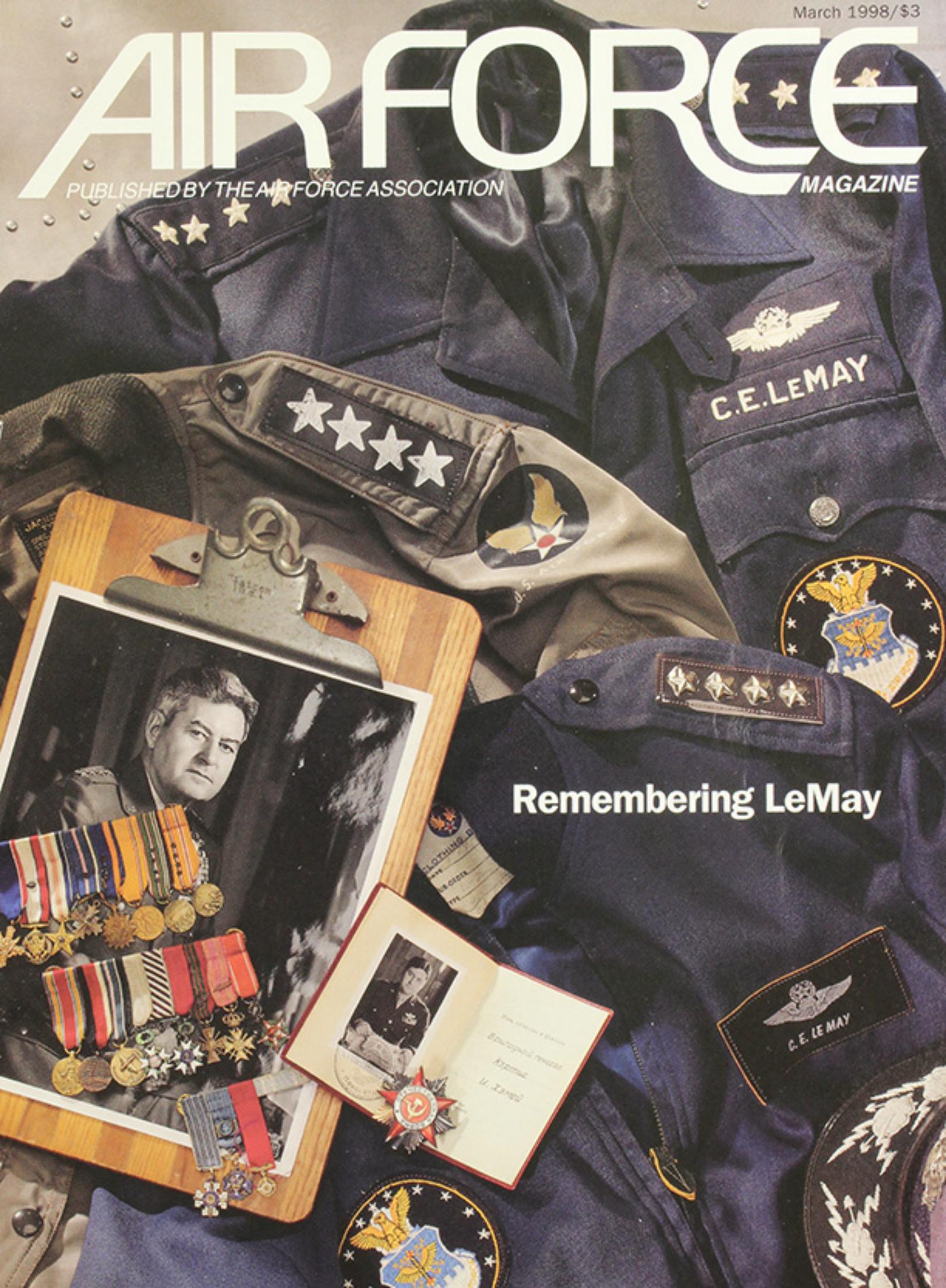


AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE

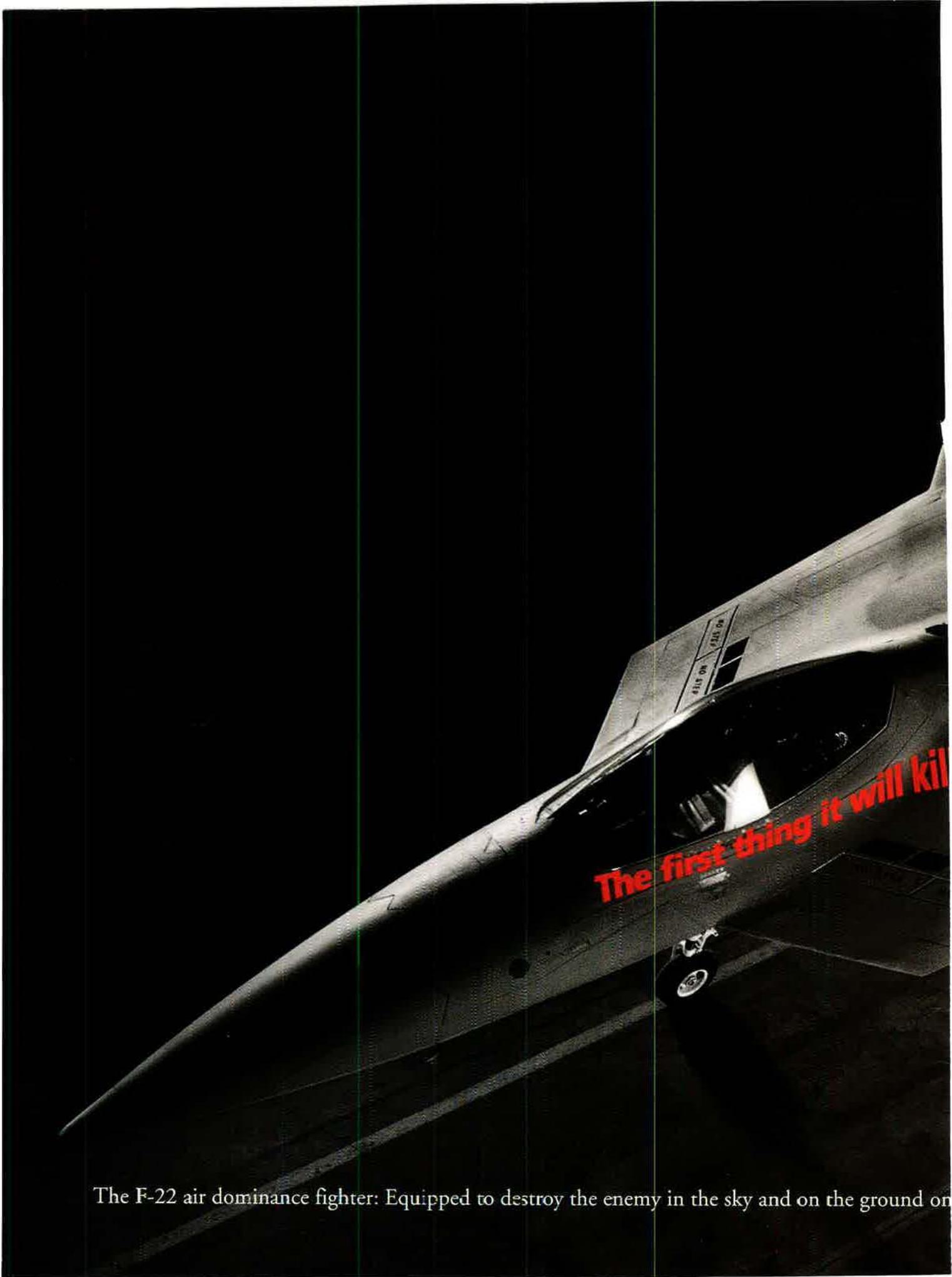


C.E. LEMAY

Remembering LeMay

C.E. LEMAY

Mrs. Corinne E. LeMay
 21400th Street
 Phoenix, Arizona
 U.S.A.



The first thing it will kill

The F-22 air dominance fighter: Equipped to destroy the enemy in the sky and on the ground on



is an enemy's appetite for war.



the first day of a war. Equally adept at destroying an enemy's desire to fight, long before there is a war.

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE

March 1998, Vol. 81, No. 3

- 6 Letters
- 10 Aerospace World
- 16 Senior Staff Changes
- 18 Index to Advertisers
- 43 Verbatim
- 76 This Is AFA
- 77 Valor
- 78 AFA/AEF National Report
- 85 Unit Reunions
- 85 Bulletin Board
- 88 Pieces of History

- 4 **Editorial: Air Mobility Is an Operational Mission**
By John T. Correll
Not many military actions in the modern era rank in strategic importance with the Berlin Airlift.
- 20 **The NDP and the Transformation Strategy**
By John A. Tirpak
The National Defense Panel would dump the two-conflict strategy and move ahead from there.
- 28 **The Devastating Impact of Sensor Fuzed Weapons**
By Robert Wall
Each aircraft can attack enemy armor with hundreds of projectiles.
- 34 **The Super Hornet**
By John A. Tirpak
The Navy has decided that stealth is not that important and has pegged its future to the F/A-18E/F.
- 40 **Making the Case for FEHBP**
By Peter Grier
The campaign to open the Federal Employees Health Benefits Program to military retirees is gathering strength.

- 46 **The Poor Man's Nukes**
Two types of weapons of mass destruction—chemical and biological agents—have moved to the center of attention.
- 52 **Mustangs**
By Wendy Alexis Peddrick
These Air Force general officers began their careers as enlisted members.



About the cover: Gen. Curtis E. LeMay was called the greatest air commander of all time. See "LeMay," p. 60. Cover photo by Paul Kennedy. Memorabilia courtesy of the National Air and Space Museum, Washington.



52



28

- 60 **LeMay**
By Walter J. Boyne
Doolittle and Eaker said he was the greatest air commander of all time.
- 68 **Department of Defense Senior Leadership**
Compiled by Juliette Kelsey
Who's who in the Clinton Administration's Pentagon.
- 72 **How US Defense Spending Compares**
The defense burden is lighter for Europeans and Canadians.

AIR FORCE Magazine (ISSN 0730-6784) March 1998 (Vol. 81, No. 3) 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:** \$30 per year; \$75 for three-year membership. **Life Membership (nonrefundable):** \$450 single payment, \$475 extended payments. **Subscription Rate:** \$30 per year; \$25 per year additional for postage to foreign addresses (except Canada and Mexico, which are \$9 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 1998 by Air Force Association. All rights reserved. Pan-American Copyright Convention.

Flying worldwide. Now.



On the F-14, F-15, F-16, F-117, F/A-18, B-2, AH-64, MIG-21, Tornado, Gripen, IDF, Space Shuttle and many more. Air forces around the globe depend on over 15,000 TEAC airborne video tape recorders (AVTRs) to perform their critical role in thousands of missions daily. Qualified to some of the most rigorous MIL-specs ever devised, TEAC AVTRs are flown on over 75% of the world's fighter aircraft.

Each unit is backed by TEAC's guarantee of production, configuration control, spares and logistics support for the life of your program. Each with the highest demonstrated MTBFs and lowest life cycle costs of any AVTR available in the industry.

However, unlike our competitors, we're not re-packaging commercial camcorders or home VCRs. Our AVTRs employ TEAC proprietary Hi-8mm video technology developed specifically to withstand harsh military environments. Because we understand the mission-critical role our recorders must play in combat and training, we build them to the highest standards of reliability and performance.

For flight-proven AVTRs with a global reputation, call us today. And you can have a fully qualified TEAC AVTR tomorrow.

TEAC Airborne Products Division
7733 Telegraph Road, Montebello, CA 90640
(213) 726-0303 Ext. 366 • Fax (213) 727-7621
E-mail: airborne@teac.com
Web site: www.teac-recorders.com



IF IT'S WORTH A MISSION, IT'S WORTH A

TEAC®

By John T. Correll, Editor in Chief

Air Mobility Is an Operational Mission

ONE of the odder notions from the National Defense Panel last year was to merge US Transportation Command with the Defense Logistics Agency to form a new unified command called the US Logistics Command.

It was a bad suggestion and unlikely to be adopted. The people who framed it no doubt meant well, though. When they looked at Transportation Command, they saw it essentially as a link in the supply, distribution, and transportation chain. They wanted to make that linkage more efficient.

Their point was not altogether without merit, but their perspective was wrong. The value of logistics (which includes maintenance, supply, and acquisition of materiel) is too obvious to require explanation. The logistics mission deserves its own priority and identity. However, the same is true of the Transportation Command mission.

Although some TRANSCOM activities may closely resemble trucking, shipping, and distribution functions in the commercial sector, others—especially air mobility—go well beyond that and have a critical military element in their composition.

Air mobility consists of airlift and aerial refueling. In the Gulf War of 1991 and the limited Desert Strike operation in September 1996 it was refueling by tankers along the way that made it possible for bombers to fly nonstop from bases in the United States and deliver their ordnance in Southwest Asia. Without aerial refueling, the national strategy of rapid global response to crisis would not be possible.

Airlift is in constant demand to support forces and operations of all kinds, but it can also be an operational mission in itself. The classic example is the Berlin Airlift, of which this year begins the 50th anniversary.

In June 1948, the Soviet Union shut off road, rail, and barge access to Berlin in an attempt to force out the western powers and absorb Berlin into the Soviet sector. The only routes remaining open were the air

corridors that had been established formally by previous four-power agreement.

For more than a year, the airlift kept West Berlin alive. Every 90 seconds, another airplane touched down, bringing food and coal. In all, they made 277,000 flights into the beleaguered city, delivering 2.3 million tons of cargo. In 1949, the Russians tacitly conceded that their power play was a failure and lifted the blockade.

Not many military actions in the modern era rank in strategic importance with the Berlin Airlift.

The Berlin Airlift was a great humanitarian mission, but it was more than that. It successfully defended West Berlin against takeover by a hostile military power and defeated the Soviet Union in the first big confrontation of the Cold War. There are not many military operations in the modern era that rank with it in strategic importance.

The Yom Kippur War was another instance when air mobility had strategic consequences. In October 1973, with Israel fighting desperately for survival, the United States sent Military Airlift Command to the rescue. Nine hours after receipt of orders to go, C-141s and C-5s were in the air with supplies and ammunition. They maintained Operation Nickel Grass for the next 32 days, through the end of the crisis. Later, *Reader's Digest* would call it "The Airlift That Saved Israel." Premier Golda Meir said that, "For generations to come, all will be told of the miracle of the immense planes from the United States bringing in the material that meant life for our people."

It was a dramatic example of the projection of US power and the use of the armed forces to influence global events.

Air mobility is a military occupation. Sometimes it is a combat occupation. In January 1968, US Marines at Khe Sanh were encircled and cut off by the North Vietnamese Army. The Marine outpost sat in a valley and was bombarded by intense mortar, rocket, and artillery attacks from the surrounding hills. Until the siege was broken 11 weeks later, Khe Sanh was reinforced and resupplied under fire by tactical airlifters, who took their share of battle damage in the course of 1,128 sorties into Khe Sanh.

The primary wartime role of air mobility is to get the other forces to the fight and to sustain them until sealift begins to arrive, several weeks later. Most defense analysts acknowledge that air mobility, principally airlift, is the main constraint on the nation's capability to respond to military emergencies in faraway places.

Despite a general inclination toward reductions in force structure and personnel, last year's Quadrennial Defense Review projected an increase in the requirement for strategic mobility and said that smaller US forces would be adequate only if they could be transported swiftly and over long distances.

Air mobility means global reach. On a nonstop, 8,000-mile mission last September, for example, Air Mobility Command C-17s picked up 600 airborne troops in North Carolina, met tankers operating out of Spain for refueling en route, and delivered the jumpers, bang on schedule, after 20 hours in the air to their drop zone in Kazakhstan.

In most operations, air mobility will be a leading force in support of the mission, but sometimes—as in the case of the Berlin Airlift—air mobility will *be* the mission.

It is a significant instrument of national power. We must take care that the focus on it is not lost through organizational realignments and mergers. ■

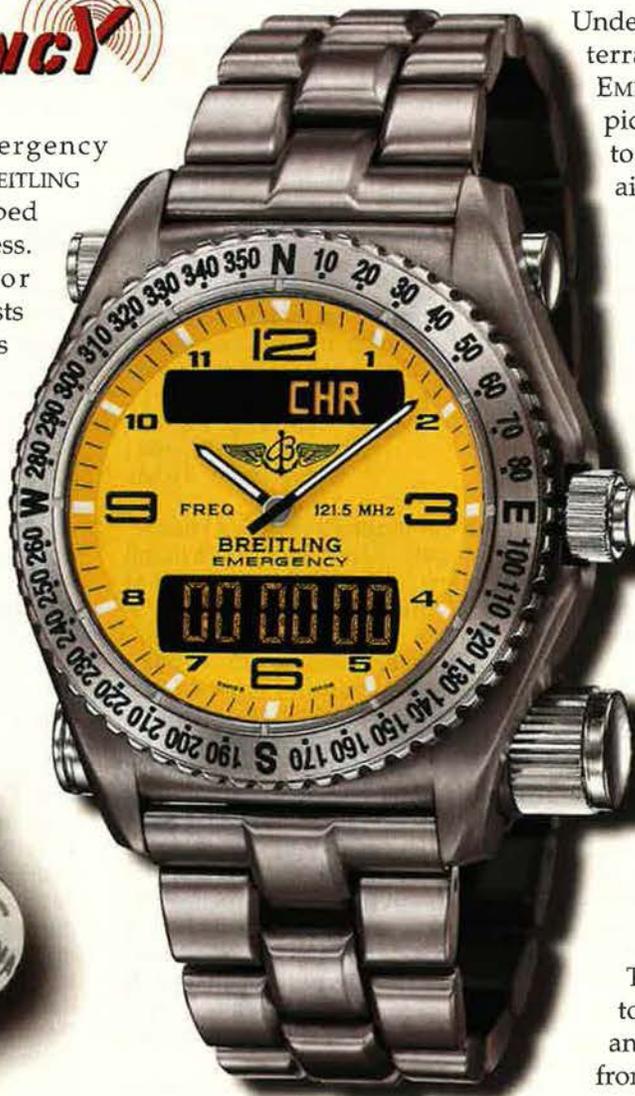


BREITLING

1884

EMERGENCY

Incorporating an emergency microtransmitter, the BREITLING EMERGENCY was developed to assist pilots in distress. The EMERGENCY version for civil-aviation use broadcasts on the 121.5 MHz distress frequency and serves as a back-up for ELT-type airborne beacons. For military users, BREITLING has equipped the EMERGENCY with a miniaturized transmitter with On/Off switch, operating on the 243 MHz military frequency.



Under normal conditions — flat terrain or calm seas — the EMERGENCY's signal will be picked up at a range of up to 90 nautical miles by search aircraft flying at 20,000 feet.



The EMERGENCY is designed to foil any handling mistakes and to protect the transmitter from even violent jarring.



121.5 MHz transmitter power reserve at ≥ 30 mW : 48 hrs
243 MHz transmitter power reserve at ≥ 25 mW : 24 hrs
Thermal operating range : -10° to 85° C.
Transmitter water resistance : to 30 m (3 atm)
Transmitter power source : 2 x 3V independent lithium batteries.

Watch : electronic movement with 12/24 hr analog & digital display; chronograph to 1/100th sec.; countdown timer; 2nd timezone; alarm signal; battery end-of-life warning.
Case : one-piece, matt titanium; water-resistant to 30 m (3 atm).
Sapphire crystal, glareproofed front and back.

FOR ALL INFORMATION: BREITLING SA · P.O. BOX 1132 · 2540 GRENCHEN · SWITZERLAND · PHONE +41 32/654 54 54 · FAX +41 32/654 54 00

INSTRUMENTS FOR PROFESSIONALS™

"Invisible" Tankers

In the January editorial, "The Measure of Airpower" [p. 3], one word was conspicuous by its absence, and that word was "tankers." It was as if someone were to write about naval aviation without the slightest hint that carriers exist.

For all the breathless razzle-dazzle that's come out of the Gulf War about F-117s, smart bombs, cruise missiles, AWACS, Joint STARS, etc., ad infinitum, it is never mentioned anywhere that on any given day of Desert Storm's 44 days, 18 percent of the airplanes in the air were tankers—almost one-fifth of the force [and] a lot of well-trained, dedicated people.

In the same issue, the article "The B-2s Are Ready" [p. 24] never mentions tankers. General missions are described, but there's not a hint of how much tanker support will be absolutely necessary to send those "global power" B-2s to a distant "here—there—anywhere."

The extension of range, the expansion of endurance, and the maximizing of payloads at takeoff by means of in-flight refueling is consistently taken for granted; it simply happens. Without global reach the stuff of global power becomes problematical. And that reach depends absolutely on some 3,000 "invisible" men and women in some 500 "invisible" airplanes.

Richard K. Smith
Wilmington, N.C.

Administrative Nightmare

Peter Grier's article "The Pentagon Prescribes Tricare" [January, p. 41] is insightful, if not what many of us who spent over 20 years in service want to read. The paragraph concerning remaining Tricare issues caught my attention. Improving administrative and claims processes also [must] address how Tricare HMOs bill military patients.

I am enrolled in Tricare Prime and am only responsible for paying a co-payment. I continually get statements of late charges from the local Tricare [provider] indicating that I owe them the difference between what they charge and what [the Tricare regional

contractor], Foundation Health Federal Services, Inc., pays. I have even received calls late at night on weekends from a collection agency, threatening me with action if I do not pay up.

When I call Tricare benefits, they say to ignore the statements and calls, that it will work itself out. This only invites an increase in my blood pressure and the possibility of another heart attack since it is my credit rating that I am concerned about. It would seem that a simple software change in billing procedures would eliminate [this problem]. It sure would improve my disposition and health.

Maj. Thomas L. Turner,
USAF (Ret.)
San Angelo, Texas

"The Pentagon Prescribes Tricare" is strangely silent about providing physicians. I can't speak for other parts of the country, but [here] in physicians' offices, [which have] experienced interfacing with 30–40 other managed care entities, Tricare is rated at the bottom! I [participate in Tricare as a providing physician], but the other four gastroenterologists in this office have opted out, as has almost every other physician that we know.

All office personnel levels complain that the hassle factor, administrative complexities, difficulties obtaining approval, [and] reimbursement levels—make it not worth participating in Tricare. This area's two largest primary care groups, [with] 15–20 respected physicians each, no longer participate.

No physicians I know have ever

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

been surveyed by DoD about their feelings, suggestions, happiness, nor their reasons for opting out or not being in Tricare. Quality physicians are not generic equivalents.

Col. David E. Langdon, MD,
USAF (Ret.)
Arlington, Texas

"Airborne Diplomacy"

Your article "The Electronic Triad" [January, p. 54], highlighting the Air Force Information Superiority/Air Expeditionary Force built around E-3s, E-8s, and RC-135s, was informative. However, your lead-in implication that this concept is new, and that in the past our national response to a contingency has been fighters and bombers, is way off the mark. Airborne early warning, battle management, and reconnaissance aircraft have long been the first-response package of choice when trouble flared in world [hot] spots.

Examples of just E-3 AWACS over the past two decades illustrate the point. In 1979 E-3s were deployed to Saudi Arabia during the border conflict between North and South Yemen and, later in 1979, to South Korea to monitor a tense situation following President Park Chung Hee's assassination. In 1980, E-3s [went] to Saudi Arabia to enhance Allied air defenses during the Iran–Iraq war, a deployment that continued until 1989. Later in 1980, E-3s deployed to Europe during the Warsaw Pact invasion of Poland. Following President Anwar Sadat's assassination, E-3s were [sent] to Egypt. Other recent participation by AWACS aircraft includes the Grenada rescue, KAL 007 shoot-down salvage surveillance, Just Cause, Desert Shield/Storm, Proven Force, Provide Comfort, Southern Watch, and Uphold Democracy. And airborne command-and-control support in various theaters worldwide continues today.

The IS/AEF concept is not new but is a battle-proven force multiplier that can react quickly, is politically non-threatening, and has proved for over 20 years to be an essential element to demonstrate national resolve.

Information gathering appears to

have replaced command and control/battle management as the mission vision of the IS/AEF concept. If so, [this is] an exceptional underutilization of assets and capabilities. Lastly, it is unfortunate and premature that [the EC-130E] Airborne Battlefield Command and Control Center has been omitted from the IS/AEF—[this] system's history is interweaved through many of the above-mentioned contingencies and many more; and none of the other three jet platforms can match the communication systems capability of ABCCC.

Lt. Col. Bert Pryor,
USAF (Ret.)
Norman, Okla.

Cyber Warriors

Regarding your article "War in Cyberspace" [p. 32] in the January 1998 issue: Please rest assured that the Air Force is again leading the way with new and innovative ideas. The 609th Information Warfare Squadron was created by Gen. Ronald R. Fogleman in October 1995 to counter the increasing threat to Air Force information systems.

The IWS is made up of a hand-selected cadre of mission planners, intelligence analysts, and computer security experts. It is the only combat-ready, information warfare squadron in DoD. The IWS has been an operational combat information warfare unit since August 1996. Our motto is "Anticipate or Perish." Our record is clear: no known compromise of any information network defended by the 609th IWS.

TSgt. Dan Sedano,
USAF
Shaw AFB, S.C.

Full Partner

Some of the impressions that "Air-lift Gets a Boost" [December 1997, p. 24] evoked prompt me to add some cloth to the tapestry John Tirpak created.

The current US Total Force doctrine calls the Air Reserve Component, as comprised by both the USAF Reserve and Air National Guard, to seamlessly fit with their active duty counterparts in all operations. In many of these operations, the ARC is less the junior partner and more the leading force. For example, and according to the Air Force Reserve Command, although it comprises a mere 13 percent of Air Force manning, Reservists are vested with 54 percent of the aerial port, 59 percent of the wartime combat logistics support, and 100 percent of the aerial spraying and weather reconnaissance missions.

Bean counting airframes, as Tirpak's article does, paints an inaccurate picture of mission division between the active duty and [its reserve components]. One of the major reasons this inaccuracy develops is the taxpayer-friendly Associate system that teams an active duty wing and its personnel with a reserve wing while jointly using the active duty assigned airframes. A more accurate picture is portrayed by manning and mission accomplishment.

According to Air Mobility Command, fully 59 percent of airlift and 54 percent of air refueling capability reside in the ARC. Furthermore, since ARC mobility aircrews maintain the same currency requirements as their active duty compatriots, they not only support this mission burden daily but also are prepared to seamlessly incorporate into full-time service in the event of a national activation. This was demonstrated by the last crisis requiring widespread activation of the ARC—Desert Shield/Storm/Calm.

I come to an inescapable conclusion: The airlift and air refueling ARC is an absolutely essential part of the mobility team without which the Air Force would not be able to meet its mobility mission requirements, not only in a contingency but also on a day-to-day basis. Therefore, any discussion of airframe and mission allocation that fails to fully acknowledge the ARC's full and equal partnership in mobility mission tasking and accomplishment is one that fails to fully understand current US Total Force doctrine.

Donald F. Knight
Tacoma, Wash.

Dereliction or Well-Meaning Intent?

I have never seen the gift of hindsight used so effectively as by Maj. H. R. McMaster in his book, *Dereliction of Duty: Lyndon Johnson, Robert McNamara, the Joint Chiefs of Staff, and the Lies That Led to Vietnam*. I have not read the book, but I believe I [can] take *Air Force Magazine's* profile of the Defense Writers Group meeting with McMaster as a fair representation of the book's contents. [*"Dereliction of Duty," January, p. 70.*]

There does not seem to be much new in McMaster's so-called revelations concerning the Vietnam War or the political milieu of the country or of the machinations of the political leadership or even of the failures of the military leadership. This was all apparent to most casual students of the time and is well documented elsewhere. What McMaster does add, though it hardly seems necessary, is gratuitous name-calling as a substi-

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

Publisher
John A. Shaud

Editorial

Editor in Chief
John T. Correll

Executive Editor
Robert S. Dudney

Senior Editor
John A. Tirpak

Associate Editor
Tamar A. Mehuron

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

Managing Editor
Suzann Chapman

Assistant Managing Editor
Frances McKenney

Director of Production
Robert T. Shaughness

Art Director
Guy Aceto

Assistant Art Director
Teresa K. Jameson

Research Librarian
Pearlie M. Draughn

Editorial Associates
Juliette Kelsey
Chanel Sartor

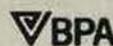
Administrative Assistant and Staff Editor
Wendy Alexis Peddrick

Advertising

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

Industry Relations Manager
Jennifer Krause • 703/247-5800

US and European Sales Manager
William Farrell • 847/295-2305
Lake Forest, IL

 **BPA** Circulation audited by
Business Publication Audit



Air Force Association

1501 Lee Highway • Arlington, VA 22209-1198

Telephone: (703) 247-5800

Toll-free: (800) 727-3337

Fax: (703) 247-5853

To select documents and receive them
by fax: (800) 232-3563

E-mail: information@afa.org

Internet: <http://www.afa.org/>

AFA's Mission

- To promote aerospace power and a strong national defense.
- To support the needs of the Air Force and Air Force people.
- To explain these needs to the American people.

Telephone calls to (703) 247-5800 or (800) 727-3337:

If you know your party's extension, **press 1.**

For a customer-service representative, **press 3.**

Or stay on the line and an operator will direct your call.

Customer Service

For questions about membership, insurance, change of address or other data changes, magazine delivery problems, or member benefit programs, select the "Customer Service" option.

E-Mail Addresses

Communications/news media/*Crossfeed*
com@afa.org

Customer Service custserv@afa.org

Eaker Institute eaker@afa.org

Industry Relations/Advertising irl@afa.org

Information information@afa.org

Magazine Editorial Offices ... afmag@afa.org

Magazine Letters letters@afa.org

National Defense and Congressional Issues
ndi@afa.org

Field Services fldsvcs@afa.org

Aerospace Education Foundation
aefstaff@aef.org

Air Force Memorial Foundation ... afmf@afa.org

For individual staff members:
first initial, last name, @afa.org
(example: jdoe@afa.org)

Letters

tute for analysis. When I want to know how exactly someone managed "circumvention of the Constitution," or was "deceitful," all I get are platitudes or some weak example of an arguably ambiguous event.

I think McMaster falls victim to the trap of sensationalizing in order to draw attention. I just find it difficult to believe that our main force of political and military leaders at the time—for all of their mistakes—could have been such consistently craven caricatures as depicted by McMaster.

I think a much fairer, and more interesting, book will be one that chronicles US mistakes in Southeast Asia in terms of failed but well-meaning notions concerning the desirability of supporting right-wing dictatorships to prevent the ascendancy of left-wing regimes. And the major lesson—a classic underestimation of the political will and resourcefulness of an altruistic and dedicated enemy fighting on his own ground. In sum, we seem to hate the middle ground, but that is where good politicians operate most effectively.

R. D. Truitt
Summit, N.J.

No Change From Technology?

I have been critical of what I thought were sometimes excessive Air Force claims about airpower's potential, but when I read comments like those of Lt. Gen. Paul K. Van Riper, USMC (Ret.), that "technology has never resulted in a fundamental change in how nations go to war," I have to wonder about the motives of people who don't remember the longbow's impact on armored knights or machine guns in World War I. [*To Halt an Enemy*, January, p. 60.]

Perhaps the senior military leadership of all the services can stop throwing buzzwords and catchy phrases around and engage in some serious dialogue about how—together—the sea, air, and ground forces can effectively meet America's security needs. We aren't selling hamburgers but determining how secure our future will be. The stakes are high enough to demand more than sound bites.

Col. Michael R. Gallagher,
USAF (Ret.)
Sacramento, Calif.

Why They Leave

With reference to "A Talk With the Personnel Chief" [December, p. 31], I have given a lot of thought over the last few years as to why the Air Force is having a retention problem with pilots. I spent 20 years in the Air

Force as a fighter pilot and have no regrets. I have spent the last 10 years working for a major airline and now am beginning to see the problem.

Flying in the Air Force is both rewarding and challenging. Not only are you able to fly state-of-the-art equipment, but the camaraderie with your fellow pilots is wonderful. However, under the Air Force's philosophy, each pilot is competing for the Chief of Staff's job, and if he/she just wants to be a good professional aviator, then he/she must not be properly motivated and is certainly not the type of pilot to retain for 20 or 30 years.

Bottom line, you are in management whether you want to be or not. I've known many excellent pilots in the Air Force who lamented the fact that if they worked hard at being outstanding pilots and warriors, their reward would be to get promoted out of the cockpit and into a desk job.

Now let's put this into contrast with an airline job. First, you can fly your entire career (never work in training or management) and retire with dignity and without being considered a deadbeat who had no career aspirations. Second, when you are not on a trip, then you are off. Third, you are in a seniority system which, although it does not allow you to advance past your peers, does not allow people to "politic" past you. And last, in just a very few years, you will be making a salary commensurate with your skills.

When I entered [the Air Force] during the Vietnam War, my squadron commanders, operations officers, and flight commanders were the most experienced in the squadron. They could lead you to war and bring you home! This is very different from the force I retired from, where those leadership positions were viewed as necessary "squares" for fast burners as they progressed up the ladder.

In summary, the issue of full-time pilots in the Air Force has been banded around for years. Whether or not this is a viable solution to the problem, I don't know. However, I do know that good pilots are leaving every day, and they are not all just the ones who have done their minimum commitment. Many excellent leaders of the future are bailing out at 20 years. Why? Well, I can tell you from personal experience that flying an F-16 is a lot more fun than an A-320. But being able to just be a professional pilot, get paid for it, and not have to "check my six" every day to ensure that some of my contempo-

aries/fellow warriors haven't tried to stab me in the back for their future gain hasn't been all bad!

Lt. Col. John Cary,
USAF (Ret.)
Glendale, Ariz.

What's In a Name

I agree with TSgt. John R. Radloff's comment [*"Letters," January, p. 10*] on the name Raptor for the F-22. The first time I read the name in *Air Force Magazine*, I thought, "That's a dumb name for a fighter." I grew up in the age of Mustang, Thunderbolt, Warhawk, Lightning, and Airacobra. When I wore the blue uniform the venerable Mustang was around but was being replaced by Shooting Star, Sabre, and Thunderjet. Now we have the Raptor? I guess it goes with the three-button suit called a Class A uniform.

Louis D. Betterman
Seneca, Pa.

I find Radloff's objecting to the name Raptor for the F-22 interesting but without merit. He objects to Raptor because it is a name for a class of birds vs. a specific bird. Is the F-15 Eagle named for the Bald Eagle, Golden Eagle, or Sea Eagle? What breed of horse was the P-51 Mustang named for? What is a Voodoo, a Super Sabre, a Starfighter, or a Globemaster? As for letting the manufacturer name the aircraft, that is akin to letting the doctor name your child because he delivered it. The Air Force wrote the requirements and the taxpayer paid for it, and therein lies the poetic license.

The naming process can be delicate. If you wait too long, you get the pilots calling the F-16 the "Viper," 18 years after it's officially named the Fighting Falcon. Or, you get Aardvark for the F-111 because you neglect to name it at all, until the last boneyard flight.

Lt. Col. Drew N. Metcalf,
USAF (Ret.)
Springfield, Va.

Only Two Drone-Capable

In your January 1997 issue, the Raytheon advertisement [*p. 2*] states that the Super MQM target drone is launched "from beneath the belly of a C-130." I only assume they meant the wing pylon of a DC-130. Only two drone-capable DC-130s were ever manufactured. [They were] unique in that they had two flight control consoles for up to four drones. Two windows were placed in the left and right rear sides to monitor the drones. Another visible characteristic was the extra nose radome that hung straight down.

A common joke was to tell people that the drones were recoverable in flight. You just put up a cargo net [across] the rear door and fly them in, refuel them, and kick them back out.

MSgt. Mark Lilley,
USAF (Ret.)
Aurora, Colo.

The Loader Is ...

Just for the record: The picture on the bottom of p. 26 in the December issue [*"Airlift Gets a Boost," p. 24*] is a 25K loader manufactured by Southwest Mobile Systems (now Systems and Electronics, Inc.), not a 40K loader.

John DeLuca
Systems and Electronics, Inc.
St. Louis

More Trainers

I was surprised to find that the USAF T-1 Jayhawk was not listed in the "World Gallery of Trainers" [*December, p. 72*]. The Jayhawk, as you know, is one of our newest trainers and is widely used in multiservice undergraduate flight training to prepare our future aviators for heavy aircraft operations.

Lt. Col. Scott Wuesthoff,
USAF
SHAPE, Belgium

■ *The T-1 is included in the "Gallery of USAF Weapons," published in the Almanac issue each May.—THE EDITORS*

It is amazing how many different types of aircraft are used as trainers. To list all these types of aircraft and the many countries that use them certainly took a lot of research on your part. However, you missed one aircraft that is being used in our own backyard. Under your T-41 and Cessna 150 section, you failed to mention that the Cessna 150 currently is, and has been for quite some time, being used as a trainer and competition aircraft by the 94th Flying Training Squadron at the US Air Force Academy.

Randy S. Finelli
Mount Bethel, Pa.

ASTOVL Sea Change

I must admit I was initially shocked to read that USAF is considering buying the ASTOVL version of the Joint Strike Fighter. [*"ASTOVL for Joint Strike Fighter," Aerospace World, December 1997, p. 16.*] As a long-time fan of the Harrier, which USAF has consistently avoided buying for the past 30 years, I had reluctantly come to accept the fact that the Air Force would never own a STOVL aircraft.

I hope this decision reflects a change of philosophy and is not merely the result of fiscal constraints. The flexibility of a STOVL aircraft would allow USAF to deploy away from large, fixed airfields as well as on some naval platforms, as the Marines now do with their Harriers. With fewer supercarriers now available, the possibility of such Joint operations has increased. Britain's Royal Air Force probably never thought they would operate their Harrier GR.3s off carriers in wartime, but that's exactly what happened in 1982 in the Falkland Islands. I'm glad to see the Air Force is finally starting to think outside the box on this one.

Anthony E. Wessel
Grand Forks, N.D.

Test Pilot Courage

The "Flashback" photo [*January, p. 31*] is spectacular but only hints at the courage of the test pilot who is at the controls. I believe it is Albert Blackburn. He certainly deserves at least a mention.

Matthew S. Rae Jr.
Los Angeles

■ *Reader Rae is correct. North American Aviation test pilot Blackburn flew the second series, the F-100 zero length launches.—THE EDITORS*

SAMs and Linebacker II

I participated in six of the 11 Linebacker II B-52 missions [flying] an F-4C Weasel. Retired Col. John Schroeder's comment [*"Letters," January, p. 9*] that the "North Vietnamese rarely fired SA-2s when MiGs were up," while correct for earlier periods of the war, is not correct for Linebacker II. A few MiGs did fly during some of those missions while SAMs were being fired. I suspect they were deconflicted geographically but don't really know how the North Vietnamese managed it.

For example, during one early LB II mission, I led [a] Weasel flight [when] a MiG-21 passed a few thousand feet above us as he headed toward the B-52s. Not long afterward, the first B-52s entered the target area and the SAMs opened up, firing over 70 missiles during the first few minutes of the BUFF's 30+ minutes Time Over Target window. The MiG was still airborne at the time. He probably remained outside the SAM coverage over "downtown," but he may have been the MiG that was inbound to Phuc Yen airfield when it was bombed by the B-52s.

Lt. Col. William C. McLeod II,
USAF (Ret.)
Las Vegas

Aerospace World

By Peter Grier

Balkan F-16s Hit Skids

The Department of Defense on Jan. 6 conceded that USAF F-16 fighters policing the skies over Bosnia have not been as mission ready as the Air Force would like.

However, according to Pentagon officials, this and other Air Force readiness problems are not systemic but isolated in nature.

"I can't tell you that there are not readiness problems in the military because clearly, from time to time, we do have needs for spare parts or we run into temporary shortages of people, but we try to address those as quickly as possible," said Pentagon spokesman Kenneth H. Bacon.

According to numerous reports from the Balkan region, at least two Air Force fighter units—the 510th and 555th fighter squadrons—have had to cannibalize F-16 aircraft to maintain a mission readiness rate that is at least adequate.

The F-16 squadrons have been able to maintain an aircraft availability rate of less than 80 percent, according to Bacon; however, one news report quoting squadron members said only 76 percent. The Air Force goal for the F-16 force, fleetwide, is to maintain an 84 percent readiness rate, Bacon added.

F-16s form the backbone of US air operations supporting the Bosnian peacekeeping mission. They are based at Aviano AB, Italy.

USAF Readiness Dips

The readiness problem on display in the Balkan operation has begun to ripple through the Air Force as a whole.

For example, readiness figures for the F-16s, overall, were three percent lower in Fiscal 1997 than in the previous year, but all Air Force systems suffered from a one to three percent drop in readiness, according to officials.

Overall readiness is a prime concern of the Pentagon, said DoD spokesman Bacon. Each month, he noted, a Joint Senior Readiness Oversight Council reviews force availabil-



DoD photo by SSGT. Edward W. Niro

Troops take a break during Operation Big Drop, part of Joint exercise Purple Dragon, Jan. 28. Along with other Air Force assets participating in Purple Dragon, more than 60 AMC, AETC, AFRC, and ANG airlifters transported troops and heavy equipment to drop zones at Ft. Bragg, N.C.

ity issues, and operations and maintenance spending per US troop now runs to around \$66,000 annually, an all-time high.

Even so, USAF said its units suffered a major shortage of spare parts last year, and that has contributed to spot readiness problems. Budget cuts, plus a miscalculation of maintenance requirements, drove some aircraft into a readiness hole.

Report Due on B-2 Bomber

A new study on US long-range airpower capabilities and the adequacy of the B-2 bomber fleet is due this month.

In the Fiscal 1998 defense appropriations bill, Congress created an independent panel to "evaluate the adequacy of current planning for United States long-range airpower and the requirement for continued low-rate production of B-2 stealth bombers." Congress' marching orders were for the panel to complete its work by March 1 and submit a report with its conclusions.

Chairing the panel was Gen. Larry D. Welch, USAF (Ret.), a former Chief

of Staff. Other members were Gen. Merrill A. McPeak, USAF (Ret.); Gen. Robert L. Rutherford, USAF (Ret.); former Sen. James Exon (D-Neb.); former Air Force Secretary Donald B. Rice; John Foster, TRW; Frederick L. Frostic, Booz-Allen & Hamilton; Samuel Adcock, Daimler-Benz; and Walter Morrow, Massachusetts Institute of Technology.

The panel was to consider, among other issues, no-warning and little-warning scenarios; the makeup of the bomber fleet and expected attrition over 15 years; potential effect of more B-2s on deterrence; potential effect of additional B-2 bombers in the halt phase of war; potential for biological or chemical lockout of tactical US aircraft and the effect of B-2s on thwarting that tactic; and tradeoffs between more B-2s and other assets.

At present, B-2 production is capped at 21 aircraft. Some in Congress are seeking to resume production.

Ryan Follows Father's Footsteps

Gen. Michael E. Ryan, Air Force

Chief of Staff, recently completed a rapid-fire orientation in strategic power projection with heavy bombers, following in the footsteps of his father, Gen. John D. Ryan, a renowned bomber commander. The elder Ryan was Air Force Chief of Staff from 1969–73.

During the recent three-day orientation, Ryan flew in a B-52H from Barksdale AFB, La., and a B-2 from Whiteman AFB, Mo. The B-52 and B-2 bombers are assigned to the 2d Bomb Wing and the 509th Bomb Wing, respectively. Both units had been commanded in decades past by the elder Ryan.

In addition, the Air Force Chief of Staff took a flight in a B-1B Lancer based at Dyess AFB, Texas.

He noted that he was impressed by the unique capabilities of each aircraft. Turning to the B-1B specifically, Ryan said, "The Lancer has amazing speed and maneuverability, like a huge fighter."

UAV Tested in SEAD Role

The Unmanned Aerial Vehicles Battlelab at the 53d Wing, Eglin AFB, Fla., tested its first major initiative over two days in late January near Cannon AFB, N.M., USAF announced Jan. 27.

The test featured the use of specially equipped UAVs in the Suppression of Enemy Air Defenses role. The test on Jan. 20–21 was to determine whether a UAV could locate enemy air defenses and hand off that data to attacking fighters.

Col. Joe Grasso, UAV Battlelab commander, summed up, "We suc-



Contract employees escort a Hunter Unmanned Aerial Vehicle to the runway at the Fort Sumner, N.M., airport, near Cannon AFB, for a test by USAF's UAV Battlelab to determine if a UAV can detect and transmit locations of enemy air defenses to fighter jets. The test was successful, according to Col. Joe Grasso, UAV Battlelab commander.

cessfully accomplished our goal of demonstrating a UAV's potential to detect enemy air defenses and transmit information about those defenses back to friendly aircraft."

Battlelab technicians used a Hunter UAV, which flew a two-hour mission each day. It carried a direction-finding package to identify and locate potential threats and an improved data modem to transmit gathered data from the UAV to the fighters.

"The payload on the Hunter UAV performed very well during the demonstration," said Maj. Jim Shane,

SEAD initiative program manager. "The direction-finding package identified the given threats, and the improved data modem worked exceptionally well."

The demonstration was conducted near the Melrose Bombing Range in the Pecos Military Operating Area in New Mexico.

Ryan Issues Status Report

USAF Chief of Staff Ryan released a NOTAM, or notice to airmen, on Jan. 14, addressing major challenges in personnel retention, including operations tempo, care for the families of deployed people, and quality of life.

"Several initiatives to decrease optempo are in place," noted Ryan. Among them:

- A five percent reduction in Air Force and Joint training exercises for Fiscal 1999 and 2000.

- A 15 percent cut in people supporting Chairman of the Joint Chiefs of Staff-directed exercises, effective Jan. 1.

- Ending Quality Air Force Assessments, effective Jan. 1.

- A 10 percent reduction in the length of inspections and the number of inspectors used for Operational Readiness Inspections in Fiscal 1998, with another 20 percent reduction planned for 1999.

Regarding families, the Air Force is pursuing an ombudsman program, stated Ryan. Wing commanders will instruct ombudsmen to serve as advisers on deployment-related family issues and to help affected families get access to base services.

USAF photo by SrA. Dean Nash



Army Gen. Henry Shelton, JCS Chairman, who visited troops supporting Balkan operations in January, talks with SrA. Paula Eastman, a security forces specialist with USAF's 16th Air Expeditionary Operations Group in Istres, France.



TSgt. Jay Taylor (left), 406th Expeditionary Air Base Group at Taszar AB, Hungary, shows a fireman with the Hungarian air force how to tighten the mask on a self-contained breathing apparatus during an orientation in January.

Quality-of-life initiatives include this year's 2.8 percent pay raise. Fiscal 1998 funding will also pay for the construction, replacement, or improvement of more than 3,800 military family housing units, 21 dormitories, and three child development centers, among other infrastructure items.

Raytheon Deal Completed

Raytheon announced Dec. 18 that it had completed its \$9.5 billion acquisition of General Motors' Hughes Electronics defense business. Additionally, the Massachusetts-based Raytheon said it would combine the former Hughes defense operations with Raytheon Electronic Systems, Raytheon TI Systems, and Raytheon E-Systems into a single unit, Raytheon Systems Co. The new company will rank as the third-largest DoD supplier and be headquartered in Washington.

"We believe it's key to be located next to our customer to help with that interface and stay on top of the business," said William H. Swanson, who will head the new defense arm.

Raytheon Systems will be a powerhouse in defense electronics and missiles, producing Patriot and Sidewinder munitions, as well as the Advanced Medium Range Air-to-Air-Missile. Despite weak defense budgets, the electronics business is expected to grow 10 percent a year, according to company officials.

Consolidation Costs 8,700 Jobs

Raytheon officials on Jan. 23 outlined the consolidation of facilities that

the addition of Hughes—plus the earlier acquisition of Texas Instruments' defense business—made inevitable.

In the process, some 3,700 jobs will be eliminated.

As part of the consolidation, Raytheon Systems will make major changes at 26 plants, closing 20 and partially closing six, over the next two years. Facility space will be reduced from 42 million square feet to 34 million square feet—a cut of about 20 percent.

Hardest hit by the contraction will be California, which is to suffer the loss of approximately 5,200 positions. The former Raytheon E-Systems facility in Los Carneros and two San Diego plants will be among those closed.

"While we have superb people in California, the fact is that many of our operations here are less efficient than those elsewhere," said Ken Dahlberg, Raytheon Systems president and chief operating officer. He added that larger, more modern and efficient operations already exist in other states.

TRW to Watch Over ICBMs

In a fundamental shift in ICBM support philosophy, the Air Force turned over life-cycle management of its land-based nuclear deterrent force to a private contractor—TRW.

The Air Force on Dec. 22 awarded TRW the first of a series of ICBM maintenance and upgrade contracts in a program that could be worth more than \$3.4 billion over a 15-year period.

Previously, the Air Force did all of this work itself, with help from TRW

and other subcontractors. However, Air Force officials said that privatization of the effort could save up to 30 percent of today's cost.

TRW will now oversee support for the nation's 530-missile Minuteman III and 50-missile Peacekeeper inventories. Its tasks will include conversion of multiple-warhead weapons to single-warhead models, replacement of outdated guidance electronics, and installation of new Minuteman propulsion systems.

The initial contract is valued at \$84.9 million.

JDAM Buy to Proceed

The Air Force this year will proceed with the purchase of Joint Direct Attack Munition kits for Mk. 84 2,000-pound bombs, while putting off procurement of JDAM equipment for BLU-109 2,000-pound munitions.

USAF officials had wanted to buy both JDAM variants this year, but instability problems discovered during wind tunnel testing killed that plan. The problems affected only the BLU-109 and Mk. 83 1,000-pound bombs, however.

Air Combat Command officials believe that obtaining 2,000-pound JDAMs as soon as possible is crucial, so the Air Force now is accelerating its Mk. 84 buy.

To eliminate the instability that appears at high angles of attack, engineers have redesigned the JDAM strakes that give the bombs additional lift. In addition, a new fin-lock mechanism should guard against movement-induced fin fatigue.

C-17 To Get New Landing System

C-17 airlifters are set to begin receiving precision approach landing capability this year. Installation of the much-needed systems should be completed by this summer on all Globemasters at Charleston AFB, S.C., according to contractor officials.

Air Mobility Command chief Gen. Walter Kross asked for the new system—known as the Air Mobility Command Precision Approach Capability—after bad weather kept some C-17s from using certain airfields during early phases of the Bosnia mission.

AMCPAC modifications include installation of six microwave landing system antennas and two nose direction antennas, among other things. Prime contractor Boeing will also make software changes in nine line-replaceable units.

Other C-17 changes that Boeing and the Air Force are working on

include improvements in the aft compartment heating system. Crew members have complained of excessive cold at cruising altitudes.

Extension Incentive Increases

The incentive bonus for certain enlisted personnel who extend overseas tours by 12 months has increased by more than \$1,000, according to the terms of the Fiscal 1998 defense authorization bill.

The old award for extension was an \$80 per month payment. The new one is a \$2,000 lump sum, received upon entering the extension period.

Enlisted members who qualify include any stationed at a short-tour location and those serving in critical or imbalanced Air Force Specialty Codes at long-term locations. Among those in demand are personnel in Airborne Communications Systems, Combat Control, and Safety.

"Members who entered their [Date Eligible for Return from Overseas] forecast window Oct. 1 [1997] are eligible for the \$2,000 lump sum incentive," said Lt. Col. Stan Perrin, chief of the Assignment Procedures Division at Randolph AFB, Texas. "Unfortunately, since this incentive begins with [Fiscal 1998], any members who forecast or entered their 12-month extension before this time



Maj. Lyn Martin (second from right) with USAF's 28th Air Transportable Hospital based at Ellsworth AFB, S.D., checks out a child during a recent rotation to US Support Group-Haiti, in operation since February 1996.

aren't eligible for the \$2,000 lump sum but will continue to be eligible for the \$80 per month incentive."

Air Force Works on AEF Roadmap

An Air Force conference held early this year at Mountain Home AFB,

Idaho, developed a list of action items to help improve rapid-response Air Expeditionary Force capabilities.

During the first few AEF deployments, units involved were notified well in advance of deployments. The focus of the meeting between representatives from various commands,

SENSOR FUZED WEAPON Multi-Purpose Air-to-Ground Smart Munition

The Sensor Fuzed Weapon is designed to defeat multiple targets with a single weapon while minimizing pilot and aircraft exposure.

Each SFW Tactical Munitions Dispenser houses ten BLU-108 submunitions, each with four target sensing "smart" Skeet warheads.

For three decades Textron Systems, with its leading-edge technology and innovative solutions, has earned its reputation as a leader in the development and production of advanced systems, state-of-the-art components and performance-critical materials.

TEXTRON Systems
A Textron Company
www.systems.textron.com

TEXTRON Systems 201 Lowell Street, Wilmington, MA 01887 USA • Tel. 1-978-657-2100 • Fax 1-978-657-6644

Air Force Honors War Hero

The Air Force honored one of its Medal of Honor recipients in an unusual and highly visible way: It named one of its newest aircraft after him. In a Jan. 23 ceremony held in Long Beach, Calif., USAF officially gave the 37th C-17 transport the name *The Spirit of Sgt. John L. Levitow*.

Levitow is one of only five Air Force enlisted Medal of Honor recipients and the only one from the Vietnam War. He was also the lowest ranking airman ever to receive the award.

At times overcome with emotion, he remarked during the ceremony, "It's kind of creepy looking up and seeing your name" on a USAF aircraft. Levitow's C-17 is the first aircraft officially to be named after an enlisted airman.

He received the Medal of Honor for actions Feb. 24, 1969. On that night, Levitow, an A1C, was serving as loadmaster when his aircraft, an AC-47, was severely damaged by 82 mm mortar fire over Long Binh, South Vietnam.

The blast left Levitow with more than 40 shrapnel wounds in his back and legs, but he saw that a magnesium flare lay amid a jumble of spilled ammunition canisters. Despite loss of blood and partial loss of feeling in his right leg, Levitow threw himself on the flare, hugged it close, dragged himself to the open cargo door, and hurled it out. At almost the same instant, the flare ignited. His selfless act saved the crew from certain death.

Medal of Honor recipient John L. Levitow (left) unveils his name on the side of a C-17 dedicated in his honor, as Gen. Walter Kross, USTRANSCOM commander in chief and AMC commander, looks on.



Boeing photo by Ross Mishima

wings who have participated in AEFs, and several Air Force battlelabs, was to help units prepare to react to AEF calls in a minimum amount of time.

Among the conference suggestions:

- Units should identify their minimum essential requirements before deployment notification. They should list the bare-bones communications equipment needed for the first days of a deployment, for instance.

- Equipment support needs standardization. Knowing what materials should be prepositioned in the theater of operations and who is responsible for in-theater repair of items that cannot be fixed on site, such as engines, will help ensure success in future AEFs.

- Up-to-date base support plans with crucial beddown site information are key to AEF preplanning.

- Combat units need to develop a standard munitions package for the initial rapid-response AEF.

C-130 Review Complete

An Air Force advisory panel recommended that the service resume looking for parts of an Air Force Reserve Command C-130 aircraft, call sign King 56, that crashed off the coast of California a year ago, to help

determine what caused the engines of the Hercules cargo airplane to lose power, according to a Jan. 16 USAF statement.

The initial accident investigation report, released April 24, 1997, concluded there was not enough evidence to determine why fuel stopped flowing to the aircraft's engines. Recovery of such parts as the airplane's wing sections, fuselage tanks, and cockpit fuel gauges might shed more light on the mysterious accident.

The recommendation was one of a number issued by the panel, headed by Maj. Gen. Bobby O. Floyd, Air Mobility Command's director of logistics. The panel was chartered by the Air Force Secretary, in response to a request from members of the US Senate, to broadly review C-130 safety as well as to take another look at the Nov. 22, 1996, accident involving an HC-130P from the 939th Rescue Wing, Portland IAP, Ore.

Ten of 11 crew members—all Air Force Reservists from Oregon—perished in the crash. Before the accident, each of the airplane's engines cut out, one by one, presumably from fuel starvation, as it struggled to make the coast some 80 miles away. The Air Force had closed its initial investigation of the King 56 accident last

April without resolving why the fuel stopped flowing.

Broader C-130 Problem?

A similar power loss problem has affected 71 other C-130s in the last decade, noted the panel, although none of those aircraft crashed.

As a result, the panel concluded, the Air Force should take broader action focused on the C-130 fleet. Some of the general recommendations made by the "C-130 Broad Area Review" include:

- The Air Force should standardize cockpit instrumentation across fleets of like aircraft and make sure that maintenance and operation manuals are up to date, easy to read, and all alike.

- USAF officials should review ditching and bail-out procedures for the C-130, analyzing previous ditching events and using lessons learned to update flight manuals.

- C-130 crews should be required to review ditching and bail-out procedures on the first leg of every over-water mission.

- The Air Force should fully fund a program to completely rewrite C-130 technical orders and convert technical manuals from paper to a digital format.

USAF Proposes T-3A Fixes

The Air Force announced Jan. 5 that it has identified 10 modifications it will make to its fleet of T-3A trainer aircraft in order to solve an engine shut-off problem that has kept the airplane grounded since July.

The fixes include increasing the diameter and rerouting some of the fuel lines. They will be made by the Oklahoma City Air Logistics Center at Tinker AFB, Okla., and should be completed by mid-1998.

"We think the fixes will cure the problem," said Gen. Lloyd W. "Fig" Newton, commander of Air Education and Training Command, at a Pentagon press conference. He added that a fuel vapor problem has caused the engine to falter.

Introduced into the Air Force inventory in mid-1994, the single-engine, propeller-driven T-3A Firefly is used to screen pilot candidates. The aircraft are manufactured in the UK by Slingsby Aviation and assembled in the United States. Engines are US-built Textron Lycoming power plants.

Thirty midair engine stoppages, plus a series of shutoffs at critical points during takeoffs and landings, led to the T-3A grounding. Acting Air Force Secretary F. Whitten Peters ordered a full investigation into the incidents early in December.

USAF Responds to Storms

Air Force and USAF-related crews were among the first US military personnel to reach communities from Maine to New Brunswick, Canada, crippled by severe winter weather in early 1998.

The Canadian government requested a C-17 Globemaster to help move equipment and supplies between Montreal and Edmonton.

Air Mobility Command C-17s and C-5s also helped deliver electrical repair personnel and equipment to Maine. The aircraft flew 10 missions, transporting electric line workers, line maintenance trucks, and repair equipment from Pope AFB, N.C., to NAS Brunswick, Maine.

The Air Force auxiliary Civil Air Patrol also helped out in the northeast US. They did everything from manning shelters and flying emergency-service officials on damage-assessment flights to using their own gear to keep regional communications nets intact.

"Our people, including the cadets, worked around the clock in support of [Maine's] relief efforts," said CAP Maj. John Paeper, the New York Wing's director of emergency services. "They were exhausted, mentally and emotionally."

Roadman Talks Readiness

Lt. Gen. Charles H. Roadman II, the Air Force surgeon general, emphasized that for medics, readiness is a peacetime function as well as a wartime issue. The reasons: The Air Force medical community has an obligation during peacetime to ensure airmen are ready to fight at a moment's notice. It also has an obligation to oversee the force's general well-being.

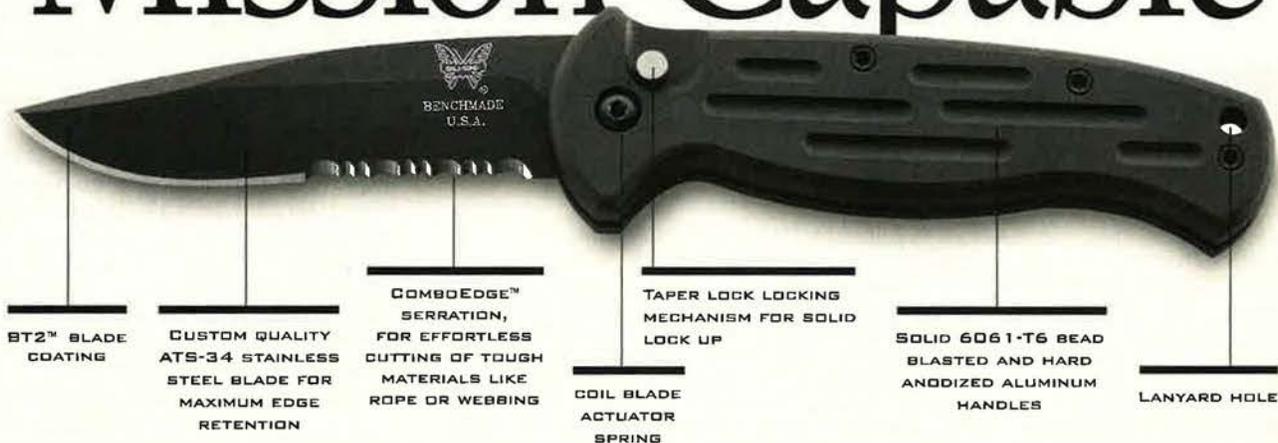
Roadman issued his remarks during a visit to Brooks AFB, Texas, medical units in early January.

"We've used the idea of buddy care in wartime as taking care of your wounded casualty next door," said Roadman. "It is equally important for us to think about buddy care in peacetime—to think about people having the stresses of normal life, to be able to react to them."

Mental, physical, and spiritual wellness are components for balance in people's lives that enable them to withstand the rigors of deployment and very high-stress environments, added Roadman.

Much of the work of striking this balance occurs long before a deployment or other kind of real-world contingency. Immunizations should be kept up to date. Cardiovascular fitness enables Air Force personnel to

Mission Capable



BT2™ BLADE COATING

CUSTOM QUALITY ATS-34 STAINLESS STEEL BLADE FOR MAXIMUM EDGE RETENTION

COMBOEDGE™ SERRATION, FOR EFFORTLESS CUTTING OF TOUGH MATERIALS LIKE ROPE OR WEBBING

COIL BLADE ACTUATOR SPRING

TAPER LOCK LOCKING MECHANISM FOR SOLID LOCK UP

SOLID 6061-T6 BEAD BLASTED AND HARD ANODIZED ALUMINUM HANDLES

LANYARD HOLE

Model 9000SBT™

The Benchmade 9000SBT, NSN-1095-01-446-4348, is an approved issue item for the US Coast Guard for their rescue swimmers, and for the US Air Force for use in survival vests and kits. With its BT2 coated blade, specifically designed for use in corrosive environments, the 9000SBT is the ideal knife for use by air crew, search and rescue, or

maritime personnel who need a reliable, low maintenance, automatic knife. This knife is available through the Defense Logistics Agency or direct from Benchmade.

For more information fax or mail a catalog request on letterhead, to:

BENCHMADE

BENCHMADE KNIFE COMPANY INC.
300 BEAVERCREEK ROAD
DEPT. AF
OREGON CITY, OREGON 97045 U.S.A.
VOICE: (503) - 655 - 6004
FAX: (503) - 655 - 6223
URL: <http://www.benchmade.com>
E-MAIL: info@benchmade.com

MADE IN
USA
FOR THE WORLD



Forty years ago on Jan. 31, 1958, the US celebrated its first satellite launch into space when a US Army-modified booster, known as Jupiter C, successfully carried Explorer I into orbit from Cape Canaveral AS, Fla. Shown here is the actual launch site at the Cape.

sustain heavy workloads in a stressful environment. Mental balance helps lonely and tired workers realize why they are there.

GAO Slams Super Hornet

A draft study from the Congressional General Accounting Office warned that the Boeing F/A-18 E/F Super Hornet had several potentially serious problems and that the Pentagon should stop buying the airplanes until the glitches are fixed.

Among the GAO's points: The Su-

per Hornet has shown a tendency to "wing drop" to one side in certain combat maneuvers. [See "The Super Hornet," p. 34.]

The Navy view was that a complete redesign of the wing to eliminate the dip might be prohibitively expensive and unneeded. Instead, the Navy proposed a number of inexpensive changes, including placing small strips of sandpaper or other material on the wing to alter airflow.

GAO investigators, however, be-

lieved that the Navy's proposed changes would not eliminate the problem under all aerodynamic conditions.

The 1998 defense budget includes more than \$2.4 billion earmarked for purchase of 20 Super Hornets, but the Navy held up releasing the money pending the outcome of its own probe. GAO officials recommended that this money not be released this month, as had been planned.

USAF Seeks Bomber Training Area

Air Combat Command has started looking for ways to expand training areas for B-1 crews at Dyess AFB, Texas, and B-52 combat crews at Barksdale AFB, La.

Under the Realistic Bomber Training Initiative, Air Force officials are preparing an environmental impact statement on the use of airspace over western Texas or northern New Mexico.

Current electronic scoring sites near Harrison, Ark., and La Junta, Colo., would be closed under RBTI. Bomber flights in existing training areas would be increased, and the Air Force would buy 12 15-acre parcels of land for new electronic scoring sites.

According to ACC, the initiative's goal is to provide more realistic training now and in the future.

B-52s Integrate With Joint STARS

Crews aboard two B-52 heavy bombers from Minot AFB, N.D., scored a historic first recently when they employed Handheld Terminal Units to communicate with Joint STARS aircraft during an exercise over Ft. Stewart, Ga.

HTU technology allowed the bombers to receive real-time targeting data from the radar aircraft. The exercise will contribute to the continued development of tactics and procedures for airborne alert interdiction and Joint STARS attack support operations, said Maj. Ron Funk, 93d Operations Support Squadron exercise and readiness flight commander.

"The ability to interact directly and plan missions with the bomber crews provides a valuable training opportunity for the B-52 and E-8 aircrews," said Funk. "It allows us to put a face to the voice in the other cockpit and gives us a chance to discuss before and after the mission what worked, what didn't, and what we can change in order to do it better and more effectively."

Senior Staff Changes

RETIREMENTS: Maj. Gen. Jerrold P. Allen. Lt. Gen. John C. Griffith.

NOMINATIONS: To be Lieutenant General: Thomas R. Case.

To be Brigadier General: Russell J. Anarde, Anthony W. Bell Jr., Robert Damon Bishop Jr., Marion E. Callender Jr., Kevin P. Chilton, Trudy H. Clark, Richard L. Comer, Craig R. Cooning, John D.W. Corley, David A. Deptula, Gary R. Dylewski, Edward R. Ellis, Norman R. Flemens, Leonard D. Fox, Terry L. Gabreski, Jonathan S. Gratton, Michael A. Hamel, William F. Hodgkins, John L. Hudson, David L. Johnson, Walter I. Jones, Daniel P. Leaf, Paul J. Lebras, Richard B.H. Lewis, Stephen P. Luebbert, Dale W. Meyerrose, David L. Moody, Quentin L. Peterson, Donald P. Pettit, Douglas J. Richardson, Ben T. Robinson, John W. Rosa Jr., James G. Roudebush, Ronald F. Sams, Stanley A. Sieg, James B. Smith, Joseph E. Sovey, Lawrence H. Stevenson, Robert P. Summers, Peter U. Sutton, Donald J. Wetekam, William M. Wilson Jr., Gary A. Winterberger.

CHANGES: Lt. Gen. (sel.) Thomas R. Case, from Dir., Ops., JSCENTCOM, MacDill AFB, Fla., to Dep. CINC and C/S, USCENTCOM, MacDill AFB, Fla. ... Brig. Gen. (sel.) Douglas J. Richardson, from Cmdr., 48th FW, RAF Lakenheath, UK, to Cmdr., 53d Wg., Eglin AFB, Fla. ... Brig. Gen. (sel.) Peter U. Sutton, from Cmdr., 11th Wg., Belling AFB, Washington, to Cmdr., Air Force Recruiting Service, Randolph AFB, Texas.

SENIOR EXECUTIVE SERVICE CHANGE: Arthur J. Myers, to (SES) Dir. of Services, USAF, Arlington, Va. ■

Pilot Crossflow Continues

The Air Force selected 25 more officers to crossflow from current jobs as pilots in non-fighter weapon systems to fighter aircraft, AETC announced Jan. 22.

Those officers selected are assigned to these fighters: four for A-10 attack aircraft; 10 for F-15C air dominance fighters; two for F-15E dual role fighters; and nine for F-16 multirole fighters.

Overall, the Air Force is offering 150 fighter cockpits through 1999 and will decide who gets them by using six fighter crossflow selection boards. The third board met at the Air Force Personnel Center, Randolph AFB, Texas, in December.

The move is intended to help deal with an expected shortage of fighter pilots as officers in non-fighter weapon systems begin to compete for the fighter vacancies, personnel officials said.

The pilots selected by the December board begin training in April and continue into early Fiscal 1999.

Airman Receives Silver Star

Twenty-six years after his heroic act, Air Force Reserve Col. Paul Curs was awarded the Silver Star. The recent Pentagon ceremony recognized Curs for saving an Army Spe-

cial Forces unit in the Vietnam War on Oct. 11, 1971.

On that day, then-1st Lt. Curs was flying an O-2A above the Ia Drang Valley, serving as a forward air controller, when an Army reconnaissance team under attack called for help. Despite rough terrain and marginal weather conditions, he located the team and coordinated a US helicopter extraction of the Army Green Berets.

With no fighter support available, he fired target marking rockets at enveloping North Vietnamese troops, holding them off until help could arrive. Even after expending his rockets, he continued to make low passes over the NVA to keep them away from the American soldiers.

The unit suffered not a single casualty or loss.

Curs now is a Boeing 737 captain with Continental and, in his Reserve capacity, the mobilization assistant to the assistant secretary of the Air Force for manpower, reserve affairs, installations, and environment.

Following his action in 1971, Curs received the Distinguished Flying Cross. It was upgraded to the Silver Star after the incident came to light in a book, *SOG*, by John Plaster, a retired Green Beret major who was with the rescue party.

"I've never seen such bravery as

the Green Berets," Curs said at the ceremony. "I've seen them remain extremely calm in situations where they were seconds away from death."

B-2 Buzzes Super Bowl

A USAF B-2 stealth bomber on Jan. 25 overflew Qualcomm Stadium in San Diego, site of the 32d Super Bowl. The overflight, which took place just before the kickoff of the game between the Denver Broncos and Green Bay Packers, was seen by millions of television viewers.

The B-2A Spirit is assigned to the 509th Bomb Wing, at Whiteman AFB, Mo. It flew to Edwards AFB, Calif., and took off from there for the Super Bowl site. Lt. Col. Will Gildner, aircraft pilot, and Capt. Roger Forsyth, mission commander, flew the aircraft, named *Spirit of Oklahoma*, over the stadium at an altitude of about 1,000 feet and a speed of about 280 mph.

C-17 Aids Chinese

The crews and aircraft of Air Mobility Command helped deliver to China more than 81,000 pounds of relief supplies for the victims of an earthquake. The tembler occurred Jan. 10 in northern Hebei Province.

One C-17 Globemaster III and its crew, based at the 437th Airlift Wing, Charleston AFB, S.C., loaded sup-

Special savings
and a free
upgrade from
Hertz.

Hertz rents Ford's and other fine cars. © REG. U.S. PAT. OFF. © HERTZ SYSTEM INC. 1998/421-98



Enjoy year-round savings and a one car class upgrade!

Members of the Air Force Association can take advantage of year-round discounts from Hertz. Just mention your Hertz CDP# 83080 when making your reservation and present your US Government ID or Hertz Member Discount Card at the time of rental.

And now through August 31st, you can enjoy a free one car class upgrade when you use the bonus coupon below.

For reservations, call your travel agent, call Hertz at 1-800-654-6511 or visit our website at www.hertz.com.

Free One Car Class Upgrade CDP# 83080

Mention this offer and CDP# 83080 when reserving and renting a compact 4-door through full-size car (Class B, C, D, F) for a day, weekend or week at Hertz Standard, Leisure or Government Rates. At the time of rental, surrender this coupon and present your US Government ID or Hertz Member Discount Card for identification.

Call your travel agent, call Hertz at 1-800-654-2210 or visit www.hertz.com. Advance reservations are required as blackout periods may apply, especially during periods of peak demand. If a blackout occurs, you're still entitled to your government discount and can save this offer for another trip as it's good through August 31, 1998. This offer is redeemable at participating Hertz locations in the U.S., excluding Hertz Local Edition locations and is subject to vehicle availability.

Highest obtainable upgrade is to a Premium (Class G) car. This coupon has no cash value, must be surrendered on rental and may not be used with any other CDP#, coupon, discount, rate or promotion. This coupon may only be used with a GOVT CDP#. Hertz standard age, driver and credit qualifications for the renting location apply and the car must be returned to that location. Call for details.

COUPON EXPIRES 8/31/98 PC# 116270

Hertz
exactly.

plies at Kadena AB, Japan, for the flight into China. Relief items included blankets and sleeping bags, medical supplies, and rations.

The mission was in response to a formal Chinese request for assistance.

News Notes

■ On Jan. 8, the Department of Defense announced that Air Force Gen. Joseph W. Ralston will serve a second two-year term as vice chairman of the Joint Chiefs of Staff. Ralston was in line to succeed Gen. John Shalikashvili as JCS chief but was forced to withdraw his name from consideration after last June's revelation of an adulterous affair in the mid-1980s.

■ Col. Charles B. DeBellevue, the leading US fighter ace of the Vietnam War, retired from the Air Force in January at Edwards AFB, Calif., after 30 years of service. Only three USAF fliers earned ace status during the Southeast Asia conflict; DeBellevue, at the time a weapon systems officer, was credited with six MiG kills, the highest total. After the war, he went on to earn pilot's wings. Most recently, he had been assigned as the commander of AFROTC Det. 440, University of Missouri, Columbia, Mo.

■ Civil Air Patrol—USAF, the Air Force unit which provides advice and oversight to the 56,000 members of the Civil Air Patrol auxiliary, urgently needs enlisted and officer Category E reservists. Positions range from acting as a liaison between CAP and the Air Force during search-and-rescue operations to teaching air and space science to young people. Those inter-



Photo by Tony Sacketts

Air Force Reserve Brig. Gen. Steve Ritchie (left) and Col. Charles DeBellevue (right) pose with Lt. Col. Phil Mixon, commander of the 20th Fighter Squadron, the last F-4 unit in the Air Force, at a Phantom convention at Holloman AFB, N.M. DeBellevue, who retired in January, and Ritchie are two of only five aces from the Vietnam War.

ested should call Joyce Deplanche at (334) 953-5225 or DSN 493-5225.

■ Hickam AFB, Hawaii, officials said they are looking for a 6-foot painting of Army Air Corps Lt. Col. Horace Meek Hickam that was hanging in the mess hall of the field's barracks when the Japanese attacked Dec. 7, 1941. Artist Paul Myers shipped the painting back to California after the war, and it has since disappeared. Anyone with information on the whereabouts of the historic portrait should call the base public affairs office at (808) 449-2490.

■ A1C Deborah L. Nordyke won a

spot on the US Olympic biathlete team at trials in Vermont Dec. 26 to Jan. 3. The demanding Nordic biathlon event requires competitors to race on cross-country skis over a set course while carrying a rifle and fire at stationary targets at different stages on the course. "I never would have made the team without the support of the Air Force World Class Athlete Program," said Nordyke.

■ On Dec. 4, SSgt. Mareca Fischer and A1C Terrance Everitt became the first enlisted Air Force Reserve AWACS weapons directors, after graduating from a training course held at Tyndall AFB, Fla. During the 60 days of instruction the pair learned the skills necessary to direct aircraft conducting air defense and tactical missions and to coordinate aircraft control and warning activities.

■ Tour lengths for Air Force members assigned to Howard AFB, Panama, will be shorter, effective March 1. Blue-suiters assigned to the base will now serve a 12-month unaccompanied tour, vs. a 36-month accompanied or 24-month unaccompanied long tour.

■ On Dec. 24, Secretary of Defense William S. Cohen established two new positions—assistants to the Chairman of the Joint Chiefs of Staff for National Guard matters and for Reserve matters. The two two-star positions were required by the Fiscal 1998 defense authorization bill.

Index to Advertisers

AT&T Communications	Cover III
Benchmade Knife	15
Boeing	Cover IV
Breitling	5
Hertz	17
Lockheed Martin	Cover II, 1
Mitchell Lang	19
Oceans of America	26-27
Pratt & Whitney	44-45
TEAC America	3
Teledyne Brown Engineering	33
Textron Systems	13
AFA Member Supplies	19
AFA National Policy Symposium—San Antonio	87
Video Biography on Legends of Airpower	86
Video on the History of USAF	84

■ USAF Reserve aircraft helped the Coast Guard rescue 28 crew members from the sinking British cargo vessel *Merchant Patriot* on Dec. 30, 1997. The rescue process involved hoisting each of the doomed vessel's personnel from the ocean into a helicopter, one by one. They were then flown to the Bahamas for medical evaluation.

■ On Dec. 23, 1997, Air Mobility Command announced that the joint US-German search team had successfully completed its search-and-salvage operations to recover significant wreckage items from the USAF C-141 and German TU-154M aircraft which crashed due to a mid-air collision off the west coast of Africa on Sept. 13. The salvage operations recovered all data recorders from the two airplanes. These "black boxes" are currently being analyzed as part of the accident investigation.

■ Two F-16s from the 388th Fighter Wing, Hill AFB, Utah, collided in mid-air over the Utah Test and Training Range on Jan. 7. One aircraft crashed; its pilot ejected safely. The second airplane sustained damage, but the pilot managed to land at an airfield at Dugway Proving Ground.

■ The Air Force recently named its top pararescuers for 1997. SrA. Patrick Van Meter, special tactics team member with the 24th Special Tactics Squadron, Ft. Bragg, N.C., won the Pararescue Airman award. TSgt. Kenneth A. Knutson, pararescue craftsman with the 23d Special Tactics Squadron, Hurlburt Field, Fla., won the Pararescue Noncommissioned Officer award. MSgt. Everett E. Evans, superintendent of training for the 23d STS, won the Pararescue Senior NCO award.

■ Maj. Hans Garcia, deputy chief of AMC's channel development and performance division, was the recipient of an unusual honor Dec. 10, 1997—a meritorious service medal from the Venezuelan Air Force. Garcia, a Miami native fluent in Spanish, spent three years stationed in Maracay, Venezuela, as part of an Air Force personnel exchange program.

■ The National Safety Council recently presented Luke AFB, Ariz., with its most prestigious citation, the Award of Honor. The base had no on-duty ground mishap fatalities reported in 1996. In addition, its ground mishap rate was .1847, substantially lower than the Air Force's average .2844 rate.

■ Two NCOs assigned to Air Mobility Command, Scott AFB, Ill., recently helped save the Air Force about

\$1.5 million. MSgt. Bill Ogden and SSgt. Robert Tedford researched and obtained replacement clips from defective MB-2 cargo tie-down devices, avoiding the need to purchase all-new devices when the clips wore out. The MB-2 is used to secure large, heavy cargo on AMC aircraft.

Obituary

Retired Air Force Lt. Gen. Thomas S. Moorman, superintendent of the US Air Force Academy from 1965 to 1970, died of respiratory failure Dec. 23 in Sterling, Va. He was 87.

Moorman entered US military service upon graduation from the US Military Academy at West Point in 1933. A specialist in meteorology, he received a master's degree in that field from the California Institute of Technology.

He wore the uniform for 37 years, serving with Ninth Air Force in Europe during World War II, then undertaking a series of command and staff positions that stretched from commander of the Air Weather Service to chief of 13th Air Force at Clark AB, Philippines.

Moorman's son, Gen. Thomas S. Moorman Jr., was vice chief of staff of the Air Force from 1994 to July 1997. ■

NEW! SAC Ring



This magnificent ring is a proud symbol of SAC's legacy and heritage. Custom-made in a variety of beautiful metals; diamond option available.

To get a **FREE** color brochure and price list call **1-800-872-2853** (free 24 hr. recorded message - leave your name & address and the information will be rushed to you). Or, to speak directly with a sales representative, call 1-800-872-2856. Or write to: Mitchell Lang Designs, 435 S.E. 85th Dept. AR, Portland OR 97216.

Our rings are made in limited numbers - to avoid disappointment act now.

◆ Also available: USAF, MSgt, SMSgt, CMSgt, First Sgt, ANG rings

Code AR-398

Call AFA Member Supplies



#C1008
AFA Satin Podium Banner. 42"×30" with crossbar, gold fringe and tassel cord. \$55

#C1009
AFA Nylon Banner. 3'×5' with grommets top and bottom for mounting. Full color AFA logo. \$40

#M0133
AFA Totebag. 16"×12"×6" heavyweight cotton duck with reinforced handles in red and blue. AFA logo on front pocket. \$25

#M0119A
Airpower for a Strong America T-Shirt. Depicts Bald Eagle and U.S. Flag in full color. 100% pre-shrunk cotton. Sizes: M,L,XL,XXL. \$10

Order Toll-Free 1-800-727-3337

Air Force Association

The National Defense Panel would dump the two-conflict strategy and move ahead from there.

The NDP and the Transformation Strategy

By John A. Tirpak, Senior Editor

NOTHING less than a “transformation” of the US military into a radically different force is needed if it is to be ready for a slew of nasty new threats that will materialize around the turn of the century, according to the National Defense Panel, a blue-ribbon commission chartered by Congress. The NDP’s findings, released in December, paint a disquietingly vague picture of what the military is supposed to look like when the transformation is complete, offering little in the way of a clearly defined end state strategy and failing to deliver on Congress’ request for alternative force structures. Nevertheless, the panel’s work figures to have an impact—possibly a significant impact—on this year’s defense budget deliberations on Capitol Hill.

The NDP was created by Congress in 1996 to give a second opinion on the Pentagon’s Quadrennial Defense Review, itself an update of the 1993 Bottom-Up Review. Worried that the Pentagon—with its long traditions and vested interests—might not be up to taking a fresh, imaginative look at itself, Congress set up the NDP to provide counterpoint. The panel, comprising retired flag officers and representatives of industry, the diplomatic corps, and academia, took a year to make its own assessment of America’s military future, even as it looked over the shoulder of those conducting the QDR.

In its report, “Transforming Defense: National Security in the 21st Century,” the panel asserted that the US “must begin now” to make its defense establishment proactive rather than reactive—able to stifle emerging threats before they become uncontrollable crises. It prescribed intense experimentation with new military concepts and technologies and called for much more coordination and togetherness in all aspects of US security, from border patrols to space surveillance, the better to spot and defuse problems before they get out of hand.

The NDP warned that the United States, though a superpower surrounded by broad oceans and docile neighbors, must worry about a host of serious security problems—terrorism, rogue states armed with weapons of mass destruction, and new dangers such as cyber attacks. Ord-

nary citizens are at peril in their own front yards, the group said, and it advocated a renewed emphasis on homeland defense, with focus on repelling ballistic missile attack, thwarting saboteurs, and protecting the nation’s infrastructure.

How Many Wars?

In some key areas, the conclusions of the NDP and QDR overlapped. Like the QDR, the NDP sounded the now-familiar call for a drastic cut in the size of the military’s support infrastructure, rejecting the current system as being far too large and cumbersome. Moreover, the panel urged that US forces adopt a lighter, more mobile, and more lethal posture, one that would be expeditionary in nature. It even produced a template of critical capabilities to be desired and pursued—among them, mobility, stealth, speed, increased range, precision strike, and a small logistics footprint—that is remarkably similar to those identified in the earlier study.

However, when it came to a central premise of the national military strategy, the NDP and Pentagon were sharply at odds.

The Defense Department has held the view since 1993—reaffirmed last year in the QDR—that the nation must maintain sufficient forces and capabilities to be able to fight and win two Major Theater Wars even if they occurred more or less at the same time and in widely separated regions of the world.

The NDP disagreed. The panel’s final report belittled the two-war concept as “a force-sizing function and not a strategy” and dismissed it as little more than a “means of justifying the current force structure.” Continuing with its critique, the NDP claimed that the two-war construct serves as a psychological security blanket “for those searching for the certainties of the Cold War era.” The panel found that no such certainties exist or are likely to.

“The two-theater construct has been a useful mechanism for determining what forces to retain as the Cold War came to a close,” the NDP allowed in its report. However, it went on, this element of US national strategy “is fast becoming an inhibitor to reaching the capabilities we will need in the 2010–20 time frame.”

In his response—required by Con-

gress—to the NDP’s report, Defense Secretary William S. Cohen found something complimentary or conciliatory to say about almost all the NDP’s findings, but he firmly rejected its take on the two-war requirement. He said the size of the force is intended not only to handle two wars but also to maintain forward presence and carry out peacetime or humanitarian operations. He said the strategy is key to “credibly deterring opportunism and aggression.”

Quick, Find an Extra \$5 Billion to \$10 Billion

The NDP declared that the current US force, “with the support of allies,” should be able to win nearly simultaneous wars in the Persian Gulf and the Korean peninsula, hot spots the US “cannot ignore,” the panel reported. However, the panel thought that DoD could make do with a bit less expenditure on these forces, stating explicitly that the US could afford to accept more risk in the near term. The NDP called for diverting \$5 billion–\$10 billion a year from existing accounts—which pay for today’s forces and their immediate successors—in order to give more to new “initiatives in intelligence, space, urban warfare, Joint experimentation, and information operations.”

This money stream supposedly would come from cutting unneeded military bases and streamlining DoD’s way of buying things. The NDP conceded that closing more facilities could be politically impossible, though, as Congress has suggested it may be. If so, said the NDP, then operating tempo, personnel, and force structure will have to be cut and major programs canceled. “Difficult choices must be made,” the NDP intoned.

In almost the same breath, however, the NDP acknowledged that the range of near-future scenarios is wide and the specifics “impossible to predict,” with the possible scenarios ranging from an era of almost uninterrupted warring over resources and ethnic differences to an unprecedented spell of peaceful prosperity. In such a situation, said the NDP, it would be foolhardy to dump too much of the existing force in order to accelerate the nation’s reach for a more futuristic one.

Any potential US adversary will have “learned from the Gulf War” and won’t try to take on American forces where they are clearly dominant.

This circumstance “strongly suggests a hedging approach to preparing for the future,” the panel said. “We must maintain current capability as we adapt.”

The proper route, according to the NDP, is to “shift the emphasis of our forces” as events unfold, while at the same time “curtailing outdated or less useful forces and operational concepts.” DoD must not be held hostage to “legacy systems” just because it has invested a lot in them, if they are no longer relevant, the NDP said.

The panelists argued that any potential US adversary will have “learned from the Gulf War” and won’t try to take on American forces where they are clearly dominant. Instead, future enemies will try

“asymmetrical” means of attack, to “disable the underlying structures that enable our military operations.” For example, a theater opponent may try to coerce an ally to withdraw air or basing rights by threatening or making missile attacks with weapons of mass destruction. Such scenarios will require the US to quickly develop a more effective means to protect not only itself but its Allies from theater ballistic missiles, said the commission.

The US can also expect attacks on its communication nodes, staging areas, and overseas ports and terrorist attacks at home in an attempt to keep America from getting into or staying involved in a regional war.

The NDP forecast that “increasing commercialization of space” will

make it possible for “state and non-state actors” to obtain satellite reconnaissance and surveillance information, which could erode US dominance in this area. Additionally, such space assets mean adversaries will have the precision targeting capability that for a decade has been almost the exclusive province of the United States.

Power Projection a New Way

The panel warned that, because of the uncertainty that overseas bases will be available in a crisis, the military must not count on using such facilities in the future—at least not to the extent to which the US military is accustomed. American units will have to operate in small groups on the move, scattered and relying on “numerous small, dispersed supply points” rather than large, fixed bases.

“We must be able to project military power and conduct combat operations into areas where we may not have forward-deployed forces or forward bases,” the NDP said. The nation must be able to put “capable, agile, and highly effective shore-based land and air forces in place with a vastly decreased logistics footprint.” The NDP forecast is that small forces will be “the norm” with “regular deployments to far-flung areas of the globe” viewed not as “a detraction from our traditional missions, but as a central element of the responsibilities of the future.”

The need to acquire a capability to project power without forward bases was a note sounded frequently in the NDP’s report, which said that priority will have to be given to “enhanced military responsiveness distinguished by its increased range of employment and resulting in reduced exposure of our forces.” In the panel’s view, speed of deployment, the ability to seize the initiative and achieve objectives quickly “with minimal risk of heavy casualties” will be of primary concern.

With respect to military airpower, the Air Force, and the aviation branches of the other services, the NDP maintained that the nation should also be placing “greater emphasis on operating at extended ranges, relying heavily on long-range aircraft and extended-range unmanned systems, employing advanced precision and brilliant mu-

nitions, and [basing] outside the theater of operations.”

US military aviation units will have to be positioned well away from the danger posed by weapons of mass destruction, said the NDP report, and could operate from mobile offshore bases or aircraft carriers, but these too would have to operate “outside enemy missile range.”

Moreover, it argued that a “great reliance” will have to be placed on aerial refueling to extend the range of aircraft, as well as on multiple, austere bases for touch-and-go arming and refueling. Today, the Air Force has a monopoly on forces able to carry out such long-range refueling.

Land forces of the future will rely heavily on speed and “seeing deep” with the help of reconnaissance heli-

copters and unmanned aerial vehicles. Combat UAVs, attack helicopters, and rocket artillery will have to perform extended-range precision strikes, and all land forces will act as eyes and ears for similar strikes by air and sea forces.

Trouble for Tanks

The NDP warned that attempting to either seize or to control certain kinds of terrain with large concentrations of troops and armored vehicles would be “exceedingly challenging” in the emerging combat environment.

The group’s observation is particularly true in urban operations, where it will be extremely difficult to distinguish combatants from non-combatants, yet where avoiding ci-

vilian casualties and damage to civilian infrastructure will be a top priority. The panel recommended virtually a crash program in developing urban warfare techniques and technologies but seemed to have no idea of what they might be.

Naval forces would also be required to do more long-range precision strike, adopting a “distributed and networked” operational concept among ships, submarines, and, again, UAVs, to efficiently direct attacks at coastal territory.

The NDP came out in favor of the arsenal ship concept, as well as land-attack destroyers but emphasized that the carriers should be outfitted with short-range aircraft for strikes against points on the littorals of the world’s oceans.

Amphibious forces will need to focus on forces to quickly seize objectives “while avoiding an enemy’s defenses”—presumably a reference to the murderous fortifications and mining of beaches like those around Kuwait City during the Gulf War.

In forecasting future trouble spots, the panel noted that the landlocked Caspian Sea area of Central Asia, with its largely untapped oil and other resources, may become a central focus of contingency planning in the future, but the region would be well out of the range of naval and amphibious forces.

Some observers wondered why the NDP didn’t suggest the termination of a few “traditional” service missions that have not been performed in war for half a century—for example, large combat drops of US Army paratroopers or amphibious landings by US Marines. To this question, panel chairman Philip Odeen replied that the NDP preferred to leave such choices to the Pentagon once battlelab experimentation defines new tactics and capabilities more relevant to emerging threats.

Odeen did note, however, that the group was especially intent on pushing the Army to obtain “dramatically more lethality” for its light forces. “The old joke about the 82d Airborne being a ‘speed bump’ during [the early days of] the Gulf War is largely true,” said the chairman. The NDP chastised the Army for pursuing a new main battle tank when it should be developing a new “very light” armored vehicle of “half the weight” of the M1 Abrams.

Force Characteristics

The panel believes that relative to today’s forces, the US military of 2010–20 should place far greater emphasis on the following characteristics:

■ **Systems Architectures.** Information technologies could dramatically enhance the ability to integrate the actions of widely dispersed and dissimilar units. Such systems architectures would enable highly distributed, network-based operations.

■ **Information System Protection.** The defense of our commercial and military information architecture will be critical and will allow us to protect our forces and our platforms from the enemy’s reconnaissance efforts. New means to protect information systems and identify the origin of cyber attacks must be the highest priority. Today, we are vulnerable.

■ **Information Operations.** Significant improvements in the application of military force will be achieved by electronic strike capability. We need to develop the ability to insert viruses, implant “logic bombs,” conduct electromagnetic pulse and directed energy strikes, and conduct other offensive electronic operations.

■ **Automation** (to include the migration into space and unmanned platforms). The major advantage automation gives us is speed. Given that time will be an increasingly scarce resource in future warfare, automation-aided operations can temporarily compress operations.

■ **Small Logistics Footprint.** Not only do we require lighter, more mobile forces, but we also require lean logistics. There may be no secure rear areas. A smaller logistics footprint will represent less of a target and, at the same time, less of a strain on indigenous infrastructures and our own strategic air- and sealift.

■ **Mobility.** The ability to move our forces rapidly and in the right configuration is key to their effectiveness. Most importantly, the greater their mobility, the greater their protection.

■ **Stealth.** Increasingly, any force that can be seen is likely to be hit. The best protection, therefore, is not to be seen. At the same time, the ability to avoid detection affords the opportunity for tactical surprise—which in turn can allow for strategic and operational surprise. The stealth embodied in our planes and submarines today will be increasingly important for our air, sea, and ground forces tomorrow.

■ **Speed.** Given advances in the speed of information flow and communications, the unfolding and duration of critical engagements—indeed the tempo of war itself—have shrunk dramatically. The rate at which we can mobilize, deploy, set, act, and reset for any action—preemptive or reactive—will likely be fundamental to success.

■ **Increased Operational and Strike Ranges.** We will need increased ranges to ensure the safety of our forces and their ability to achieve desired effects from disparate locations. Greater ranges will also offset the growing vulnerability of forward forces.

■ **Precision Strike.** Precision weapons will enable the use of far fewer platforms, with no loss in force capabilities. Precision and the ability to discriminate among targets near each other will limit collateral damage.

“The procurement budgets of the services **do not** adequately reflect the central thrust of their visions.”

In addition, the group lectured all of the services about the need to become fully Joint, knitted together by “a global distributed reconnaissance and intelligence architecture composed of satellites, unmanned aerial vehicles, sensors, and infiltration forces.”

Critical Qualities

In defining what the term “power projection” will mean in the early 21st century, the NDP sounded remarkably like the Air Force describing its approach to the Gulf War. The panel construed future power projection as “disabling the enemy’s strategic center of gravity (including his war-making potential and military forces) and occupying key terrain.” It went on to say that “in general, we must be able to

rapidly target and access whatever an adversary values most, the loss of which would render him either unable or unwilling to continue his hostilities.” To do it, “we should try ... to stop aggression through our own strategic initiative and control of the battlespace.” This will mean simultaneously “conducting extended-range precision strikes, seizing control of space and information superiority, exercising ground and sea control, and providing missile defense.”

The NDP set forth a number of basic qualities, capabilities, and characteristics which it thinks will distinguish successful forces of the future. These included integrated, networked system architectures, defensive and offensive information warfare, extensive automation, small

logistics footprint, mobility, speed, stealth, increased operational and strike ranges, and precision strike capabilities.

The NDP report noted that the armed services already have codified many of these concepts in individual service “visions”—USAF’s “Global Engagement,” the Army’s “Army After Next” and the Navy’s “Forward ... From the Sea”—and that the concepts are well understood. However, it pointed out, “the procurement budgets of the services do not adequately reflect the central thrust of their visions.” It suggested major changes in the way the armed services are allocating funds so as to acquire vitally needed capabilities for the next 20 or 30 years.

For instance, the NDP recommended that the Army and the Marine Corps stop continually extending the service lives of their existing helicopter fleet and move on to advanced vertical lift systems. In addition, the NDP said, the Army should move toward lighter weight and more lethality in all of its platforms and go to smaller units. It should seek to acquire a lighter combat vehicle in the 30- to 35-ton range and a hypervelocity gun. The Army generally should become “more expeditionary” with “fast, shock-exploiting forces.” The Navy should invest in stealthier ships with more—and more sustainable—firepower. The Navy should also proceed with a new generation of aircraft carriers that are smaller and “capitalize on short take-off, vertical landing,” or STOVL, aircraft technologies.

The panel also recommended a somewhat different thrust investment in aviation forces and space forces. It called for the United States to “move toward fewer numbers of short-range aircraft providing increased delivery capacity with smaller, but more accurate, weapons.” It prescribed exploration of “new approaches to long-range, precision-delivery vehicles” and STOVL operations “on a wide array of airfields, ships, and sea-based platforms.”

With respect to intelligence and surveillance systems, the NDP recommended more satellites to provide redundancy and survivability of command and control, as well as “increased ground surveillance capability.” It chided the Pentagon for reducing the planned procurement

of Joint STARS surveillance airplanes from 19 to 13. It urged the Pentagon to restore funding for the full fleet.

Legacy Systems Under Fire

The NDP struck a nerve with many in DoD and the armed services with its call to shift spending sharply away from so-called "legacy systems"—that is, those growing out of the Cold War face off with the Soviet Union—to new systems focused on new missions. With respect to fighter aircraft programs, the panel's report lumped together the Air Force F-22, the Navy's F/A-18E/F, and the multi-service Joint Strike Fighter as if they did not have different capabilities, purposes, and importance. However, Odeen was at pains to point out that the NDP did not consider all extant platforms to be "legacies."

The Air Force's F-22 stealth fighter, in particular, "is a very advanced system," he said, and should not be regarded as an out-of-date weapon. "It has strong stealth characteristics," said Odeen. "I don't think any of us [NDP members] felt the F-22 shouldn't go ahead."

However, the NDP did question the validity of the planned numbers of F-22s, Navy F/A-18E/Fs, and multiservice Joint Strike Fighters, and challenged the Defense Department to show how each of these aircraft "can operate effectively" in the period 2010–20.

With that remark, Odeen explained later, the panel was trying to highlight the disputed issue of forward bases, inasmuch as the F/A-18 and JSF, particularly, would need to be deployed close to a combat zone. "How can you demonstrate" an ability to operate these new aircraft from "really austere airfields" far from the front lines, Odeen asked. Without the forward bases, the planned numbers of airplanes might be open to question. He also cautioned that the NDP's remarks on tactical aircraft shouldn't be read as a call for program terminations but simply a request to "show us the logic" of the missions of the airplanes and why the stated numbers are required.

Ignoring the Halt Phase

Air Force officers and their supporters also felt uneasy about the NDP's deliberate failure to emphasize—or even mention—the halt

phase of conventional theater conflict, an issue of prime importance to the Air Force. Like the Air Force itself, the QDR stated unequivocally that a prime operational requirement for US forces of the future will be to halt an enemy force rapidly, short of its objective, so as to prevent or greatly minimize the need to mount a large ground campaign to reclaim territory seized by an enemy ground force. It is a task for which the Air Force is ideally prepared. However, the final NDP report contained not a single sentence about the whole issue.

Odeen explained that the panel "didn't feel [it] could endorse that particular approach because we don't think it has been demonstrated yet." The concept received "a good bit" of consideration by the group, and "it may well work ... and ought to be explored, but we just weren't comfortable in saying that ought to be our new approach."

He added that possible US exploitation of its airpower supremacy in the halt phase of theater war is "exactly the kind of issue this Joint experimentation effort ought to look at." It is one of "a number of operational concepts we think make a good bit of sense," he added.

When they appeared at a Washington press conference to release their report, panel members shied away from linking their advocacy of long-range, stealthy, precision strike platforms in the abstract with the B-2 bomber specifically. Retired Air Force Gen. James P. McCarthy, a panel member, explained that the NDP is indeed pushing for longer-range aircraft rather than the larger numbers of shorter-range aircraft, but he was quick to add that this statement was "not specifically meant" to be an endorsement of buying more B-2 bombers. The B-2 bomber purchase has been capped at 21 aircraft.

"We ... looked out to 2020 and saw that there is no planned longer-range aircraft by any of the services," McCarthy said. "We don't have a long-range aircraft on the drawing boards that follows or replaces the existing systems," and such an absence worries the panel.

NDP members largely agreed with the Pentagon that current levels of nuclear weapons aren't necessary. It advocated reaching a "strategic equilibrium" between the US, China, and

Russia that works to deter nuclear attacks and isn't sized to "win" a nuclear war with overwhelming firepower.

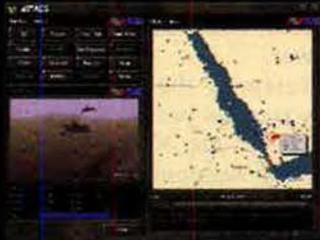
Retaining the existing force "for an extended period is not in the US interest," the NDP found, arguing that the weapons will be "expensive to maintain and do not facilitate the transformation process essential to respond to future threats." The panel urged getting START II ratified quickly and making haste in getting down to START III nuclear levels "and beyond" to save money.

The panel suggested creating a new "Joint Forces Command" to take charge of CONUS-based forces of all services and be responsible for training them, indoctrinating them with "Jointness," experimentation with operational concepts, providing forces to regional commanders in chief, and to play the role of "driver" of the transformation.

The NDP also advised that Space Command take over information warfare responsibilities and advised realignments of other areas of responsibility to better cover contingencies in the former Soviet republics and the Middle East.

As for the industrial base, the NDP said that maintaining a mobilization capability has dubious value in an era when wars will have to be fought so swiftly and decisively that surge production would never play a role. The group prescribed a "scrub" of any programs aimed at maintaining a defense-specific industrial base "to eliminate unnecessary cost associated with obsolete mobilization concepts." Commercial, off-the-shelf buying will have to become the rule wherever possible, the NDP determined.

The NDP further suggested that, in order to live within available funds, the services will have to adapt to smaller force structures of fewer, but more capable, machines. It acknowledged that the unit price "sticker shock" of building smaller lots of new systems will be a problem with Congress but insisted that ways can be found to reduce development time and thus cost. The Pentagon "must work with Congress to devise new rules and policies that emphasize technology development and de-emphasize the need for large production quantities in order to recover cost and profit," it said. ■



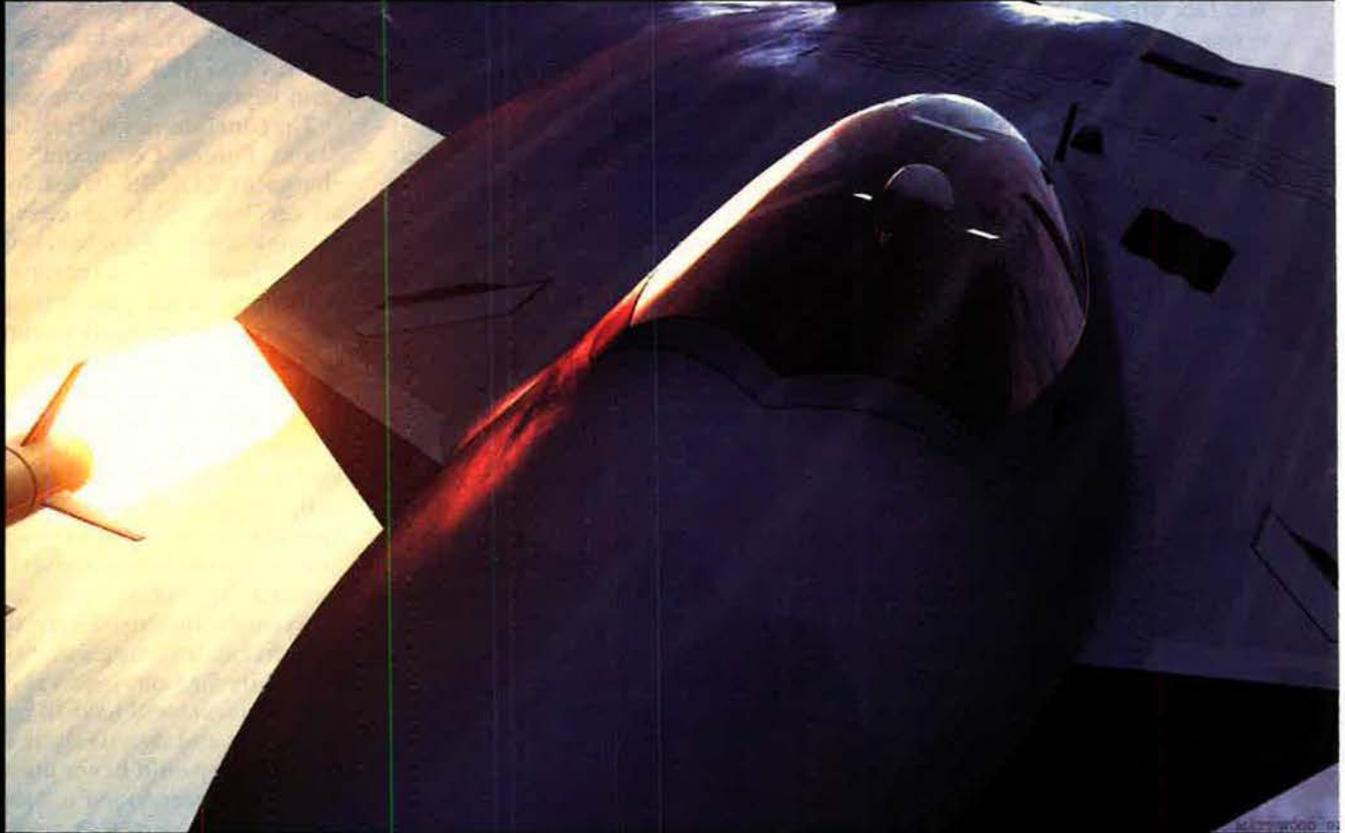
AWACS Mission Control



Full Virtual Cockpit



ACMI Mode



FIGHT'S ON!



DID AIR DOMINANCE FIGHTER™



	AWACS Simulation	ACMI	Realistic Stealth Mode	Scaleable 3D Map	FREE Reference Guide
DID F22 ADF™ - Ocean	YES	YES	YES	YES	YES
iF22™ - iMagic	NO	NO	NO	NO	NO
F22 Raptor™ - NovaLogic	NO	NO	NO	NO	NO
JF11™ - Interplay	NO	NO	NO	NO	NO



Extensive Training Missions



Network Play



High Resolution Terrain



It happens in a heartbeat.

You're commanding an AWACS aircraft through 2.5 million square miles of astonishingly detailed battlespace. Or you're mixing it up with bandits and bogeys in your own F-22 Air Dominance Fighter.

But it only happens with DID's F-22 Air Dominance Fighter, the flight simulation Denny Atkin of *Computer Gaming World* calls, "the most advanced F-22 sim out there."

Believe it. DID's F-22 Air Dominance Fighter is loaded with features you won't find anywhere else.

So strap in and prepare to lead, fight, or get out of the way. It's your choice, but make it now. There's a war to win...



Each aircraft can attack enemy armor
with hundreds of projectiles.

The Devastating Impact of Sensor Fuzed Weapons

By Robert Wall





At left, a Sensor Fuzed Weapon, USAF's newest wide-area cluster munition, 10 times more effective than earlier cluster bombs, takes out a tank during testing. Above, a B-1B bomber releases a CBU-97/B SFW.

THE United States Air Force late last year carried out the first operational deployment of the CBU-97/B Sensor Fuzed Weapon when it dispatched two SFW-equipped B-1B bombers to Bahrain. The Bahrain deployment marked a coming out event for a weapon that is expected to drastically alter the ability of airpower to engage and stop moving ground targets.

The SFW is the Air Force's newest wide-area cluster munition, the first of that breed smart enough to find its target after it has been released. The SFW is considered 10 times more effective than Vietnam-era cluster munitions, which had only a small chance of hitting their targets.

The SFW, in fact, has a proven all-weather, 24-hour operational capability. This new anti-armor munition is projected to go a long way toward meeting the Air Force's goal to be able to find, fix, track, target, and engage any moving ground target anywhere on the surface of the Earth.

Acquisition of the SFW has generated new visions of what future combat will be like. Air Force planners foresee B-1B heavy bombers taking off from bases in the continental United States, flying halfway around the world, and then delivering a full load of SFWs against large columns of advancing enemy armor. Each SFW released by the bombers would be able to cover an area the size of 20 football fields with 40 top-attack projectiles. Because each B-1B

could carry 30 of these SFWs, one heavy bomber would be able to deliver 1,200 projectiles over a huge battle area.

Instant Paralysis

The Air Force doesn't expect to achieve a hard kill from each projectile, but service officials are confident that little, if anything, would remain on the move after such an attack.

Maj. Jeff Latas, USAF's SFW requirements officer at the Pentagon, said the ability of an aircraft using SFWs to engage several targets at the same time is "something we've never had before." He added, "In one pass, I can drop a whole array of weapons in an optimum fashion, so I can go out and kill many targets with one airplane."

That concept represents "a potentially revolutionary capability," said David Ochmanek, a defense analyst for the RAND Corp. in Washington. He said that the B-1B/SFW combination shapes up to be the cornerstone of the new Air Force concept that calls for engaging the enemy's main armored force decisively in the halt phase of major theater war, a time when USAF would strive to slow, break up, and finally stop an attack.

"This kind of capability [the SFW] is key to the halt," he said. "Without it, you just don't get enough kills, given the kill capacity of the small number of attack platforms you would have available on short notice."

Because of the numerical draw-



This is a cutaway of one of 10 BLU-108/B submunitions with its four canister-like, warhead-carrying projectiles contained in the SFW's tactical munitions dispenser. Each SFW can deliver 40 lethal projectiles.

down of Air Force aircraft during the past decade and the high operational tempo troops are experiencing, the SFW's ability to reduce the number of sorties needed to stop an enemy is considered a significant force multiplier.

Each SFW comprises an SUU-66/B tactical munitions dispenser with an FZU-39 fuze. Each tactical munitions dispenser contains 10 BLU-108/B submunitions, and each submunition contains four projectiles that, upon being thrown out, seek out their target and deliver a warhead. Thus, each SFW can deliver a total of 40 lethal projectiles.

Col. William Wise, Air Force system program director in charge of area-attack munitions at Eglin AFB, Fla., outlined for *Air Force Magazine* how the SFW functions in both the low-altitude and high-altitude attack profile. The area covered in both scenarios is similar. Each CBU-97/B can cover an area of about 500 feet by 1,200 feet, Wise said.

■ **Low altitude.** The engagement would begin with the bomber making a drop at an altitude ranging from 200 feet to 3,000 feet above ground level, with a typical mission altitude of 300 feet, said Wise. For any attack commencing below an

altitude of 1,500 feet, the dispenser would use a preset timed release.

Wise said that, although the time is variable, it would be about one second after a drop at 300 feet, meaning the dispenser would release the 10 BLU-108/B submunitions at about 280 feet. Each of the 10 submunitions then would hang on a parachute for about eight seconds, during which time the projectiles are spun up and finally ejected at about 100 feet above ground level.

Each of the hockey puck-shaped projectiles then uses an infrared sensor to rapidly locate a hot target, such as a tank or armored vehicle. The projectile locks on to its target and fires a self-forging, high-velocity slug, which strikes and immobilizes the target.

■ **Medium-to-high altitude.** Here the engagement would begin with the aircraft releasing the SFW anywhere above 15,000 feet, with the fuze set in its proximity mode. At about 1,500 feet, the tactical munitions dispenser throws out the 10 submunitions. They glide on a parachute for 20 seconds, spinning up the projectiles as they descend. Once a submunition reaches an altitude of 100 feet, the weapon operates the same as in a low-altitude engagement.

Better Versions

Even as the SFW is being fielded, the Air Force is working on improved versions of the weapon. The service already has moved forward with the first of two Product Enhancement Programs to reduce the price of the munition. The first program, called PEP 1, reduced the cost of each SFW. With full-rate production just beginning, the Air Force has been able to reduce the cost of SFWs from \$360,000 to \$260,000 per copy. Still in the works is PEP 2, which is expected to save another \$5,000 per unit. That effort will enter production in about two years.

More significant is an operational improvement that has already entered the test phase. Projectiles would be dispensed at a greater altitude with a different look-angle, thereby expanding the area covered by an SFW to about 600 feet by 1,800 feet.

This preplanned product improvement is expected to double the effectiveness of a regular SFW at a 20 percent premium.

In addition, the Air Force will add a laser range finder to the projectile to allow the SFW to detect a target by its height as well as by its infrared signature. That capability will provide a better aim point for the slug.

Finally, USAF is modifying the slug itself. In the new configuration, the SFW will fire a smaller center slug and an outer ring of shards. Those shards will improve the weapon's performance against soft targets, such as unarmored vehicles. Because the center slug is fired at a higher velocity than before, it is expected to remain as lethal as the larger slug on the regular SFW.

No one expects each SFW slug to destroy a target. The goal is to stop the vehicle in its tracks. Latas noted that "the goal is a *mobility* kill, not a *catastrophic* kill." He added, however, that "a mobility kill is just as good as anything else, when you can cover that kind of area and affect that many targets per sortie."

USAF has postulated three levels of mobility kill, differentiated by how quickly a target stops functioning. Latas said the SFW achieves the highest-level mobility kill currently measured by the Air Force.

The SFW's kill probability is classified, but Latas said, "We've seen in testing that, with the current threat, this is going to be a pretty devastat-

ing weapon." The Air Force has run more than 111 SFW tests so far and, Wise noted, it has exceeded its requirements.

Many of USAF's current and near-future inventory of smart weapons resulted from the experience of Desert Storm in 1990-91. However, the idea for SFWs considerably predates the Gulf War.

Choked Up

Originally, the Air Force envisioned the SFW as a Cold War weapon system useful in a "Fulda Gap" scenario, whereby large numbers of heavy Warsaw Pact tanks would concentrate to try to punch through NATO defenses at specific choke points and then race through Western Europe to the Atlantic. The SFW was going to be one of the weapons that kept the choke points choked with the blazing, burned-out hulks of Soviet tanks.

The end of the Cold War not only removed the original wartime scenario but also opened up new ways of delivering such weapons. With the end of the Cold War, USAF's heavy, long-range bombers were withdrawn from their nuclear orientation and revamped as conventional delivery systems. Thus, the number



Here an F-16C displays four SFWs on its undercarriage during testing at Eglin AFB, Fla. USAF has run more than 111 tests so far, and officials state the SFW has exceeded expectations.

of potential SFW carriers increased dramatically.

Initially, the Air Force judged the primary delivery means to be F-16, F-15, and A-10 fighter-attack aircraft. Now added to the mix are the B-52, B-1B, and even B-2 bombers. All will be able to carry the SFW in large numbers.

One of the ironies of this dramatic

turn of events, Air Force officials remarked, is that the SFW, a quintessential Cold War weapon, may well end up having even greater significance in the post-Cold War world. "If we had had something like this in Desert Storm, it would have significantly reduced the number of sorties we would have had to fly," said Wise. Latas went further. He said that, had the SFW been on hand in August 1990 and had Washington demonstrated the political will to respond immediately to Iraq's troop and tank movements around Kuwait, Iraqi forces never would have made their way into the desert sheikhdom in the first place.

The Air Force's analysis of the Gulf War produced a key lesson that had a direct effect on subsequent development of the SFW. In most cases, Air Force pilots had to deliver their ground-attack weapons at medium-to-high altitude so as to stay out of the range of enemy air defenses. USAF saw immediately that, at those altitudes, the performance of the SFWs could be hampered or undercut by the force of winds.

Into the Wind

The search for an answer to that problem led directly to something called Wick-Mid, for the acronym WCMD. It stands for Wind-Corrected Munitions Dispenser. Eventually, all SFWs will be equipped with special WCMD tail-kit assemblies that will turn them into WCMDs. New ones



Once an SFW's tactical munitions dispenser throws out its 10 submunitions, the submunitions hang on a parachute, spinning up their projectiles as they descend. At about 100 feet, the submunitions eject their four projectiles. Each hockey puck-shaped projectile then uses an infrared sensor to locate a hot target.

Weapon Characteristics

	Munition	Submunition	Projectile
Weight	927 pounds	63 pounds	8 pounds
Length	92 inches	31 inches	3.75 inches
Diameter	16 inches	5.25 inches	5.25 inches
Operational Envelope	200 feet–20,000 feet (above ground level) 250 knots–650 knots		
Guidance	None (except on WCMD)		
Control	Parachute-retarded submunitions		
Propulsion	Dual-nozzle rocket motor (per submunition)		
Fuze	Proximity sensor, timed release		
Targets	Tanks, armored vehicles, support vehicles		

Source: US Air Force

will be built that way. Those SFWs already fielded—the Air Force had about 500 SFWs in inventory at the beginning of the year—will be retrofitted with the new system. The SFW/WCMD combination will carry the designation CBU-105. The first SFWs are to be mated to the WCMD tail-kit system later this year.

The main benefit of using WCMD comes during releases at medium-to-high altitude. There, it ensures the tactical munitions dispenser does not get blown off target. However, the SFW can benefit from the WCMD tail-kit even in a low-altitude scenario.

Wise noted that the WCMD provides “increased flexibility as far as your launch region is concerned.” Without WCMD, a fighter or bomber has to overfly a target area so that the tactical munitions dispenser drops ballistically over the target vehicles. With WCMD, the aircraft can approach away from the center of the target, deploy the SFW, and let WCMD take care of bringing the tactical munitions dispenser into its proper location.

The SFW can be targeted three different ways.

- The simplest way, self-targeting, requires the pilot of an aircraft with SFWs to fly over the battlefield, find the target using the airplane’s sensors, and then engage the target with the weapon. That scenario is less likely to involve bombers than fighters or A-10 attack aircraft, Latas noted.

- The second approach, third-party cuing, entails use of an off-board sensor, such as a Joint Surveillance



Defense analysts state that with the unpretentious-looking SFW the Air Force will have the ability to engage numerous targets at once with one aircraft—enabling the service to decisively engage an enemy in the halt phase.

Target Attack Radar System, to tell the pilot of the SFW aircraft where to go to find the target.

- The third and most challenging approach is third-party targeting. In that scenario, an outside sensor “tells” the weapon where it needs to go. The pilot flying the SFW aircraft never has to see the target.

The B-1B is turning into the main SFW delivery vehicle, largely because of its ability to project power from the United States and its ability

to carry a large load of SFWs. But other aircraft are also going to use SFWs. The likely operational load of SFWs is four for the F-16, 12 for the F-15E, 10 for the A-10, 16 for the B-52, and potentially 34 for the B-2.

Air Force and outside analysts see little chance for the enemy’s military leaders to be able to avoid devastation by SFW, short of completely dispersing their forces. “I don’t see how the Red Force can at the same time evade the SFW tactically and still achieve its objectives,” said RAND analyst Ochmanek. The result, he went on, is that SFW could “render obsolete large-scale armored advances.”

Current plans call for the Air Force to buy 5,000 weapons, about half of which will be in the improved con-

figuration. That represents a significantly lower number than the almost 17,000 SFWs the Air Force once planned on buying. To many analysts, the lower number appears certain to pose a major problem, particularly in light of the US national strategy of being able to fight and win two Major Theater Wars at more or less the same time. They said that 5,000 is enough for a single Major Theater War, but two of them would require a far larger number. ■

Robert Wall is the Pentagon reporter for Aerospace Daily, a Washington-based defense and commercial aviation periodical. His most recent article for Air Force Magazine, “The Electronic Triad,” appeared in the January 1998 issue.

Global Experience

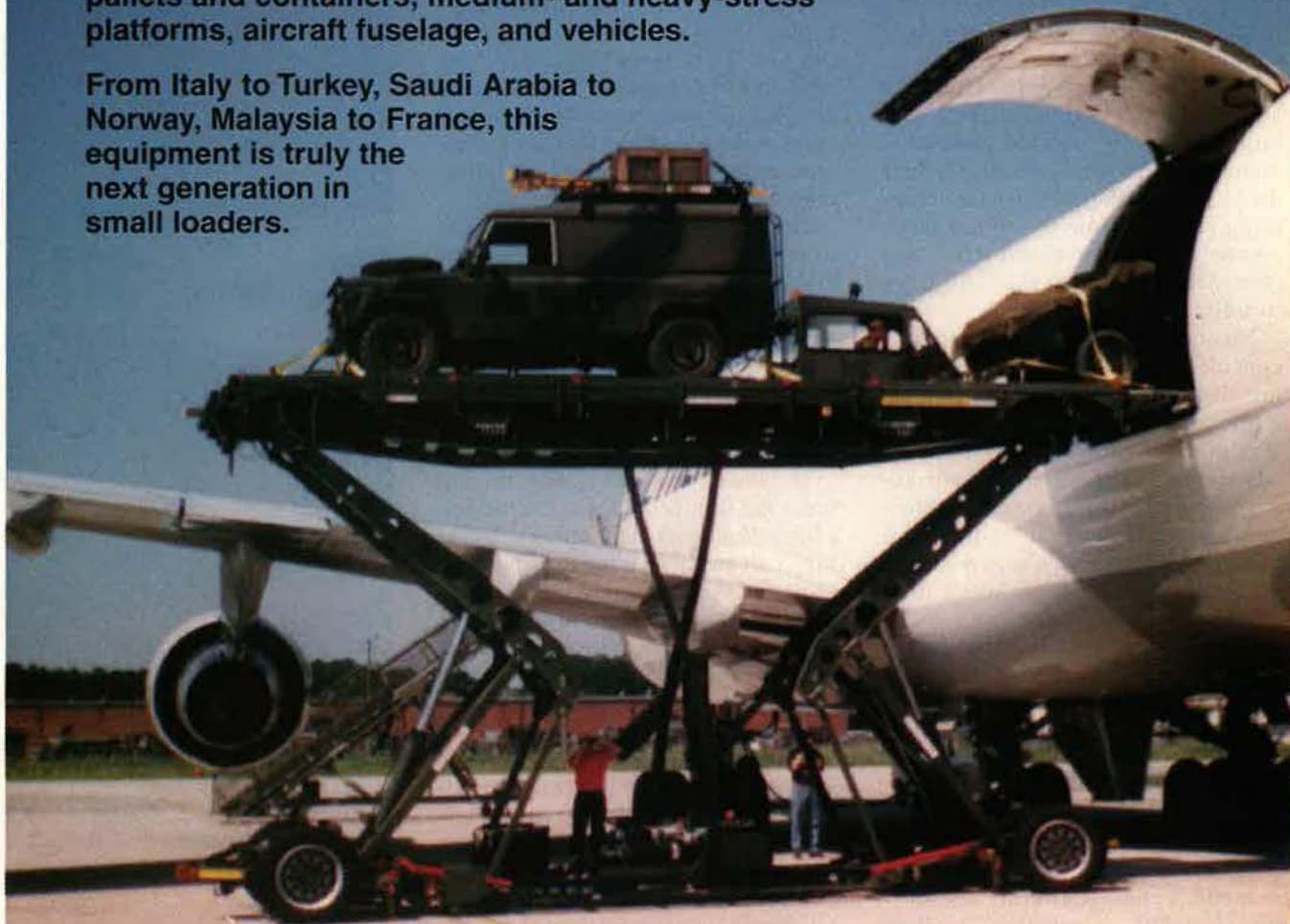
for the Next Generation Small Loader

ATLAS MKII: Proven Performer Worldwide

The Atlas MKII, a tactical main-deck loader capable of transporting all types of cargo and transferring it to cargo-carrying aircraft, has been proven in conflicts and field exercises worldwide.

The Atlas MKII is certified by the RAF to a load/lifting capacity of 42,000 pounds. Its deck is capable of handling all types of pallets and containers, medium- and heavy-stress platforms, aircraft fuselage, and vehicles.

From Italy to Turkey, Saudi Arabia to Norway, Malaysia to France, this equipment is truly the next generation in small loaders.



Atlas MKII is a product of Aircraft Maintenance Support Services Ltd. and is licensed for production by Teledyne Brown Engineering.

 **TELEDYNE
BROWN ENGINEERING**
An Allegheny Teledyne Company

The Navy has decided stealth is not that important and has pegged its future to the F/A-18E/F.

By John A. Tirpak, Senior Editor

THE F/A-18 Hornet is the new centerpiece of naval aviation. Carrier air wings today are made up mostly of F/A-18s, and within a decade only Hornet variants will be flying combat missions from America's flattops. A large new model, called Super Hornet, currently is in flight test and is expected to achieve initial operational capability in 2001.

However, the new Super Hornet is a compromise design, shaped to a large extent by budget pressures, major missteps in other earlier fighter programs, and the need to have something ready in time to replace large numbers of carrier-based strike and fleet-defense aircraft that will have to retire in the next decade.

No one—certainly not the Navy—considers the Super Hornet to be a low-observable, or “stealthy,” fighter; it has only a small degree of bolt-on stealthiness. Moreover it offers no advantage in speed, turning, or acceleration over today's standard Hornet. The revisions that it offers can be itemized: an extra weapon station on each wing, room for more fuel, somewhat more range, and more room for improvement than can be found in the current F/A-18C/D version. That Hornet model, in the words of the Navy's top aviator, is “maxed out.”

The Navy is well aware of the Super Hornet's limitations, but it has built a new carrier strategy around it, insisting that the “state of the art” in modern combat aircraft design—that is, stealth—isn't all it's cracked up to be.

“Perishable”

The service has published numerous brochures, white papers, and analyses promoting the Super Hornet—the single-seat version is called the F/A-18E and the two-seat ver-

sion the F/A-18F. It argues that the new fighter has a “balanced” design that doesn't rely on stealth because stealth is “perishable.” By that, the Navy means that aeronautic engineers eventually will come up with a countermeasure that will negate the LO advantage.

The Navy says that part of the reason it needs a larger version of the F/A-18 is to get the additional room it needs for systems that carry out defensive electronic countermeasures—jamming—as well as the attendant power and cooling requirements such systems require.

Nevertheless, the Navy has sought to buy as much stealthiness as possible for the Super Hornet. Canopy coatings, special materials and treatment for leading edges, and an F-22-style engine air intake have all helped produce a modest reduction in the Super Hornet's frontal radar cross section.

However, the new inlets do not mask the fighter's engine fan blades, a big reflector of radar energy. Nothing at all has been done to reduce the airplane's considerable infrared signature or its radar signature from the side or rear. Super Hornet will still carry weapons externally, a practice that greatly magnifies the aircraft's signature.

Making the airplane any stealthier would have forced the Navy to put the Hornet through a costly and unacceptably lengthy redesign, and the Navy decided against it.

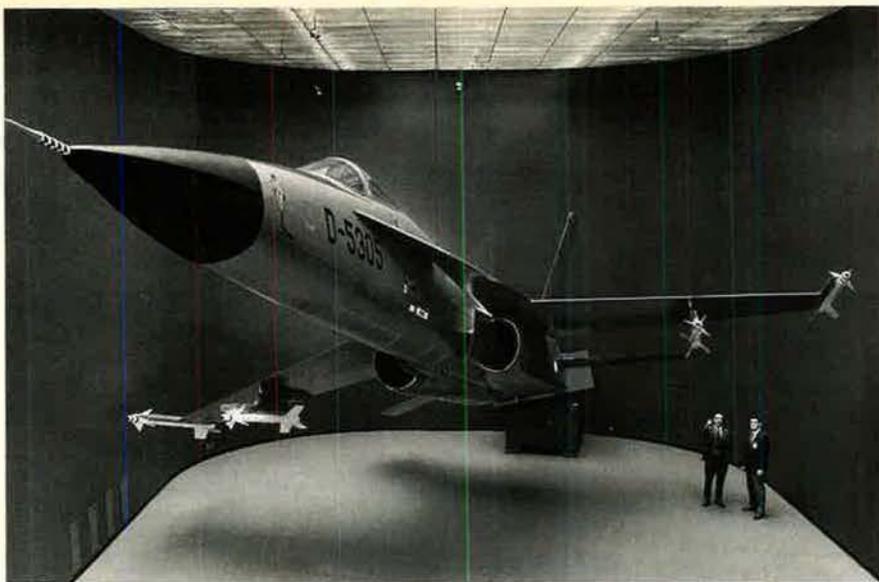
The Navy promotes the Super Hornet as an aircraft able to best any fighter it might encounter on tomorrow's battlefields. The service maintains that “with the AMRAAM missile, enhanced radar, and advanced onboard sensor fusion capability, there is not a threat fighter in the world today—or projected to exist in the next 20 years—that Super



The Super Hornet



Making its first "trap" aboard a carrier is the Super Hornet, latest in the Navy's family of Hornet strike fighters. This two-seat F/A-18F landed aboard USS John C. Stennis Jan. 18, 1997. The new airplane is about the same size as the USAF F-22 but descends from fighters not designed with stealth in mind.



The original Hornet, the F/A-18A/B, emerged from a Northrop in-house design called Cobra, shown here in mock-up. It became an entrant in the 1972 Air Force Lightweight Fighter Competition but lost to General Dynamics' YF-16. The Super Hornet is bigger and heavier.

Hornet cannot decisively defeat and totally dominate in combat.”

Many have challenged the Navy to state the basis for such claims, given the fact that modern competing aircraft such as the French Rafale and multinational Eurofighter 2000 not only are far more agile and stealthy but also boast up-to-date avionics which are at least on par with those of the Super Hornet. When asked, the service's director of air warfare supplies the small print: These threats can be defeated by the Super Hornet “with improvements.”

Rear Adm. Dennis V. McGinn agrees that the Super Hornet most likely won't win against some other modern aircraft using “brute force.” He explained, “If I get into a turning fight” with the E/F against these other aircraft, “then I've made a big mistake.”

He explained that, in the Navy's view, “things like ... thrust-to-weight ratios, turn radius, and climb performance [and] acceleration ... are still important, but they are not important in the same way as they were ... as recently as five years ago.”

McGinn maintained that the advent of features such as a helmet-mounted cuing system, AIM-9X short-range dogfight missile, electronically scanned array radar, and ever-improving AMRAAM radar-guided missile means “the air-to-air mission is becoming more and more

dependent upon parameters [such as] ... electronics and the weapon system and less on brute force.”

However, many of those features are not present in the initial version of the Super Hornet. The AIM-9X missile is still in early development. The improved radar system would be an expensive add-on to the Super Hornet because it is not funded and included in the baseline cost of the airplane.

“Best ... We Can Get”

The new F/A-18 can catch up to the threat “with continual improvements ... as we have [made] with every airplane we've ever built,” McGinn asserted. The Navy's approach with Super Hornet has been to “shoot for ... the best capability we can get” at the stage of IOC, “based on technology and affordability [and] on the threat that you project at that time. We never, ever design to the end point of performance.”

McGinn maintained that the Super Hornet will be better than its overseas competitors “overall,” taking into account the factors working to its advantage. The reduced radar signature, modest increase in range and payload, and improvement in self-defense avionics, coupled with better tactics to stay clear of enemy defenses, improved access to US intelligence and surveillance data, new standoff weapons, better crew training, and, eventually, an upgraded

Super Hornet Chronology

1987: Secretary of Defense Caspar Weinberger launches study of naval air requirements.

June 1992: Navy awards McDonnell Douglas a \$3.1 billion contract to conduct F/A-18E/F engineering and manufacturing development.

May 1995: McDonnell Douglas begins final assembly of F/A-18E1. GE delivers first production F414 engines.

September 1995: F/A-18E1 rolls out at McDonnell Douglas plant in St. Louis.

November 1995: F/A-18E1 makes first flight.

January 1996: Naval Air Warfare Center at Patuxent River, Md., begins three-year flight test program.

April 1996: F/A-18E1 conducts supersonic test flights, achieving Mach 1.1 on April 2 and Mach 1.52 on April 13.

August 1996: F/A-18F1 performs first catapult launches at Patuxent River.

January 1997: F/A-18F1 completes initial sea trials aboard USS *John C. Stennis*.

March 1997: DoD approves initial production of 12 aircraft.

April 1997: F/A-18F2 fires first missile (an AIM-9) in the flight test program.

January 1999: First production Super Hornets to enter service.

May 1999: Navy to begin operational testing.

2001: Planned IOC of first squadron.

Source: Boeing

radar will make the E/F “world class,” said McGinn.

The Navy also needs the Super Hornet in order to avoid wasting valuable munitions, he added. Because of landing load restrictions, the F/A-18C/D model must frequently jettison fuel and unexpended ordnance before landing on a carrier; during a rough “trap,” such weight might rip off a fighter's wings.

The E/F model, however, has stronger wings, a factor that increases the fighter's “bringback” capability, reducing the need to throw away bombs

or missiles before landing. This is becoming particularly important, McGinn said, in operations like Bosnia, where an airplane will take off with a full load of ordnance but usually does not use it before the end of the mission.

Critics of the Super Hornet, though, contend that there's not enough improvement to justify such a big production effort. The General Accounting Office, for instance, claimed that the existing F/A-18C/D Hornet could perform as well as or better than the Super Hornet if the Navy would equip it with larger external fuel tanks and an a la carte selection of some components planned for Super Hornet.

McGinn acknowledged that the march of microminiaturization and the new concept of relying on off-board sensors and jammers could, conceivably, take care of the room-for-growth problem that currently bedevils the C/D version.

He argued, though, that the Super Hornet will perform vital service as a "technology maturation" platform for some of the systems that may go on the new Joint Strike Fighter and that some new avionics require conformal antennas and arrays that must be built into the structure and skin of the airplane.

The JSF will be able to gain leverage from some of the new technologies that shake out of the Super Hornet, McGinn said, and this will reduce risk in the forthcoming airplane.

McGinn emphasized that, while

the Navy is "very, very happy" with the progress of its version of the JSF, there is no guarantee the program will succeed. If it were to fail, the Navy would have the Super Hornet as a fallback system, a "flexible" platform that could be adapted to new missions and threats.

McGinn also noted that the threat originally anticipated for the early 21st century—"multiple divisions of fifth-generation [Soviet] fighters and the ground carpeted with double-digit SAMs" has not materialized, a development that has made a less capable airplane acceptable as well as "affordable." However, he added, "We cannot be complacent. ... We need a platform with balanced survivability."

An Earlier View of Stealth

The Super Hornet is not the airplane the Navy originally had in mind for the role of carrier-borne deep-strike airplane in the early 21st century. Until recently, Navy plans for carrier aviation ascribed a far more significant role to stealth. Ten years ago, in fact, the service insisted to Congress that the highest priority of naval aviation was fielding both a stealthy medium bomber to replace the venerable A-6 Intruder and a stealthy fleet defense interceptor to replace the aging F-14 Tomcat.

The A-6—the Navy's main air-strike platform and a Vietnam veteran—was by the late 1970s an aging design and no match for the

sophisticated air defenses foreseen for the 1990s and beyond. Faced with advanced Soviet-made SAMs and associated radar, the A-6 was rapidly losing the capacity to win through to the target and return in one piece. If the deterioration of naval strike aviation continued, naval analysts agreed, carriers as America's "big stick" would lose credibility, and the Navy might have a hard time justifying buying any more at a cost of some \$5 billion apiece.

A new, stealthy aircraft, the A-12 Avenger II, was to have been the Navy's way of getting "back in the game" of deep strike. This stealthy flying wing, designed to carry a large internal load of weapons and fuel, would have expanded the carrier's power to reach into defended enemy territory. The A-12, by skirting hostile radars and presenting a tiny target to enemy missiles, was to allow carriers to strike with impunity against even the most heavily defended objectives.

Congress gave the Navy authorization to pursue the highly secret A-12 project. Moreover, the Navy was to pursue the Naval Advanced Tactical Fighter, to be a variant of whatever airplane USAF chose as its F-15 replacement—eventually, the F-22.

However, the Navy and its contractors bungled the A-12. In January 1991, then-Secretary of Defense Dick Cheney canceled the project because of technical problems, cost overruns, and long delays in schedule. Exactly who was most to blame is still being argued in the courts seven years later. The most recent rulings in favor of the contractors suggest the Navy may still have to pay more than a billion dollars to put the debacle to rest—money the service simply doesn't have on hand.

After the cancellation, it became immediately clear that the Navy had put all its eggs in the A-12 basket. Without it, the Navy had no modern stealth aircraft for its attack mission.

Son of A-12

The service hurriedly cobbled together an effort to produce a replacement aircraft, which was called A-X. Soon, however, this project collapsed because of projected high costs and the feeling inside the Navy that procurement of a single-mission airplane would not go over well with a



Collapse of the program to produce the A-12 (shown here) left a gaping hole in Navy plans. Without a new stealth attack fighter, it was forced to fall back on a souped-up, but not very stealthy, F/A-18 until the Joint Strike Fighter arrives.

Super Hornet Characteristics

Primary Function: Multirole fighter and attack aircraft

Contractor: McDonnell Douglas, now Boeing

Propulsion: Two F414-GE-400 turbofan engines

Thrust: 22,000 pounds per engine

Length: 60.3 feet

Height: 16 feet

Wingspan: 44.9 feet

Ceiling: 50,000+ feet

Speed: Mach 1.8+

Combat Radius: 370 miles (attack); 540 miles (fighter) (both vary with the mission profile)

Max Takeoff Gross Weight: 66,000 pounds

Models: 2, the E and F

Crew: 1 for E model, 2 for F model

Armament: 1 20 mm MK-61A1 Vulcan cannon

Munitions capability: AIM-9 Sidewinder, AIM-7 Sparrow, AIM-120 AMRAAM, Harpoon, HARM, Shrike, SLAM, SLAM-ER, Walleye, and Maverick missiles; JSOW; JDAM; various general purpose bombs, mines, and rockets.

Source: US Navy

cost-conscious Congress. Based on experience with the F/A-18—predominantly a fighter but with some attack capabilities—the Navy shifted gears and began a program called the A/F-X. Plans called for the new fighter to put emphasis on attack but have some fighter capabilities.

The arrival of the Clinton Administration in early 1993, however, signaled the end of the A/F-X and a parallel Air Force effort called the Multirole Fighter, intended to yield a replacement for the F-16 fighter.

Clinton defense officials, to promote economy, merged the two projects and their seemingly dissimilar requirements into a Joint effort that would satisfy the Navy's need for a medium stealth bomber as well as the Air Force's requirement for a cheap, low-end stablemate for the F-22. [See "Strike Fighter," October 1996, p. 22.]

The result was the Joint Strike Fighter program. The naval version of the JSF is expected to see initial

service around 2010. It will be equipped with wings that are larger than those on Air Force and Marine Corps models, and it will be able to carry two 2000-pound bombs internally. The Navy says it will have a combat radius of about 600 nautical miles, or about 100 nautical miles less than the planned combat radius of the defunct A-12 and A-X aircraft.

McGinn explained that the Navy fully understood that the JSF must meet an affordability requirement and that it was willing to "trade off" the additional range the service would have liked to have had in the new airplane for other benefits. However, the Navy's stealth requirement for its JSF is much more stringent than that of the Air Force or Marine Corps for their own variants. This suggests that the Navy actually puts more stock in the value of stealth than it publicly admits. The Marines, for their part, have opted out of the Super Hornet program altogether, preferring to wait for the JSF.

Out of this situation, the Super Hornet emerged as the gap-filler that would help the Navy carry on until it could get its true first-day-of-the-war penetrating fighter. This critical aircraft was originally conceived as Hornet 2000, with a much more radically altered platform featuring canards, more stealth, and conformal carriage of weapons. The concept was scaled back considerably in order to control costs and free up money

that the Navy could put toward building the stealth aircraft of the future.

Out of the 1970s

The Pentagon shopped the Hornet 2000 concept around to European Allies in the late 1980s with promises of sharing its development and production costs and benefits. The effort was aimed at saving Alliance money as well as heading off development of European designs which could be sold without consulting the United States. The Europeans declined to join in the Hornet 2000 effort and proceeded with their own projects. They offered the tart observation that the proposed American aircraft was "dressed up" 1970s technology.

Now, the Super Hornet is intended to bridge the gap until the JSF arrives in about 12 years. Of the 50 airplanes that constitute the Navy's current striking power aboard each carrier, 36 are F/A-18C/Ds and 14 are F-14 Tomcats, many of which have been given precision-strike capability with the addition of modified LANTIRN night-vision and targeting pods. The Super Hornet first will replace the F-14 and then gradually the F/A-18C/D.

"We'll be out of the F-14A in 2003," McGinn said, "and by 2007 we'll be out of the F-14D" and fielding an all-F/A-18 force aboard carriers. As the F/A-18C/Ds start to phase out, they'll be replaced by the JSF, but the plan is for the bulk of carrier strike power to



The Super Hornet is 25 percent larger than the C and D models. This two-seat F/A-18D carries a Laser-Guided Bomb on its left wing. The Super Hornet will first replace the F-14 Tomcat and then the F/A-18C/Ds.

reside in the Super Hornet. The objective air wing of 2015 is about 36 Super Hornets and 14 JSFs.

McGinn asserted that the Super Hornet will be "better than the F-14" in speed, agility, and maneuverability and have a more sophisticated air-to-ground suite than the Tomcat was ever intended to.

Initially, the Navy envisioned a Navy-Marine Corps production run of 1,000 Super Hornets, but that number has fallen considerably. First, the Marine Corps, which had established an unofficial requirement for 248, pulled out of the program some years ago. Then, the Pentagon's Quadrennial Defense Review in 1997 recommended that the Navy further reduce the program to 548 aircraft and move more rapidly to deploy the Joint Strike Fighter. "The total program cost of the E/F is right around \$43 billion," McGinn said. "Recurring unit fly-away cost is about \$44 million." Thanks to new initiatives and technologies in manufacturing, the cost of the Super Hornet "continues to come down," McGinn asserted.

During testing, the Super Hornet program has been hampered by the discovery of a problem known as "wing drop." This is a design glitch that results in an uncommanded wing dip, or wobble, during certain types of flight maneuvers in certain areas of the flight envelope. If left uncorrected, the problem could cause potentially dangerous distractions and complications during combat.

The Navy believes it has found an adequate solution that will reduce to acceptable levels—but not altogether eliminate—the problem of wing drop. This would include the addition of devices such as stall strips to the wings, which could increase drag and affect range. By early 1998, though, the Navy was still struggling to define a cost estimate for its proposed fixes.

Rollback

To accommodate itself to the Super Hornet's limited penetrating ability, the Navy has designed a "rollback" air campaign that it claims could gradually reduce the surface-to-air threat without unduly putting its attack force at risk. "It's all about mission effectiveness, not about stealth," McGinn said of the Navy's concept of operations.



The Navy contends that standoff weapons, jamming, good pilot training, and smart tactics will make up for what the Super Hornet lacks in stealth. It will also be able to carry more weapons than its predecessors and won't have to throw them away to land safely on deck.

"Stealth plays a part in mission effectiveness," McGinn acknowledged, defining the term as "the combination of lethality to carry out your air campaign objectives and survivability ... in our concept of operations, operating 'Forward, ... From the Sea.' It is the entire capability of the battle group."

Tomahawk Land Attack Missiles, fired from surface warships or submarines, would be the first salvo in a battle group attack, McGinn said, and would be launched against "key nodes of an integrated air defense system." The TLAMs would be followed by "standoff, outside area defense weapons" such as the Standoff Land Attack Missile-Expanded Response, or SLAM-ER, and Joint Standoff Weapon, both carried by the Hornet or Super Hornet.

Finally, with defenses beaten down, "we get to what we call level-of-effort weapons, such as [Joint Direct Attack Munition] or the [Guided Bomb Unit] family," McGinn concluded. He added that these would be used "in conjunction with other means of enhancing survivability," such as the AGM-88 High-speed Anti-Radiation Missile and jamming by the EA-6B Prowler.

"You achieve survivability through a combination of Suppression of Enemy Air Defenses, lethal target suppression, reduction of signature, onboard ECM, and tactics," McGinn

said. "It's not any one of those things. ... It's the combination of factors."

The radar cross section reduction in the Super Hornet "enhances the effectiveness of the other things we do, such as standoff jamming and standoff weapons and lethal SEAD," he added.

However, McGinn is resolute in his conviction about the "perishability" of stealth. "If you try to place your mission effectiveness too much in one specific area, you can get yourself in a situation where, if the enemy comes up with a countermeasure ... you really have to spend a lot of money and really make some compromises in how you employ your forces," he maintained.

The admiral went on, "We've seen it a lot in electronic warfare." For every measure, "there is a countermeasure [and a] counter-countermeasure. It has to do with physics." The Super Hornet offers "the flexibility in design to shift your strategy ... more toward electronics, or more toward missile performance, or more toward onboard or offboard sensor components. That's the key to staying two steps ahead of potential adversaries."

He observed that "the threat never is quite what you expect. ... Sometimes it's less, sometimes it's worse, sometimes it's just different." The Super Hornet is "the thing we think will work the best that meets our affordability [requirements]." ■

The campaign to open the Federal Employees Health Benefits Program to military retirees is gathering strength.

Making the Case for FEHBP

By Peter Grier

MILITARY retirees know the problem well: The Department of Defense has become the only large employer in the United States that kicks former workers out of its own health care system once they become eligible for Medicare at age 65.

These older retirees can still receive on-base care at Military Treatment Facilities on a space-available basis. However, waiting list slots are becoming increasingly difficult to find as bases close across the nation and the military health infrastructure gets smaller and more efficient.

Many military retirees and military associations—the Air Force Association included—believe the answer to this crunch is to open up the Federal Employees Health Benefits Program to those who wore the country's uniforms. Such a move would simply give them the same health care options that are now open to, say, Interior Department retirees—or retired members of Congress.

Proponents say 1998 may be the breakthrough year for this effort. Congress will consider legislation that would approve a limited test of FEHBP-65 at two sites. If lawmakers approve of the idea, and President Clinton doesn't stop it, the experiment could settle the controversial issue of the financial viability of FEHBP-65.

Rep. James P. Moran, the Virginia

Democrat who has been at the forefront of the FEHBP-65 campaign, believes the test is critical. When he introduced the legislation that would authorize the experiment, he said, "I believe this test will demonstrate that the FEHBP option is cost effective, does not impact military readiness, and provides superior health insurance coverage."

Moran also said that he believes the Department of Defense may support the effort. In the past, the Pentagon has been leery of embracing the FEHBP option because of the high price estimates it generated. However, DoD said in a report to Congress on the subject last year that "the Department is not opposed to an FEHBP demonstration program at a few limited sites where Tricare Prime is not offered." Tricare Prime is one of the Defense Department's current options for health care.

The Broken Promise

The roots of this issue can be found in the promises that DoD made to today's retirees when they originally signed up for military service.

Without question many, if not all, were told they would receive free or nearly free health care for as long as they lived, as part of the deferred compensation for the rigors of a career in military service. FEHBP-65 advocates note that, as recently as 1991, an Army recruiting brochure

said that health care would be provided to enlistees and their families "while you are in the Army and for the rest of your life if you serve a minimum of 20 years of active federal service to earn your retirement."

Moran said that after he became interested in the health care problems of military retirees, some of his retired service member friends produced similar documentation. Then, at a hearing, a Pentagon official said such words were "recruiting language, not legal language," he remembers.

"I couldn't believe it," Moran said.

Pentagon officials and their Congressional overseers for decades have considered the combination of Medicare and space-available treatment at military facilities to be the fulfillment of their health care commitment to older retirees. For decades, this combination worked.

The active duty force outnumbered retirees for most of the Cold War period, so retired service personnel and their families represented a relatively small proportion of the Pentagon health care workload. Many retirees settled near military bases in order to be as close to on-base care as possible.

However, two powerful forces have changed this picture in recent years: the Congressionally chartered Base Realignment and Closure commissions and the skyrocketing cost of medical care generally.

Several rounds of BRAC have helped Congress take politically tough steps to close excess military infrastructure. While necessary to get the most national security possible out of the shrinking Pentagon budget, these closures have left many retirees isolated, in terms of health care.

Meanwhile, the cost and complexity of modern medicine have led DoD to consolidate the services' health care programs, including CHAMPUS (Civilian Health and Medical Program of the Uniformed Services), into the new Tricare system, which combines access to MTFs with civilian health provider networks.

Tricare, however, is limited to beneficiaries under 65 (just as CHAMPUS was before it). Increasingly, MTF commanders are focusing their own scarce on-base resources on Tricare needs. Military readiness is their top priority, after

all, but that means that space-available slots for non-Tricare participants are becoming scarcer.

And Now, "Lockout"

Older retirees argue that MTFs increasingly have developed an institutional preference against them.

"It really goes to expectations," said Moran. "When people enrolled in the military and were paid really low incomes, it was the benefits—particularly retirement and health care—that encouraged them to stay. It was a contractual thing.

"Now, when they go into military health care facilities, they go to the doctors they've always been served by, but once they turn 65, it's, 'Sorry, we will serve you only if there's no one else waiting.'" For older retirees, the result is Tricare "lockout."

Military retirees age 65 and over can participate fully in Medicare, of course, as can all US citizens who reach that age. Even so, many big US corporations provide their retirees health benefits to supplement Medicare. And, ironically, other federal retirees do not have to depend on the Medicare bureaucracy as their sole health provider. They continue to be eligible for the Federal Employees Health Benefits Program as long as they live—and their survivors can stay enrolled in the program after their passing.

One lawmaker who opposes this dual standard is Sen. Christopher "Kit" Bond, a Missouri Republican who has introduced in the Senate a bill similar to the House version introduced by Moran. "This is an issue of fairness," said Bond. "Compared to what other federal and private sector retirees receive in terms of health care options, our treatment of military retirees is woefully inadequate and downright inexcusable."

Congress has already made one move that could lead to an improvement in the health care of some over-64 military retirees. As part of the total package of 1998 Defense Department legislation, lawmakers approved a test of Medicare Subvention in selected sites around the country.

Under the subvention approach, the Medicare program reimburses the Pentagon for medical services that DoD provides to over-64 military retirees in Military Treatment Facilities. This allows older retirees to

remain in the health care system they are used to, receiving the medical care most feel they were promised.

The problem is that, to take advantage of Medicare Subvention, retirees must live near an MTF and, as noted, that is becoming less common. Nine states now have no such facilities at all. Six have no inpatient facilities. Eight others have only one hospital. Overall, of the approximately 1.2 million military retirees currently eligible for space-available MTF treatment, only 380,000 live near military hospitals with 50 beds or more, according to statistics compiled by the General Accounting Office, a Congressional watchdog agency.

Not Enough

Medicare Subvention is all well and good, say many military associations, but it needs to be accompanied by a further step—opening FEHBP to all service retirees over 64.

Congress agrees that more work is needed. In the final conference report of the 1998 Defense Appropriations Act, the key House and Senate negotiators had this to say: While encouraged by the advent of the Medicare Subvention effort, "alternative options, such as providing FEHBP to Medicare-eligible military retirees, exist and could serve to further ameliorate the problems caused by Tricare lockout."

FEHBP, the federal government's premier voluntary health services program, was established in 1960 and now covers some nine million current and retired government employees, ranging from Supreme Court justices and Presidents to Congressional staffers and Environmental Protection Agency clerks, at an annual cost of \$16 billion.

The system offers participants a wide choice of health plans, including traditional fee-for-service, Preferred Provider Organizations, Health Maintenance Organizations, and 100 percent prescription drug coverage. Enrollees pay a monthly premium, which varies according to the expense of their chosen plan, but the government subsidizes up to 72 percent of this outlay.

Military retirees, military organizations, and their supporters argue that FEHBP would provide military retirees better and cheaper wrap-

around coverage to supplement Medicare than can be obtained in commercially available Medigap policies. They say that, depending on which plan they choose, older service retirees could have nearly 100 percent coverage of their medical expenses, including costly prescriptions and dental care.

"FEHBP serves as a model for the managed health care programs offered by other large employers," said an Air Force Association position paper.

Now, it looks as if the changeover finally will happen. Proponents of FEHBP-65 legislation say there are a number of reasons why this could be their year. One is that this is no longer a new issue. Military association representatives have now had several years to educate lawmakers about expanding retiree health care options. Another is that the approval of a Medicare Subvention demonstration shows that Congress believes there is, indeed, a problem that needs to be fixed. And it's an election year, when lawmakers are often somewhat more open to the entreaties of important constituencies. Finally, the experience with subvention has taught proponents that they may need to start with small steps. Many are putting their weight behind an FEHBP-65 test bill that could help settle the question of the move's cost, and its effect on existing federal health policyholders, once and for all.

Three-Year Test

The proposed bill—introduced as H.R. 1766 in the House by Moran and as S. 1334 in the Senate by Bond—would set up an FEHBP-65 demonstration program that would last three years and run at two different sites.

One of the sites would be within an MTF catchment area, meaning close to a DoD-run hospital. The other would be far from any military facility. Total participation would be capped at 50,000 Medicare-eligible retirees. Under the terms of the bill, the cost of the test would be offset by reductions in the administrative costs of the Pentagon's travel budget and by the sale of platinum and palladium from the National Defense Stockpile.

The question of cost—perceived by some to be too high—has long been a major factor weighing against

the FEHBP-65 campaign. In today's budget-conscious era, any program whose price tag features a long row of zeros faces harsh Congressional scrutiny. Moran said, "There are legitimate concerns about the cost of this option." These concerns, however, are overstated, he added.

The Congressional Budget Office has estimated FEHBP-65 could cost as much as \$1.6 billion a year. However, this estimate is a worst-case scenario. It assumes that older military retirees receive no space-available MTF care and that 95 percent of the eligible 1.2 million retired service personnel and dependents enroll in the federal employee's health program.

The Military Coalition, a group of military and veterans organizations, believes the true cost would be much lower.

This is how the coalition derives its lower estimates: First, take the 1.2 million possible enrollees and subtract those who would be covered by nationwide Medicare Subvention. Eliminate those who have health coverage from post-military employment, either with the government or the private sector. Eliminate those who will be reluctant to pay FEHBP premiums on top of their Medicare Part B costs. The result? A possible beneficiary population of 160,000 to 240,000 persons.

The marginal cost of covering these individuals would range from \$236 million to \$354 million, according to the coalition. It might even go lower, coalition analysts added; unlike most other FEHBP enrollees, military retirees would have Medicare as first payer for many of the health costs.

Would allowing retired service personnel into the FEHBP system make it more expensive for those already enrolled? Proponents of the move argue that would not happen. The test legislation envisions placing them in a separate risk pool, for purposes of establishing premiums.

"We will only combine them if we establish that it would not increase the premium for those already enrolled," said Moran. "I think they're

going to find that the military retirees are in fact lower cost," because Medicare would shoulder many of their largest expenses.

Of Nose and Tent

FEHBP-65 backers admit that they consider their proposed demonstration program to be simply a legislative camel's nose under the tent. Their real aim is to demonstrate viability and then pass a full-scale program. Moran has also introduced a bill (H.R. 76) to that effect.

Some other lawmakers would take a different approach. Rep. J.C. Watts (R-Okla.) is sponsoring a bill (H.R. 1356) that would allow all military retirees, regardless of age, to participate in FEHBP if they live outside an MTF catchment area and do not have access to Tricare Standard.

There is "some latitude and flexibility" in his bill that other legislation does not have, said Watts, but he added, "We need to work and come up with a way to provide this coverage. If someone has a better way, then come up with a plan."

Recent improvement in the US government's fiscal situation may make it easier, politically, to adopt some sort of FEHBP plan for military retirees, according to Watts. As yet, he has no cost estimate for his own plan. Still, "the fact that we can see light at the end of the tunnel hopefully will give us the courage to at least put this thing on the front burner," he said.

Just because the federal budget now is close to being in balance does not mean that FEHBP costs are irrelevant, however. Even a \$300 million increase remains a large one in today's fiscal context, and the Department of Defense might yet object to the effort. However, Moran claims that a majority of House members will support FEHBP-65 legislation if it reaches the floor of the House. The problem is driving such a bill through the committee process to get to that point.

"If the grassroots of military retirees and military associations keep pushing for it, I'm sure we're going to get it," said Moran. ■

Peter Grier, the Washington bureau chief of the Christian Science Monitor, is a longtime defense correspondent and regular contributor to Air Force Magazine. His most recent article, "Going Gray," appeared in the February 1998 issue.

Down a Rat Hole

"You don't need blueprints to draw very sensible conclusions [about the layout of an underground military target]. I think we are doing extremely well in judging what the buried structure must look like. ... The cost of building a penetrator [weapon able to reach and destroy such a target] is trivial compared to [the cost of] burying oneself ever deeper in the ground. In this particular chess match, it is better to be on the penetrator end than on the burying end, because the burying end will go broke."
Harold P. Smith Jr., DoD official for nuclear, biological, and chemical defense programs, in Jan. 30, 1998, remarks to the Defense Writers Group in Washington.

Nuclear Test Ban for Dummies

"The point of the treaty is to ban the bang, not to ban the bomb."
Robert Bell, National Security Council official, in a Feb. 2, 1998, briefing on the proposed Comprehensive Test Ban Treaty.

Mullahs and Missiles

"When I testified here a year ago, I said that Iran, which had received extensive missile assistance from North Korea, would probably have medium-range missiles capable of hitting Saudi Arabia and Israel in less than 10 years. Since I testified, Iran's success in gaining technology and material from Russian companies, combined with recent indigenous Iranian advances, means that it could have a medium-range missile much sooner than I assessed last year."
George Tenet, CIA director, in Jan. 28, 1998, testimony to the Senate Select Committee on Intelligence concerning worldwide threats.

Mustafa the Magnificent

"During Israel's invasion of Lebanon, and after the deployment of the multinational force, I gathered the Lebanese resistance leaders together and told them: Do whatever you want with the US, British, and other forces, but I do not want a single Italian soldier to be hurt ...

because I do not want a single tear falling from the eyes of [Italian actress] Gina Lollobrigida. ... I've been fond of her ever since my youth."

Gen. Mustafa Tlass, Syrian defense minister, in Jan. 1, 1998, newspaper interview about events in Beirut in 1982-83.

Blonding Insight

"It seems like a total guy thing that's going on here—this whole idea, this whole macho thing of wanting to be buried in Arlington National Cemetery. I think the idea that the Republicans found out about it and sort of said, 'This is a great idea; let's accuse them [Clinton Administration officials] of going after Arlington Cemetery,' was the kind of thing that I don't think a group of women Republicans would ever get up to."

Sally Quinn, Washington pundit, to Ted Koppel, in a Dec. 5, 1997, "Nightline" broadcast about controversial waivers granted for burials at Arlington National Cemetery.

Schlesinger Doctrine

"My view is this should be approached very cautiously. Repeat: very cautiously. This process, of which de-alerting is a part, can be carried too far in the direction of sheer nuclear disarmament."

Former Defense Secretary James R. Schlesinger, quoted in the Dec. 12, 1997, Washington Times, regarding DoD's development of a major strategic weapons plan that would lower the alert status of US nuclear forces by removing critical components.

The Term Is "Quagmire"

"There's a difference between saying it [the commitment of US forces in Bosnia] is *indefinite* and [saying] it is *infinite*. ... We ought to stay until the seeds of peace have taken much deeper root and can become self-sustaining."

Secretary of Defense William S. Cohen, appearing on CBS' Dec. 21, 1997, broadcast of "Face the Nation," to defend President Clinton's decision to ignore the prom-

ised June 1998 date for a pullout of US troops.

Advance to the Rear

"After two years of a massive military presence costing the US over \$7 billion, the situation remains explosive. This only underscores the need to establish a realistic, achievable military mission that, when accomplished, will permit an orderly withdrawal in the future."

Sen. John McCain (R-Ariz.), a senior member of the Senate Armed Services Committee, in a Dec. 18, 1997, statement responding to President Clinton's statement on Bosnia.

"Halt Phase," Anyone?

"CBO estimated how long it would take US mobility assets proposed for early next century ... to transport all of the Army's forces and associated equipment to two conflicts that broke out 45 days apart. CBO's results indicate that getting all Army forces to the theater for an initial conflict in the Middle East could require as much as 140 days, rather than the 90 days assumed in some DoD plans. The time required to complete deliveries to a second theater could be almost 200 days. ... CBO's analysis suggests that delivering all Army forces to both theaters might take as long as 240 days—significantly longer than the 135 days consistent with DoD's notional schedule."

From CBO report, "Structuring the Active and Reserve Army for the 21st Century," December 1997.

Cause and No Effect

"People in the Pentagon like to say: 'Every time there's been a crisis, the United States Navy [and] United States Marine Corps have been there 63 percent of the time.' The second part of that paragraph says, 'The crisis happened even though you were there.'"

Gen. John J. Sheehan, USMC (Ret.), former commander of US Atlantic Command, in mid-January remarks to a technology conference in San Diego. ■



The F119 is the dependable engine for the F-22, making its derivative the most affordable engine for the Joint Strike Fighter. Backed by the same



WHEN YOU'RE HEADED INTO
A MAJOR THEATER, USE THE ENGINE
THAT'S HAD A DRESS REHEARSAL.

top-flight support we've shown on the F-15, F-16, and C-17. Pratt & Whitney. *THE POWER OF READINESS.*



Pratt & Whitney

A United Technologies Company

Two types of weapons of mass destruction—chemical and biological agents—have moved to the center of attention.

The Poor Man's Nukes

THE Pentagon, concerned about the threat of germ and gas warfare, has intensified efforts to bolster US defenses overseas and at home. For example, DoD ordered 1.4 million active troops and one million reservists and civilians to be vaccinated against anthrax, a lethal biological agent. Secretary of Defense William S. Cohen said the US

is studying ways to address special weapons use in the US itself. In Cohen's view, such arms pose "the greatest threat that any of us will face in the coming years."

There are numerous weapons of mass destruction—those that can wipe out military units or populations. What follows is a look at what American troops and civilians could be facing. The list is not exhaustive.

Information on these pages is drawn from "Proliferation: Threat and Response," Department of Defense; "Biological Agent Information Papers" and "Medical Management of Biological Casualties Handbook," US Army Medical Research Institute of Infectious Diseases, Ft. Detrick, Md.; and "Medical Management of Chemical Casualties Handbook," US Army Medical Research Institute of Chemical Defense, Aberdeen Proving Ground, Md.



Who Has What

Nation	Biological Weapons	Chemical Weapons
China	Possesses infrastructure necessary for biowar program. Likely has maintained an offensive biowar program.	Produces and is capable of using wide variety of agents.
India	Has R&D facilities geared toward biowar defense.	Has a sizable chemical industry and recently declared details of its chemwar program.
Iran	Possesses expertise and infrastructure to support biowar program. May have small quantities of agents; seeking larger capability.	Employed chemical agents on limited scale during Iran-Iraq War. Produces chemical agents and is capable of use on limited scale. Seeking independent capability.
Iraq	May retain elements of its old [pre-Gulf War] program, including some agents in missile warheads. Could restart some limited agent production quickly.	Probably has hidden precursor chemicals, agents, munitions, documentation for future effort. Could restart production and have small usable stockpile in several months.
Libya	Lacks scientific and technical base. Remains in R&D stage.	Employed chemical agents against Chadian troops in 1987; produced blister and nerve agents in 1980s; is building underground production facility.
N. Korea	Pursued biowar R&D for many years. Possesses biotechnical infrastructure capable of supporting limited biowar effort.	Produces and is capable of using wide variety of agents.
Pakistan	May have the capability to support a limited biowar program.	Has ability to transition from R&D to chemical agent production.
Syria	Possesses adequate biotechnical infrastructure to support biowar program. May be conducting research related to biowar.	Produces and is capable of using chemical agents. Seeking independent chemwar capability.



Aircrew members help each other with NBC equipment during an exercise—learning procedures and protective measures against an increasing threat of chemical and biological warfare.

Bacterial Threats

Anthrax

Description: Lethal disease caused by infection with the bacterium *Bacillus anthracis*. In nature, organisms usually enter the body through skin wounds but they may be inhaled or ingested. Intentional release by belligerents or terrorist groups would presumably involve aerosol means.

Symptoms: The incubation period for inhaled anthrax is one to six days. Fever, malaise, fatigue, cough, and chest discomfort are rapidly followed by severe respiratory distress. Shock and death occur within 24 to 36 hours of the onset of severe symptoms. In cases of cutaneous anthrax, a papule develops, then vesicates, finally developing into a black patch surrounded by moderate to severe edema. Without treatment, this disease may progress to blood poisoning and death, with a case-fatality rate of 20 percent. With treatment, fatalities are rare.

Treatment: Penicillin, ciprofloxacin, or doxycycline, though they are usually ineffective against inhaled anthrax once symptoms appear.

Protection: A licensed vaccine is available for use in those at risk of exposure.

Brucellosis

Description: An infection caused by any of four species of coccobacilli of the genus *Brucella*. One is normally a pathogen of cattle, while

the other three are pathogens of goats, pigs, and dogs. Organisms are acquired by humans through the ingestion of unpasteurized milk and cheese, inhalation of aerosols generated on farms and in slaughterhouses, or skin lesions on persons with animal contact. Intentional exposure by belligerents would likely involve aerosolization but could involve contamination of food.

Symptoms: Symptoms of brucellosis are nonspecific and consist of irregular fever, headache, profound weakness and fatigue, chills and sweating, and generalized arthralgias and myalgias. Depression and mental status changes are noteworthy. Osteoarthritic complications, particularly involving the axial skeleton, are common. Fatalities are uncommon, even in the absence of therapy.

Treatment: Antibiotics.

Protection: No human brucellosis vaccine is available.

Cholera

Description: An incapacitating infection caused by the bacterium *Vibrio cholerae*, acquired by ingestion of contaminated water or food. The disease manifests itself as a watery diarrhea so profuse that supplies of IV fluids are often exhausted during epidemics. Intentional use by belligerents or terrorist groups would presumably involve contamination of food or water sources. Cholera is not itself lethal, but with heavy ca-

sualties and the breakdown in medical care often found in wartime, a large number of deaths is possible.

Symptoms: Incubation takes one to five days. While a large number of infected persons remain asymptomatic, the "classic" form of cholera is noteworthy for its severity and sudden onset. Vomiting, abdominal distention, and pain with little or no fever are followed rapidly by a profuse, watery diarrhea. Fluid losses may readily exceed 10 liters per day. Without treatment, death may result from severe dehydration and shock.

Treatment: Fluid and electrolyte replacement to prevent or overcome severe dehydration. Antibiotics.

Protection: A licensed vaccine is available but is only modestly effective, providing about 50 percent protection for six months.

Plague

Description: A lethal infectious disease caused by the bacterium *Yersinia pestis*. Naturally occurring plague is acquired by bite of a flea that has previously fed on infected rodents. Plague may also be transmitted via aerosol. In such instances, a pneumonic form may develop and, in the absence of prompt therapy, progress rapidly to death within three days. Intentional release by belligerents or terrorists would presumably involve aerosols.

Symptoms: Pneumonic plague begins with high fever, chills, headache, and vomiting blood, progressing rapidly to difficulty breathing and lack of oxygen. Death results from respiratory failure, circulatory collapse, and bleeding. Bubonic plague has an incubation period of two to 10 days and causes malaise, high fever, and tender lymph nodes. Bubonic plague may progress spontaneously to the septic form, with spread to the central nervous system and lungs.

Treatment: Antibiotics must be started within 24 hours of onset of symptoms.

Protection: A licensed vaccine is available but appears to offer little protection against aerosol exposure.

Tularemia

Description: An infection caused by the bacillus *Francisella tularensis*. Naturally acquired tularemia is contracted through bites of certain insects (notably ticks and deerflies) or

contact with infected rabbits, muskrats, and squirrels. Intentional release by belligerents would presumably involve aerosolization of living organisms. Naturally acquired tularemia has a fatality rate of five percent; the pneumonic form, which would predominate in war, would likely have a greater mortality rate.

Symptoms: Incubation averages three to five days. Use of tularemia as a weapon would likely lead to preponderance of pneumonic and typhoidal cases, and large aerosolized attacks would be expected to shorten the incubation period. Victims would have tender ulcers at the site of inoculation, accompanied by tender, enlarged regional lymph nodes. Fever, chills, headache, and malaise often accompany these symptoms. Typhoidal and pneumonic forms often involve significant cough, abdominal pain, substernal discomfort, and prostration, in addition to fever, chills, and headache.

Treatment: Antibiotics, though relapses may occur.

Protection: A live, attenuated vaccine is available as an investigational product. Intramuscular streptomycin will prevent disease following documented exposure.

Q Fever

Description: An infection with the rickettsial organism *Coxiella burnetii*, typically spread by inadvertent aerosolization of organisms from infected animal products. Person-to-person transmission rarely occurs. Intentional release by belligerents or terrorist groups would presumably involve aerosolization, and Q fever would likely be employed as an incapacitating agent, as its mortality rate is low, only one to three percent.

Symptoms: Q fever typically starts as an undifferentiated illness with fever, chills, cough, headache, weakness, and chest pain occurring as early as 10 days after exposure. Onset may be sudden or insidious. Pneumonia is present in some cases, but pulmonary syndromes are usually not prominent. The illness lasts from two days to two weeks.

Treatment: Antibiotics. Q fever is generally a self-limited illness even without treatment.

Protection: Treatment with tetracycline or doxycycline within 12 days of exposure should prevent onset of

symptoms. Vaccine is available as an investigational agent.

Viral Threats

Smallpox

Description: A lethal infection caused by the variola virus, a member of the Chordopoxvirus family. Naturally occurring smallpox has been eradicated from the globe, with the last known case occurring in Somalia in 1977. Repositories of virus are known to exist in only two laboratories. Monkeypox, cowpox, and vaccinia are closely related viruses, however, which might lend themselves to genetic manipulation and the subsequent production of smallpox-like disease.

Symptoms: The incubation period of smallpox is about 12 days. Clinical manifestations begin acutely with a period involving malaise, fevers, rigors, vomiting, headache, and backache. After two to four days, skin lesions appear and begin to progress uniformly from macules to papules to vesicles and pustules. Lesions progress centrifugally and scab in one to two weeks. In unvaccinated individuals, variola major, the classical form of the disease, is fatal in some 30 percent of cases.

Treatment: Supportive care is the mainstay of smallpox therapy. No specific antiviral therapy exists.

Protection: A licensed, live vaccinia virus vaccine is available and is administered via a bifurcated needle using a multiple puncture technique. Vaccine would only be indicated in laboratory settings or where biological warfare was a distinct possibility.

Venezuelan Equine Encephalitis

Description: A mosquito-borne disease maintained in a horse-mosquito-horse cycle, though thousands of human infections also occur each year. Large outbreaks among horses typically precede appearance of human cases. Use of VEE as a weapon would presumably involve aerosolization.

Symptoms: VEE is an incapacitating agent with a mortality rate of less than one percent. Susceptibility is nearly 100 percent, however. The disease is characterized by sudden onset following a one-to-five-day incubation. Initial symptoms include

malaise, severe headache, fever and rigors, photophobia, and myalgias. Cough, sore throat, and vomiting and diarrhea may follow. Only a small percentage of cases actually progress to encephalitis, which is more frequent in young children and is marked by convulsions, coma, and paralysis. In a majority of cases without neurologic complications, however, full recovery occurs in one to two weeks.

Treatment: Largely supportive.

Protection: Vaccine TC-83 is available as investigational product.

Viral Hemorrhagic Fevers

Description: A diverse group of human illnesses caused by viruses from several different families: the Filoviridae, which consists of Ebola and Marburg viruses; the Arenaviridae, including Lassa fever, Argentine, and Bolivian hemorrhagic fever viruses; the Bunyaviridae, including various members from the Hantavirus genus, Congo-Crimean hemorrhagic fever virus from the Nairovirus genus, and Rift Valley fever from the Phlebovirus genus; and Flaviviridae, such as yellow fever virus, dengue hemorrhagic fever virus, and others.

Symptoms: VHF are illnesses which can be complicated by easy bleeding, petechiae, hypotension and even shock, flushing of the face and chest, and edema. Constitutional symptoms such as malaise, myalgias, headache, vomiting, and diarrhea may occur.

Treatment: Antiviral therapy with ribavirin may be useful in several of these infections.

Protection: The only licensed VHF vaccine is yellow fever vaccine. Prophylactic ribavirin may be effective for Lassa fever, Rift Valley fever, CCHF, and possibly hemorrhagic fever with renal syndrome.

Biotoxic Threats

Botulism

Description: Lethal illness caused by any of seven related neurotoxins produced by the bacterium *Clostridium botulinum*. They are typically formed in canned foods and subsequently ingested, although the spore form may occasionally gain access to the body through wounds or gastrointestinal tract. Intentional release by belligerents or terrorists would



Preparation for a chemical warfare attack was just as important back in 1942, when these enlisted men at Lubbock Army Flying School in Texas received instructions on gas mask technique.

likely involve aerosolization of preformed toxins, which then produce disease via inhalation.

Symptoms: Drooping eyelids, generalized weakness, dizziness, dry mouth and throat, blurred vision, slurred speech, and difficulty in swallowing are followed by symmetrical descending paralysis and the development of respiratory failure. Symptoms may begin as early as 12 to 36 hours following ingestion or inhalation but could take as long as several days.

Treatment: Supportive care is the mainstay of therapy. For respiratory failure, tracheostomy may be required. A licensed trivalent equine botulinum antitoxin is available.

Protection: Toxoid available as an investigational product.

Staphylococcal Enterotoxin B Disease

Description: An incapacitating illness caused by SEB, one of several toxins produced by the bacterium *Staphylococcus aureus*. SEB is a common contributor to food poisoning but could be employed by belligerents or terrorist groups as an aerosolized inhalational agent. It is incapacitating but rarely lethal.

Symptoms: Symptoms appear three to 12 hours after aerosol exposure and consist of sudden onset of fever, chills, headache, myalgia, and cough. Some patients may develop shortness of breath and retrosternal chest pain. Fever may last two to five days, and

cough may persist for four weeks. Patients ingesting toxin might suffer nausea, vomiting, and diarrhea. Very high exposure levels may lead to pulmonary edema and, though rare, death.

Treatment: Treatment is limited to supportive care. No antitoxin has been developed.

Protection: Currently no human vaccine is available to prevent SEB intoxication.

Ricin Intoxication

Description: A lethal illness caused by ricin, a protein toxin which acts as a cellular poison. Ricin is readily produced from castor beans, ubiquitous throughout the world. Five percent of all waste from commercial production of castor oil is ricin. Natural cases of ricin intoxication involve ingestion of castor beans, which causes severe GI symptoms, vascular collapse, and death. Ricin use by belligerents might involve the poisoning of water or foodstuffs, use of ricin-laced projectiles, or aerosolization of ricin as a liquid or freeze-dried powder.

Symptoms: When inhaled as an aerosol, ricin would likely cause symptoms within eight hours. Fever, cough, difficulty breathing, nausea, and chest tightness are followed by profuse sweating, development of pulmonary edema, cyanosis, hypotension, and finally respiratory failure and circulatory collapse. Death would occur in 36 to 72 hours, depending on size of the dose.

Treatment: No specific antitoxin treatment exists.

Protection: A protective mask offers protection from aerosol exposure, but no specific vaccine exists.

Trichothecene Mycotoxicosis

Description: Disease caused by the trichothecene mycotoxins, poisons produced by several species of fungi. Most are potent inhibitors of protein synthesis and respiration. The toxins most frequently isolated from agricultural products, and likewise mentioned most often in the context of belligerent use, include diacetoxyscirpenol (DAS), Nivalenol, 4-Deoxynivalenol (DON), and especially T-2. T-2, one of the most stable types, is perhaps the most likely to be employed in terrorism or warfare. Intentional use of T-2 by belligerents might involve aerosolization or contamination of food.

Symptoms: Skin exposure leads to symptoms within minutes, including redness of the skin, pain, and a burning sensation. Blisters form and progress to necrosis with a leathery blackening of the skin. Inhalational exposure produces a rapid onset of nose and throat pain, with nasal discharge, cough, labored breathing, wheezing, chest pain, and coughing up of blood. Eyes are likewise affected with intense burning. GI exposure leads to loss of appetite, nausea, abdominal cramping, and watery or bloody diarrhea.

Treatment: Standard poison management techniques, such as the use of superactivated charcoal, are useful when administered early to casualties with gastrointestinal exposure.

Protection: Physical means, such as a protective mask and clothing.

Nerve Agents

Tabun (GA), Sarin (GB), Soman (GD), GF, VX

Description: The most toxic of the known chemical agents. Nerve agents are extreme hazards in their liquid and vapor states and can cause death minutes after exposure. Nerve agents inhibit certain enzymes in tissue; effects are caused by resulting excess compounds. Nerve agents are considered major military threats. They can be dispersed from missiles, rockets, bombs, howitzer shells, spray tanks, land mines, and other large munitions.

Symptoms: Small exposure to vapor brings constriction of the pupils, nasal inflammation, and mild difficulty breathing, while a large exposure to vapor causes sudden loss of consciousness, convulsions, a halt in breathing, paralysis, and death. Small to moderate exposure of liquid on skin produces localized sweating, nausea, vomiting, and a feeling of weakness, while a large exposure to liquid on skin has same effect as vapor exposure. Lethal amounts of vapor or liquid cause a rapid cascade of events culminating, within a minute or two, with loss of consciousness and convulsive activity followed by a halt in breathing within several more minutes.

Treatment: Three drugs—atropine, pralidoxime chloride, and diazepam—are used to treat nerve agent exposure.

Protection: Pyridostigmine bromide as a pretreatment. Protective masks, clothing.

Vesicant Agents

Mustard (H, HD)

Description: A major military threat agent since its introduction in World War I, mustard is an oily liquid with color ranging from a light yellow to brown and has an odor of garlic, onion, or mustard (hence its name). Mustard constitutes both a vapor and a liquid threat to exposed skin and mucous membranes. Effects are delayed, appearing hours after exposure. A vesicant, it causes vesicles (blisters) on the skin; however, these agents also damage the eyes and airways by direct contact and have other effects.

Symptoms: Blisters on the skin; irritation, conjunctivitis, corneal opacity, and damage in the eyes; mild upper respiratory irritation and burning progresses to marked airway damage; also nausea and vomiting and bone marrow damage. Organs most commonly affected are skin, eyes (with mild conjunctivitis to severe eye damage), and airways (with mild irritation of the upper respiratory tract to severe bronchiolar damage leading to necrosis and hemorrhage of the airway). The GI tract may be damaged. Death stems from respiratory failure, bacterial pneumonia, or immune system failure.

Treatment: No specific antidote.

Immediate decontamination is the only way to reduce damage.

Protection: Protective mask, clothing.

Lewisite (L)

Description: An oily, colorless liquid, having the odor of geraniums. It is a vesicant that damages eyes, skin, and airways by direct contact. After absorption, it causes an increase in capillary permeability to produce shock and organ damage.

Symptoms: Lewisite causes immediate pain or irritation of skin and mucous membranes. Blisters on the skin, and eye and airway damage similar to those seen after mustard exposure, develop later. A person with a droplet of Lewisite on his skin will note the burning and will immediately take steps to try to remove it. The vapor is so irritating that a person will seek to leave a contaminated area. Because this warning causes the person exposed to take immediate steps to decontaminate, the Lewisite lesion will probably not be as severe as a mustard lesion.

Treatment: Immediate decontamination and treatment of lesions. A specific antidote, British-Anti-Lewisite, decreases systemic effects but causes some toxicity itself.

Protection: Protective mask, clothing.

Phosgene Oxime (CX)

Description: Phosgene oxime is an itching-stinging agent that causes a corrosive skin and tissue lesion. The vapor is extremely irritating, and both vapor and liquid cause almost immediate tissue damage. The mechanism by which phosgene oxime causes biological effects is unknown.

Symptoms: On the skin and all mucous membranes, CX liquid or vapor causes immediate pain on contact. Extreme pain may persist for days. It is irritating and painful to the eyes and upper airways. Agent causes pulmonary edema after inhalation and after skin contact. Some data suggest that CX may cause hemorrhagic inflammatory changes in the GI tract.

Treatment: Immediate decontamination.

Protection: Protective mask, clothing.

Cyanide Agents

Hydrocyanic Acid (AC),

Cyanogen Chloride (CK)

Description: A rapidly acting lethal agent that is limited in its military usefulness by its high volatility. However, at high concentrations, cyanide kills quickly. Cyanides are sometimes called "blood agents." Cyanides are in liquid state in munitions but rapidly vaporize upon detonation of the munitions.

Symptoms: After exposure to heavy dose, seizures, respiratory failure, and cardiac arrest appear. The organs most susceptible to cyanide are the central nervous system and the heart. Most clinical effects are of CNS origin and are nonspecific. About 15 seconds after inhalation of concentrated vapor, there is abnormally deep breathing followed in 15 to 30 seconds by convulsions. Respiratory activity stops two to three minutes later, and cardiac activity ceases several minutes later still or at about six to eight minutes after exposure.

Treatment: Sodium nitrite and sodium thiosulfate are effective antidotes. Amyl nitrite also is useful.

Protection: Protective mask, clothing.

Pulmonary Agents

Phosgene, Others

Description: A lung-damaging liquid dispersed in a liquid-filled shell that explodes, rapidly vaporizing as a low-lying, white cloud of gas. It has a characteristic odor of sweet, newly mown hay or freshly cut grass or corn.

Symptoms: After a latent period, the victim experiences worsening respiratory distress that at first is unaccompanied by signs of pulmonary damage but that may progress relentlessly to death. Irritation of the larynx by very large concentrations of the agent may lead to sudden laryngeal spasm and death. The most prominent symptom following the latent period is difficulty breathing, perceived as shortness of breath with or without chest tightness. Death results from respiratory failure or in combination with the effects of lack of oxygen to vital organs and tissues. Complications include infection of damaged lungs and delayed death following such respiratory infections.

Treatment: No antidote.

Protection: Protective mask, clothing.



MEYER INSIGNIA

INSIGNIA SINCE 1888



SPECIALISTS
© W. S. MEYER, INC.

© 1950 Meyer Insignia Co. All rights reserved.

These Air Force general officers began their careers as enlisted members.

Mustangs

By Wendy Alexis Peddrick, Staff Editor

The "Wall of Achievers" at the Air Force Enlisted Heritage Research Institute, Gunter Annex, Maxwell AFB, Ala., honors former Air Force–Army Air Corps enlisted personnel who achieved fame in various occupations and pursuits. Among those recognized are enlisted members who later became officers—"mustangs"—and achieved general officer grade. Their routes to commissions ranged from Officer Candidate School and the Aviation Cadets to the Air Force Academy.

Maj. Gen. Lewis E. Curtis III

Airman Third Class Curtis (at left, top) was not long out of basic training in 1960 when this photo was taken. He started his service as an F-105D radar maintenance technician and completed his career as commander of the San Antonio Air Logistics Center at Kelly AFB, Texas, in 1996.

Maj. Gen. Doyle E. Larson Shortly after Private First Class Larson (far left) finished basic training in 1951, he was en route to Army language school to study Russian. Larson was the first commander of Electronic Security Command when he retired in 1983. He is currently president of the Air Force Association.

Brig. Gen. Mark J. Worrick In September 1951 Private First Class Worrick (immediate left) was an accounting and payroll technician at Erding Air Depot, Germany. Worrick retired in 1988 as assistant comptroller of the Air Force for accounting and finance, commander of the Air Force Accounting and Finance Center, and assistant director, Defense Security Assistance Agency for Security Assistance Accounting.



Gen. Earl T. O'Loughlin After completing basic training in March 1951, Private First Class O'Loughlin shows off his very first stripe at Sampson AFB, N.Y. The Air Force did not change its Army-style enlisted rank until 1952. Many more promotions would follow before O'Loughlin retired in 1987 as commander of Air Force Logistics Command.



Lt. Gen. Anthony J. Burshnick In 1955 Airman Third Class Burshnick was an electronics instructor in the Technical Training Center at Chanute AFB, Ill. (On the right is A3C "Doc" Dougherty, who would retire in the late 1970s as a chief master sergeant.) Burshnick retired in 1991 as vice commander in chief, Military Airlift Command.



Gen. John G. Lorber After Airman Lorber had completed basic training at Lackland AFB, Texas, in 1959, he was sent to the Naval Academy Preparatory School to see if he could qualify for the Air Force Academy. He did. Lorber became commander of Pacific Air Forces, Hickam AFB, Hawaii, before retiring in September 1997.



Brig. Gen. Alfred P. Bunting After a stint in the Army, Bunting enlisted in the Kansas Air National Guard, where he would serve as first sergeant for the 127th Fighter Bomber Squadron, Wichita MAP, Kan. He was directly commissioned from chief master sergeant to first lieutenant in 1962. Bunting went on to be the assistant adjutant general for air and commander of the Kansas ANG.



Lt. Gen. Donald O. Aldridge In February 1957, Technical Sergeant Aldridge was a Russian linguist stationed in Bad Kreuznach, Germany. Here, he holds his daughter, Holly Anne. He went on to become vice commander in chief of Strategic Air Command.



Maj. Gen. John E. Griffith *Sergeant Griffith was assigned to the 2d Air Refueling Squadron, Davis-Monthan AFB, Ariz., in January 1950. He was enlisted for more than eight years, went to Officer Candidate School, and was an officer for 32 years. Griffith completed his service in 1990 as director, operations and logistics, US Transportation Command. He was honored as having served longer on continuous Air Force active duty (41 years, five months, 21 days) than anyone before him.*



Lt. Gen. Warren D. Johnson *Private Johnson takes a break from washing pots and pans at the mess hall at Camp Barkeley, Texas, in 1942. He had been assigned the task "after having my rear end chewed for goofing off." He applied himself better after that and was director of the Defense Nuclear Agency at the time of his retirement in 1977.*



Maj. Gen. Charles I. Bennett Jr. *In this 1942 photo, Corporal Bennett trains in a BT-13 aircraft at Brady, Texas. He later served as personal pilot to General of the Army Dwight D. Eisenhower. Bennett retired as director of plans, Deputy Chief of Staff, Plans and Operations, USAF. The Air Force Association's chapter in Merced, Calif., is named after him.*



Gen. Alfred G. Hansen *In April 1953, Airman Basic Hansen got a weekend pass from Sampson AFB, N.Y., went into Syracuse, and put a coin in a machine to get this photo. Years later, Hansen would wear four stars and lead Air Force Logistics Command, before his retirement in 1989.*



Brig. Gen. Lonnie J. Slauson Jr. *Private First Class Slauson was on active duty with the Army in Korea in 1954. In 1956, he joined the Alabama ANG as an airman first class. At his retirement in March 1993, Slauson was Alabama National Guard assistant adjutant general for air.*



Maj. Gen. Charles D. Link Airman Link was a student in the jet engine maintenance course at Sheppard AFB, Texas, in 1957. In 1963, he was a member of the last class to go through Air Force Officer Candidate School. When he retired in 1997, he was special assistant to the Chief of Staff and the Air Force's point man on the Quadrennial Defense Review and the National Defense Panel report.



Maj. Gen. Monroe T. Smith Staff Sergeant Smith proudly presents his new F-86 in early 1954 at RAF Manston, UK, where he was a flight line crew chief. Smith became deputy chief of staff, product assurance and acquisition logistics, Air Force Systems Command, Andrews AFB, Md., before he retired in 1987.



Brig. Gen. Tedd L. Bishop Eighteen-year-old mechanic Private Bishop works on an AT-10 in Columbus, Miss., in August 1944. Bishop retired from active duty 34 years later after serving as commander of the 437th Military Airlift Wing, Charleston AFB, S.C.



Brig. Gen. Richard A. Ingram Sergeant Ingram was a personnel and administration specialist in 1951. When he retired in 1988, Ingram was deputy commander of the Canadian North American Aerospace Defense Command Region and the senior US military officer assigned to Canada.



Maj. Gen. G. Wesley Clark About the time this photo was taken in April 1952, the Air Force switched from Army-style grade designations to its own style. Clark sometimes tells friends that he was "the last private in the Air Force" before transformation to airman basic. From there, he became a nuclear weapons electronic technician. Clark retired as vice commander, Air Force Space Command, in 1990.



Brig. Gen. Charles L. Bishop After completing Russian language training at Syracuse University, Syracuse, N.Y., Airman First Class Bishop was assigned to the 6937th Communications Group in Peshawar, Pakistan, where this photo was taken in September 1960. By 1989, Bishop was deputy chief of staff for intelligence, US Air Forces in Europe.



Maj. Gen. Jeanne M. Holm In August 1942, Auxiliary Holm was stationed in Des Moines, Iowa, with the Women's Army Auxiliary Corps, where she drove in the motor pool. In 1948, she received a regular commission in the new US Air Force. From 1965 to 1972 she was Director of Women in the Air Force. In 1971, she became the first female Air Force general officer and its first female two-star general two years later. When Holm retired, she was director of the Air Force Personnel Council.



Brig. Gen. Edwin F. Wenglar Staff Sergeant Wenglar was an enlisted pilot flying C-47s out of Ismailia, Egypt, in 1942, with the 45th Troop Carrier Squadron, 316th Troop Carrier Group. Wenglar became vice commander of the Central Air Force Reserve Region, Ellington AFB, Texas. He retired in 1983.



Maj. Gen. Lucius Theus First Sergeant Theus oversaw pre-aviation cadet and basic training squadrons at Keesler Field, Miss., in 1944. Theus retired as director of accounting and finance, USAF Comptroller, and commander of the Air Force Accounting and Finance Center in 1979.



Lt. Gen. George H. McKee Buck Sergeant McKee was serving as an instructor at the Aircraft Maintenance Course at Chanute Field, Ill., in April 1942. McKee's last assignment was commander of Air Training Command. After retiring in 1975, he was appointed governor of the US Soldiers' and Airmen's Home in Washington, a post he kept for 12 years.



Gen. John L. Piotrowski After basic training at Lackland AFB, Texas, in 1952, Airman Basic Piotrowski went to electronics and ground radar school at Keesler AFB, Miss. In this photo he is getting ready for a dorm inspection. Piotrowski retired in April 1990 as commander in chief of NORAD and US Space Command.



Maj. Gen. Thomas M. Sadler Private Sadler (right), broom in hand, pauses with a friend during basic training (and a lot of KP duty) at Keesler Field, Miss., in 1943. Sadler retired in 1983 as commander of Military Airlift Command's 21st Air Force.



Gen. William L. Kirk Private Kirk entered the Air Force in October 1951, shown here just after basic training. When he retired in 1989, Kirk was commander in chief of US Air Forces in Europe and commander, Allied Air Forces Central Europe.



Lt. Gen. Carl G. O'Berry Communications specialist Airman First Class O'Berry reenlisted in May 1961, just prior to his entry into Officer Candidate School. O'Berry retired in 1995 as deputy chief of staff, Command, Control, Communications, and Computers, USAF.



Lt. Gen. Harry A. Goodall In 1952, Sergeant Goodall was training recruits at Lackland AFB, Texas, when he volunteered for weekend duty to put in a golf course at the base. Goodall's last assignment was as commander, Allied Air Forces Southern Europe, and deputy commander in chief, US Air Forces in Europe for the Southern Area, Naples, Italy. He retired in 1991 and is now president of AT&T's Defense Programs Group.

Brig. Gen. Raymond V. McMillan
Technical Sergeant McMillan (right) receives a Safe Driver Award from Brig. Gen. Curtis R. Lowe, commander of 28th Air Division, Hamilton AFB, Calif., in March 1958. McMillan became chief, System Integration Office, and assistant deputy chief of staff, systems integration, logistics, and support, Air Force Space Command, Peterson AFB, Colo., retiring in 1987.



Other Mustangs

The following general officers were once enlisted and are honored on the Wall of Achievers at Gunter, but photographs from their enlisted days were not available.

Brig. Gen. Thomas E. Bowen
Lt. Gen. Patrick P. Caruana
Brig. Gen. Rendell F. Clark Jr.
Brig. Gen. Joe Crawford
Gen. W.L. Creech
Lt. Gen. Charles E. Franklin
Maj. Gen. Richard F. Gillis
Brig. Gen. William M. Guth
Brig. Gen. Trevor A. Hammond
Brig. Gen. Charles B. Jiggetts
Lt. Gen. Jay W. Kelley
Gen. Robert T. Marsh
Maj. Gen. Richard M. Pascoe
Lt. Gen. Winston D. Powers
Maj. Gen. Raymond B. Stewart
Maj. Gen. Russell L. Waldron
Gen. Larry D. Welch
Brig. Gen. Charles E. Yeager



A Mustang of Considerable Fame

James Stewart was already a well-known movie star when he joined the Army in 1941. Before World War II was over he would fly combat missions in Europe as pilot of a B-24 Liberator. He stayed in the Air Force Reserve and retired from the Air Force as a brigadier general in 1968. (Along the way, he joined with 11 other veterans in 1946 to found the Air Force Association.)

In 1941, Stewart reported along with other recruits for initial training at Moffett Field, Calif., and was assigned to a four-man tent. According to Carl L. Miller, who was a sergeant at the

recruiting detachment at Moffett, Stewart's training as an actor helped him memorize the drill manual, and he was quickly assigned as a drill instructor. In this photo, Stewart sits on the steps with 1st Sgt. Frank Jellison.

Miller, who retired as a colonel, recalls that Stewart had been a civilian pilot before he enlisted and convinced the Army to let him fly the BT-13. From there, he moved on to Air Corps pilot training and B-24s.

Doolittle and Eaker said he was the greatest air commander of all time.

LeMay

By Walter J. Boyne

THERE has never been anyone like Gen. Curtis E. LeMay. Within the Air Force, he was extraordinarily successful at every level of command, from squadron to the entire service. He was a brilliant pilot, pre-eminent navigator, and excellent bombardier, as well as a daring combat leader who always flew the toughest missions.

A master of tactics and strategy, LeMay not only played key World War II roles in both Europe and the Pacific but also pushed Strategic Air Command to the pinnacle of greatness and served as the architect of victory in the Cold War. He was the greatest air commander of all time, determined to win as quickly as possible with the minimum number of casualties.

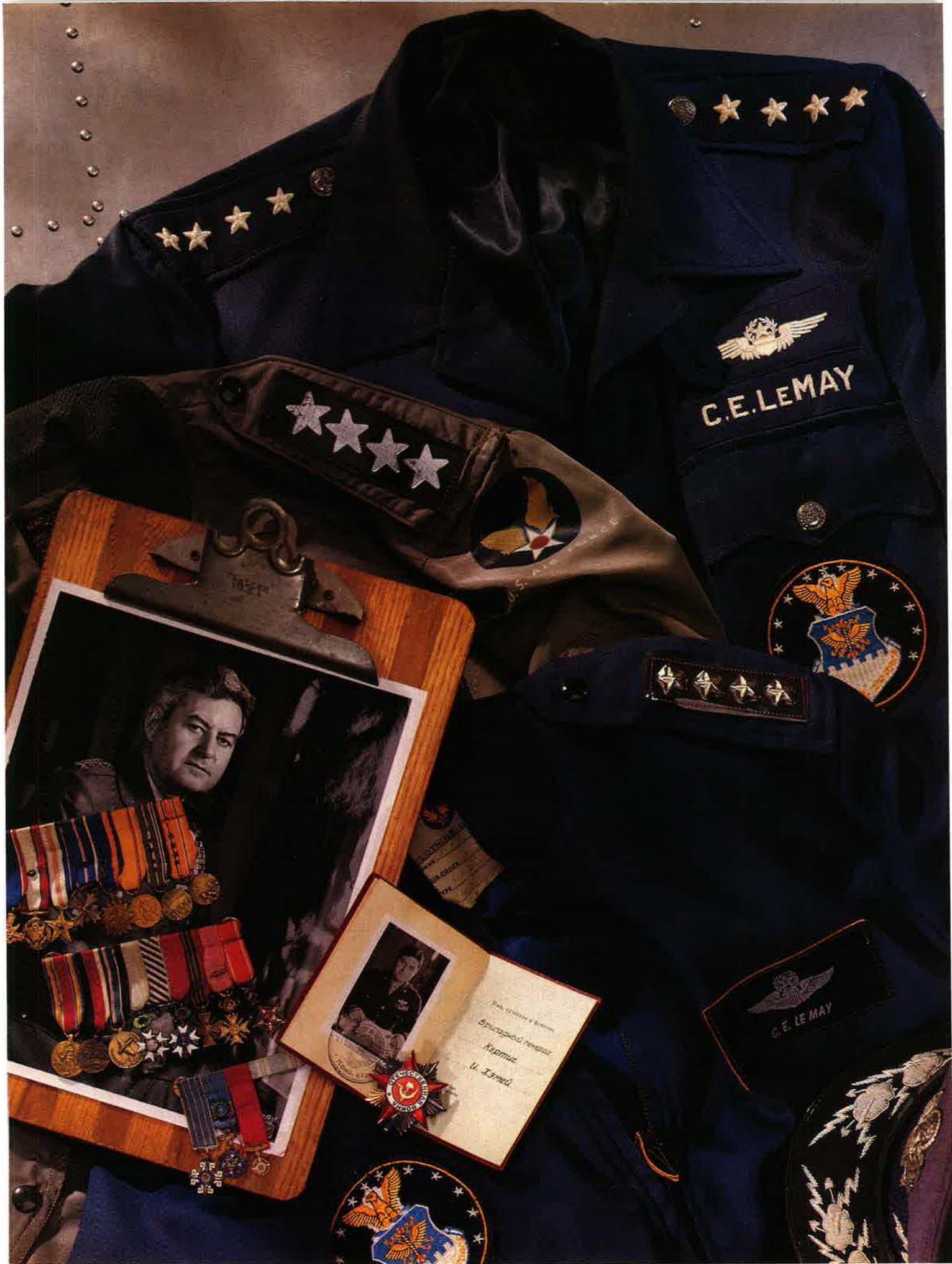
At the beginning of World War II, by dint of hard work and training, he was able to mold troops and equipment into successful fighting units when there were inadequate resources with which to work. Under his leadership—and with support produced by his masterful relations with Congress—he gained such enormous resources for Strategic Air Command that American opponents were deterred.

“Tough” is always the word that springs to mind in any consideration of LeMay. Yet he went far beyond being tough to get the results he knew were needed. He achieved his great triumphs by combining his powers of analytical thinking with a



During World War II, Gen. Curtis E. LeMay displayed masterful tactics and strategy that helped the US prevail first in Europe and then in the Pacific. Even Soviet officers and officials acknowledged LeMay's brilliant leadership and awarded him a military decoration (among items at right).

Photo by Paul Kennedy



A determined LeMay earned a commission in the Regular Army through a complicated route, doing whatever it took to secure one of the service's rare flying positions. The young LeMay in this photo had just completed pilot training.



rigorous operational philosophy. He was tough, as a combat commander should be tough—insisting on extremely high standards of training and strict evaluation. He knew from experience that this led to a proficiency that produced both good results and lower casualties. LeMay was ready for combat every day of his military career because he believed that there might be combat on any day.

Retired USAF Gen. Russell E. Dougherty, the eighth officer to command SAC and one of the most thoughtful, well-spoken military men in the United States, describes himself as “the first non-hero to command the Strategic Air Command.” He has an almost endless fund of stories that shed light on LeMay.

Dougherty recalls a time that he was visited by retired Gens. Jimmy Doolittle and Ira Eaker at his Quarters 16 when he was CINCSAC at Offutt AFB, Neb. The three were sitting in a recreation room designed and furnished by LeMay when, in the course of conversation, Eaker stated that “LeMay was my best combat commander.” Doolittle agreed and went on to say that he had watched LeMay both in Europe and the Pacific and believed him to be

the best air combat commander the US or any other nation ever produced.

Eaker followed by remarking, “LeMay excelled as a ‘today’ general. He had great competence in every quarter, but he could look at what was in front of him today, and then take whatever forces were available today, and apply them to the enemy in front of him today.”

Still, LeMay also was a “tomorrow” general. At the outset of the Cold War, he correctly identified the potential threat posed by the Soviet Union. He spent every day preparing first Strategic Air Command and then the entire USAF to make certain that tomorrow’s battle would be deterred if possible and won if it could not be deterred. The organizations he created not only deterred tomorrow’s battle indefinitely but also won the Cold War and consigned the aggressive, expansionist Soviet Union to the ash heap of history.

The man who did so much to win wars and keep the nuclear peace was born at home in Columbus, Ohio, on Nov. 15, 1906, the first of seven children, six of whom survived. The LeMay family was typical of the time, the father moving from job to job as necessity dictated and the

mother struggling to make ends meet at home. In LeMay’s 1965 autobiography, *Mission With LeMay*, the story is told of a 5-year-old Curtis Emerson LeMay becoming imbued with enthusiasm for flying when he first saw an aircraft passing overhead. He wanted to possess the airplane and he ran after it in a way that he never forgot. LeMay later realized that the event was a defining moment for him: He had to be involved in aviation.

Circuitous Route

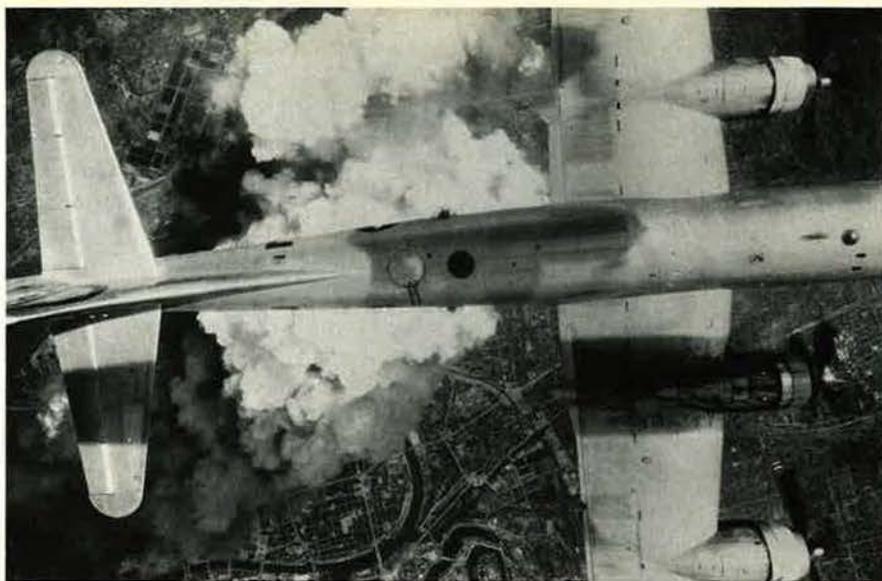
LeMay worked his way through Ohio State University, obtaining a commission in the US Army by a somewhat complicated route. He first gained a reserve commission as an ROTC student. Then, to expedite his entry into the flying cadet program, he resigned his commission to accept a commission in the Ohio National Guard. When he graduated from flying school at Kelly Field, Texas, in October 1929, he had to resign his National Guard commission before being awarded another reserve commission. Three months later, he received a commission in the Regular Army—an unusual accolade that spoke volumes, for most graduates of flying school in those days were given their reserve commissions and then released to civilian status. There were just too few available flying positions.

From the start, LeMay displayed the utter dedication and ferocious attention to detail that would characterize his career. Assigned to the elite 27th Pursuit Squadron of the 1st Pursuit Group, located at Selfridge Field, Mich., young LeMay accepted additional duties with pleasure, no matter what they were. He also sought out additional training, including subjects as esoteric for the time as celestial navigation. When he had an opportunity to learn instrument flying, he did so with his usual dedication, logging more time than any of his colleagues in the hood-equipped Douglas O-2s. He kept his skills. Famed test pilot Russ Schleeh, later LeMay’s aide, recalls LeMay personally giving him tough partial-panel instrument checks in the B-17 when the soon-to-be famous 305th Bombardment Group was formed in 1942.

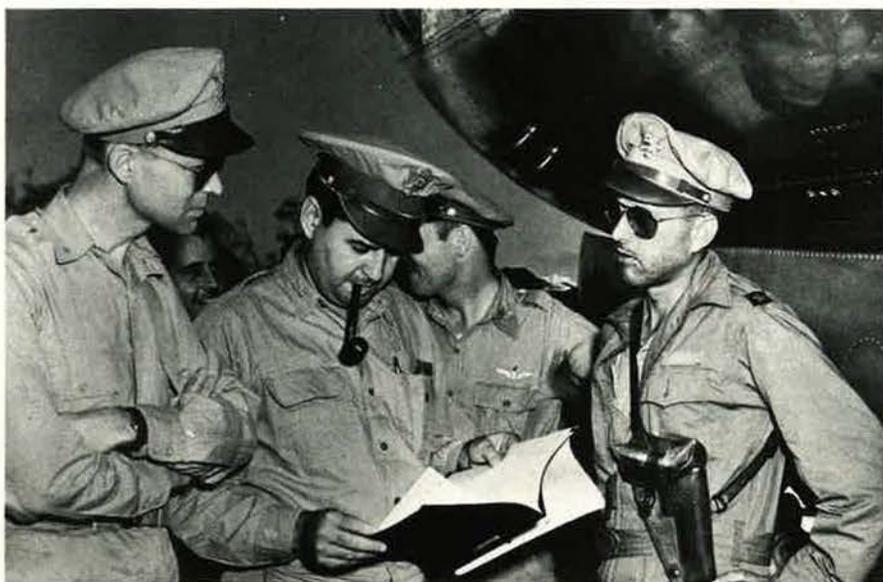
As much as he enjoyed flying Boeing P-12 pursuit aircraft, LeMay

decided that fighters were essentially defensive weapons and that any future wars would have to be won by offensive weapons. His assumption was fostered by the potential implicit in the new Martin B-10 bomber, which was just coming into service. At about the same time he made another important decision; in 1934 he married the vivacious, intelligent Helen Maitland.

In that same year, President Franklin D. Roosevelt tasked the Army Air Corps to carry the mail. The Air Corps, ill-equipped and lacking both the instruments and the training for flying in bad weather, nonetheless did an excellent job, though the press, acting out of political motives having little to do with the efficiency of the Air Corps, seized upon the inevitable accidents and represented the effort as a fiasco.



A B-29 from XXI Bomber Command drops incendiary bombs over Japan in 1945. In a revolutionary tactic, LeMay stripped the Superfortresses for low-altitude firebombing of Japan's industrial areas.



LeMay discusses the results of a raid by 300 B-29s on Tokyo in March 1945 with Brig. Gen. Lauris Norstad (left) and Brig. Gen. Thomas S. Power.

Scrounging

Typically, buck pilot LeMay flew as much as possible, pulling extra shifts whenever he could. Years later, he recalled that the chief hazard was not crashing but finding a place to sleep and scrounging enough money to get something to eat, for there were no extra funds provided for the expenses of either flight or ground crews.

LeMay learned from the experience. He was particularly struck with the overriding importance of logistics and the vital requirement for training, lessons he never forgot. He

was promoted to first lieutenant in March 1935, after serving six years in grade. Subsequent promotions came rather more rapidly.

In 1937, he was assigned to the GHQ Air Force at Langley Field, Va., just as the first Boeing Y1-B17s were acquired by the 2d Bombardment Group. At Langley, LeMay maintained his skills as a pilot and increased his proficiency as a navigator. Next, he taught himself to be a bombardier, using the new and highly classified Norden bombsight. He was thus the first example of his

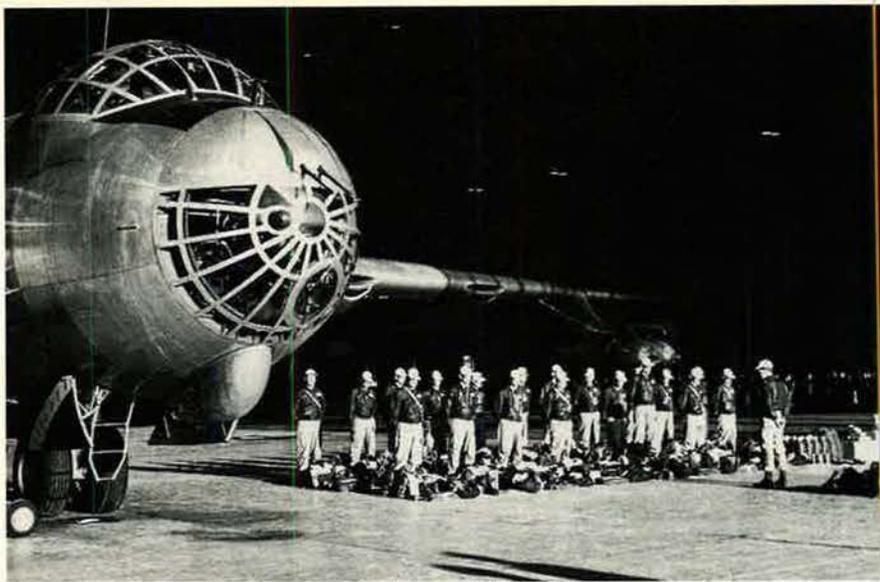
own "triple rated" concept that he would later sponsor in Strategic Air Command.

His pilot-navigator-bombardier capability placed him in a unique position. The Air Corps wanted to prove the efficiency of the B-17, and LeMay was lead navigator on two "mass" flights of B-17s to South America in 1938—the "mass" meaning six Y1B-17s on the February flight to Argentina and three on the August flight to Colombia. But the GHQ Air Force gained its greatest fame (or in the eyes of the US Navy, notoriety) on May 12, 1938, when LeMay's impeccable navigation enabled three of the Fortresses to intercept *Rex*, an Italian ocean liner, 776 miles out to sea.

After the typically slow promotion of peacetime, LeMay's career now began to skyrocket. He made captain in 1940—11 years after his commission date—and received command of a squadron in the 34th Bombardment Group.

Then as later, all of LeMay's work was based on a hard foundation of personal competence. Immediately before the outbreak of World War II, he pioneered air routes over the South Atlantic to Africa and over the North Atlantic to England. He was an excellent pilot: After a single landing in a Consolidated B-24 during training, he flew a brand new Liberator to England.

He was soon promoted to command—and to create and train—the



A B-36 crew preparing for a long-range training mission out of Ellsworth AFB, S.D. (above), and the aerial refueling of Lucky Lady II (lower aircraft below) symbolize the global strike force that LeMay envisioned and created.

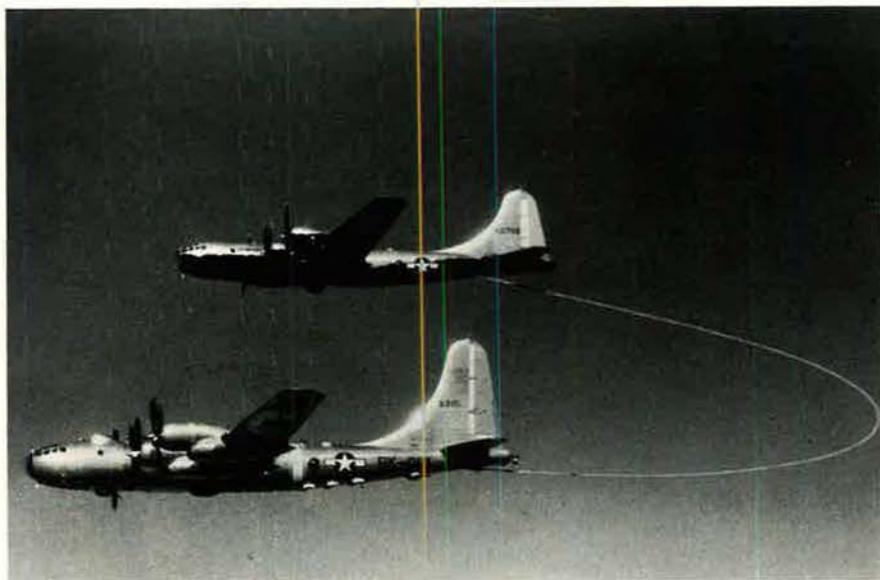
305th Bombardment Group. He led the 305th in combat and found his true métier. A LeMay quote of the time comes close to being a perfect fit with his nature: In the midst of the air war against Germany, he said, "I don't mind being called tough, since I find in this racket it's the tough guys who lead the survivors."

Two Critical Tactics

Colonel LeMay drilled the 305th constantly, flying in every aircraft position except that of ball gunner. He ordered constant practice in formation and instrument flying to enable his men to cope with the miserable weather in which they would have to fight. In addition, he developed two crucial tactics that would be adopted throughout USAAF.

The first of these was to require a long, straight bomb run from the initial point, with no deviations from course or altitude to avoid flak. Using this tactic, the 305th consistently put more bombs on the target than did other groups. LeMay accepted the increased vulnerability of the long run-in, arguing that, overall, it was safer to fly a straight bomb run and knock the target out than to try to evade flak by jinking and have to return again and again.

Secondly, he devised what became known as the combat box, the arrangement in which the American bombers flew in staggered formations that optimized the firepower they could bring to bear on German targets.



These ideas were a product of LeMay's brooding silence and intense concentration, qualities that his colleagues learned to endure. At meals with his staff, it was not uncommon for him to eat without saying a single word. He was not being rude; he was just inordinately preoccupied with the demands placed upon him and aware of how little experience he actually had. Nonetheless, he was determined to do his job to the best of his ability and to save the lives of as many of his people as possible in the process.

LeMay continued to lead the toughest raids, even after he had been given command of the Third Air Division

and promoted to brigadier general. He led the bloody Aug. 17, 1943, raid on the German city of Regensburg, when USAAF lost 24 out of 146—a chilling 16 percent—of the aircraft dispatched to the target.

Despite these losses, his overall success in Europe led to his being promoted to the rank of major general. He was selected by Gen. H.H. Arnold to be commanding general of XX Bomber Command in India. He was next transferred to the Mariana Islands to assume command of the XXI Bomber Command and there turned the faltering B-29 bomber campaign into a war-winning effort based upon new tactics.

LeMay elected to strip the B-29s of gunners, guns, and ammunition and send them in singly at low level to firebomb urban industrial areas in

Japan. His success was so great that Japan, had its leaders been acting sensibly and honorably, should have surrendered by April 1945. Had they done so, they would have spared their country further devastation and they would have avoided the two atomic attacks in August 1945—at Hiroshima and Nagasaki—that forced their surrender.

One of LeMay's lesser known contributions came immediately after the end of the war, when Arnold tasked him to jump-start the leap into postwar technology as deputy chief of staff for research and development. He succeeded admirably and then served as a three star command-

ing US Air Forces in Europe, where he initiated the Berlin Airlift.

Creating SAC

Though he already had achieved much, LeMay's greatest contributions were yet to come. The blockade of Berlin in 1948 and the relentless extension of Soviet power into Eastern Europe made Moscow's intentions only too obvious. On Oct. 19, 1948, LeMay assumed the leadership of Strategic Air Command.

In 1948, SAC had fewer than 52,000 personnel. It had 837 aircraft, including only 35 B-36 and 35 B-50 intercontinental-range bombers. It had only the beginning of a tanker force, with two air refueling squadrons just getting their converted KB-29s.

He went to work, determined to build SAC to his exacting standards, unit by unit. Curiously, he was not dismayed, nor did he fire anyone, when an initial simulated combat mission was flown without a single aircraft getting over the target. As always, he was totally dedicated to his tasks and his responsibilities as a commander, yet he was always agonizingly aware of his responsibility to his men for their safety.

He started with the 509th Bombardment Group. He set high standards and insisted that they be met. He picked a staff that could evaluate performance and enforce his standards. It took time, but Strategic Air Command was transformed into a potent instrument of deterrence. As

Under LeMay's leadership, SAC became a potent force for deterrence, an elite element of USAF. This B-47 crew, scrambling for a mission, was among SAC's tough, highly trained members who were ready on a moment's notice.



its proficiency increased, so did its morale; SAC became a recognized elite, a model for the Air Force to follow.

LeMay had a vision of SAC being so obviously powerful that it would be perceived by the enemies of the United States to be unbeatable and so deter them. To create a SAC of such stature, he had to enforce his will and his standards within the

command and at the same time enforce his demands for resources in Washington—the Air Force, the Department of Defense, the Bureau of Budget, and the Congress. He was equally successful on both fronts.

The command was fashioned in his image and reflected his values. He got impressive results that helped him establish such good relations with Congress that he got sufficient resources on a regular basis. These were never enough to meet all his demands but more than enough to generate envy within DoD and even within the Air Force. Congress liked dealing with LeMay because he was straightforward. He placed no spin on his statements. He meant what he said and the lawmakers loved it.

LeMay embraced technology. He saw the jet bomber as the weapon of the present and the missile as the weapon of the future. If he was somewhat more attached to the manned bomber than the ICBM, he must be forgiven, for he knew what the bombers could do, and the missiles, though ultimately less expensive, were still to be tested.

Not Since Grant

On Oct. 29, 1951, he became the youngest US four-star general since Ulysses S. Grant. He led SAC until



After the famous Boeing chief test pilot A.M. "Tex" Johnston (right seat) checked him out in the cockpit, LeMay test-flew a KC-135 aerial refueler. Even as SAC commander, LeMay continued flying and setting records.



USAF Chief of Staff LeMay conferred with President Kennedy during the Cuban Missile Crisis. With him are (l-r) Col. Ralph Steakley, a JCS photo evaluator, and Lt. Col. Joe O'Brady and Maj. Richard Heyser, reconnaissance pilots.

June 30, 1957, the longest tenure of any US military commander since the days of Army Gen. Winfield Scott. When he left SAC it had grown to a force of 224,000 active duty personnel, equipped with some 2,700 aircraft—127 B-36s, 243 B-52s, 1,501 B-47s and RB-47s, 742 KC-97s, and 24 KC-135s. It was the mightiest force the world had ever known, and it established a Pax Americana, for it was so obviously powerful that no nation could risk war with it. LeMay saw to it that SAC was always ready to fight immediately—not the next month, not the next day, but that day.

LeMay did appear to be gruff, and this was interpreted that he was mean. He was not mean, as those who worked with him will tell you and as his many efforts on behalf of his enlisted forces demonstrated. He did not smile readily, in part because of his personality. LeMay was often uncommunicative, not because he meant to be rude but because he was, for his entire career as a commander, preoccupied with important problems, the weight of which might have overwhelmed a lesser man. When he did speak, he did so in a trenchant manner that economized on words but went to the heart of the matter.

Dougherty recalls that LeMay was an iconoclast who spoke in short-burst communications, each one pithy and accurate. He tells of a briefing that had been prepared for LeMay on the proposed stretch modification of

the General Dynamics F-111 fighter into the FB-111 bomber version. Lt. Gen. David Burchinal, whom Dougherty characterizes as the “brightest man in the Air Force at the time,” gave a detailed two-hour briefing on the proposed FB-111, during which LeMay did not say a word. When the briefing ended, LeMay turned to Burchinal and said only, “It isn’t big enough.” Dougherty notes that those four words captured the essence of the FB-111, for it lacked the necessary size to carry the combination of fuel, bombs, and sensors that it should have had for its mission.

LeMay transformed SAC, and ultimately transformed the Air Force, in ways that went beyond his absolute demand for wartime proficiency. He personally saw to it that housing was improved dramatically and was the driving force that resulted in first the Wherry and then the Capehart housing programs. From personal experience, LeMay knew the importance of good, rather than adequate, messing facilities, and he called for and got the same sort of improvements he’d achieved in the bomb wings. He brought his wife into his campaign for improved family services, and he again set standards that were adopted across the Air Force.

Despite his own inclination to avoid it, LeMay became a celebrity as SAC’s commander, in small part because he continued flying and setting records. More than anything else, it is important to emphasize that LeMay had been a simple good soldier at SAC. Recent sensationalist television presentations and revisionist articles have claimed that he authorized, on his own, provocative overflights of the Soviet Union. They have alleged that his intentions were to acquire justification for launching a preemptive nuclear strike. These claims are totally false, fabrications made up from partial truths, comments taken out of context, and—on occasion—deliberately literal interpretations of obviously sarcastic remarks.



Air Force Secretary Eugene Zuckert swore in LeMay as Chief of Staff in June 1961. Among the dignitaries present were President Kennedy (center) and Vice President Lyndon Johnson (behind LeMay).

Famous Phrase

Those who knew him best know that it would have been anathema to him to work at odds with the established principle of civilian control of the military. In a similar way, LeMay always denied making the statement (about North Vietnam) that he favored “bombing them back to the Stone Age,” yet this one phrase, a product of literary license, is inevitably chosen by journalists to characterize him.

In contrast, no one notes a particularly admirable LeMay characteristic that personified his role as vice chief of staff to Gen. Thomas D. White. Given his public prominence, it would have been understandable if LeMay had occasionally upstaged his less-well-known boss. It never happened, and White acknowledged the fact.

LeMay found himself caught in an impossible situation when he became Chief on June 30, 1961, for he did not understand his leaders and they did not appreciate his experience as a warrior. The new civilian authority, led by President John F. Kennedy and Defense Secretary Robert S. McNamara, adopted a policy of “flexible response” advocated by the Chairman of the Joint Chiefs of Staff, Army Gen. Maxwell D. Taylor.

To a significant degree, flexible response led the US into a ground war in Southeast Asia; it made no sense to LeMay. His advice on not entering combat in Southeast Asia was ignored, and most galling of all, once combat began, his advice on how to win the war was ignored as well. Later, he noted that the US dropped 502,000 tons of bombs on Japan and won the war. In Southeast Asia, the US dropped 6,162,000 tons of bombs (mostly on our ally, South Vietnam) and lost the war.

The difference was that in Japan, LeMay chose the targets, and in Vietnam, McNamara and President Lyndon B. Johnson did.

His inability to deal with the Kennedy and Johnson administrations filled his years as Chief with frustration. LeMay believed in civilian con-



LeMay used his prodigious analytical powers and rigorous operational philosophy to transform the Air Force into a powerful striking force, the backbone of superpower deterrence.

trol but also believed that civilian control of the military implicitly required careful consideration of the military's advice on military matters. He particularly resented McNamara's continual use of “military” rationale to explain decisions that he made based only on quantitative analysis.

It was McNamara's penchant for quantification that led to the cancellation of the B-70 bomber and Skybolt missile. LeMay had to suffer in silence as McNamara first forced the TFX multiservice fighter concept down Air Force and Navy throats and then selected the General Dynamics F-111 over the Boeing entry.

The Wallace Error

In spite of their mutual antipathy, Kennedy let LeMay remain Air Force Chief of Staff; he was too well liked by Congress for his enemies to try to remove him. LeMay retired on Jan. 31, 1965, but he would have one more conscious decision to make, one which he believed was as much in the service of his country as serving as CINCSAC. Sadly, it was to be a fatal error to his popular reputation. He accepted the offer of George Wallace,

the segregationist Alabama governor, to run as his vice presidential candidate in the 1968 election.

At the time, LeMay's friends were nonplussed by the move. They knew that he was not a racist—he had fostered integration in SAC and the Air Force generally—but to them LeMay was still General LeMay, and few, if any, questioned him at the time.

Gen. David Jones, former USAF Chief of Staff and Chairman of the Joint Chiefs of Staff, was once LeMay's aide and pilot. He has related how, many years later, in Orlando, Fla., in a gathering of retired generals, LeMay was asked why he had run with Wallace. LeMay was silent, then replied that he despised Wallace's policies and would never have run with him if he thought he had a chance at winning. He did, however, believe that the Democratic nominee for President, Hubert Humphrey, would be disastrous for the country's defenses if elected. Thus, according to LeMay, he ran with Wallace, against all his desires, simply to help take votes away from Humphrey.

The decision was disastrous for his reputation. As a result, LeMay forfeited the lasting recognition that he had earned with such labor.

LeMay spent his post-Air Force years productively, working for the establishment of Air Force Village West in California. He was content with his contributions to history. The nation was fortunate to have had LeMay when it needed him. ■

Walter J. Boyne, former director of the National Air and Space Museum in Washington, is a retired Air Force colonel and author. He has written more than 400 articles about aviation topics and 28 books, the most recent of which is Beyond the Wild Blue: A History of the United States Air Force, 1947-1997. His most recent article for Air Force Magazine, "The Long Reach of the Stratojet," appeared in the December 1997 issue.

DOD

Senior Leadership

As of Feb. 1, 1998

KEY

- USD** Undersecretary of Defense
- PDUSD** Principal Deputy Undersecretary of Defense
- DUSD** Deputy Undersecretary of Defense
- ASD** Assistant Secretary of Defense
- PDASD** Principal Deputy Assistant Secretary of Defense
- DASD** Deputy Assistant Secretary of Defense

Compiled by Juliette Kelsey, Editorial Associate

Note: The Pentagon announced numerous organizational changes Nov. 10, 1997. Some changes still require Congressional approval, and others are ongoing. The proposed creation of an ASD for Intelligence has been canceled.



Secretary of Defense
William S. Cohen



Deputy Secretary of Defense
John J. Hamre



ASD for Public Affairs
Kenneth H. Bacon



Inspector General
Eleanor J. Hill



Director, Operational Test & Evaluation
Philip E. Coyle III



General Counsel
Judith A. Miller



ASD for Legislative Affairs
Sandra K. Stuart

PDASD for Public Affairs
Clifford H. Bernath

DASD for Public Affairs (Information)
Capt. Michael W. Doubleday, USN

DASD for Public Affairs (Communications)
Douglas Wilson

Deputy Inspector General
Donald Mancuso

Command, Control, Communications, & Intelligence

Principal Deputy General Counsel
Douglas A. Dworkin

DASD for Legislative Affairs
Col. Erik Winborn, USAF

DASD for Senate Affairs
John Veroneau

Exec. Dir. for House Affairs
Cece Carman



ASD for C³
Anthony M. Valletta (Acting)*

DASD for C³
James E. Soos

DASD for C³I Acquisition
Margaret E. Myers (Acting)

PDASD for C³I
Vacant

DASD for Intelligence & Security
Cheryl Roby (Acting)

Director, C⁴I, Integration Support Activity
Dennis Nagy

DASD for Plans & Resources
Belkis Leong-Hong

*Retires March 1

Comptroller



USD Comptroller
William J. Lynn III



PDUSD (Comptroller)
Alice C. Maroni

Deputy Chief Financial Officer
Nelson Toye

Deputy Comptroller (Program Budget)
Bruce Dauer



Director, Program Analysis & Evaluation
Robert R. Soule (Acting)

Personnel & Readiness



USD for Personnel & Readiness
Rudy de Leon

DUSD for Readiness
Louis C. Finch

DUSD for Program Integration
Jeanne B. Fites



ASD for Force Management Policy
Francis M. Rush Jr. (Acting)

PDASD for Force Management Policy
Francis M. Rush Jr.

DASD for Military Personnel Policy
Lt. Gen. Normand G. Lezy, USAF

DASD for Personnel Support, Families, & Education
Carolyn H. Becraft

DASD for Civilian Personnel Policy
Diane M. Disney

DASD for Equal Opportunity
William E. Leftwich III



ASD for Health Affairs
Edward D. Martin (Acting)

PDASD for Health Affairs
Gary Christopherson

DASD (Clinical Services)
John F. Mazzuchi

DASD (Health Budget & Programs)
Gwendolyn A. Brown

DASD (Health Service Financing)
Diana G. Tabler

DASD (Health Services Operations & Readiness)
Maj. Gen. Robert G. Claypool, USA

DASD (Policy & Planning Coordination)
Charles A. Monfort



ASD for Reserve Affairs
Deborah R. Lee

PDASD for Reserve Affairs/Chief of Staff
Charles L. Cragin

DASD for Strategic Plans & Analysis
Joel B. Resnick

DASD for Manpower & Personnel
Jim Schweiter

DASD for Materiel & Facilities
Pat J. Walker (Acting)

DASD for Readiness, Training, & Mobilization
Brig. Gen. James E. Andrews, USAF

DASD for Resources
Jennifer C. Buck

Acquisition & Technology



USD for Acquisition & Technology
Jacques S. Gansler



PDUSD for Acquisition & Technology
Joseph J. Eash III (Acting)



Director of Defense Research & Engineering
George T. Singley III (Acting)

DUSD for Acquisition Reform
Donna S. Richbourg (Acting)

DUSD for Environmental Security
Sherri W. Goodman

DUSD for Industrial Affairs & Installations
John B. Goodman

DUSD for Logistics
Roy R. Willis (Acting)

Director, Small & Disadvantaged Business Utilization
Robert L. Neal Jr.

Offices slated to be cut:

DUSD for International and Commercial Programs
Paul J. Hoepfer

DUSD (Space)
Gil I. Klinger (Acting)

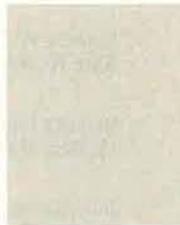
DUSD for Advanced Technology
Joseph J. Eash III

Military Departments



Secretary of the Air Force
F. Whitten Peters (Acting)

Undersecretary of the Air Force
F. Whitten Peters



Secretary of the Army
Robert M. Walker (Acting)

Undersecretary of the Army
Robert M. Walker



Secretary of the Navy
John H. Dalton

Undersecretary of the Navy
Jerry M. Hultin

Policy



USD for Policy
Walter B. Slocombe

Asst. to the USD for Policy
Rear Adm. Steven G. Smith, USN



ASD for Special Operations & Low-Intensity Conflict
H. Allen Holmes

PDASD for Special Operations & Low-Intensity Conflict
Brian E. Sheridan

DASD for Drug Enforcement Policy & Support
Robert Newberry (Acting)

DASD for Forces & Resources
Raymond Dominguez

DASD for Policy & Missions
Brig. Gen. Larry J. Dodgen, USA

DASD for Peacekeeping & Humanitarian Assistance
James Schear

DASD for Inter-American Affairs
Maria C. Fernandez-Greczmiel



PDUSD for Policy
Jan M. Lodal



ASD for Strategy & Threat Reduction
Edward L. Warner III

PDASD for Strategy & Threat Reduction
Michele A. Flournoy

PDASD for Strategy & Threat Reduction
Frank Miller

DASD for Requirements & Plans
Jim Miller



ASD for International Security Affairs
Franklin D. Kramer

PDASD for International Security Affairs
Frederick C. Smith

DASD for European & NATO Affairs
Thomas K. Longstreth

DASD for Asian & Pacific Affairs
Kurt M. Campbell

DASD for Near Eastern & South Asian Affairs
Alina Romanowski

DASD for African Affairs
Vincent D. Kern

DASD for POW/MIA Affairs
J. Alan Liotta (Acting)

Directors of Defense Agencies

Ballistic Missile Defense Organization
Lt. Gen. Lester L. Lyles, USAF

Defense Advanced Research Projects Agency
V. Larry Lynn

Defense Commissary Agency
Maj. Gen. Richard E. Beale Jr., USA (Ret.)

Defense Contract Audit Agency
William H. Reed

Defense Finance & Accounting Service
Gary W. Amlin (Acting)

Defense Information Systems Agency
Lt. Gen. David J. Kelley, USA

Defense Intelligence Agency
Lt. Gen. Patrick M. Hughes, USA

Defense Security Service
Margaret R. Munson

Defense Legal Services Agency
Judith A. Miller

Defense Logistics Agency
Lt. Gen. Henry T. Glisson, USA

Defense Security Assistance Agency
Lt. Gen. Michael S. Davison Jr., USA

National Imagery and Mapping Agency
Rear Adm. Joseph J. Dantone Jr. (Acting)

National Security Agency/Central Security Service
Lt. Gen. Kenneth A. Minihan, USAF

Agencies slated to be consolidated into a new Treaty Compliance & Threat Reduction Agency:

Defense Special Weapons Agency
Maj. Gen. Gary L. Curtin, USAF

On-Site Inspection Agency
Brig. Gen. John C. Reppert, USA

Office of the Joint Chiefs of Staff



Chairman
Gen. Henry H. Shelton, USA



Vice Chairman
Gen. Joseph W. Ralston, USAF



Air Force Chief of Staff
Gen. Michael E. Ryan



Army Chief of Staff
Gen. Dennis J. Reimer



Chief of Naval Operations
Adm. Jay L. Johnson



Commandant of the Marine Corps
Gen. Charles C. Krulak

The Joint Staff

Chairman
Gen. Henry H. Shelton, USA

Vice Chairman
Gen. Joseph W. Ralston, USAF



Assistant to the CJCS
Lt. Gen. Robert H. Foglesong, USAF



Director, Joint Staff
Vice Adm. Dennis C. Blair

J-1 Manpower & Personnel
Brig. Gen. Patrick O. Adams, USAF

J-2 Joint Staff Intelligence
Maj. Gen. James C. King, USA

J-3 Operations
Vice Adm. Vernon E. Clark

J-4 Logistics
Lt. Gen. John J. Cusick, USA

J-5 Strategic Plans & Policy
Vice Adm. John S. Redd

J-6 Command, Control, Communications, & Computer Systems
Lt. Gen. Douglas D. Buchholz, USA

J-7 Operational Plans & Interoperability
Maj. Gen. George F. Close Jr., USA

J-8 Force Structure, Resources, & Assessment
Lt. Gen. Frank B. Campbell, USAF

Commanders in Chief, Unified Commands



US Atlantic Command
Adm. Harold W. Gehman Jr.



US Central Command
Gen. Anthony C. Zinni, USMC



US European Command
Gen. Wesley K. Clark, USA



US Pacific Command
Adm. Joseph W. Prueher



US Southern Command
Gen. Charles E. Wilhelm, USMC



US Space Command
Gen. Howell M. Estes III, USAF



US Special Operations Command
Gen. Peter J. Schoomaker, USA



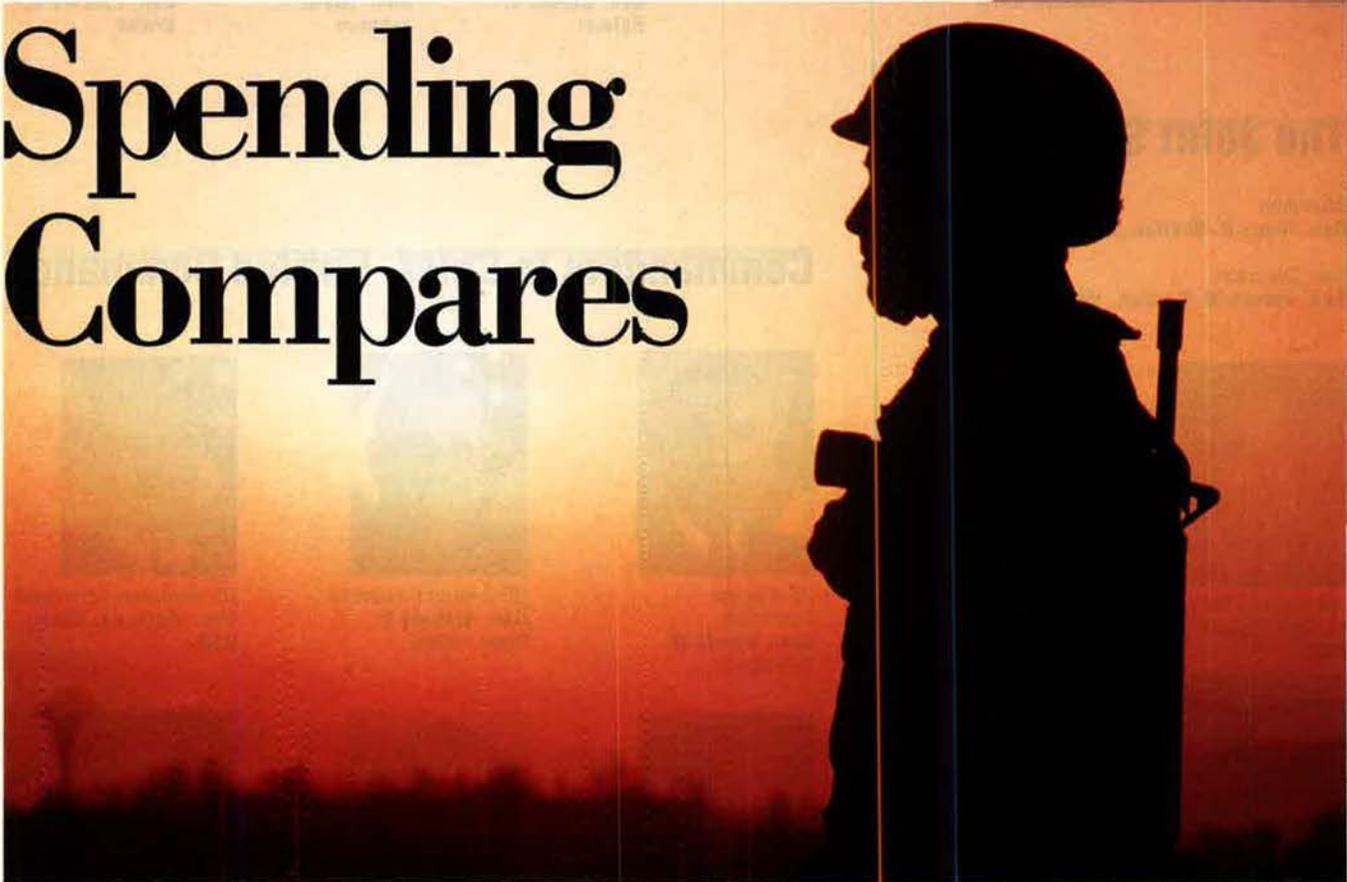
US Strategic Command
Gen. Eugene E. Habiger, USAF



US Transportation Command
Gen. Walter Kross, USAF

The defense burden is lighter
for Europeans and Canadians.

How US Defense Spending Compares



DoD photo by SSGT. Rodney E. Jones

THE open-ended US mission in Bosnia and the planned expansion of NATO have rekindled debate about burden sharing in the Alliance. Specifically, analysts and officials charge that Europe and Canada are not pulling their weight on defense.

Since 1995, the Bosnia deployment has cost the US \$7 billion, with no end in sight. The cost of incorporating the Czech Republic, Poland, and Hungary into NATO is in dispute but surely will cost Washington billions more. These expenditures come on top of scores of billions the US spends each year to keep a 100,000-strong force in Europe and its territorial waters and to protect Western oil supplies in the Persian Gulf.

These and other factors have provoked claims that European nations and Canada, with a combined popula-

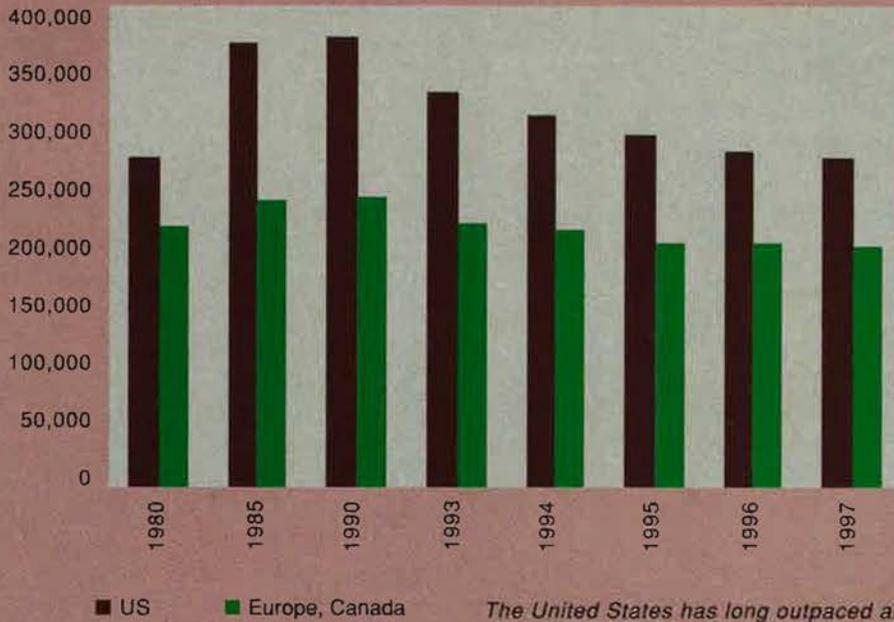
tion and economic output comparable to those of the US, should pay more of the common defense bill, reducing the US burden.

The tension is readily seen in policy on Bosnia. Two key Democratic Senators, Carl Levin of Michigan and Jack Reed of Rhode Island, said in December they support keeping the US force in Bosnia but not indefinitely. Europeans, they warned, must be prepared to take up the burden soon. Republicans are even stronger in their calls for more vigorous European action on a range of defense matters.

Judging from the statistical evidence, critics of the Allies have a case. Information presented on the following pages has been drawn directly from official NATO sources or has been derived from official NATO data.

Fig. 1 Defense Expenditures of NATO Members 1980-97

Constant 1998 US Dollars



The United States has long outpaced all the other Allies combined in total military expenditures. Part of the difference can be attributed to the global nature of US defense strategy. The gap grew significantly during the Reagan defense buildup of the 1980s. As can be seen in Fig. 1, the difference narrowed a bit during recent years as the United States' armed forces went through its extended post-Cold War drawdown. However, Washington still leads the rest of the Alliance by a wide margin, as is evident in Fig. 2.

Fig. 2 Shares of Defense Burden

Percent of Total Spending by NATO Nations, 1997

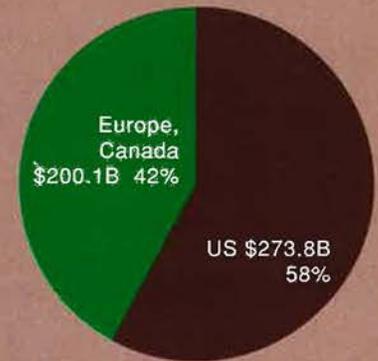
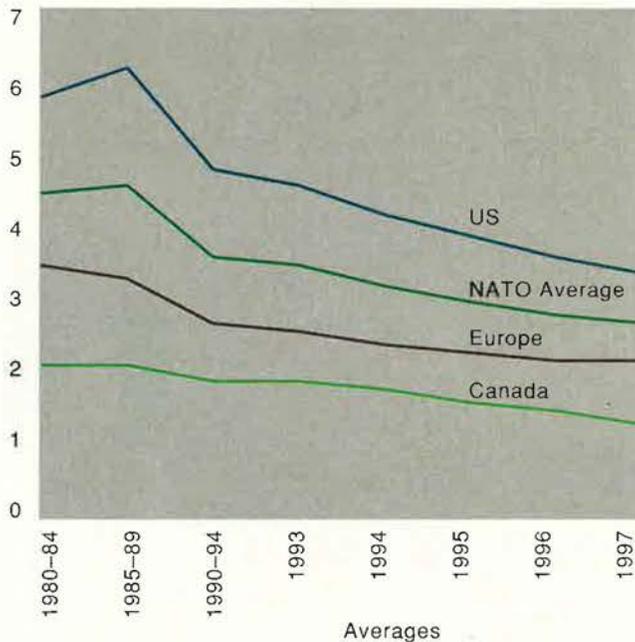


Fig. 3 The Economic Burden 1980-97

Defense Spending as Percent of GDP



Defense analysts and officials frequently cite the share of national economic output devoted to defense as a measure of a nation's defense burden and commitment to provide for its security. As the data in Fig. 3 show, Europe and Canada traditionally have lagged far behind the United States in this key indicator of military spending. The percentages have been drifting downward on both sides of the Atlantic for some time. Even so, as seen in Fig. 4, the US still dominates in this category.

Fig. 4 Current Commitment

Percent of GDP, 1997

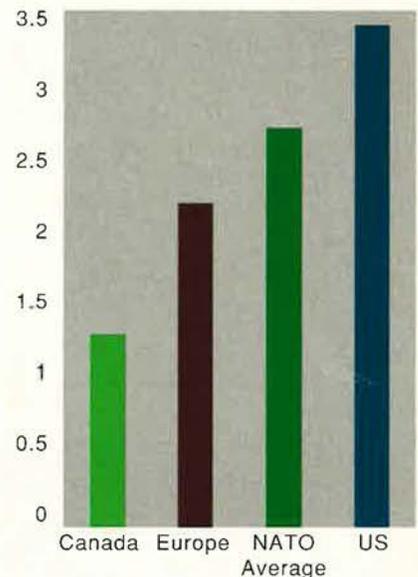


Fig. 7 Payments for Troops

Personnel Costs as Percent of Defense, 1997

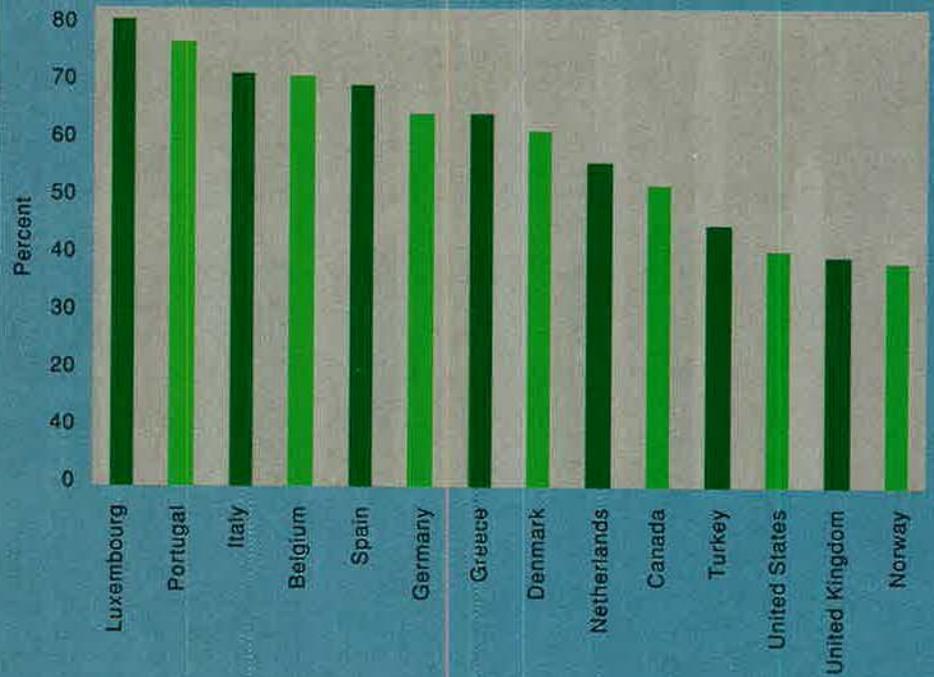


Fig. 5 The Burden on Individuals

Defense Spending Per Capita, 1998 Dollars

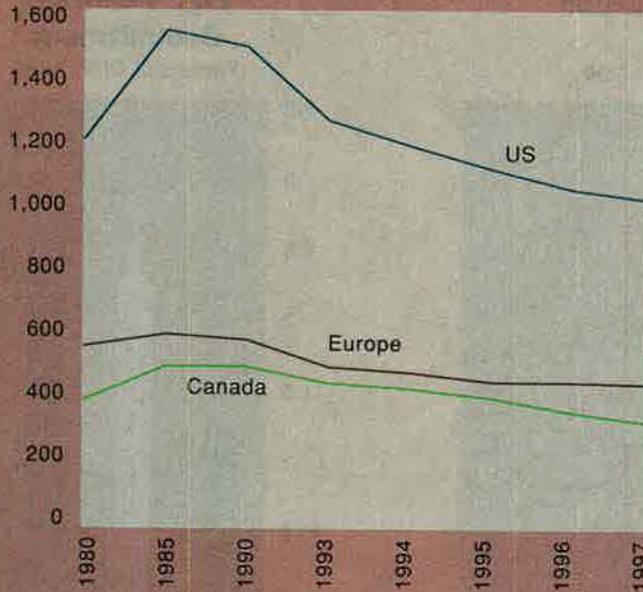
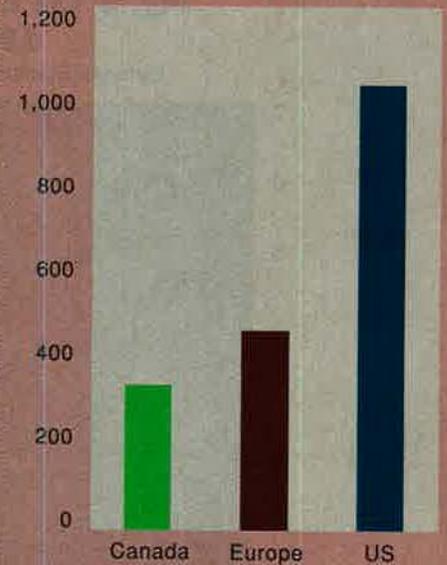


Fig. 6 What Americans, Others Paid in 1997

Defense Spending Per Capita



When it comes to the burden borne by the individual taxpayer, the transatlantic gap is even more pronounced. For Americans, per capita spending on defense peaked at about \$1,600 per year in 1985 (measured in constant 1998 dollars) and has been slowly declining ever since. [See Fig. 5.] The annual cost to the European and Canadian citizen also has been declining but from a far lower starting level. The upshot is that, in 1997, Americans paid \$1,000 apiece for national defense, compared to \$475 for the average European and \$348 for the average Canadian, as seen in Fig. 6.

Fig. 8 Payments for Hardware

Equipment Costs as Percent of Defense, 1997

These two charts demonstrate the relative importance (in budgetary terms) that the United States and its Allies ascribe to two key components of military power—personnel and hardware. Higher spending on new weapons and equipment generally is viewed as supportive of a more technically advanced military force. However, Europeans spend more of each defense dollar on personnel costs, compared to the United States. Whereas US personnel costs consume a bit less than 40 percent of the defense budget, major European Allies such as Germany, Italy, Spain, and Belgium allot 60 percent or more to pay the troops. [See Fig. 7.] As can be seen in Fig. 8, the US commits about a quarter of its budget to weapons and other equipment. Surprisingly, Turkey and the UK surpass the US in this measurement, whereas some key Allies lag far behind.

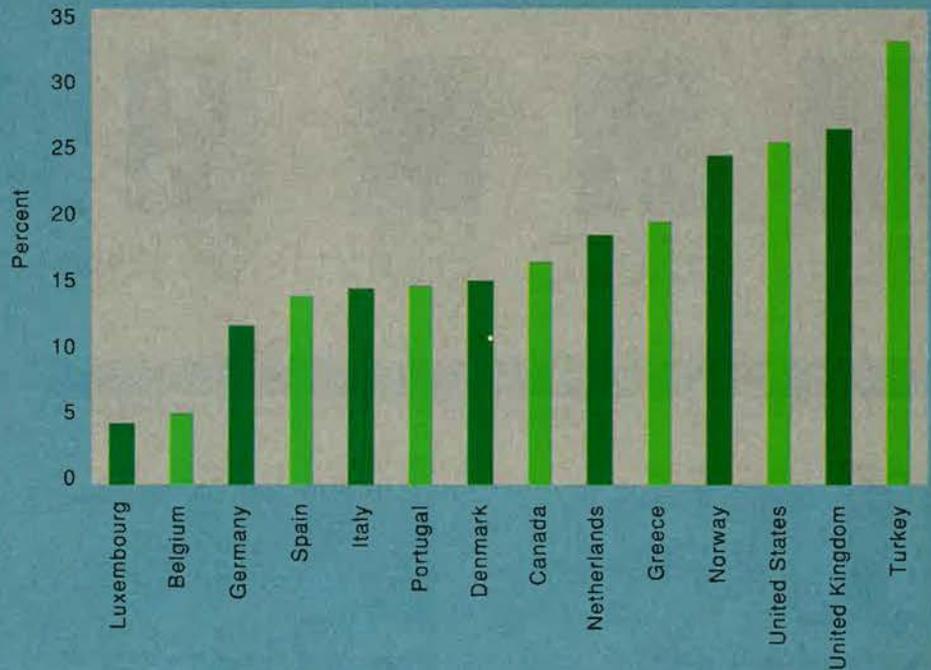
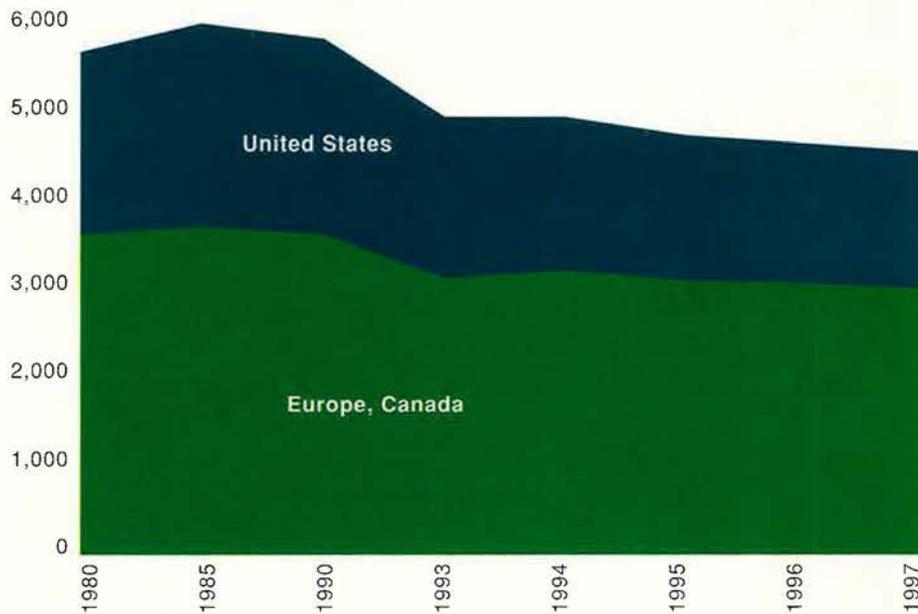


Fig. 9 Active Duty Forces of NATO Nations

Average Annual Strength, in Thousands



As seen in Fig. 9, the combined military force of the Western Alliance stood at nearly six million active troops in 1985, the first year of a profound thawing in East-West relations that produced the end of the Cold War. Since that time, NATO nations have shed more than 1.4 million troops and now deploy a force totaling about 4.5 million. Surprisingly, as can be seen in Fig. 10, the troops of Europe and Canada outnumber those of the United States 2-to-1. However, analysts say that many of these troops are not equipped or trained for major military conflict.

Fig. 10 NATO Armed Forces

Average Annual Strength, Active Duty, in Thousands

Nation	1980	1985	1990	1993	1994	1995	1996	1997
US	2,050	2,244	2,181	1,815	1,715	1,620	1,575	1,554
Europe	3,504	3,603	3,510	3,014	3,103	3,010	2,976	2,907
Canada	82	83	87	76	75	70	66	66
Total	5,636	5,930	5,778	4,905	4,893	4,700	4,617	4,527

Note: Includes France.



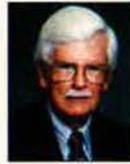
PRESIDENT
Doyle E. Larson
Burnsville, Minn.



BOARD CHAIRMAN
Gene Smith
West Point, Miss.



SECRETARY
William D. Croom Jr.
Colorado Springs, Colo.



TREASURER
Charles H. Church Jr.
Lenexa, Kan.

NATIONAL VICE PRESIDENTS

Information regarding AFA activity within a particular state may be obtained from the vice president of the region in which the state is located.



R. Donald Anderson
3 White House Dr.
Poquoson, VA 23662
(757) 868-8756

Central East Region
Delaware, District of Columbia, Maryland,
Virginia, West Virginia



Anton D. Brees
23049 Bonnyriggs Ct.
Hawthorn Woods, IL 60047-7525
(847) 259-9600, ext. 5104

Great Lakes Region
Illinois, Indiana, Kentucky, Michigan,
Ohio, Wisconsin



George E. Masters
1029 6th Ave. S.W.
Minot, ND 58701-3606
(701) 723-6697

North Central Region
Minnesota, North Dakota,
South Dakota



Ivan L. McKinney
331 Greenacres Blvd.
Bossier City, LA 71111-6014
(318) 861-8600

South Central Region
Alabama, Arkansas, Louisiana,
Mississippi, Tennessee



Ronald E. Palmer
269 Overlook Rd.
Glastonbury, CT 06033
(860) 633-3567

New England Region
Connecticut, Maine, Massachusetts,
New Hampshire, Rhode Island, Vermont



John J. Politi
1970 Timber Ridge Dr.
Sedalia, MO 65301-8918
(573) 526-1728

Midwest Region
Iowa, Kansas, Missouri, Nebraska



I. Fred Rosenfelder
P.O. Box 59445
Renton, WA 98058-2445
(206) 662-7752

Northwest Region
Alaska, Idaho, Montana, Oregon,
Washington



Jack H. Steed
309 Lake Front Dr.
Warner Robins, GA 31088-6064
(912) 929-3888

Southeast Region
Florida, Georgia, North Carolina,
Puerto Rico, South Carolina



Charles G. Thomas
4906 Calle Del Cielo
Albuquerque, NM 87111-2912
(505) 845-3506

Southwest Region
New Mexico, Oklahoma, Texas



Arthur F. Trost
288 Lombardi Cir.
Walnut Creek, CA 94598-4907
(925) 934-2889

Far West Region
Arizona, California, Guam, Hawaii,
Nevada



Dolores F. Vallone
143 Marne Rd.
Hopatcong, NJ 07843-1843
(973) 77C-2161

Northeast Region
New Jersey, New York, Pennsylvania



Mark J. Worrick
3210 S. Oneida Way
Denver, CO 80224-2830
(303) 757-8555

Rocky Mountain Region
Colorado, Utah, Wyoming



Ken I. Manako
15-9 Minami Aoyama 1-Chome
Minato-Ku, Tokyo 108 Japan
011-81-3-2475-6330

Special Assistant Europe



Frank M. Swords
PSC 3, Box 1469
APO AE C9021-1466
011-49-608-7237

NATIONAL DIRECTORS

Henry W. Boardman
Gulfport, Miss.

Dr. Dan Callahan
Warner Robins, Ga.

James E. Callahan
East Amherst, N.Y.

David J. Campanale
Vienna, Va.

Gerald S. Chapman
Saratoga, Calif.

James G. Clark
Springfield, Va.

Michael J. Dugan
New York

Charles G. Durazo
McLean, Va.

Rodney E. Ellison
Peterson AFB, Colo.

Ronald R. Fogleman
Durango, Colo.

Samuel M. Gardner
Garden City, Kan.

John O. Gray
Washington, D.C.

Tommy G. Harrision
Apopka, Fla.

Monroe W. Hatch Jr.
Clifton, Va.

Daniel C. Hendrickson
Layton, Utah

Harold F. Henneke
Indianapolis

Sandra L. Henninger
Cheyenne, Wyo.

Sharon M. Johnson
Ravenna, Ohio

William A. Lafferty
Green Valley, Ariz.

Stephen M. Mallon
Hampton, Va.

James M. McCoy
Bellevue, Neb.

Thomas J. McKee
Arlington, Va.

Michael J. Peters
Auburn, Calif.

Julie E. Petrina
Perry Hall, Md.

Victor C. Seavers
Eagan, Minn.

Dale E. Seiber
Great Falls, Mont.

Kevin Sluss
Jacksonville, Ark.

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

Lisa A. Smith
Fresno, Calif.

William L. Sparks
Daytona Beach, Fla.

John B. Steele
Fairborn, Ohio

Mary Anne Thompson
Oakton, Va.

Walter G. Vartan
Chicago

Cheryl L. Waller
Santa Maria, Calif.

L.B. "Buck" Webber
Fort Worth, Texas

Joseph A. Zaranka
Bloomfield, Conn.

ex officio

John A. Shaud
Executive Director
Air Force Association
Arlington, Va.

Rev. Richard Carr
National Chaplain
Springfield, Va.

Korvin D. Auch
Chairman, Junior Officer
Advisory Council
Hickam AFB, Hawaii

Kurt C. Helphinstine
National Commander
Arnold Air Society
Portland, Ore.

directors emeritus

John R. Alison
Washington, D.C.

Joseph E. Assaf
Mashpee, Mass.

Richard H. Becker
Oak Brook, Ill.

David L. Blankenship
Tulsa, Okla.

John G. Brosky
Pittsburgh, Pa.

Dan F. Callahan
Nashville, Tenn.

Robert L. Carr
Pittsburgh

George H. Chabbott
Dover, Del.

Earl D. Clark Jr.
Shawnee Mission, Kan.

O.R. Crawford
Austin, Texas

R.L. Devoucoux
Portsmouth, N.H.

Jon R. Donnelly
Richmond, Va.

Russell E. Dougherty
Arlington, Va.

George M. Douglas
Colorado Springs, Colo.

Joseph R. Falcone
Ellington, Conn.

E.F. "Sandy" Faust
San Antonio

Joe Foss
Scottsdale, Ariz.

Barry Goldwater
Scottsdale, Ariz.

Jack B. Gross
Harrisburg, Pa.

Martin H. Harris
Montverde, Fla.

Gerald V. Hasler
Albany, N.Y.

H.B. Henderson
Ramona, Calif.

John P. Henebry
Deerfield, Ill.

Robert S. Johnson
Lake Wylie, S.C.

David C. Jones
Arlington, Va.

Arthur F. Kelly
Los Angeles

Victor R. Kregel
Colorado Springs, Colo.

Jan M. Laitos
Rapid City, S.D.

Frank M. Lugo
Mobile, Ala.

Nathan H. Mazer
Roy, Utah

William V. McBride
San Antonio

Edward J. Monaghan
Anchorage, Alaska

J.B. Montgomery
Piedmont, Calif.

Bryan L. Murphy Jr.
Fort Worth, Texas

J. Gilbert Nettleton Jr.
Los Angeles

Ellis T. Nottingham
McLean, Va.

Jack C. Price
Pleasant View, Utah

William C. Rapp
Williamsville, N.Y.

Julian B. Rosenthal
Durham, N.C.

Peter J. Schenk
Pinehurst, N.C.

Walter E. Scott
Dixon, Calif.

Mary Ann Seibel
Clayton, Mo.

Joe L. Shosid
Fort Worth, Texas

William W. Spruance
Wilmington, Del.

Thos. F. Stack
San Mateo, Calif.

Harold C. Stuart
Tulsa, Okla.

James M. Trail
Oro Valley, Ariz.

A.A. West
Hayes, Va.

Sherman W. Wilkins
Issaquah, Wash.

By John L. Frisbee, Contributing Editor

Greenland Rescue

Three attempts to save the men who had crash-landed on Greenland's ice cap had failed. It was up to Lt. Col. Emil Beaudry to get them out.

There is no more inhospitable area on Earth than Greenland, the world's largest island. More than 1,600 miles long, much of the ice-capped island lies north of the Arctic Circle, with ice ranging from 1,000 feet to two miles thick. During the winter there are only three hours of daylight in the south, and the sun never appears in the north. Temperatures of minus 45 degrees are not unusual, nor are gale force winds. Greenland is not an ideal area for flying, but over the interior there is no other way to travel.

It was in this scene of frigid desolation that an Air Force C-47 crash-landed on Dec. 7, 1948, during a routine flight from Bluie West-8 to BW-1. None of the seven men aboard were injured. For the next three weeks attempts to rescue the men were thwarted by weather and technical failures. The central character in this drama was to be Air Force Lt. Col. Emil Beaudry, USAF's foremost expert in Arctic rescue operations.

As the C-47 prepared for a belly landing on the snow, the radio operator got off a position report to BW-1, 125 miles to their south. They touched down at about 8,000 feet, an altitude that added another dimension to their survival and the rescue attempts that were made in the days to come. The Air Rescue Service detachment at BW-1 immediately dispatched a B-17 to locate the crash site but with no success that day, due to blowing snow.

Four days later, after the crash site had been located, the weather improved enough to launch a B-17 with a two-man crew to attempt a wheel landing near the downed men. All went well as the B-17 touched down on what appeared to be hard

snow. Then the aircraft hit a hidden obstacle. The landing gear and one engine were torn off, leaving the uninjured crew to join the C-47 survivors. Now there were nine.

It was clear that the men on the ground could not survive for long in the frigid fuselage of the C-47, even with supplies, including portable stoves, dropped to them by parachute. Using all available tools they dug a 10-by-16-foot cave through the snow to solid ice. A roof was improvised from parachutes. The stoves provided sufficient heat to keep the shelter warm enough for survival.

For the next few days, weather ruled out another rescue flight. Beaudry and other operations planners believed the best chance of success lay in a cargo glider towed by a C-54 from Goose Bay, Labrador, to the crash site. After a very rough trip the glider landed safely, and within 30 minutes its crew set up the poles and ropes that would enable the circling C-54 to snatch the glider into the air and tow it to BW-1. A hookup was made successfully, but as the glider broke ground the tow rope parted. A second attempt was unsuccessful for the same reason. During the night, high winds destroyed the glider. Now 11 men were stranded on the ice.

On Christmas Day another glider, this one with a single crewman, was towed to the crash site. Again the tow rope parted, whipped back, and destroyed the nose section of the glider. The number of men on the ice now had risen to 12.

The Navy had volunteered to try a rescue with helicopters flying from the carrier *Saigon*, but the ship's arrival was delayed by severe weather, and there was no certainty that the choppers could operate successfully in Greenland's unstable weather. Beaudry decided that the most likely chance of success was to take advantage of a forecasted break in the weather and go in with a ski-equipped C-47 using Jet Assisted Takeoff bottles for the takeoff from the rescue site. The additional 2,000 pounds of thrust that they provided would



Lt. Col. Emil Beaudry was USAF's foremost expert in Arctic rescues.

be added insurance of a successful takeoff in the thin air at 8,000 feet.

BW-1 was closed by weather, so Beaudry waited at BW-8, where there was snow on the runway, for the break to come. Because of mountainous terrain and the lack of landing and takeoff aids, operations at both bases were permitted only during the three hours of daylight (semi-daylight at BW-8). The round trip from BW-8 to the crash site and return would take about four hours. In order to land back at the base before complete darkness, Beaudry decided on a night takeoff, despite its hazards.

Beaudry landed safely near the crash site and with the help of past experience and the JATO bottles got the 12 men safely back to BW-8. The original seven C-47 crew members had been on the ice cap for three weeks while three heroic attempts to save them had gone for naught.

For his rescue flight in the face of past failures, Beaudry was presented the Mackay Trophy by Air Force Chief of Staff Gen. Hoyt S. Vandenberg for the most meritorious military flight of the year. Beaudry retired as a colonel in 1969 and now lives in Winter Park, Fla. ■

Thanks to Beaudry's daughter, Ann.

AFA / AEF National Report

By Frances McKenney, Assistant Managing Editor

AFA Members Respond to Call

An advertisement placed by the Air Force Association's National Defense Issues department in January's *Air Force Magazine*, asking members to send letters to their legislators, urging them to support FEHBP-65, drew an overwhelming response from readers.

Within three weeks of the ad's appearance [January, p. 80], 10,000 AFA members had contacted its sponsor, Health Care Equity Action Line, ordering three preaddressed letters to send to their congressmen.

The letters urged legislators to co-sponsor S. 1334 and H.R. 1766, authorizing a test program to allow Medicare-eligible beneficiaries from the uniformed services to enroll in the Federal Employees Health Benefits Program. This initiative is called FEHBP-65.

The ad was an initiative of the Mili-

tary Coalition, of which AFA is an affiliate.

AFA's Director of NDI Kenneth Goss said, "It is the coalition's hope that by publishing this ad in 26 member publications that Capitol Hill will be flooded with correspondence," signaling to legislators that the issue is of importance to a large number and wide range of people.

Goss added, "AFA members who have not yet had an opportunity to respond to the Action Line ad should do so or feel free to write their own letter. This is an election year—members of Congress want to hear from their constituents. Only through a strong grassroots effort will a test program for FEHBP-65 be authorized."

To order three letters to mail to their Congressmen, AFA members can send their name, address (active duty must include their voting ZIP code), and a check or money order for \$5.95 to MC/USA Letters, PO Box 9865, Washington, DC 20016.

Spouse Scholarship Winners

The Aerospace Education Foundation recently selected 31 recipients for its spouse scholarships, and for the first time since the awards were established in 1995 the winners include husbands of active duty Air Force members.

James B. Combs, a junior at New Mexico State University at Alamogordo majoring in medical laboratory technology, is the spouse of A1C Cara Combs of the 49th Operations Support Squadron, Holloman AFB, N.M.

Albert G. Pinto, a sophomore political science major at Loyola University Chicago, is the spouse of SrA. Jennifer L. Pinto of the 440th Airlift Wing (AFRC), General Mitchell IAP/ARS, Wis.

In addition to 30 \$1,000 Air Force Spouse Scholarships, AEF awarded the second Janet R. Wisemandle Whittle Memorial Scholarship to Amber D. James, a junior majoring in secondary education at the University of Nevada, Las Vegas. She is the spouse of Amn. Ronnie W. James of the 57th EMS, Nellis AFB, Nev. The \$500 Whittle scholarship is named for the late wife of Wright Memorial (Ohio) Chapter member Alan N. Whittle.

This year, 575 people applied for the spouse scholarships.

New Home for Old Vet

When a high-tech, full-motion simulator of a B-52 cockpit needed a new home, Iowa State President Louis M. Rapier asked his father-in-law, Jerry L. Naylor, of the Lancer (Iowa) Chapter, for help.

Naylor owns a hangar at the Monticello Municipal Airport in Monticello, Iowa, and willingly donated some space.

The simulator was trucked there in December, and now the chapter is organizing a volunteer effort to refurbish it, hoping to make it worthy of permanent indoor display at the Science Station in Cedar Rapids, Iowa. The simulator needs a lot of restoration, including work on its outer skin, as well as new instrumentation, seats, and a myriad of parts. Finding re-



AFA National President Doyle Larson; Ken Mann, president of the First Flight Society; and Gen. Ralph Eberhardt, USAF vice chief of staff (l-r), unveil portraits of Gen. H.H. Arnold and Piedmont Airlines founder Thomas Davis at a December ceremony at Kill Devil Hills, N.C. The portraits of Arnold and Davis now hang in the First Flight Shrine, located in the Wright Brothers National Memorial's visitors center. This annual shrine induction ceremony was part of two days of festivities organized by the Kitty Hawk (N.C.) Chapter and the First Flight Society.



At a meeting of the Charleston (S.C.) Chapter, (l-r) past presidents Roderick Lenahan and John Settle received AFA Medals of Merit from Stanley Hood, state president. Walter Watson Jr., a Columbia (S.C.) Chapter member, spoke at this December meeting, recounting his experiences as a reconnaissance systems officer for the SR-71.

placements for these items will be a big challenge, said Rapier.

In the same way that the real Stratofortress has handled a wide variety of roles since first joining the USAF inventory in August 1954, so has this cockpit simulator served in many settings. Rapier has been able to determine that it originally came from a B-52 base in northern Michigan and that it spent its first post-Air Force years at the University of Iowa in Iowa City.

A local businessman, Dan Bernacki, acquired it from the university in 1990 and placed it in his backyard, where his children used it as a play fort. Two years ago, Bernacki gave it to the Science Station, hoping it would be used for its playground. The museum stored it in its parking lot until William Klein, secretary of the Lancer Chapter, took action. At first, the Rockwell engineer and other volunteers, including AFROTC cadets, worked on restoring it as time permitted. Their efforts didn't make much headway since they were fighting the elements, so Klein turned to Rapier for help.

The rescue of the simulator garnered attention in the local newspaper, with prominent mention of AFA and the Lancer Chapter. It also made the local TV news. Rapier said the coverage generated phone calls not only from five or six people interested in aiding the restoration work but also from a few who just wanted to see it.

In Cowboy Country

Lt. Gen. Lance W. Lord, vice commander of Air Force Space Command, headed the list of VIPs at the **Cheyenne Cowboy (Wyo.) Chapter's** banquet in December that marked the 50th anniversary of the Air Force. In his remarks, he spoke of the future role of the space and air force and its impact on F.E. Warren AFB, Wyo.

Lord is no stranger to the base, having been commander of its 90th Missile Wing from 1992 to 1993.

Chapter President Irene G. Johnigan said nearly 400 guests turned out for the event, including many military, state, and local civic leaders, among them Maj. Gen. Donald G. Cook, commander of 20th Air Force at F.E. Warren.

Johnigan said that the chapter's Community Partners bought tables at the banquet and were able to sponsor 60 airmen that evening.

The gala also included award presentations by the Employer Support of the Guard and Reserve organization and also recognized Eagle Grant recipient SSgt. Julia L. Breeden.

Yeager Visits Yeager

A surprise appearance by retired Brig. Gen. Charles Yeager highlighted the "Wings Over Charleston" air show in October, cosponsored by the **Chuck Yeager (W.Va.) Chapter**.

The chapter set up an AFA booth for the air show, at Yeager Airport,

Click on "Enola Gay"

In January 1995, the Smithsonian Institution canceled plans by the National Air and Space Museum to exhibit the *Enola Gay*, the B-29 that dropped the atomic bomb on Hiroshima, as a prop in a political horror show. Shortly thereafter, the secretary of the Smithsonian requested and received the resignation of Martin Harwit, director of the Air and Space Museum. In 1996, Harwit wrote a book, *An Exhibit Denied: Lobbying the History of Enola Gay*, in which he placed much of the blame for his troubles on the Air Force Association and *Air Force Magazine*.

A resurgence of interest in the controversy is now under way, fueled by curiously belated reviews of Harwit's book in such publications as the *New York Times* and *The Journal of American History*.

Readers who want the parts of the story not found in the *New York Times* should check the Air Force Association site on the World Wide Web (<http://www.afa.org>) and click on "Air Force Magazine," then "Enola Gay," for *Revisionism Gone Wrong*, a complete collection of our special reports, articles, and editorials on this matter.

ANG photo by Rick Ware



Before re-enacting his breaking of the sound barrier on the 50th anniversary of the event in October, retired Brig. Gen. Chuck Yeager visited the AFA booth at a West Virginia air show to meet Ira Latimer Jr. (left), Chuck Yeager Chapter vice president for communications, and Samuel Rich (right), chapter president.

W.Va., and also helped organize the flyover, ensuring participation by the 130th Airlift Wing from Yeager Airport and the 192d Fighter Wing from Richmond IAP, Va.

Ira S. Latimer Jr., chapter vice president for communications, explained that the chapter had heard rumors that Yeager would be at a local university during the time of the air show and so invited him to the event. They didn't know he would arrive until just 10 minutes before Yeager landed at the airport in a P-51. Latimer said.

Along with the air show, the chapter also sponsored a military ball at a Marriott hotel, honoring USAF's 50th anniversary. About 160 attended this black-tie gathering.

Honored guests included Sen. John D. Rockefeller IV (D-W.Va.), Charles G. Durazo, AFA national director, and Maj. Gen. Allen E. Tackett, the state adjutant general. Retired Brig. Gen. J. Kemp McLaughlin was the evening's guest speaker. Founder of the West Virginia ANG—which was also celebrating its 50th anniversary—he spoke about his experiences as an Eighth Air Force B-17 pilot in World War II.

As part of the festivities, Rockefeller received an AEF Scott Associate Fellowship, and a representative from the office of Sen. Robert C. Byrd (D-W.Va.) accepted one on behalf of the Senator. Tackett received an AFA Special Citation. Chapter President Samuel Rich received an award, recognizing his leadership of the state's only chapter.

Several chapter charter members of AFA also were honored: Richard W. Ervin and Charles R. Fox, whose memberships date back to 1946, and Karl G. Foster, Ray A. Wilkins, and Frederick L. Wotring, who all joined AFA in 1947. Foster was the only one able to attend the program and accepted plaques for the others.

Future for Logistics

At a luncheon meeting of the C. Farinha Gold Rush (Calif.) Chapter

and the local Financial Managers Association in December, James W. Hopp described a vision for USAF's depot system in a speech on Air Force logistics.

In his comprehensive presentation, he covered the steps needed to achieve effectiveness and efficiency in a 21st century Air Force and described the "environment" that Air Force Materiel Command operates in, including budget constraints and the recommendations of the Quadrennial Defense Review, Defense Reform Initiative, and National Defense Panel.

Hopp, a retired major general and also a C. Farinha Gold Rush Chapter member, gained his knowledge and vision for the Air Force's logistics systems through a career that included posts as director of supply for the deputy chief of staff for logistics, vice commander of Sacramento Air Logistics Center, McClellan AFB, Calif., and commander of Ogden ALC at Hill AFB, Utah. He is currently director for logistics programs and services at KPMG Peat Marwick in Sacramento.

Hopp's speech greatly impressed fellow chapter member John V. Welge. "It's not often you hear a presentation laid out to where a layman and loggie could understand it," he said.

The joint meeting, held at the McClellan AFB Officers Club, was attended by about 45 guests.

On Veterans Day

The Panhandle AFA (Texas) Chap-



At Warner Robins, Ga., Museum of Aviation Director Elizabeth Garcia received a print of a C-130 to commemorate the 50th anniversary of the 165th Airlift Wing (ANG), Savannah IAP, Ga. L-r, Dr. Dan Callahan, national director; ANG Lt. Col. Edward Wexler, state president; ANG Lt. Col. Charles Clark; and Jack Steed, national vice president (Southeast Region), made the presentation.

ter constructed a jet and persuaded a beauty queen to grace their float in the Veterans Day Parade at Amarillo.

Chapter member L. Ray McKee assembled the "jet" with wood planks and the shiny Mylar material that usually wraps air-conditioning ducts, and the beauty pageant queen was his six-year-old granddaughter, winner of two local beauty contests for children. According to McKee the float was well received, especially since little Jessa Hooper tossed USAF 50th anniversary pins and pencils to the crowd lining the streets.

She and TSgt. Mitchell Creel from the local Military Entrance Processing Station joined four former chapter presidents on the float: McKee, Barry L. Smith, Antonio Salazar Jr., and Guy W. Leach.

Chapter member W.R. "Bob" Izzard served as announcer for the parade. Chapter President Robert P. Balliett joined him on the reviewing stand to serve as a "spotter," feeding Izzard information on which float and what VIP was rolling up next.

McKee said a local hardware store donated the lumber for his jet, a client of his stockbroker employer donated the silvery Mylar flex-duct wrap, and his wife's retail store provided the bunting and fringe that covered the float.

This year's parade honored USAF's 50th anniversary and featured a fly-over of four F-16s from Cannon AFB, N.M.

In Arizona, Glenn O. Plaumann, Arizona state vice president for communications, and his wife, Donita F. Plaumann, of the **Phoenix Sky Har-**



Panhandle Chapter on parade for Veterans Day in Amarillo, Texas: In the front row (l-r) are L. Ray McKee and Barry Smith. Middle row: Jessa Hooper and TSgt. Mitchell Creel from the local MEPS. Back row: Antonio Salazar Jr. and Guy Leach.

bor Chapter, rode a convertible in the Veterans Day Parade in Prescott, Ariz.

Afterward, Glenn Plaumann presented \$200 to Patricia A. McKlem, director of the Department of Veterans Affairs Medical Center in Prescott. He said the donation to the morale, welfare, and recreation fund for the facility's employees served to thank them for the care they give to veterans. The medical center sponsored the parade.

**Pearl Harbor Remembered
Nassau Mitchel (N.Y.) Chapter**

member Irwin Hansen organized the annual ceremony at Republic Airport, N.Y., to commemorate the 56th anniversary of the attack on Pearl Harbor.

Nassau Mitchel and **Francis S. Gabreski (N.Y.) Chapter** members were among the military groups who watched 19 antique and other aircraft take off from the airport to drop 56 roses—one for each year since Dec. 7, 1941—in the waters around the Statue of Liberty in New York harbor at 12:55 p.m., marking the East Coast time of the attack.

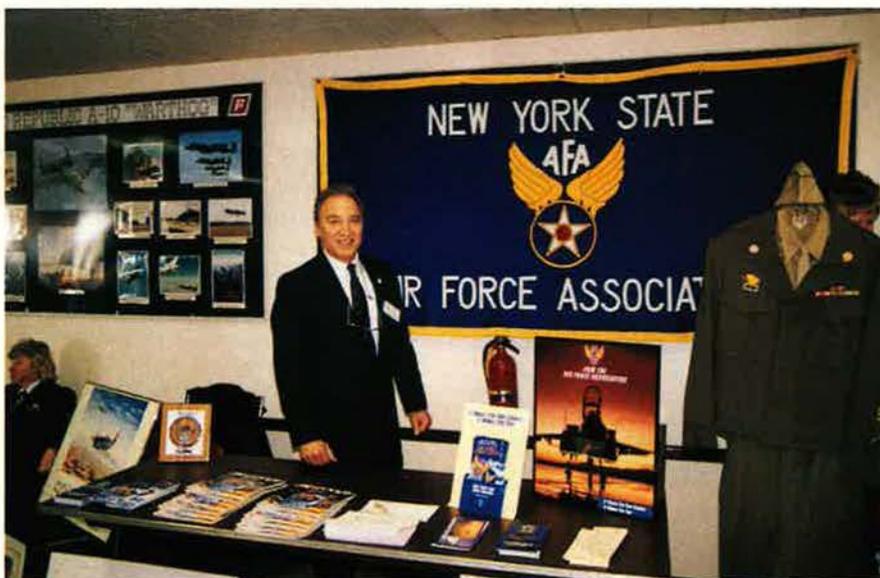
This ceremony, including a blessing of the roses, first took place in 1970 and was started by Joseph S. Hydrusko. He was serving on a Navy hospital ship at Pearl Harbor when the attack came and is said to have saved several hundred lives that day. At the first Statue of Liberty ceremony, Hydrusko used his own aircraft to drop the roses. After his death in 1983, his friends took over the tradition.

Fred DiFabio, president of the Nassau Mitchel Chapter, and chapter members Walter N. Zywan and Marylyn V. Zywan set up two tables of AFA materials at the airport. Their display also included two bulletin boards of photos and an Army Air Corps uniform. DiFabio reported that between 400 and 500 visitors attended the event.

Thanks, Partner

More than 200 guests attended a luncheon for the Community Partners of the **Altus (Okla.) Chapter** in November.

Col. Christopher A. Kelly, 97th Air



Fred DiFabio, Nassau Mitchel Chapter president, and other chapter members manned a display at Republic Airport, N.Y., in December, where a ceremony marked the anniversary of the attack on Pearl Harbor.

Mobility Wing commander, at Altus, was the guest speaker.

The chapter selected the Southwest Technology Center as the chapter's Community Partner of the Year, 1997. The center offers vocational and technical education and last year rounded up a surplus F-111 flight simulator from Clovis, N.M., in order to train simulator technicians. These technicians are in demand worldwide, according to Gregory J. Mason, chapter secretary.

Awards in Virginia

In November, the **Leigh Wade (Va.) Chapter** held a dinner at Ft. Lee, Va., in conjunction with a quarterly state meeting conducted by George D. Golden, state president.

Col. Irving L. Halter Jr., commander of 1st Operations Group at Langley AFB, Va., was the keynote speaker, delivering an update on USAF's missions.

In awards presentations, Halter and chapter council members George Aguirre, Andrew H. Heath, and James O. Tyler received commemorative coins marking USAF's and AFA's 50th anniversaries. Edward R. Martin was named Chapter Member of the Year 1997.

Chapter President Glen E. Thompson received an AFA service award for the region and also announced that Kathy Vaeth of North Elementary School in Colonial Heights, Va.,

Max Keeney Retires After 39 Years

Richmond "Max" Keeney, director of Membership Operations, retired from the Air Force Association after more than 39 years as part of the executive staff. He was commissioned a second lieutenant after graduating in 1952 from Amherst College in Amherst, Mass., then went to St. Louis University to train for USAF's Air Weather Service. He received a second bachelor's degree after completing studies at St. Louis University in 1953. After leaving the Air Force in 1956, Keeney worked briefly for Connecticut General Life Insurance Co. in Washington before joining AFA in 1958. Over the years he has been instrumental in creating and developing new insurance and membership programs, including the Military Group Life Insurance Program that he implemented in 1960 and which is still going strong.

In describing Keeney's key role at AFA headquarters, former Executive Director John O. Gray recently wrote, "Under the management and supervision of Max, and with the assistance of an outstanding and highly dedicated staff, the association's insurance programs grew in stature, numbers of programs, and in numbers of participants. These programs have been major factors in contributing to the growth of AFA and to the resources necessary for the association to address its profound mission."

Keeney has also been responsible for arranging to have special items made available for AFA members, most recently the 50th anniversary A-2 leather jacket, "First Day of Sale" cover of the Air Force commemorative postage stamp, *AFA 50th Anniversary Directory of Membership*, and a commemorative book of reunion groups that attended Air Force Fifty.

In retirement, Keeney will continue to work with AFA as a consultant.

had been selected as the chapter's Teacher of the Year for 1997. Vaeth teaches kindergarten and is the daughter of former chapter vice president Sylvester L. Vaeth.

Christmas in Indiana

At a Christmas awards banquet in Indiana, the **Fort Wayne Chapter** named Georjean A. Bush of Pleasant

Center Elementary School in Fort Wayne as Teacher of the Year for 1997. A science teacher for fourth- and fifth-graders, she is the chapter vice president and has been an AFA member since 1995.

Other awards were given to Theodore Huff Jr., chapter president; Hyrle A. Ivy Jr., vice president for aerospace education; Ed Bennett; and CMSgt. Robert J. Brandt, who represented the 122d Fighter Wing (ANG), Fort Wayne IAP.

Photo by Kathy Snodgrass



A generous donation from National Director Emeritus Jack B. Gross makes it possible for AFA to honor a staff member each quarter. In 1997 (l-r), Brian Wheeler-Melvin of Membership Operations, Katherine DuGarm of Management Information Systems, Carol Obenstine from Insurance, and Betsy Joyce from Communications each received a Staff Award of the Quarter, recognizing superb job performance, initiative, cooperation, and teamwork. DuGarm also won the 1997 Staff Award of the Year.

Coming Events

March 6-8, **Louisiana State Convention**, New Orleans; April 2, **Minnesota/South Dakota State Convention**, Minneapolis, Minn.; April 17-18, **Alabama State Convention**, Montgomery, Ala.; April 24-25, **North Dakota State Convention**, Grand Forks, N.D.; May 8-9, **South Carolina State Convention**, Sumter, S.C.; May 15-16, **Tennessee State Convention**, Nashville, Tenn.; June 5-6, **Ohio State Convention**, Columbus, Ohio; June 5-7, **New York State Convention**, Ronkonkoma, N.Y.; June 6-7, **Arizona/Nevada State Convention**, Laughlin, Nev.; June 12-13, **Arkansas State Convention**, Jacksonville, Ark.; July 17-19, **Texas State Convention**, San Angelo, Texas; Aug. 6-9, **California State Convention**, Vandenberg AFB, Calif.; Aug. 14-15, **Oklahoma State Convention**, Oklahoma City; Aug. 22, **Indiana State Convention**, Indianapolis; Sept. 14-16, **AFA National Convention and Aerospace Technology Exposition**, Washington.

Aerospace Education Foundation Fellows

The following is a listing of Individual Fellows who have become fellows since the last such listing in the September 1995 issue of this magazine. The listing will be published annually each March in future issues.

Individual Jimmy Doolittle Fellows

(Listed in order of affiliation. Represents \$1,000 contribution)

NAME	SPONSOR	
1995		
Kenneth A. Grant	Air Force Ball of Mid-America	Sequa Atlantic Research
McDonnell Douglas	Air Force Ball of Mid-America	The Aerospace Corp.
Leland L. Adams	Pope (N.C.) Chapter	TRW
Gen. Joseph W. Ralston, USAF	Iron Gate (N.Y.) Chapter	Lt. Gen. George K. Muellner, USAF
Dolores F. Vallone	Syminx	Los Angeles Air Force Ball
Jill Ann Heymer	Gen. E.W. Rawlings (Minn.) Chapter	Los Angeles Air Force Ball
Cecil G. Brendle	John O. Gray	Los Angeles Air Force Ball
Howard Eichner (<i>in memoriam</i>)	Florida State AFA	Los Angeles Air Force Ball
Gen. Henry Viccellio Jr., USAF	Iron Gate (N.Y.) Chapter	Los Angeles Air Force Ball
GTE Government Systems	Los Angeles Air Force Ball	Los Angeles Air Force Ball
TRW	Los Angeles Air Force Ball	Los Angeles Air Force Ball
ITT Aerospace	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Honeywell	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Hughes Aircraft	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Logicon	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Rockwell International	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Foundation of Litton Industries	Los Angeles Air Force Ball	Los Angeles Air Force Ball
McDonnell Douglas Aerospace	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Boeing Defense & Space Group	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Loral Federal Systems	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Thiokol	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Lockheed Martin	Los Angeles Air Force Ball	Los Angeles Air Force Ball
GenCorp Aerojet	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Los Angeles Air Force Ball Committee	Aerospace Education Foundation	Los Angeles Air Force Ball
1996		
Dr. Arthur Schiewe	The Aerospace Corp.	Los Angeles Air Force Ball
Gen. Thomas S. Moorman Jr., USAF	Cape Canaveral (Fla.) Chapter	Los Angeles Air Force Ball
Robert M. Balch	Langley (Va.) Chapter	Los Angeles Air Force Ball
Edgar A. Hastings	Langley (Va.) Chapter	Los Angeles Air Force Ball
Lawrence A. Shellhammer	Langley (Va.) Chapter	Los Angeles Air Force Ball
Col. Raymond P. Massie Jr., USAF (Ret.)	Air Force Ball of Mid-America	Los Angeles Air Force Ball
Gen. Billy J. Boles, USAF	Iron Gate (N.Y.) Chapter	Los Angeles Air Force Ball
Eddie Brown	Gregg Moser	Los Angeles Air Force Ball
Brig. Gen. Robert L. Scott Jr., USAF (Ret.)	Georgia State AFA	Los Angeles Air Force Ball
TRW, Co Soule	Scott Memorial (Ill.) Chapter	Los Angeles Air Force Ball
Gen. Robert L. Rutherford, USAF (Ret.)	Scott Memorial (Ill.) Chapter	Los Angeles Air Force Ball
Vic Seavers	Gen. E.W. Rawlings (Minn.) Chapter	Los Angeles Air Force Ball
Lt. Gen. Edwin E. Tenoso, USAF	Iron Gate (N.Y.) Chapter	Los Angeles Air Force Ball
Edward A. Elbert Jr.	Central Florida Chapter	Los Angeles Air Force Ball
Maj. Gen. Frank B. Campbell, USAF	Langley (Va.) Chapter	Los Angeles Air Force Ball
Richard Schankel	Utah State AFA	Los Angeles Air Force Ball
AT&T	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Rockwell	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Foundation of Litton Industries	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Honeywell	Los Angeles Air Force Ball	Los Angeles Air Force Ball
ITT Aerospace	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Logicon	Los Angeles Air Force Ball	Los Angeles Air Force Ball
McDonnell Douglas Aerospace	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Northrop Grumman	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Boeing Defense and Space Group	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Cobham PLC	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Aerojet	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Hughes Space and Communications	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Hughes Electronics	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Raytheon Aircraft	Los Angeles Air Force Ball	Los Angeles Air Force Ball
1997		
Maj. Gen. Bryan G. Hawley, USAF	Iron Gate (N.Y.) Chapter	Los Angeles Air Force Ball
Emma Meister	New Jersey State AFA	Los Angeles Air Force Ball
Hq Air Combat Command	Langley (Va.) Chapter	Los Angeles Air Force Ball
1st Fighter Wing	Langley (Va.) Chapter	Los Angeles Air Force Ball
David B. Ballou	Doyle E. Larson	Los Angeles Air Force Ball
Susan Ann Calhoun	Wayne Calhoun	Los Angeles Air Force Ball
John E. Craig II	Virginia State AFA	Los Angeles Air Force Ball
James P. Cavanaugh	Doyle E. Larson	Los Angeles Air Force Ball
MSgt. Robert D. Gatewood Jr., USAF	Maryland State AFA	Los Angeles Air Force Ball
Gen. Ronald R. Fogleman, USAF	AFA National	Los Angeles Air Force Ball
Jack Steed	Georgia State AFA and its chapters	Los Angeles Air Force Ball
Gen. Robert Russ, USAF (Ret.)	Eglin (Fla.) Chapter	Los Angeles Air Force Ball
Col. Felix Dupré, USAF	Langley (Va.) Chapter	Los Angeles Air Force Ball
Brig. Gen. Theodore W. Lay II, USAF	Langley (Va.) Chapter	Los Angeles Air Force Ball
Aerojet	Los Angeles Air Force Ball	Los Angeles Air Force Ball
ITT Industries	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Northrop Grumman	Los Angeles Air Force Ball	Los Angeles Air Force Ball
TRW Space & Electronics	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Thiokol	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Sunstrand Aerospace	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Lockheed Martin	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Raytheon Aircraft	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Hughes Aircraft	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Boeing	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Honeywell	Los Angeles Air Force Ball	Los Angeles Air Force Ball
William H. Campbell Jr.	Los Angeles Air Force Ball	Los Angeles Air Force Ball
Fellows of the Foundation		
NAME	SPONSOR	
1996		
Cecil H. Hopper	Ohio State AFA	
1997		
Douglas Stark	AEF	
Lt. Gen. Paul E. Stein, USAF	Colorado Springs/Lance Sijan (Colo.) Chapter	
Lt. Gen. Patrick P. Caruana, USAF	Colorado Springs/Lance Sijan (Colo.) Chapter	
Associate Fellows of the Foundation		
NAME	SPONSOR	
1996		
Howard Vasina	Colorado State AFA	
1997		
Oscar Curtis	Enid (Okla.) Chapter	

Individual Ira C. Eaker Fellows

(Listed in order of affiliation. Represents \$1,000 contribution)

NAME	SPONSOR
1995	
Peter J. Nikolaisen	Air Force Ball of Mid-America
Fred H. Klopper	Air Force Ball of Mid-America
Duane A. Aamodt	Bob Hope (Calif.) Chapter
Rebecca L. Scott	Walter E. Scott
Gen. James L. Jamerson, USAF	Men and women of USAFE
1996	
Founders of AFA	Central Florida Chapter
Charter members of AFA	Central Florida Chapter
Elected leadership of AFA	Central Florida Chapter
Members of AFA and AEF national staffs	Central Florida Chapter
Gen. Joseph W. Ralston, USAF	Langley (Va.) Chapter
Gen. Robert L. Rutherford, USAF (Ret.)	Iron Gate (N.Y.) Chapter
Maj. Gen. Ronald T. Kadish, USAF	Iron Gate (N.Y.) Chapter
Norman R. Augustine	Iron Gate (N.Y.) Chapter
Frank A. Shrontz	Iron Gate (N.Y.) Chapter
Harry C. Stonecipher	Iron Gate (N.Y.) Chapter
Rep. James Talent (R-Mo.)	Air Force Ball of Mid-America
John O. Gray	Iron Gate (N.Y.) Chapter
Fern Kinion	Colorado Springs/Lance Sijan (Colo.) Chapter and AFA National
TSgt. David De Los Santos, USAF	Doyle E. Larson
Donald D. Adams Sr. (<i>in memoriam</i>)	Ak-Sar-Ben (Neb.) Chapter
The men and women of Lockheed Martin	Scott Memorial (Ill.) Chapter
Patricia Fleener-Ryan	Florida State AFA
Rae Smith	The Smith Family
Joseph P. Allen IV	Calspan SRL

Organizers of the US Air Force	Central Florida Chapter
Commitment of USAF personnel, 1947-97	Central Florida Chapter
Sacrifices made by USAF people, 1947-97	Central Florida Chapter
Outstanding leadership of USAF, 1947-97	Central Florida Chapter
45th Space Wing, Partick AFB, Fla.	Cape Canaveral (Fla.) Chapter
Paul E. Bell	Bob Hope (Calif.) Chapter
Coleman Rader Jr.	Gen. E.W. Rawlings (Minn.) Chapter
Cecil G. Brendle	Central Florida Chapter
Col. Robert W. Gates, USAF (Ret.)	Eglin (Fla.) Chapter
Maj. Gen. Walter B. Putnam, USAF (Ret.)	Eglin (Fla.) Chapter
Col. George E. Day, USAF (Ret.)	Eglin (Fla.) Chapter
CMSgt. Dominick N. Masone, USAF (Ret.)	Eglin (Fla.) Chapter
The Hon. Sheilia E. Widnall	AFA National

Barry Goldwater Fellows

(Represents \$5,000 contribution)

NAME	SPONSOR
1995	
Gen. Monroe W. Hatch Jr., USAF (Ret.)	AEF Board of Trustees
Brian Barents	Mrs. H.H. Timken Jr.
1996	
None awarded.	
1997	
William H. Russell	Langley (Va.) Chapter

**Give the Gift of Video!
AFA Members Receive
a \$3 Discount!**

The newly released video, *People, Power, and Mission* commemorates the fiftieth anniversary of the United States Air

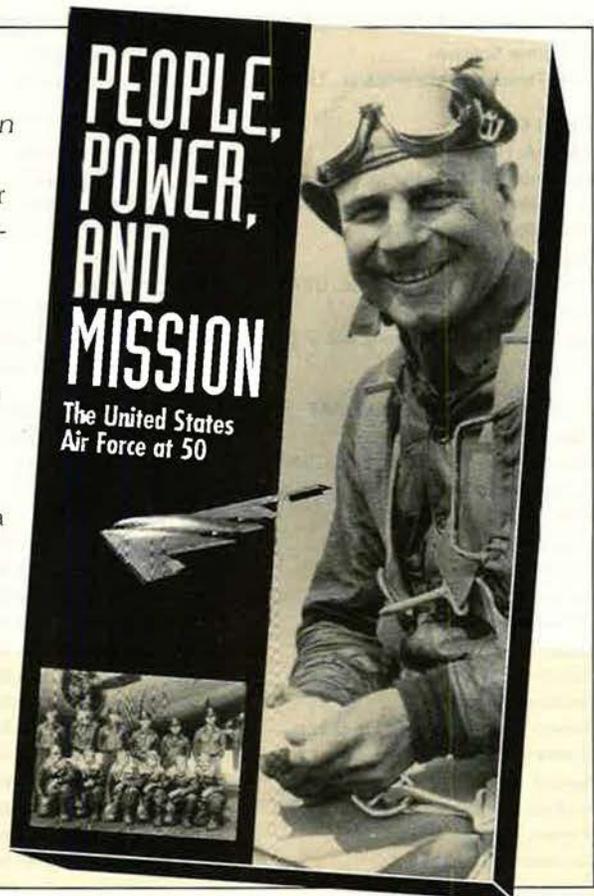
Force. Its stirring, visually rich history is presented in compelling style, featuring rarely seen footage.

Featured are interviews with General Brent Scowcroft, Gabby Gabreski (the world's greatest living ace), General Bernard Schriever, and dozens of others who have made the USAF the best in the world.

The Air Force Association has joined the Emmy Award-winning production team of Russ Hodge, Tim White, and a production staff with more than a half-dozen Emmys to produce this must-have video. Order your copy today!

Non-members: \$19.95 (plus \$4 shipping & handling) \$23.95
AFA members: \$16.95 (plus \$4 shipping & handling) \$20.95

 **SEND CHECK OR MONEY ORDER TO:**
Three Roads Communications
Post Office Box 3682 • Frederick, Maryland 21705-3682



Unit Reunions

29th Air Service Group Assn, 13th AF. June 14-19, 1998, at the Holiday Inn Dayton Airport in Englewood, OH. **Contact:** Frank L. Pace, 315 W. 15th St., Dover, OH 44622 (330-343-7855).

31st FG. June 24-July 2, 1998, in UK. **Contact:** Ed Dalrymple, 4211 Prickly Pear Dr., Austin, TX 78731 (512-345-1479).

52d Air Rescue Sq and Flight B, 6th ARS. Oct. 15-17, 1998, at Wright-Patterson AFB, OH. Air rescue personnel who served at Ernest Harmon AFB, Newfoundland, Canada, are invited. **Contact:** Roger A. Coelho, 44 Sinnott St., West Bridgewater, MA 02379 (508-587-9741).

69th FS, 5th AF (WWII). June 5-7, 1998, in Philadelphia. **Contact:** George E. Mayer, 7445 Thomas Ave. S., Richfield, MN 55423 (612-866-6073).

89th Attack Sq and 8th, 13th, and 90th Sqs, 5th AF. May 4-7, 1998, at the Holiday Inn Casino Boardwalk in Las Vegas. **Contact:** John L. Dugan, 7520 Ridgewood Ave. #303, Cape Canaveral, FL 32920 (407-784-6017) or 126 Division St., Salamanca, NY 14779 (716-945-1457).

100th Air Refueling Sq. Oct. 8-11, 1998, at Robins AFB, GA. **Contact:** John Vizzini, 103 Becky Dr., Bonaire, GA 31005-9317 (912-923-9759).

100th BW, B-47/KC-97-era personnel, Pease AFB, NH. Oct. 29-Nov. 1, 1998, in Fort Walton Beach, FL. **Contact:** C.J. Brown, PO Box 192, Shalimar, FL 32579-0192 (850-862-9526 or fax 850-936-0180) (CharleyJB@aol.com).

315th FS, 324th FG (WWII). May 13-17, 1998, at the Holiday Inn Virginia Beach, VA. **Contact:** Eugene J. Orlandi, 311 Third St., East Northport, NY 11731 (516-368-9193).

Mail unit reunion 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.

364th FG, 8th AF, Honington, UK (WWII). Sept. 13-17, 1998, at the Ameristar Casino Hotel in Council Bluffs, IA. **Contact:** Dan Leftwich, 6630 Caldero Ct., Dayton, OH 45415 (937-890-3641).

387th BG and assigned units. Oct. 8-12, 1998, in St. Louis. **Contact:** Paul Priday, 420 Eaton St., London, OH 43140 (740-852-6694).

398th BG, 8th AF. Aug. 26-29, 1998, in Harrisburg, PA. **Contact:** George R. Hilliard, 7841 Quartermaine Ave., Cincinnati, OH 45236-2313.

483d BG and 566th Air Engineers (WWII). Oct. 6-11, 1998, in Tucson, AZ. **Contact:** Bill Jeffs, 3034 S. Columbine St., Denver, CO 80210 (303-756-8417 or fax 303-973-9615).

B-58 Hustler Assn. June 5-7, 1998, at the Green Oaks Park Hotel in Fort Worth, TX. **Contact:** Bob Norton, 4204 Plantation Dr., Fort Worth, TX 76116 (817-244-3328) (mach2@startext.net).

Berlin Airlift Veterans Assn. Sept. 27-30, 1998, in Washington. **Contact:** J.W. Studak, 3204 Benbrook Dr., Austin, TX 78757 (512-452-0903).

Bombardier Alumni Assn. Sept. 30-Oct. 4, 1998, in Syracuse, NY. **Contact:** Lee E. Cam-

panion, 8439 Lace Park Ln., Liverpool, NY 13090 (315-622-1073).

Countermeasure veterans. April 3-5, 1998, at the Best Western Waterfront in Punta Gorda, FL. **Contact:** Arne Martinsen, 1 Coachlight Dr., Little Rock, AR 72227-6435 (501-225-7254) (ArneCM Assn@aol.com).

Nagoya/Komaki AB Reunion Assn. May 28-31, 1998, at the Landmark Resort Hotel in Myrtle Beach, SC. **Contact:** John M. Campo, 8212 E. 103d Terr., Kansas City, MO 64134-2101 (816-763-6081) (JAYMCEE@aol.com).

Pilot Training Class 68-G (Vance AFB, OK). May 8-10, 1998, at Vance AFB. **Contact:** Duane Cocking, 3912 S. Ridgeview Dr., Spokane, WA 99206 (509-926-9080 or fax 509-926-3923) (Jcocking@Worldnet.ATT.net).

WWII Night Fighters. June 21-26, 1998, at the Sheraton Hotel in Reading, PA. **Contact:** Alvin E. Anderson, 8885 Plumas Cir., D-1116, Huntington Beach, CA 92646-5763 (714-960-9058).

To plan a reunion, seeking **52d Fighter-Interceptor Wg** members assigned to McGuire AFB, NJ (1950-52). **Contact:** James O. Cantrell, 201 River Oaks Rd., Brentwood, TN 37027 (615-661-4224).

Seeking **Pilot Class 52-D**, Vance AFB, OK, for the purpose of compiling a reunion roster. **Contact:** John E. Dickerson, 1967 2425th Dr., Cedaredge, CO 81413 (970-856-3683) (jedick@co.tds.net).

Seeking **Pilot Training Class 55-L** and associated personnel for a reunion. **Contact:** Allen H. Locher, 7968 E. Windwood Way, Parker, CO 80134-6382 (locherah@juno.com).

Bulletin Board

Seeking former crew members and anyone interested in preserving the history of the **B-52 Stratofortress**. **Contact:** The B-52 Stratofortress Association, 498 Carthage Dr., Beaver Creek, OH 45434-5865 (Fax: 937-426-1289) (www.stratofortress.org).

Seeking information on **2d Lt. David E. Nelson**, F/E, B-29, 3d Recon. Sq (VLR, Photographic), 311th Wg, killed on takeoff, June 11, 1946, Guam. **Contact:** David J. Eriksen, HC 11 Box 71 D-2, Kamiah, ID 83536-9420 (rustspur@camasnet.com).

Seeking information on and photos and USAF instructional film of **T-6s** in Vietnam, Laos, and Cambodia in late 1950s-61. **Contact:** Anton le Nobel, Kaggersingel 14, 2172 XG Sassenheim, Netherlands.

Seeking information on B-17 **Rigor Mortis**, downed May 1, 1943, and members of **399th BS**, 88th BG, 8th AF. **Contact:** William J. Garrison, 1841 E. Alpine Ave., Tulare, CA 93274-6006.

Seeking information on **2d Lt. Samuel E. Kershaw**, 55th FG, Wormingford, UK, whose Mustang P-51B crashed Feb. 22, 1945, in Essex,

UK. **Contact:** K.A. Rydings, 5 Harvey, Grays, Essex RM16 2TX, UK.

Seeking **SSgt. Harry S. Springer**, who flew with 3d BD, 8th AF, on bombing missions on the Messerschmitt aircraft factories in Regensburg, Germany, WWII. Also seeking information about **3d BD** and its insignia. **Contact:** Dan Travis, PO Box 021184, Juneau, AK 99802-1184.

Seeking personnel assigned to **417th BS** or other **25th BG** Sqs, stationed in the Caribbean, flying B-18 Bolo aircraft, 1940-43. **Contact:** Charles G. Jarrells, 3580 Timbrook Ct., Dayton, OH 45431 (937-427-1910).

Seeking members of **2d FS**, 52d FG, WWII. **Contact:** Hillert Vitt, 2537 W. 6th St., Erie, PA 16505.

Seeking **navigator wings** from Turkey, Venezuela, Bolivia, and Ecuador. **Contact:** Paul J. McPhee, 19 Bannehr St., Oakland, NJ 07436.

Seeking **AACS** and **AFCS** (Air Traffic Control operators) **patches**. **Contact:** Robert E. Greene, PO Box 295, New Kingstown, PA 17072-0295 (717-691-9500).

Seeking **Sgts. Lee R. Farris, Gordon P. Gregg, and Philip W. Nipper** and **SSgt. Lowell W. Jackson** of the B-24 **Racy Tomato**, 718th BS, 449th BG, WWII. **Contact:** Bob Werner, 2345 Dogwood Cir., Louisville, CO 80027-1179.

Seeking **Lt. Col. Maurice "Duke" Rehm**, stationed at Wright-Patterson AFB, OH, 1960s. **Contact:** George L. Smith, 1318 N. Paseo De Golf, Green Valley, AZ 85614.

Seeking information on **Marks Field, Marks AFB, and Nome Field** in Nome, AK, 1941-56. **Contact:** James W. Williams, 13232 Ranchwood Rd., Tustin, CA 92782 (714-838-1047).

Seeking anyone who knew **Fenton F. Furlong**, USAAF, June 1, 1942-Dec. 10, 1945, who served with the 34th, 376th, and 396th BGs. **Contact:** Anthony Furlong, 319 S. 5th St., Perkasio, PA 18944-1317.

Seeking **Piper L4 Cub** pilots and crew members who were stationed in East Anglia, UK, during WWII. **Contact:** C.W. Stearn, Vintage Piper Aircraft Club, 42 The Chase, Ely, Cambridgeshire CB6 3BJ, UK.

Bulletin Board

Seeking **Audrey Bulgin Phillips and Ron Phillips**, former USA service member, who lived in Spanaway, WA, in 1985. **Contact:** Alan and Pamela Biggar, 46 Valley Rd., Little Billing, Northampton NN3 9AL, UK.

Seeking photos of **B-52s, K-135As, and C-130s** used in Southeast Asia during Vietnam War. Also seeking **Bill Barker**, 306th FM, MacDill AFB, FL, 1957-62. **Contact:** Roy D. Hill, 306 Crestview Dr., Arlington, TX 76018-1062 (817-557-3412).

Seeking information on a **USAF captain** who crashed in an F-100F at Bien Hoa AB, South Vietnam, 1967 or 1968, and who survived on oxygen while trapped under water for one hour. **Contact:** Jack L. Keith, 7400 S.W. 174th St., Miami, FL 33157 (305-252-2292).

Seeking information on and veterans of **Project Sonnie**, which supplied the Norwegian Resistance and evacuated refugees during WWII. Also interested in photos of **B-24 Liberators** flown during this operation. **Contact:** Frank Rodgers, 11166 Ironwood Rd., San Diego, CA 92131-1814 (day 619-658-3982 or evening 619-578-9362).

For an association, seeking alumni of **Cardinal Spellman School** (now St. Matthew the Evangelist School), located near Offutt AFB, NE, and built to serve military families. **Contact:** Dennis Stolinski, 3605 Looking Glass Dr., Bellevue, NE 68123 (402-292-7418).

Seeking former **PACs** who served in 2140th AAF Base Unit, Keesler Field, MS; Stuttgart AAF, AR; and Smyrna AAF, TN, during WWII. **Contact:** Adam Stepanchenko, 28206 Norwood St., Warren, MI 48092-5626 (810-573-6420).

Seeking information on **James Rowland**, bomber crew member, possibly on B-24s out of Italy in early 1940s, whose crew and aircraft were lost. **Contact:** John R. Harris, 825 Lamplight Ln., Virginia Beach, VA 23452.

Seeking history of **B-47 #23363**, pictured in the December 1997 issue of *Air Force Magazine* on p. 66. **Contact:** Donald R. Edwards, HQ JUSMAGTHAI, Box R3131, APO AP 96546.

Atlantic Warbirds of Londonderry, NH, offers its **C-54 Skymaster** for reunions, fly-bys, and other military and civilian functions. **Contact:** Jim Vocell, 461 Mammoth Rd., Londonderry, NH 03053 (603-382-3493) (skydrnh@sprintmail.com).

Seeking information on B-24 **Shoo-Shoo Baby** and its crew. **Contact:** James Englehart, 2321 St. Clair Ave., Cleveland, OH 44114 (216-526-8270).

Seeking **AAF memorabilia** from WWI and WWII. Especially interested in leather flight jackets, uniforms, flight equipment, and photo albums. **Contact:** Jon Cerar, 425 John St., Carlinville, IL 62626.

Seeking an officer named John, who befriended **Hilda Rose, Phyllis, and George Hewitt** of Essex, UK, during 1944-45. **Contact:** Valerie Gray, 17 Alderman Foley Dr., Norden Rochdale, Lancashire, OL12 7PU, UK.

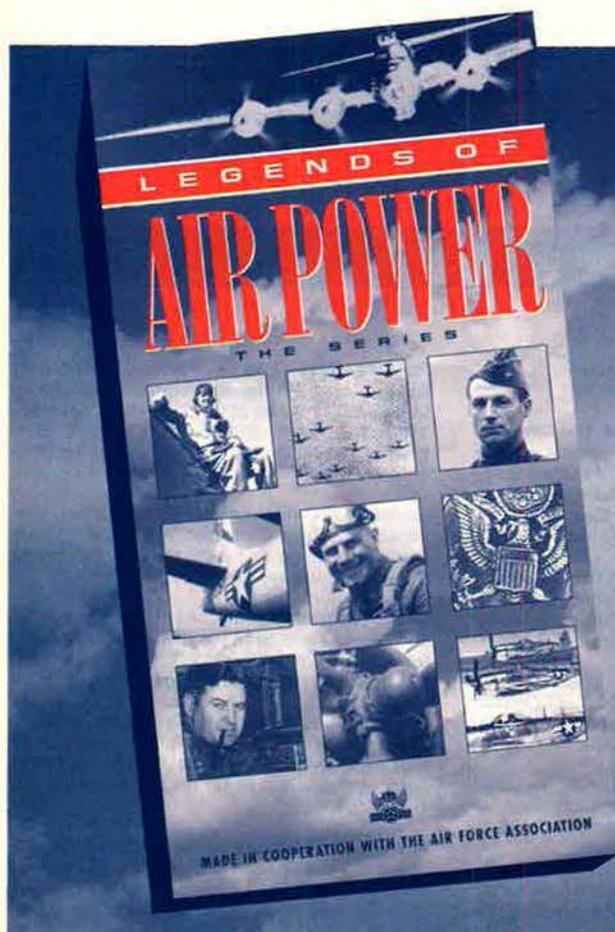
Seeking **Billy J. Anderson, John W. Hale, Raymond F. Ross**, and other members of **Observer/Navigator Class 55-02**, Ellington AFB, TX. **Contact:** Marvell J. Tripp, 1422 South Shore Dr., Worthington, MN 56187 (507-376-6975).

If you need information on an individual, unit, or aircraft or want to collect, donate, or trade USAF-related items, write to "Bulletin Board," *Air Force Magazine*, 1501 Lee Highway, Arlington, VA 22209-1198. Items submitted by AFA members have first priority; others will run on a space-available basis. If an item has not run within six months, the sender should resubmit an updated version. Letters must be signed. Items or services for sale, or otherwise intended to bring in money, and photographs will not be used or returned.—THE EDITORS

Seeking **Air Force Medical Corps personnel** who served in Vietnam from March 1971-March 1972. **Contact:** Albert Akers, 4223 Pacific Ave., Box 405, Stockton, CA 95207 (209-366-1413).

Seeking USAF personnel who served in UK on the **Thor IRBM** deployment or who worked with RAF crews on combat training launches at Vandenberg AFB, CA. **Contact:** Frank Crosby, 37 The America, Sutton, Ely, Cambridgeshire, UK.

Seeking contact with former US servicemen interested in corresponding with a **Royal British Legion** member. **Contact:** John D. Shaw, 52 Ivy Leigh, Liverpool L13 7ER, UK.



They were the men who made American airpower the best in the world. They were the kings of the sky.

Face down the enemy and relive the greatest moments in airpower history as Emmy Award-winning producer Russ Hodge and a production staff with six combined Emmys tell the stories of these legends.

This multi-part biographical series will make a rich addition to the video library of any aviation enthusiast.

Non-members: \$19.95 (plus \$4 shipping & handling) \$23.95
AFA members: \$16.95 (plus \$4 shipping & handling) \$20.95
All four videos: \$59.95 (plus \$4 shipping & handling) \$63.95

PLEASE SPECIFY YOUR TAPE CHOICE WHEN ORDERING

FOUR TAPES AVAILABLE NOW!

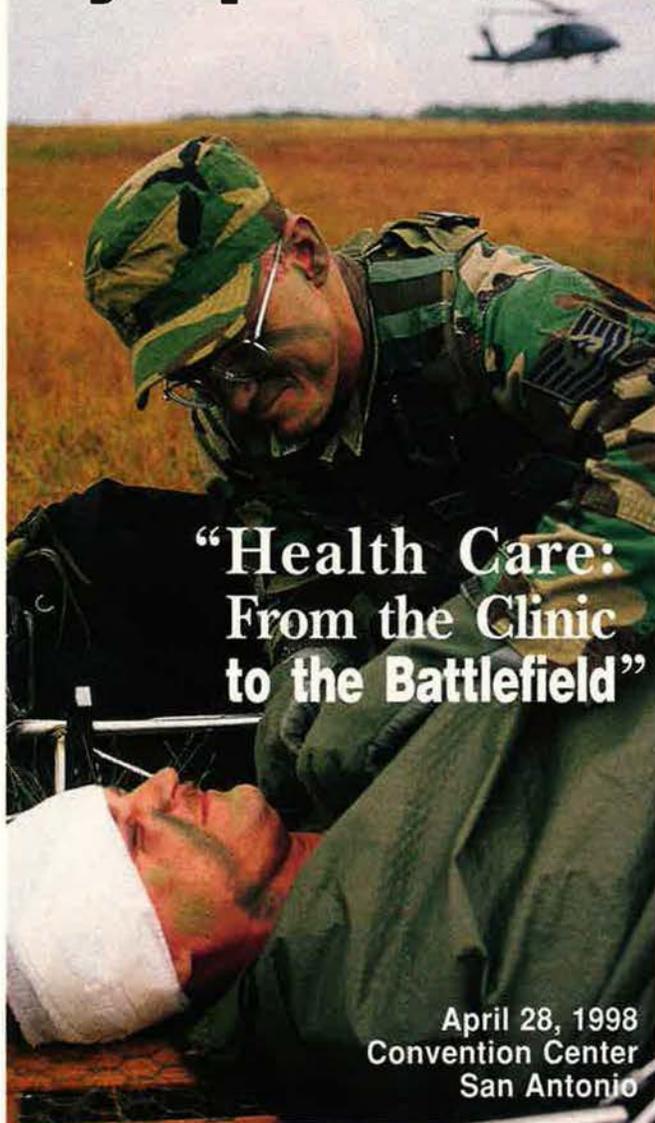
- Jimmy Doolittle
- Hap Arnold
- Billy Mitchell
- Gabby Gabreski

SEND CHECK OR MONEY ORDER TO:
 Three Roads Communications
 Post Office Box 3682
 Frederick, MD 21705-3682



Air Force Association's

National Policy Symposium



**“Health Care:
From the Clinic
to the Battlefield”**

**April 28, 1998
Convention Center
San Antonio**

Registration

Advance registration closes April 20, 1998. No refunds can be made for cancellations after this date. Symposium fee for AFA Individual or Industrial Associate member is \$295.00. Fee for non-member is \$350.00. Fee includes continental breakfast, coffee breaks, lunch, and farewell reception.

For more information call Jennifer Krcuse at (703) 247-5838 (e-mail: jkrause@afa.org), call the fax on demand service, available 24 hours a day at 1-800-232-3563 and order document 321, or visit our web site (<http://www.afa.org.sananton.html>). For DoD personnel registration information, please call Barbara Coffey at (703) 247-5805 (e-mail: bcoffey@afa.org).

The Air Force Association will host a major symposium that will explore today's health care problems and solutions, a topic of prime concern to both the military and civilian audience. The Defense Department medical community is going through its own revolution in health affairs as it adapts to the same shrinking budgets, technological changes, and force structure realignments that line members of the services have already faced. At this AFA symposium, senior leaders in both the military and civilian health care world will discuss what revised policies and new capabilities are emerging in medicine today. Additionally, a host of smaller professional breakout sessions, ranging from current medical support of Military Operations Other Than War to nano/biotechnological breakthroughs will open new windows on the state of the medical profession today. Whether your interest is as a practitioner or customer of the health care system, you won't want to miss this symposium. Invited speakers include:

**Air Force Chief of Staff
Surgeons General of the Army, Navy, and Air Force
Commander, Air Education and Training Command, USAF
President, University of Texas Health Science Center
at San Antonio
Congressional leaders**

A welcome continental breakfast, lunch, coffee breaks, and a farewell reception honoring all speakers are included.

Tentative Schedule

7:30-8:30 a.m.	Continental Breakfast
8:30-Noon	Symposium Session I
Noon-1:30 p.m.	Buffet Luncheon
1:30-5:30 p.m.	Symposium Session II
5:30-7:30 p.m.	Reception

Other Activities

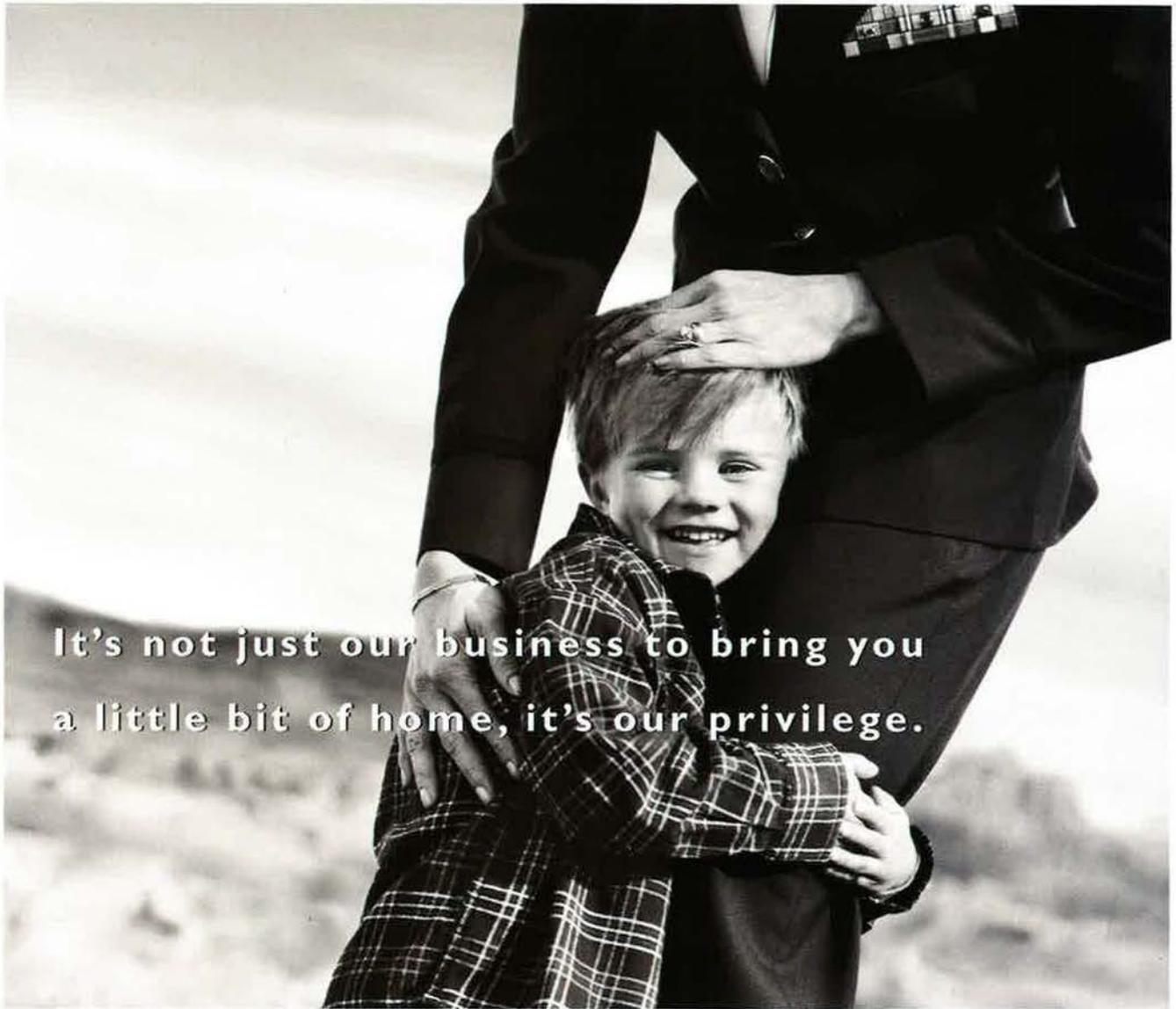
AFA's Alamo Chapter will sponsor a golf tournament at the challenging Quarry Golf Club course, rated one of the best public golf courses in America, on April 27, followed by a reception. Also the chapter plans to sponsor a dinner Tuesday evening, after the exhibit hall reception, at the historic Menger Hotel. For golf details, call John Williams, (210) 616-5550; dinner ticket information, Dave Stoltz, (210) 925-1531, ext. 688.

Hotel Reservations

For hotel reservations, call the historic Menger Hotel, 1-800-345-9285, and mention that you are attending the AFA symposium for a special rate of \$99.00 plus 15% tax, single or double. Hotel reservations cutoff date is March 24.

“The military health system is positioned to be the benchmark health care delivery system of the 21st century.”

**Joint Strategic Plan statement by
service Surgeons General and the
Assistant Secretary of Defense for Health Affairs
1997**



It's not just our business to bring you
a little bit of home, it's our privilege.

From the day you're commissioned until the day you retire, AT&T is committed to providing you with the products and services that make staying close to your family and friends easier. Which means that no matter where in the world you're stationed, AT&T will be there keeping the lines of communication open to the most important people in your life.

Military Customer Care at 1 800 551-3131, ext. 52730 can help you with any questions.

It's all within your reach.



 **BOEING**



THE AIR FORCE IS COMMITTED TO
A JOINT STRIKE FIGHTER
THAT'S AFFORDABLE.

SO ARE WE.

Our customers have set challenging targets for affordability. Our experience says we can meet those targets. Everything about the Boeing JSF backs this up - from a highly innovative design concept and integrated digital product definition to lean manufacturing techniques and real supportability advantages. The Boeing JSF. Affordable performance.

www.boeing.com