HI 96708 (808-573-6339).

Pilot Class 49-C. Jan. 9-16, 2005, cruise from Fort Lauderdale, FL. **Contact:** Paul Kennedy, 2301 Lloyd St., Bellevue, NE 68005 (402-291-5433) (duhhh1@webtv.net).

Pilot Training Classes 52-G and 52-H. Sept. 19-21 at the Radisson Cincinnati Riverfront Hotel in Covington, KY. **Contact:** Randy Presley, PO Box 1238, Mt. Pleasant, TX 75456-1238 (903-573-2439) (rp@presley.com).

Pilot Training Class 55-S. Oct. 7-9, 2005, in Midland, TX. **Contact:** Marvin Craig (970-493-0842) (falconuno1@aol.com).

Pilot Training Class 56-O. March 2-5, 2006, in Tucson, AZ. **Contact:** John Kerr Jr., 1439 Fulbright Ave., Redlands, CA 92373-4937 (phone: 909-792-7003 or fax: 909-798-5377) (john_kerr @eee.org).

Pilot Training Class 57-R. Oct. 12-15, 2005, in San Antonio. **Contact:** Robert Cinalli, 5 Avon Rd., Pine Beach, NJ 08741 (732-244-1348) (bjcinalli@earthlink.net).

Swiss Internees. Oct. 13-17 in Cape Canaveral, FL. **Contact:** Swiss Internees Assoc., 69D Dorchester Dr., Lakewood, NJ 08791 (macs @prodigy.net).

Tac Recon, all who have flown tactical reconnaissance aircraft. Oct. 14-17 in Cocoa Beach, FL. **Contact:** Jim Marshall (321-242-6730).

Thailand-Laos-Cambodia Brotherhood Vietnam War veterans. Sept. 24-26 at the Doubletree Hotel Ontario Airport in Ontario, CA. **Contact:** Les Thompson (714-557-0776) (les21@ix.netcom.com).

US Military Academy Preparatory School Class of 1959. Oct. 21-24 at the USMA Prep School at Ft. Monmouth, NJ. **Contacts:** Dick Guthrie (rpgu3@sbcglobal.net) or J.E. Condron (260-436-7631).

Seeking members of the **Albrook AFB, Panama, air police** (1951-55) for a reunion. **Contact:** Bob Carlson, 29 Rainbow Pond Dr., #A1, Walpole, MA 02081 (508-668-1655) (bobjoancarlson @earthlink.net).

Seeking members of **Aviation Cadet Class 57-21C,** Harlingen, TX, for a reunion in Albuquerque, NM, in early October 2006. **Contact:** Jon Davis, 9706 Camino Del Sol NE, Albuquerque, NM 87111-1510 (505-821-6838) (jdavis502@comcast.net).

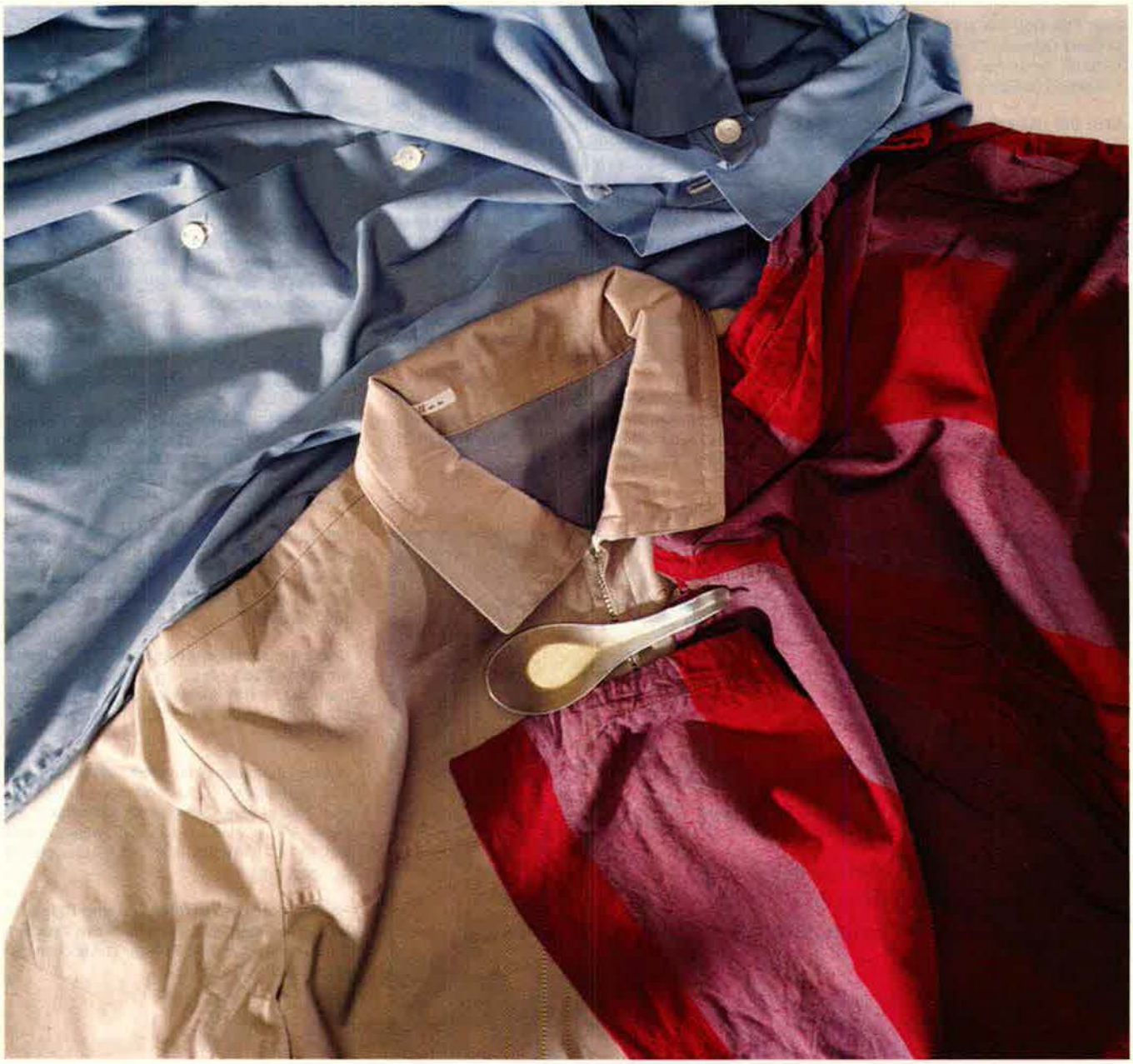
Seeking members of **Pilot Training Class 53-B1,** Vance AFB, OK, for a reunion. **Contact:** Fred Chemidlin Jr. (908-789-2877) (fredchemidlin @yahoo.com). ■

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.

Pieces of History

Photography by Paul Kennedy

With Honor



The Vietnam War produced thousands of missing US service members. Of these, 771 were known to have been captured. Most of these were USAF or Navy airmen shot down over North Vietnam. US prisoners were subjected to years of privation and torture. Some succumbed to wounds, illness, or malnutrition. The US Air Force Museum at Wright-Patterson AFB, Ohio, has carefully preserved some of the artifacts of this grim but heroic period. The reddish pajama-like shirt and pants were typical POW attire in Hanoi's prisons. The simple spoon was a standard feature of prison life. On the other hand, the blue shirt and tan jacket were issued fresh to POWs shortly before repatriation in 1973. It was a cynical attempt to convince a watching world that the POWs had been treated well.

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