

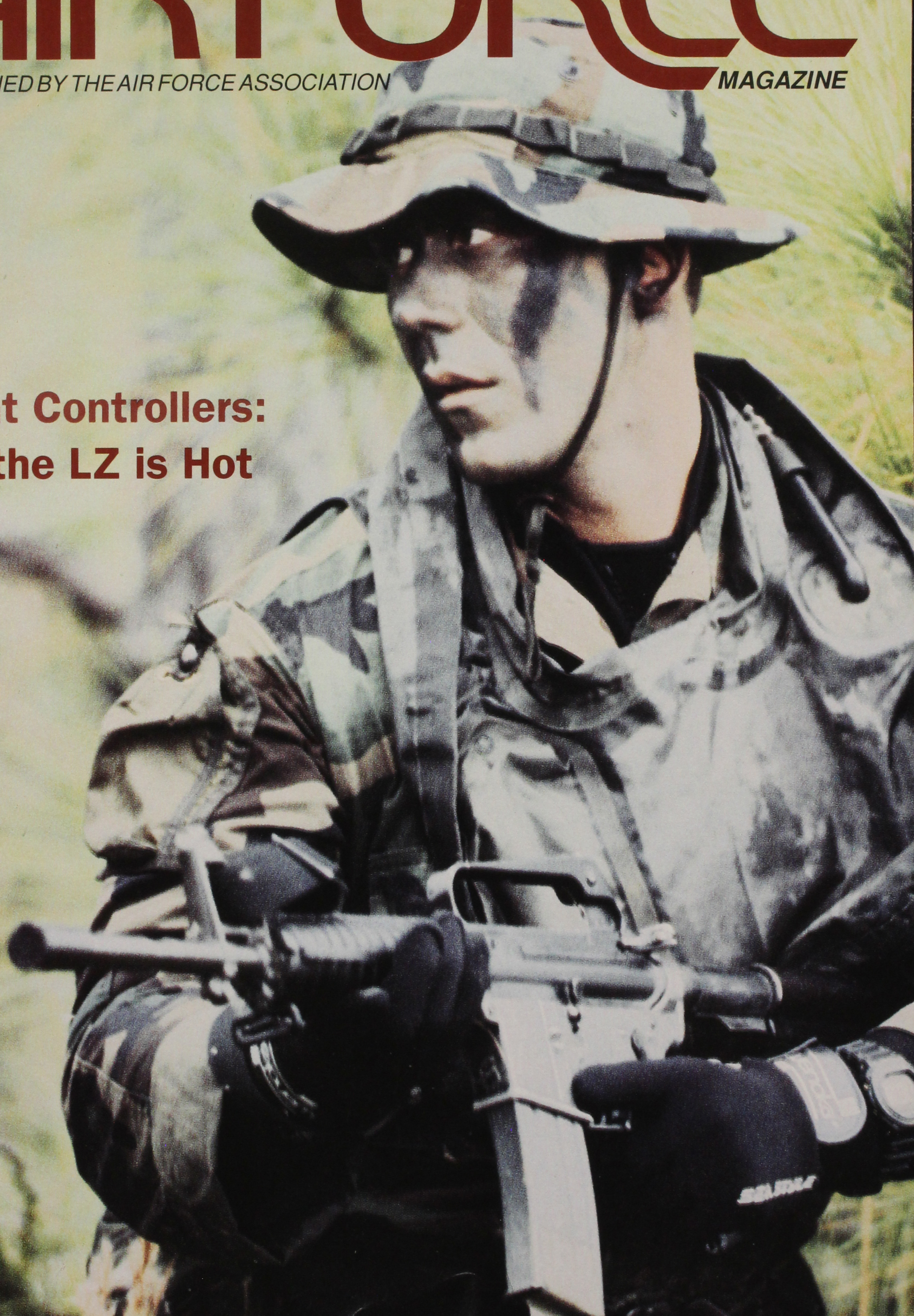
FEBRUARY 1994/\$3

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE

**Combat Controllers:
When the LZ is Hot**



Why buy anything else?

GUNSMOKE '93 RESULTS

	Bombing Finish	Overall Finish
1st	F-16	F-16
2nd	F-16	F-16
3rd	F-16	F-15E
4th	F-16	F-16
5th	F-15E	F-16
6th	F-16	F-16
7th	F-16	F-15E
8th	F-15E	A-10
9th	A-10	F-16
10th	F-16	A-10

F-16 Competition Awards

- #1 - Overall Competition
- #1 - Fighter Team
- #1 - Operations Team
- #1 - Top Gun
- #1 - Dive Bombing
- #1 - Low Angle Bombing
- #1 - Navigation Attack
- #1 - Fighter Maintenance



GUNSMOKE,
in October 1993, the definitive USAF worldwide
air-to-surface weapons competition determined the "Best of the Best"...

F-16 "World Champion"... again.

 **Lockheed**
Fort Worth Company

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE

February 1994, Vol. 77, No. 2

- 4 Letters
- 8 Capitol Hill
- 14 Aerospace World
- 19 Senior Staff Changes
- 20 Index to Advertisers
- 59 Flashback
- 70 Valor
- 71 AFA State Contacts
- 73 AFA/AEF Report
- 76 Unit Reunions
- 77 Bulletin Board
- 80 Pieces of History



About the cover: Sgt. Chris Crutchfield of the 23d Special Tactics Squadron participates in a combat control exercise. See "When the LZ Is Hot," p. 28. Staff photo by Guy Aceto.

2 Editorial: Roots of Failure

By John T. Correll

It wasn't personality or style that did in Les Aspin. It was policies that wouldn't work.

10 Washington Watch: How Many Bombers Are Enough?

By James W. Canan

The Air Force is counting on precision guided munitions to compensate for its dwindling bomber fleet.

22 This Isn't the Bottom Yet

By David J. Lynch

Air Force leaders brace themselves for the hard times yet to come.

28 When the LZ Is Hot

By Frank Oliveri

Air Force combat controllers establish communications for special operations forces in hostile landing zones.

36 Transition Is Not for Sissies

By Bruce D. Callander

Twenty-five million veterans are looking for work. The Air Force is doing its best to help them.

40 The Force in Art

Highlights from the Air Force Art Program.

46 The Case for Airpower Modernization

By Russell D. Shaver, Edward R.

Harshberger, and Natalie W. Crawford

A recent RAND Corp. study suggests that the long-standing US edge in airpower is being threatened.

54 The Air Mobility Master Plan

By Dan Allsup

AMC outlines a way to meet its future airlift requirements.

60 Another Title for the Crew Chief

By C. V. Glines

TSgt. Scott Womack is AFA's Crew Chief of the Year.



22

62 Russia Fragments Its Airpower

By Maj. Brian Collins, USAF

Russia's reorganization of its armed forces will reduce the role of airpower.

66 USAF Human Systems Checklist

Edited by Tamar A. Mehuron

Work in progress at Air Force Materiel Command's Human Systems Center, Brooks AFB, Tex., and at Armstrong Laboratory, Brooks AFB and Wright-Patterson AFB, Ohio.



40

AIR FORCE Magazine (ISSN 0730-6784) February 1994 (Vol. 77, No. 2) is published monthly by the Air Force Association, 1501 Lee Highway, Arlington, VA 22209-1198. Phone (703) 247-5800. Second-class postage paid at Arlington, Va., and additional mailing offices. **Membership Rate:** \$25 per year; \$60 for three-year membership. **Life Membership:** \$400 single payment, \$420 extended payments. **Subscription Rate:** \$25 per year; \$25 per year additional for postage to foreign addresses (except Canada and Mexico, which are \$8 per year additional). Regular issues \$3 each. Special issues (USAF Almanac issue and Anniversary issue) \$5 each. **Change of address** requires four weeks' notice. Please include mailing label. **POSTMASTER:** Send changes of address to Air Force Association, 1501 Lee Highway, Arlington, VA 22209-1198. Publisher assumes no responsibility for unsolicited material. Trademark registered by Air Force Association. Copyright 1994 by Air Force Association. All rights reserved. Pan-American Copyright Convention.

By John T. Correll, Editor in Chief

Roots of Failure

EVEN those of us who were frequently critical of Secretary of Defense Les Aspin felt a little sad about it December 15 when his dismissal was announced. It was a sorry end to a long and often distinguished public career.

Mr. Aspin's fall has been attributed, variously, to his professorial demeanor, failure to establish good working relationships, health, fatigue, lack of administrative ability, indecisiveness, undercutting the White House staff on the homosexual issue, and failure to clamp down on the armed forces. Even his rumpled appearance was mentioned.

Many saw his most famous mistake—the denial of armor to US forces in Somalia, leading to the deaths of eighteen soldiers in October—as a random anomaly.

The fact is, Mr. Aspin brought with him the seeds of his own undoing when he came to the Pentagon. His real problems had nothing to do with the way he wore his suits or ran his staff meetings. The problem was policies that would not work.

The "Options" papers. In February 1992, when Mr. Aspin was chairman of the House Armed Services Committee, he published a series of "Options" papers describing alternatives to the Bush Administration's defense program.

These papers became the basis for Bill Clinton's position on defense in the campaign. Candidate Clinton didn't know much about defense, but the Aspin papers said what he wanted to hear—that forces and budgets could be cut deeply without harm. The Aspin options subsequently became the basis for the defense program the new Clinton Administration would try to implement.

"Limited Objectives" doctrine. In the fall of 1992, Rep. Aspin attacked the Pentagon's "all or nothing" standard for committing troops to battle. He said the public would be reluctant to pay for armed forces that were "not very useful" because of a fastidious policy that allowed their employment "only very, very rarely." Mr.

Aspin brought the "limited objectives/ minimal force" mindset with him to office. It fit well with the Administration's tendencies toward social engineering abroad. Following the "Limited Objectives" concept, the relief mission to Somalia slid slickly from humanitarian relief into armed peacekeeping.

It was consistent with the new thinking when Secretary Aspin re-

It wasn't personality or style that did in Les Aspin. It was policies that wouldn't work.

fused armored support for troops committed casually to trying to capture a Somali warlord. Eighteen Army Rangers died on October 3. On December 2, US troops were acting as bodyguards for that same warlord (no longer a "thug" in shifting Administration parlance) and flying him to a meeting on an Army aircraft.

The thin-air budget. On March 27, the Defense Department announced a new five-year budget, with numbers that were not only astonishingly low but also arbitrarily set. Program specifics were to be determined later. What made the Administration think this preposterous approach might work? The decision-makers were going on the basis of the Aspin "Options" packages, where the analysis and arithmetic had supposedly been done. The dollar estimates, concepts, and rhetoric all bore a strong family resemblance to the 1992 Aspin papers.

Strategic and financial floundering. Throughout the summer and into the fall, Mr. Aspin and the armed forces struggled to fabricate a defense program that would make the

budget numbers work. One product of this effort was the shaky "Win-Hold-Win" strategy that Mr. Aspin withdrew in June under fire and ridicule.

The funding gap. Mr. Aspin revealed in October what almost everybody who follows defense matters knew already: The March budget wouldn't cover the program, not even the scaled-down program that emerged from Mr. Aspin's fiscally driven "Bottom-Up Review." At first, the funding gap was said to be \$13 billion, then \$23 billion, then \$50 billion—or more. (In December, the Administration revised the funding gap estimate downward to \$31 billion, then days later declared the shortfall to have been "resolved.")

Much has been said about Mr. Aspin's inability to smooth over the rift between the President and the military. (The assumption seems to be that the troops would have behaved like obedient robots instead of real people if Mr. Aspin had been firm and tough.)

The real problem was the basis of the rift—the homosexual issue, the blind budget cuts, the options package mentality, the careless commitment of force, and the general disinterest and disrespect from the Administration—not Aspin's inability to smooth it over.

Mr. Aspin was not, as many have depicted him, an innocent victim, caught in the middle. He was both inspiration for and architect of the policies that ultimately consumed him. It was his misfortune that an inflexible Administration locked on to his optimistic, early promises and was unwilling to adjust thereafter.

It should be said for Mr. Aspin that, unlike some in the Administration, he genuinely liked and respected the military. Unfortunately, he was not able to deflect the White House from the relentless course that his theories had justified in the beginning.

His successor's position is not to be envied. He inherits the same policies and goals that brought Aspin to grief, and the situation today is even more difficult than the one that Mr. Aspin waded into a year ago. ■

THE RESULTS ARE IN. We're flying higher and climbing faster with heavier payloads than any aircraft in our category.

In fact, we've set 14 certified world payload records and have seven additional payload and time-to-climb records still pending. Proof that America's newest airlifter is a world-class performer.

The C-17 Globemaster III. Breaking out of the routine into the remarkable.

MCDONNELL DOUGLAS

Performance Above and Beyond.



**IT TURNS OUT
OUR ROUTINE FLIGHT
TESTING WAS MUCH
MORE THAN ROUTINE.**



Letters

Kitty Hawk Quibbles

In "Up From Kitty Hawk" [December 1993, p. 22], Jeffrey Rhodes writes, "March 25, 1944. Fifteenth Air Force crews close the Brenner Pass between Italy and Austria."

I believe that statement is wrong. If not, the 450th Bomb Group lost four B-24s (including mine) bombing the Brenner Pass on December 29, 1944, for no purpose.

Perhaps Mr. Rhodes should have added the word "temporarily" to his declaration.

Irving Smirnoff
Hamden, Conn.

Congratulations on another superb edition of AIR FORCE Magazine. Your December 1993 issue is a keeper. I always look forward to receiving and reading each month's issue.

I must point out a mistake on p. 37 in "Up From Kitty Hawk." The B-2 did make its first flight on July 17, 1989. I remember it well because I was the pilot accompanying Bruce Hinds. My last name is "Couch," not "Crouch." Also, at the time I was a full colonel, having attained that rank a year earlier. The flight of the B-2 was the highlight of my career.

The heroes of the first flight are the Northrop and Air Force personnel who designed, built, and prepared the B-2 for its maiden flight. Last December, the Air Force took delivery of the first operational aircraft. I hope that in the future you can run an article about the B-2 program and its many successes.

Col. Richard S. Couch,
USAF (Ret.)
Colorado Springs, Colo.

I enjoyed "Up From Kitty Hawk," but one important event was omitted.

On October 2, 1942, the Bell XP-59A, powered by two General Electric I-A jet engines, lifted off from Muroc Dry Lake Bed, Calif., piloted by Bell chief pilot Robert Stanley, in the first flight of a jet airplane in the US. The next day, Col. Lawrence C. Craigie made the first flight by a USAAF pilot.

This was the beginning of the jet age in the United States, but because of wartime secrecy, the story was not

released to the media until January 6, 1944, and it was incomplete without photos. So this important technical development never received the recognition it deserved.

William MacRobbie
Hadley, Mass.

I guess the founding of Strategic Air Command on March 21, 1946, predating USAF's establishment in 1947, wasn't important enough for "Up From Kitty Hawk." How soon we Americans forget. March 1946 to June 1, 1992—forty-six years, twenty-four hours a day, seven days a week, 365 days a year. Airborne alert, ground alert, silo control rooms—peace was our profession, and we delivered!

John F. Rodewolt
Sanford, Fla.

I can't believe that Jeffrey Rhodes left out of "Up From Kitty Hawk" the first supersonic bomber in the world, the B-58 Hustler, which was operational from 1960 to 1969.

The 43d and 305th Bomb Wings were recognized as holding nineteen world speed records. This group of airmen won the following aviation trophies: Blériot, Bendix, Thompson, Mackay, Harmon, and Schilling. No other aircraft in our history has come close to such a record. There were more peacetime Distinguished Flying Crosses and Air Medals awarded to those wonderfully brave crewmen than to any other group.

We are proud of our records and our contribution to preserving the peace during this critical time, and we

should be remembered for these significant aviation achievements.

John H. Yancy
Fort Worth, Tex.

Congratulations for publishing Jeffrey P. Rhodes's exhaustive chronology of the age of flight.

He correctly notes that the prototype flight of December 29, 1939, started the B-24 Liberator production run of more than 18,100 (only one remains flying), the largest of any military aircraft. However, the first AAF bomber mission over Europe was not on July 4, 1942, but on June 12, 1942, by B-24s flying from Fayid, Egypt, and bombing Ploesti, Romania. They were from the Halverson Detachment Task Force, "HALPRO," later to become part of the 376th Bomb Group.

Tom Shumaker
San Diego, Calif.

■ As stated in "Up From Kitty Hawk," the July 4 mission was USAAF's first over western Europe and is generally regarded as the more successful of the two attacks.—THE EDITORS

"Up From Kitty Hawk" is the best quick reference chronology put together about the Air Force's accomplishments.

May I particularly express a big thank you to Mr. Rhodes for his inclusion of the establishment of Civil Air Patrol on December 1, 1941, as part of that chronology.

It is very gratifying to see Civil Air Patrol included and duly recognized as part of aviation history.

Paul R. Kopczynski
Philadelphia, Pa.

One Wing's Heritage

As a former Special Operator, I feel compelled to expand on "Directory of Wing Commanders" [November 1993, p. 51]. This business of Air Force historians developing a rank order system to determine which numerical historic wing designations will be retained was a bitter pill for me and many of my compatriots to swallow. However, current USAF leadership thrives on designing masochistic plans

Do you have a comment about a current issue? Write to "Letters," AIR FORCE Magazine, 1501 Lee Highway, Arlington, VA 22209-1198. Letters should be concise, timely, and preferably typed. We cannot acknowledge receipt of letters. We reserve the right to condense letters as necessary. Unsigned letters are not acceptable. Photographs cannot be used or returned.—THE EDITORS

FYI—When the **USAF**
needed an airborne
SINCGARS
radio replacement for platforms like
F-16s, A-10s, & C-130s,
they selected the **ARC-222,**
a **VHF AM/FM**
radio set from
MAGNAVOX.



The result is reliable VHF voice and data communications. AN/ARC-222 from Magnavox allows the Air Force and Army to communicate during critical missions — from joint air attacks, battlefield air interdiction, and close air support; to search and rescue, tactical airlifts, and special operations. The AN/ARC-222 has cleared the air.



Magnavox
Electronic Systems Company

For more information, contact Jerry Taylor, Airborne Communications Systems Marketing:
1313 production Road, Fort Wayne, IN 46808 USA (219) 429-7709 or FAX (219) 429-6645

Publisher
Monroe W. Hatch, Jr.

Editorial

Editor in Chief
John T. Correll

Executive Editor
Robert S. Dudney

Senior Editor
James W. Canan

Associate Editors
Tamar A. Mehuron, Frank Oliveri

Contributing Editors
John L. Frisbee
Brian Green
John W. R. Taylor

Managing Editor
Francine Krasowska

Assistant Managing Editor
Daniel M. Sheehan

Director of Production
Robert T. Shaughness

Art Director
Guy Aceto

Assistant Art Director
Sherryl Coombs

Research Librarian
Pearlie M. Draughn

Editorial Associates
Frances McKenney, Doug Stucki

Administrative Assistant
Wendy L. Rivera

Advertising


Advertising Director
Patricia Teevan
1501 Lee Highway
Arlington, Va. 22209-1198
Tel: 703/247-5800
Telefax: 703/247-5855

Manager, Industry Relations
Elizabeth B. Smith • 703/247-5800

US Sales Manager
By Nicholas • 203/357-7781
Stamford, CT

US Sales Manager
William Farrell • 708/295-2305
Lake Forest, IL

European Sales Manager
David Harrison • 44-81-698-9456
Kent, England

 **BPA** Circulation audited by
Business Publication Audit

Letters

to inflict pain on itself, so add one more to the list.

Air Force Special Operations Command was directed to justify the historical significance of the unit heritage of its 1st Special Operations Wing or face losing that numerical identity. Based on some arcane rank order system, which included aerial victories (Special Operations has no air-to-air capability, so the result was predictable), the 1st Special Operations Wing became the 16th SOW.

The 16th was a World War II fighter unit, based in Panama, to provide air cover for the canal. It was deactivated back in 1943. Conversely, the 1st SOW (Air Commandos) has been around in one form or another since World War II and has been sent to fight in nearly every altercation in which this country has become involved.

Special Operators have immense pride in their heritage, and I don't see how leadership can expect them to proudly assume the unit designation of some Panama Canal baby-sitting fighter unit that has been inactive since 1943. If the 16th FW designation is so all-fired important to preserve, why wasn't it assigned to any of the numerous fighter organizations in existence since World War II?

Unit pride cannot be directed by order from headquarters and produce the desired results. To the contrary, such directions breed resentment and a lack of respect for those who give the orders, a lesson obviously lost on Air Force leadership.

Col. Jim Kyle,
USAF (Ret.)
Honolulu, Hawaii

A Widening Schism

Brian Green's thoughtful "Foreign Policy Schism" [*"Capitol Hill," December 1993, p. 10*] points out the disagreement between the President and Congress over how our military forces are to be employed and the role of the United Nations in our national security planning. A similar schism appears to be developing between the US armed forces and the Commander in Chief. It seems to widen each week.

Historically, this country's armed forces have subordinated themselves to civilian control, regardless of party politics. Yet never before has the military had to contend with so many divisive issues at one time, most of them political or social: a shrinking force structure, deep budget reductions, a dispute over homosexuals, . . . and how, when, and where the services are to be employed and the size and mission of the forces. Perhaps more

important, never in our history have we had a Commander in Chief who . . . actively avoided military service.

Military loyalty to civilian leadership cannot be dictated. It must be earned. Perhaps the new Secretary of Defense can alleviate some of the animosity, but if he can't or won't, a major military-civilian confrontation seems likely in the near future, and that would be a disaster for both the military and the Administration.

Lt. Col. Donald W. Applegate,
USAF (Ret.)
Satellite Beach, Fla.

Shining Esprit de Corps

I am compelled to comment on Lt. Col. Jack Doub's letter [*"Childish Criticisms," October 1993, p. 7*], wherein he takes Captain Scharven to task for pointing out an error.

Colonel Doub writes, "It is simply not that critical to the hundreds of thousands of readers." Perhaps not, but it is to the people in Captain Scharven's aerial port squadron. The criticisms were neither "mean-spirited and petty" nor "childish." That was *esprit de corps* shining through.

These kinds of friendly criticisms are part of the reason AIR FORCE Magazine is such a professional, well-written publication. Throughout our society, standards of excellence have been eroding steadily since the early 1960s, and I am proud that AIR FORCE Magazine has been immune.

Maj. B. L. Wilhelm,
USAF (Ret.)
Lake Wales, Fla.

John Boyd's Rank

In "The Key to Modern Airpower" [*September 1993, p. 43*], you misidentified John Boyd as "lieutenant colonel, USAF (Ret)." John R. Boyd retired from the Air Force as a full colonel. Also, while it is true that he was a "fighter weapons tactician," Colonel Boyd must also be remembered as the inventor of the "energy maneuverability theory."

Jacob Neufeld
Director, Center for Air Force
History
Bolling AFB, D. C.

Erratum

In "Some Breaks in the Cloud Cover" (December 1993, p. 53), one sentence should have read, "Soon, an airman will have to complete an NCO academy for promotion to master sergeant," rather than "tech sergeant."

For JPATS Students, It's An Accelerated Learning Program.

Nothing comes close to the Pampa 2000 for helping student pilots to quickly develop their flying skills. It's simple enough for first-time students, yet has the full performance qualities of a jet. This

pilot and minimizes the transition period between aircraft. The exceptional performance envelope and handling qualities of the Vought Pampa 2000 assures that America's military pilots will benefit from

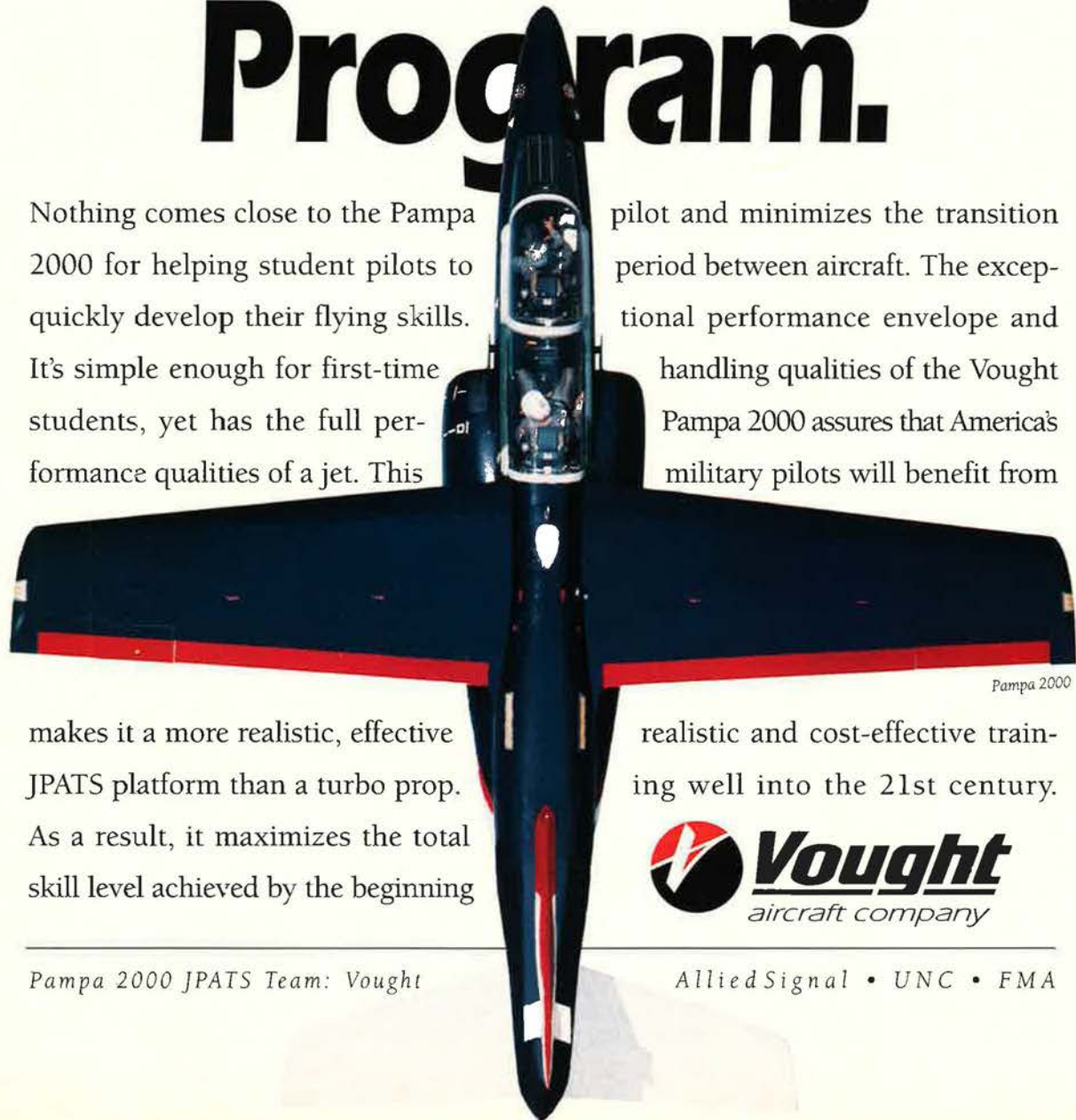
makes it a more realistic, effective JPATS platform than a turbo prop. As a result, it maximizes the total skill level achieved by the beginning

realistic and cost-effective training well into the 21st century.



Pampa 2000 JPATS Team: Vought

AlliedSignal • UNC • FMA



By Brian Green, Congressional Editor

Montgomery Attacks the Decline

"It's crazy. You need more forces. We've got more missions out there. The world is still in turmoil."

REP. G. V. "Sonny" Montgomery (D-Miss.), who for twenty-seven years has championed military issues—especially Guard, Reserve, and veterans' causes—has taken a lead role in the still-nascent movement in the House of Representatives to arrest further decline in the defense budget. His top priorities: ensuring that money is included in the budget to compensate for higher-than-expected inflation and provide for a congressionally approved military pay raise; restoring provisions that prevent money in the defense budget from being shifted to domestic programs; and controlling "non-defense" defense spending.

He was one of seven conservative and moderate Democrats to meet recently with President Clinton to warn that "the Defense Department had taken more than its share of cuts over the past couple of years." The group pushed for a \$50 billion add-on to the defense budget over five years.

"You look at the number of divisions and the number of air squadrons [programmed for the force]," Representative Montgomery told *AIR FORCE Magazine*. "It's crazy . . . you need more forces. We've got more missions out there. The world is still in turmoil." He was unimpressed by the Pentagon's Bottom-Up Review, which he believes "cuts too much," and he urged that the new Secretary of Defense "be a strong advocate for stopping the downward slide in spending for defense."

Representative Montgomery also parted company with many of his colleagues in his opposition to further base closures. He strongly advocated maintaining Guard and Reserve force structure, in part to sustain the Reserve Component armories and airfields that are "important for readiness purposes and for the economic impact these facilities have" on local

communities. "Every time you close one of these bases, you put these civilians out of work. Half of them . . . will go to welfare, and it will cost us more money in food stamps and unemployment security . . . than to keep the bases open," he argued.

He reluctantly supported the agreement to cut the Army National Guard and Reserve by 100,000 over five years, a reduction he described as "much more reasonable than under the [Gen. Colin] Powell plan." He adamantly opposed eliminating the dedicated continental US air defense squadrons, as some in the Pentagon and on Capitol Hill have advocated.

Representative Montgomery is convinced the Reserve Component can handle a bigger role. "I have no problems at all [with] . . . the Air Force giving these Reservists more drill time. I think that makes sense. Give them more missions," he said. He conceded that small businesses may suffer when their employees go off for extended duty and that Guardsmen and Reservists can have difficulties getting their old jobs back when returning from such tours. While not optimistic about chances for passage, he said he would try to persuade House Ways and Means Committee Chairman Rep. Dan Rostenkowski (D-Ill.) to support an employer tax credit to help offset costs when a valued employee is lost to military duty.

As Chairman of the House Veterans' Affairs Committee, Representative Montgomery is focusing on ensuring adequate medical care for Persian Gulf War veterans and their families, improving VA health care, and streamlining the Department of Veterans Affairs adjudication process.

Many Gulf War veterans have complained of medical problems, including chronic fatigue, memory loss, joint pain, and family illnesses, that may be related to their service in that conflict. Representative Montgomery is not yet satisfied with the Pentagon's cooperation in investigating these claims, contending that too much of the relevant information re-

mains classified. He leaned away from the idea that the illnesses were caused by Iraqi chemical agents. But, he said, "these guys are sick, and there have been some birth defects . . . We need to get a better answer and not let it be another Agent Orange [a long-running case in which Vietnam veterans claimed that their illnesses resulted from exposure to the Agent Orange defoliant]."

In that context, the President recently signed a Montgomery-sponsored bill to give priority hospital and outpatient care to Gulf War veterans complaining of these ailments. Representative Montgomery also helped push through legislation last year to establish an environmental research unit to study the effects of low-level exposure to chemicals.

Although the Veterans' Affairs Committee chairman has not signed on to the health-care reform plan proposed by President Clinton, he supports the improvements to the veterans' health-care system in the Clinton reform package. "On the whole," he argued, "it's going to bring more money into the VA system." He also noted that the Clinton plan would provide a wider range of options for veterans and their families.

However, all of this could be undermined, he warned, by personnel cuts to the VA as recommended in the President's Reinventing Government initiative. Twenty-seven percent of the recommended federal work force reduction—252,000—would come out of the VA. If that happens, he said, "you aren't going to be able to let every veteran with an honorable discharge come into a VA hospital and get treatment."

Ensuring that veterans' claims are processed quickly is another key to good care, according to Representative Montgomery. He criticized the long delays developing in the VA claims adjudication process and the inadequate appeals process. "There's no excuse for it," he said. "We've got to get in there and do a better job. The bottom line is we need to get more [claims examiners] employed and get more skill in that area." ■

UHF SATCOM

The smallest airborne DAMA-compatible modem/transceiver set for satellite or line-of-sight communications is available now, only from E-Systems ECI Division.

The Joint Chiefs have mandated DAMA (Demand-Assigned Multiple Access) compatibility for UHF satellite communications by 1996. You can have it now, with the Multi-mission UHF SATCOM Terminal (MUST) system from E-Systems.

MUST combines state-of-the-art modem and transceiver functions into a single 1-ATR airborne unit -- the smallest, lightest in the air. The radio is interoperable with all UHF radios in use today.

Variable power output to 100 watts makes MUST ideal for airborne applications or ground sheltered operations with high gain antenna configurations.

- SATCOM/LOS operation
- 225 to 400 MHz
- 75 bps to 38.4 Kbps
- Select full or half duplex operation
- Transmit power adjustable 1 to 100 W
- Navy DAMA now/USAF DAMA 1994

For more information, call or write to:
Business Development, E-Systems ECI Division,
P.O. Box 12248, St. Petersburg, FL 33733-2248,
(813) 381-2000, FAX (813) 343-9605.



E-SYSTEMS

The science of systems.



Washington Watch

By James W. Canan, Senior Editor

How Many Bombers Are Enough?

The Air Force anticipates the bomber fleet dwindling to 100 aircraft over the next ten years. It is counting on PGMs to enable them to do the job.



The Air Force took delivery of its first operational B-2 at Whiteman AFB, Mo., late last year, amid lingering questions about the adequacy of its future bomber force. Will its bomber

fleet of B-52s, B-1s, and B-2s be big enough to do the job? Will it include enough of the stealthy B-2s? Will the Air Force propose additional B-2s?

Gen. Merrill A. McPeak, Air Force Chief of Staff, and Gen. John Michael Loh, commander of Air Combat Command, addressed those questions on separate occasions as 1993 came to a close.

Both denied that the Air Force has a hidden agenda, as alleged in some circles, for extending the production of B-2 bombers. They said they would prefer more than the twenty B-2s that Congress and the Defense Department set as the maximum two years ago but that USAF could make do with that allotment for the time being.

The generals appeared to part company on whether the Air Force should prepare to continue producing B-2s at low annual rates after the last of the currently authorized lot, a B-2 now being assembled, comes off the line. General McPeak said, in effect, that there is no hope for such production. General Loh, on the other hand, refused to rule it out.

Both officers emphasized that the adequacy of the future bomber fleet—a mixture of B-2s, B-1s, and B-52s, and likely lacking in F-111s—will depend on what is required of it under the national military strategy.

That strategy would compel US military forces to cope with two “nearly simultaneous” major regional contin-

gencies (MRCs). It leaves a lot to the imagination about the nature of those MRCs.

Pivotal PGMs

USAF's Bomber Roadmap, issued in 1992, noted that precision guided munitions (PGMs) will be central to the success of, and would influence the shape and size of, the future bomber force. That conclusion rings even truer today. Both generals emphasized that the Air Force is relying on the several varieties of PGMs now being developed to do wonders for bomber firepower in years to come.

Nothing is certain in that respect, however. There are no guarantees that the PGMs will pan out as nicely as planned in terms of cost or performance. The Air Force did not issue a request for proposal for the PGM that General Loh called “particularly important”—the Joint Direct Attack Munition (JDAM), a self-guided glide bomb—until late last year.

The B-2 issue loomed large in year-end bomber-force discussions. At a December meeting with Washington defense writers, General McPeak declared, “We will not lobby as an organization for more B-2s. It's clear that the consensus does not exist in the nation to buy more B-2s, so it really doesn't make any difference what we think about this. I think it's a shame, because the B-2 is a revolutionary capability. It will have an enormous impact.”

Reports had been circulating that the Air Force, under the influence of Air Combat Command, was lying in the weeds, waiting to spring on the Defense Department and Congress a proposal for more than the allotted twenty B-2s. Among others, Sen. Sam Nunn (D-Ga.), chairman of the Senate Armed Services Committee and a longtime B-2 supporter, wondered aloud if such were indeed the case. Rep. Ronald Dellums (D-Cal.), chairman of the House Armed Services Committee, went further.

Late last November, Mr. Dellums alleged in a letter to Defense Secretary Les Aspin that ACC's General Loh and Northrop Corp., the B-2 prime

contractor, were conspiring on a concrete proposal to extend B-2 production at the rate of two bombers a year through the next ten years. Mr. Dellums accused General Loh of “planning for the apparently premature retirement of roughly one-third of the B-1B bomber fleet” to make way for and help pay for the additional B-2s.

Expressing “disappointment and concern” at any such move, Mr. Dellums wrote that it “would clearly abrogate” the agreement between Congress and the Defense Department to cap B-2 production at twenty bombers and total B-2 spending at \$44.5 billion.

“Any attempt to request additional B-2s will be met with strong opposition that could endanger your entire defense budget,” he warned.

More B-2s, in Context

Two weeks after the Dellums letter and one week after General McPeak's statements, General Loh gave his views at a Pentagon press conference.

“The truth,” he said, “is that I do not have a plan, and I am not submitting a plan, for additional B-2s. . . . I would like to have more B-2s. We in the Air Force sought more B-2s. But the fact of the matter is that, in this budget environment, we can't afford any more B-2s.”

The ACC commander emphasized that the main issue is the total number of bombers, not the number of B-2s per se. He acknowledged that he “had talked about wanting to have additional B-2s,” not in isolation, but rather “in the overall context of [the Air Force's] needing a large number of bombers to support our national security strategy.”

General Loh had never made any secret of how he felt. He had been saying all along that the Air Force may well require additional B-2s to make its bomber force as brawny as it ought to be at the turn of the century. He had openly discussed on several occasions ACC's hopes for a larger-than-planned bomber force and for additional B-2s, if that's what it would take.

ACC's "combat forces roadmap," unveiled in Air Force leadership circles last June, reflected his viewpoint. At about the same time, the ACC commander testified on Capitol Hill that "we need about 180 to 200 operational bombers" and, thus, "a total bomber force of between 210 and 230" to allow for attrition, training, and downtime for maintaining and upgrading the operational fleet.

He told the lawmakers, "We currently anticipate having a force structure of 184 operational bombers"—sixteen of the total twenty B-2s, eighty-four of the total ninety-five B-1s, and eighty-four of the total ninety-five B-52s. Such a force, he said, would enable ACC to "deal with sequential major regional contingencies, provided some of the bombers swing between conflicts."

Then came the conclusions of the Defense Department's Bottom-Up Review of weapons and forces, a document that passed muster in all the services. Issued last September, it decreed that 100 operational bombers should be enough for the Air Force to do its part in fulfilling the national military strategy.

Many Air Force officers said privately that the BUR was asking miracles of the bomber force and that it would be extremely difficult for 100 bombers to handle two major regional crises, simultaneously or even consecutively, over transoceanic distances on opposite sides of the world. The corporate Air Force did not reflect this view in endorsing the BUR.

A month after the review came out, General Loh told an AFA symposium audience that budget pressures would make it difficult for the Air Force to build as big a bomber force as he would like. Nevertheless, he broached for consideration a bomber acquisition "replacement strategy" in which the Air Force would buy additional B-2s at low annual rates in the years ahead while continuing to upgrade B-1Bs and B-52s.

Dellums's Last Straw

This suggestion seems to have been the last straw for Mr. Dellums. General Loh made it again in the aftermath of the Congressman's irate letter to the Pentagon.

At his December press conference, the ACC commander declared that he was still "looking at some kind of replacement-based acquisition strategy" for the Air Force, perhaps "to buy a few [B-2] bombers a year, to sustain a low-rate production."

"This is not just a military question; it's an industrial base question," he declared. "It doesn't mean I'm pro-

moting more B-2s. It means I'm looking at how we're going to buy the next bombers that we'll need when our B-52s wear out or, for that matter, when our B-1s wear out." He asked reporters not to interpret this as his "advocacy for more B-2s in the near term."

Once again, General Loh warned against foreclosing future B-2 production. He claimed that the Air Force may be forced to buy substantial numbers of additional B-2s in the future as wholesale replacements for venerable B-52s and that the service would be better advised to procure them at low, steady annual rates than to put off their production and then have to come up with very big money to buy them in bulk.

It would be "much more difficult and expensive" to reconstitute B-2 production resources than to keep them functioning in low gear, the ACC commander claimed. He proposed that the Air Force make "a relatively small investment to retain the design and manufacturing team" of B-2 prime contractor Northrop Corp. and its major subcontractors. This, he said, would "allow us an option to build more B-2s in the future, at a relatively cheaper cost, than if that team is allowed to wither away."

He noted that Northrop has begun assembling the last of the B-2s currently scheduled for production and that there is no time to lose in keeping the line alive. He said he had asked Northrop to figure out what it would cost to implement his proposal.

In making that proposal, "I'm not violating any laws," the ACC commander asserted. He said he has "a responsibility—indeed, an obligation" to press for bombers and other weapon systems that ACC needs for its "many missions." He is also obligated to "look at our national industrial capacity to provide for [ACC's] needs in the future." That capacity "will be affected if the B-2 manufacturing capability goes away," General Loh declared.

He expressed satisfaction with the BUR for having "recognized that bombers play a very valuable role in future national defense strategy" and that they are "critical to . . . power projection." He said ACC can live with the BUR-prescribed fighter and bomber forces "if we can hold to those forces" and "if they are applied jointly, in concert with the forces of the other services."

But he warned again that ACC "will probably not be able to fulfill [force-structure] expectations" if the defense budget continues to go downhill, a prospect that was looking all the more likely at the end of the year.

The New Command Arrangement

The ACC commander emphasized that each of the US armed services now depends on the others to get the most out of its forces.

"That's the big advantage of the new Atlantic Command—ACOM," he declared. "It puts together all the Stateside-based forces of all the services in joint packages of military capability and makes them available to overseas commanders."

"This is enormously important, because we are becoming a home-based military force."

Last October 1, US Atlantic Command took on a new look and broader responsibilities. It was expanded to encompass all CONUS-based air, land, and sea combatant forces. Its name remained the same, but its acronym changed from USLANTCOM to USACOM to reflect the changes in its makeup and mission.

The new command—commonly called ACOM—is an outgrowth of the report on military roles and missions that Gen. Colin L. Powell issued last year as Chairman of the Joint Chiefs of Staff. It recommended enfolding all CONUS-based military forces in a unified command that would train them in combined-arms operations and integrate them in "joint-force packages" on call to the CINCs of the theater combatant commands: European Command, Pacific Command, Central Command, and Southern Command.

The erstwhile USLANTCOM was predominantly a naval command, always with an admiral as its CINC, that concentrated almost exclusively on defending the Atlantic Ocean against the Soviet threat and on delivering US forces to NATO. It comprised the Navy's Atlantic Fleet and Marine Forces Atlantic. ACC's 8th Air Force was an element of USLANTCOM's multiservice joint task force.

The new ACOM features the Air Force and the Army in full partnership with the Navy and the Marine Corps. ACOM wields training and combat authority over nearly 1.5 million CONUS-based forces, excluding Navy and Marine units on the West Coast that come under US Pacific Command. It is responsible for such nontraditional Stateside missions as humanitarian assistance, disaster relief, and military assistance to civil authorities in dealing with civil disturbances.

Under the new setup, an overseas theater CINC's request for forces from CONUS would go to ACOM and not directly to Stateside service components, such as the former Tactical Air Command, as in the past. ACOM

would then form a joint force, already trained and ready to go, and send it to the theater CINC.

Army Forces Command is ACOM's ground component. Air Combat Command is its air component. Thus, said General Loh, "the commander of Air Combat Command is the air commander for the unified command," which can lay claim to all but a handful of Air Force combat aircraft based in the US, including bombers, fighters, Airborne Warning and Control System planes, C-130 tactical airlifters, and reconnaissance and rescue aircraft. Excluded from ACC ownership are air defense fighters assigned to North American Aerospace Defense Command, some C-130s that remain organic to the multiservice US Transportation Command and to the unified US Special Operations Command, and a handful of command-and-control aircraft assigned to US Strategic Command.

ACOM's first CINC is Adm. Paul David Miller, who commanded US-LANTCOM. Future ACOM CINCs will be drawn from each of the services.

Power at Home

General Loh described ACOM as markedly different from CONUS joint commands of yesteryear—US Strike Command and US Readiness Command—because "in those days, our overseas commanders had large numbers of forces in place, and they could wait a while for augmentation from Stateside-based forces. Now, ninety percent of the Air Force's combat firepower is resident in Air Combat Command in the States, and the same is, or soon will be, true of the other services.

"So it's extremely important that we are able to put together joint-force packages both for training exercises and for real crises and contingencies overseas. The expanded mission of the new Atlantic Command to do just that comes just in time."

General Loh sees ACC's bombers as the big hitters in combined-arms combat teams. No other weapon system in the US arsenal, he claimed, is capable of applying "credible firepower at any point on the globe as quickly as bombers can. With bombers at the ready, we can attack targets anywhere in the world within twenty-four hours of the President's tasking."

The ACC commander also claimed that the threat of long-range, heavily armed bombers should make potential aggressors think twice. In this vein, he said, the B-2, with its stealth

and its ability to attack targets around the world without benefit of supporting aircraft, has "a big advantage" over other types of bombers.

"Because of their ability to swing quickly from one theater to another, bombers will allow us to conduct effectively—and perhaps even deter—a second major regional contingency after becoming involved in [the first] one," the ACC commander said.

He cited "enormous support for bombers from the other services" in ACOM, because of their importance in that command's scheme of things. "We've already put together [ACOM] adaptive-force packages with bombers in them," General Loh explained.

"Conversely," he continued, "I will be giving more support to aircraft carriers [than in the past]. What this [ACOM] construction allows us to do is to understand each service's capabilities and limitations much better, and I'm learning a lot about the capabilities of naval forces and land forces."

The ACC commander said he would like to know a lot more about the nature and the timing of the two MFCs on which the national military strategy and BUR force structures are predicated. For example, he asked, "what do we mean by 'nearly simultaneously?' And what do we mean by 'two MRCs?' Do we mean two Desert Storms? Do we mean a Desert Storm and a Panama?"

"A Fairly Good Match"

General McPeak seemed somewhat more sanguine about the MRCs. "From the standpoint of the nation's air and space forces, there's a fairly good match between the force structure resulting from the Bottom-Up Review and the national military strategy of two MRCs," he said.

By the late 1990s, said the Chief of Staff, the Air Force will have equipped its bomber force with PGMs and will have fielded, in the B-2, a "large-capacity, long-range bomber capable of penetrating and surviving rather sophisticated defenses."

"All this," he said, "will make the force structure as defined in the [BUR] enormously more productive. Therefore, I'm quite confident that [the Air Force] will be in pretty good shape by the late nineties."

General McPeak said that "the risk, if there is any, lies in the near term, in the mid-1990s," or before the B-2s and the PGMs come into the picture. In that period, "the force structure will be pretty well stretched to accomplish the two-MRC strategy," he declared.

The Chief of Staff seemed fairly optimistic about that. He called two MRCs "a worst-case scenario" because "the work load we can expect in the 1990s is not a two-MRC work load. . . . By and large, the kinds of security problems that face us—the Bosnia, Somalia kinds—are nasty little ambiguous exercises but not what I'd describe as a major regional crisis."

In his outlook for the bomber force, General McPeak put a premium on PGMs. "The importance of PGMs is overwhelming," he asserted.

He noted that the B-52 fleet now has "pretty good precision guided munitions capability" with Harpoon and Have Nap standoff missiles, plus "a couple of other things" (such as air-launched cruise missiles). The Air Force will "continue to operate B-52s but probably in much smaller numbers," in order to capitalize on their PGM potency and to comply with Strategic Arms Reduction Treaty bomber-counting provisions, he said.

PGMs being developed for bombers and other attack aircraft are the Triservice Standoff Attack Missile (TSSAM), the JDAM, and the Joint Standoff Weapon (JSOW). The Air Force plans to equip the B-1 with all three varieties and the B-2 and the B-52 with TSSAM and JDAM.

B-1B bombers are currently capable of delivering only "dumb" gravity bombs on target. USAF is moving as quickly as possible to outfit them for, and equip them with, PGMs.

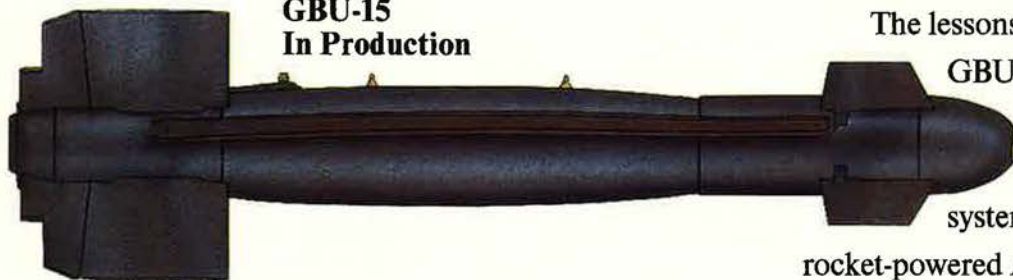
General McPeak called the B-1 "a marvelous airplane" but noted that there is no point in having it "carry a heavy payload [of unguided bombs] a long distance and then miss the target by half a mile." Arming the B-1 with PGMs is "what we need to do before we phase out the B-52," he explained.

The bomber force is shaping up as "much smaller than we've had over the Cold War period," he said. "I don't celebrate that, but I'm also not that unhappy about it, so long as [the bombers] get the PGM capability."

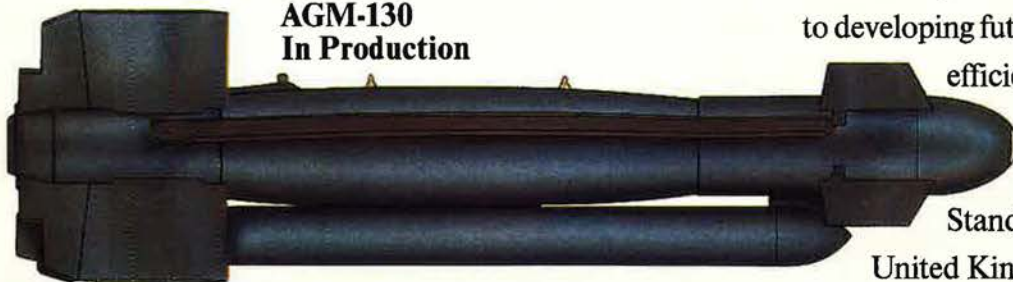
As the Air Force phases out the B-52 and brings in the B-2, its bomber force will dwindle to "on the order of 100" aircraft over the next ten years, General McPeak predicted. He said he expects the operational bomber force to include "seventy or so" B-1s, of which "one-quarter will be in the Air National Guard," leaving the remainder of the present fleet of ninety-six B-1s to be used for spare parts and as wartime "reinforcements" for the operational fleet. ■

FOR STANDOFF WEAPONS, EVOLUTION IS THE SOLUTION.

**GBU-15
In Production**



**AGM-130
In Production**



**CASOM
Concept**



Combat-proven standoff weapons technology from Rockwell is the foundation for affordable, effective standoff weapons to come.

The lessons learned from GBU-8 and GBU-15 guided weapons systems assisted in developing today's newest standoff weapons system – the U.S. Air Force's rocket-powered AGM-130. Continuing the evolution can provide a low-risk, low-cost approach to developing future generations of operationally efficient standoff weapons.

Now, the turbojet-powered Conventionally Armed Standoff Missile (CASOM) for the United Kingdom can be developed directly from the evolution of AGM-130 technology.

And the evolution continues.

For more information, write: Tactical Systems Division, Rockwell International, 1800 Satellite Blvd., Duluth, Georgia 30136, or call (404) 476-6300.



Rockwell International

Aerospace World

By Frank Oliveri, Associate Editor

Inman Tapped for Pentagon

President Clinton turned to retired Adm. Bobby Ray Inman, a consummate Washington defense insider, as his second Secretary of Defense after the first Clinton Pentagon chief, Les Aspin, announced his intent to resign effective January 20, after a tumultuous year in office.

Admiral Inman, a career intelligence officer, served as director of the National Security Agency (1977-81) during the Carter presidency and as deputy director of the Central Intelligence Agency (1981-82) in the first Reagan term. He resigned from the CIA following disputes with Director William Casey. Since retiring from the Navy in 1982, Admiral Inman has taken part in several business ventures and served on a variety of cor-

porate boards. He has also acted as an outside advisor to three presidents, the State Department, and Congress.

Highly experienced in the ways of Washington, Admiral Inman said in December that he was an operator with a strategic view. He said that the public is less concerned with what is happening overseas than it is with "getting a dollar value for a dollar spent in defense."

B-1Bs in Bright Star '94

Three B-1B bombers from the 77th Bomb Squadron, 28th Bomb Wing, Ellsworth AFB, S. D., took part in Bright Star '94, the latest in a series of US-Egyptian exercises dating to 1980. The 1993 event, which unfolded over a week in November, was the first to feature the B-1B.

The Central Command-sponsored exercise involved more than 20,000 participants from the Air Force, Army, Navy, and Marine Corps training with Egyptian forces.

On the second day of the exercise, a composite force that included two B-1B bombers conducted a simulated attack against an airfield in Egypt. Accompanying the heavy bombers were four F-15Es, four F-16Cs, one EC-130, two EF-111As, and four Egyptian Air Force F-4Es.

The B-1s were not the only big bombers to see action. Two B-52s from Griffiss AFB, N. Y., linked up with another from K. I. Sawyer AFB, Mich., to carry out a simulated global power strike. The twenty-seven-hour mission took the aircraft to a range in northeast Africa, where each bomber

AMERICA JUST INSTA SYSTEM IN KNOB



ON DECEMBER 17, 1993, THE B-2 STEALTH BOMBER ENTERED SERVICE WITH THE AIR COMBAT COMMAND AT WHITEMAN AIR FORCE BASE, KNOB NOSTER, MISSOURI. A DATE THAT MARKS THE BEGINNING OF A NEW ERA IN AIR POWER AND OUR COUNTRY'S DEFENSE. WITH ITS LONG RANGE, LARGE PAYLOAD AND STEALTH TECHNOLOGY, THE B-2 CAN RESPOND WITHIN HOURS TO A CRISIS

NORTHROP

BOEING



The Spirit of Missouri, the Air Force's first operational B-2 Stealth bomber, was delivered to Whiteman AFB, Mo., December 17 before a cheering crowd of more than 20,000. Air Force Secretary Sheila E. Widnall said that the event marked the beginning of a new chapter in aviation history.

delivered nine 500-pound bombs before returning home. Each aircraft carried a crew of five, plus an extra pilot and radar navigator. The bombers were refueled four times by KC-135s from Air Force Reserve and Air

National Guard units from Maine and New Jersey.

General Glosston Admonished

Lt. Gen. Buster C. Glosston, deputy chief of staff for Plans and Opera-

tions, received a letter of admonition in December from Air Force Secretary Sheila E. Widnall.

The letter stemmed from an internal investigation that concluded that General Glosston, a major figure in the planning of Operation Desert Storm, had improperly tried to influence three generals sitting on a promotion board. Investigators said General Glosston made disparaging remarks about a one-star officer then under consideration for promotion. General Glosston emphatically denied the charges.

Technically, the Secretary's letter does not require that General Glosston retire or relinquish his current post. Nevertheless, observers said that the punishment will complicate his chances for advancement to a four-star command, which would require congressional approval.

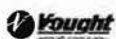
Secretary Widnall initiated the joint investigation by the Air Force Inspector General and Defense Department Inspector General in October after three lieutenant generals separately approached the four-star general presiding over the board and said that General Glosston had attempted to influence them.

In considering promotions, officers are directed to evaluate only the information in records put before them.

LLED A NEW SECURITY NOSTER, MISSOURI.



ANYWHERE IN THE WORLD, VIRTUALLY UNDETECTED. DESIGNED FROM THE START TO DEAL WITH 21ST-CENTURY THREATS, THE B-2 STEALTH BOMBER IS AN ACHIEVEMENT MADE POSSIBLE ONLY THROUGH THE EFFORTS OF TENS OF THOUSANDS OF HIGHLY SKILLED MEN AND WOMEN IN 46 STATES, ALL DEDICATED TO IMPROVING NATIONAL SECURITY, FROM OUR LARGEST CITIES TO OUR SMALLEST TOWNS. LIKE KNOB NOSTER.



© 1993 NORTHROP CORPORATION

Congress Seeks to Ease Transition

The Fiscal 1994 Defense Authorization Act contains a number of provisions that its sponsors say will make it easier for communities with closing military bases to make the transition to a commercial economy.

The act enables the military to convey property, buildings, and equipment to communities for less than fair market value or—when appropriate—free, to help create jobs. The act provides for the military to maintain the property until it is turned over to local communities. The military will also keep non-mission essential equipment vital to the reuse of the installation on-site.

C-5 Aircrews to Get Medal

C-5 transport aircrew members who airlifted soldiers and armored equipment directly to Mogadishu, Somalia, or Mombasa, Kenya, in October 1993 will receive the Aerial Achievement Medal.

To qualify for the award, crew members must have participated in the transport of personnel or equipment on at least one trip from the US to the east African cities. The missions demonstrated sustained activity, lasting up to thirty hours and requiring four or five aerial refuelings.

F-22 Fabrication Begins

Fabrication has begun on the first of nine flyable F-22 fighters to be built during the engineering and manufacturing development phase

of the program. Machining on the first part—a forward boom keelson panel (a strengthening structure) made of high-strength titanium for the aft fuselage—began last December at Boeing's facilities in Kent, Wash.

Workers will fabricate eight forward boom keelson panels per plane and ship them to Boeing facilities in Seattle for assembly of the fuselage. The panel will weigh approximately thirty pounds and will be twenty-five inches wide and thirty-six inches long.

Lockheed, the prime contractor, will begin fabricating parts this summer. The first will be a composite forward equipment shelf. The F-22 airframe will consist of titanium, aluminum, composites, steel, and other materials. Titanium and thermosets/thermoplastics will make up the largest percentage of materials, at thirty and twenty-six percent, respectively.

A Critical Design Review will occur in late 1994. Subassembly and assembly of the first F-22 will begin in late 1994 and early 1995.

ANG, AFRES Support Deny Flight

All US sorties flown from Aviano AB, Italy, in support of Operation Deny Flight over Bosnia-Herzegovina are now manned by Air Force Reserve and Air National Guard personnel, the Air Force said in December.

The operation employs US and UN forces to enforce a military no-fly zone over the troubled area. Six F-16s from the 944th Fighter Group, Luke

AFB, Ariz., arrived in December to join six others from the 301st Fighter Wing, Carswell AFB, Tex., which had arrived one day earlier. The aircraft replaced twelve F-16s from the 512th Fighter Squadron at Ramstein AB, Germany. The F-16s had been at Aviano since mid-September.

A squadron of Reserve and Guard A-10s was already at Aviano flying close air support training missions. That squadron, which arrived in mid-November, comprises about 220 persons from the Reserve's 47th Fighter Squadron at Barksdale AFB, La., and the Guard's 103d Fighter Group at Bradley ANGB, Conn.

As of December, Deny Flight fighter crews had flown about 1,300 sorties.

Gulf War Ailments Scrutinized

A council has been established to handle questions relating to unidentified ailments affecting veterans of the Gulf War.

The Persian Gulf Research Coordinating Council was established in November as a result of the Persian Gulf War Veterans Health Status Act. It will coordinate federal research activities related to the veterans' health problems.

The Department of Veterans Affairs has been designated the lead agency for the council, which includes the Department of Defense, the Department of Health and Human Services, and the Environmental Protection Agency.

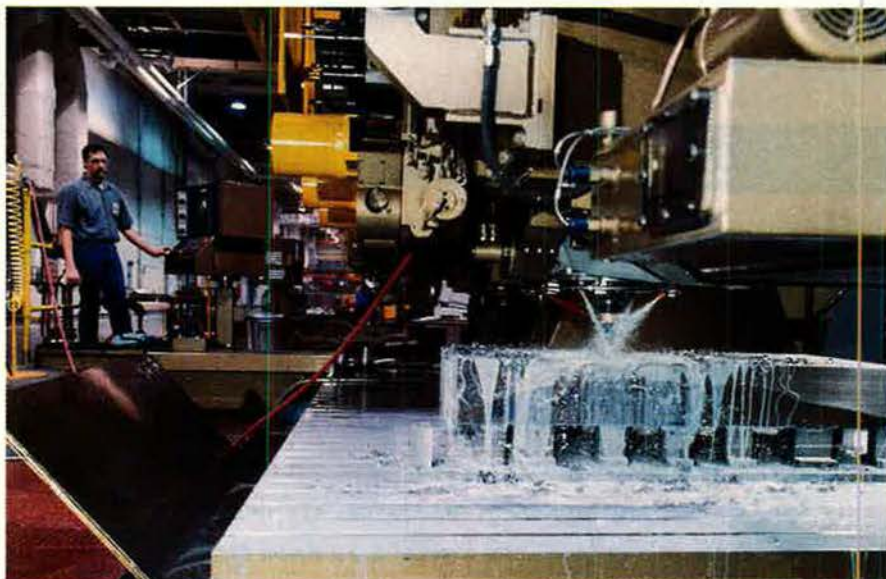
Representatives met in late November to chart a course for research. The Pentagon said, "The meeting set up the mechanism to develop common examination and terminology procedures between DoD and VA for studying and treating patients." The new structure will help deal with these issues in a scientific way.

Congress voted to provide priority health care for Gulf War veterans on both inpatient and outpatient bases. It also authorized the VA to reimburse any Gulf War veteran who may have been charged for VA care.

Pentagon Faces Funding Gap

In their preparation of the new Fiscal 1995-99 defense program now coming before Congress, Defense Department officials came up against a huge, unanticipated funding shortage. They said in December that the five-year program of weapons, training, troop pay, maintenance, and other items would cost much more than the White House had been ready to spend.

Former Defense Secretary Les Aspin said that the shortfall could be



Milling-machine operator Albert Ferara, at the Boeing plant in Kent, Wash., cuts a block of titanium to be used in the fabrication of the fuselage of the first F-22 air-superiority fighter. Assembly of the first flyable F-22 will begin in late 1994.

\$50 billion, but Office of Management and Budget (OMB) Director Leon Panetta later calculated it at \$31 billion. The President subsequently approved an addition of \$10 billion to the five-year plan, and the White House said the problem was "resolved."

The Pentagon officials said the gap was caused by higher-than-expected inflation projections, which raised the real cost of future purchases, and the unexpected Fiscal 1994 pay raise, which will ripple through the five-year program.

Inflation estimates are notoriously difficult to project, and there is constant haggling between OMB and the Congressional Budget Office to establish inflation figures for future estimates.

JCS Chairman Assesses Korean Danger

At a time of significant tension in the Far East late last year, Gen. John M. Shalikashvili asserted his confidence that combined US and South Korean forces could defeat a North Korean invasion.

The Chairman of the Joint Chiefs of Staff, in an impromptu session with reporters covering the Pentagon, stated, "As far as our confidence to stop a North Korean attack into the South, I'm very, very confident." He added that even "the more pessimistic studies" produced at the Pentagon leave "no question" that South Korean and US forces "will stop a North Korean attack far short of their . . . war objectives."

For all that, the General stopped well short of giving assurances about the security of Seoul—the political, economic, and industrial capital of South Korea. Seoul is only twenty-five miles from the demilitarized zone separating North and South.

Asked how China might respond to a war, General Shalikashvili said, "I certainly would not envision right now that we would be facing the Chinese government and Chinese troops if in fact North Korea were foolish enough to attack the South."

The Pentagon said in December that it had no plans to bolster its force of 37,000 ground troops in South Korea. South Korea has a military force of 750,000, while North Korea has a force of well over a million troops.

Pentagon Sees Mixed Aspin Legacy

In his resignation statement, Les Aspin maintained that he was proud of his efforts during his year in office to reshape US forces and defuse



C-141A StarLifter #61-2775 flew a thirtieth-anniversary sortie over the Mojave Desert December 17 for the USAF Test Pilot School at Edwards AFB, Calif. The venerable C-141 made its first flight from Marietta, Ga.

major tensions in the ranks created by debate over homosexuals in uniform and women in combat units.

The former Defense Secretary thought his most important contribution was the Bottom-Up Review of Defense Needs and Programs, a six-month study of US forces. He concluded the US must prepare to fight two nearly simultaneous major regional wars, the armed forces should produce new generations of smart weapons, and the Pentagon should invest heavily in advanced technology. The review also concluded that the US could drop its planned force from 1.6 million to 1.4 million.

Even Mr. Aspin's ardent backers concede that his short tenure was marred by problems abroad. The most trying time came last October when eighteen US Army Rangers were killed in a battle in Mogadishu. The US could not quickly mount a rescue effort because of a lack of armored assets in country. Mr. Aspin had denied a request for armor reinforcements a week before the debacle.

President Clinton said, "I will always appreciate the thoughtful and dedicated and ultimately selfless service that Les Aspin provided to me and to this nation over this last year. I asked a lot of him. . . . He gave even more to me, to our military, and to our country than was asked, and I will always be very grateful."

AETC Seeks Experienced Trainers

USAF's Air Education and Training Command will regard experience with a major weapon system as a key factor in selecting instructor pilots.

This effectively ends an era of first assignment instructor pilots or career trainers.

The Air Force announced that the change in the instructor pilot cadre will increase to ninety-five percent the proportion of pilots with major weapon system experience. The operational knowledge of the new instructors will fit well with the start of specialized undergraduate pilot training (SUPT) at Reese AFB, Tex., which is more complex than the older system.

For example, new students will practice air refueling procedures up to the point of contact. Students will also practice low-level, C-130-style airdrops, and those flying in T-38s and AT-38s will learn air-to-air combat, bombing, and low-altitude navigation. Reese began SUPT in January 1993. By the end of 1998, all AETC bases will be using the SUPT syllabus.

DoE Reveals 204 Nuclear Tests

The Department of Energy declassified the total number of nuclear tests conducted at the Nevada Test Site, revealing that 204 of the 925 tests had never been announced. Testing has taken place in Nevada since 1951.

The December announcement stated that the total number of US tests conducted worldwide is 1,051. The US kept quiet about the 204 tests to inhibit Soviet monitoring.

DoE said, "With the end of the Cold War era and the Administration's renewed emphasis on openness in government, the Department of Energy considers release of this information important to more fully inform the

public of the US nuclear test program."

While historically the US has informed the public when radioactivity was detected off-site, some of the unannounced tests released small quantities of radioactivity on-site.

DoE also revealed that eighty-nine metric tons of weapons-grade plutonium was produced between 1945 and 1988. The Savannah River site near Aiken, S. C., produced thirty-six metric tons, while the Hanford site near Richland, Wash., produced fifty-three metric tons of weapons-grade plutonium.

Sijan Winners Announced

The Air Force announced the winners of the 1993 Lance P. Sijan Leadership Award, which recognizes individuals assigned to organizations at wing level or below who demonstrate outstanding leadership.

The winners are Lt. Col. Gary L. North, National Defense University, Fort McNair, Washington, D. C., senior officer; Capt. Allen J. Jamerson, Clear AFS, Alaska, junior officer; MSgt. James E. Scott, Vandenberg AFB, Calif., senior enlisted; and TSgt. Siobhan A. Rowe, F. E. Warren AFB, Wyo., junior enlisted.

The award is named in honor of Capt. Lance P. Sijan, who was shot down over southeast Asia in 1967. After evading the enemy for six weeks, Captain Sijan was captured and died a prisoner. He was posthumously awarded the Medal of Honor.

Proliferation Danger Examined

A policy of nuclear nonproliferation—prevention through denial of nuclear weapons technology—will be insufficient to cope with aspiring nuclear states in the future. The US and other nations must take active measures, both offensive and defensive.

So said Defense Secretary Les Aspin shortly before he announced his resignation in December. He said that DoD had set up a Defense Counterproliferation Initiative to focus on methods of protection as well as prevention.

In a speech to the National Academy of Sciences, Mr. Aspin said the initiative recognizes that, despite the best US efforts, proliferation may still occur. The drive will be to develop new military capabilities to counter new threats. The Pentagon cited five possible steps: creating a counterproliferation mission, purchasing new hardware to combat the threat, re-writing plans for fighting conventional



The Bell-Boeing Tiltrotor Team completed emergency cabin egress demonstrations for its V-22 Osprey vertical/short takeoff and landing aircraft in December. Twenty-four troops can exit the Osprey's cabin in sixty seconds.

wars, altering the means and targets of intelligence collection, and tightening cooperation with allies.

Mr. Aspin said a number of military programs will fit under the counterproliferation umbrella. He said the Pentagon will look to improve non-nuclear penetrating munitions to deal with buried installations. Better methods of hunting mobile missiles are also being sought. The Pentagon will reorient the Ballistic Missile Defense Organization toward theater missile threats.

Five Pilots Begin Navigator School

In November, five student pilots began training in a new program designed to relieve the shortage of Air Force navigators and a surplus in pilots.

Air Mobility Command's Third-P lot Program will train new KC-135 pilots to handle limited navigator duties while giving veteran navigators a chance to broaden their careers, the Air Force said. The training will take place at Castle AFB, Calif.

Gen. Ronald R. Fogleman, AMC's commander, said, "The whole idea behind this program is to match up the pilot and navigator resources in the near term to do things better in both cases."

The navigator shortage is attributed to reductions in force, early-out options, and a lull in navigator production resulting from navigator training's move from California to Texas. The surplus in pilots is attributed to

the force drawdown, which has left more pilots than cockpits in the short term. AMC has 900 "banked" pilots. General Fogleman said it would take three years to get them flying.

During that time, AMC will upgrade the KC-135's avionics. This will eliminate the need for navigators on most missions. AMC will focus on putting navigators in C-130, F-15E, F-111, B-1, and B-52 aircraft.

Special-Duty Pay for Some Crew Chiefs

Some Air Mobility Command crew chiefs will receive an additional \$110 per month starting in April if they fly with their aircraft, the Air Force said in December.

The special-duty assignment pay will help to compensate the maintenance experts for their unique skills, additional hardships, and long hours in support of each mission. Crew chiefs often can repair aircraft at locations where no maintenance capability exists.

Attack Warning System Tested

In November, the Air Force began the test phase for a critical missile warning communications system—the key element in USAF plans to upgrade Cheyenne Mountain AFB, Colo., headquarters of North American Aerospace Defense Command.

The system, known as the Command Center Processing and Display System—Replacement, is designed to receive, process, and distribute attack warning information and attack

assessment information to the US leadership. The \$320 million system will be the largest missile warning communications system ever constructed.

Air Force Materiel Command's Electronic Systems Center at Hanscom AFB, Mass., is overseeing the project.

The system will receive tactical warning information over jam-resistant communications circuits between Cheyenne Mountain and remote sensors worldwide. The system will receive information via high-speed data links, then process and relay it from the Cheyenne Mountain complex to the National Military Command Center at the Pentagon, a site at Fort Ritchie, Md., and US Strategic Command at Offutt AFB, Neb. In the future, links will be established with other major US and Canadian command centers around the world.

The system will be on line in the spring. The total Cheyenne upgrade will cost \$1.6 billion.

Propulsion Technology Tested

Phillips Laboratory, Kirtland AFB, N. M., successfully conducted a test in December of a new propulsion technology that uses solar and electrical power to boost spacecraft from low to high Earth orbits.

The \$70 million program, using arcjet technology, is looking at an elec-

tric propulsion engine, which, unlike chemical thrusters, uses electrical energy to generate thrust. The arcjet has a higher exhaust velocity than chemical thrusters and requires less fuel to move the spacecraft.

A solar array power source first ignites the arcjet, and power is raised to a desired level. The test proved arcjet ignition and the system's dependability.

F-16 Flight Trainer Certified

In November, the Air Force fully certified a low-cost, high-fidelity Multi-task Trainer, which was developed by the Air Force Reserve for its F-16 pilots. The MTT was developed to satisfy a need for an inexpensive training device in which Reserve F-16 pilots could practice cockpit procedures before flying.

The concept quickly grew into a fully functional flight simulator. The MTT offers a high degree of cockpit fidelity and realism for less than \$1 million per simulator. Current simulators cost about \$15 million.

Certification involved both technical acceptance test procedures and operational simulator evaluation. Evaluators performed more than 200 tests on the system.

The MTT is now certified for F-16 Block 30/32 general aircraft training, emergency procedures training, instru-

ment/airwork training, air-to-air training, air-to-surface training, and avionics and general mission tasks. During testing, the MTT logged 220 hours of operations without failure.

The Air Force Reserve plans to equip its F-16 squadrons with MTTs by mid-1994. The active-duty Air Force, the Navy, and foreign air forces operating F-16s have also shown interest in the trainer.

Reusable Property for Sale

The Defense Reutilization and Marketing Service (DRMS) has received more property than ever before as a result of the drawdown and inventory reductions.

DRMS is responsible for the disposal of excess personal property generated by DoD components. It deals with tools, office equipment, and spare parts, among other inventory. The resale of these items saves DoD considerable amounts of money.

From its headquarters in Battle Creek, Mich., DRMS manages its mission through more than 200 Defense Reutilization and Marketing Offices (DRMOs) located on or near major military installations in the US and fifteen foreign nations.

The first disposal priority is to reuse excess personal property within the federal government before it is donated to qualified recipients, sold to the public, or destroyed. The program reused property valued at \$17 billion from 1974 through March 1993.

Authorized DoD personnel with civilian or military identification cards can visit DRMOs to inspect excess property. Information on a DRMO in your area can be obtained by calling (616) 961-5966.

US Aerospace Firms Assail Global Markets

US aerospace companies are pushing hard to sell their wares abroad, but emerging trends suggest that this will become more difficult as the market grows more competitive.

That is the conclusion of a new report by the Aerospace Industries Association, "After the Cold War: The US Aerospace Industry in the International Marketplace," which was released in November.

In 1992, US exports reached a record \$45 billion and imports reached \$13.7 billion. The rate of export growth has declined significantly since 1991. The new global orientation is a result of declining defense outlays, a slumping airline industry, and a static NASA budget.

The report said that opportunities abound in the new nations of the former Soviet bloc, while growing

Senior Staff Changes

RETIREMENTS: M/G David J. Pederson; M/G Ralph R. Rohatsch, Jr.

CHANGES: B/G Charles H. Coolidge, Jr., from Cmdr., 375th AW, Hq. AMC, Scott AFB, Ill., to Cmdr., 22d ARW, AMC, McConnell AFB, Kan., replacing Col. Stephen R. Lorenz . . . M/G William B. Davitte, from Dir., Mil. Personnel Policy, DCS/Personnel, Hq. USAF, Washington, D. C., to Cmdr., AFMPC, Randolph AFB, Tex., replacing M/G Michael D. McGinty . . . M/G Ralph E. Eberhart, from Dir., Prgms. & Eval., Hq. USAF, Washington, D. C., to Dir., Force Structure, Resources, and Assessment, J-8, Jt. Staff, Washington, D. C. . . . B/G John W. Hawley, from Cmdr., 52d FW, USAF, Spangdahlem AB, Germany, to Dir., Fighter, Command, Control, and Weapons Prgms., Ass't Sec'y of the Air Force for Acquisition, Hq. USAF, Washington, D. C., replacing B/G George K. Muellner . . . B/G Charles R. Heflebower, from Dir., Personnel Prgms., Education, and Training, DCS/Personnel, Hq. USAF, Washington, D. C., to Dir., Prgms. & Eval., Hq. USAF, Washington, D. C., replacing M/G Ralph E. Eberhart.

M/G Kenneth R. Israel, from PEO, C³ Sys., AFPEO, Ass't Sec'y of the Air Force for Acquisition, Hq. USAF, Washington, D. C., to Dir., Airborne Recon. Office, and Ass't Dep. Under Sec'y of Defense for Advanced Technology, OSD, Washington, D. C. . . . B/G Robert G. Jenkins, from Cmdr., 51st Wing, PACAF, Osan AB, South Korea, to Vice Cmdr., 7th AF, PACAF; Vice Cmdr., US Air Forces Korea; and C/S, ROK/US Air Comp. Cmd., CFC, Osan AB, South Korea, replacing B/G Ervin C. Sharpe, Jr. . . . M/G Michael D. McGinty, from Cmdr., AFMPC, Randolph AFB, Tex., to Dir., Personnel Prgms., Education, and Training, DCS/Personnel, Hq. USAF, Washington, D. C., replacing B/G Charles R. Heflebower . . . B/G George K. Muellner, from Dir., Fighter, Command, Control, and Weapons Prgms., Ass't Sec'y of the Air Force for Acquisition, Hq. USAF, Washington, D. C., to Dir., JAST Prgm., Under Sec'y of Defense for Acquisition, OSD, Washington, D. C. . . . B/G Thomas A. Twomey, from Dep. Dir., Ops., NMCC, J-3, Jt. Staff, Washington, D. C., to Dep. Dir., Ops., NMCS, J-36, Jt. Staff, Washington, D. C., replacing retired M/G David J. Pederson. ■

aerospace capabilities in other nations promise new markets, cooperative possibilities, and competition for US firms. The Asia-Pacific region still offers the greatest potential for sales growth, said the report.

Wings Gain Fuel Control

Wing commanders now have control over funding for aviation fuel used on their bases, said the Air Force last October. It decentralized aviation fuel funding after the Air Force Operational Test and Evaluation Center certified the Fuels Automated Management System.

The objectives were to reduce fuel consumption through greater efficiency, develop more accurate aircraft fuel use rates based on actual wing experience and flying profiles, and increase financial flexibility in operations and maintenance dollars from any savings accrued through conservation measures.

Dellums Promotes "Preventive Engagement"

Conflicts like those in Bosnia and Somalia "cannot be resolved at the point of a gun," and the introduction of military force can, in fact, disrupt and escalate conflicts. For that reason, the US would be served best by "preventive engagement."

That is the essence of an article written by House Armed Services Committee Chairman Ronald V. Dellums (D-Calif.) in the fall *Harvard International Review*. The article explained that preventive engagement is achieved through diplomacy, conflict resolution, and humanitarian assistance involving both outside and regional interests.

"Force may be necessary at times,"

Representative Dellums wrote, "but only when deemed absolutely necessary and utilized judiciously." He wrote that no country should play "global cop" but each nation should play some role based on its unique characteristics and capabilities in a global system of common security.

The true challenge, wrote the California Democrat, comes in identifying hot spots before they occur because, left unattended, they will likely lead to military confrontation.

Pentagon Helps Destroy Soviet Arms

The Department of Defense notified Congress of \$789.5 million in planned expenditures for projects to dismantle weapons of mass destruction in Russia, Ukraine, Belarus, and Kazakhstan—the four nuclear armed states of the old Soviet empire.

DoD signed eighteen agreements as part of the Cooperative Threat Reduction Program. Further agreements are being negotiated for an additional \$294 million.

The so-called Nunn-Lugar legislation allows DoD to obligate up to \$800 million to assist the new states of the former Soviet Union. The funds will be used for the destruction of nuclear and other weapons of mass destruction; safe transportation, storage, and safeguarding of weapons in connection with their destruction; and establishment of verifiable measures against weapons proliferation.

USAF Studies New Cockpits

The Air Force is developing new cockpit technologies for tankers and transport aircraft that will prolong the life and improve the capabilities of the existing fleet.

The Transport Aircraft Cockpit program, managed by Wright Laboratory at Wright-Patterson AFB, Ohio, focuses its work on the C-130, C-141, KC-135, KC-10, and C-5. Emphasis, however, is on the C-141.

The need for an improved cockpit was highlighted last year by an Air Mobility Command paper, calling for cockpits that reduced work load, simplified maintenance, and allowed for a smaller crew.

Designers are striving to achieve commonality among the different aircraft. The program incorporates flat panel displays and will require less power to operate than current systems. A head-up display will be used.

F-16 Achieves Off-Boresight Targeting

An F-16 successfully demonstrated new systems that could allow the jet to lock on to visual targets that are off-boresight, Lockheed said in December.

Lockheed, in association with Raytheon and Honeywell, demonstrated systems to enhance close-in air-to-air combat within visual range. A test program, which began in June 1993, achieved missile seeker lock-on beyond 85° off the nose. The system maintained the track during high-G maneuvering.

The test employed a Honeywell visor-projected helmet-mounted display to cue a variant of the Raytheon Boxoffice missile equipped with a high off-boresight seeker, capable of lock-on to targets at ±90° off-boresight.

News Notes

■ USAF successfully launched a Defense Communications System satellite aboard an Atlas II medium-launch vehicle in November at Cape Canaveral AFS, Fla. The satellite is part of a constellation supporting the military and other US government agencies with secure voice and high-data-rate, superhigh-frequency communications.

■ The 917th Wing (AFRES), at Barksdale AFB, La., became the first Reserve unit equipped with bombers when it received the first of a planned eight B-52H aircraft in December.

■ *Ulysses* became the first spacecraft to reach further south than the most southerly dip of the sun's magnetic equator, NASA said in December. *Ulysses* is on its way to explore the polar regions of the sun. It has measured solar wind speeds of up to two million miles per hour in this previously uncharted region of space.

■ The USAF-Rockwell Interna-

Index to Advertisers

E-Systems, ECI Div.	9
Fusion Video	21
GEICO	53
Grumman Corp.	Cover III
Jet-Age Productions	77
Lockheed Fort Worth Co.	Cover II
Magnavox Electronic Systems Co.	5
McDonnell Douglas Corp.	3 and Cover IV
Northrop Corp.	14-15
Rockwell International, Tactical Systems Div.	13
Teledyne Brown Engineering	35
Vought Corp.	7
AFA Insurance	78-79
AFA Member Supplies	21
AFA National Report	72

tional AGM-130 Standoff Weapon system successfully completed a sixth flight while demonstrating a new television seeker at Eglin AFB, Fla., in November. Launched from an F-111F aircraft, the weapon was released at 1,000 feet and was guided to a direct hit on a target 13.5 miles away.

■ The US Air Force Museum at Wright-Patterson AFB, Ohio, opened "The US Hypersonics Program" exhibit in November, highlighting the history of hypersonics in the US and National Aerospace Plane program technology transfer. The exhibit features several aspects of NASP hypersonic research and development, including the vehicle, its propulsion systems, and advanced materials for airframe and engine, as well as its value to the US economy as a technology multiplier.

■ The Ellsworth Heritage Foundation, Ellsworth AFB, S. D., completed restoration on a B-29 Superfortress bomber and put it on display at the South Dakota Air and Space Museum in November. The World War II bomber arrived at Ellsworth in December 1985 in poor condition. It had been sitting in the desert at China Lake, Calif., for thirty years.

■ The 1993 central captain board selected 3,750 first lieutenants for promotion in November. The board met in September to deliberate. Of 3,264 line officers considered, 3,248 were selected—a 99.5 percent select rate. The Air Force promoted 603 officers and 2,385 enlisted members in December. New insignia will go to eighty-four colonels, 201 lieutenant colonels, 318 majors, sixty-seven chief master sergeants, 160 senior master sergeants, 530 master sergeants, 570 technical sergeants, and 1,058 staff sergeants.

Purchases

The Air Force awarded Lockheed an \$11.3 million face-value increase to a fixed-price incentive firm contract for long-lead tooling for the Peace Atlantis Foreign Military Sales Program for twenty F-16A/B aircraft to Portugal. Expected completion: June 1994.

The Air Force awarded Northrop a \$92.9 million face-value increase to a cost plus incentive contract for integration, development, and testing of the B-2 GPS-Aided Targeting System. Expected completion: June 1996.

The Air Force awarded Chrysler Technologies Airborne Systems a \$9.8 million face-value increase to a firm fixed-price contract for stripping and painting of nineteen C-5 aircraft. Expected completion: December 1994.

Flying B-17 Fortress

on video

FREE
Military
Video Catalog
with order



Have you ever dreamed of flying aboard the mighty B-17? Now you can, as pilot Jeff Ethell takes left seat and you strap into the right for an incredible flight in the Flying Fortress. Get ready for a mission of sheer excitement as you and a crew of 10 lift off into the sky.

This video features incredible sound guaranteed to make you feel as though you are actually aboard the most famous bomber of them all. But be warned, starting up the four Wright Cyclone engines and running them up to 1200 rpm for warm-up may tax the limit of your speaker system, to say nothing of your neighbors' tranquility. This video is no doubt the closest thing to actually flying in the B-17 ever produced.

#5850 Approx. 45 minutes

only
\$19⁹⁸

For VISA, MC, Discover orders, call toll-free 24 hours:

1-800-959-0061 Ext. FLY15

Or send your name, address with check or money order for \$19.98 plus \$3.95 shipping and handling to:
Fusion Video, 100 Fusion Way, Dept. FLY15, Country Club Hills, IL 60478.

Canadian orders must add \$5.00 S & H and pay in U.S. funds. (Please note: Illinois residents must add 7.75% state sales tax.)

Stylish AFA Jewelry



#F-1 **Seiko Bracelet Wrist Watch.** Adjustable stainless steel and gold tone bracelet. Precision quartz movement, 14kt gold finished dial, water resistant. Shows day of month and features Air Force coat of arms. Specify men's or women's. **\$265.00**

#F-2 **Seiko Wrist Watch.** Leather strap (see above for full description). Specify men's or women's. **\$200.00**

#F-3 **Stick Pin.** 10 kt gold filled with full-color AFA logo. **\$16.00**

#F-4 **Life Member Stick Pin.** 10 kt gold filled with full-color AFA logo. **\$16.00**

#F-5 **Life Member Pin/Tie Tac.** 10 kt gold filled with full-color AFA logo. **\$16.00**

#F-6 **President's Pin/Tie Tac.** 10 kt gold filled with full-color AFA logo. **\$16.00**

#F-7 **Past President's Pin/Tie Tac.** 10 kt gold filled with full-color AFA logo. **\$16.00**

#F-8 **Button Set.** Polished gold set of nine buttons with slightly raised AFA logo. Set includes six sleeve and three jacket-front buttons. **\$25.00** Single button **\$3.00** each

#F-9 **Lapel Pin/Tie Tac.** 10kt gold filled with full-color AFA logo. **\$16.00**

#F-10 **Lapel Pin/Tie Tac.** Small size (see description above). **\$16.00**

#F-11 **Flag Pin.** American and AFA flags, side by side. **\$1.50**

#F-12 **Charm Necklace.** 10kt gold filled charm and necklace with full-color AFA logo. **\$188.00**

#F-13 **Tie Bar.** 10kt gold filled with full-color AFA logo. **\$24.00**

Order Toll-Free 1-800-727-3337

Air Force leaders grapple with hard times and brace themselves for worse to come.

USAF photo by SSgt. Ken Wright

This Isn't the Bottom Yet

By David J. Lynch

IN THE YEARS since the Cold War started to fade, the Air Force has reduced its number of major commands from thirteen to eight, cut spending on weapon modernization by sixty percent, and overhauled its procurement process. Force structure and end strength have been slashed. In 1988, USAF had some 3,800 aircraft and 840,000 uniformed and civilian personnel. By the end of this year, the corresponding figures will be 2,231 aircraft and 620,000 people.

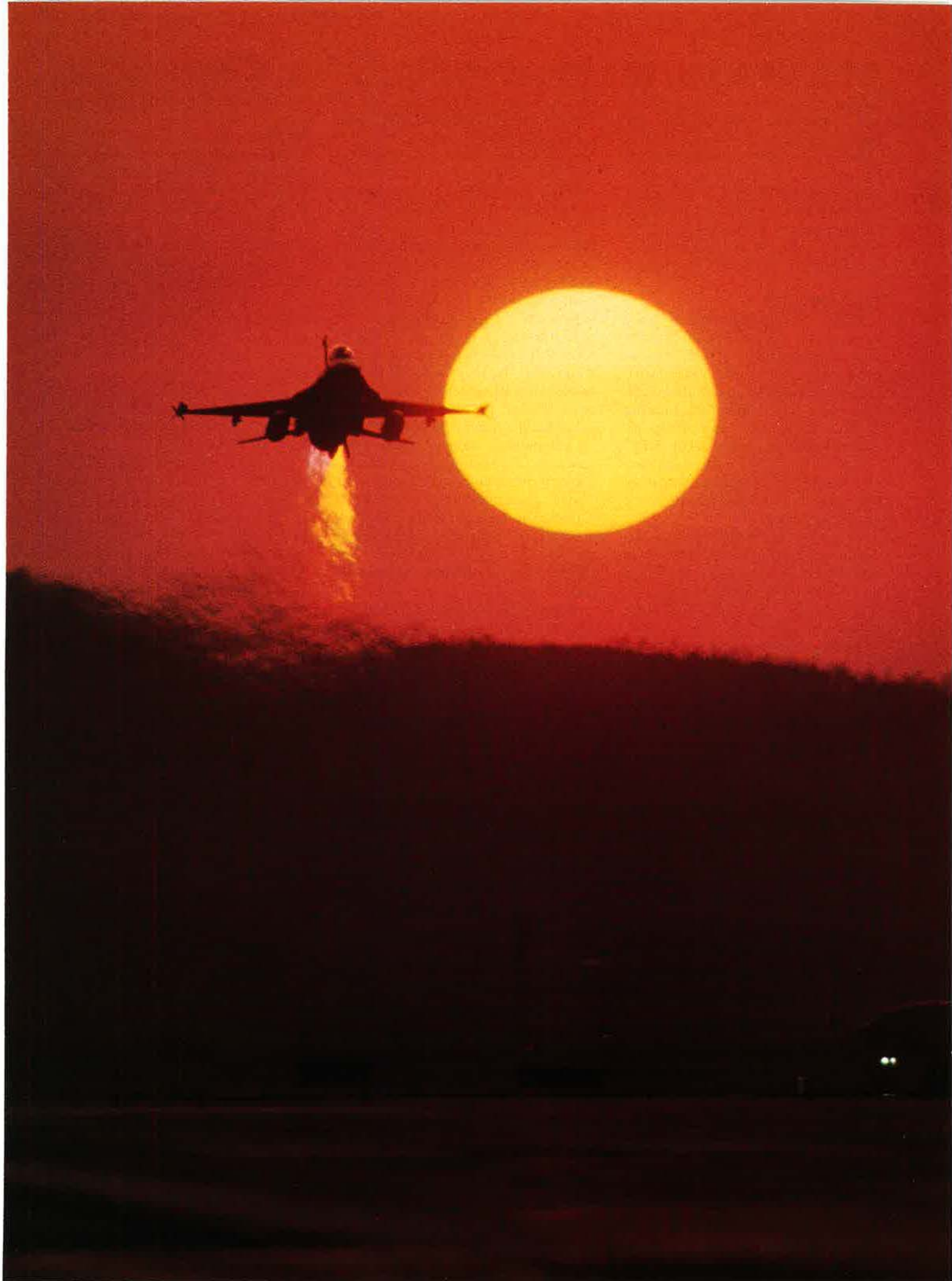
Such statistics demonstrate that USAF has taken major steps to respond to the collapse of the Soviet Union and the global military threat it represented. Yet it appears that the drawdown still has not run its course. How to maintain the world's best air force in a time of ever-diminishing budgets dominated discussions at the Air Force Association's annual West Coast symposium, held October 28-29 in Los Angeles, Calif.

Senior Air Force officials, from Gen. Merrill A. McPeak, USAF Chief of Staff, on down, said doing more with less will be the service's chief challenge in the decade ahead. Painless solutions to the problem seemed

scarce. "Money used to be the easy answer" to Air Force problems, said General McPeak, who noted that USAF's budget has fallen by forty-four percent since the halcyon days of the mid-1980s. Clearly, the Air Force can't hope to spend its way out of its problems.

The Air Force has cut active-duty strength by one-third and the number of combat fighters by one-half. Further cuts in the budget appear unavoidable, but General McPeak has drawn the line at the force-structure cuts approved in the Defense Department's recently concluded Bottom-Up Review of US military needs and programs. "We can't support more force-structure cuts," he said. "We've already gone down as far as we can."

Some Air Force officials see troubled times ahead. Gen. John Michael Loh, commander of Air Combat Command, Langley AFB, Va., said that readiness is currently acceptable but problems already are beginning to crop up. Maintenance crews are struggling to keep on hand adequate numbers of the F100 engines that power workhorse F-15 and F-16 fighters. General Loh said



the service currently faces a 1,000-engine backlog of reparable because budget pressures have crimped spare parts purchases. That, in turn, has forced ground crews to cannibalize parts from some fighters to keep others airborne. If present trends continue, said the General, in two years the Air Force's Band-Aid approach will no longer be sufficient. "In a few years, the words 'hollow force' may ring true," General Loh warned.

Even the F-117

The F-117A Stealth fighter—only three years ago the star of the war with Iraq—now has a mission capable rate below ACC standards. General Loh said he expects the stealth jet's score to continue deteriorating because the service can't afford adequate logistics accounts. The F-117 is one of roughly a half-dozen systems whose operating tempos are placing extraordinary demands upon their crews, he added.

Crews for the Stealth fighters, E-3 Airborne Warning and Control System aircraft, U-2 spy plane, and F-15E and F-111 fighters are spending more than 120 days each year on deployments away from their home base. Air Force commanders want pilots on temporary duty at least sixty days each year to maintain their skills, but anything above 120 days, General Loh said, begins to affect quality of life and morale.

With the Cold War now just a

memory, why is the Air Force still so busy? Humanitarian and peacekeeping missions represent the bulk of recent activity, and shortfalls in capability have been noted. Only 39.1 percent of the initial aid shipments into Mogadishu arrived on time, according to Lt. Gen. Walter Kross, commander of Air Mobility Command's 15th Air Force. In response, AMC created "process action teams" at its Scott AFB, Ill., headquarters and in the field to try to achieve more flexibility through a heavier reliance on in-flight refueling.

Performance improved during a KC-10 shuttle of special operations troops from Djibouti to Somalia. The tanker aircraft, which normally carry seventy-five passengers, were reconfigured at March AFB, Calif., "in an afternoon," General Kross said, to carry 163 passengers and eleven cargo pallets. Once the troops were flown via commercial aircraft to Djibouti, a group of four KC-10s transported 2,600 troops and 369,000 pounds of cargo to Somalia. The shuttle was on time thirty-eight landings in a row.

It was in service at the same time that C-5s ferried Army Rangers into the country to beef up the US presence there following a deadly October 3-4 firefight involving US soldiers. Flying directly from the US east coast to Mogadishu, the C-5 crews executed four aerial refuelings per mission—rather than the standard

two—during duty days stretching to thirty-three hours. "It was absolutely extraordinary," General Kross said.

No Exit

Service officials fear that such capability will be lost under the constant pressure caused by declining budgets. General McPeak's solution is to embrace the type of cost reduction that has swept private industry during the recent recession. The Air Force, he says, has to find cheaper ways of doing business. Unblinking budget realities mean the Air Force has no choice. It must find less expensive ways to do business, or its business will shrink.

"We have to find cheaper ways to get the job done while at the same time keeping the force ready to fight," General McPeak said.

A key target for savings—despite some obvious risks—will be the cost of operating the force. By 1995, the Air Force will be flying one million fewer hours annually, compared with 1985. Yet the share of its total budget consumed by operations and maintenance is expected to increase to thirty-six percent from thirty percent.

Compared with the civilian economy, the military has yet to address its excessive overhead costs aggressively. General McPeak cited the E-4B National Emergency Airborne Command Post aircraft, which cost three times what it takes to keep a comparable Boeing 747 aircraft flying. The Air Force's people-to-planes ratio is now 278 to one, up 25.8 percent from 1988.

One major obstacle to the Air Force's efforts to strip away fat is a variety of outmoded information and cost-accounting systems, the Chief of Staff said. Too often, service officials don't really know how much something costs. They may know to the dime how much they are charged for it by the Pentagon's Byzantine procurement process, but the available data do not reflect true costs.

Echoing the conclusions of numerous think tanks and outside commissions, General McPeak said costs can be reduced by designing in easy maintenance and higher reliability at the front end. To effect the sort of cultural change required to make cost a key concern, USAF has begun to structure new financial incentives into its wing commanders' budgets. It has achieved some minor successes.



Though it was a star performer in the Gulf War, the F-117 (above) now has mission capable rates below ACC standards. USAF commanders worry that inadequate logistics accounts will exacerbate the problem.

Under the Gold Flag initiative, \$60 million has been saved by repairing spare parts that otherwise would have been thrown away. In 1993, three bases took part in a pilot program to shrink fuel costs; Seymour Johnson AFB, N. C., reported savings of \$1.4 million. A joint industry-USAF effort took \$5 million out of the B-1B's support costs.

General McPeak concedes that the Air Force hasn't done "more than jawboning" on the cost issue in the past. Now, he says, "the cost crunch is so central to everything I do up there at the Pentagon" that service attitudes must change. As an initial step, he has established a Quality Council with the major US-based air commanders, aimed at weeding out inefficiencies.

Two at a Time

Last year's Bottom-Up Review made clear that the task assigned the Air Force will not get any easier even as budgets continue to shrink. The good news for air warfare specialists is that the threats envisioned in the post-Cold War world will require a robust air arm. The bad news is that those threats may materialize simultaneously on opposite sides of the globe, requiring a flexible and fast-reacting air campaign with little margin for error.

Edward L. Warner III, the Pentagon's assistant secretary of Defense for Strategy, Requirements, and Resources, was one of the key civilian officials involved in the Bottom-Up Review, which identified four dangers now confronting the US: regional problems of coercion, aggression, or internal ethnic or religious conflicts in areas where the US is involved through treaty commitments; the proliferation of nuclear or biochemical weapons and the need to prepare US forces to operate in the face of such weapons; the failure of democracy to take root in the former Soviet Union and eastern Europe; and the prospect of economic stagnation and weakness in the West.

Perhaps the principal regional danger lies in North Korea, which maintains one million men under arms and six million more in reserve and keeps forty percent of its army arrayed along the Demilitarized Zone and seventy-five percent within sixty miles of the demarcation line. The South Korean capital, Seoul, and its



USAF photo by TSgt. Val Gempis

The Air Force remains busy despite the end of the Cold War. It conducts frequent exercises in South Korea, for example, where early arriving forces will be instrumental in blunting any aggression.

fourteen million residents are within range of 20,000 Communist guns, according to Gen. Robert L. Rutherford, Pacific Air Forces commander.

The Clinton Administration has embraced the concept of a "two-war strategy," under which the US will maintain forces able simultaneously to fight successfully in, for example, Korea and the Persian Gulf. To do that, Mr. Warner said, airpower will play a critical early role in blunting the enemy's opening assault in the initial theater and then "swinging" US power to a second combat zone perhaps thousands of miles away.

"It is clear that this is an era where airpower . . . is an inextricable component of American military capability and one we can rely on to answer almost any challenge," Mr. Warner said. "We are putting a tremendous amount of emphasis on early arriving combat power. Nothing is more important to that than airpower. Sealift can't get you there."

Preliminary Air Force analyses have shown that precision guided munitions aboard F-111, F-15E, and F-117A aircraft, plus long-range B-52, B-1B, and conventionally armed B-2 bombers, will be the leading edge of the airborne response. The Air Force mission, Mr. Warner said, will be to establish air superiority in rear areas as well as local air superiority above attacking enemy forces. At the same time, commanders will likely execute "selec-

tive attacks against critical targets" in the enemy's rear areas. Once US forces switch to offensive operations, "sustained air and missile attacks" will be launched to weaken the enemy's ability to make war. Ultimately, Mr. Warner said, a combined-arms attack will expel enemy forces and achieve an American victory with minimal casualties.

The two-war strategy is ambitious, and some senior commanders are already expressing reservations.

The Shopping List

General Loh said he was confident the Air Force could execute its part of the strategy today. However, he said, additional analysis is needed to answer two related questions: What forces are needed to swing between simultaneous theaters of conflict? Can that job be achieved with the forces likely to be available five or ten years hence?

"There is a potential mismatch if we don't do it right," he said. "With further cuts [beyond those already planned for 1995-99], it becomes difficult, if not impossible."

Pentagon and Air Force planners have developed a concise shopping list of force enhancements aimed at making sure General Loh and his colleagues have what they need. At the top of the list is increased airlift, principally the C-17 transport. Next are new weapons and munitions, including antiarmor submunitions and

other precision guided munitions; better integration of spacebased warning into air assets; and new theater air defense systems. The challenge will be finding room for all these in currently tight budgets.

Clearly, better airlift is the overriding objective, in the view of Air Force leaders. With the C-17 burdened by cost, schedule, and technical problems that have ballooned into a nagging political controversy, commanders took every opportunity to boost the troubled program.

"That thing is fun to fly. It's easy to fly. It's a dream for the pilot," said General McPeak. Air Force Secretary Sheila Widnall was also enthusiastic: "We have a successful aircraft." General Kross said that, along with the new airlifter, a new, highly reliable 60,000-pound loader is needed. Current models have a mean time between failure of ten hours; the service wants its next loader to last 100 hours between breakdowns, General Kross said. Prototypes of a model that can "unload any plane, anywhere" are being tested at Dover AFB, Del.

With the memory of bruising congressional battles over Northrop's B-2 still fresh, the question of how best to maintain an adequate bomber force is reemerging. General Loh said he would prefer to field a force of about 184 bombers, but budget pressures will make that difficult. He envisions a force of twenty B-2s, seventy to eighty B-52s, and most or all of the ninety-seven B-1Bs equipped with upgraded conventional weapons. "You can't be a kid in a candy store anymore. You have to pay for what you buy," he said in a comment echoed by others.

General Loh was already eyeing a creative new "replacement strategy" for the bomber force. The idea was to buy additional B-2s in coming years while continuing to upgrade B-1Bs and B-52s as they age—all within ever-tighter budgets. General Loh said it may make more sense to plan annual purchases of a small number of new bombers rather than to introduce large-scale bomber programs every generation. "The Navy does that for submarines, and it works very well," he said.

General Loh suggested that factories could be tooled up for such "steady-state, low-rate production" to boost efficiency.

Decision Time

If the Air Force wants to preserve the option for continued production of B-2s, it will have to buy additional planes within the next year or two, General Loh said. Otherwise, key Northrop suppliers will leave the business, valuable tooling will be discarded or shelved, and a trained work force will disperse. General Loh is leading a study to determine exactly which steps must be taken and when to keep open the prospect of additional B-2 purchases, though other senior officers, such as General McPeak, believe the public will not support additional bomber purchases and that the Air Force should stop pressing for them.

Also drawing increased attention were two other program areas: the Joint Advanced Strike Technology (JAST) effort and theater air defense.

Air Force leaders said JAST orientation and goals remain indistinct. General Loh worried that, without greater focus, the program could degenerate into "an unfocused hobby shop that produces little at the end of the day." He urged work on advanced operational prototypes and advanced technology demonstrators that could lead to future generations of warplanes. Among them, he said, would be replacements for the F-16 and Navy A-6, plus an export fighter.

General McPeak said theater air defense deserves a much higher priority. "I believe the Air Force needs

to get its act together on the question of theater air defense. . . . We've let this whole business slip away from us," he said.

The emergence of a new range of military threats unrelated to the Cold War's nuclear SIOP (Single Integrated Operational Plan) missions demands more attention for the problem of intercepting cruise and intermediate-range missile barrages, General McPeak said. He admitted that Air Force efforts during Operation Desert Storm to find and destroy Iraqi Scud missiles prior to launch were generally unsuccessful. Similar threats are likely in future conflicts, he said in arguing for a "wall-to-wall revolution of theater air defense."

General McPeak said that over the next year a new theater air defense office, headed by Maj. Gen. W. Thomas West of Pacific Command, will consider changes in doctrine, training, technical possibilities, force structure, and the Air Force's role in theater air defense.

The Gulf War also underscored the military's growing dependence on spacebased assets, a dependence the Air Force equates with growing service responsibilities. Gen. Charles A. Horner, commander of US Space Command at Peterson AFB, Colo., warned that a new approach is needed if the potential of spaceborne systems is to be fully exploited.

He reiterated an argument he first advanced at AFA's 1992 symposium,



If B-2 purchases are halted at the legislatively mandated twenty, important suppliers will leave the business, valuable tooling will be discarded or shelved, and a trained work force will disperse within two years.

saying that on-time performance needs to become as much a part of space-suit culture as it is of fighter operations. When he first arrived at Space Command and reviewed recent launch records, General Horner said he found that "takeoff time wasn't [considered] important" in the space community. Even more recently, a 1993 Delta launch of a German scientific satellite was judged a success, he said, although its launch was twenty-eight days late. "In aviation, fifteen minutes late isn't good," General Horner said. [See "Fogbound in Space," January 1994, p. 22.]

Despite the often obvious advantages of spacebased systems, General Horner said, budget pressures will force the military to embrace terrestrial or airborne solutions unless the expense, nonresponsiveness, and unreliability of space programs are resolved. To achieve that, the space community must move away from large, highly complex payloads and launch systems, he said.

Hands-On Experience

The Air Force's approach to training people to operate all this hardware is also changing. Reorganization of training efforts led to the creation of a muscular Air Education and Training Command. AETC, which combined the assets of formerly independent Air University and Air Training Command, has control of seventeen installations and 68,000 troops, plus thirty-two types of aircraft. Roughly 90,000 students receive initial skills or other training from command instructors each day.

Adequate training is likely to become more essential as USAF strives to fill the 30,000 jobs it will have available for new entrants this year.

AETC's commander, Gen. Henry Viccellio, Jr., said recruiters "are beginning to struggle" to find qualified recruits. A major thrust of the restructured training arm is to produce airmen who are ready for their initial assignments. "We were turning out products that were a far cry from being ready for the job. . . . It was a lousy way of doing business," said General Viccellio. Much of the fault lay with the previously fragmented organizational setup, he said.

Enlisted personnel assigned to maintenance units often arrived at their bases without having seen the types of aircraft they would be working on,



Training is one area in which USAF seeks efficiency. Air Education and Training Command, which combined the assets of ATC and Air University, is clearing the underbrush from the hodgepodge of field training detachments.

he said. For newly minted pilots, there were similar worries. "As a wing commander at Langley and MacDill, I had pilots who would need . . . between ten and forty additional local sorties before I'd feel comfortable letting them fly as a wingman in even a benign combat role," he said.

AETC, which now has responsibility for all initial skills training, is working on two fronts to improve the situation. General Viccellio is still clearing the underbrush from the "hodgepodge" of field training units that had sprung up in the past. Up to 163 field training detachments existed at air bases around the world to provide the kind of training that personnel should have received before reaching their first posting. The FTDs are down to sixty-five today and eventually will be whittled to twenty-one, said General Viccellio.

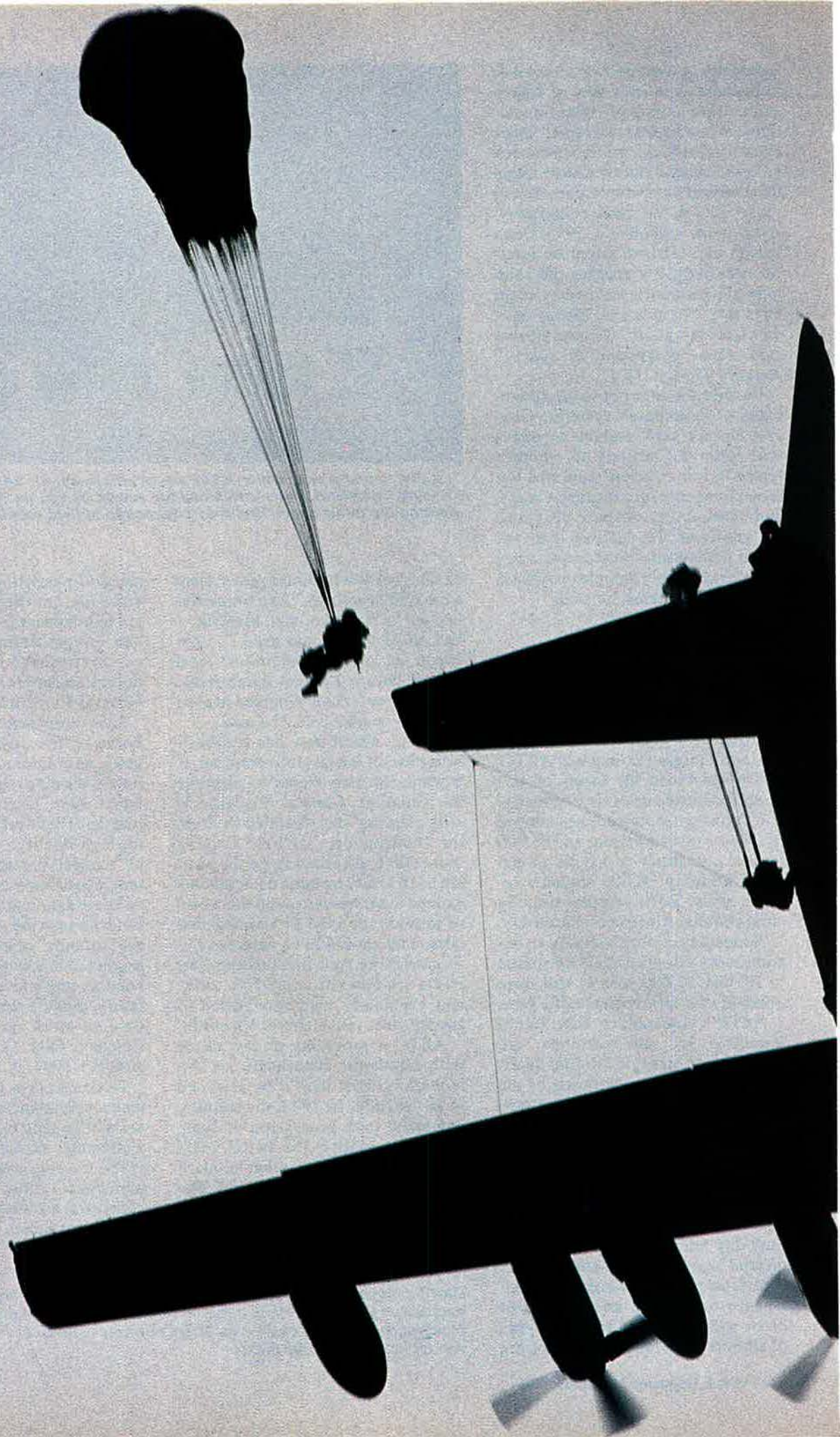
AETC is providing its raw talent with hands-on experience on the modern aircraft they'll be assigned to in the field. In 1993, the training command took possession of fourteen F-16s, eight F-15s, two C-141s, and more than forty other modern aircraft, General Viccellio said. The Air Force also plans to provide more intensive continuation training in-

stead of persisting with its reliance on *ad hoc*, on-the-job training. After six to ten years in the field, specialists will get a mini-sabbatical to receive refresher courses on new technology and approaches in their field, General Viccellio said.

Like corporate America, the Air Force is investigating how to integrate new interactive technologies into its training regimen. Flight simulators have long been a staple of pilot and flight-crew training. Emerging high-fidelity technologies—a sort of "virtual airplane"—have the potential to change current instructional habits dramatically. General Viccellio, who says the Air Force is only in the "infancy" of using such systems, predicted it may soon be possible to conduct proficiency checks in simulators, thus freeing expensive flight time to work on operational proficiency. [See "Virtual Warriors," January 1994, p. 30.]

Not only pilots will benefit. Maintenance personnel and even fire fighters will be able to learn their jobs in a computer-created environment. A video training network is being established to allow "correspondence" courses at air bases scattered across the United States. ■

David J. Lynch covers defense and aerospace for the Orange County Register in California. He is a former editor of Defense Week Magazine. His most recent article for AIR FORCE Magazine was "The C-17 Fights the Headwinds" in the July 1993 issue.

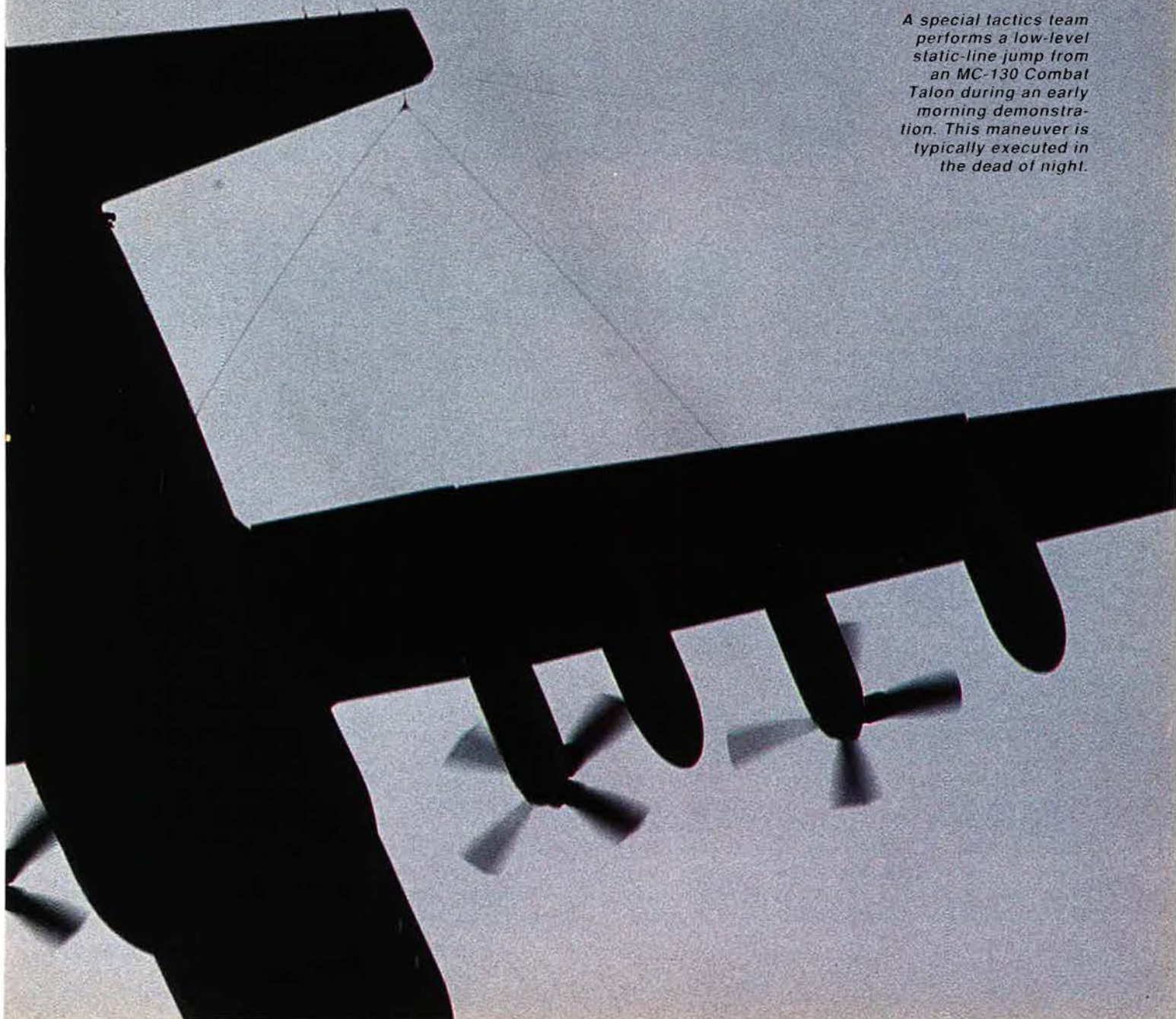


Combat controllers jump early to establish communications in hostile landing zones.

When the LZ is Hot

By Frank Oliveri, Associate Editor Photos by Guy Aceto, Art Director

A special tactics team performs a low-level static-line jump from an MC-130 Combat Talon during an early morning demonstration. This maneuver is typically executed in the dead of night.



At right, SSgt. Boyd G. Bowling of the 23d Special Tactics Squadron, Hurlburt Field, Fla., prepares to contact an aircraft on his satellite communications equipment as part of a demonstration of the setup of an air traffic control center in a landing zone. Below, team leader Capt. Patrick Barnett (also of the 23d STS) checks his equipment moments after jumping from his MC-130. The large bundle behind him contains two motorcycles that will be used to check the landing strip for debris.



erations forces (SOF) activities. In less than ninety minutes, despite having to operate under fire, the team established communications with incoming support planes, cleared the airfield of debris and obstacles, and began to orchestrate arrivals and takeoffs of what would become a wave of hundreds of transports and helicopters.

These USAF specialists are more than mere air traffic controllers. In the 1991 Persian Gulf War, they participated in incursions against Iraqi positions. They installed beacons that marked the way for the waves of fighter aircraft that struck the first blows of the war. Combat controllers designated enemy targets with lasers so that fast-flying USAF fighters could find and destroy them. Combat control teams provided a vital link between ground and air special operations forces at all times.

Speed, Surprise, and Action

Special operations missions require speed, surprise, and violent action. "If you can't bring those three

IN THE early morning darkness of December 20, 1989, Air Force transports dropped more than 500 Army Ranger paratroopers onto the air base at Rio Hato, Panama. The beginning of Operation Just Cause drew a fierce response. Panamanian gunners opened up, lighting the sky with anti-aircraft fire that whistled past the descending troops.

The Rio Hato operation unfolded in classic Ranger style, but it involved more than Rangers.

Some of the first fighters to hit the ground were members of a USAF special tactics team—eight combat controllers and twelve pararescuemen, or "PJs." Among them was MSgt. Carl Casey, the sixth man to jump from the lead plane. Sergeant Casey, a combat controller from Air Force Special Operations Command's (AF-SOC's) 23d Special Tactics Squadron (STS) at Hurlburt Field, Fla., recalls seeing up to 400 elite Panamanian troops, sent there to defend dictator Manuel Noriega.

"When we jumped out, it [the landing zone] was hot," said Sergeant Casey. "When I jumped, they started shooting at us as we were coming down. By the time number three came



over, it was *really* hot. I didn't have a lot of time to watch. When I went out the door, it was 500 feet, and I landed on top of somebody's parachute, and the next thing I knew I was in the trees."

What happened next shows why USAF's combat controllers, though few in number, play such a key role in the outcome of most special op-

things to bear, normally you fail," said Col. Robert W. Neumann, commander of the 720th Special Tactics Group, AFSOC, at Hurlburt. "We bring the air and the ground systems together to achieve that. Our mission is clearly an air mission, but it's performed in the tactical ground environment. We are neither fish nor fowl."

Colonel Neumann added that the mission of special tactics teams is to establish and maintain the air-to-ground link in the special operations target area. "Whenever there is a need to tie those two together, there is a need to have special tactics [units] involved," he explained.

Special tactics teams have several other functions. They are required to survey, establish, and control assault zones and landing zones for fixed and rotary wing aircraft and to do the same for drop and recovery zones. PJs administer medical treatment on the spot. Recently added to the combat controller's repertoire is a new mission: special operations terminal attack control. "That's the old ground FAC [forward air controller] mission, primarily performed by TACPs [tactical air control parties] for conventional forces," said



Sgt. Chris Crutchfield of the 23d STS patrols the area during a demonstration exercise. Combat controllers are also assigned to AMC, ACC, USAF, PACAF, and AETC, providing their special talents around the world.



Mobility is important in securing the landing zone. Two motorcycles are dropped into the LZ, and the controllers dash off to survey the area, all the while keeping in contact with the newly established communications center.

Colonel Neumann, who noted that the Army's Special Forces have no TACPs.

Airfield seizure is a combat controller specialty. That capability was ably demonstrated during Just Cause. Tons of equipment and thousands of troops poured into Panama through seized airfields. None of this could take place, however, until US forces had seized and secured them and combat controllers had set up shop to establish the ground-air communications link.

Once combat controllers hit the ground at Rio Hato on the opening night, the primary controller set up communications while junior team members used motorcycles or minibikes to race up and down runways—under fire—to clear any debris that might damage incoming aircraft. Other team members set up infrared strobes and lights, marking the runway for incoming aircraft. This typically takes thirty to forty minutes, but Rio Hato took almost an hour and a half because of the intensity

of enemy resistance and obstacles placed on the runway.

They Don't Travel Light

Because of the nature of their work, combat controllers are walking communications networks. Each is linked by FM radio to his team members. Each team has UHF/VHF radios to permit contact via satellite with selected aircraft around the world.

Special tactics combat controllers, along with their PJ brethren, operate with such SOF units as Navy SEALs and the Army's Rangers and Special Forces units. Their tactical insertion skills are identical to those of other SOF units. For example, combat controllers can parachute at low levels by a static line or fall into combat areas using high-altitude, low-opening jumps. In the HALO jumps, a combat controller wears an oxygen mask and falls to about 3,000 feet, where he pops his parachute. If it fails, he must open a spare at 2,000 feet; otherwise, it's too late.

The controllers don't travel light. They bring everything they might need to carry out the mission, and that can be quite a bit. Counting personal weapons and ammunition, radios, and other gear, Sergeant Casey was probably carrying about 100 pounds of equipment when he jumped into Panama.

Nor do they travel in comfort. Before he jumped, the Sergeant had

been flying in a cramped transport for seven hours, having left Fort Benning, Ga., in a snowstorm, and had arrived in Panama to be greeted with a blast of ninety-degree jungle heat.

"When I hit the ground and got my bearings . . . the whole world just opened up on us," he said. "You could hear the rounds whipping through the trees. The Pan-American Highway was right on the side of us, and vehicles were trying to get out of there. Panamanians were trying to leave the airfield because we had gunships [AC-130s] and little birds [helicopter gunships] up that we started talking to as soon as we hit the ground. I got a hold of some Army helicopters that provided forward air support."

TSgt. Gordon Tully, a combat controller from the 23d STS who



TSgt. Gordon Tully of the 23d STS uses the laser rangefinder on his GAU-5 to designate an enemy target for an orbiting AC-130 gunship. Sergeant Tully was among the first to land in Panama during Operation Just Cause.



The AC-130 Spectre, with weapons ranging from 20-mm Gatling guns to a 105-mm howitzer, is the close support platform of choice. The 40-mm gun can be slaved to radar sensors for night or adverse weather operations.

also jumped from the lead plane, was tasked to establish a lighting pattern at the approach end of the runway. "As I came down . . . I could see that the Panamanians had blocked the runway with deuce-and-a-halves [2.5-ton trucks]," he said. "I knew we were going to have a hot time."

Sergeant Tully landed and moved down the runway at a trot. The Panamanians fired several antiaircraft guns at incoming aircraft and the parachuting Rangers and also shot grazing fire across the airstrip. "As

I moved up the Pan-American Highway, there was an armored car that was shooting, and across on the other side of the runway was an antiaircraft gun that was doing quite well," Sergeant Tully said. "I took a couple of shots at the exposed gunner on the armored car and decided that, since I was in the middle of an open runway, perhaps it wasn't a good idea to let them know where I was."

Three Rangers came along and took two shots at the Panamanian vehicle with an AT-4 rocket launcher and a

Light Antitank Weapon, but they missed. Eventually, an AC-130 gunship destroyed the armored vehicle and a tank on the Pan-American Highway.

Though they can get caught up in gun battles, combat controllers generally maintain that they should not draw and fire their weapons unless they are in imminent danger and that they should leave the fighting to others, such as Rangers. "My job is to get through the mess, get to the airfield, and get the control point up and established," Sergeant Casey said.

By the Book

Next comes a complex production in which the combat controller is the director. "Everything is preplanned," said Sergeant Casey. "It's like a ballet. It's already been rehearsed, but it gets complicated."

Rehearsal is key, according to Colonel Neumann. Every successful special operations mission has been planned well. Rio Hato was rehearsed and then executed by the book.

First, the lead combat controller divided the airspace into areas of operations. For example, at Rio Hato, airplanes were landing north to south. That meant the helicopter force had to operate on the east-west axis, with the runway as the center line. Then there was the gunship, which orbited the airfield at a predetermined altitude.

If an aircraft was taking fire on approach, it could opt to break out and go to the end of the line. If an aircraft told the combat controller that it was low on fuel, it had to be worked in quickly. The combat controller had to find a solution if the parking area became a hot LZ.

All the coordination moves and all the decisions are made without

Grueling Training

How does a person prepare for the mental and physical stresses brought on by the combat controller mission?

First, candidates go through twelve weeks of physical training that starts slowly but builds to a much higher level. The Air Force loses eighty percent of its combat controller ap-

plicants in those first twelve weeks of pre-scuba training, which prepares them for the next course: combat diving at Key West, Fla.

"It's a tough program, but it is also an extremely well designed scientific program. In fact, there are people from other services, as well as outside the military, who are coming in to look at that program because it's about as tough as it can be without being ridiculous," Colonel Neumann said. "We're really testing a guy's mettle."

Next comes jump school at Fort Benning, followed by the military free-fall course at Fort Bragg, N. C. Then it's off to the West Coast for aircrew survival school at Fairchild AFB, Wash., where a water survival course has been added. Later, students are sent to air traffic control school at Keesler AFB, Miss., for eleven weeks, followed by combat control school at Pope AFB, N. C., for ten weeks.

"The target population that we have used in the past was between 30,000 and 40,000 Air Force entrants each year," Colonel Neumann said. "We have been providing recruiting briefings to every Air Force



notes. "You don't have anything to write on," said Sergeant Casey. "We have to memorize everything. We have to remember what airplane is supposed to be where. We've got to remember all the call signs, remember where the gunship is orbiting and where he is shooting. You have the small helicopters that fly all over. We call for them, and they provide suppressive fire. They [fixed-wing aircraft] land in one-minute intervals in the dark. You have to get them all parked. Once you get it all going, . . . it's perfect, and it doesn't take long."

Sergeant Casey said he was relieved of duty after twelve hours of intense activity. "It can get confusing," he said. "You can get lost in a heartbeat."

"You have three different radios you're talking on, and you have to remember this guy is six minutes out and he's fixing to land. . . . I don't want anyone running into each other or anybody shooting each other. It's not bad, but it tires you out. Eventually, your mind just stops."

Pararescuemen, or PJs, are an integral part of every special tactics team. Above, this specially designed Rapid All-Terrain Transport has been fitted to accommodate litters and equipment. It is one of many pieces of equipment designed to the specifications of the controllers and PJs. At right, PJ A1C Michael A. Malloy moves to a more secure area and watches for other members of his team.



basic trainee at Lackland [AFB, Tex.], so for the most part those people who have [entered] our pipeline have come right out of basic training. People want to come into the Air Force because [it] has a good reputation for quality of life, learning technical skills for outside employment, building opportunities for education—not exactly the kind of physical combat-oriented programs we offer. What we've learned is, in order to increase the rate of success through our program, we have to target a slightly different population. In fact, it's the same population that the Army and Navy have traditionally targeted for Rangers, Special Forces, and SEALs."

The Air Force works its combat controllers hard—so hard, in fact, that the average temporary duty for a combat controller is 180 to 200



The MC-130 Combat Talon provides one way for combat control teams to deploy in or out of a landing zone at a moment's notice. Air Force Special Operations Command assets also include MH-53 and MH-60 helicopters.



Air Force combat controllers train in various infiltration/exfiltration techniques with other branches of the military, such as Army Special Forces and Navy SEALs. Here, a control team practices offshore infiltration with a Zodiac boat.

days a year. There are about 440 combat controllers in the Air Force, with 199 of them in AFSOC. Currently they are only at about sixty-percent of authorized strength.

When it comes to the job, combat controllers are extraordinarily flexible. During Ocean Venture 1993, a combined-forces Caribbean exercise, Sergeant Tully was assigned to support three Special Forces teams. The teams were practicing a submarine lockout: The sub stayed submerged while SOF divers deployed from it

to shore. From the submarine, Sergeant Tully had to provide them with supporting airpower.

"We were running a little short on folks, so I needed to support three separate teams," he said. "The best way we figured I could do that was to stay on the sub and try to work from there. It was a technique we hadn't tried before, a brand-new concept. The idea was that we could be a liaison between the close air support assets and the SOF teams."

In Operations Desert Shield and

Desert Storm, combat controllers ran King Fahd Airport, Saudi Arabia—at the time, the world's busiest airport lacking radar. They took an airport two years from completion, cleared two 13,000-foot runways, and provided the wherewithal for 40,000 sorties per month, more than the combined traffic at Chicago's O'Hare Airport and New York's Kennedy Airport. King Fahd Airport had 750 assigned aircraft, including the 1st Special Operations Wing (now the 16th SOW), a squadron of F-16s, an entire provisional wing of 144 A-10s, 500 Army helicopters, and surveillance and electronic warfare aircraft.

The combat controllers at King Fahd used only portable radios and shifts of about five persons at a time. "We were using as much of [our] standard procedures as possible," Sergeant Tully said. "We had two 13,000-foot runways, so we set up two rectangular patterns—an inside pattern and an outside pattern. Then we had an overhead pattern and a straight-in traffic pattern. We had over twenty helo pads at King Fahd. It was not uncommon to have forty to fifty aircraft in your pattern at any given time.

"People asked, 'How do you remember the call signs?' Well, you don't. It seemed that, for me, when it became necessary to talk to them, I knew the call sign. It comes into your head." ■

The All-New Teledyne Brown 60K Loader

**Meeting
Tomorrow's
Cargo
Handling
Needs
Today!**



**Developed for
the U.S. Air Force
to provide:**

- ✓ Increased Capacity
- ✓ Faster Loading
- ✓ Smaller Crew
- ✓ 5-to-1 Reduction
in Downtime
- ✓ Compatibility with ANY
U.S. Military or
Civilian Reserve
Transport Aircraft



**TELEDYNE
BROWN ENGINEERING**

Common sense ... uncommon innovation
P.O. Box 070007
Huntsville, Alabama 35807-7007
(205) 726-1426

Twenty-five million veterans are out in the civilian world. Many are looking for work. Here's how some of them are doing.

Transition Is Not for Sissies

By Bruce D. Callander

IN 1980, Rick Staples quit the Air Force and took a job on a Colorado oil rig. A year later, unable to make ends meet, he returned to the service. Next June, he will try civilian life again, but this time he will leave with the retired pay of a technical sergeant and a well-defined strategy for tackling his second career. He is one of tens of thousands of service members and civilian employees leaving service early because of the military drawdown.

For many, facing the "outside" world is a formidable prospect. The economy remains sluggish, government jobs are scarce, and defense industries have been scaling back. Meanwhile, civilian colleges and trade schools continue to send job-hungry graduates into the market and displaced workers are still looking for new positions. Veteran status gives separatees preference for some jobs, but more than twenty-five million veterans are already out there. Many are looking for work.

Sergeant Staples felt he had a lot to offer. His career in aerospace ground equipment qualified him on diesel and jet engines and in electronics. He had worked with chemi-

cal and petroleum products and could work in environmental clean-up. A broader option would be a job in warehouse management. By late fall, he had had one promising job nibble from a hazardous-waste disposal firm, but he was keeping his options open.

Sergeant Staples had planned to stay in the Air Force for at least three more years. During the drawdown, however, USAF lowered the high year of tenure (mandatory retirement point) for E-6s to twenty years. At age thirty-nine, Sergeant Staples now thinks the timing may be for the best. "Companies aren't allowed to discriminate because of age," he said, "but they can say you're 'overqualified.' If you stay in too long, the age factor can hurt you in the job market."

Nine months before his retirement date, Sergeant Staples began his job search at the Transition Assistance Program (TAP) center at Kirtland AFB, N. M., one of more than 100 such centers operating at Air Force bases. TAP has worked with more than 210,000 military and civilian separatees and expects to be in business for several more years.

These are some of the benefits to which a service member may be entitled, but there are exceptions. Officials recommend checking with local Transition Assistance Program centers for details.

Learning to Translate

The program offers everything from three-day workshops to specialized courses in résumé writing and interviewing. Clients have access to computer programs that help them analyze their assets, organize job searches, and use such networks of prospective employers as the Defense Outplacement Referral System. They learn how to translate their military experience into civilian equivalents, how to dress for interviews, and even how to use body language to better effect.

The main aim of TAP, however, is to motivate separatees to tackle the job hunt determined to make good. Arnie Chavez, TAP manager at Kirtland, knows the value of persistence. He was an Air Force civilian program analyst when he was caught in a reduction in force (RIF), dropped two pay grades, and wound up in Army public affairs. He had begun to work his way back up when his unit shut down and he had to start over again. His self-esteem was at low ebb, but an earlier version of the

transition program helped him recover and land his present job. "All the information the program provides is invaluable," Mr. Chavez said, "not only for the immediate crisis but any time in your life when you have to make a change of jobs."

Restoring confidence is vital, said Fae Simmons, the TAP manager at Randolph AFB, Tex. "The more the clients sense that they can take control of the process, the more the anxiety level goes down," she said. "We work hard to keep them from internalizing and seeing it as a personal rejection when they don't get a job on the first try."

Even with high self-esteem, job hunting can take time and drain finances. Most separatees have some financial cushion to see them through early disappointments. Like Sergeant Staples, those retiring with at least twenty years receive annuities, military medical care, and commissary and exchange privileges. Retirees with fewer years of service get smaller annuities but the same base privileges. Even many of those with

limited service receive substantial sums under the Voluntary Separation Incentive or the Special Separation Benefit. They also qualify for at least temporary shopping and medical privileges, for leave or job-hunting temporary duty (TDY) and, in some cases, even for continued base housing.

Benefits With Price Tags

The separation benefits are not pure gravy. Income taxes take their toll, and some of the options have price tags attached. Veterans can convert their government life insurance and pick up additional coverage, for example, but at additional cost. Retirees can ensure continued incomes for their dependents under the Survivor Benefit Plan (SBP) but must accept a reduction in their own annuities to pay for it. Those allowed to remain in government housing must pay fair-market rent. Separatees not covered by the Montgomery GI Bill are given a last chance to qualify but must pay \$1,200 up front.

Even military medical care often

S U M M A R Y O F B E N E F I T S

	Members Leaving With VSI/SSB Entitlements	Involuntary Separatees	Retirees
Preseparation counseling	■	■	■
Employment assistance	■	■	■
Relocation assistance	■	■	■
Excess leave (up to thirty days)	■	■	1
Permissive TDY (PTDY)	2	2	2
Travel home (within twelve months)	■	■	■
Storage of household goods (within twelve months)	■	■	■
Extension at DoD Dependents Schools	3	3	4
Montgomery GI Bill enrollment	■	■	—
Health care: Military/CHAMPUS	5	5	■
USVIP eligibility	■	■	—
Preexisting conditions	6	6	6
Commissary	7	7	■
Exchange	7	7	■
Family housing for 120 days (with rent, space available)	■	■	1
Nonappropriated fund job preference	■	■	—
Military years of service credit in federal civilian job	8	8	8

1	2	3	4	5	6	7	8
If separated as a result of Selective Early Retirement Board.	Thirty days when last duty station is overseas; twenty days for others. Members may take either PTDY or excess leave but not both.	Dependents who have completed eleventh grade and will graduate within one year of separation may continue without tuition.	Retirees may be required to pay tuition except for dependents of members retired as a result of SERBs, to whom note 3 applies.	Sixty days if separatee has less than six years of service; 120 days if more.	Provided only for individuals covered by USVIP who are denied coverage solely because condition was preexisting. Pregnancy is covered.	For two years after separation.	Creditable for retirement eligibility. May be used to compute amount of annuity if member contributes to retirement fund for military years of service.

requires copayments, and retirees are urged to buy CHAMPUS (Civilian Health and Medical Program of the Uniformed Services) supplements. Other veterans can buy up to eighteen months of health insurance under the Uniformed Services Voluntary Insurance Program (USVIP), but they must pay their own premiums. Air Force officials say that about thirty percent of those eligible sign up for the USVIP plan. The rest apparently make other arrangements or simply gamble that their future employers will provide health care.

Scam artists are eager to prey on departing members. At Randolph, Fae Simmons said, "they pop up every day. They say, 'Take this test, and we'll do all this for you and get you a job.' But, of course, we have all the information available for them here. I hope people are sophisticated enough not to be taken in."

Fortunately, a number of outside volunteers offer legitimate help in the transition effort. At Kirtland, the Service Corps of Retired Executives talks to clients individually about opening small businesses. The Veterans of Foreign Wars offers a similar program and has a nationwide employment network to help vets looking for work. The Non-Commissioned Officers Association offers job fairs, workshops, and personal services not only for NCOs but for veterans of all grades. Other veterans associations work through their local posts and chapters to help separatees explore opportunities in their own communities.

All the help Air Force and other agencies can give them, however, does not mean separatees should wait for job offers to pour in. "They really have to do some rapid movement in getting a job," said Cheryl Vollmer, TAP manager at McChord AFB, Wash. "No matter how they're leaving, they need to focus on that."

Even with a sharp focus, landing a job may take time. Jim Hofbauer, RIFed as a McChord captain in December 1992, was still waiting for the right opportunity a year later. As a former communications computer systems officer, he had been sending out résumés and going to interviews. After several rejections, he concluded that he needed more training in some computer skills to get the job he wanted. The problem was that the kind of self-paced course he wanted

was expensive and not covered by the GI Bill. He searched for another program to help with the cost.

Meanwhile, Mr. Hofbauer had found a temporary job as shipping and receiving clerk with a chemical company. That lowered his anxiety level, but he and his wife still were struggling with a tight budget and hoping they stayed well. He had not opted for the USVIP medical plan. "They wanted \$360 for each three months of coverage," Mr. Hofbauer said, "and that was out of my price range. All I get in the temporary job is workmen's compensation, so we are not covered at home at all. It's an uncomfortable feeling, but I can't afford medical insurance right now."

An Emotional Roller Coaster

Even for those on full retirement, money can be a concern until the right job shows up. Bill Koerner retired in San Antonio, Tex., as a chief master sergeant with twenty-nine years in the Air Force. That gave him a steady income but, to be on the safe side, he took a night job answering phones for a TV home-shopping network while he continued to pursue job leads by day.

Job hunting turned out to be one of the toughest jobs he'd ever faced, Chief Koerner admitted. "You spend as many hours at it as you would at work," he said. "You go on an emotional roller coaster. You think you've got it, and they call you and say, 'No, you don't.'"

In Chief Koerner's case, the effort paid off. After a career in Air Force finance, he was hired as office manager for Allied Signal Corp., with a shot at a higher position.

After moving every few years in service, he liked the idea of sinking roots, but if advancement meant pulling up stakes again, he was ready. "If you're not willing to be mobile, you're just cutting out some of your options," he said. "It's like being in the Air Force. It's the needs of the company. If they need you in a particular spot, you have to go, especially if you're looking at a management position."

Mobility is not an option that Col. Brian D. Leen would even consider. Based at Kirtland, Colonel Leen was tapped by a Selective Early Retirement Board (SERB) last summer. He began immediately to send out résumés, aiming for a job in con-

tracting, where he had spent most of his career. He also looked into a company that conducts motivational seminars. The one thing he did not want to do was leave the Albuquerque area. "I'll flip hamburgers if I have to to stay here," he said.

Colonel Leen said he had little interest in most federal civilian jobs. As a retired active-duty officer, particularly with a background in contracting, he would be prevented from taking some positions for at least several months, and he would forfeit some retired pay if his civilian salary were too high.

Colonel Leen admitted that the shock of being SERBed sent him through a period of self-analysis but said that the transition program helped him organize his job-hunting approach, develop an effective résumé, and hone his interview technique.

Like some other separatees, Colonel Leen decided not to take all the separation options. Rather than pick up his government life insurance or join the SBP, he decided to buy commercial term insurance and invest the money he would have had to give up for SBP. Putting the money aside on a regular basis would take discipline, he conceded, but he thought the return would be better in the long run. He planned to buy enough CHAMPUS supplement to cover catastrophic illness but would absorb the copayments for routine care.

Staying in Albuquerque will allow the Leens access to various base privileges, but the Colonel has mixed feelings about the savings. He said the commissary still offers bargains, particularly on staples, but prices at local stores often beat those at the BX. Gasoline costs more on base than at most local stations, he said.

Gone to Tennessee

TSgt. Adrian Manning was not even thinking about base privileges when he retired for high year of tenure in late November. He planned to be married and then make a beeline for his hometown, Knoxville, Tenn. The nearest base is more than 100 miles from Knoxville, so Sergeant Manning planned to use CHAMPUS. He turned down the survivor benefits option and took out commercial insurance to cover his new wife. She applied for a state job in law enforcement, but Sergeant Manning was not interested in any kind of government

work. "I'd rather make a clean break," he said.

Sergeant Manning's plan was to study refrigeration for two or three years and then look for a job in his area. He already had some experience in the field—the result of his work in Air Force civil engineering—and he said the job prospects were good in the Knoxville region. After a twenty-year career with tours in Alaska, Hawaii, South Korea, and Greece and several TDYs, he wasn't going anywhere but home.

Anita V. Smith also sought additional education. As a sergeant with almost six years of service, she had hoped to earn a commission and stay in the Air Force, but a back injury forced her into a medical separation last July. A few months later, she was a full-time student and a part-time employee with the Washington State Department of Employment Security.

Ms. Smith said that her separation was a setback to her career plans but that TAP helped her recover and redirect her energies. Her main focus now is on a master's degree in human resources management, which she expects to receive next October. Then she will try to land an internship with a large corporation and work on her doctorate.

A long-range planner, Ms. Smith had signed up for the Montgomery GI Bill in basic training and paid her share of it within a year. Rather than use up her benefits too fast, however, she relied on the tuition assistance program to earn her associate and bachelor's degrees. She was paying for her master's under a VA work-study program and planned to save her GI Bill entitlements for her doctoral studies. Because of her medical discharge, she expected to receive a disability pension, which would help with expenses.

Ms. Smith would like to settle somewhere in the Northwest. Don Patton, an outreach specialist with the Washington State Department of Employment Security, said the prospects were good in the region, although the number of high-paying jobs was limited. One problem was that many firms, hit by the cost of medical care and other benefits, were using outside agencies to supply temporary workers. Another was that some defense-related firms that once took many former service members

had been hit by military cutbacks. Boeing Aircraft and other military suppliers had hardly been hiring, Mr. Patton said. The timber industry, another mainstay of the region, also had been hard hit, partly because of environmental restrictions.

Scouting for Jobs

Assigned full-time to McChord AFB and working closely with Ms. Vollmer, Mr. Patton helps separatees apply for unemployment insurance, which is administered by the state. Unless they are separated "for cause," most will get it, he said, whether they leave voluntarily or are forced out.

Mr. Patton also helps separatees scout for government jobs, where veterans have preference and often can count their military service time toward civilian retirement. Cutbacks have reduced government hiring, but TAP managers said that some of their clients found opportunities in specialized agencies, such as the FBI, FAA, Border Patrol, and Immigration and Naturalization Service.

The government offers substantial incentives to nongovernment employers who hire veterans caught in the military drawdown, Mr. Patton said. Under the Service Members Occupational Transition Act, those who hire vets released after August 1990 can receive up to \$10,000 for retraining them.

Another recently developed program offers special help to early retirees. Those with fifteen to nineteen years of service are required to register with the Temporary Early Retirement Authority, a network that matches them with jobs in community or public service. They are not required to take such jobs, but those who do can earn eventual increases in their annuities. The jobs are in such areas as education, law enforcement, and environmental science. "It's such a new program," said Ms. Vollmer, "and we don't have any statistical data on it, but we're certainly hopeful for it."

Another advantage to job hunting in an area like Tacoma, Wash., is that, even though high-paying jobs

are scarce, the cost of living is not as high as in some other parts of the country. That and the natural beauty of the region make it attractive to many who have been based there. Ms. Vollmer said that about half her clients would like to stay in the area.

Col. Richard S. Castle, tapped by a SERB, wanted to stay in the Southwest for some of the same reasons, but he was willing to move if that was needed to land the right job.

During his career, Colonel Castle served twice as a base commander. He hoped to find work as manager of a civilian airport or a college. He took the three-day transition course in September and was impressed particularly with the sessions on résumé writing and job interviewing. Colonel Castle estimated that most of his fellow students were younger members leaving after fewer than fifteen years of service. He was impressed, he said, by how many already had résumés out and had been on interviews. "Several of them were way ahead of me in preparing for their transition," he said. "I suspect that they were driven in large part by the need to find another job quickly."

Colonel Castle's own job search can be more leisurely. He will have his retired pay for twenty-seven years of service, and his wife will be teaching in Albuquerque at least through the school year. "I'm going to make my job search initially in this area," Colonel Castle said, "but if that doesn't pan out, we'll be ready to move."

As Bill Koerner discovered in San Antonio, staying flexible can be important to the job search. He credits TAP with giving him that perspective, but he notes that, in the end, landing the job is up to the individual.

"They give you a whole toolbox to use for marketing yourself. They tell you how to organize, how to plan your approach, and how to target your market. The one thing they can't do is motivate you to use the tools. There's always something better out there, but you have to keep looking for it." ■

Bruce D. Callander, a regular contributor to AIR FORCE Magazine, served tours of active duty during World War II and the Korean War. In 1952, he joined Air Force Times, becoming editor in 1972. His most recent article for AIR FORCE Magazine, "The RO-Gunners," appeared in the January 1994 issue.

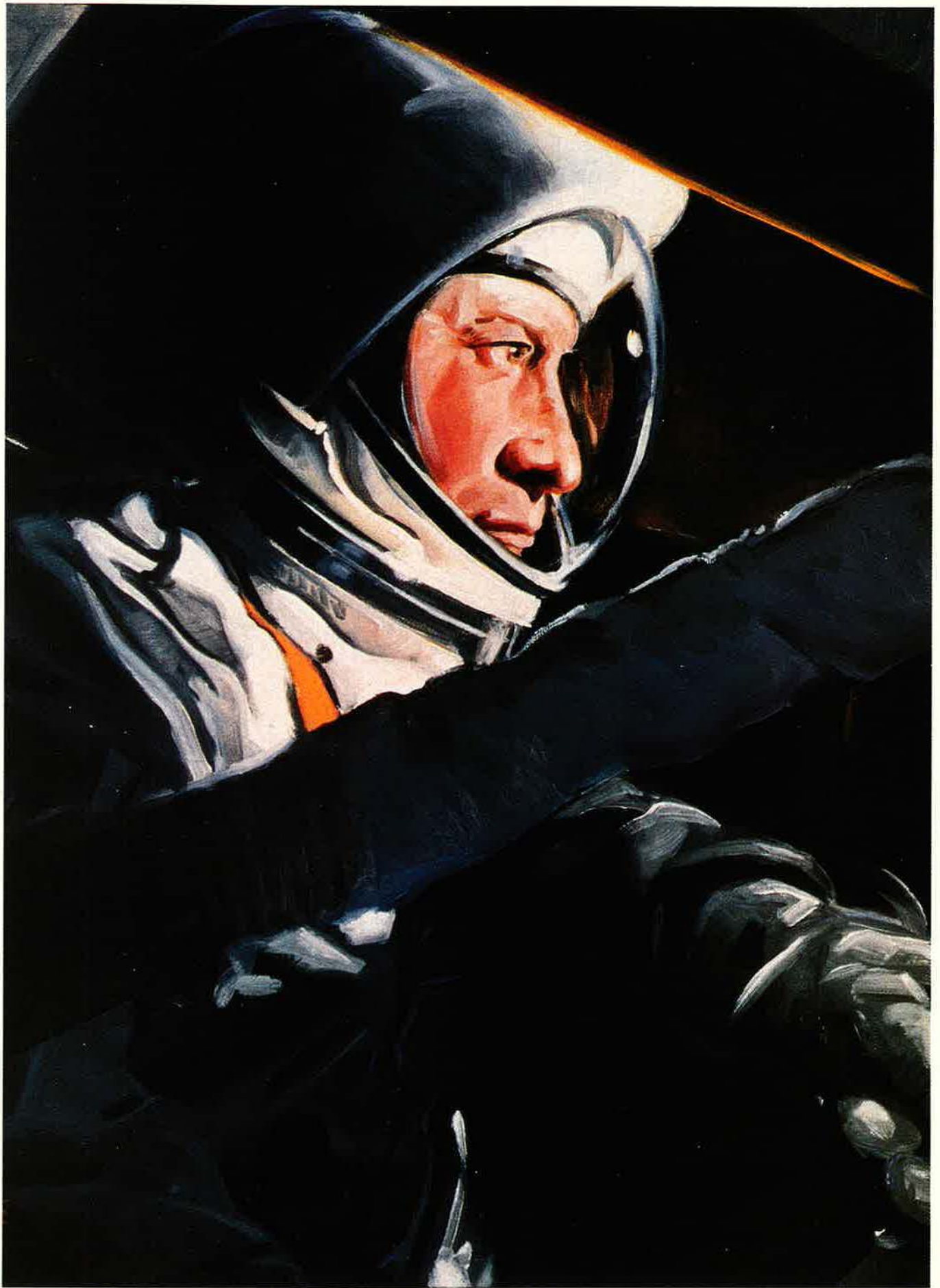
The Air Force Art Program helps artists show us USAF's many missions through their unique perspective.

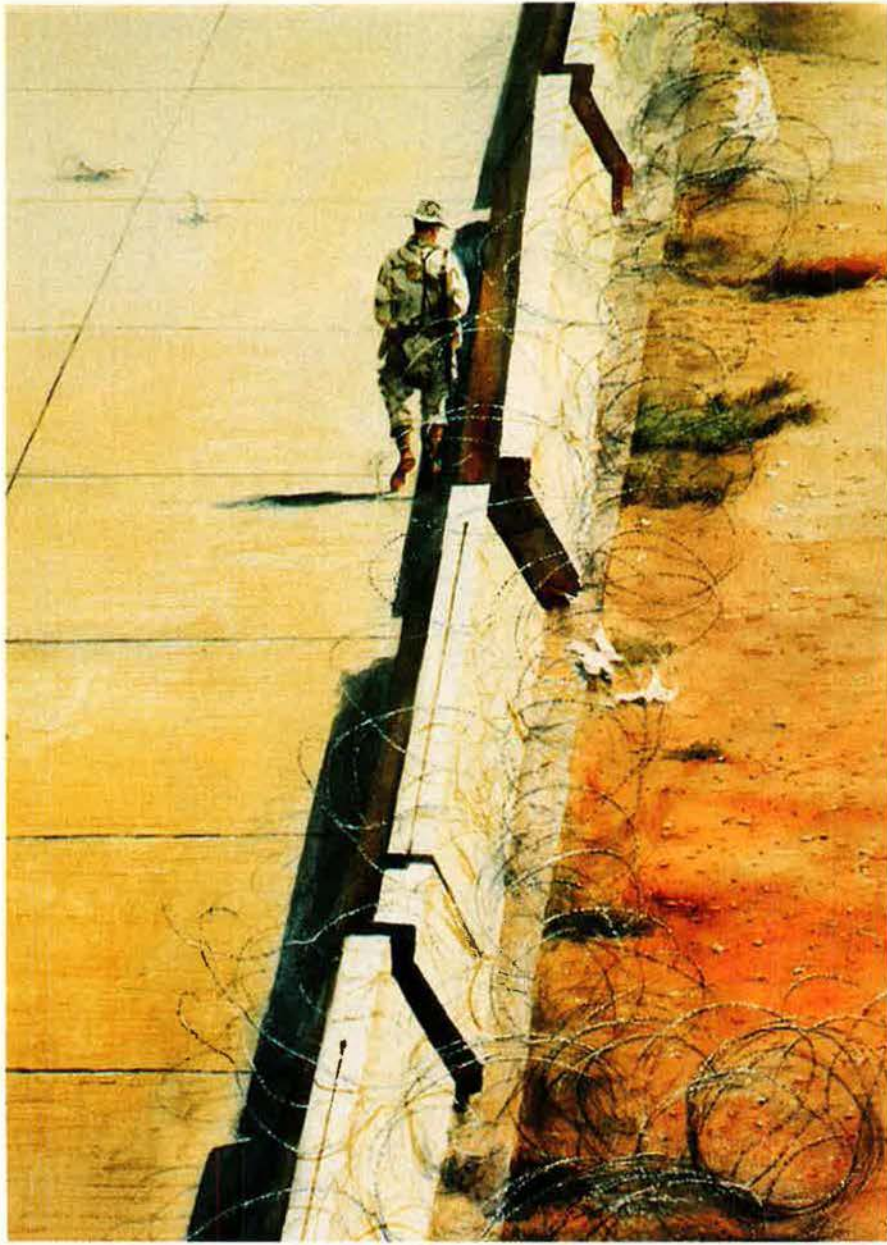
The Force in Art

Established in 1950, the Air Force Art Program has sponsored professional artists' efforts to convey the flavor of the various Air Force missions. Today the program's collection contains more than 7,000 works. Here are some recent additions to the collection.



Oxygen masks make an interesting composition in Peter Fiore's *Altitude Chamber Oxygen Masks* (above). Opposite, a pilot prepares for his next U-2 reconnaissance flight in Linda S. Nye's *Gus*.





Harvey K. Kidder's Desert Shield—GI Walking Flight Line evokes the loneliness of a Security Policeman on patrol far from home.

Betty Maxey painted Navigator and Boom Operator after an orientation flight on a KC-135 from the Illinois ANG's 126th Air Refueling Wing.





The two works on this page reflect the increase in USAF humanitarian missions after the Cold War. Above is Providing Hope—Somalia 1992 by Deanna Glad, which documents the stark conditions in Somalia. At left, in Feed the Children Relief Camp by Nilo M. Santiago, workers unload supplies delivered by the Air Force in an attempt to alleviate those conditions.



Artists also “covered” the Persian Gulf War. Nixon Galloway’s Baghdad Nighthawks (above) depicts F-117s flying over heavily defended Baghdad. James Consor drew F-4G (right) while observing flight-line operations during the conflict.

Afghan Freedom Fighter at Window
by John Thompson captures a moment from the recent war in Afghanistan. US transports ferried many injured Afghanis to modern hospitals that could deliver care unavailable in their homeland.



© Howard Koslow



Howard Koslow's Probe to Drogue depicts HH-60 helicopters from the 102d Rescue Squadron, 106th Rescue Group, Suffolk, N. Y., one of the oldest units in the Air National Guard.

**Popular belief notwithstanding,
the US edge in airpower is perishable.**

The Case for Airpower Modernization

**By Russell D. Shaver,
Edward R. Harshberger, and
Natalie W. Crawford**

IN LIGHT of the resounding US victory in the Persian Gulf War and strong pressure to cut defense spending, many are questioning the need to modernize US airpower assets, at least in the near term. Critics argue that, even if such modernization were desirable, the nation cannot afford it.

The facts indicate that certain airpower systems must be modernized if the US is to preserve the military capabilities demonstrated in the Gulf War. Just as the Gulf War successes arose from airpower developments in the 1960s and 1970s, the aircraft and weapon developments of today will provide the force structure of 2010 and beyond.

A recent RAND analysis concludes that the lesson from the Gulf War is not that the US has enough airpower to meet future needs but that the capabilities exhibited in that war are a national asset that Washington should preserve and extend.

Doing so will not be easy. Future US opponents will learn from Operation Desert Storm. In future major contingencies, the United States likely will face the task of deploying forces over long distances, into hostile environments, against enemy



RAND Corp. analysts have concluded that the US should preserve and extend the airpower capability exhibited in the Persian Gulf War. The key to control of the skies is the air-superiority fighter, such as the F-15C (above) and the new F-22.

forces that initially outnumber US and allied forces, where air bases and ports are threatened by attack (possibly with weapons of mass destruction) and where rapid deployment will be the key to preventing an early enemy victory. Should the conflict begin before US deployments are established, airpower, delivered by the Air Force and the Navy, would be the primary—perhaps the only—option for halting the invasion.

Existing technology offers the prospect of retaining desirable airpower capabilities in far less favorable conditions than existed during Desert Storm—perhaps the most important reason for pursuing airpower modernization. There are at least four other reasons:

- Many front-line US aircraft are aging and will need to be replaced in ten to twenty years.
- New technologies will almost certainly threaten US air assets. Technological competition still exists, and the US cannot afford to ignore it.
- The full potential of airpower cannot be attained without selected modernization.
- The reduced size of the future US military force will place a higher premium on the quality of individual systems.

Modernizing Air-Superiority Fighters

The cornerstone of US airpower strategies is the capability to gain

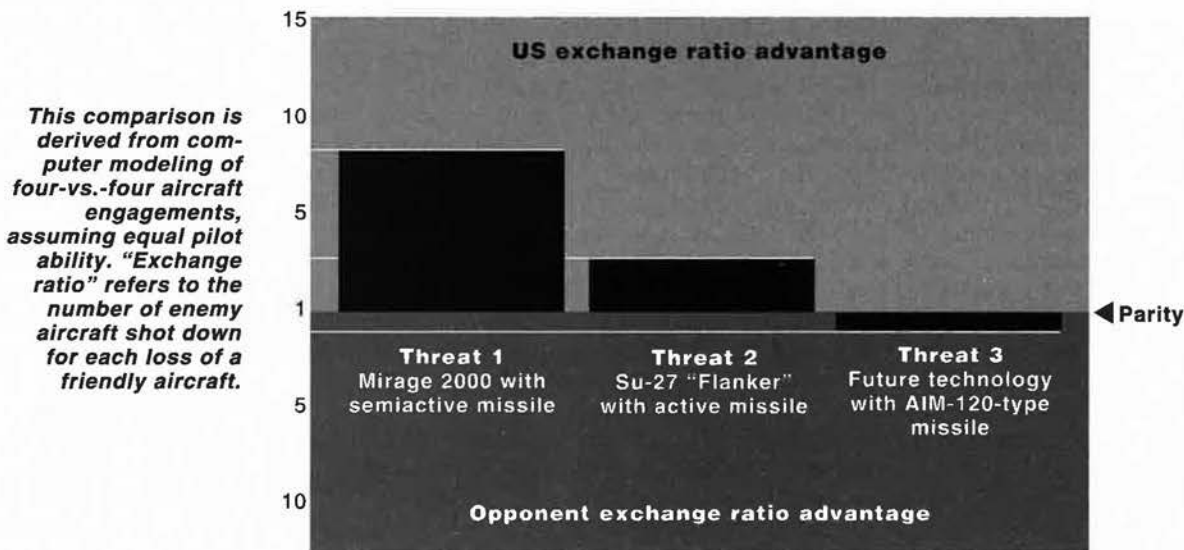
control of the skies rapidly and maintain it. The key asset that allows the military to accomplish this objective is the air-superiority fighter. Air Force and Navy fighters have performed well, but both services are pursuing options for modernizing their aircraft.

With life extension programs, the current Air Force air-superiority fighter, the F-15C, will not reach structural limits until 2010 or later. However, the Air Force plans to begin replacing these aircraft around 2003 with the new F-22 Advanced Tactical Fighter. To maintain reasonable force capabilities (even at reduced force levels), avoid unmanageable budget spikes, stay beneath general budget ceilings, and provide

dominance of the skies rests on three factors: the capabilities of US aircraft platforms, the capabilities of US air-to-air weapons and avionics, and the level of training and skill of US pilots. When the RAND analysts examined the potential of future adversaries, they saw a reasonable possibility of substantial threats to this dominance emerging over the next ten to twenty years.

The pace of foreign tactical aircraft modernization has been slowed by the collapse of the US-Soviet competition. Nevertheless, US intelligence agencies are still detecting upgrades to foreign fighters, including new air-intercept radars, air-to-air missiles, and reduced observables. Figure 1 indicates the ex-

FIGURE 1
F-15C With AIM-120 vs. Future Threats



some industrial stability, the US must spread out tactical aircraft modernization programs. For these reasons, and to ensure unchallenged air supremacy, the F-22 is being developed before the replacement for the F-16.

Before assessing the benefits and costs of the F-22 and other alternatives, one needs to answer a more basic question: Why can't the Air Force buy more F-15Cs? The recent overwhelming success of the F-15C in the Gulf War reinforces the question. Why modernize an air force that so totally dominated recent opponents?

The answers lie not in the past but in the present and future. Present US

tent to which likely threat upgrades can erode current US advantages. US strategy for major wars calls for rapid victory with minimal casualties. Parity or near parity with an opponent is unacceptable; it leads to extended air battles with heavy losses to both sides.

Eroding Tactical Advantage

The potential erosion of US technical advantage is largely driven by the combination of missile technologies and the radar and avionics required to operate them effectively. Application of radar cross section (RCS)-reduction techniques to foreign aircraft with improved radars and air-to-air missiles could bring



Today's air-to-air weapons, represented by AIM-120s (foreground), AIM-9 Sidewinders, and AIM-7 Sparrows (here with the 36th Fighter Wing at Bitburg AB, Germany), can be improved through modest investment.

an adverse exchange ratio for the F-15C.

The technologies compared in Figure 1 are currently well within the reach of US technical competitors, who are strenuously pursuing them. Active missile programs are under way in France (MICA), Britain (Active Sky Flash), and Russia (AA-12). Advanced radar and avionics are planned for the French Rafale, the European Fighter Aircraft, and the Japanese FS-X and are currently being exported on the US F-15E, F-16, and F/A-18. Rafale and Russian MiG prototypes employ RCS-reduction techniques.

This analysis does not consider the effects of two current US advantages: pilot training and numbers. The United States has consistently invested in high-quality, realistic training of its pilots, but other countries, especially those of the Third World, so far have lacked such operational training. If this trend were to continue, it would virtually guarantee US superiority in the air. However, limited military budgets can be overcome. The Israeli Air Force, for instance, maintains a highly skilled pilot force with far fewer national resources. The United States cannot afford to assume that potential opponents will never be able to train pilots effectively.

Today, advanced US air forces vastly outnumber all others except those of Russia and China. Perhaps

overwhelming numbers of F-15Cs could overcome the technological challenge looming overseas. However, US force structure is shrinking. Moreover, US deployment constraints will limit the number of early arriving US aircraft available to fight in a given theater. US opponents will continue to enjoy a home field advantage, at least at the start of campaigns. During this phase, a few squadrons of high-quality aircraft could seriously contest US air superiority.

This nation's future opponents may find it more affordable to increase surface-to-air defenses than to purchase more fighters and may use advanced surface-to-air missiles to challenge US air superiority over their territory. In this circumstance, the stealthiness of the F-22 should give it significant advantages over the F-15.

Modernization Options

Modernization of air superiority thus is critical and can take the form of a new aircraft design—the F-22—or modification and upgrade of an existing design, an option the RAND study terms “F-15I.”

The F-22 is currently in the engineering and manufacturing phase of development. It will be an all-aspect, stealthy fighter outfitted with advanced avionics, including an electronically steerable array (ESA) radar and advanced countermeasures.

Though designed primarily as an air-to-air plane, the F-22 will carry two 1,000-pound-class Joint Direct Attack Munition (JDAM-1) air-to-ground weapons. The RAND analysis indicates that the F-22 will maintain extremely high capability (with exchange ratios of twenty or thirty to one) against all conceivable threats, through a combination of stealth, avionics, and weaponry.

Alternatives to the F-22 exist. The most reasonable of these would take advantage of Saudi Arabia's purchase of F-15Es, which means the F-15 line will remain available for production of an upgraded variant (the F-15I) to be developed and procured on roughly the same schedule as the F-22. ESA radar technology would be needed to enhance radar capability and allow some RCS reduction, and avionics and countermeasures devices must be added to further enhance survivability. Current missile capabilities could be enhanced with the addition of a longer-range variant of the AIM-120 Advanced Medium-Range Air-to-Air Missile.

The main reason the United States might wish to pursue such an alternative is lower cost. Firm data are not available, but some speculate that the cost of developing and producing the F-15I might undershoot that for the F-22 by as much as twenty percent. The US would be buying a capable air-superiority weapon system, albeit one that would lack both the F-22's effectiveness and its robustness, which give it the ability to adapt as the threat evolves.

The RAND analysis indicates that the F-15I with an AIM-120C would be effective against the future threats examined above, at least until the opponent deploys advanced long-range air-to-air missiles. Unfortunately, all signs are that the appearance of such missiles could easily predate the F-15I.

The analysis shows that, in a choice between the F-22 and the F-15I, the F-22 is clearly preferred for a number of reasons:

- The F-22 will maintain a dominant air-to-air capability against all threats over the next twenty to thirty years.

- All-aspect signature reduction on the F-22 will allow it to operate effectively in the presence of surface-to-air defenses, a critical factor in ensuring air superiority over enemy

territory if US opponents pursue heavy surface-based defenses.

- F-22 design emphasis on reliability, maintainability, and deployability promises major operational and support advantages.

- The F-22 builds on US investment and current advantage in stealth—an ongoing area of military technological competition.

- Acquisition of new aircraft, such as the F-22, would help maintain a shrinking defense aerospace industrial base.

- A new design will provide flexibility in the far future. Since the United States rarely uses its aircraft solely for the original design purpose (witness the F-15), this flexibility could be critical.

The RAND study reaches this conclusion through both analysis and subjective balancing of benefits and costs. This conclusion might change if F-22 costs were to increase significantly. Cost should remain a key item of scrutiny for the F-22 program.

Advanced Bomber and Fighter Weapons

Freedom of the skies during Desert Storm allowed the United States and its allies to employ a staggering array of air-to-ground capabilities. Despite this impressive performance, the US faces a range of modernization issues with respect to its air-to-ground forces. Debate focuses on three critical areas: air-to-ground weapons and sensors, deep-attack and interdiction forces, and multirole fighters.

With a very modest investment, today's ground-target attack capabilities can be improved tremendously through improved weapon lethality. This advance, when combined with the scale of projected threats, brings within reach the ability to destroy most fixed targets and many mobile targets early in a conflict.

With technologies under development today, weapon effectiveness could be limited more by problems of gaining near-real-time target location and identification than by any lack of lethality inherent in the weapon. However, the US must carry out its planned buy of advanced weapons and integrate them into weapon systems. Weapons historically have gotten short shrift when

budgets tighten. Aside from defeat in the budget wars, the greatest risk is the urge to add "nice-to-have" features to weapons. Remarkable performance is available, but each increment of performance adds cost and risk, delaying the realization of needed capabilities.

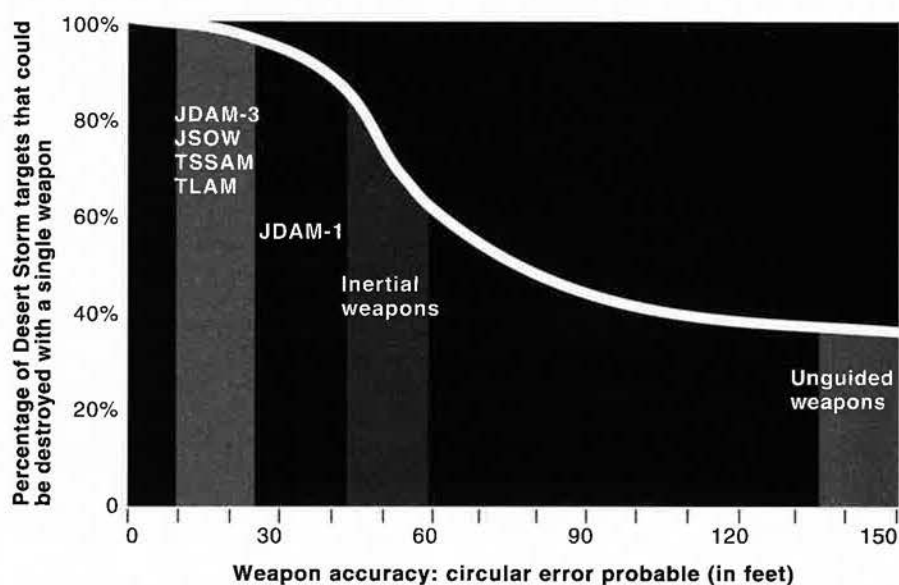
Many weapons are now in procurement or development. Among the most important:

- The JDAM family of weapons, which will provide fighters and bombers with all-weather, day-night, precision-strike capability at relatively modest cost.

weapon-aircraft integration and targeting methods. With targeting errors significantly reduced, JDAM-1 can substantially reduce the need for large numbers of the more expensive JDAM-3.

Addition of these modern weapons continues to be the most cost-effective step that the US could take to improve its air-to-ground capability. A conservative estimate of the costs for all of these programs is \$15 billion to \$20 billion of research, development, test, evaluation, and procurement, spread over fifteen to twenty years, with

FIGURE 2
Weapon Accuracy and Target Coverage



- The family of sensor-fuzed anti-armor submunitions, including Skeet and BAT, which allow fighter and bombers multiple armor kills per sortie.

- Standoff munitions, including the short-range Joint Standoff Weapon (JSOW), the medium-range Tri-service Standoff Attack Missile (TSSAM), and the long-range Tomahawk land-attack missile, each of which provides high-confidence kill capabilities against heavily defended targets.

Figure 2 shows some capability improvements that are possible with some of these new weapons. The most accurate weapons are generally those with terminal seekers. JDAM-1 weapons, with Global Positioning System-aided inertial guidance, vary in accuracy depending on

no significant rise in manning requirements.

Deep Attack: Bombers and Interdictors

US planners face important decisions about deep-attack aircraft. In the near term, several steps are necessary if the US is to reorient its bomber force toward conventional warfighting. Later, Washington will need to replace aging elements of the interdiction fighter force.

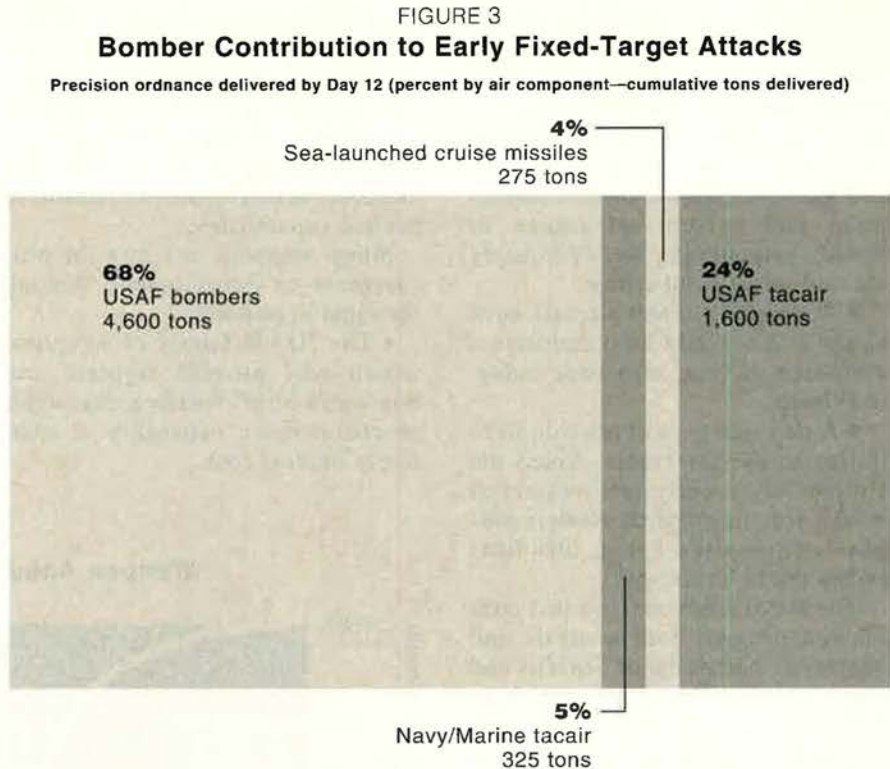
Near-Term: The Bomber Force. Another RAND analysis [see "The Lion's Share of Power Projection," June 1993, p. 38] showed that bomber forces with modernized weapons can have a dramatic effect on the outcome of large regional conflicts. The bomber's inherent range-payload attributes provide the potential,

through its ability to initiate near-immediate operations from the continental United States and nontheater overseas bases, to deny an enemy quick victory. As fighter forces arrive, the bombers can add to the weight of the attack against virtually all enemy target types, hastening the victory. Figure 3 illustrates the weight that bombers can provide.

Some bomber force modernization measures, such as survivability improvements and integration of modernized weapons, have been spelled out in the Air Force's Bomber Roadmap [see "The Bomber Roadmap," September 1992, p. 42]. However, additional actions are needed to help bombers reach their full potential. The focus of such efforts should be on creating a more flexible force having rapid access to targeting and threat information, with the ability to respond more swiftly to changed conditions and employ a variety of munitions through weapons carriage modifications.

Current Bomber Roadmap cost projections are \$3 billion to \$4 billion over several years. This modernization program is a bargain. It would still be cost-effective at twice the price.

Far-Term: The Interdiction Fighter Force. Two of the Air Force's interdiction fighters, the F-111 and F-117, may have to be retired early in the next century. The Navy's A-6 carrier-based bomber aircraft will



likely be retired by 2000. To address this issue, the US has two realistic options:

- Do not replace these aircraft. Hand responsibility for deep attack to F-15Es, modified F-14s, bombers, long-range cruise missiles, and a ground-attack variant of the F-22.
- Replace all current deep-attack, interdicator aircraft with a high-end, joint aircraft specifically designed as a deep-flying, stealthy, precision-

attack aircraft capable of carrier and land employment.

RAND concludes that, at this time, the United States should embrace the first option. This conclusion assumes the Navy will not replace its deep-attack aircraft with a new-development strike aircraft and will focus on cruise missiles as the sole future naval deep-strike system.

The conclusion also rests on three fundamental assumptions: that new, more effective weapons will be successfully developed, that USAF's long-range bombers will make the transition to "conventional" warfare, and that the F-22 will be procured in sizable numbers and ground-attack variants will emerge.

The weapons discussed above would allow a wide range of aircraft, both bombers and fighters, to conduct accurate attacks under nearly all weather conditions without the need to carry and integrate laser designator equipment. With stand-off, such attacks could be carried out at ranges sufficient to ensure the survivability of delivery aircraft and naval forces.

The bomber force, with suitable modification and weapons, greatly expands US deep-attack capability. B-52 aircraft served as area-attack systems and cruise missile carriers in Desert Storm and could continue in this role. The B-2 bomber has the



Looking at modernization of the interdiction force in the far term, the RAND study concluded that if F-117s and F-111s, like this one at Cannon AFB, N. M., are retired early in the next century, they should not be replaced.

potential to add unique strengths—rapid, long-range, high-payload, accurate, and stealth-attack capabilities. Finally, and in spite of the many problems associated with the B-1B, the study shows that a combination of the standoff capabilities of such weapons as the JSOW and TSSAM and integration of fighters and bombers in conventional operations would result in effective B-1B conventional employment, replacing the F-111 in the strike role.

Finally, a modestly modified F-22 force capable of delivering two

lem. Current plans call for the Navy to replace its multirole F/A-18C force with F/A-18E/Fs. The Navy has argued that the F/A-18E/F is a straightforward upgrade to previous Hornet types. In essence, this means that the F/A-18E/F can be procured in the relatively near term.

Figure 4 paints a stark picture of the expected lifetimes of USAF and Navy multirole force structure. Many potential solutions have been floated, and many new aircraft combinations have been discussed. Three options have received considerable scrutiny:

- The Navy replaces its entire force with F/A-18E/Fs in the near term. The Air Force delays procurement of a new MRF until 2010 by a combination of near-term procurements, F-16 life extension, and force reductions. This approach is similar to current plans.

- The Navy and Air Force both procure the F/A-18E/F as a joint MRF. Because the services would share costs, the Air Force could buy a larger-than-planned multirole force.

- The US delays Navy and Air Force multirole fighter retirements (through life extension programs and limited procurement of new F/A-18Cs, F-16Cs, and F-15Es) and develops a new aircraft, the Joint Attack Fighter.

The first option satisfies the Navy's near-term needs while deferring the Air Force's decision until MRF development can be afforded. However, in light of the similarity of USAF and Navy multirole missions, this option seems unsatisfactory. The F/A-18E/F is only a modest improvement over the F/A-18C, and future budget constraints may force the Air Force to acquire a low-cost MRF or fewer aircraft. The combination of two development programs and smaller aircraft buys creates unnecessary costs.

The second option better addresses cost. Given R&D savings, the larger buys inherent in a joint program, and reasonable program timing, this option may be more



The US should "delay and decide" before pursuing modernization of the multirole fighter force, which now consists largely of F/A-18s (above) and F-16s. This Hornet is equipped for dropping bombs, for SEAD, and with AIM-120s.

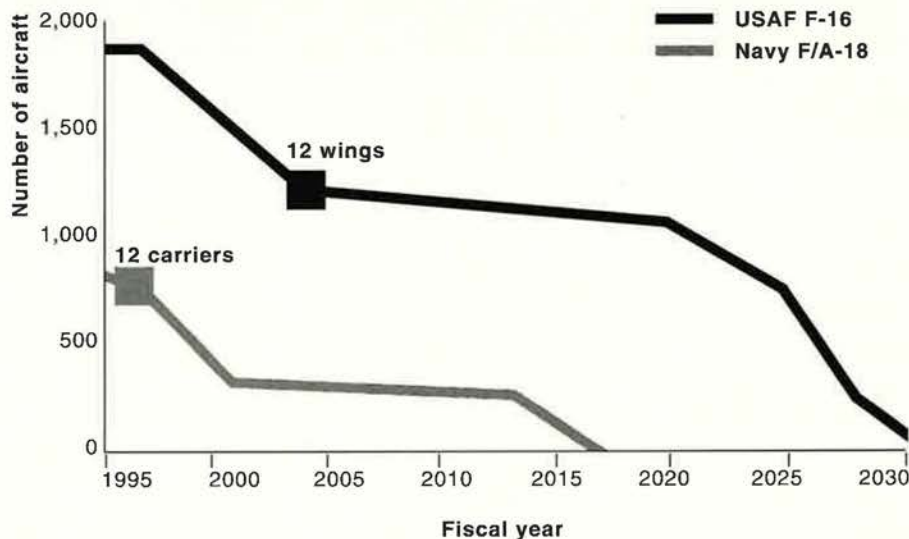
JDAM-1 weapons can be turned to several uses after air superiority is achieved, including ground attack and Suppression of Enemy Air Defenses. The F-15E, F-14, and F-117A supplement ground attack and SEAD and maintain the ability to employ laser-guided bombs where appropriate.

The Multirole Fighter Force

The relatively inexpensive and numerous F-16 is currently the Air Force's Multirole Fighter (MRF) and constitutes the bulk of its force structure. The procurement of an F-16 replacement will probably begin no earlier than 2005 and possibly later. This was the time line for MRF procurement until very recently.

The Navy faces a much harsher near-term fighter-modernization prob-

FIGURE 4
Expected Lifetime of Multirole Fighter Force Structure

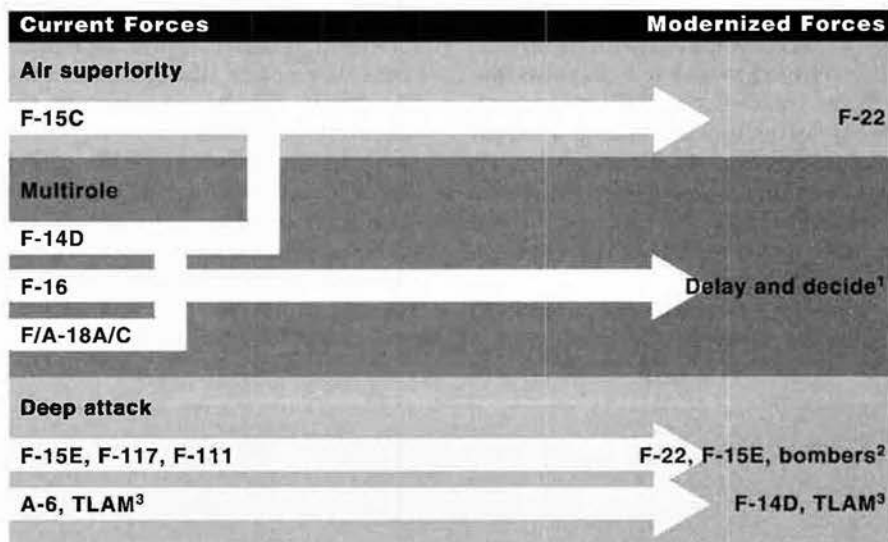


affordable to both services, costing less overall than separate programs. Although the F/A-18E/F will cost more per unit than the F/A-18C or the F-16, it is somewhat more capable than either. However, this option results in a multirole force (the bulk of US fighter forces) consisting largely of old technology for the next thirty or so years.

The third option has the cost benefits associated with a single, jointly purchased aircraft and could avoid potential technical obsolescence. However, it has its own set of difficulties.

The poor record of Navy-USAF joint aircraft developments is testimony to the problems of the joint approach; there are many difficult technical trade-offs involved in creating aircraft that meet both services' needs. Moreover, the disparity between the Navy and Air Force cost and schedule requirements may be

FIGURE 5
Modernizing the Airpower Force



¹Assumes some near-term procurement and life extension

²Assumes Bomber Roadmap, advanced weapons for fighters and bombers, and F-22 ground-attack capability

³Tomahawk land-attack missile



The RAND study recommended procuring F-22s. The all-aspect, stealthy fighter will maintain high capability against all threats. However, should the aircraft's costs increase significantly, this might not be the best option.

too great to bridge with a single, new, joint program.

The arguments are circular. The budgetary and timing requirements of the MRF are well understood, but it is not clear that anyone knows the desired characteristics of a future MRF. For instance, in the context of total force structure, should the future multirole aircraft be more heavily weighted toward ground attack than current aircraft are? Should it

be equipped for defense suppression? How do new weapons affect the avionics? How stealthy should it be?

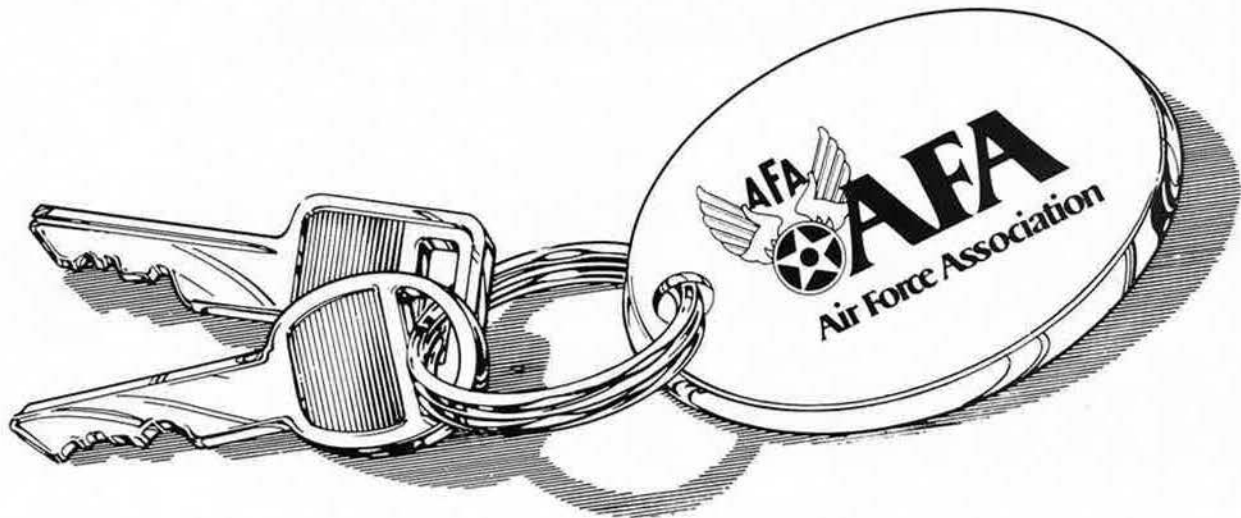
The RAND study concludes that the US should follow a different course—"delay and decide"—which is a hybrid

of all three options. Moderate near-term procurement and life-extension efforts allow both time and budget leeway. The time gained should be used to thoroughly analyze the three options to learn their budgetary effect and the capability they would provide. Building on this base of knowledge, the budget leeway gained should enable the US to pursue a more considered multirole force modernization strategy.

Figure 5 summarizes RAND's conclusions plus five recommendations:

- Procure the F-22.
 - Fully fund and integrate an array of air-to-ground weapons.
 - Fully fund the Bomber Roadmap and consider additional measures to improve conventional bomber capabilities.
 - Dispense with any new Navy interdiction fighter program.
 - Delay the MRF decision and study the range of options available.
- This approach to airpower modernization would emphasize preserving the fundamental capabilities that served this nation well in the Persian Gulf War and augmenting those capabilities in anticipation of new threats and new opportunities. ■

Russell D. Shaver, Edward R. Harshberger, and Natalie W. Crawford are analysts with the RAND Corp. in California. This article was adapted from their paper "Modernizing Airpower Projection Capabilities: Future Needs and Options."



A Few Good Reasons Why Association Members Should Be Associated With GEICO.

AFA members may save 10-15% or more on car insurance. Members with good driving records may qualify for quality, low-cost auto insurance through GEICO. It's an opportunity for you to cut your insurance costs without giving up the excellent service you deserve.

AFA members receive GEICO's round-the-clock service. Whenever you need to make a claim, report an accident, change your coverage or simply ask a question, you can! Just pick up the phone and dial our toll-free number 24 hours a day, 7 days a week, 365 days a year.

AFA members benefit from over 55 years of military experience. Since 1936, GEICO has been nationally recognized for providing quality auto insurance services to military personnel. With offices near most major military bases and a management team that includes several retired military employees, GEICO specializes in meeting the unique needs of the military. Today, over

240,000 active and retired military personnel insure with the GEICO companies.

AFA members get their choice of coverage and payment plans. If you qualify, you'll get coverage tailored to your personal needs and a choice of convenient payment plans to fit your budget.

All it takes is a toll-free phone call. Call 1-800-368-2734 and ask for your free, no-obligation rate quote. Be sure to mention your membership and you'll receive priority processing. If you're accepted, you can arrange for immediate coverage by charging your first premium on your credit card. (Not available in all states.) Call today to discover why so many AFA members are associated with GEICO.

Call 1-800-368-2734

or visit your local GEICO Representative

GEICO

Serving those who serve the nation.

GEICO Cost
Comparison ID # 4545

Should you not meet all of the underwriting requirements of Government Employees Insurance Company or GEICO General Insurance Company, you may still qualify for the same quality insurance and service from another GEICO affiliate at somewhat higher rates. GEICO auto insurance is not available in MA or NJ. In PA, this program is offered through a GEICO affiliate, GEICO Indemnity Company. These shareholder-owned companies are not affiliated with the U.S. Government. GEICO's pricing for this program is not based on group experience in most states. Home Office: Washington, D.C. 20076.

AMC outlines a way to meet the requirement for fifty-seven million ton-miles per day of airlift.

The Air Mobility Master Plan

By Dan Allsup

IT IS NOW possible to know the plans, programs, problems, and policies that the Air Force thinks will shape Air Mobility Command and the nation's basic air mobility capabilities for at least the next two decades.

The command's planners think that the airlift and refueler equipment situation will grow somewhat worse during the next few years but will brighten over the long term; that the command will create two or three new air mobility wings, blending airlifters and refuelers on bases for maximum crisis responsiveness; that, despite jitters about current personnel trends, the quality and quantity of the force will be sufficient; that the en route mobility system will shrink considerably; and that future bases will have battery-operated forklifts and solar-powered cars.

These are among the conclusions and observations contained in the "Air Mobility Master Plan," a recently completed, 334-page compendium of facts, figures, guidance, and analysis prepared by the staff of AMC's commander, Gen. Ronald R. Fogleman. It provides a twenty-year program for building, strengthening,

T: today (FY 1994)

S: short-term (FY 1995–2001)

M: mid-term (FY 2002–2009)

L: long-term (FY 2010–2015)

■ full mission capability

■ partial capability

■ poor or no capability

and employing Air Force mobility resources and infrastructure.

The staff's working group presented the result of its analysis last October. The project began in March 1993, when sixty staffers launched an intensive effort to assess and project the command's capabilities out to 2015. The group produced mission-needs statements, mission-area plans, and roadmaps that identify deficiencies in and solutions for equipment, personnel, and infrastructure. It also produced a color-coded assessment of the command's capabilities today and over time [see below]. Green indicates full mission capability, yellow means partial capability, and red denotes significant deficiencies.

The master plan outlines AMC's scheme for providing fifty-seven million ton-miles per day of airlift capability, as called for in the most recent mobility requirements study. The master plan says that, if AMC's plan is carried out, the Air Force will

reach that goal around 2005. [See "Notional Strategic Airlift Capability" chart, p. 57.] The plan hinges on many factors, including the continued purchase of the C-17 transport, acquisition of a new commercial derivative freighter known as "C-XX," and full activation of the Civil Reserve Air Fleet in a crisis. AMC officials also note that the goal can be reached only under optimum conditions.

The plan dwells heavily on equipment—principally aircraft. The twin problems of aging aircraft and falling budgets give AMC a gloomy view of its current equipment. The master plan also places great emphasis on two other major areas: personnel and mobility infrastructure, which the command deems vital to successful operations.

Personnel

The working group took a hard look at troop morale, changing living standards and styles, housing

problems, and the potential effect of reductions in benefits. The report assesses the current personnel situation as good. It is even optimistic about the long-range health and competence of the force. The only personnel categories receiving less than top ratings are air refueling employment and the airdrop and special operations categories of the airlift mission. In the long-range projection out to 2015, all areas receive green ratings.

The command reports concerns about pilot retention, pilot experience levels, and the ratio of active-duty to Guard and Reserve KC-135 aircrews. AMC is troubled by a lack of airlift management expertise within its airlift control staff. The master plan projects long-term shortages of navigators and finds training inadequate for operators of mobile communications and computer systems that are vitally important to mobility operations.

The plan predicts that the dramatically changed international threat spectrum and long-term pressures on the Pentagon budget will cause major shifts in composition of the force. Soon to disappear, it predicts, is the current ratio of active-duty to Air Reserve Component personnel (forty-five percent to fifty-five percent of the total mobility force).

Says the master plan: "As the ARC portion of the Total Force increases, it will form the lion's share of AMC capabilities. All of the C-141 fleet is currently programmed for transition to the ARC, as are a major part of the C-5, aeromedical, and aerial port force structures and personnel. Over half of AMC's air refueling capability will be contained in ARC forces. . . . Increasing mobility requirements may result in more frequent mobilization of Guard and Reserve personnel."

For the active force, says the report, this change will lead to more frequent deployments and temporary duty assignments and contribute to aircrew retention problems by the late 1990s. Increased use of Air Reserve Component personnel will result in more frequent mobilization of Guard and Reserve personnel, so AMC must explore new operational concepts.

If master plan projections are on target, many changes lie ahead for civilian personnel, a component slated

Assessment of AMC's Capabilities

AIRLIFT												
Operational task	People				Infrastructure				Equipment			
	T	S	M	L	T	S	M	L	T	S	M	L
Cargo	■	■	■	■	■	■	■	■	■	■	■	■
Airdrop	■	■	■	■	■	■	■	■	■	■	■	■
Aeromedical evacuation	■	■	■	■	■	■	■	■	■	■	■	■
Special operations	■	■	■	■	■	■	■	■	■	■	■	■
Passengers	■	■	■	■	■	■	■	■	■	■	■	■

AIR REFUELING												
Operational task	People				Infrastructure				Equipment			
	T	S	M	L	T	S	M	L	T	S	M	L
Single Integrated Operational Plan	■	■	■	■	■	■	■	■	■	■	■	■
Deployment and redeployment	■	■	■	■	■	■	■	■	■	■	■	■
Employment	■	■	■	■	■	■	■	■	■	■	■	■
Joint, combined, and special operations	■	■	■	■	■	■	■	■	■	■	■	■

CORE ACTIVITY												
Activity	People				Infrastructure				Equipment			
	T	S	M	L	T	S	M	L	T	S	M	L
Information resources management/C ⁴ I	■	■	■	■	■	■	■	■	■	■	■	■
Command and control	■	■	■	■	■	■	■	■	■	■	■	■
Logistics	■	■	■	■	■	■	■	■	■	■	■	■
Training	■	■	■	■	■	■	■	■	■	■	■	■
Security	■	■	■	■	■	■	■	■	■	■	■	■
Medical	■	■	■	■	■	■	■	■	■	■	■	■
Cargo/passenger handling	■	■	■	■	■	■	■	■	■	■	■	■
Operations support	■	■	■	■	■	■	■	■	■	■	■	■
Base operating support	■	■	■	■	■	■	■	■	■	■	■	■

to constitute approximately fourteen percent of the future AMC work force.

More consolidations of AMC functions may result in fewer authorizations and a reduction in top-level positions, the master plan reports. It warns that this will hamper career progression and cause more frequent relocations.

The AMC document notes that an improving national economy may increase civilian turnover at the higher levels, especially if civilian pay does not keep pace with that of the commercial sector. If these problems aren't resolved, the plan warns, AMC's future may be based on a civilian force with fewer personnel serving until retirement and more having careers spanning only five to ten years. The result could be pressure to use more contract-type services. These would probably include aircrew training, aircraft maintenance, and base upkeep.

The master plan foresees the upgrading of, and increased automation in, AMC's military support and community activities. Military support provides Air Force personnel with food, lodging, fitness, and recreational services. Plans are for the Air Force Morale, Welfare, Recreation, and Services Agency to assume the Defense Commissary Agency's responsibility for wartime troop issue functions. Strategic goals focus on automation, direct vendor deliveries, more efficient equipment, and improved precooked foods and in-flight meals.

The master plan sets a goal of upgrading all transient facilities to command standard by building more facilities, replacing furnishings, and upgrading on a regular basis. Other goals are to automate the accounting system and to acquire an information system that can handle field-billeting assignments.

Recognizing the need for physical fitness and community activities, the master plan sets goals to expand and improve existing programs. Many community activity centers are underused, and AMC's goal is to better identify recreational needs. Other goals include improving profitability, providing adequate facilities, and updating the library system.

Mobility Infrastructure

AMC considers infrastructure the foundation of global mobility opera-

tions. The master plan carefully reviews AMC's fixed sites, en route system, and mobility and information infrastructure.

Virtually all current infrastructure areas get yellow ratings. Here also, AMC expresses considerable optimism, seeing improvements leading to the "green level" by 2015.

The command's ability to support national military needs depends to a large extent on high-quality facilities, claims the master plan, and AMC has established a strategy that sets goals and provides intermediate-range plans to improve living, working, and recreational facilities throughout the command.

The master plan says the command's undersized and substandard aircraft maintenance units, declining medical facilities, and unsatisfactory dormitories—"the worst in the Air Force"—need immediate attention. It also warns that AMC's medical facilities are declining because of a lack of money and other resources.

The plan recognizes the importance of high-quality family housing. AMC believes it falls behind the rest of the Air Force in this area. The command has already initiated USAF's first family housing investment strategy, and it is making long-range plans to ensure its housing units are brought up to Air Force standards.

The master plan pays close attention to the command's en route air mobility system, a global network of people and materiel designed to support AMC forces. Because of the changing security and fiscal environments, AMC plans to reduce its future overseas presence by downsizing, realigning, and contracting some en route services.

A new organizational structure will reduce AMC's overseas presence from thirty-nine to thirteen sites. Six Airlift Support Groups will be consolidated to two Air Mobility Support Groups, and twenty maintenance and aerial port squadrons will be reduced to thirteen Air Mobility Support Squadrons.

Despite the reductions, AMC says the streamlined system will continue to meet global air refueling and airlift requirements.

Information systems are another area of concern on the infrastructure front. The master plan notes that information management, still in its

infancy throughout the command and throughout the Air Force, is encountering dug-in resistance. Initiatives are under way, including enrolling AMC officers in a master's degree program in information resource management at the Air Force Institute of Technology.

The master plan also points out

Notional strategic airlift capability is a depiction of the entire system capability under optimum conditions. To produce at this level, AMC needs full Air Reserve Component mobilization and complete Civil Reserve Air Fleet activation.

¹ One ton-mile equals one ton airlifted over a distance of one nautical mile.

that most AMC bases don't have networking capability and therefore lack the power that comes from being connected electronically to other local and even distant users. The command thus has set a long-term goal to produce a global information system with total interoperability.

In the area of command and control, AMC planners have developed short-range goals that include making C² systems fully deployable with Air Force and NATO systems; ensuring continuous support for tasking and reporting requirements; and developing a mobility planning and scheduling system that will be integrated with AMC and joint forces execution. Mid-range goals include developing an AMC fleet with common C² capability.

Airlifters

In the present-day inventory of equipment for the airlift mission, "failing" red assessments show up in two areas: airdrop and cargo capabilities. Yellow grades are assigned to every other aspect. In the air refueling category, yellow grades are given to all aspects. In "core activity," cargo and passenger handling

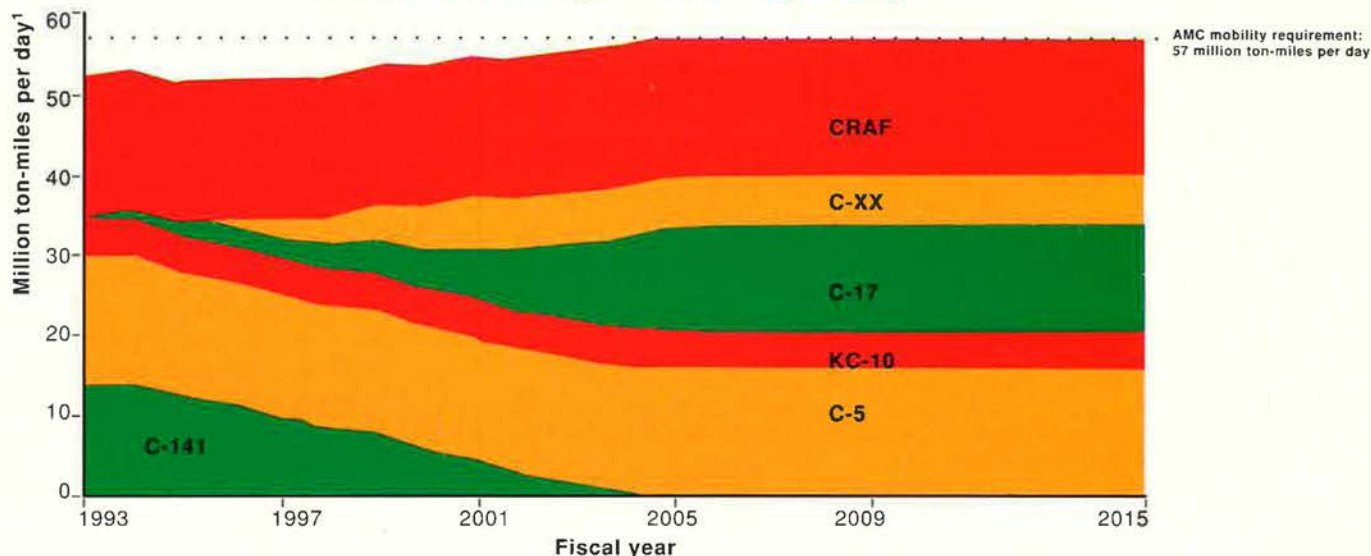
receive poor grades. The master plan's projections for the short and medium terms show these ratings gradually improving through Fiscal 2009. The long-range outlook is a bit more optimistic, with high marks expected.

One major focus of attention, of course, is long-range airlifters. The C-141, introduced in the 1960s and

The ultimate solution, says the report, is the new C-17 airlifter, the centerpiece of future US airlift capabilities. AMC expects the C-17 to pick up where the C-141 leaves off. The master plan says the advanced airlifter will fulfill all the requirements of direct delivery—the air movement of cargo or personnel from

the C-5 a bigger role in peacetime airlift operations. It is the only operational aircraft capable of carrying outsize cargo, but, because of its size and lack of agility, it is usually restricted to flights into and out of main operating bases. The idea is to start using it at the more austere bases.

Notional Strategic Airlift Capability



modified in the 1980s, remains AMC's airlift workhorse. The report notes that the C-141 is showing its age. More than ninety percent of today's fleet has recently flown under operational restrictions. The maximum allowable cabin load has been reduced by twenty-six percent because of inner wing structural problems. Wing cracks, window frame cracks, and weep hole cracks have caused altitude, air refueling, and cargo weight restrictions.

According to the master plan, AMC wants to retire all C-141s in the active-duty force by 2003.

The report notes that the command has bought some time for the C-141. First, USAF moved in 1992 to slow the aircraft's deterioration by slashing flying hours. AMC is evaluating methods and costs to repair the problems, but officers argue that it may not be cost-effective to fix some of the aircraft.

As a result, although near-term modifications are aimed at preserving the remaining force, AMC is re-evaluating the worth of some of them because the C-141 may be forced into early retirement. Eighteen were retired in 1993.

liftoff to as close as practical to the customer's final destination.

The master plan acknowledges the C-17's turbulent development and production history. However, the AMC planners believe that no other aircraft can routinely deliver outsize cargo to short, austere airfields. Though the C-17 is similar in exterior size to the C-141, its cargo capacity is closer to that of the mammoth C-5.

The command expects to receive delivery of its final C-17 in 2006. (The report was completed before the conclusion of Pentagon reviews of final C-17 production quantities.) The plan says the plane will have an expected service life of 30,000 hours and will still be operating in 2025. According to the master plan, the C-17 is "absolutely essential for AMC to meet its future mobility requirements."

The command states that the delivery rate of the C-17 may not be sufficient to match, on a one-for-one basis, retirement of the C-141. AMC is studying methods to meet this possible shortfall in strategic airlift capability.

One proposed solution is to give

The C-5A force has been in service since 1969. In the mid-1980s, all models were fitted with new wings. Lockheed is conducting studies on reliability and economic life, and AMC will conduct its own study in 1994, concentrating on reliability and maintainability.

When it comes to theater airlifters, the master plan focuses on the C-130. Introduced in 1956, the ubiquitous plane continues to be the stalwart of theater operations. Although the original A model was retired in 1992, the master plan foresees the remaining three models—B, E, and H—remaining the primary theater airlifters well into the twenty-first century.

The C-130's air-abort and break rates have improved in recent years because of innovative maintenance programs. The plan predicts the trend will continue as the C-130 is modernized.

About 150 of AMC's Operational Support Aircraft, including C-12s, C-21s, C-26s, T-43s, and Air National Guard C-130s, are dispersed at more than twenty installations. The majority of the OSA fleet are C-21s, introduced in the mid-1980s.

The C-17 Goes on Probation

The C-17 lifter—USAF's top-priority program—escaped the death sentence, but the plane is now on "heavy probation," and the contractor, McDonnell Douglas, will have to swallow a hefty financial penalty. That, in a nutshell, was the conclusion of a new Pentagon review of the transport, which has been hampered by delays and technical woes and has undergone six months of intense scrutiny.

Under Secretary of Defense for Acquisition John M. Deutch, who led the examination and announced its result December 15, gave serious thought to killing the plane, which the Air Force says is key to American mobility. Les Aspin, the former Defense Secretary, found cancellation "very tempting." Instead, the Pentagon proposed to McDonnell Douglas a four-part, take-it-or-leave-it deal, which the company accepted. The deal calls for:

Limited new production. Mr. Deutch approved procurement of twelve more lifters—six each in Fiscal 1995 and 1996—pushing the approved total to forty. Plans had called for buying 120 C-17s. The purchases keep the program alive, and the deal did not specifically abandon the higher number, but it did withhold any endorsement of a forty-first aircraft.

Probation. Over the next two years, McDonnell Douglas must prove it can stick to schedule, cost, and specifications. C-17 flight tests must be "successfully completed," said Mr. Deutch. The firm will spend an additional \$456 million on facilities and testing. If performance improves, the Air Force will buy more C-17s. If not, the Pentagon will kill the program and try something different.

Development of alternatives. To put teeth in its threat, the Pentagon will try to develop airlift alternatives, including procuring commercial jumbo jets and restarting production of the Lockheed C-5 transport. Extending the life of the aging C-141 fleet, however, was specifically ruled out.

Settlement of claims. McDonnell Douglas "irrevocably" would drop \$1.7 billion in actual and pending claims against the government. In return, the Pentagon would spend an additional \$111 million on flight testing and \$237 million to settle some claims. The government also agreed to ease the contractual range-payload specification of the airlifter.

With a life span of 20,000 hours, the C-21 fleet is expected to remain operational until 2015.

Since 1975, Military Airlift Command and then AMC have served as the single manager for the aeromedical evacuation mission. Some ninety-three percent of the current force is incorporated in Air Reserve Component units. Four active-duty squadrons provide support for contingency transition and daily missions within Europe, the Pacific, and the US.

The C-9 Nightingale is the only aircraft dedicated to aeromedical evacuation operations, though the C-12 and C-21 can be converted to an aeromedical configuration. Based on current flying hours, the C-9 could last until 2024.

The master plan, however, says it may not be economically feasible to extend the aircraft's life because of the high cost of support and maintenance. McDonnell Douglas, the manufacturer, has already put the C-9 into its aging-aircraft program. Another problem: Without major modifications or engine replacement, the C-9 will not comply with FAA noise standards that will be in place by the turn of the century.

Refuelers

AMC expects the KC-135 and KC-10 aircraft to meet all US refueling requirements well into the next century.

The KC-135 is the command's core tanker. Five different models are currently flown by both active-duty and Guard and Reserve aircrews. The master plan sets a goal of reducing the number of aircraft in depot status and extending the duration of each programmed depot maintenance from four years to five.

Aircraft systems identified for upgrade include the radar and compass systems, brakes, batteries, and air refueling booms. The aircraft will continue to be upgraded with the more efficient and powerful CFM56 engine.

Now entering its fourth decade, the basic KC-135A received its first major upgrade after twenty-nine years of service. The master plan predicts that, with current use rates, the aircraft should remain in service until 2030. The danger of corrosion,

metal fatigue, and other potential problems led the planners to recommend replacement studies beginning not later than 2000.

The role of the KC-10 closely resembles that of the older KC-135. Its size, however, helps it fill the roles of deployment, employment, and redeployment. The KC-10 also has longer range, a greater offload capability, and more cargo capacity than its counterpart. Introduced in 1980, the KC-10 requires relatively little maintenance and modification. Projected service life extends to 2043.

One problem could cause serious difficulties. The plan notes that the first round of commercial DC-10 airliner retirements, scheduled for 2010, will have a major impact on the future of KC-10 operations, adding that "if there are not enough second-tier airlines operating these aircraft after this date, the commercial logistics tail for KC-10s will shrink, significantly driving up operations and support costs."

Other Equipment

One goal is to boost system reliability by improving maintenance. Another is to reduce the amount of time a customer has to wait for an item from supply. AMC says this will be possible by establishing regional repair and supply points and expediting the movement of repairable parts through the repair cycle.

The plan projects that increased computerization will help the command improve the reliability, maintainability, and acquisition of vehicles. Standardization will pay off in reduced numbers of makes, models, and designs of vehicles. Mobility capability will be increased by having fewer types of equipment. AMC has set a goal of converting the majority of its ground vehicle fleet to alternate fuels. It predicts that battery-operated forklifts, compressed-natural-gas vehicles, and solar electric cars will be used on all installations.

The plan's authors emphasize that master planning is an ongoing procedure and that the current version is subject to review and revision. Indeed, initial changes are expected this year. ■

Dan Allsup is a former senior staff writer for Airman Magazine. He retired from active duty in 1989 and lives in Belleville, Ill. His most recent article for AIR FORCE Magazine, "Mobility Central," appeared in the June 1993 issue.

Flashback

Canine Copilot



The dog's name was "Monoplane," and he belonged to Shakir S. Jerwan, chief pilot instructor for the Moisant Flying School at Garden City, Long Island, N. Y. Willing to follow his master just about anywhere, Monoplane made more than forty flights with Jerwan, beginning in 1912. At the flying school, the canine aviator

was known to run out to the field at the sound of engines starting up. Monoplane, claimed a contemporary newspaper account, was "as competent to judge where the machine will land as any human—more so than those not accustomed to flying." It was also said that the dog enjoyed a pipe as well as his cigars.

**TSgt. Scott Womack of Pope AFB is
AFA's Crew Chief of the Year.**

Another Title for the Crew Chief

By C. V. Glines

CREW CHIEF (CrC). A noncommissioned officer who supervises a ground crew of aircraft mechanics. In some instances, a crew chief may serve also as an aircrew member."—*The United States Air Force Dictionary*

TSgt. Scott Womack, a nine-year Air Force veteran, is a dedicated crew chief—an apt title for one who has devoted his years in the service to doing everything he could to keep his unit's airlifters safely in the air. Now Sergeant Womack, who works on the C-130E transports of the 41st Airlift Squadron, 37th Operations Group, 317th Airlift Wing, Pope AFB, N. C., has another illustrious title. He is AFA's 1993 Crew Chief of the Year.

The word "dedicated" is all-important when the Air Force makes its Crew Chief of the Year nominations to AFA. It implies a unique obligation to a plane and its crew. Flight crew members look to the crew chief when the aircraft malfunctions. They are confident he or she will know everything about the operation of the mechanical, hydraulic, and electrical systems in their aircraft. As the team leader for their



TSgt. Scott Womack receives AFA's Crew Chief of the Year award from AFA President James M. McCoy at last September's AFA National Convention in Washington, D. C., as AFA Board Chairman O. R. Crawford applauds warmly.

Photo by Paul Kennedy

aircraft, the crew chief promotes cross-training and sharing of technical expertise among ground crew. The post of dedicated crew chief is a position of trust that calls for a commitment to excellence and a devotion to perfection.

The 1993 winner was a staff sergeant last May when he was nominated to receive the award. The next month, he was promoted to technical sergeant. He hopes to remain in the Air Force for a full career.

Sergeant Womack is a 1982 honor graduate of Hurricane High School, Hurricane, W. Va., where he participated in a masonry vocational program and represented his school in state competitions his senior year. He was a member of the state-championship varsity basketball team in 1981. For two years after graduating, he worked for a construction company. Then he decided to join the Air Force.

An Outstanding Mechanic

Sergeant Womack enlisted in August 1984. His aptitude tests showed outstanding mechanical skills, and he was assigned to technical training at Sheppard AFB, Tex. After training, he was assigned to Pope AFB, where he began on-the-job training in the aircraft general career field. Enthusiastic about aircraft maintenance, Sergeant Womack became an assistant crew chief within a year of enlistment and was on flying status for the next two years. In 1987, he was upgraded to dedicated crew chief. He was one of the first airmen in his unit to achieve certified mechanic status and was promoted to senior airman below the zone in December 1987.

Sergeant Womack was selected to join an elite unit for three years to gain experience in a nonflying job with management responsibilities. He served as a shift supervisor, production expediter, and assistant NCO in charge. This elite unit was engaged in Credible Cat, a classified, top-priority mission. For outstanding meritorious service between 1984 and 1989, Sergeant Womack was awarded the Air Force Commendation Medal.

After absorbing all the material in his technical manuals and maintenance reports, Sergeant Womack completed the NCO preparatory course in 1988. He was designated a distinguished graduate of the NCO Leadership School the following year. In addition, he completed requirements

for the Airplane General seven-level skills and was awarded the Senior Maintenance Badge in 1989.

Late that year, Sergeant Womack returned to flying status, becoming dedicated crew chief on a C-130E. He has since participated as a crew member in almost every major worldwide USAF operational deployment.

Beginning in 1989 with support missions for the Air Force's Hurricane Hugo relief mission and Operation Just Cause in Panama, he served at Rhein-Main AB, Germany, during Operations Desert Shield and Desert Storm as an isochronal supervisor, overseeing calendar inspections on the hard-working C-130 aircraft. This duty was followed by humanitarian missions to support Operations Provide Comfort in Turkey, Provide Hope in Lithuania, and Provide Promise in Sarajevo.

These deployments were in addition to classified missions in support of Drug Enforcement Administration (DEA) operations in Puerto Rico, Peru, Colombia, and Panama. Sergeant Womack was also chosen to deploy with the 40th Airlift Squadron on a Phoenix Pine rotation to RAF Mildenhall, UK, to support C-130 maintenance activities in Europe. During this period, he was recognized as the top dedicated crew chief for the rotation.

He Signs His Work

Sergeant Womack's status as a certified mechanic allows him to clear aircraft forms after performing maintenance in the field, enabling him to troubleshoot, repair, and sign off on his own work. Because of his performance, his aircraft maintained fully mission capable status on several wing operational missions. For example, while deployed on a classified mission to Soto Cano, Honduras, in 1992, his C-130 developed a flight deck air-conditioning turbine overheating problem, which could have grounded the aircraft. Sergeant Womack found the source of the malfunction and quickly replaced the turbine. The aircraft continued on its high-priority mission.

On another occasion, while deployed to Hawaii on a joint airborne-

transportability training exercise, his aircraft developed brake problems. Sergeant Womack quickly replaced the main landing gear brake assemblies and returned the aircraft to service. He logged more than forty hours of flying time that week.

During a deployment to the Virgin Islands, Sergeant Womack replaced a generator control panel in minimum time. Deployed to NAS Roosevelt Roads, Puerto Rico, in support of DEA operations, his aircraft maintained 100 percent launch capability.

While on a flight to Aalborg, Denmark, in 1992, his aircraft was struck by lightning, damaging the communications and navigation systems. He was able to expedite repair of the radar and radio components. His prompt action and systems knowledge precluded the need for a maintenance recovery team to be sent to assist in the repairs.

During a mission in support of Provide Promise to Sarajevo in February 1993, Sergeant Womack had his closest brush with disaster under hostile conditions. At the time, the airport was a potential target for belligerent forces, and speedy aircraft turnaround was essential. His C-130's number three engine failed to start, but Sergeant Womack traced the trouble to a faulty igniter plug and lead wires. He fashioned a temporary repair of the igniter plug, and his plane and crew returned safely to Rhein-Main AB.

Sergeant Womack flew thirty-nine missions to Sarajevo and more than forty to Split on the Dalmatian coast of Croatia. From April 1, 1992, to March 31, 1993, he was on temporary duty overseas for eight months.

His C-130 logged 869.7 hours during a twelve-month period, meaning that it was airborne for more than thirty-six days of the year. Sergeant Womack was on board more than 452 hours of that time. The aircraft's overall reliability rate for operational missions was 97.9 percent, a record that gives other crew chiefs a high target to shoot for. Sergeant Womack now has nearly 1,000 hours flying time accrued in C-130s during his nine years in uniform. ■

C. V. Glines is a free-lance writer in the Washington, D. C., area. His most recent article for AIR FORCE Magazine was "An American Hero" in the November 1993 issue.

The reorganization plan reflects Russian disdain for an independent aerospace role in combat operations.

Russia Fragments Its Airpower

By Maj. Brian Collins, USAF

AN AMBITIOUS new plan to reshape Russia's military aviation foreshadows a significant turn in that nation's airpower.

An extensive review of Russian sources—military journals, official statements, and government reports—indicates that the once-powerful Air Defense Forces will soon be extinct. Their Fighter Aviation element will be absorbed by the main Russian Air Forces. Surface-to-air missile (SAM) units will go to the Ground Forces, and Space-Missile Defense units will be independent.

The new structure calls for elimination of the independent air armies of the Supreme High Command. Such air armies would be subordinate to new Territorial Commands. This balkanization of the air units would make it more difficult during a crisis to mass Russian airpower assets for a Western-style air offensive.

These moves, plus others now in the works, suggest that Russian aerospace forces will be fragmented both horizontally (between remaining services) and vertically (between Strategic Deterrent Forces Command, Mobile Forces Command, and Territorial Commands). This marks a

Russia's plans to reshape its military aviation call for the Air Forces, the backbone of Russian airpower, to retain the MIG-29 (right) as a short-range fighter—but restructuring may put the aircraft under a new command.



setback for Russian aerospace power, which in recent years seemed to have gained new prominence in Russian thinking. Consequently, aerospace organization is now a hotly debated aspect of Russian military reform.

The initial Russian Air Order of Battle was shaped by the Treaty on the Conventional Forces in Europe (CFE) and the large-scale nationalization of Soviet military assets by Ukraine and the other former republics. The Tashkent Agreement of 1992, under which ex-Soviet states divided up Soviet CFE Treaty ceilings in combat arms, set limits on the amount of equipment Russia and the other European republics could station in the Atlantic-to-the-Urals zone covered in the accord.

A Three-to-One Edge

Russia clearly saw the importance of airpower—or at least the importance of denying it to the other post-Soviet states. In the Tashkent Agreement, Russia typically took about fifty percent of the overall Soviet allocation for groundbased equipment but reserved the right to keep two-thirds of the total allotment of combat aircraft—more than 3,400

fighters. This left Russia with a 3.17-to-one advantage over its main rival, Ukraine (which will still have more than any western European nation).

The seminal Russian General Staff proposal, drafted in 1992, stated that by 2000 all Russian aerospace forces would be in the Air Forces, Space-Missile Defense Forces, Space Forces, and Strategic Rocket Forces. Several existing combat groups—the Air Defense Forces, Air Defense Troops of the Ground Forces, Naval Aviation, and Army Aviation—were not included in this plan for 2000 and beyond.

The military reform was to have three stages. Stage 1 brought about the creation of the Russian Ministry of Defense and development of the basic concept of the Russian armed forces, plus withdrawals of groups of Soviet forces to Russia.

Stage 2, covering 1993–94, called for further withdrawals, consolidation, and initial moves toward a new force structure. In the air defense field, Air Defense Districts, Air Defense Armies, and Separate Corps were to be transformed into five Air Defense Zones by 1995. Otherwise, the services were to remain intact.

Stage 3, covering 1995–2000, calls for major reorganization of all services—Ground Forces, Air Forces, Air Defense Forces, Strategic Rocket Forces, and Navy. It envisions a reduction in the number of service branches from five to four, a step widely seen as a signal that Air Defense Forces will be disbanded. The Air Defense Forces, which have 70,000 more troops than the Air Forces, will fight to the end for their bureaucratic existence.

The reorganization plan calls for creation of three supercommands:

- Strategic Deterrence Forces, formed from the Strategic Rocket Forces, strategic nuclear aviation, seabased strategic nuclear forces, Space-Missile Defense Forces, and Space Forces.

- Mobile Forces, comprising airborne forces, mechanized divisions, independent Air Forces regiments, aviation transport divisions and regiments, naval infantry, and warships.

- Territorial Commands, based on military districts and formed from Ground Forces armies and corps, operational-level air armies, air defense armies and corps, and fleets.

The General Staff plan for 2000 identifies the Strategic Rocket Forces, Air Forces, Space-Missile Defense Forces, and Space Forces as "aerospace forces." The context of the plan clearly indicates that air defense fighters would go to the main Russian Air Forces. Under the same plan, air defense radars, SAMs, and other such support equipment would go to "ground forces." The General Staff plan clearly separates the Space-Missile Defense Forces from the Strategic Rocket Forces and Space Forces, the other contenders for this combat mission.

All general-purpose units will fall into either the Mobile Forces Command or the Territorial Commands. Land units assigned to Mobile Forces are to receive priority. They will combine well-trained, quick-reaction units with the Strategic Regrouping Forces—airlift and support units. Land units under Territorial Commands will be considerably less mobile, have lower readiness, and provide initial in-place defenses against attack. The Territorial forces will likely be conscript-heavy, given the Russian penchant for a large mobilization base. Mobile Forces will be a professional military force.

Unlike the ground forces, the aerospace forces will not evolve into a two-tier system. Only a few regiments are assigned to the Mobile Forces, and, because all aerospace units must maintain high combat readiness, they can ill afford to rely on a heavy reserve component.

A Common Fate

The Air Defense Forces is the service with the most ties to the political geography of the old Soviet Union.

Major elements of fighter aviation, groundbased radar and SAM units, and space-missile warning and defense were distributed throughout most former Soviet republics. Many radar and space defense units were built on optimal sites, and they cannot be moved or simply replaced by new radars and equipment at new sites in Russia.

In late 1992, Russian officers said that if the Baltic states, Moldova, Ukraine, Belarus, and Georgia were to withdraw completely from a unified air defense system, Russia would lose some 1,000–1,500 kilometers of extended air surveillance. The lowest-altitude radar coverage would

rise two to three times higher than the former Soviet minimum.

After the Soviet breakup, the Russian Air Defense Forces still had sixty-five percent of Soviet Air Defense Forces' weapons and equipment. However, most of the first-rate equipment, stationed on the periphery of the USSR, was taken over by other republics.

Gen. Maj. N. Kozlov of the Air Defense Forces wrote in the fall of 1992 that Russia's air borders in the west and south were practically open and defenseless and that one would find no modern SAMs stationed in Russia's interior areas—Volga, the Urals, and the Central Economic Region surrounding Moscow.

Russian officers estimate they must protect more than 400 military and economic installations—of which more than 100 are of strategic importance—from strikes by enemy offensive air forces. Since many of these installations do not have local SAM coverage, they must be protected by the Integrated Air Defense System of fighter aviation and long-range SAM systems. However, the Soviet-built Integrated Air Defense System is collapsing, leaving many installations potentially vulnerable to air attack.

The fate of the Air Defense Forces is linked to the existence of the Soviet integrated air and space-missile defense systems. As the Integrated Air Defense System collapses, so do many justifications for continuing the Air Defense Forces as a separate armed service.

Air Defense has been battling for its continued existence for many years. However, it is expensive to keep Fighter Aviation as an independent fleet of 2,000 pure interceptors, and CFE limits place a premium on multirole fighters. Furthermore, Russia can ill afford to try to build a Soviet-style Integrated Air Defense System in Russia.

Air Defense officers say that decentralization of air defense to the military district level was tried in the early 1980s and failed. To quote Gen. Col. Victor Alexeievich Prudnikov, Commander in Chief of the Air Defense Forces: "In 1986, the leadership of the former Union and of the Armed Forces recognized their mistake and made the decision, which was backed up with the necessary financial and material expenditures, to return to the unified system."

Air Defense Forces officers argue that the transfer of radar troops, SAM troops, and fighter aviation to other service branches would cost too much, reduce the effectiveness of air defenses, and increase fratricide among Russian systems.

The situation has changed dramatically since the 1980s. Even General Prudnikov admitted in December 1992 that the breakup of the Soviet Union left Russia with several holes in its air defense coverage. Though those gaps are being closed, redeployment and setup of new positions take time. The completely integrated Soviet air defense system is gone.

General Prudnikov has also admitted that Air Defense Forces units are being restructured to increase their firepower and mobility. This is partly to compensate for the loss of the SAM ring along the border, but such a restructuring also lends credence to the argument that these units are being prepared to shift to a closer relationship with the Ground Forces, where mobility is becoming ever more important.

Emphasis on mobile SAM systems was displayed at Oborona '92, Russia's first major post-Soviet national exercise. First Deputy Minister of Defense Andrei Kokoshin stated that only mobile air defense systems (the SA-10 "Grumble" and SA-15 Tor, among others) were tested and evaluated because these systems would play a key role with the Mobile Forces. Consequently, the Air Defense Troops of the Ground Forces played the lead role in the joint exercise.

As the Soviet integrated air and space-missile defense systems continue to collapse, General Prudnikov said that the Air Defense Forces could no longer operate independently of the Ground Forces air defenses. The change in emphasis of Russian air defense to mobile systems and a cluster or point defense concept indicates that the distinction between the Air Defense Forces and the Air Defense Troops of the Ground Forces is evaporating.

The Backbone of Russian Airpower

The main Russian Air Forces form the backbone of Russian airpower. The Air Forces have the most aircraft and aircraft types and have traditionally been involved in offensive as well as purely defensive air

operations. They also have been in charge of airlift, strategic nuclear aviation missions, and air support of ground forces.

Gen. Col. Peter Stepanovich Deynekin has the responsibility of forming the new Russian Air Forces. This means building a new structure while reducing personnel and eliminating obsolete aircraft and equipment. The Air Forces are making claims for units from Naval Aviation, Air Defense Forces Fighter Aviation, Space Forces, and Space-Missile Defense. The Air Forces leader is encountering strong political opposition.

The Navy, predictably, is resisting his attempt to exert control over Naval Aviation. Russian admirals maintain that such a move would disrupt joint naval training among submarines, surface ships, and naval aircraft and put Naval Aviation in the hands of officers ill-informed about air operations over water.

Army Gen. Col. F. M. Kuzmin, commandant of the Frunze Military Academy, said that the Ground Forces need to deemphasize tanks and motorized units. He also stated that future Russian Ground Forces must emphasize developments in Ground Forces Aviation, which he said should become one of the basic combat arms in Ground Forces, thereby ending once and for all the discussion of where to put ground-attack planes and helicopters.

According to General Kuzmin, the Russian Ground Forces need to place more emphasis on Air Defense troops, which need antijamming protection and new systems to combat new-generation missiles and aircraft. The Russian Ground Forces want full control over their aviation assets.

After the Soviet breakup, the Air Forces ended up with approximately 14,000 aviators and 5,000 combat aircraft. However, some regiments remained in other republics or abroad in Germany or Poland. A Russian Tu-22 bomber regiment is scheduled to stay in Belarus through 1995.

Order of Battle

Air Forces plans call for retaining the MiG-29 as a short-range fighter and the Su-27 as its long-range counterpart. Close air support will be provided by the Su-25 and helicopters, though it is unclear who will control Army Aviation. The Su-24 "Fencer," of which there are several hundred

in the Russian fleet, will be the main front-level bomber, and the Tu-95MS and Tu-160 bombers, armed with smart conventional weapons, will perform the long-range missions. The Russian Tu-160 force will take a while to develop, since Ukraine nationalized the entire Soviet fleet of Tu-160s and Russia did not fly its first Tu-160 at a Russian airfield until August 1992. The Il-78 will be the primary tanker aircraft, and the Il-76 and An-124 will be the primary airlifters.

Some of these aircraft will find new homes under the Air Forces structure, which consists of four main commands: Long-Range (Strategic) Aviation, under which the Air Forces want to include long-range Naval Aviation; Military Transport Aviation; Frontal (Tactical) Aviation; and Personnel, Training, and Reserves. As the Air Forces go through their drawdown, the flying training centers will form the basis of a skeleton reserve air army, since modern warfare precludes a rapid buildup of aircraft or crews during a conflict. The reserves, both aircraft and crews, must be on hand at the beginning of a conflict.

General Deynekin wants to reorganize Air Forces pilot training. The number of military colleges has been reduced since Ukraine and other republics nationalized military schools on their territory.

General Deynekin wants to drop the military colleges' function as undergraduate pilot training bases. Cadets will now receive three to four years of academic and physical training before flight training. He hopes the result will be "mature pilots instead of seventeen-year-old boys who can't take care of themselves, let alone an airplane." General Deynekin, alluding again to the integration of Naval Aviation, stated that officers for Long-Range Aviation, Naval missile-carrying bombers, and Military Transport will all attend the same school.

The Russian Air Forces will continue to have composite units (*i.e.*,

those with multiple types of aircraft assigned to them). Russian generals said that such units must be retained if the Russian Air Forces are to conduct an initial air campaign or joint or independent operations. These composite units, the "air armies," can by their very nature conduct various air-to-air and air-to-ground missions and independently achieve operational objectives. The Territorial Commands will inherit the frontal air armies. However, it is unclear whether the elements of an air army will actually train together or just remain "composite" on paper.

Despite the grand designs of some air generals, the Air Forces will not monopolize Russian aerospace power. Although the Air Forces will continue to train cosmonauts and keep a hand in for future space shuttle and space plane developments, the Space Forces and Space-Missile Defense Forces will become independent services. In the short term, the Air Forces will have to settle for Air Defense Forces Fighter Aviation, with the final status of Naval and Army Aviation still unresolved.

The restructuring of aviation could have ushered in a new era of aerospace supremacy in Russian thought, but it is apparent that several factors limit the development of Russian aerospace power. The new Russian military doctrine is noteworthy for its justification of Russian intervention in former Soviet states and, as a result, the Army-dominated Mobile Forces seem to be competing against airpower as the key to future Russian conventional needs. Western aerospace forces are recognized as the primary threat to Russian joint combat operations [see "Russia's Vision of Air-Space War," *December 1993*, p. 76], but practical Russian airpower theory plays down an independent aerospace role in combat operations and emphasizes aerospace support of ground combat operations.

Russian aerospace power will remain fragmented and continue to fail to reach its full potential. ■

Maj. Brian Collins, USAF, is a student at the German Armed Forces General Staff Course in Hamburg and was an aerospace analyst in the CIS Military Studies Group at Supreme Headquarters Allied Powers Europe in Belgium. This article is excerpted from a longer paper, "Russian Airpower: The First Year, Blueprint for the Future." Major Collins's most recent article for AIR FORCE Magazine, "Soviet View of the Storm," appeared in the July 1992 issue.

USAF Human Systems Checklist

Edited by Tamar A. Mehuron, Associate Editor

Human Systems Program Office

ACES II Advanced Recovery Sequencer

Program to develop improved sequencing/sensing system for the Advanced Concept Ejection Seat II. The system will expand the performance envelope of the seat, will be reliable and maintainable, and will reduce life-cycle cost. **Contractor:** McDonnell Douglas (MD). **Status:** Engineering development.

Active Noise Reduction

Investigation of a new electronic approach to noise attenuation in aircrew helmets to reduce hearing loss and improve communications capability. **Contractors:** Bose, Ketrion. **Status:** Engineering development.

Advanced Technology Anti-G Suit

Program to develop an extended-coverage anti-G suit to replace the CSU-13 series anti-G suits. This new anti-G suit will reduce fatigue induced by sustained rapid acceleration and allow the aircrew member to extend the time spent in a high-G environment during flight. **Contractor:** To be determined (TBD). **Status:** Pre-Engineering and manufacturing development.

Advanced Training System

Program to develop for Air Education and Training Command's training wings an interactive computer support system capable of performing and integrating training, development, delivery, testing and evaluation. With special emphasis on improving training for wartime and sortie generation, ATS will have an impact on the electronic and mechanical specialties, which have expanding training requirements. Initial operational test and evaluation is scheduled to begin at Keesler AFB, Miss., in early 1994. **Contractors:** IBM, SAIC. **Status:** Engineering and manufacturing development (EMD).

Aircraft Mishap Prevention

Program to develop a central human-factors database. AMP will operate jointly with other human-factors databases, as well as research, literature, and abstract services. The program provides for analysis, identification, and dissemination of human-factors trends for reducing aircraft mishaps. **Contractor:** ETA. **Status:** EMD.

Aircrew Ensemble

Initiative to develop new DoD lightweight chemical defense ensembles offering improved chemical protection by advanced chemical absorption composite material. Aircrew ensemble enhances performance by being worn as standard clothing, fully compatible with other personnel equipment, reusable, washable, and offering significantly less thermal burden. **Contractor:** TBD. **Status:** Follow-on production.

Aircrew Eye-Respiratory Protection

Program to replace the MBU-13/P chemical/biological warfare oxygen mask with an improved system. Final objective is to equip all crew members in all aircraft with a chemical defense capability. Enhanced capabilities include better chemical/biological protection, under-the-helmet design, drinking capability, and ability to perform a Valsalva maneuver. **Contractor:** TBD. **Status:** Follow-on production.

Alternating-Current Interface Unit

Project to develop hardware to provide an alternative power source to battery-only operation of the aeromedical evacuation mission cardiac monitor and defibrillator. **Contractor:** Sunset Resources. **Status:** EMD.

Work in progress at Air Force Materiel Command's Human Systems Center, Brooks AFB, Tex., and at Armstrong Laboratory, Brooks AFB and Wright-Patterson AFB, Ohio

Automatic Life Preserver

Development, design, and qualification of an automatic water-actuated inflator for existing LPU-G/P life preservers. **Contractor:** S-Tron. **Status:** Production.

Automatic Liquid Agent Detector

Program to provide a small, lightweight, rugged unit to detect falling liquid chemical agents and activate audible and visible alarms. **Contractor:** Arvin Calspan Corp. **Status:** Production.

Automatic Vapor Agent Detector

Program to provide an off-the-shelf detector that will automatically activate alarm in the presence of chemical agent vapors. System will replace aging, unsupported M8A1 device. **Contractor:** TBD. **Status:** Preproduction.

Chemical Defense Ground Crew Ensemble

Program to design and develop a one- or two-piece clothing configuration with hood to provide liquid, vapor, and aerosol protection. It also would reduce thermal stress, provide flame protection equivalent to the current suit, and be washable and decontaminable. **Contractor:** TBD. **Status:** EMD.

Chemically Hardened Air-Transportable Hospital

Program to provide capability for front-line medical personnel to deploy, set up, and operate in high-threat chemical environments. Aim is to provide immediate and improved treatment of troops to increase personnel return to combat units and unit combat effectiveness and to reduce permanent injuries. **Contractors:** Many. **Status:** EMD, initial production.

Civil Reserve Air Fleet Aeromedical Evacuation Shipsets

Program to convert commercial Boeing 767 aircraft to aeromedical evacuation platforms by removing airline interiors and installing litter stanchions, liquid oxygen converters, and electrical power converters. **Contractor:** E-Systems. **Status:** Production.

Combat Ace

Program to investigate methods to provide pilots with enhanced acceleration protection and chemical/biological defense. **Contractor:** Boeing. **Status:** Demonstration/validation (dem/val).

Combat Edge

Investigation of methods to provide fighter pilots with enhanced protection against the effects of Gs and to improve pilot endurance using a Pressure Breathing for G System that reduces dependence on the anti-G straining maneuver. **Contractors:** Gentex, ARO. **Status:** Production, deployment.

Combat Survivor/Evader Locator

Program to develop an extended-range survival radio with geolocation capability and low probability of intercept and detection. The system may include airborne and spacebased relay platforms as well as ground stations. **Contractor:** TBD. **Status:** Cost and operational effectiveness analysis.

Continuous/Intermittent Suction Unit

Project to develop and provide the aeromedical evacuation mission with a certified nasopharyngeal and gastric suction unit capable of continuous or variable timed intermittent operations. **Contractor:** TBD. **Status:** Pre-EMD.

Disposable Eye-Respiratory Protection (DERP)

Program to develop an inexpensive, compact, disposable mask to provide emergency protection in a chemical warfare environment. DERP is required to provide head, eye, neck, and respiratory protection in an environment contaminated with chemical nerve and blister agent vapors, aerosols, and liquids. **Contractors:** Mine Safety Appliance, ILC Dover, National Draeger. **Status:** EMD.

Field Medical Laser System

Program to develop a self-contained, highly portable, miniature laser scalpel to provide advanced trauma life support on the battlefield. **Contractor:** TBD. **Status:** Pre-EMD.

Fire Fighter Ensemble

Program to provide a chemically protective garment with vapor and aerosol protection that would reduce thermal stress and allow integration with body cooling systems. The ensemble will provide USAF fire fighters an enhanced capacity for fighting fires in a chemical environment. **Contractor:** TBD. **Status:** EMD.

Lightweight Helmet Development

Development and procurement of a lightweight helmet designed for improved stability in the high-acceleration environment. **Contractor:** Gentex Corp. **Status:** Production.

Maintenance Skills Tutors

Program to develop computer-based training systems that use artificial intelligence to teach advanced troubleshooting skills to improve tactical air forces maintenance. **Contractor:** TBD. **Status:** Pre-EMD.

Multifunction RADIAC Equipment

Production program to provide an off-the-shelf radiological detector for replacement of the currently fielded suite of nonsupportable RADIAC instruments. Mobile detector will activate alarms in the presence of alpha, beta, gamma, and X radiation. **Contractor:** TBD. **Status:** Preproduction planning.

Night Vision System

Development of a low-profile night vision system to enable aircrews to see outside the aircraft during periods of darkness while retaining the capability to monitor cockpit displays. System will be ejection-safe. **Contractors:** ITT Electronics Product Division, Kaiser Electronics. **Status:** EMD.

Operational Support System

Program to support Threat-Related Attrition (THREAT) System application validation efforts and to explore concepts associated with using the THREAT system to support Air Force contingency and wartime operation planning requirements. **Contractor:** BDM International. **Status:** Ongoing.

Passenger Smoke and Fume Protection

Development of a device that provides supplemental oxygen for rapid-decompression/oxygen-deficient situations and eye and respiratory protection for passengers aboard Air Mobility Command aircraft. **Contractor:** TBD. **Status:** Conceptual study.

Pilot Candidate Selection Method

Program to develop hardware and software evaluation capability to select the most capable flight-training candidates. Payoffs include selection of highest-quality pilots, reduced attrition, optimal assignment, and decreased training costs. **Contractor:** CTA. **Status:** Production.

Ranch Hand II Epidemiology Study

A 20-year epidemiology investigation, using physical exams and questionnaires, of 1,200 Air Force personnel who sprayed herbicides in Vietnam (exposed) and a comparison population (unexposed). The objective is to determine the health effects, both morbidity and mortality, from exposure to herbicide-associated dioxins. **Contractor:** SAIC. **Status:** Management and support.

Spinal Cord Injury Transport System

Program to develop and procure standard-of-care transport system for aeromedical evacuation of spinal cord injury patients. **Contractor:** TBD. **Status:** EMD.

THREAT System

Development of a system for Air Force planners and programmers to estimate personnel attrition due to conventional and nonconventional attacks on air bases, diseases, and accidents. **Contractor:** BDM Federal. **Status:** EMD.

Transportable Blood Transshipment Center

Program to develop a transportable modular facility for in-theater rechilling or refreezing of human blood and blood products en route to worldwide theaters of military operations or disaster areas. **Contractor:** Arthur D. Little, Inc. **Status:** EMD.

Transportable Collective Protection System

Program will provide mobile system that offers personnel a toxic-free work, rest, and relief environment. May provide chemical protection to bare bases and deployed and detached units. **Contractor:** ILC Dover. **Status:** Production.

Uniform and Organizational Clothing

Research and development (R&D) on uniform items from concept to phaseout, including test and evaluation, development of specifications, value engineering, and quality assurance. **Contractor:** Red the Uniform Tailor. **Status:** EMD.

Universal Water-Activated Release System

Program to provide the crew member an automatic backup parachute release capability that will activate on entry into salt water. **Contractor:** Conax Florida Corp. **Status:** Development.

Vacuum-Packed One-Man Life Raft

Development of a zero-leak life raft inflation system to be used on current life rafts, for use by Air Combat Command, Air Force Reserve, and Air National Guard. **Contractor:** Conax Florida Corp. **Status:** Production.

Wartime Medical Planning System

Development of automated system analysis tools for the Air Force Surgeon General to allow planners to evaluate selected medical system options against threats to US air bases and to validate wartime medical force structure and assemblages. **Contractor:** BDM Federal. **Status:** Advanced development.

Armstrong Laboratory

Active Noise Cancellation in Hush House

Program to investigate the use of active noise reduction technologies to reduce the low-frequency noise generated from an aircraft hush house or test cell. **Contractor:** BBN Systems & Technologies (BBN). **Status:** Ongoing.

Advanced Aircrew Vision Protection

Advanced Technology Transition Development (ATTD) program to develop aircrew eye protection from lasers and nuclear weapons. Program seeks to provide visors that protect against all invisible laser wavelengths during day or night tactical operations. Daytime visors will integrate laser protection with neutral gray (sun) and high-contrast visors. **Contractor:** The Analytic Sciences Corp. **Status:** Ongoing.

Advanced Technology Active Noise Reduction Headsets

Program to increase the effectiveness of the ANR headset currently in use and allow the wearer to be exposed to noises up to 140 dB with a 50 dB attenuation. **Contractor:** U. of Mississippi. **Status:** Ongoing.

Aeromedical Neuropsychiatric Standards

Evaluation and application of research techniques in neuro-behavioral science applied to the flying population. Active studies on aviator suicide, ten-year psychiatric outcomes, seizure risk after head injury, and new cognitive assessment tests. **Contractor:** TBD. **Status:** Ongoing.

Aeromedical Visual Standards

Development of new techniques for visual-disease detection, epidemiological studies of visual disorders, and development and evaluation of optical devices that may enhance or protect visual performance in the flying population. **Contractor:** TBD. **Status:** Ongoing.

Aircraft Battle-Damage Assessment and Repair

ATTD project to develop an automated handheld aid and associated software that provides battle-damage assessment personnel with ready access to all information required to evaluate battle damage and assess reparability of aircraft. **Contractor:** TBD. **Status:** New start for FY 1995.

Assessment System for Aircraft Noise

ATTD program to provide Air Force environmental and airspace planners the technology to develop technically sound, legally defensible noise elements in environmental documents prepared to assess military flight activities. **Contractor:** BBN. **Status:** Ongoing.

Basic Job Skills

ATTD program to develop computer-based trainers to accelerate learning of troubleshooting skills by aircraft maintenance technicians. **Contractor:** U. of Pittsburgh. **Status:** Ongoing.

Clinical Consult Service

The Consult Service evaluates more than 700 grounded aircrew members each year, returning, on average, 72 percent to flying duties. Research is conducted on aviator selection and retention standards, using data from the world's largest aviator database. Consultation requests are received from all elements of the Air Force Medical Service. **Contractor:** In-house. **Status:** Ongoing.

Crew-Centered Cockpit Design Program

Program to accelerate the transfer of human-centered technology into the cockpit through computer-aided design and engineering. This program will develop an entire process and associated tools to facilitate

safer and more mission capable cockpits. **Contractors:** Many. **Status:** Ongoing.

Crew Protection

Basic, applied, and advanced R&D to ensure effectiveness and safety of aircrew personnel exposed to high altitude, chemical and biological warfare agents, live fire threats, and mechanical stress, including acceleration, impact, aerodynamic forces, transient thermal energy, and vibration. **Contractors:** Many. **Status:** Ongoing.

Dental Investigative Service

Program to guide and assist all USAF dental personnel. Consists of clinical, laboratory, and consultant capabilities designed to solve operational problems and evaluate methods, techniques, procedures, equipment, and materials as identified by military and other federal dental activities. **Contractor:** In-house. **Status:** Ongoing.

Design Technology

Program to prevent dangerous aircraft performance deficiencies, manage the cockpit information explosion, and prevent cockpit retrofits from becoming the collages found in many aircraft. Technologies include camouflage, concealment, obscuring, human information processing, system control, experimental man-in-space performance and workload assessment, spatial disorientation countermeasures, crew station design techniques and criteria, and crew-centered cockpit design. **Contractors:** Many. **Status:** Ongoing.

Drug Testing

Supports the DoD objective of maintaining a drug-free, mission ready force. Advanced laboratory technology is used for more than 800,000 tests annually on 250,000 specimens. **Contractor:** In-house. **Status:** Ongoing.

Early Disease Detection

Research to detect significant asymptomatic illness in otherwise healthy flying population. The Aerospace Medicine Directorate operates 23 study groups to follow disease conditions over time to learn their operational significance. **Contractor:** TBD. **Status:** Ongoing.

Effects of Aircraft Noise on Sleep Disturbance

Field study program to develop a better understanding of the relationship between aircraft overflight noise and the potential for nighttime awakenings. The goal is to develop a model to predict numbers of awakenings within a community by proposed aircraft overflights. **Contractor:** BBN. **Status:** Ongoing.

Epidemiological Research

Provides worldwide reference laboratory service; supports DoD and the Air Force Surgeon General in epidemiological and preventive medicine/disease surveillance; and collects, analyzes, and interprets health data on Air Force populations. More than 2.5 million procedures were performed in FY 1992, expanding services to more than 100 medical treatment facilities, saving more than \$7 million compared to commercial laboratory charges. **Contractor:** In-house. **Status:** Ongoing.

Fourth-Generation Escape Systems Technologies

Program to integrate and demonstrate technologies that significantly increase the safe escape envelope. Efforts will reduce fatalities and major injuries in emergency ejections from modern military aircraft. **Contractor:** MD Aerospace. **Status:** Ongoing.

Health Study

Program to conduct long-term epidemiological investigations of health effects in Air Force personnel following exposure to herbicides. **Contractor:** SAIC. **Status:** Ongoing.

Helicopter Noise Prediction Model

Program to develop a helicopter noise data file and a model to predict helicopter noise within the airbase environment. The model will be inserted into Noisemap, currently used throughout the Air Force. **Contractor:** Wyle Labs. **Status:** Ongoing.

Hyperbaric Medicine

Develops and provides hyperbaric medicine advanced training, education, and application. **Contractor:** In-house. **Status:** Ongoing.

Information Integration Technology

ATTD program to develop and demonstrate a prototype integration information system to store design, manufacturing, and logistics data and

make them easily available on-line to System Program Offices and Air Logistics Centers (ALCs). **Contractor:** Knowledge Based Systems, Inc. **Status:** Ongoing.

Integrated Maintenance Information System

ATTD program that uses computers to provide rapid access to all information needed for a particular maintenance job. **Contractor:** General Dynamics (GD). **Status:** Ongoing.

Integrated Technical Information for Air Logistics Centers

ATTD project to improve, standardize, and integrate technical and management information into the ALCs. The project will make management and technical information more readily available at the job to improve ALC aircraft maintenance and support operations. **Contractor:** TBD. **Status:** New start for FY 1994.

Intelligent Computer-Assisted Training Test-Beds

ATTD project to create, evaluate, and demonstrate a capability to rapidly develop and deliver effective simulation-based intelligent tutoring systems for equipment tasks. **Contractors:** U. of Southern California, GSA. **Status:** Ongoing.

Logistics Systems Technology

Development of models to aid logistics personnel and designers with computer-aided design and computer-aided modeling. Aim is to produce an integrated maintenance information system that interacts with the aircraft and the maintenance technician to permit faster repair of the aircraft and higher sortie-generation rates. **Contractors:** GDE, Logicon. **Status:** Advanced development.

Manpower and Personnel Technologies

Basic, applied, and advanced research program to provide state-of-the-art methods and tools to ensure that the most qualified people are selected and placed in jobs that maximize their capabilities. Program will also provide technologies to integrate manpower, personnel, and training factors early in weapon system design. **Contractors:** Many. **Status:** Ongoing.

Manpower Personnel Training Decision Support System

ATTD program to develop a family of analysis tools for weapon system planners and designers, System Program Offices, and major commands to ensure mission capable systems at the lowest life-cycle costs. **Contractor:** Dynamics Research. **Status:** Ongoing.

Multiship Training R&D

ATTD project to develop, demonstrate, and document training value and performance requirements for microprocessor-based, selective fidelity aircrew training devices and distributed simulation networks. **Contractors:** General Electric, U. of Dayton Research Institute (UDRI). **Status:** Ongoing.

Night Vision Device

R&D to improve night training and night operations with night vision devices. **Contractors:** Martin Marietta (MM), UDRI. **Status:** Ongoing.

Noise

Development of models on the effects of noise and sonic booms on humans, animals, and structures. Supports development of Environmental Impact Assessments. **Contractors:** Many. **Status:** Ongoing.

Occupational and Environmental Health

Program to provide analytical chemistry support and consultation to Air Force bases by telephone and on-site visits. Consultation is provided in occupational medicine, ergonomics, hearing conservation, radiation monitoring, safe drinking-water standards, environmental compliance, and hazardous-waste disposal and minimization. **Contractors:** Many. **Status:** Ongoing.

Preventive Services Initiative

Program sponsored by the USAF Surgeon General to coordinate and rationalize Air Force preventive services efforts. Four primary emphasis areas: preventive services delivery, preventive services support and consultation, preventive services education, and preventive services research, development, test, and evaluation. **Contractor:** Battelle. **Status:** Concept exploration, dem/val.

Radiation

Program of studies on the biological effects of electromagnetic and ionizing radiation. Supports program offices in ensuring appropriate

safety measures in design of systems producing radiation. **Contractors:** Many. **Status:** Ongoing.

Selection and Classification Technology

Development of the Air Force Officer Qualifying Test, used with other criteria for selection of officers for the Air Force, and development of the Basic Attributes Test (a battery of psychomotor, cognition, and effectiveness tests) for selection and classification of pilot candidates. **Contractors:** Metric, CTA. **Status:** EMD, advanced development.

Simultaneous Engineering Technology

ATTD program to develop and demonstrate computer tools to integrate logistics support, training needs, and cost considerations into the design process. **Contractors:** GD, Rockwell International. **Status:** Ongoing.

Situational Awareness

Program to develop and validate methods for objectively measuring and training situational awareness skills for aircrew members. **Contractors:** MM, Loral, UDRI. **Status:** Ongoing.

System Interfaces

Program to develop and exploit methods to improve safety and performance under challenging new operational conditions. Technologies include biocommunications, audio communications countermeasures and counter-countermeasures, helmet-mounted systems technologies, helmet tracking, helmet display and visually coupled system component technologies, night vision enhancement, cockpit lighting, night operations devices, and human sensory feedback for telepresence. **Contractors:** Many. **Status:** Ongoing.

Technical Training Technologies

Program to develop basic, applied, and advanced research for technologies that improve training effectiveness and quality while reducing the cost of technical training in the classroom and on the job. The two primary areas of research are (1) training systems design technologies and other technologies that assist in making training planning decisions and (2) instructional technologies that apply artificial intelligence to the development and delivery of Air Force training. **Contractors:** Many. **Status:** Ongoing.

Toxicology

Program to provide toxicological evaluations of Air Force chemicals and materials, studies to support program offices in evaluating the risk to human health of new materials under development, and development of biologically based models to improve extrapolations from laboratory studies to actual human exposure situations. **Contractors:** Many. **Status:** Ongoing.

Training Impact Decision Support System

A computer-aided decision support system for determining which specialty tasks to train and when/how to train. Integration of training, personnel, and cost/resource information enables functional managers to evaluate training scenarios for optimal resource allocation. **Contractor:** Metrica. **Status:** Ongoing.

Unit Training Research

Program to develop training methods and technologies that will provide cost-effective training at wing and squadron levels. **Contractors:** MM, Loral, UDRI. **Status:** Ongoing.

Virtual Environment

Program to determine the relationship among microcomputer-based VE capabilities, aircrew perceptual needs, and training benefits at squadron level. **Contractors:** MM, Loral, UDRI. **Status:** Ongoing.

Visually Coupled Acquisition and Targeting System

ATTD program to design and build a high-performance, monocular, helmet-mounted display suitable for investigating and demonstrating the use of visually coupled system technology in fixed-wing fighter aircraft. **Contractor:** TBD. **Status:** Ongoing.

Visual Research Program

Program to determine the relationship among visual simulation capabilities, human perceptual requirements, and training benefit to aircrews. **Contractors:** MM, Loral, UDRI. **Status:** Ongoing.

Visual Systems

Program to develop low-cost, high-fidelity visual systems that are compatible with unit-level training systems, networkable, deployable, upgradable, and expandable. **Contractors:** MM, Loral, UDRI. **Status:** Ongoing. ■

By John L. Frisbee, Contributing Editor

They're Dead Without You

Twice hit, low on fuel, and almost out of ordnance, an F-100 pilot refused to abandon the besieged ARVN troops.

MANY readers will recognize Mark Berent as the author of five best-selling Vietnam War novels. Taken together, these books form a powerfully dramatic history of the war in southeast Asia, written by a fighter pilot who lived through four years of combat in North and South Vietnam, Laos, and Cambodia. Principal characters in the continuing saga are composites of men, good and bad, whom Berent fought with and against on 235 combat missions in F-100s and 219 in F-4s, the latter while at Ubon RTAFB, Thailand, as a flight commander, then as chief of the 8th Tactical Fighter Wing's Wolf forward air control operations.

Denied a third tour in fighters, Lt. Col. Mark Berent found an assignment as an "operational" air attaché at the American Embassy in Phnom Penh, Cambodia. There he "flew things with propellers," worked directly with Special Forces, and learned much about the political maneuvering in Washington and the Pacific. All of that, too, is reflected in his books.

There was still another string to Mark Berent's bow that has added to the authenticity of his writing but came close to keeping him out of the fight. His early career as an F-100 and F-86 pilot was followed by an Air Force Institute of Technology assignment at the University of Arizona to earn a degree in engineering. With that background, he was assigned to Air Force Systems Command while the war in Vietnam was expanding, at least in the south. Captain Berent finally wangled an assignment to the 531st Tactical Fighter Squadron. In December 1965, the 531st TFS was about to deploy to Bien Hoa AB, South Vietnam. It had been seven years since Berent had flown an F-100, but never mind that. He was

going to war with a lot of fighter time behind him and a burning desire for combat.

One of Captain Berent's most memorable early missions was flown on the afternoon of February 8, 1966. He and a wingman were scrambled to support two Army of the Republic of Vietnam rifle companies that were being cut to ribbons by vastly superior Viet Cong forces.

The ARVN units were pinned against a canal in the Mekong Delta near Rach Gia, 130 miles southwest of Bien Hoa. The forward air controller reported extremely heavy ground fire. Berent remembers a battlefield that looked like a scene from World War II with explosions and smoke making it difficult to locate friendly forces. Once they were pinpointed, which took several passes, the FAC cleared Berent and his wingman in to deliver their 500-pound Mk. 82 bombs. Berent's first was a dud, the second right on target. Now for the cluster bomb units' antipersonnel bomblets.

Dropping CBU's in the face of heavy ground fire was sweeter work than dive-bombing with 500-pounders. The CBU's had to be released while flying straight and level at Mach .71 and 300 feet altitude. Higher and they would drift off target; lower and they would not have time to arm. Before release on Captain Berent's first run, his right windscreen quarter panel was shattered by an AK-47 slug, showering his face and eyes with bits of glass and smashing his gunsight. The F-100 was still under control and all gauges checked out, so he continued the run, putting his bomblets right on target, according to the FAC.

Captain Berent pulled up to assess damage to his fighter and asked the FAC how serious things were for the ARVN troops. "They're dead without you," the FAC replied. Not knowing if his windscreen would blow out in another Mach .71 run and with minimal fuel, Berent decided to go anyway. He wiped the glass from his eyes as best he could, dumped cabin pressure, lowered his seat, pulled down his visor, and went in

for two more passes. On the second, he was hit again, this time from directly ahead by "one gutsy gunner." With no more bombs or 20-mm, undetermined battle damage, and marginal fuel, he headed for Bien Hoa and a safe landing.

The FAC reported that after Berent's last bomb run, VC attacks on the beleaguered ARVN troops had "virtually ceased. Captain Berent's actions merit . . . an award for gallantry." Mark Berent thought he was "merely doing what I was paid to do." Those who approved a recommendation for award of the Silver Star did not agree.

In 1974, Lt. Col. Berent retired from an assignment as chief of the Test Control Branch at the Armament Development and Test Center. A much-decorated fighter pilot, he already had launched a successful writing career and, with US withdrawal from southeast Asia, "there was no second act." He now lives on a 250-acre farm in Virginia hunt country and, between novels and other writing, is a technical advisor for television combat documentaries. ■



Capt. Mark Berent prepares to fly an F-100 mission from Bien Hoa AB, South Vietnam, in 1966.

AFA State Contacts



Following each state name are the names of the communities in which AFA chapters are located. Information regarding these chapters or any of AFA's activities within the state may be obtained from the appropriate contact.

ALABAMA (Birmingham, Gadsden, Huntsville, Mobile, Montgomery): **William B. Divin**, 6404 Pinehurst Run, Mobile, AL 36608 (phone 205-433-4848, ext. 278).

ALASKA (Anchorage, Fairbanks): **Steven R. Lundgren**, P. O. Box 83658, Fairbanks, AK 99708-3658 (phone 907-459-3291).

ARIZONA (Green Valley, Phoenix, Prescott, Sedona, Sierra Vista, Sun City, Tucson): **William A. Lafferty**, 1342 W. Placita Salubre, Green Valley, AZ 85614 (phone 602-625-9449).

ARKANSAS (Blytheville, Fayetteville, Fort Smith, Hot Springs, Little Rock): **William A. Kehler**, 2718 Gray Fox Ln., Jacksonville, AR 72076-2629 (phone 501-843-3562).

CALIFORNIA (Apple Valley, Bakersfield, Camarillo, Edwards, Fairfield, Fresno, Los Angeles, Merced, Monterey, Novato, Orange County, Pasadena, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, Sunnyvale, Vandenberg AFB, Yuba City): **Cheryl L. Waller**, 10449 Shore Crest Terr., Moreno Valley, CA 92557 (phone 909-382-3689).

COLORADO (Boulder, Colorado Springs, Denver, Fort Collins, Grand Junction, Pueblo): **Don Dandurand**, 4450 E. Fountain Blvd., Suite 204, Colorado Springs, CO 80916 (phone 719-591-1011).

CONNECTICUT (Brookfield, East Hartford, Middletown, Storrs, Stratford, Torrington, Waterbury, Westport, Windsor Locks): **John F. McCormack**, 218 Tryon St., Middletown, CT 06457 (phone 203-346-0036).

DELAWARE (Dover, New Castle County, Rehoboth Beach): **Robert M. Berglund**, 128 W. Lookerman St., Dover, DE 19901 (phone 302-674-0200).

DISTRICT OF COLUMBIA (Washington): **Grant Miller**, 1501 Lee Highway, Arlington, VA 22209-1198 (phone 703-247-5820).

FLORIDA (Avon Park, Broward County, Cape Coral, Daytona Beach, Fort Walton Beach, Gainesville, Homestead, Hurlburt Field, Jacksonville, Leesburg, Miami, New Port Richey, Ocala, Orlando, Palm Harbor, Panama City, Patrick AFB, Port Charlotte, Saint Augustine, Sarasota, Spring Hill, Tallahassee, Tampa, Titusville, Vero Beach, West Palm Beach, Winter Haven): **Bernard R. Hanlon**, 1179 Talbot St., Port Charlotte, FL 33952-2872 (phone 813-624-0234).

GEORGIA (Athens, Atlanta, Columbus, Dobbins AFB, Rome, Saint Simons Island, Savannah, Valdosta, Warner Robins): **Jack Steed**, P. O. Box 2087, Warner Robins, GA 31099 (phone 912-929-4111).

GUAM (Agana): **William Dippel**, P. O. Box 12861, Tamuning, GU 96931 (phone 671-646-4445).

HAWAII (Honolulu, Maui): **John A. Parrish, Jr.**, 98-1349 Kulawai St., Aiea, HI 96701 (phone 808-836-2966).

IDAHO (Boise, Mountain Home, Twin Falls): **Ralph D. Townsend**, P. O. Box 45, Boise, ID 83707-0045 (phone 208-389-5226).

ILLINOIS (Belleville, Champaign, Chicago, Elmhurst, Moline, Peoria, Rockford, Springfield-Decatur): **Richard W. Asbury**, 502 Slavens Manor, Bettendorf, IA 52722-4114 (phone 319-355-8409).

INDIANA (Bloomington, Evansville, Fort Wayne, Grissom AFB, Indianapolis, Lafayette, Marion, Mentone, New Albany, South Bend, Terre Haute): **Don McKeilar**, 2324 Pinehurst, Kokomo, IN 46902 (phone 317-455-0933).

IOWA (Des Moines, Marion, Sioux City, Waterloo): **Carl B. Zimmerman**, 208 Waterloo Bldg., Waterloo, IA 50701-5495 (phone 319-234-0339).

KANSAS (Garden City, Topeka, Wichita): **E. D. Brown**, 4209 Westport, Wichita, KS 67217 (phone 316-942-8045).

KENTUCKY (Lexington, Louisville, Paducah): **Vaigen Q. Cox**, 3249 Cross Bill Rd., Louisville, KY 40213-1284 (phone 502-636-2316).

LOUISIANA (Alexandria, Baton Rouge, New Orleans, Shreveport): **Ivan L. McKinney**, 331 Greenacres Blvd., Bossier City, LA 71111 (phone 318-425-8877).

MAINE (Bangor, Loring AFB, North Berwick): **Philip B. Turner**, P. O. Box 202, Caribou, ME 04736 (phone 207-496-6461).

MARYLAND (Andrews AFB, Baltimore, College Park, Rockville): **Robert B. Roit**, P. O. Box 263, Poolesville, MD 20837-0263 (phone 301-349-2262).

MASSACHUSETTS (Bedford, Boston, East Longmeadow, Falmouth, Hanscom AFB, Taunton, Westfield, Worcester): **Carol A. Chrest**, 134 Embury Ln., Carlisle, MA 01741 (phone 617-275-6100).

MICHIGAN (Alpena, Battle Creek, Detroit, East Lansing, Kalamazoo, Marquette, Mount Clemens, Oscoda, Traverse City, Southfield): **George E. Copher**, 1015 S. County Rd. 557, Gwinn, MI 49841 (phone 906-346-2400).

MINNESOTA (Duluth, Minneapolis-Saint Paul): **Vic Seavers**, 8259 131st St. W., Apple Valley, MN 55124 (phone 612-726-6558).

MISSISSIPPI (Biloxi, Columbus, Jackson): **Leonard R. Vernamonti**, 718 Country Place Dr., Pearl, MS 39208 (phone 601-960-3600).

MISSOURI (Richards-Gebaur AFB, Saint Louis, Springfield, Whiteman AFB): **John J. Politi**, 2308 Jason Ct., Jefferson City, MO 65109-5825 (phone 314-634-2246).

MONTANA (Bozeman, Great Falls): **Charles F. Curtis**, 119 W. College, Bozeman, MT 59715 (phone 406-586-0291).

NEBRASKA (Lincoln, Omaha): **C. Howard Vest**, 301 S. 70th St., Suite 140, Lincoln, NE 68510-2452 (phone 402-489-9255).

NEVADA (Las Vegas, Reno): **P. K. Robinson**, 3440 Moberly Ave., Las Vegas, NV 89118 (phone 702-385-8600).

NEW HAMPSHIRE (Manchester, Pease AFB): **Baldwin M. Domingo**, 5 Birch Dr., Dover, NH 03820 (phone 603-742-0422).

NEW JERSEY (Andover, Atlantic City, Belleville, Camden, Chatham, Cherry Hill, Forked River, Fort Monmouth, Gladstone, Jersey City, McGuire AFB, Newark, Old Bridge, Trenton, Wallington, West Orange): **Joseph M. Capriglione**, 179 Newbrook Ln., Springfield, NJ 07081-3022 (phone 201-344-6753).

NEW MEXICO (Alamogordo, Albuquerque, Clovis): **Charles Vesely**, 808 Piedra Vista N. E., Albuquerque, NM 87123-1954 (phone 505-881-3552).

NEW YORK (Albany, Bethpage, Binghamton, Brooklyn, Buffalo, Chautauqua, Griffiss AFB, Nassau County, New York City, Plattsburgh, Queens, Rochester, Staten Island, Suffolk County, Syracuse, Westhampton Beach, White Plains): **Allen G. Harris**, 202 Riverside Dr., 6C, New York, NY 10025-7298 (phone 212-222-0446).

NORTH CAROLINA (Asheville, Charlotte, Fayetteville, Goldsboro, Greensboro, Greenville, Havelock,

Kitty Hawk, Littleton, Raleigh, Wilmington): **William W. Michael**, P. O. Box 36, Fayetteville, NC 28302-0036 (phone 910-323-4400).

NORTH DAKOTA (Fargo, Grand Forks, Minot): **John O. Syverson**, 6450 N. 13th St., Fargo, ND 58102-6011 (phone 701-232-2897).

OHIO (Cleveland, Columbus, Dayton, Mansfield, Newark, Youngstown): **William J. Schaff**, 429 Oakmead Pl., Dayton, OH 45419 (phone 513-429-0100).

OKLAHOMA (Altus, Enid, Oklahoma City, Tulsa): **Larry M. Williams**, 11819 S. Douglas Ave., Oklahoma City, OK 73170-5635 (phone 405-736-5512 or 736-4317).

OREGON (Eugene, Klamath Falls, Portland): **Robert S. Furrer**, 19 S. W. Greenridge Ct., Lake Oswego, OR 97035-1428 (phone 503-697-7585).

PENNSYLVANIA (Allentown, Altoona, Beaver Falls, Bensalem, Coraopolis, Drexel Hill, Erie, Harrisburg, Homestead, Johnstown, Lewistown, Philadelphia, Pittsburgh, Scranton, Shiremanstown, State College, Washington, Willow Grove, York): **Robert C. Rutledge**, 129 Arlington St., Johnstown, PA 15905 (phone 412-235-2711).

PUERTO RICO (San Juan): **Vincent Aponte**, P. O. Box 8204, Santurce, PR 00910 (phone 809-764-8900).

RHODE ISLAND (Warwick): **John A. Powell**, 700 Saint Paul's St., North Smithfield, RI 02895 (phone 401-766-3797).

SOUTH CAROLINA (Charleston, Clemson, Columbia, Myrtle Beach, Sumter): **David V. Massey**, 101 Kerryton Rd., Columbia, SC 29223 (phone 803-695-6202).

SOUTH DAKOTA (Rapid City, Sioux Falls): **Robert J. Johnson**, 1120 E. 57th St., Sioux Falls, SD 57106 (phone 605-338-4532).

TENNESSEE (Chattanooga, Knoxville, Memphis, Nashville, Tullahoma): **Jack K. Westbrook**, P. O. Box 1801, Knoxville, TN 37901-1801 (phone 615-523-6000).

TEXAS (Abilene, Amarillo, Austin, Big Spring, College Station, Commerce, Corpus Christi, Dallas, Del Rio, Denton, El Paso, Fort Worth, Harlingen, Houston, Kerrville, Lubbock, San Angelo, San Antonio, Waco, Wichita Falls): **Larry L. Miller**, 8322 Van Pelt Dr., Dallas, TX 75228-5950 (phone 214-653-3537).

UTAH (Clearfield, Ogden, Salt Lake City): **Richard E. Schankel**, 370 S. 500 E., #120, Clearfield, UT 84015-4046 (phone 801-776-2101).

VERMONT (Burlington): **William C. Austin**, 10 Southwind Dr., Burlington, VT 05401 (phone 802-863-5909).

VIRGINIA (Alexandria, Charlottesville, Danville, Harrisonburg, Langley AFB, Lynchburg, McLean, Norfolk, Petersburg, Richmond, Roanoke, Winchester): **James E. Cvik**, 1919 Commerce Dr., Suite 445, Hampton, VA 23666-4269 (phone 804-838-2424).

WASHINGTON (Seattle, Spokane, Tacoma): **Philip Giambri**, 131 S. W. 194th St., Seattle, WA 98166-4040 (phone 206-773-1226).

WISCONSIN (Madison, Milwaukee, Mitchell Field): **Gilbert M. Kwiatkowski**, 8260 W. Sheridan Ave., Milwaukee, WI 53218-3548 (phone 414-463-1849).

WYOMING (Cheyenne): **Robert S. Rowland**, 9001 Red Fox Rd., Cheyenne, WY 82009 (phone 307-632-8746).



NATIONAL REPORT

AFA Works for People Programs

The following legislation was enacted into law in 1993. The Air Force Association has always been concerned with quality of life issues for those who serve and have served in the US Air Force. Prior to enactment, AFA, working in conjunction with numerous coalitions, was instrumental in providing information, support and rationale to the US Congress for each of these initiatives. AFA takes pride in its efforts to improve the lives of Air Force people.

Pay & Allowances

- 2.2% pay raise for military personnel
- 2.6% cost of living adjustment (COLA) for VA disability and DIC recipients
- Increased temporary lodging expenses (TLE)
- Increase in the Medal of Honor pension
- COLAs for federal retirees
- Locality pay for federal civil servants

Health Care

- Establishment of a nation-wide military health care system
- Priority status & assumption of service-connected illness for Persian Gulf War vets
- Medical care at base realignment and closure (BRAC) sites
- Report on the feasibility of expanding the mail order pharmacy to all non-active duty beneficiaries
- Expanded enrollment in the dependents' dental program

- Bonus authorities for nurse officer candidates, RNs & nurse anesthetists

Family Matters

- Dependent status for legal custody wards
- Transitional compensation for dependents of military members who are separated for dependent abuse

Education

- Continued funding of Impact Aid
- Expanded educational benefits for graduate school for Guardsmen & Reservists under Montgomery GI Bill

Other

- Extension of transition benefits through FY 1999 for separating military personnel during the drawdown
- Ban on service of open homosexuals in the armed forces of the United States

Year in Review

- Working with the Military Coalition, AFA helped defeat the Penny-Kasich amendment, which would have had a devastating impact on active duty and civil service recruiting and retention and on retiree benefits.
- A record number of AFA state organizations held congressional breakfasts during the 1993 National Convention to discuss key defense issues with their representatives and senators.
- As part of the Military Coalition, AFA filed an *amicus curiae* brief with the U.S. Supreme Court to assure federal and military retirees would be treated with equity in taxation by state and local governments and recover past payments collected in error.
- Working in cooperation with the Air Force Memorial Foundation, AFA helped secure passage of the Air Force Memorial Bill in December.
- AFA President Jim McCoy encouraged newly elected President Bill Clinton to travel to military bases and meet with those who serve to give him a better understanding of the unique aspects of military service.
- Working with the Military Coalition and independently, AFA strongly opposed lifting the ban on homosexuals serving in the military.
- Throughout the year, AFA voiced its concerns about cuts in the defense budget to key members of Congress. AFA national officers and the executive director made numerous visits to Capitol Hill.
- In March, AFA hosted a reception for freshmen members of the 103rd Congress and senior Air Force leaders, including Chief of Staff Gen. Merrill A. McPeak and then-acting Secretary of the Air Force Michael B. Donley.
- AFA President Jim McCoy testified before the Base Closure and Realignment Commission, focusing on the impact closures and realignments would have on military families and retirees, with a special emphasis on health care.
- After five years of intense work, AFA, in conjunction with the National Coalition for Source Tax Repeal, was successful in convincing the House Judiciary Committee to hold formal hearings on this important issue. This follows important rulings already received from the Congressional Research Service and the Senate Finance Subcommittee on Taxation.
- Acting in concert with the Military Coalition, AFA testified before numerous congressional committees and the White House Health Care Reform Task Force.



Edited by Daniel M. Sheehan, Assistant Managing Editor

Twenty-Second L. A. Ball

Three years and seven months after the Wright brothers flew at Kitty Hawk, N. C., the US Army Signal Corps formed its Aeronautical Division, the forerunner of the Air Force. In 1993, AFA's Los Angeles Air Force Ball celebrated the eighty-six-year history of US military flying by taking the Heritage of the US Air Force as its theme.

Actor Richard Anderson, the master of ceremonies, briefly traced USAF's history for the 800 AFA members and guests in attendance, touching on the many accomplishments of the Army Air Corps and Army Air Forces as well. He concluded by praising the men and women of today's Air Force. "Uniformed and civilian personnel and their families—they are the heritage of the United States Air Force," he said. "They met the challenges of the past and are ready to meet the challenges of the future."

The evening's entertainment was consistent with the theme. The Air Force Band's Airmen of Note appeared in World War II uniforms to provide music for the audience. The Tuskegee Airmen, black veterans of the highly decorated 99th, 100th, 301st, and 302d Fighter Squadrons, who fought in Europe during World War II, received an Aerospace Education Foundation Barry Goldwater Fellowship at the ball. They were also the subject of a video and musical tribute. Tuskegee Airmen National President Roger "Bill" Terry accepted the fellowship, which represents a \$5,000 donation to AEF, from the organizers of the ball.

Former Air Force Secretary Edward C. "Pete" Aldridge, Jr., served as general chairman of the ball, which has raised hundreds of thousands of dollars for Scholarships for Children of American Military Personnel (SCAMP) and AEF. Gen. Bernard A. Schriever, USAF (Ret.), who commanded Air Force Systems Command from 1959 through 1966, was named honorary chairman.

The SCAMP program was begun to honor servicemen killed, missing, or held prisoner during the Vietnam War. Scholarships may also now be received by children of any service member killed,



National President James M. McCoy poses with the 1993 SCAMP award winners at the annual Los Angeles Air Force Ball. From left, Cindy S. Smith, David W. Small, President McCoy, Carol A. Butler, and Michele L. Stackhouse.

missing, or taken prisoner in action since that conflict or children of participants killed while serving in the US space program. Initial grants are \$5,000 each; renewals are \$3,500 per year for those maintaining eligibility.

Air Force Secretary Sheila Widnall attended the ball, as did USAF Chief of Staff Gen. Merrill A. McPeak, Air Combat Command Commander Gen. John Michael Loh, US Space Command Commander in Chief Gen. Charles A. Horner, Pacific Air Forces Commander Gen. Robert L. Rutherford, and former Air Force Secretary Verne Orr.

Entertainer Billy Davis, Jr., opened the program with a rousing rendition of the National Anthem. The Air Force Band of the Golden West also performed, and color guards and honor guards from Edwards AFB, March AFB, and Los Angeles AFB participated.

Chairman Aldridge noted that 122 students have been awarded a total of 373 SCAMP scholarships since the program's inception. He thanked the many volunteers who made the ball possible and the hosts, Lt. Gen. Edward P. Barry, Jr., commander of the Space and Missile Systems Center,

and Lt. Gen. Walter Kross, commander of 15th Air Force.

The following students received the 1993 SCAMP awards.

Carol A. Butler, daughter of Air Force Capt. William W. Butler, a former prisoner of war in southeast Asia. She will attend the University of California, Santa Barbara, where she will major in marine biology.

David W. Small, son of Marine Corps Maj. Joseph J. Small III, who was taken prisoner during Operation Desert Storm. He will attend the University of North Carolina and plans to major in computer science and pursue a military career.

Cindy S. Smith, daughter of Air Force Lt. Col. Philip E. Smith, who was shot down over the Gulf of Tonkin and held prisoner in China until 1973. She will attend Biola University in La Mirada, Calif.

Michele L. Stackhouse, daughter of Navy Lt. Cmdr. Charles D. Stackhouse, a former POW in southeast Asia. She attends Southern Methodist University.

This year's ball will be held October 28, 1994.

—James A. McDonnell, Jr.

USAF Memorial Authorized

The men and women who have served in the US Air Force will soon have a memorial of their own in Washington, D. C. President Clinton signed into law on December 2 a bill authorizing construction of an Air Force Memorial in the nation's capital.

Air Force Memorial Foundation Executive Director Lt. Gen. Robert D. Springer, USAF (Ret.), framed the purpose of the memorial succinctly: "to reflect past accomplishments while also motivating young men and women to ensure that the United States Air Force is a valuable national resource

William D. Croom, R. L. Devoucoux, William J. Gibson, William L. Ryon, Jr., James M. McCoy, *ex officio* (nonvoting).

Membership Committee: Craig R. McKinley (Chairman), Donald D. Adams, Dan F. Callahan III, Harold F. Henneke, Alwyn T. Lloyd, John W. Lynch, William W. Michael, Gilbert E. Petrina, Jr., Mary Anne Thompson, Marie M. Vanover, James M. McCoy, *ex officio* (nonvoting).

Constitution Committee: Martin H. Harris (Chairman), William V. McBride, William C. Rapp, James M. McCoy, *ex officio* (nonvoting).

Resolutions Committee: Mary Ann Seibel (Chairman), Bob Cantu, O. R. Crawford, Michael J. Dugan, James M. McCoy, Craig R. McKinley, Jack C. Price, Walter E. Scott, William N. Webb, Monroe W. Hatch, Jr., *ex officio* (nonvoting).

Long-Range Planning Committee: R. E. G. Smith (Chairman), H. A. Strack (Vice Chairman), David A. Brescia, George R. Jernigan III, John E. Kittelson, Maj. Paul A. Willard II, James M. McCoy, *ex officio* (nonvoting).

Science and Technology Committee: Robert T. Marsh (Chairman), Thomas E. Cooper, Charles G. Durazo, Charles A. Gabriel, Thomas McMullen, William Schneider, Jr., Wayne A. Schroeder, Henry C. Smyth, Jr., Charles F. Stebbins, James Tegnalia, Richard E. Thomas, John J. Welch, Jr.

Audit Committee: Jack G. Powell (Chairman), Donald D. Adams, William V. McBride, Benjamin S. Roth, John Russell, Claudius E. Watts III, O. R. Crawford, *ex officio* (nonvoting).

Advisors: Jerry Dalton (Communications), Ken Daly (Junior ROTC), Col. Earl Donnell (Senior ROTC), John R. Graham (Civilian Personnel), Donna L. Tinsley (Medical), Maj. Paul A. Willard II (Civil Air Patrol).



As a memento for her speech to the Paul Revere (Mass.) Chapter, Air Force Secretary Sheila Widnall received a framed certificate including a nail wrought in Paul Revere's foundry from Chapter President John J. KeNy, Jr.

Garden City Memorial

National Vice President (Midwest Region) Samuel M. Gardner is lending a hand to a worthy cause: the establishment of a veterans memorial at Garden City, Kan., Regional Airport, formerly Garden City AAB. The memorial, with three flagpoles and two his-

well into the twenty-first century and beyond." The memorial will be funded through corporate and private donations. The foundation is negotiating with the National Park Service to select an appropriate location.

AFA's National Committees

The makeup of AFA's National Committees for 1993-94 has been determined. The following members have been named to serve on the committees.

Executive Committee: James M. McCoy (Chairman), Bob Cantu, O. R. Crawford, Michael J. Dugan, Craig R. McKinley, Jack C. Price, Walter E. Scott, Mary Ann Seibel, William N. Webb, Gerald V. Hasler, *ex officio* (nonvoting), James M. Keck, *ex officio* (nonvoting), Monroe W. Hatch, Jr., *ex officio* (nonvoting).

Finance Committee: William N. Webb (Chairman), Charles H. Church, Jr. (Vice Chairman), John R. Alison,



Rep. H. James Saxton (R-N. J.) accepts an AEF Thomas B. McGuire, Jr., Fellowship from State Vice President (Government Affairs) Edgar Wolf, Jr. (right), in honor of his efforts in keeping McGuire AFB open. A \$1,000 scholarship in Mr. Saxton's name will be awarded to a student majoring in aerospace science.



The San Bernardino Area Chapter's Salute to USAF and Norton AFB, Calif., drew 1,000 spectators, who also toured the Ballistic Missile Heritage Park. National Director Edward A. Stearn (left), retired Gen. Bernard A. Schriever (center), and Space and Missile Systems Center Commander Lt. Gen. Edward Barry took part.

torical markers, will honor veterans of World War II, the Korean War, the Vietnam War, and Operation Desert Storm. It will also include trees and a limestone walk. Members of the **Con-trails (Kan.) Chapter** are spearheading the fund-raising drive for the memorial and have already raised more than \$10,000 of the \$30,000 projected cost. For more information, write to Garden City Regional Airport, 2225 S. Airservice Rd., Garden City, KS 67846.

Chapter News

High on the list of the **Eglin (Fla.) Chapter's** favorite charities is the Air Force Enlisted Men's Widows and Dependents Home Foundation, for which they have raised thousands of dollars over the years. The chapter recently presented a \$51,000 installment to Loyal L. Weaver, the foundation's president and chief executive officer. The funds represented the proceeds from the Bob Hope Benefit Show, in which Bob and Delores Hope, Willie Nelson, the Airmen of Note, and other entertainers took part to raise money for an additional 120 units at the Bob Hope Village section of the home.

The check was presented at a quarterly meeting that featured Air Warfare Center Commander Maj. Gen. George B. Harrison as guest speaker. Chapter President Bob O'Connor also welcomed Air Force Special Operations Command Commander Maj. Gen. Bruce L. Fister, Air Force Development Test Center Commander Brig. Gen. Stewart E. Cranston, 16th Special Operations Wing Commander Brig. Gen. Maxwell C. Bailey, and Maj. Gen. Benjamin Putnam, USAF (Ret.), to the meeting.

The **Dacotah (S. D.) Chapter** recently

hosted a distinguished visitor: Col. Horst Lemke, who serves as German Air Attaché to the U.S. Chapter President Chuck Nelson welcomed Colonel Lemke, who discussed NATO issues with National Director and former National Vice President (North Central Region) John E. Kittelson.

Southern Indiana Chapter President Eugene A. Merrell presented the AFA Award to outstanding Cadet Bradley K. Smith during ceremonies near the University of Indiana in Bloomington. Maj. Rhonda Lee Arnold, USAF, an assistant professor of aerospace studies, said the presentation "is always a highlight" of AFROTC Det. 215's annual awards ceremony.

Its proximity to the Air Force Academy inspires the **Colorado Springs/Lance Sijan (Colo.) Chapter's** strong support of education. SrA. Daniel N. Rutter received tangible evidence of that support in the form of a \$250 Eagle Grant scholarship from Chapter Vice President (Aerospace Education) Charles P. Zimkas. Other outstanding graduates of the Peterson AFB Community College of the Air Force receiving AEF scholarships were TSgt. Martha J. Curtis, SSgt. Kathy M. Williams, and SSgt. James S. Evridge. Brig. Gen. Donald G. Cook, commander of the 21st Space Wing at Peterson AFB, joined chapter officials in congratulating the graduates.

Academic scholarships were also featured at a recent meeting of the **Golden Triangle (Miss.) Chapter**. Cadet Ryan Plunkett received a \$500 scholarship, and Elizabeth Owens received a \$1,000 Angel Flight/Silver Wings Society scholarship. Cadet Plunkett and Ms. Owens are affiliated

with AFROTC Det. 425 at Mississippi State University.

Also at the meeting, the Golden Triangle Chapter elected a new set of officers. Chapter President Col. Marc McBride, Vice President Gene Davenport, and Treasurer Jim Nolen will now lead the chapter. Col. Robert H. Foglesong, commander of the 14th Flying Training Wing, Columbus AFB, Miss., addressed the meeting.

The **Greater Pittsburgh (Pa.) Chapter** sent a strong contingent to observe Veterans Day at the Soldiers and Sailors Memorial Hall in Pittsburgh. University of Pittsburgh AFROTC cadets staged a twenty-four-hour candlelight vigil at the memorial, observed by National Director and former National President John G. Brosky, National Director Robert L. Carr, and State Western Region Director Tillie Metzger.

The **Panama City (Fla.) Chapter** has the first active-duty enlisted president in its history in the person of MSgt. Sidney E. Duffer of the 325th Operations Support Squadron at Tyndall AFB, Fla. He is a twenty-three-year veteran of the Air Force and was selected First Sergeant of the Year for Tyndall in 1992.

Have AFA/AEF News?

Contributions to "AFA/AEF Report" should be sent to Dave Noerr, AFA National Headquarters, 1501 Lee Highway, Arlington, VA 22209-1198. ■

Coming Events

March 18-19, **Louisiana State Convention**, Bossier City, La.; May 6-7, **North Carolina State Convention**, Fayetteville, N. C.; May 7, **Massachusetts State Convention**, Boston, Mass.; June 10-12, **New York State Convention**, Cheektowaga, N. Y.; June 17-18, **Missouri State Convention**, Whiteman AFB, Mo.; June 24-26, **Alabama State Convention**, Huntsville, Ala.; July 8-9, **Virginia State Convention**, McLean, Va.; July 15-18, **Pennsylvania State Convention**, Pittsburgh, Pa.; July 22-23, **Kansas State Convention**, Wichita, Kan.; July 22-24, **Texas State Convention**, Fort Worth, Tex.; August 5-6, **New Mexico State Convention**, Albuquerque, N. M.; August 6, **Montana State Convention**, Three Forks, Mont.; August 6-7, **Iowa State Convention**, Des Moines, Iowa; August 12-14, **California State Convention**, Vandenberg AFB, Calif.; September 12-14, **AFA National Convention and Aerospace Technology Exhibition**, Washington, D. C.

Fiftieth Anniversary of the United States Air Force

Seeking veterans/unit reunion groups and individuals interested in participating in USAF fiftieth-anniversary activities in Las Vegas, Nev., April 22–26, 1997. **Contact:** Jim McDonnell, Air Force Association, 1501 Lee Hwy., Arlington, VA 22209. Phone: (800) 727-3337.

Amarillo AFB Personnel

Military and civilian personnel who were stationed at Amarillo AFB, Tex., will hold a reunion May 20–21, 1994, in Amarillo. **Contact:** Robert P. Balliett, 6305 Stoneham Dr., Amarillo, TX 79109. Phone: (806) 352-8875 or (806) 355-0242.

American Advisors in Vietnam

Members of Team 162 who served as American advisors in Vietnam, Red Markers, and the Society of the Vietnamese Airborne will hold a reunion June 23–26, 1994, in Columbus/Fort Benning, Ga. **Contact:** Otis Amick, 6060 Canterbury Dr., Columbus, GA 31902. Phone: (404) 323-4028.

Army Air Corps Enlisted Pilots Ass'n

Army Air Corps enlisted pilots will hold a reunion October 12–15, 1994, in Omaha, Neb. **Contact:** Royden D. Schooley, 2010 Whitehorn Dr. N., Colorado Springs, CO 80920. Phone: (710) 593-1681.

Aviano Reunion Ass'n

Personnel who were assigned to Aviano AB, Italy, will hold a reunion October 2–5, 1994, at the Villa Giustinian near Pordenone, Italy. **Contact:** Tama Tillman, 3214 Fox Lake Dr., Tampa, FL 33618. Phone: (813) 963-3083.

Douglas AAB

Permanent party officers who were assigned to Douglas AAB, Ariz., between 1942 and 1945 will hold a reunion May 12–15, 1994, in Dayton, Ohio. **Contact:** William L. Daniels, P. O. Box 73, Rensselaer, IN 47978. Phone: (219) 866-4328.

Glenn Miller AAF Band

Former members of Glenn Miller AAF Band (Special), World War II era, will hold a reunion March 5, 1994, in Studio City, Calif. **Contacts:** Tom Cochran, Apt. 6-G, 424 E. 52d St., New York, NY 10022. C. Beauregard, 10 E. Del Mar Blvd., Pasadena, CA 91105. Phone: (818) 792-4911.

Rome AMA/GEEIA Personnel

Military and civilian personnel who were assigned to the Rome Air Materiel Area (ROAMA) or Ground Equipment Engineering and Installation Agency (GEEIA) at Griffiss AFB, N. Y., will hold a thirtieth-year reunion August 25–27, 1994, in Burlington, Mass. **Contact:** Tony Storace, 44 Cheyenne Dr., Nashua, NH 03063-3527. Phone: (603) 882-7069.

SAC Communicators

Strategic Air Command Communicators will hold a reunion September 16–18, 1994, in Colorado Springs, Colo. **Contact:** William Bloom, 1002 Day Dr., Bellevue, NE 68005. Phone: (402) 733-5340.

Santa Ana AAB

Personnel who served at Santa Ana AAB, Calif., during World War II will hold a reunion April 23,

1994, at Orange Coast College in Costa Mesa, Calif. **Contact:** Alvin E. Anderson, P. O. Box 1764, Costa Mesa, CA 92628. Phone: (714) 631-5918.

Schilling AFB Personnel

Veterans who served at Schilling AFB, Kan., will hold a reunion April 28–May 1, 1994, in Salina, Kan. **Contact:** Joan Johnson, P. O. Box 2012, Salina, KS 67402-2012. Phone: (913) 823-5065.

Society of SAC

The Society of the Strategic Air Command will hold a forty-eighth-year reunion in Omaha, Neb., August 25–28, 1994. **Contacts:** Bill Ernst, 410 Greenbriar Ct., Bellevue, NE 68005-4715. Phone: (402) 292-0101 or (402) 292-1205. Society of the Strategic Air Command, P. O. Box 1244, Bellevue, NE 68005-2114. Phone: (402) 293-7433.

2d Bomb Wing Ass'n

Veterans of the 2d Bomb Wing (Tucson-Savannah) who served between 1947 and 1964 will hold a reunion May 26–29, 1994, at the Holiday Inn International Drive Resort in Orlando, Fla. **Contact:** John Boynton, 9425 Sumac Ln., Garden Ridge, TX 78266. Phone: (210) 651-6614.

4th Fighter-Interceptor Wing

Korean War veterans of the 4th Fighter-Interceptor Wing will hold a reunion June 23–26, 1994, in Dayton, Ohio. **Contact:** John David, Rte. 2, Box 2543, Quitman, TX 75783. Phone: (903) 967-2569.

5th Air Force Memorial Foundation

Veterans of 5th Air Force will hold a reunion May 12–15, 1994, at Hill Aerospace Museum in Ogden, Utah. **Contact:** James S. Chastain, 4290 S. 2075 W., Roy, UT 84067. Phone: (801) 731-4355.

8th Fighter Group Ass'n

Veterans of the 8th Fighter Group, which included the 33d, 35th, 36th, and 80th Fighter Squadrons, 5th Air Force (World War II), will hold a reunion September 15–18, 1994, in Seattle, Wash. **Contact:** Ray Bisterfeldt, 211 Eagle Dr., Chewelah, WA 99109. Phone: (509) 935-8099.

31st Fighter Officers Ass'n

Members of the 31st Tactical Fighter Wing (1940–93) will hold a reunion July 21–23, 1994, at the Hope Hotel, Wright-Patterson AFB, Ohio. **Contact:** Col. Clyde W. Strain, USAF (Ret.), 30 Beards Creek Cir., Chapin, SC 29036. Phone: (803) 781-0363 or fax (803) 732-4517.

43d Bomb Group Ass'n

Veterans of the 43d Bomb Group will hold a reunion August 29–September 4, 1994, at the Hyatt Regency Riverwalk Hotel in San Antonio, Tex. **Contact:** Lloyd Boren, 102 Beechwood, Universal City, TX 78148. Phone: (512) 658-5978.

Class 43-K

Members of Class 43-K (Central Flying Training Command) are planning to hold a reunion in

Readers wishing to submit reunion notices to "Unit Reunions" should mail their notices well in advance 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.

September 1994. **Contact:** Harold A. Jacobs, 17545 Drayton Hall Way, San Diego, CA 92128. Phone: (619) 485-5041.

Classes 44-H and 44-I

Members of Class 44-H and Class 44-I plan to hold a reunion in September 1994 in Dayton, Ohio. **Contact:** M. A. Tilbury, 5611 S. Trenton, Tulsa, OK 74105. Phone: (918) 743-2208.

Class 45-E

Members of Class 45-E will hold a reunion in conjunction with the Tuskegee Airmen August 1–7, 1994, at the Hyatt Regency Hotel in Chicago, Ill. **Contacts:** John B. Roach, 118 Montvale Ave., Woburn, MA 01801. Phone: (617) 933-5064. William E. Broadwater, 700 7th St., S. W., #720, Washington, DC 20024. Phone: (202) 488-4391.

54th Troop Carrier Wing

Veterans of the 54th Troop Carrier Wing, 374th Troop Carrier Group, support groups, and assigned squadrons (World War II) will hold a reunion June 9–12, 1994, in St. Louis, Mo. **Contact:** Glenn McMurphy, 8944 Krueger St., Culver City, CA 90232-2437. Phone: (310) 559-8331.

Class 58-E

Members of Class 58-E (Bainbridge AB, Ga.) will hold a reunion September 3–5, 1994, in Bainbridge, Ga. **Contact:** Winston J. Daws, 8391 Sherman Oaks Dr., Memphis, TN 38139-4320. Phone: (901) 757-8578.

60th Troop Carrier Group

Veterans of the 60th TCG will hold a reunion June 1–4, 1994, in Kings Island, Ohio. **Contact:** John Diamantakos, 3525 Lynngate Cir., Birmingham, AL 35216-5239. Phone: (205) 823-4747.

67th Troop Carrier Squadron

Veterans of the 67th Troop Carrier Squadron, 433d Troop Carrier Group, 5th Air Force (World War II), will hold a reunion in summer 1994. **Contact:** Lt. Col. Alton E. Justice, USAF (Ret.), 10305 Pointe Aux Chenes, Ocean Springs, MS 39564. Phone: (601) 875-9310.

92d Bomb Group

Veterans of the 92d Bomb Group and assigned units will hold a reunion September 28–October 3, 1994, at the Greentree Marriott Hotel in Pittsburgh, Pa. **Contacts:** Ralph Rosensteel, 200 Delaware Ave., N. Versailles, PA 15137. Phone: (412) 824-4401. Lt. Col. Robert D. Elliott, USAF (Ret.), 32 N. Madrid Ave., Newbury Park, CA 91320. Phone: (805) 498-4144.

99th Bomb Group

Veterans of the 99th Bomb Group (World War II) will hold a reunion April 20–24, 1994, in Daytona Beach, Fla. **Contact:** Morton G. Magee, The Woodlands, 8 Butternut Cir., Ormond Beach, FL 32174-6039. Phone: (904) 673-8549.

321st Bomb Wing

Veterans of the 321st Bomb Wing (B-47 unit) will hold a reunion August 25–28, 1994, in St. Augustine, Fla. **Contact:** Les Gaskins, 2200 N. W. 21st St., Gainesville, FL 32605. Phone: (904) 377-6892.

349th Troop Carrier Group

Veterans of the 349th Troop Carrier Group (World War II) and attached squadrons will hold a reunion August 24–28, 1994, at the Nashville Airport Marriott Hotel in Nashville, Tenn. **Contact:** Bart McCarthy, 361 Monaco Dr., Hermitage, TN 37076. Phone: (615) 885-3689.

384th Bomb Group

Veterans of the 384th Bomb Group/Wing will hold

a reunion May 19-22, 1994, at Hill Aerospace Museum in Ogden, Utah. **Contact:** Nathan H. Mazer, 5483 S. 2375 W., Roy, UT 84067. Phone: (801) 825-2796.

405th Fighter Group

Veterans of the 405th Fighter Group, which included the 509th, 510th, and 511th Fighter Squadrons, 9th Air Force (World War II), will hold a reunion August 31-September 4, 1994, at the Westin Hotel in Seattle, Wash. **Contacts:** Perri Roe or Kris Eastman, Convention Services Northwest, Tower Building, 1809 7th Ave., Suite 1200, Seattle, WA 98101. Phone: (206) 292-9198.

433d Troop Carrier Group

Veterans of the 433d Troop Carrier Group, which included the 65th, 66th, 67th, 68th, 69th, and 70th Troop Carrier Squadrons, 5th Air Force (World War II), will hold a reunion October 27-29, 1994, in San Antonio, Tex. **Contact:** Col. Joseph B. Bonner, USAF (Ret.), 4210-A Lake Underhill Rd., Orlando, FL 32803-7045. Phone: (407) 896-0579.

444th Bomb Squadron

Veterans of the 444th Bomb Squadron, 320th Bomb Group (World War II), will hold a reunion July 14-16, 1994, at the Radisson Inn in Madison, Wis. **Contacts:** Leland S. Ford, 615 Oak Ln., Horicon, WI 53032. Phone: (414) 485-2328. Leo K. Simpson, 629 9th St., Tell City, IN 47586. Phone: (812) 547-3895.

507th Fighter Group

Weapon loaders of the 507th Fighter Group (Tinker AFB, Okla.) will hold a reunion March 12, 1994, in Oklahoma City, Okla. All weapon loader members of the 507th Fighter Group/Tactical Fighter Group are invited. **Contact:** Stan Jackson, 465 AMU (DOMWG), Tinker AFB, OK 73145-5000. Phone: (405) 734-7049.

PACAF Manpower

Seeking contact with PACAF manpower community interested in a reunion in Hawaii. **Contacts:** Eddie Gotori, 98-1799 Kupukupu St., Aiea, HI 96701. Hugh Ames, 426-C Ulu Paina St., Kailua, HI 96734.

25th Bomb Squadron

For the purpose of holding a reunion, seeking contact with members of the 25th Bomb Squadron, 6th Bomb Group, who were stationed at France Field, Canal Zone, on December 7, 1941. **Contact:** Maj. W. L. Cooper, Jr., USAF (Ret.), 149 Steeplechase Rd., Lexington, SC 29072. Phone: (803) 359-2918.

75th/55th MATS

For a reunion in 1994, seeking members of the 75th/55th Air Transport/Military Airlift Squadrons, Military Air Transport Service (Travis AFB, Calif.), who served between 1956 and 1958. **Contact:** Dick Ritter, 6659 Williams Rd., Rome, NY 13440.

90th Strategic Recon Wing

Seeking contact with members of the 90th Strategic Reconnaissance Wing and assigned squadrons interested in holding a reunion or starting a newsletter. **Contact:** Paul Schmidt, 653 Jefferson St., N. E., Salem, OR 97303-7101.

438th Troop Carrier Group

Members of the 438th Troop Carrier Group are seeking members of all troop carrier groups that participated in the invasion of Normandy in World War II to celebrate a fiftieth-anniversary reunion June 6, 1994, in France. **Contact:** Walker M. Mahurin, 4000 MacArthur Blvd., Suite 3000, Newport Beach, CA 92660.

547th Air Force Band

Seeking members of the 547th Air Force Band assigned to Luke AFB, Ariz., between 1951 and 1953 for a reunion in spring 1994. **Contact:** Robert T. Vaught, 1739 E. Luke Ave., Phoenix, AZ 85016-2904. Phone: (602) 279-2553. ■

Bulletin Board

Wing historian seeks memorabilia from members of the **388th Fighter-Bomber/Tactical Fighter/Fighter Wing** for a permanent display at the Hill AFB Aerospace Museum. **Contact:** 388th Fighter Wing History Office, 5887 D Ave., Room 113C, Hill AFB, UT 84056-5017.

Biographer seeks contact with anyone who flew or worked with **Col. David C. Schilling** in England during World War II; at Selfridge AFB, Mich., in 1946-48; at the Pentagon in 1949-50; or at Turner AFB, Ga., in 1951-54. **Contact:** John C. McClure, 2674 Leslie Dr. N. E., Atlanta, GA 30345-1562.

Author seeks anecdotes from retirees for a book on outrageous retirement lifestyles. **Contact:** Stephen B. Fish, 6000 Nasci Dr. N. E., Albuquerque, NM 87111.

Seeking contact with **Mike Venaccio**, navigator on an LOR E-13 crew, for a 1994 crew reunion. **Contact:** Lt. Col. Peter Webber, USAF (Ret.), 6717 Kingswood Dr., Fort Worth, TX 76113-5317.

Researcher seeks information on **American vehicles (military or civilian) lost in southeast Asia** in the Vietnam War. **Contact:** David W. Schill, 132 Harding Ave., Moorestown, NJ 08057.

Seeking contact with members of the **61st Service Squadron** who went to the Philippines from Owi Island. Interested in information about the 61st's activities in the Philippines. **Contact:** Carl J. Furmanski, 2030 S. Main St., Apt. 224, Bountiful, UT 84010.

Biographer seeks information about the writer **James Dickey**, who served with the 418th Night Fighter Squadron in the South Pacific in World War II and the Korean War. **Contact:** Henry Hart, English Dept., P. O. Box 8795, College of William and Mary, Williamsburg, VA 23187-8795.

Seeking the whereabouts of **William D. Orr**, World War II B-29 pilot and recipient of the Distinguished Service Cross. **Contact:** John L. Frisbee, P. O. Box 1137, Lynchburg, VA 24505.

Seeking the whereabouts of **Sgt. Howard Williams**, who was stationed with 9th Air Force at RAF Wethersfield or Andrews Field, England, during 1942-44, before being transferred to Rivenhall, Essex. **Contact:** Barrie Trevain, 1 Leslie Newnham Ct., Maldon, Essex CM9 6XG, UK.

Seeking Vietnam-era patches from the **774th Troop Carrier Squadron**. **Contact:** David C. Williams, 2237 Brookhollow Dr., Abilene, TX 79605.

Seeking the whereabouts of **Capt. Eric "Winkle" Brown**, **A. Scott Crossfield**, **Sidney Gillibrand**, **Saburo Sakai**, and **Peter Twiss**. **Contact:** John A. Moore, 13914 Tree Crossing, San Antonio, TX 78247.

Seeking contact with members of the **2002d Air Engineers Platoon**, as well as ground crew and B-17 aircrew members of 8th Air Force stationed near **Grimsby, England**, during 1942-44. **Contact:** George Binson, 620 Post Oak Ln., Seneca, SC 29678-9327.

Military aviation history buff seeks contact with **pilots** who flew F-4s in Vietnam or F-4s, F-15s, F-16s, F/A-18s, or F-117As during **Operations Desert Shield and Desert Storm**. Also interested in stories from Desert Storm POWs. **Contact:** Monica L. Koepfel, 75 Strauss Dr., Suite 104, Winnipeg, Manitoba R3J 3R6, Canada.

Seeking information on **Lt. John H. Wheeler** of the 366th Fighter Squadron, who was killed July 14, 1944, in Orne, France. **Contact:** Rudolph Atmus, P. O. Box 202, McDonough, GA 30253.

Collector seeks patches and photos of aircraft from the **435th Fighter-Day Squadron** and a coffee cup with the logo of the 435th or George AFB, Calif. **Contact:** Joe Davidson, 7 Betty Anne Dr., Rensselaer, NY 12144.

Seeking copies of **Republic Aviation News** from the 1940s, especially the March 10, 1945, and June 16, 1945, issues. **Contact:** Josephine Rachiele, 1404 Herzel Blvd., W. Babylon, NY 11704. ■

If you need information on an individual, unit, or aircraft, or if you want to collect, donate, or trade USAF-related items, write to "Bulletin Board," **Air Force Magazine**, 1501 Lee Highway, Arlington, VA 22209-1198. Letters should be brief and typewritten; we reserve the right to condense them as necessary. We cannot acknowledge receipt of letters. Unsigned letters, items or services for sale or otherwise intended to bring in money, and photographs will not be used or returned.—THE EDITORS

RUSSIAN AVIATION - On VHS Video

Report from ZHUKOVSKY. Highlights from both Moscow Aerospace Shows of the 1990's presenting the current state of Russian Aviation. The ultimate Russian Aviation flying video. 75+ minutes.



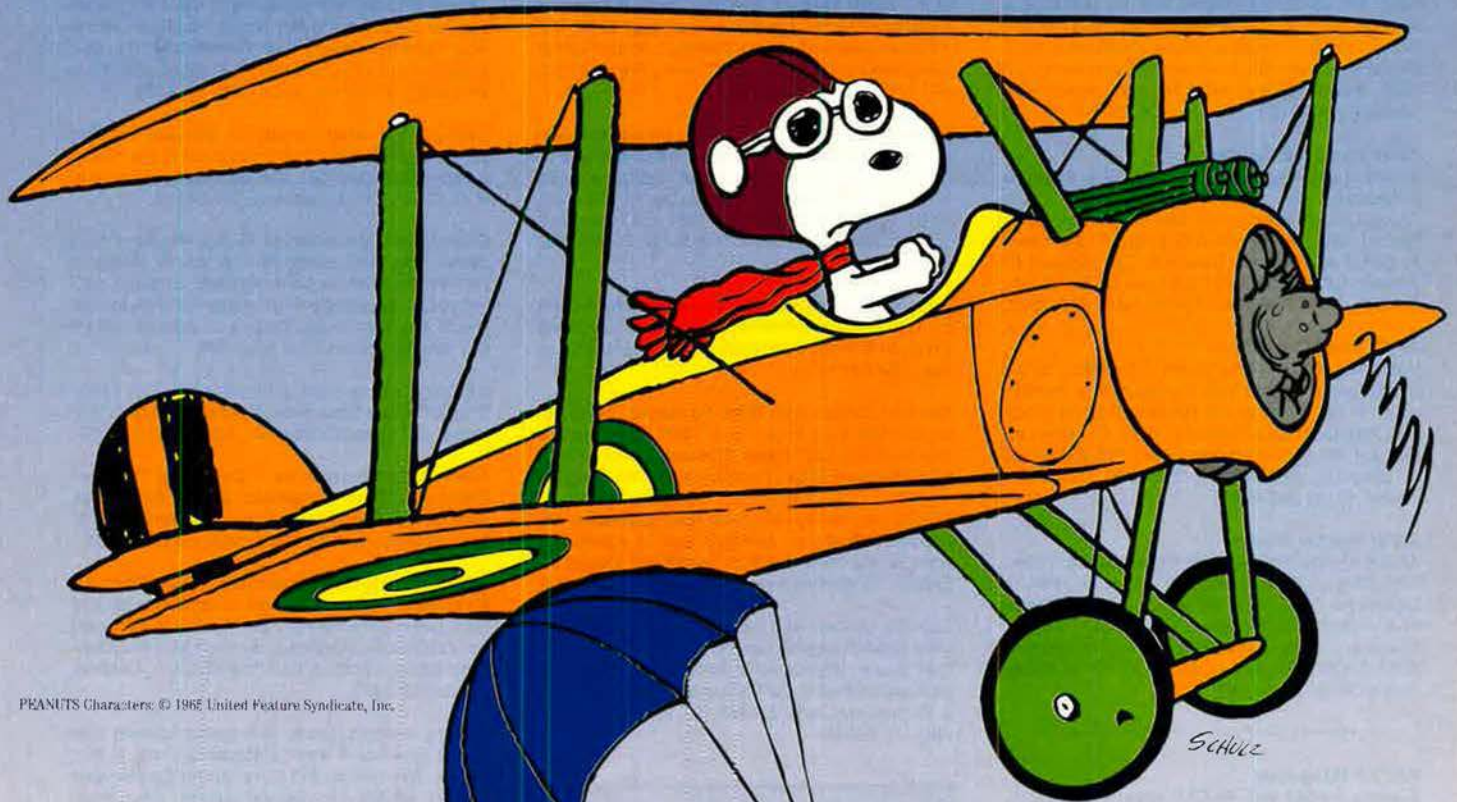
TU-95MS BEAR-H at ZHUKOVSKY

One video for \$39 or both for \$59 ppd. USA delivery. Overseas add \$4 per video for airmail and specify NTSC, PAL, or SECAM format. U.S. funds only.

JET-AGE PRODUCTIONS, P.O. Box 2509, Silverthorne, Colorado 80498 USA

Also Available:
The Soviet Airforce Museum at MONINO. The complete video tour of the most comprehensive aircraft collection outside the Western World. Over 100 fighters, bombers, commercial and research aircraft depict the history of Soviet Aviation. 62 minutes.

You Wouldn't Fly Without Your Parachute, Would You?



PEANUTS Characters © 1985 United Feature Syndicate, Inc.

That's why AFA offers, through its underwriter Metropolitan Life Insurance Company, the AFA Group Term Life Insurance plan—an affordable term life insurance plan.

AFA's Group Term Life Insurance plan provides full coverage for all members under age 65... all the time... at the same cost! Rates are based on your age, regardless of flying status, so that all insured members of the same age are provided the same amount of coverage for the same premium amount. Coverage is also available for your dependents.

And you have your choice of coverage—benefits range from up to \$200,000 under the Standard Plan, up to \$300,000 under the High Option Plan, or up to \$400,000 for the High Option Plus Plan.

Plus, there's no war clause, so there's no limitation or restriction on benefits payable in the event that death is caused by war or an act of war.

The plan also offers these valuable benefits:

Expedited claim payments

Depending on your coverage amount, up to \$5,000 can be issued on the same day that proof of death is received at AFA.

Guaranteed conversion provision

When coverage terminates because you've reached age 85, or because you've terminated your AFA membership, you can convert to any permanent insurance plan being offered by MetLife at that time.

Disability premium waiver

You're eligible for the disability premium waiver benefit if, prior to age 60, you become totally disabled for at least nine months while your coverage is in effect. This means that, upon

approval, you won't have to pay premiums for as long as you continue to be totally disabled and are otherwise eligible for benefits...up to termination of coverage at age 80!

Convenient payment options

AFA recommends that you pay for your coverage by monthly government allotment to prevent any lapse in your coverage—but premium payments may be made directly to AFA in quarterly, semi-annual or annual installments, or through your AFA Visa or MasterCard.

Professional administration

AFA's staff of professional, knowledgeable, and experienced personnel provide you with quality service.

Enroll Today!

SCHEDULE OF BENEFITS

Attained Age	High Option Plus	High Option	Standard Plan	Spouse	Each Child
20-24	\$400,000	\$300,000	\$200,000	\$50,000	\$5,000
25-29	350,000	262,500	175,000	50,000	5,000
30-34	250,000	187,500	125,000	40,000	5,000
35-39	180,000	135,000	90,000	30,000	5,000
40-44	100,000	75,000	50,000	20,000	5,000
45-49	60,000	45,000	30,000	10,000	5,000
50-54	40,000	30,000	20,000	7,500	5,000
55-59	28,000	21,000	14,000	5,000	5,000
60-64	18,000	13,500	9,000	3,000	5,000
65-69	8,000	6,000	4,000	2,000	5,000
70-74	5,000	3,750	2,500	1,000	5,000
75-79	4,000	3,000	2,000	1,000	5,000
80-84	3,000	2,250	1,500	1,000	5,000

Effective Date of Coverage. All certificates are dated and take effect on the last day of the month in which the application for coverage is approved. AFA insurance coverage runs currently with AFA membership, and is written in conformity with the insurance regulations of the State of Minnesota.

Termination of Coverage. Other than by you reaching age 85, your coverage can only be terminated if a) you are no longer an Air Force Association member in good standing, b) you do not pay your premium, or c) the AFA master policy is discontinued.

Exceptions & Limitations. During the first 12 months of coverage, benefits will not be payable for suicide or death as a result of intentionally self-inflicted injuries (while sane or insane).

Application for AFA Group Term Life Insurance

To be completed by Member:

Your Name (Last) (First) (Middle)

Address (Number and street) (City) (State) (Zip)

Daytime phone Social Security No. Date of Birth Age Height Weight
 () (Mo./day/year)

Primary Beneficiary (name and relationship)

Secondary Beneficiary (name and relationship)

In the past twelve months have you used any tobacco products? Yes No

This insurance coverage may only be issued to AFA members. Please check the appropriate box below:

I enclose \$25 for annual AFA membership dues (includes \$18 for subscription to Air Force Magazine). I am currently an AFA member.

Please issue coverage as follows: Member only Member and dependents

(Please select your preferred payment frequency and indicate the correct premium amount.)

PLAN OF INSURANCE	Standard		High Option		High Option Plus	
	Member Only	Member and Dependents	Member Only	Member and Dependents	Member Only	Member and Dependents
Monthly government allotment (only for military personnel). I enclose 2 months' premium to cover the necessary period for my allotment (payable to Air Force Association) to be established.	<input type="checkbox"/> \$10.00	<input type="checkbox"/> \$12.50	<input type="checkbox"/> \$15.00	<input type="checkbox"/> \$17.50	<input type="checkbox"/> \$20.00	<input type="checkbox"/> \$22.50
Quarterly. I enclose the amount checked.	<input type="checkbox"/> \$30.00	<input type="checkbox"/> \$37.50	<input type="checkbox"/> \$45.00	<input type="checkbox"/> \$52.50	<input type="checkbox"/> \$60.00	<input type="checkbox"/> \$67.50
Semi-Annually. I enclose the amount checked.	<input type="checkbox"/> \$60.00	<input type="checkbox"/> \$75.00	<input type="checkbox"/> \$90.00	<input type="checkbox"/> \$105.00	<input type="checkbox"/> \$120.00	<input type="checkbox"/> \$135.00
Annually. I enclose the amount checked.	<input type="checkbox"/> \$120.00	<input type="checkbox"/> \$150.00	<input type="checkbox"/> \$180.00	<input type="checkbox"/> \$210.00	<input type="checkbox"/> \$240.00	<input type="checkbox"/> \$270.00

I am currently insured under the Standard High Option Plan. My certificate number is _____.

Please increase my coverage to the High Option High Option Plus Plan.

Monthly: Government allotment (please submit 2 months' premium with your application; instructions for requesting an allotment will be sent with your certificate of coverage). AFA/Visa or MasterCard _____ Exp. date _____

Quarterly: _____ **Semi-annually:** _____ **Annually:** _____

Names of dependents to be insured	Relationship	Date of Birth	Height	Weight

The following questions should be answered for you and any dependents for whom you are requesting coverage:

- 1) Have you been hospitalized during the preceding 90 days? Yes No
- 2) In the past three years, have you received treatment or been told you had: Yes No
 - a) cancer, leukemia, Hodgkin's disease, or other associated malignancies? Yes No
 - b) heart disease, stroke, or other cardiovascular disease? Yes No
- 3) Within the past two years, have you had persistent cough, pneumonia, chest discomfort, muscle weakness, unexplained weight loss of ten pounds or more, swollen glands, patches in mouth, visual disturbance, recurring diarrhea, fever, or infection? Yes No
- 4) Has any application made by you for life or health insurance been declined, postponed or issued other than as applied for? Yes No
- 5) Are you receiving, entitled to receive, or would be entitled to receive upon timely application, any benefits due to sickness or injury (other than medical expense benefits) under any private policy or plan or governmental program, whether insured or non-insured? Yes No

If you answered "Yes" to any of the above questions, please give the names of the persons to whom your answer applies and provide details, dates, diagnosis, treatment and name and address of the health care provider(s) and hospital(s). Use additional paper if necessary.

Information in this application, a copy of which shall be attached to and made a part of my certificate when issued, is given to obtain the plan requested and is true and complete to the best of my knowledge and belief. I agree that no insurance will be effective until a certificate has been issued and the initial premium paid. I understand that the coverage will not become effective until approved by MetLife.

I understand that if on the Effective Date I am not eligible for such insurance by reason of (i) age or (ii) membership status, insurance will not become effective on my life.

"Hospitalized" means inpatient confinement for: hospital care, hospice care or care in an intermediate or long-term care facility. It also includes outpatient hospital care for chemotherapy, radiation therapy, or dialysis treatment.

Authorization to Furnish Medical Information

For underwriting and claim purposes, I hereby authorize any physician or other medical practitioner, hospital, clinic or other medically related facility, insurance company or other organization to furnish MetLife, on my behalf, with information in his or its possession, including the findings, relating to medical, psychiatric or psychological care or examination, or surgical treatment given to the undersigned. This authorization shall be valid for two years. A photocopy of this authorization shall be considered as effective and valid as the original.

Member Signature _____ Date _____

Send application with remittance to: Insurance Division, AFA, 1501 Lee Highway, Arlington, VA 22209-1198 4570-G1-MetLife **2/94**

Please Retain This Medical Information For Your Records MetLife's Consumer Privacy Notice-Information Practices

The Underwriting Process: MetLife (hereinafter "we") will evaluate the information given by you on this enrollment form and tell you if we cannot give you the coverage you asked for. We will also tell you in general terms the reason for our decision. Upon written request, more specific reasons will be given to you.

Information Collection: This enrollment form is our main source of information. To properly evaluate your request for coverage, we obtain additional medical data from third parties about any person to be insured. For instance, we may ask physicians, hospitals, or medical care providers to confirm or add to the medical data you have given us.

Information Disclosure: In most cases, the information we have about you will be sent to third parties only if you authorize us to do so. In some cases where disclosure is required by law or necessary to conduct our business, we may send the information to third parties without your consent.

Access and Correction Information: Upon written request, we will make information we have about you available to you. You have certain access and correction rights with respect to the information about you in our files.

Further Information About Our Practices: Upon written request, we will send you more information about our underwriting process and your access and correction rights. Also, upon your written request we will give you more information about the circumstances under which we will disclose the information about you to third parties without your authorization. Please write MetLife at the following address about these matters:

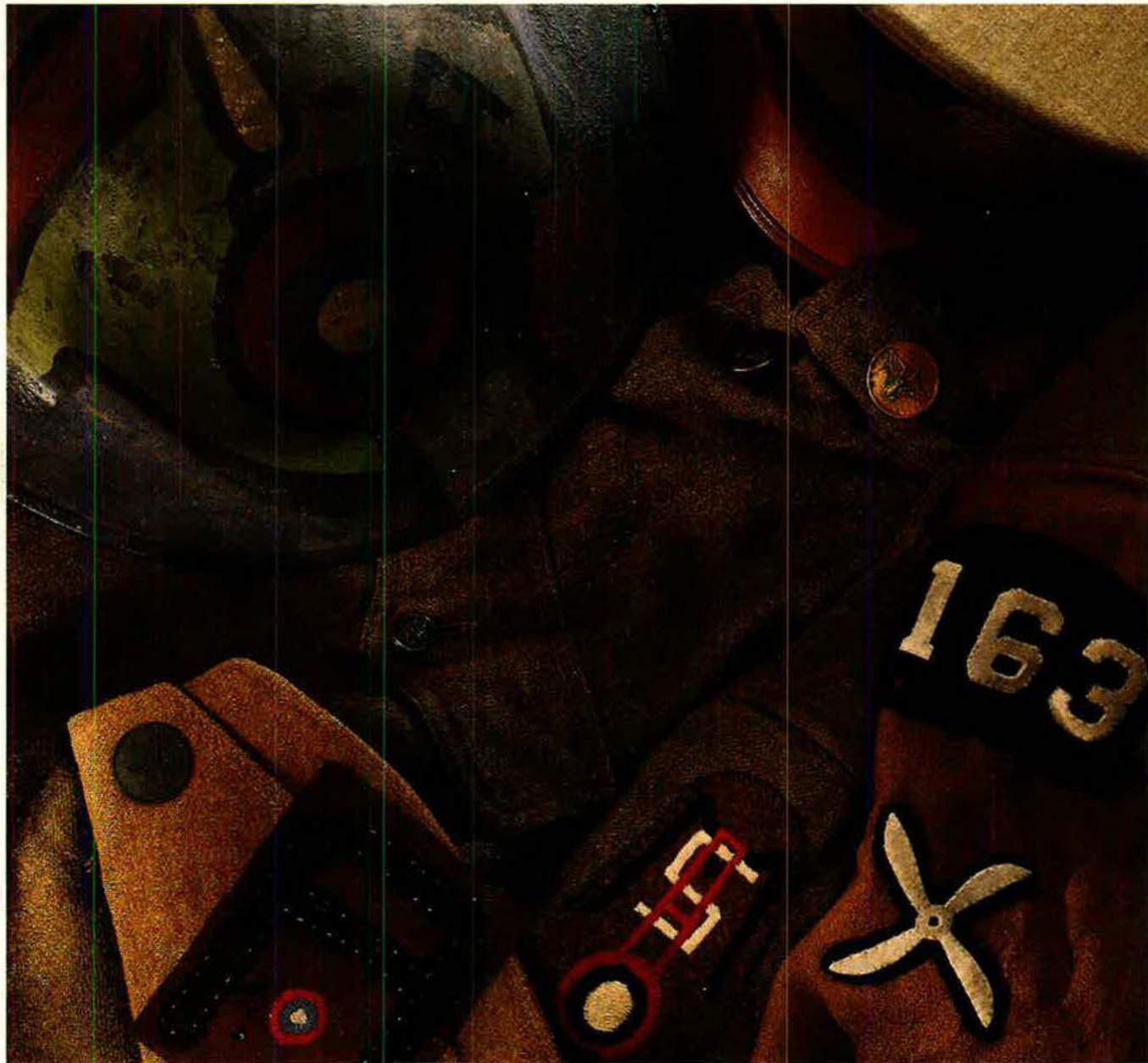
Metropolitan Life Insurance Company, One Madison Avenue, New York, NY 10010-3650



Pieces of History

Photography by Paul Kennedy

A Fledgling Service



When America entered World War I, the nascent Aviation Section of the Signal Corps was struggling to establish an identity. Air services of other countries had been flying in combat for three years. In January 1918, Col. Billy Mitchell, commander of the American front-line aerial units in France, adopted as a national

insignia a roundel patterned after the markings of other Allied aircraft. The red, white, and blue design appeared on aircraft and all over the uniform as airmen proudly proclaimed their affiliation.

Memorabilia courtesy Lt. Col. Charles Hillman, USAF (Ret.)

THE BEST WAY TO OVERSEE PEACE BUILDING.

Regional conflicts have made Europe less stable, and management of security now ranges from Peace Keeping to Peace Building.

NATO collectively aims to improve its ground surveillance capabilities for effective control and successful resolution of crises. Nothing can meet this need better than Joint STARS, which provides non-intrusive, deep-looking, wide-area surveillance of moving and

stationary ground and maritime traffic as well as helicopters. By complementing the air-surveillance capabilities of NATO AWACS, Joint STARS will be indispensable to the future integrated and multinational Defense Structure. For more information, contact Grumman International, Inc., Brussels, Belgium, Tel: (02) 732 59 90 Telefax: (02) 732 64 47.

GRUMMAN





FRIDAY, DECEMBER 3.
THE F-15E SET AN INDOOR SPEED RECORD.

Friday, December 3, we rolled out the Air Force's two hundred and first F-15E. This aircraft was completed in only twenty-seven months. That's more than seven months ahead of schedule. So now, besides being one-of-a-kind, combat-proven and already in the hangar, the F-15E holds a new speed record. Indoors.

MCDONNELL DOUGLAS
Performance Above and Beyond.