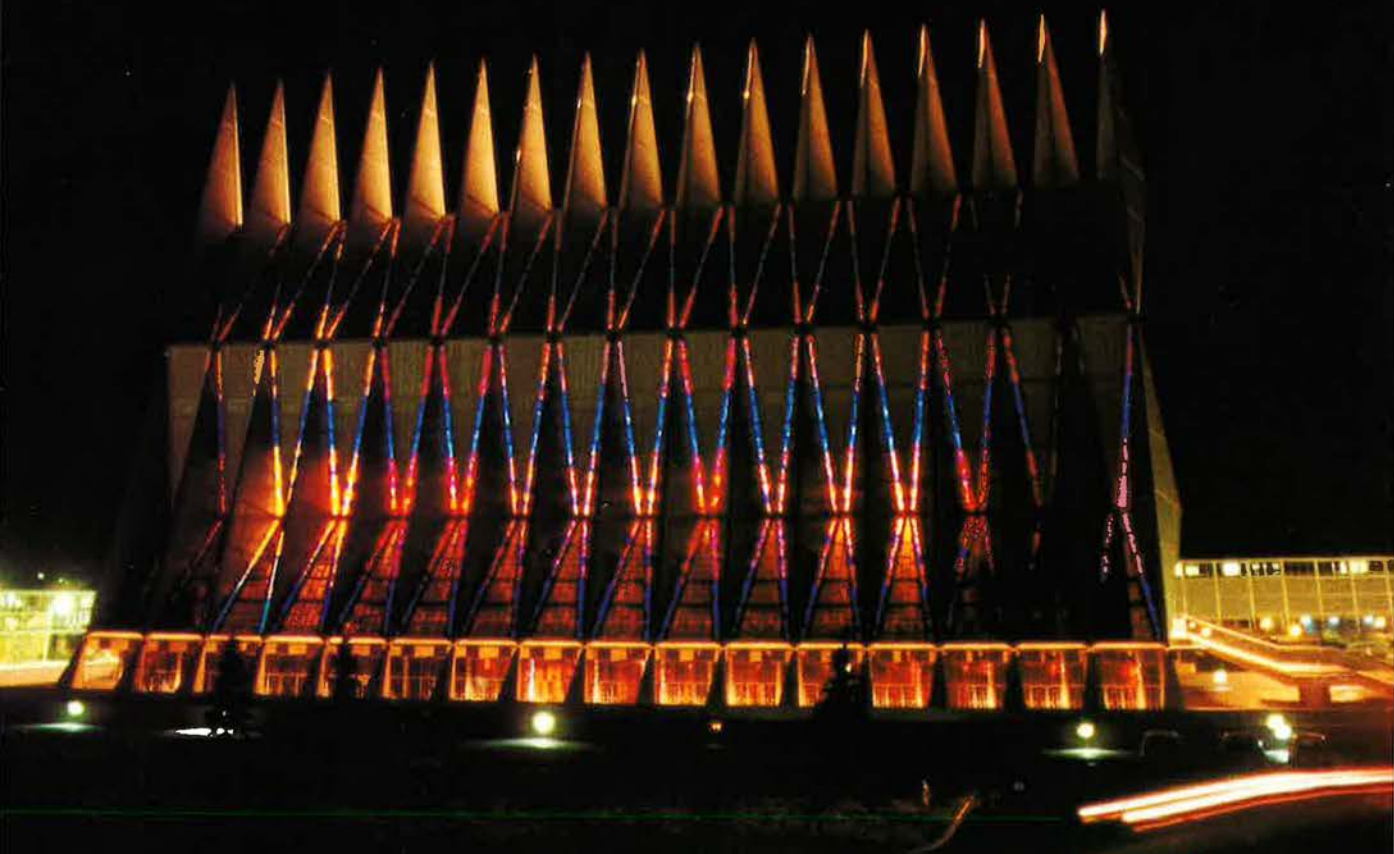


APRIL 1979/\$1

# AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE



**AIR FORCE ACADEMY'S  
SILVER ANNIVERSARY**

# Air Force Power



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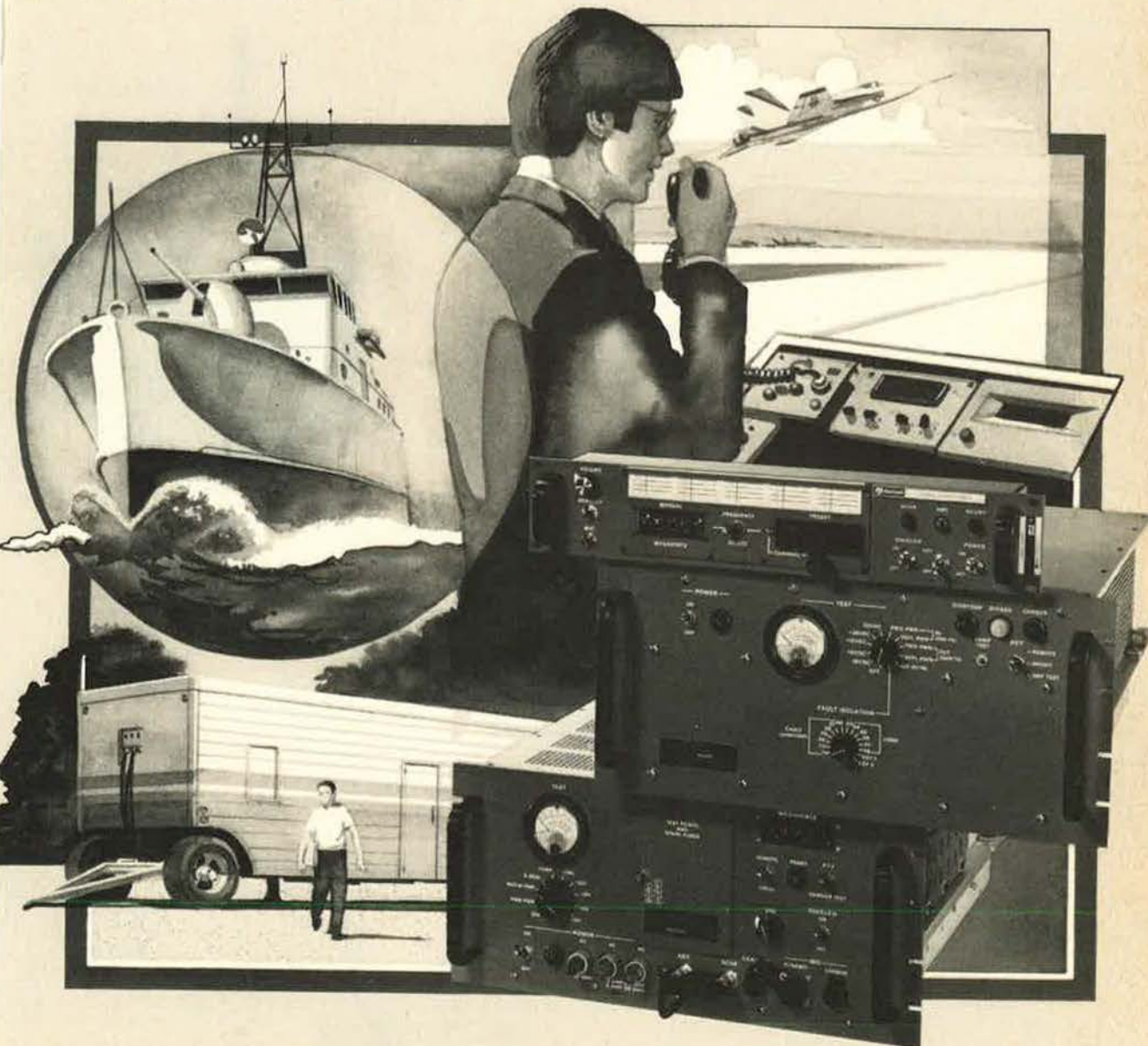
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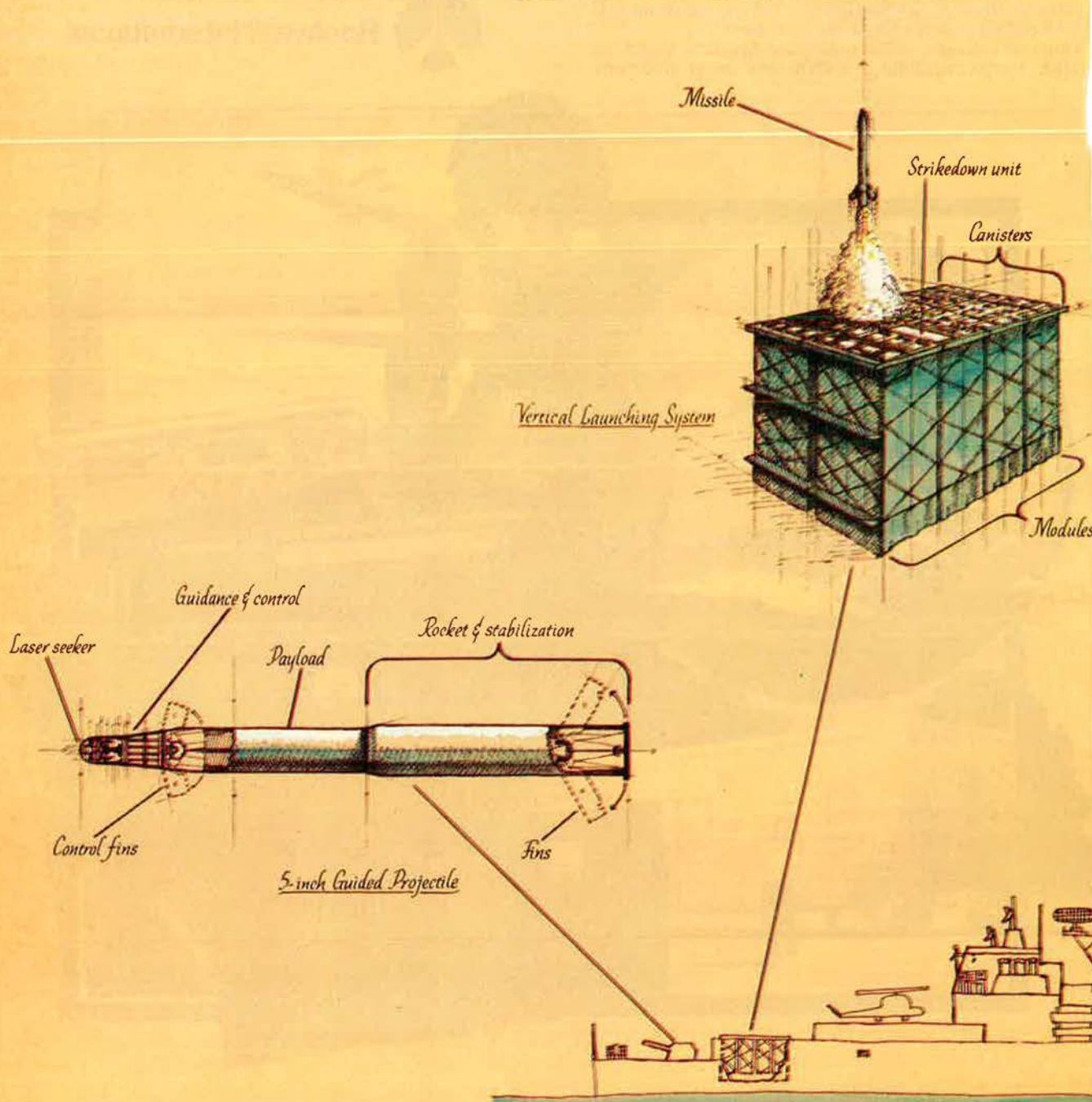


**Rockwell International**



# What is required to help the Navy control the seas?

## Understanding the naval environment.



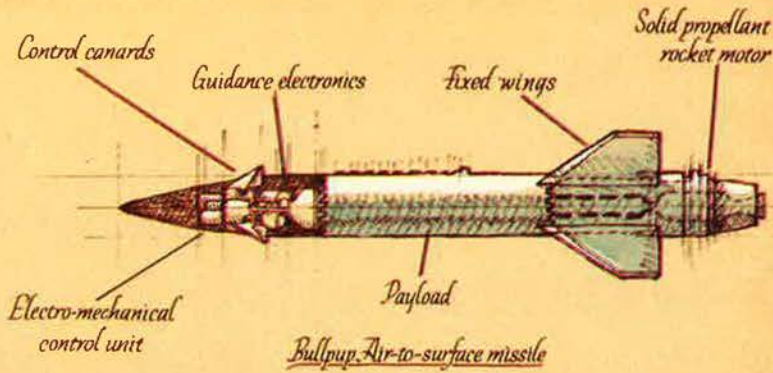
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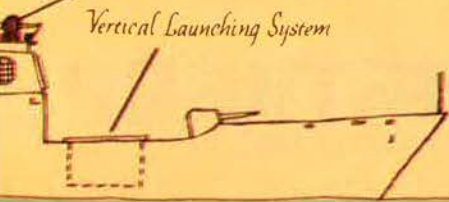
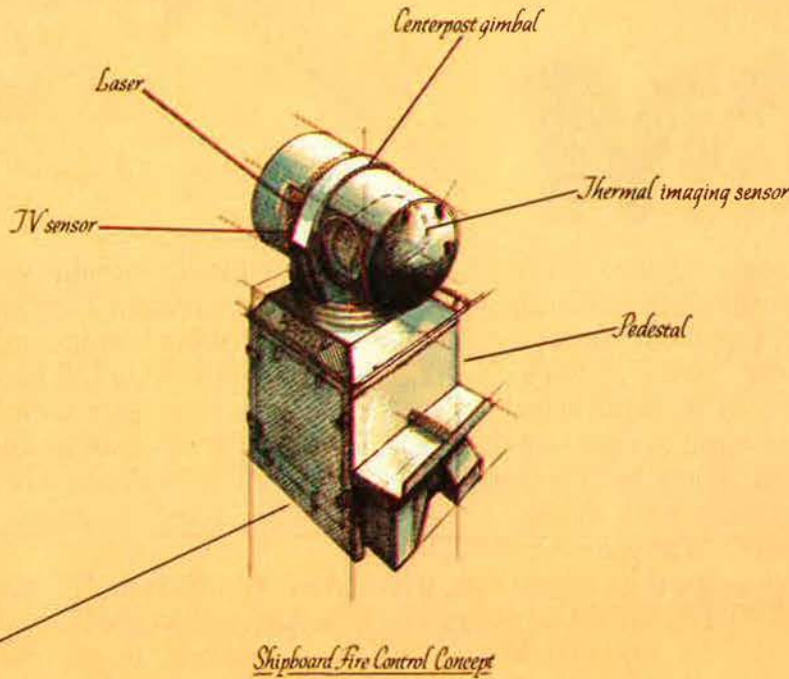


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# AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE

## is Month

**The Academy: Symbol and Bastion** / Editorial

**Airmobile MX** / By Edgar Ulsamer

**How to Deal With the Russians: The Basics of Negotiation**  
By the Hon. Clare Boothe Luce

**The Air Force Academy: A Fine Twenty-five Years**  
By Gen. T. R. Milton, USAF (Ret.)

**Flying the F-84F** / By Maj. Douglas K. Evans, USAF (Ret.)

**Jane's All the World's Aircraft Supplement**  
Compiled by John W. R. Taylor

**The Limitations of Alliances** / By Gen. T. R. Milton, USAF (Ret.)

**"Countervailing Strategy"** / By Edgar Ulsamer

**The Pros and Cons of a Multimission Fighter Force**  
By Bonner Day

**Putting Up-Or-Out in Perspective** / By Ed Gates

**Seasoning the Sergeants** / By Maj. Charles G. Tucker, USAF

**Increasing the Combat Effectiveness of CAS Pilots**  
By Capt. Leon Trenton Pauley, USAF

**The Brave Copilots** / By Lt. Col. Jim Beavers, USAF (Ret.)

**Our Retiree "Mobilization Assets"** / By Ed Gates

**Benjamin D. Foulois: Chief of the Air Corps, 1931-35**  
By Maj. John F. Shiner, USAF

## ON THE COVER



*The Air Force Academy Chapel, the Institution's most striking architectural feature, aglow in the moonlight, as photographed by TSgt. Lawson K. Stevenson, USAF. In April 1979 will be celebrated the twenty-fifth anniversary of the Academy, whose history is recounted beginning on p. 34.*

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APRIL 1979  
VOLUME 62, NUMBER 4

Executive Director: James H. Straubel

Publisher and Editor in Chief:  
John F. Loosbrock  
Associate Publishers:  
Charles E. Cruze, Richard M. Skinner  
Special Assistant to the Publisher:  
Nellie M. Law

Editor: John L. Frisbee  
Senior Editors: Edgar Ulsamer, Bonner Day  
Military Relations Editor:  
James A. McDonnell, Jr.

Contributing Editors:  
Ed Gates, Don Steele, John W. R. Taylor  
("Jane's Supplement"), Maj. Charles G. Tucker,  
USAF

Managing Editor: Richard M. Skinner  
Asst. Managing Editor: William P. Schlitz  
Director of Design and Production:  
Robert T. Shaughnessy

Art Director: William A. Ford

Editorial Assistants:  
Nellie M. Law, Pearlle M. Draughn,  
Grace Lizzio, Christine Ulanaki

Assistant for Editorial Promotion: Robin Whittle

Advertising Director:  
Charles E. Cruze  
1750 Pennsylvania Ave., N.W.  
Washington, D.C. 20008  
Telephone: (202) 637-3330

Advertising Service Manager: Patricia Teevan  
Area Sales Managers:  
Bayard Nicholas, Stamford, Conn.  
(203) 357-7781

William J. Farrell, Chicago (312) 446-4304  
Harold L. Keefer, Los Angeles (213) 878-2447  
William Coughlin, San Francisco  
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European Sales Representative:  
Richard A. Ewin  
Overseas Publicity Ltd.  
214 Oxford St.  
London W1N 0EA, England  
Telephone: 01-836-8296

AIR FORCE Magazine (including SPACE DIGEST) is published monthly by the Air Force Association, Suite 400, 1750 Pennsylvania Ave., N.W., Washington, D.C. 20008. Phone: (202) 637-3300. Second-class postage paid at Washington, D.C., and additional mailing offices. Membership rate: \$13 per year (includes \$9 for one-year subscription); \$30 for three-year membership (includes \$21 for subscription). Life membership: \$200. Subscription rate: \$13 per year; \$5 additional for foreign postage. Single copy \$1. Special issues (Soviet Aerospace Almanac, USAF Almanac issue, Anniversary issue, and "Military Balance" issue) \$3 each. Change of address requires four weeks' notice. Please include mailing label. Publisher assumes no responsibility for unsolicited material. Trademark registered by Air Force Association. Copyright 1979 by Air Force Association. All rights reserved. Pan-American Copyright Convention.

(USPS 010-280)

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(w/o reserves)

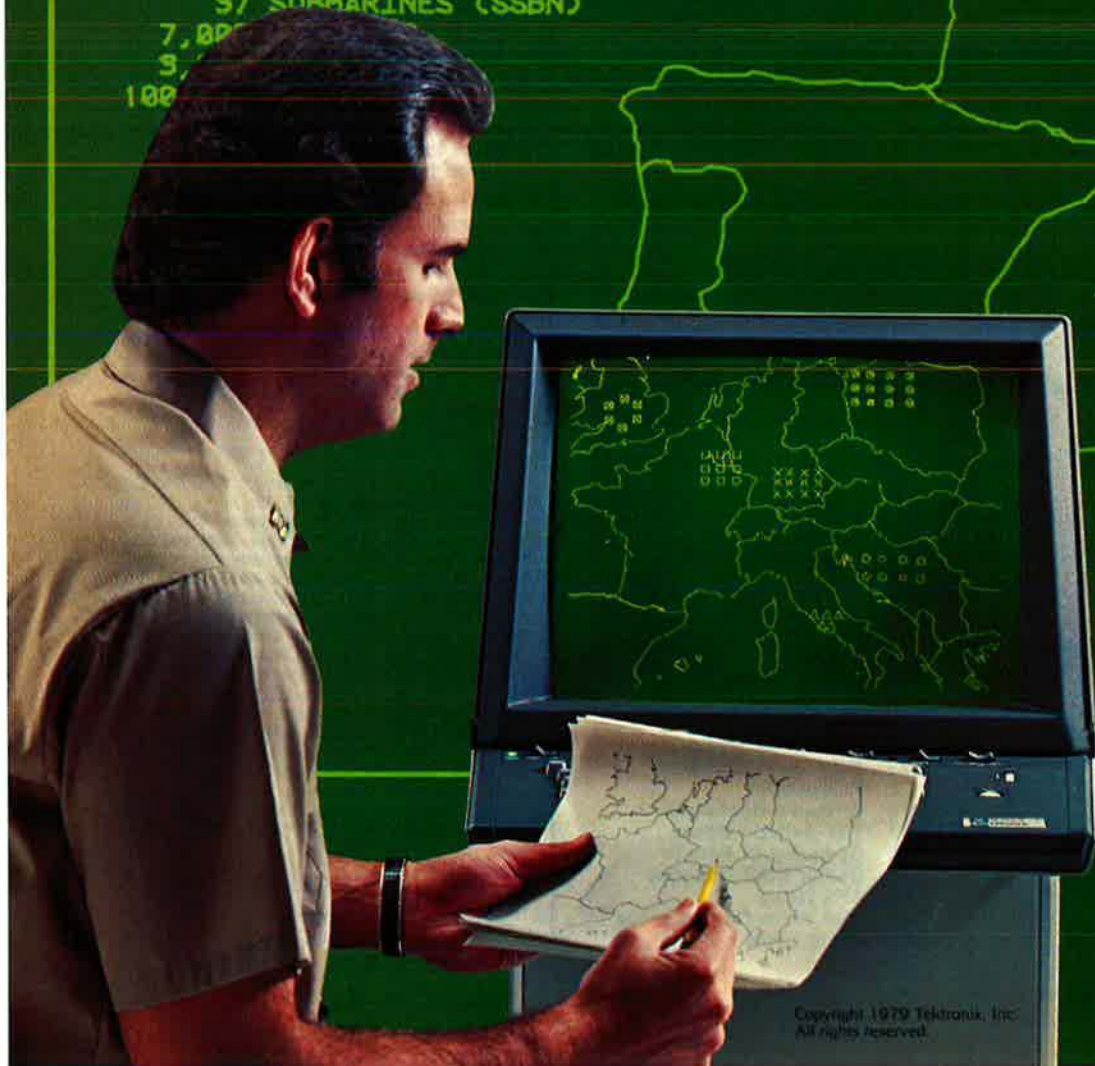
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- 30 NAVAL ESCORT GROUPS
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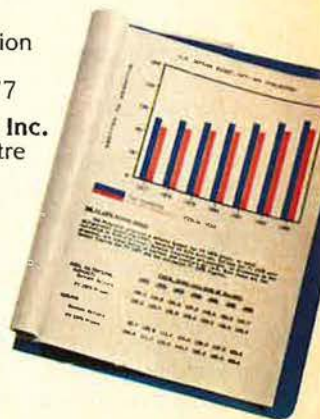
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# The Academy: Symbol and Bastion

**T**HE cover of this issue, and Gen. T. R. Milton's article starting on p. 34, remind us that the Air Force Academy, which still seems so new to many of us, is now a quarter of a century old. Only two months back, we printed a picture of Harold Todd, the first Academy graduate to pin on the stars of a brigadier general.

It takes a conscious effort, for those of us who are old enough, to remember what the world was like in April 1954 when President Eisenhower signed the Air Force Academy bill. That was only nine years after World War II, in which good triumphed over evil—as it is supposed to—and the war ended in victory, as we then supposed all wars should end. Never mind that Korea had just wound down in a different way. That, many of us thought, was an aberration, never to be repeated.

Anyway, there were more urgent things to think about. Our Russian allies of the Big War had stopped acting like allies even before V-E Day, and now they were a nuclear power of sorts, firmly lodged in Eastern Europe and casting covetous eyes in all directions. The defense budget never returned to the low, pre-Korea, level; the country responded to what was recognized from the White House on down to be a clear-and-present danger. The military, which had slipped slightly in esteem during the dragged-out Korea affair, was restored to grace.

There was scarcely an issue of the popular national magazines that didn't carry a story about a SAC crew or the emerging missile threat. The country needed the military, and knew it. There was a challenge, and it was being met in a national atmosphere that was almost electric. That was what it was like when the Academy opened its doors to the first class in July 1955, and that's pretty much the way things stayed for a decade.

Vietnam, Watergate, and the frenetically overreactive soul-searching that followed have changed a lot of that. The antimilitary waves that surged during Vietnam and right after the war subsided, it's true, but only to be followed by something perhaps even more dangerous—indifference. Now the public is told that our defenses are in good shape—that we will protect our interests wherever they may be threatened, so why worry? Fewer and fewer families are touched directly by the military as it has shrunk in size and is manned by volunteers. For much of the country, it's out-of-sight, out-of-mind.

With a shrinking base of grass-roots support in recent years, the military has become increasingly attractive ground for budget cutters who hack away at benefits that always have been a part of military compensation. Congress, obsessed with its own ethical transgressions, passed an Ethics in Government law, aimed primarily at the defense community. It is one of the most discriminatory and degrading pieces of legislation in recent years. (See *February issue*, p. 76.) If Congress

allows it to stand as written, and we hope it won't, the law will virtually guarantee that a large percentage of younger officers who can anticipate becoming generals will resign or retire before reaching star rank. Equally damaging, it would in competent civilians from accepting appointments to key posts throughout the Defense Department. The pernicious effects of the law already are apparent in the worrisome number of generals and key civilians who either have left service or plan to leave before the law goes into effect on July 1.

But for many military people, "the most unkindest cut of all" was the Commander in Chief's discriminatory 5.5 percent cut on the military cost-of-living adjustment—and that of federal civilian employees, too.

It's small wonder that some Academy cadets and some of the active forces are taking a more tentative look at an Air Force career.

But wait. To our great good fortune—and for what immediate consolation it may be—the military has survived this kind of environment before. A few days ago, we had a letter from a retired Air Force four-star who graduated from West Point toward the end of the Roaring Twenties, when the dollar was king. He wrote: "As first classmen, Charles Schwab [head of US Steel] offered any of us \$10,000 a year if we would join steel works. A second lieutenant's pay was \$2,500. Only three resigned. . . . We were second lieutenants a little over two years. . . . Two years after graduation, thirteen of us requested flight training. Twelve washed out. Every one of them returned to his nonflying branch instead of resigning."

The wall of indifference (even hostility) to the military that existed in those years before World War II began to crumble as war clouds gathered over Europe. The country awakened to the fact that it desperately needed strong armed forces. A nucleus of dedicated professionals had stuck it out through decades of neglect and worse, and they led the country to victory in 1945.

Mark our words, the same kind of change will happen again. Despite the Administration's efforts to minimize the threat to this country, it is apparent to all who will heed, just as a similar threat was apparent in 1939.

Among the burdens the military must bear in a democracy are downswings in the vicissitudes of both public opinion and national leadership. We believe that public indifference toward the military profession is bottoming out. We also believe that the vast majority of today's military professionals will remain faithful to their trust, as did their predecessors.

In this sense, the Air Force Academy is something more than a military college. It is both symbol and bastion of an honorable and essential profession. On this Twenty-fifth Anniversary, we salute the Academy and all it stands for.

—JOHN L. FRISBEE, EDITOR



# Radome design: One way our engineers made a reliable missile more reliable.

Reducing the error slopes on the radome of the Sparrow AIM-7F missile to provide more accurate angle information required an interplay of diverse disciplines. Aeronautical, microwave, material and thermo engineering technology were required to produce a radome with an aerodynamic shape that also possessed small-angle line of sight errors to the target."

*Howard Brady, Program Manager,  
Engineering Development Sparrow AIM-7F*



When General Dynamics engineers analyzed the Sparrow AIM-7F documentation package, we made recommendations on ways to improve its reliability and effectiveness. One area was the radome. We found that the pyroceram tangent ogive radome specified could be changed to a Von Karman radome to allow more accurate guidance.

A Von Karman radome possesses an aerodynamic shape which has small-angle line of sight errors to the

target. Made of the same pyroceram material, it allows grinding to reduce error slopes for lower distortion—without loss of performance. This process reduces false angle information to create more accurate guidance. It proved to be cost-effective as well.

Achieving these benefits required expertise in guidance signal processing, the low-noise microwave process, component radome engineering, high dynamic pressure aeronautical engineering, material and thermo engineering and systems engineering.

At General Dynamics we are looking for more engineering professionals who can fully understand complex challenges like the Sparrow AIM-7F. We need high-level engineers who can identify existing deficiencies and make cost-effective recommendations. If this kind of technology interests you, write:  
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## **GENERAL DYNAMICS**

# Airmail

## Area of Shifting Balance

An excellent and timely story, "Japan and the Shifting Asian Balance," by James E. Dornan, Jr., in the February issue.

Congratulations for leading the way in the informative analysis of this area of growing importance to global security.

As both a former intelligence analyst with the DoD and a former student of Professor Dornan's, I appreciate the outstanding work he is doing.

I just renewed my membership in AFA for three more years. Now I can look forward to another three years' enlightening reading. Keep up the good work.

William E. DeLashmit  
Plymouth, N. H.

• *Dr. Dornan was killed instantly in an automobile accident on January 25, just as our February issue was going to press. He was forty-one years old.*—THE EDITORS

## Ethics Law

Having spent a considerable part of my life in the Air Force, as its Chief of Chaplains, I am aware that not every regulation or policy was universally applauded or completely accepted. The assumption is that decisions involving the many are carefully prepared, routinely tested, examined for flaws, and [each] thoroughly debated for its merits before enactment. Common sense, of course, demands such preparation before it be inherited by the community.

I suppose that is why I am so bewildered by the proposed so-called "Ethics in Government" law. From what I have read, this is, at best and at worst, an insult. It impugns the good name of its most successful and talented leaders. I assume the presence of past indiscretions and questionable judgments—else why the proposal?—but why tar the many for the few?

I think by now a healthy psychology would confirm the lack of wisdom in subtly punishing the majority where only a handful are allegedly guilty. It makes no sense! The mat-

ter would be further exacerbated by the determination to make public the financial condition of these senior people. Incredible! Who, pray tell, is not bright enough to foresee the consequences? Hurried and angry retirements, and the credibility of leadership. Even conceding but certainly not justifying past unworthy behavior, I say again, should the many be ciled for the few?

I suspect that an unpleasant gnaw is being eliminated by the elephant's foot—*costly, ludicrous, and sad!*

Maj. Gen. Henry J. Meade,  
Chaplain, USAF (Ret.)  
Vero Beach, Fla.

## On Second Thought . . .

"I'd have written a shorter letter but I didn't have time. . . ." As a former editor and publisher of *The MAC Flyer*, I can certainly empathize with your note in page 9 of the January issue. But you folks are doing a spectacular job in AIR FORCE Magazine—keep it up. And if this turns out to be a long afflatus, my apologies.

Robert C. Fonow's letter [p. 10] on "Wrong Emphasis" really got my attention. At first reading, I thought, this guy's really found the problem: too many Corvettes in front of the BOQ. But after studying his words, I think it's a pretty shallow indictment.

He wonders "if our potential adversaries are as worried about their material conditions. Or are they of tougher stuff? . . ." are, perhaps, words that need to be said. But I wonder if the nation's militia isn't a little tired of the double standard as applied to inflation. For several years now, we've been the brunt of government's "good example" in fighting inflation. I agree that we're not underpaid or underprivileged yet—but that's the flight plan heading.

Mr. Fonow's suggestion that "dignity isn't something one . . . automatically receives with a commission . . . [but] . . . developed from within through sacrifice . . . character, dedication, and an overwhelming belief in one's purpose and mission" certainly rings of classic leadership philosophy—but it's difficult for a young officer or NCO to maintain that depth of commitment when superiors

and subordinates chip away at ideals. . . .

Developing leadership is leadership's responsibility. Those ethical traits that Mr. Fonow describes must be developed, nurtured, and enforced by leaders at all levels. Probably the most important responsibility we have.

Finally (*finally*), the "peevish senior officer complaining about OER system . . ." is right. "No boards," "gaming-the-system," "commander's paddle-ball partr aside, you just can't take a young officer (or an old one, for that matter) give him the President of the United States's "special trust and confidence" to hype him up, then tell he's in the bottom half of his class by giving him a III OER. That's how you get people to work for you. Fortunately, that program is going—but not forgotten. The collective Air Force officer has taken a hit; he's in critical condition; his loyalty is dissident is withering; his judgment suffering from "career myopia."

The hard question for selection boards and leadership is, do we want a corps of square-filling yes-men? Could we use a Young Turk here and there? A Loyal Dissenter? A Devil Advocate?

We have to answer these questions ourselves—keeping in mind the seriousness of our business. Failure doesn't mean bankruptcy; it means defeat.

Lt. Col. Orlen L. Brownfield  
Highland, Calif.

## Problems in the Med Corps

Much writing exists on health manpower shortages in the military. Most of the articles state that the solution of manpower shortages can be resolved by paying more money, and particularly so to physicians. Both a retired Air Force Surgeon General, George E. Schafer and the current Air Force Surgeon General, Paul V. Myers, stated that more money would be necessary to solve manpower problems.

As a retired military medical officer, I take offense at this thesis. Medicine is affronted with the simplistic approach and the implicit cynicism that every man has his price. There are other than monetary reasons causing physicians to look elsewhere for a career. Let us examine some of these.

*Manpower.* This has been cut across the board. The demand for care, however, and the mushroom

of health-care support systems with their different functions increased. No matter how much is given to nurses and corpsmen, if the overall numbers are reduced and the demand for services eased, the end result is the suffering of the quality of medical care.

military medical services no longer have depth in highly trained physicians. This places an in-credible burden of responsibility on the health-care providers and increases the credulity of the health-care recipient.

**Equipment.** Quality of equipment, of course, is important. This must have a built-in provision for constant upgrading in an infinitely more sophisticated system than currently appears to be available.

**Leadership.** Articles on manpower management have omitted discussing the possibility that leadership may have failed. Physician refusal to stay on active duty is viewed almost as an anomaly of the individual involved. The separation from active duty to civilian life is studied, cataloged, discussed, interviewed, matched, indexed, and subjected to statistical analysis, and it is then carefully filed. It appears as if no one asked if the physician knows how to keep the men and women on the job. This also appears to be a callousness that permeates all levels of command in the medical service.

**Dedication.** In our search to understand the spirit of human freedom and individuality, our society and the military services seemingly have shifted to a state of permissiveness and self-indulgence. We have relinquished our inner toughness.

We no longer have a common purpose now, but instead practice a trade, and we earn wages. We have become specialists! The price for all of this is a natural dissolution of the concept of discipline; that which exists within one's self and that which is directed toward the job, our associates, and the crises in our tasks before us.

**Objectives.** The goals and the objectives of motivation and behavior are not as clearly defined. This has caused confusion and unrest. There is not enough gold in the world to compensate for all of this, and to expect people to function in this unstructured framework.

It is time to ask tough questions. It is obvious that the job has not been done right. It is time to admit that we

no longer can make men and women believe in our mission. Therefore, we need leaders more than we need efficient managers. . . . The military will need leaders who dare to speak up and courageously state that in fact we can no longer now accomplish what we could a few years ago. We also need leaders who can create an esprit and develop and instill mutual respect among members of the corps. All of this, I submit, cannot be bought at any salary increase.

Col. Henry P. Meijer, M. D.,  
USAF (Ret.)  
Minot, N. D.

As a physician who recently returned to active duty with a double medical specialty, I would like to describe the most significant irritants that I have encountered:

1. In private practice our life styles were on a par with those of general officers. The instant loss of prestige and status in the military was a jolt that took months to resolve. It was difficult to revert to hitchhiking in the snow to get to work, paying up to \$1,000 a month for grossly substandard housing, and receiving grossly unconcerned treatment from civilian base employees.

2. Although I spend up to fifty percent of my time on TDY orders for essential manning assistance that requires being "on call" twenty-four hours a day, I am not authorized a vehicle. Waiting for commercial taxis at midnight in the rain, after spending several hours saving a life in surgery, will depress any physician. Also, when my quarters are substandard, I am not allowed a nonavailability option.

3. The OER system is poorly adapted to the Medical Corps. In a hospital that was rated as No. 2 in the Air Force for excellence, the physicians received the lowest OERs in the entire command.

**Possible Partial Solutions:**

1. Develop a triservice medical service that would have a distinctive, rankless uniform that would identify us as physicians and accord us some DV or VIP consideration when on official orders. This

We suggest that readers keep their letters to a maximum of 500 words. The Editors reserve the right to excerpt or condense as required in the interest of space or good taste. Names will be withheld on request, but unsigned letters are not acceptable.

would also allow priority base housing as key personnel. Incidentally, a combined medical service would also save millions in funds.

2. Assign GS ratings to physicians and pay us what we are worth. Our pay would then be unrelated to that of the line officers.

3. An OER system designed specifically for physicians. As very few of us are Academy graduates, we are admittedly lacking in general military training. OERs should reflect on our performance as doctors of medicine.

Lt. Col. Vernon P. Wagner,  
USAF MC, FS  
APO San Francisco

The doctor shortage in the military services could easily be solved by authorizing chiropractic clinics on military bases and giving military personnel, retirees, and dependents freedom of choice. A bill (H.R. 13041) to authorize chiropractic care in the military has been introduced in Congress by Rep. Melvin Price, Chairman of the House Armed Services Committee. . . .

Chiropractors estimate that seventy-four percent of the conditions on sick call are the type of ailments they treat successfully in civilian life. They are licensed in all fifty states and the number of chiropractors and their patients are growing daily due to the results obtained.

The AMA will undoubtedly fight chiropractors serving the military. We have dental clinics—so why not have chiropractic clinics—as in civilian life? . . .

Maj. George G. White,  
USAF (Ret.)  
St. Louis, Mo.

**The Winner Again?**

Re "POMO and POST . . ." in the January issue, it appears Operations has won again.

Speaking from fourteen years as a fighter pilot and the next fourteen in aircraft maintenance, it is worth noting that the crew-chief concept is the most pleasing, but it is also the most expensive. All the arguments to justify it, regardless of how it is titled, have been around for decades, and are no more valid now than they were when first proposed.

The name of the game is maintenance overtime on a massive scale, even when there are other ways of producing sorties on a surge basis. In this period of tight funds and pop-

# Airmail

ular opposition in many quarters against defense spending, it ill behooves USAF to go back to the most expensive system of maintenance ever developed.

Lt. Col. Wallace H. Little,  
USAF (Ret.)  
Corinth, Miss.

## Twilight of the Navigators?

With the recent exodus in the pilot force, maybe it is time for the navigators to take a hard, realistic look at their future. . . .

First, let's look at the favorable aspects of the navigator's future:

1. Lt. Gen. Thomas P. Stafford recently flew the Panavia Tornado as a possible candidate for an all-weather fighter to make up a possible four squadrons in Europe.

2. Despite constant cuts in the Air Force's electronic warfare budget, it appears the EF-111 and the F-4G will actually enter the inventory.

3. The F-111 and possibly the F-4E will remain in the active inventory for some time.

Now let's look at the negative:

1. MAC has just decided to eliminate the navigators from most C-141s and C-5s. The C-130s, to a lesser degree, are bound to follow this trend. Most assuredly the C-130's replacement will not require a navigator on most missions.

2. TAC has gone to the single-seat fighter. True, there are studies of making a two-seat, all-weather A-10, RF-15, and an F-16 Wild Weasel, but the production decision, if one is made, will be made by gentlemen suffering from the single-seat syndrome, and the lead time for such aircraft is about three years. Also, I have learned from McDonnell Douglas that the Air Force has requested them to determine the potential cost and feasibility of remodifying the F-4E into a single-seat version.

3. The manned bomber is in its waning years. At best, one might reasonably expect the new B-52 bomb-navigation systems to eventually eliminate one crew position.

It has been over four years since the repeal of Title 10, and, despite a few token successes, the navigator simply will never compete on an equal footing with the pilots. After

years of flying, a navigator still attains the rating of Master Navigator, not Command Navigator. That may be trivial, but it is still indicative of the attitudes within the Air Force. Most of the successes came, not in the rated fields, but in the missile, communications, and administrative fields. Some doors to rated positions are being opened, but only after rumblings of a threatened class action suit by the navigators in the Reserve Air Technician force.

I would advise my fellow navigators to weigh their futures carefully. Do not allow yourselves to become disposable "Handi-Wipes" because of the "needs of the Air Force." If you decide to get out, consider flying in the Air National Guard or the Reserves. They will have the F-4s and KC-135s for some time, and a Reserve retirement is better than nothing. If you decide to stay in, you should try to specialize in the electronic warfare, bomb navigation, or reconnaissance fields. Also, you should be especially aggressive, decisive, and competent, because the most excellent navigator cannot hope to compete with the most mediocre pilot.

Name Withheld by Request

## 91st Bomb Group's B-17?

In studies concerning my dwelling place, Holten, Netherlands, during WW II, I discovered that on December 10, 1943, at 1528 hours, a B-17 crashed in Holten, which is twelve miles east of Deventer. I believe it was with the 91st Bomb Group, Eighth Air Force, and Muenster, Germany, the target.

Two of the crew, T. M. Ennis and L. M. Kasi, were killed, five became POWs, and three escaped. To the best of my knowledge, the names of those who survived the crash were: James L. Lohrmann, Richard Jackson, Robert L. Richards, 2d Pilot Whitlow, Gunner John T. Ashcroft, Collem (?), Flintoff (?), and John Jembowsky (?).

Corrections, completions, and further information would be most welcome; also information on colors, markings, and number of the aircraft.

M. J. G. Hols  
Boschkampsstraat 21  
7451 GB Holten, Netherlands

## Privileged People

Recently I have read several articles stating that federal military retirees are a privileged group taking advantage of the taxpayer. This

is nice to know since I am a federal military retiree.

Surprisingly, I never knew that I was a member of such a privileged group when, as a buck private, I received my gross pay of \$21 per month—that is, before deductions. I didn't even feel privileged later when I was promoted to the rank of corporal at \$54 per month.

Nor did I feel that I was a member of a privileged group when I was huddled in a coral dugout on a remote island in the Pacific during World War II, listening to bombs come walking up the island from Japanese Betty overhead, reflecting that the nearest US interceptor was at least 2,000 miles away, and wondering whether the next bomb would hit on top of the dugout or come enough over on the other side to be a miss. I didn't feel privileged when we had months on end without fresh fruits or vegetables, but still had gum recession and lost a tooth every year or so to remind me.

I didn't feel part of a privileged group as a lieutenant when I worked on a regular work shift of two hours on, twelve hours off, and eighteen hours on at the end of the week to change shifts so that two of us covered the twenty-four hours seven days a week for several months. Again, I didn't feel privileged at another time when, as the captain in charge, I worked from seven in the morning until eleven or midnight each day for several months straight to load up the B-29s going to the Pacific. I just felt that I was doing my job.

I didn't even feel especially privileged when I received my notice of involuntary recall from inactive service at the beginning of the Korean War. I can still recall the phrase from my orders: "Family will accompany officer nor join later." I can't recall feeling less privileged during any one of several occasions when I was separated from my family for periods ranging from three months to over two years at a time.

Later, I didn't feel especially privileged when I was drafted as a major out of my previous job specialty and placed involuntarily in the missile program. Finally, I didn't even feel surprised, let alone privileged, when it took a two-month campaign, including final decisions from the Secretary of the Air Force, just to get released from the military when I finally decided to re-

# U.S. Air Force sets another record in F100-powered F-15s.

It's a sortie record. Recently, the 36th Tactical Fighter Wing of the U.S. Forces of Europe (USAFE) held a grueling three-day combat capabilities exercise. During the exercise, the USAFE record was set when

71 F-15 fighters flew 322 separate sorties in a 24-hour period.

The men and women of the "Fighting 36th", the McDonnell Douglas F-15 Eagle, the Pratt & Whitney Aircraft F100 engine—ready to defend Western Europe.



**PRATT & WHITNEY  
AIRCRAFT GROUP**

Government Products Division  
West Palm Beach, Florida 33402 U.S.A.



**UNITED  
TECHNOLOGIES**

# Airmail

well into the Vietnam War era, but Strategic Air Command wanted to keep this particular regular lieutenant colonel on active duty.

At long last, I am glad to be informed that I am a member of a privileged minority. Surprisingly, I never feel that I am "ripping off" anyone when I collect my retired pay. I just can't understand why, if the service is such a good deal, the military is not swamped with applicants—especially now, when, for the moment, no one is being shot at!

When all is said and done, I feel, not privileged, but proud that, along with millions of other Americans, I have paid my dues to my country. It will continue to exist only so long as sufficient future people feel the same way.

Lt. Col. Donald C. Marsh,  
USAF (Ret.)  
Oneonta, N. Y.

## Captive Allied Aircraft

I am investigating the German deployment of captured Allied aircraft in WW II. These include those machines overrun by advancing German troops and those captured "in hot blood," so to speak, as a result of combat damage, engine malfunctions, and the like.

To this end I am collecting photographs and am trying to find any German or Allied documents concerning captive aircraft. Would particularly like any personal anecdotes or recollections about this from readers.

I would greatly value any information, either direct or regarding potential sources.

Alan Stokes  
The Open University  
Walton Hall  
Milton Keynes, MK7 6AA, England

## Still Flying Around, We Hope

With the recent start of the new year 1979, I reviewed my back copies of AIR FORCE Magazine for particular items. Upon completion, I could not to this day believe I'm the only living survivor of Col. Phillip Sykes's 387th Bomb Group (M), 559th Bomb Squadron! This Jolly Roger outfit was in the ETO/9th Air Force area of WW II and flew the "true" B-26 Martin Marauder.

Not one sentence in your "Airmail" column referred to anything having to do with this unit.

Of course, 1943-45 wasn't exactly just yesterday and I don't recall Herr Goering's Luftwaffe wiping our B-26s out of the sky. So WHAT happened to the hundreds of men in the 387th/559th—aren't any of them capable of or interested in writing comments to the magazine?

Should any of your readers be interested, at least two of us are alive, healthy, happy, and hoping to hear from ex-members doing likewise somewhere in this nutty old world.

We are:

George E. Lund  
1094 Cudahy Pl., #210  
San Diego, Calif. 92110

Phone: (714) 276-4793

and

Edward C. Kranch  
P. O. Box 91582  
Los Angeles, Calif. 90009

Phone: (213) 645-4624

## Langley Residential History

I am attempting to complete a chrono listing of former residents in three of Langley's proud old officers quarters. Records from 1958 on are fairly complete. Records of prior years are almost nonexistent due to the 1933 hurricane flood, fragmented record keeping, and destruction syndromes following World War II. Two of these residences were built in 1918-19.

I am sure that some noteworthy names will be recovered if former residents, relatives, or anyone with records or recall will respond. Information is desired on 3A Eagan Ave. (Building 690), 16B Sagan Ave. (Building 532), and 53 Dodd Blvd. (Building 434).

Lt. Col. C. L. Weidinger  
3A Eagan Ave.  
Langley AFB, Va. 23665

## Skyblazers Aerobatic Team

I am a senior Air Force ROTC cadet at Wilkes College, Pa., and am currently collecting material for a book on the US Air Force Skyblazers jet aerobatic team. This unit performed in Europe in the fifties and early sixties.

I would appreciate it if readers could help me with information, photographs, stories, etc., on the team. Any loaned material will be returned to the owner and credit will be given.

Would also like to contact anyone who was associated with the Sky-

blazers (pilot or ground crew) to their first-hand account of the team.

Gary C. Meeker  
79 Beattie Ave.  
Middletown, N. Y. 10854

## Rescue From a Trash Bin

A book was found in a trash bin passed on to me. Its cover was missing, and there was no evidence of owner. It is the history of the 4th Bomb Group (M), Fifteenth Air Force stationed in Brindisi, Italy, during WW II. Commanding officer was Paul Barton. Squadrons consisted of the 815th, commanded by Maj. Stanfield; 816th, commanded by Lt. Col. Fred Ascani; 817th, commanded by William Kiolpatrick; and the 840th, commanded by Maj. Louis Seith.

If any officer or enlisted member of the 483d contacts me, I will make arrangements to get this book to its valuable history to where it belongs.

Anthony M. Keresi  
4362 Sussex Dr.  
Lake Worth, Fla. 33464

## Vietnam Research

As a historian doing research on the course of the Vietnam conflict from the intervention of the United States to the final pullout, I would like to correspond with active-duty veterans or organizations who can help with the project.

Philippe Charpentier  
Ruelensvest 181  
B-3030 Heverlee, Belgium

## Twelfth and Fifteenth History

After ten years of writing primarily about fighter planes and operations, I am now undertaking a project which I was personally involved in: the history of the Twelfth and Fifteenth Air Forces in the Mediterranean.

I would like to hear from anyone all who feel they can help with information, recollections, and photos of all units concerned. All material will receive the best care and will be returned to the owner.

This history is long overdue and help your outfit get the recognition it deserves.

William N. Hess  
P. O. Box 61268  
Houston, Tex. 77061

## Mustang Documentary

I have a contract with Macdonald and Jane's Publishers to write *Mustang: A Documentary History*. I would appreciate help in the form of memories, anecdotes, documents, and



Published photos from anyone interested with the Mustang throughout its long history from 1940 to the present. Pilots, mechanics, ground crew, NAA employees, anyone who has something to tell that has not been published before.

With help, this book should be very fresh on such a great but worn subject.

Jeffrey L. Ethell  
2403 Sunnybrook Rd.  
Richmond, Va. 23229  
Phone: (804) 282-0804

#### Photo Book

I want to contact former A-20 Havoc crewmen or persons with material on aircraft. I am presently working on a photo book on the A-20 which will be similar to my A-26 book just completed, to be published early next year.

Anyone wishing to help out on this project is asked to write me. All material will be handled carefully and returned when work is done.

Jim Mesko  
4019 LeCona Rd.  
Akron, Ohio 44319  
Phone: (216) 644-3388

#### North American's XFJ-48

I would like to hear from crews that flew and operated the different systems on the North American XFJ-48. This was an attack bomber with a B system for delivering an MK-7 nuclear weapon and an extra pair of landing brakes beneath the tail. Six servicing stations could be used to carry 4,000 pounds of bombs, rocket motors, or up to five Bullpup air-to-air missiles.

Sheridan R. Hollom  
P. O. Box 414  
Black Canyon City, Ariz. 85324

## UNIT REUNIONS

#### Association of Old Crows

July 21-25, Hilton Palacio del Rio Hotel, San Antonio, Tex. **Contact:** P. K. Weir, Brett Packard, 205 Billy Mitchell Rd., San Antonio, Tex. 78226. Phone: (512) 8241.

#### For Awards Dinner

Reunion of Military Aviators, New York City, May 18, American Legion Room, Hamilton, Brooklyn, New York. **Contact:** William Ready, 765 Argyle Rd., Brooklyn, N. Y. 11230.

#### Strategic Air Depot Ass'n

July 1979, 3d SAD, AAF Station 505 (1st and 46th ADGs), 8th AF, Watton,

England, WW II. **Contact:** W. S. Noble, 7266 Goodwood Ave., Baton Rouge, La. 70806.

#### 13th and 71st Fighter-Interceptor Sqdns.

1st reunion, pilots and officers stationed at Selfridge AFB, Mich., 1953-58, MGM Grand Hotel, Reno, Nev., June 22-24. **Contact:** Cliff Sherrod, Box 742, Midland, Tex. 79702. Phone: (915) 684-5302.

#### Class 39-B

40th reunion, May 24-27, Menger Hotel, San Antonio, Tex. **Contact:** Brig. Gen. Dorr Newton, USAF (Ret.), 808 Milam Bldg., San Antonio, Tex. 78205.

#### P-40 Warhawk Pilots Association

July 20-22, Imperial House-North, Dayton, Ohio. **Contact:** Lloyd "Scotty" Hathcock, 34 College Ave., Dayton, Ohio 45407. Phone: (513) 223-8432.

#### 47th Bomb Group

2d reunion, July 12-15, Dayton, Ohio. Bring WW II scrapbooks, photos, other 47th BG memorabilia for display. Send stamped, self-addressed envelope. **Contact:** George C. McElhoe, 6694 Nelson St., Arvada, Colo. 80004.

#### 48th FG and 322d BG, 9th AF

Stationed in Cambrai-Niergnies, France, in 1944. We are planning a commemoration and reunion June 16-24 and wish to locate pilots from these two outfits for both information and invitations. **Contact:** Michel Bacquet, 7, Place du 9 Octobre, 59403 Cambrai, France.

#### 49th Fighter Group

7th, 8th, and 9th Squadrons and Headquarters, July 12-14, Ashville, N. C. **Contact:** William Reid, 326 Summit Pl., S. W., Lenoir, N. C. 28645.

#### 57th Bomb Wing (M) Ass'n

Including 310th, 319th, 321st, 340th Groups and 308th Signal Wing attached, July 11-15, The Town and Country Hotel, San Diego, Calif. **Contact:** Hal Lynch, Executive Director, 11720 Whisper Bow Dr., San Antonio, Tex. 78230.

#### 58th Weather Recon Sqdn., "F Troop"

July 27-29, Albuquerque, N. M. **Contact:** Chuck Leonard, 12009 Donna Court, N. E., Albuquerque, N. M. 87112. Phone: (505) 294-6827.

#### 75th Troop Carrier Sqdn.

July 27-29, Dayton, Ohio. **Contact:** Robert Richards, 139 Kiser Dr., Tipp City, Ohio 45371.

#### 98th Bomb Group (H)

"The Pyramidiers," July 16-19, Holiday Inn Nashville Vanderbilt Motel, Nashville, Tenn. All former members invited. **Contact:** Walter H. Bolling, Jr., Rt. 3, Box 67, Gonzales, La. 70737.

#### AC-130 Gunships

All Spectres and others associated with

the 16th SOS, 5th annual minireunion, May 4-6, Fontenelle Hills Country Club, near Omaha, Neb. **Contact:** Col. R. A. Wicklund, 602 Martin Dr. North, Bellevue, Neb. 68005. Phone: (402) 291-4690.

#### Hq. 152d Tac Control Gp., 152d Tac Air Control Center Sqdn., 552d AF Band, NYANG

31st Anniversary Program, May 11, "North of the Manor," South Farmingdale, N. Y. **Contact:** Maj. Roy R. Spells, Hq. 152d TCG, Roslyn ANG Station, Roslyn, N. Y. 11576. Phone: (516) 621-7765 or -2604, AUTOVON 938-3490.

#### 319th Bomb Group

5th reunion, July 18-22, Denver, Colo. **Contact:** Harold E. Oyster, 662 Deering Dr., Akron, Ohio 44313.

#### 320th Bomb Group

2d reunion in conjunction with the 319th BG, July 18-22, Denver, Colo. **Contact:** M. S. "Stu" Rowan, 108 Aspen, Hereford, Tex. 79045.

#### 390th Bomb Group (H), 8th AF

May 4-5, Rivermont Holiday Inn, 200 W. Georgia Ave., Memphis, Tenn. Also trying to locate air and ground crews. **Contact:** Patrick Rossi, 58 Doat St., Buffalo, N. Y. 14211.

#### 412 (Transport) Squadron

2d All Ranks Reunion July 13-15, 1979, celebrating 40th anniversary, at Canadian Forces Base Ottawa(S) (Uplands). **Contact:** 412 Reunion Officer, General Delivery, Canadian Forces Base Ottawa(S), Ottawa, Ontario, K1A 0K5, Canada.

#### Det. 437, SEMO University

Southeast Missouri State University, 2d annual dining-out, April 21. All graduates invited. **Contact** (no later than April 14): Det. 437, AFROTC, SEMO University, Cape Girardeau, Mo. 63701. Phone: (314) 651-2184/5.

#### 457th Bomb Group Ass'n

July 29-31, Omaha, Neb. **Contact:** Homer L. Briggs, 811 Northwest B St., Bentonville, Ark. 72712. Phone: (501) 273-3908.

#### 474th Fighter Group

May 18-20, Hyatt-Regency Hotel, San Francisco, Calif. **Contact:** Robert D. Hanson, Suite 226, 7515 Wayzata Blvd., Minneapolis, Minn. 55426.

#### 709th Bomb Sqdn., 447th Bomb Gp.

Squadron organization and 2d reunion, July 20-22, Omaha, Neb. **Contact:** Myron P. Schreiber, 21302 Park Wick Lane, Katy, Tex. 77450.

#### 911th Air Refueling Sqdn.

20-year reunion, July 6-8, Seymour Johnson AFB, N. C. **Contact:** Robert A. Pait, 203 Mourning Dove Lane, Goldsboro, N. C. 27530.

# InFocus...

BY EDGAR ULSAMER, SENIOR EDITOR

Washington, D. C., March 5  
**Airmobile MX**

The Air Force, in the current re-examination of survivable basing modes of MX, is determined to give the airmobile concept a fair chance even though to date all the available evidence confirms that MPS (Multiple Protective Structures, in effect vertical shelters amongst which an ICBM would be dispersed in shell-game fashion) remains the most cost-effective solution.

According to Maj. Gen. Kelly H. Burke, Director of Operational Requirements, USAF DCS/RD&A, airmobile ICBM concepts have been studied extensively in the past by the Air Force and other elements of the Defense Department, but "there have not been studies in depth in the last three years and during that time we acquired better understanding of short takeoff and landing technology as applied to transport . . . aircraft—a technology that supports a new concept of a dispersible airmobile system. In view of the magnitude and importance of MX, I think it altogether proper that we thoroughly examine this new technology and concept."

USAF's second look at airmobile systems—directed by the Defense Department late last year—has matured over the past few weeks into a relatively firm system. Key element of the proposed weapon is a four-engine STOL aircraft, derived from either the YC-14 or YC-15 AMST prototype designs built by McDonnell Douglas and Boeing, and to be hardened against overpressure and electromagnetic pulse to the same extent as the B-1 strategic bomber test aircraft. Between 200 and 300 missile-carriers would be acquired, each one accommodating an MX weighing at least 150,000 pounds and fitted with ten warheads (the maximum number permitted under the pending SALT II agreement). In addition, there would be eighty to 100 training aircraft that also could serve in a communication relay role during crises or war. About seventy-five percent of the MX carriers would be on alert at all times.

Under normal peacetime conditions, the aircraft would be stationed at between thirty and fifty alert bases located in the central region of the country, at least 700 miles from the oceans as a measure of protection against Soviet SLBM attack and sufficiently dispersed to reduce the risk of barrage-bombing by Soviet ICBMs.

During periods of tension, the MX carriers would be dispersed to about 150 primary dispersal sites as well as to some of the secondary dispersal sites that are available, whence the National Command Authorities (NCA) could direct them to go on airborne alert and eventually launch their missiles. Launch would take place in flight and would be accomplished by extracting the ICBM by parachute through the aircraft's tailgate. Since the objective of the airmobile basing mode is to furnish the US with a sustainable war-fighting capability, the secondary dispersal sites could also serve as recovery sites. These sites would include general-aviation facilities with runways hard enough to permit at least one landing and take-off by an MX carrier. (The weight of the aircraft exceeds the weight limits of most runways of this type.) Other sites could include salt flats, interstate highway sections, and dry lakebeds. Maintenance and support of the airmobile MX system would take place at five special sites situated in the same general area as the alert bases.

USAF's reevaluation of survivable MX basing modes was to be forwarded to the Defense Department by March 30 of this year. Should the decision go in favor of the airmobile approach, USAF might develop two competitive designs and carry the program forward to a competitive flyoff between the McDonnell Douglas and Boeing systems. Some of the MX ICBMs, according to the latest plans, could also be deployed in silos.

President Carter plans to personally review and rule on the Defense Department's recommendations concerning the MX missile and how to base it, according to Dr. William J.

Perry, Under Secretary of Defense for Research and Engineering, in a briefing congressional staff members, he also said that while he hoped that the Defense Department will be in a position to make a decision on basing mode by April, a delay of perhaps as long as a year would not adversely affect the program if full-scale engineering development of the missile itself authorized this spring.

One of the White House's consultants on the MX basing program, Dr. R. L. Garwin, meanwhile concluded against deploying MX in MPS basing mode while appearing as a witness before the House Armed Services Committee. Garwin, a mainstay of the group of academicians assembled by Presidential science and technology advisor Dr. Frank Press to review USAF and Defense Department basing mode recommendations, advocated instead that MX be deployed in an airmobile mode or on submarines operating in the shallow waters above the continental shelf.

The latter concept, a long-time favorite of the inventive Dr. Garwin, envisions slow-moving bottom-crawling submarines, each carrying two MX ICBMs, to replace the land-based leg of the triad. Command and control would be provided by long fiber optics cables that could be plugged into various underwater junction boxes. Earlier Defense Department analyses of this scheme concluded that it required a number of technological breakthroughs, yet in sight, and that it lacked operational merit.

The White House consultant also told the committee that if MPS was deemed necessary, the system should use a 20,000-pound single-warhead missile, rather than a MIRVed (ten warheads) 150,000-pound-plus missile as recommended by the Air Force and the Defense Science Board. His reasoning that such a small missile represents a more cost-effective countermeasure to the growing number of Soviet ICBM warheads than does a large MIRVed missile is totally at odds with Air Force and Defense Department findings.

## Brightening the State of the Union

In his State of the Union address on January 23, President Jimmy Carter asserted that just one Poseidon

narine can "destroy every large medium-sized city in the Soviet Union." Some congressional experts challenging this contention on technical grounds. Poseidon SSBNs normally carry ten warheads on each of their sixteen SLBMs for a total of 160 individual weapons. Yet there are at least 204 Soviet cities with populations above 100,000. Further, the range of the SLBMs—at least on the new Trident I (C-4) missile is expected beginning next year—is expected to reach a significant percentage of these cities. Also, the "RV footprint," the size of the area in which the individual warheads of an SLBM can be targeted, is limited. In most cases, the distance between Soviet cities is far greater than the SLBM's footprint. Finally, the forty-kiloton yield of a Poseidon is below the damage level predicted by current US targeting and clearance doctrine. Hence, several would have to be directed against a single city. Congressional critics believe that the President's comment about the Poseidon's capabilities typifies the frequent inadequacy of defense information furnished the White House by the State Department and the Arms Control and Disarmament Agency.

### North Korea's Underestimated Military Power

After the recent setbacks to free world and US interests in Iran, Afghanistan, and Africa, Congress seems bent on cooling the Administration's ardor for withdrawing US ground troops from South Korea. In a speech on the House floor, Rep. Manuel E. Stratton (D-N. Y.), for instance, asked about public allegations that the Korean troop-withdrawal plan also called for removing tactical nuclear weapons from that country and replacing them with army warheads. He asserted that "... we cannot countenance any strategic plan [that] could increase the risk of war [and that is] being carried out deliberately in a way that could bypass the Congress and the constitutional requirements of our government." The Administration has not yet responded to Mr. Stratton's request for information on that issue. In Senate Armed Services Committee hearings, meanwhile, the Commander in Chief of the United Nations Command in Korea, Army Gen. John W. Vessey, testified that North Korea has a much larger and better-equipped military force than

had been previously believed. Before this most recent reassessment, which has yet to be... concluded by the intelligence community, we credited the North Koreans with a two-to-one advantage in tanks, artillery, and tactical aircraft. We thought they had a four-to-one advantage in naval combatants, including a three-to-one advantage in missile-attack craft. We now believe that the North is much stronger in artillery, tanks, and overall combat capability than was estimated a year ago." General Vessey also disclosed that "there may be some difficulty" in the ROK Army's ability to operate all the weapon systems that it was to take over from the departing US Army under the Administration's original schedule.

Even though he declined to speculate about North Korea's intentions, General Vessey told the Senate that "the nature of the North's deployments, its available weaponry, and the sheer number of its units justifies the perception of offensive intent. It is clear that this force has the ability to launch a major invasion of the ROK with little warning. Unequivocal evidence of the North's aggressive posture is found in its active clandestine infiltration of the South by sea and by land, and its unrelenting burrowing of tunnels under the DMZ [demilitarized zone]. On 17 October 1978, United Nations Command counter-tunnel operations exposed a third North Korean tunnel, dug deep under the military demarcation line and well into the southern DMZ. Detection devices indicate that more tunnels are being dug. These tunnels represent clear violations of the Armistice agreement. They serve no purpose other than surprise attack at a time advantageous to the North."

The White House has now indicated that the Administration will exercise caution in further withdrawal of US ground forces from South Korea, at least until the belated intelligence assessment is completed.

### Washington Observations

• On February 20 of this year the Central Intelligence Agency—represented by four senior officials—was to furnish the R&D Subcommittee of the House Armed Services Committee with a full, unabridged briefing on a CIA study of Soviet deceptions prior to, during, and after SALT I. This so-called Sullivan study—named for its principal au-

thor, David S. Sullivan, a strategic analyst who subsequently resigned from the CIA (see "In Focus...", January '79), exposes Soviet duplicity in negotiating past arms-control agreements and documents the near-absolute control of the Soviet military over the USSR's SALT policies. But to the subcommittee's surprise and chagrin, the four CIA officials were prepared only to provide a watered-down, abbreviated version—presumably less foreboding than the complete briefing so far as the prospects for Soviet compliance with SALT II are concerned. Rep. Richard Ichord (D-Mo.), the chairman of the subcommittee, protested the CIA's evasion of what the subcommittee viewed as its constitutional prerogatives, namely complete access to relevant information.

• CIA Director Adm. Stansfield Turner, USN (Ret.), recently caused raised eyebrows with some startling assertions before Washington's Harvard Club. The nation's top intelligence officer reportedly told the group during a briefing at CIA headquarters that the cold war is "over" and that there are "more important things" to worry about than the Soviet Union. Admiral Turner also struck an ominous note when he declared that it would be "criminal" for other government agencies—meaning probably such organizations as the National Security Agency, DIA, and the military services' intelligence units—not to share intelligence information with the CIA. Some intelligence experts attending the briefing were struck by the CIA Director's emphasis of political factors and his apparent downplaying of fundamental intelligence concerns.

• At this writing, contradictory signals are being sent out by various elements of the executive branch of government about the imminence of SALT II's conclusion. On balance, the prospects for a relatively speedy windup appear to be reasonably bright. It has become obvious, however, that playing the "China Card," at the time and in the manner chosen by President Carter, turned out to be no trump. Soviet intractability solidified immediately, even though major US concessions have satisfied almost all Soviet demands. The only major unresolved issue centers on what constitutes, in the sense of SALT II, a new ICBM and what is to be considered a modification of an existing system. The US contends

# InFocus...

that any modification of an existing model that either increases or decreases the missile's size by more than five percent is a new design—and thus is prohibited. The Soviets have not accepted that understanding and seek the option to reduce missile size by up to twenty percent. The US recently yielded on two points: the number of cruise missiles that can be carried by a cruise missile carrier aircraft has been reduced from thirty-five to twenty-eight at Soviet insistence. Encryption of telemetry data transmissions during ICBM test-flights is now prohibited only where information pertinent to verification of treaty adherence is involved. How the US will be able to *verify* that encrypted Soviet data are not needed to *verify* Soviet compliance is unclear, especially since most congressional experts believe that *all* flight-test data are, of and by themselves, an intrinsic part of the verification process. In spite of the ground given by the US negotiators, both the rate of SALT progress and the mood of the Soviet negotiators, subsequent to the Sino-US rapprochement, remained glacial for more than two months.

• SALT, as defined by Sen. Gordon J. Humphrey (R-N. H.), stands in Soviet eyes for "Stop the American Lead in Technology." At a press conference sponsored by the American Security Council and Congress's Coalition for Peace Through Strength that featured Senator Humphrey and former Air Force Secretary Thomas C. Reed, it was disclosed that any new Soviet strategic bomber—at least one such weapon system is under development according to the Defense Department's latest Annual Report—will not be counted under the SALT II rules as long as it carries only nuclear bombs or air-launched cruise missiles with a range less than 600 kilometers. Mr. Reed, one of the most respected Secretaries in the history of the Air Force, told the Washington press that the Administration "is about to present to the American public a SALT II agreement which ignores the lessons of a half century of history. It disregards the opportunities offered and the dangers posed by the manned bomber." Urging that

the Administration not sign, and the Senate not ratify "any SALT agreement that does not recognize and constrain the Soviet Backfire bomber," Mr. Reed concurred with earlier AIR FORCE Magazine reports that US estimates of Backfire's range were too low. With a 5,000-mile range and a 25,000-pound payload, Backfire provides the Soviet Union with a "very good strategic reserve," thus further enhancing the Kremlin's sustained nuclear war-fighting capability, he said. The former Air Force Secretary asserted that the number of Backfires currently in service is "probably between 150 and 200." He estimated that the current annual production rate is between thirty-six and forty aircraft and that Backfire can carry ALCMs and/or Mach 3, 435-nautical-mile range AS-6 Kingfish nuclear-armed air-to-surface missiles. Mr. Reed confirmed that an improved production model known as the "C" or "ND" version is now in the Soviet inventory.

• A recent Air Force study of the capabilities of the new KC-10 Advanced Tanker Cargo Aircraft (ATCA) led to dramatic conclusions. Based on a scenario that required the deployment of eighteen F-15s, 115 tons of equipment, and 220 support personnel to Saudi Arabia, these comparative performance capabilities were established: Using current equipment, it would require sixteen KC-135s, three C-141s, and two C-5s. The mission could be executed only by using forward bases at the Azores and in Spain, whose availability is far from certain. Deploying the force would take two days. Using six KC-10s, no C-141s, no C-5s, and no forward bases, the deployment could be completed in one day. Some 26,000 gallons of fuel would be saved compared to the presently available force.

• Dr. Ruth M. Davis, Deputy Under Secretary of Defense for Research and Advanced Technology, recently reported that carbon/carbon materials currently used on the nosetips of SLBM and ICBM RVs (warheads) "do not perform as well as desired under severe environmental conditions." USAF's ABRES program is to come up with improvements to assure that the accuracy of US ballistic missiles does not deteriorate because of nosecone erosion caused by rain, snow, or other adverse environmental factors, she said.

• Adm. Thomas H. Moorer, USN

(Ret.), former Chairman of the J Chiefs of Staff, speaking recently to defense industry executives in Washington, excoriated the Administration's tentative plan to halt their erosion in the Middle East through the creation of the I Fleet to cover the Indian Ocean. With the existing fleets sadly understrength and no ships available on the ways, the Administration's action amounts to "gunboat diplomacy without gunboats," he said.

• A generally overlooked aspect of the SALT II accord is that the US total of 2,250 so-called ceremonial launch vehicles (ICBMs, SLBMs, strategic bombers) includes all 180 mothballed B-52s and four test aircraft. The B-52s have been cannibalized or have deteriorated to a point where they could not be restored to operational status at reasonable costs and within a reasonable time. The B-1 test aircraft, because of the President's decision to cancel production, never reached operational status.

• Under the aegis of the National Strategy Information Center, a group of prominent defense experts formed a "Strategic Alternatives Team" to provide a range of "quick fix" options for redressing Soviet strategic advantages in the early 1980s. The group, which included former Deputy Secretary of Defense Paul Nitze, concentrated on approaches that could reach operational status within a thousand dollars from program go-ahead. Among options developed by the group were innovative ballistic missile defense systems, a revitalized US civil defense program, and multiple point (MAP) basing techniques for the Minuteman ICBM force.

• The Republican National Committee, in a stinging critique of the Administration's foreign and defense policies, termed them "shortsighted and dangerously inadequate," with the result that "America's reliability as an ally is in doubt, our military defenses are becoming less capable of maintaining peace every year, international economic strength is rapidly deteriorating, our position in some of the most vital regions of the world is crumbling." The President "in the absence of a defensive policy," the Republicans charge "substitutes utterly meaningless cantations about strength while continuing a policy of defense cancellations, deferrals, and real budget reductions."

# SCIENCE/SCOPE

A newly developed closed-cycle cooler that chills the Sidewinder missile's infrared sensor to -320 degrees F will simplify logistics support and reduce life cycle costs. The air-to-air missile's infrared eye must be super-cooled to increase its sensitivity to a target aircraft's engine heat. In the past, the Sidewinder has used an open-cycle nitrogen or argon gas cooling system that needed complex logistics support and could be turned on only for limited intervals before needing recharging. With the new closed-cycle cooler, a combat pilot may leave the missile sensor on throughout a mission with no concern for mission duration.

Under contract to the U.S. Air Force, Hughes built 10 advanced development models of the closed-cycle cooler, which are now undergoing tests. An additional 42 coolers are being built for evaluation and flights tests under an AIM-9L product improvement contract (AIM-9M) with the Navy.

Anti-tank weaponry enters a new dimension now that a variation of the original TOW missile system is going completely under armor. A TOW weapon subsystem developed by Hughes will be installed on the U. S. Army's Fighting Vehicle System, a fast, lightweight armored companion to the AM-1 main battle tank. The subsystem has a twin-barrel launcher encased in an armored pod outside the vehicle and an integrated sight that operates day or night with either low or high magnification. It will be less vulnerable and better able to get close to a target than either the infantry or helicopter versions of TOW. In nearly 11 years, Hughes has built more than 200,000 TOW (Tube-Launched, Optically-Tracked, Wire-Guided) missiles for more than 25 nations around the world.

Infrared heat "maps" now can locate problems in complex electronic equipment quickly and without damaging expensive printed boards. Infrared Fault Isolation Test System (IRFITS) is a new non-contact, non-destructive testing method that discovers shorts and open circuits in printed boards faster and safer than ever before. It does this by mapping heat released from the surface of an object. Any variation in the heat pattern that would indicate trouble is displayed on a screen. Previously, it was necessary to chip away coatings, with the risk of possibly damaging intricate circuitry to probe for trouble spots.

Developed by Hughes, IRFITS can be used alone to locate many types of faults. Or when used with automatic testing equipment, it can cut fault isolation costs by over 50 percent and reduce test time substantially. Now used to test military equipment, it eventually may be available for airlines and other commercial users.

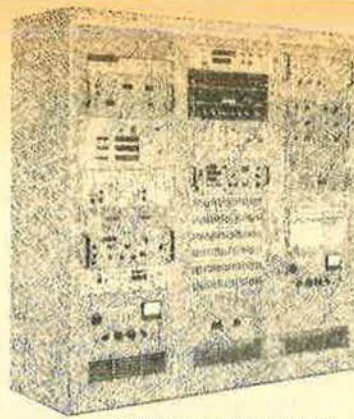
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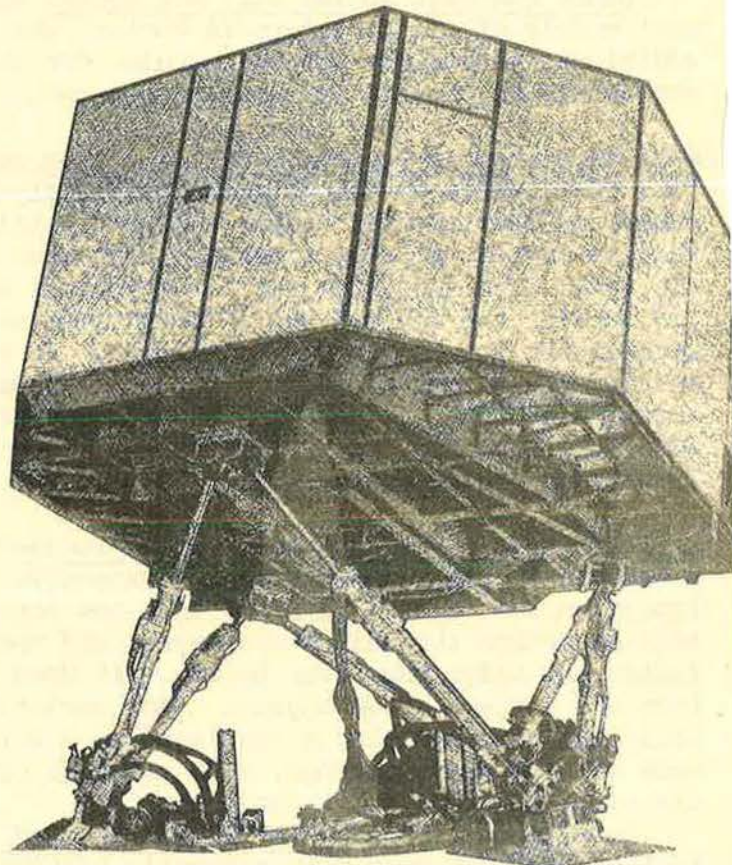
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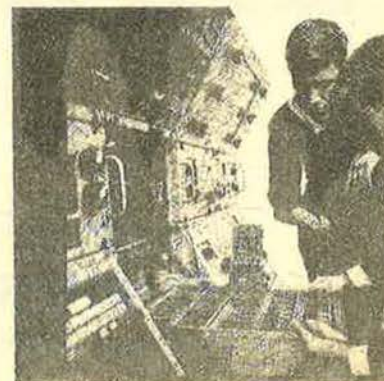
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# Capitol Hill

## the Air Force Association Staff

Washington, D. C., Feb. 27  
At this writing, the Congress is in  
midst of what promises to be a  
lengthy and hectic review of the FY  
Defense Budget and the related  
'79 Supplemental Budget Re-  
quest.

The chances of the latter's pas-  
sage appear to be slim.

Congressional cynics suggest that  
Administration's goal of scoring  
three percent growth from FY '79  
FY '80 would be facilitated if the  
supplemental is voted down.

## Revised FY '79 Supple- mental Request

The FY '79 DoD Supplemental  
Budget Request forwarded to Con-  
gress last month has been revised.  
While the revision does not change  
the \$2.2 billion total of the earlier  
request, numerous reallocations  
are being sought by the Defense De-  
partment to offset lost weapons  
sales to Iran. The goal is to retain  
programmed production rates and  
reduce unit costs. Four weapon sys-  
tems are involved: the F-16, and the  
Phoenix, Harpoon, and Standard  
missiles, for which \$460 million,  
\$71 million, \$116.9 million, and  
\$5.9 million are being requested re-  
spectively. The revised request off-  
sets these additions through a num-  
ber of deletions which include:  
Nuclear Weapons Storage, Commu-  
nications, Chemical/Biological De-  
fense, Very High Speed Integrated  
Circuits, NATO JTIDS, Strategic  
Satellite System, FB-111 SRAM  
Guidance Device, and Insensitive  
High Explosives.

## All-Volunteer Force

Recent testimony before the  
Armed Services Committees has  
focused on the growing problems of  
the All-Volunteer Force and the need  
for corrective action.

Gen. Lew Allen, Jr., Air Force  
Chief of Staff, told the House Ar-  
med Services Committee that "the Air  
Force up until now has had a very  
good record in the All-Volunteer  
Force area. Our quality of people  
has stayed good, it continues to stay

good, and we have met our require-  
ments for acquisition of people. For  
the first time, in December we did  
not meet our recruiting goals. We  
anticipate that we will be able to  
satisfy our mandatory needs over  
the next six months or so, but we are  
doing it by eating into what is known  
as the pool of deferred enlistments.  
The cold facts are . . . that we are  
beginning to see signs of the same  
kinds of problems which . . . have  
been involving the Army for some  
time. We do anticipate difficulties in  
the future."

General Allen in later testimony  
added that if the steps discussed by  
Defense Secretary Harold Brown  
and Gen. David C. Jones, Chairman  
of the Joint Chiefs of Staff, were  
taken—*i.e.*, registration and some  
sort of classification system—"that  
alone will probably increase our  
ability to recruit just by calling at-  
tention [of] our young people  
[to] the obligations they have to their  
country. . . . [Thus] we could prob-  
ably get our numbers back up to  
where they should be, because we  
are really fairly close. . . . I do not  
see a need for a draft to solve the  
Air Force problems."

Rep. Robin Beard (R-Tenn.), one  
of the most vocal critics of the mili-  
tary manpower situation, recently  
introduced legislation "calling for  
establishment of a Joint Select Com-  
mittee to conduct a complete analy-  
sis of our military manpower system  
and to make recommendations for  
solving our critical problems." Mr.  
Beard emphasized that "this is not a  
call for a return to the draft as we  
know it. Rather, this is a call for a  
thorough examination of many alter-  
natives to the all-volunteer system."  
In releasing new manpower figures  
compiled by the Army, Mr. Beard  
called the results "devastating,"  
pointing out that ninety days into a  
European conflict the US could be  
more than one million personnel  
short of demand. The most critical  
shortages affect the infantry, armor,  
artillery, and combat specialties. Se-  
vere shortages of medical personnel,  
such as "less than forty percent of

the doctors needed, twenty-five per-  
cent of the nurses, and less than half  
of the enlisted medics" would  
further exacerbate the situation.  
"In short, the system of military  
medical care is literally on the verge  
of collapse," Mr. Beard claimed.

Sen. Gary Hart (D-Colo.), in com-  
menting to this column on the mili-  
tary manpower issue, suggested that  
"there are enough problems with the  
all-volunteer Army [to warrant that  
we] look at the alternatives, rang-  
ing from . . . identification, registra-  
tion, and testing [to] qualified draft,  
full draft, [or] universal service. But  
I think to make a major public policy  
shift of that sort one would [require]  
weeks and months of hearings,  
[and] public debate." Equally im-  
portant, he said, are cost compari-  
sons, "not only in terms of the differ-  
ence between what we have now  
and what the alternative system  
would be in 1979 or '80 dollars, but  
also [about] implications for retire-  
ment systems in the twenty-first cen-  
tury."

## NATO/Pact Balance

Gen. Alexander Haig, outgoing  
Commander in Chief, United States  
European Command (CINCEUR)  
and NATO's Supreme Allied Com-  
mander Europe, recently reported to  
the Senate Armed Services Commit-  
tee that despite significant improve-  
ments within NATO in 1978, "includ-  
ing the lifting of the American arms  
embargo against Turkey, a host of  
deep-seated problems remains in  
NATO's Southeastern flank:

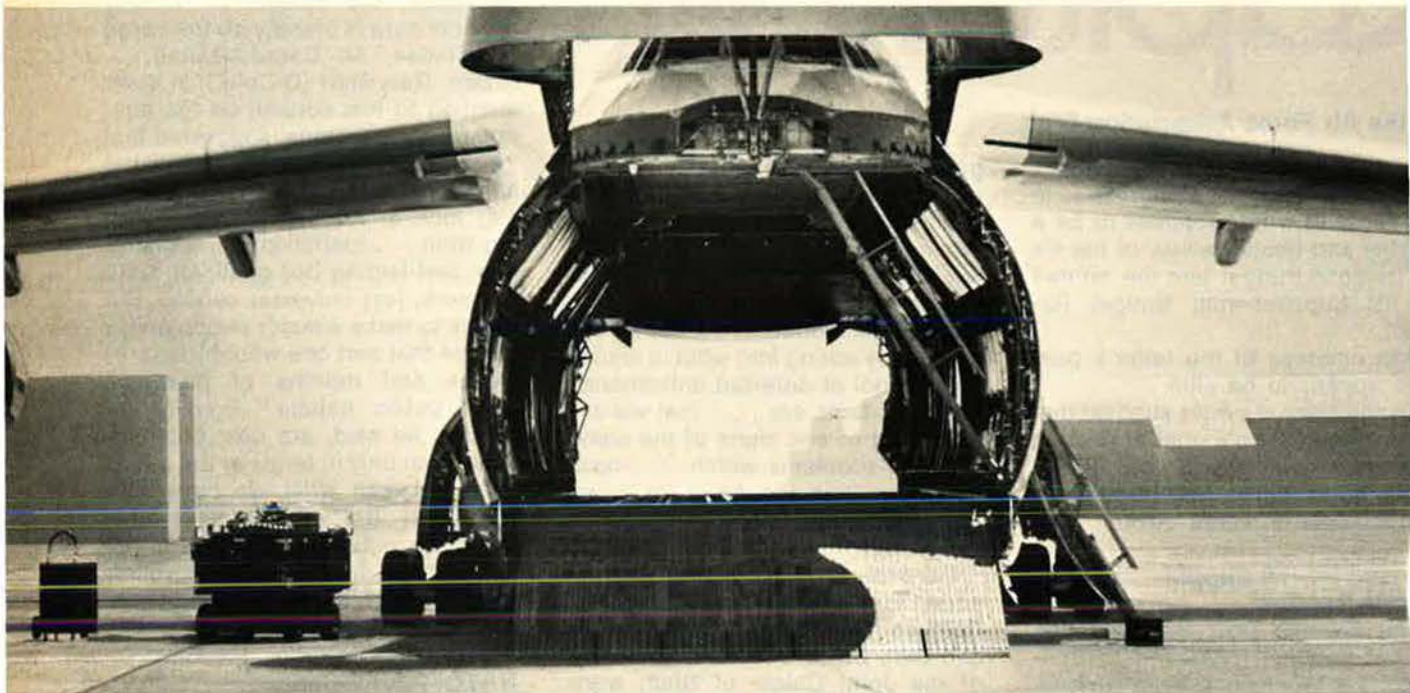
- "Greece, a trusted ally, remains  
outside NATO's integrated military  
structure;

- "A number of difficult political  
issues between Greece and Turkey  
remain unresolved; and finally,

- "The economic plight of Turkey  
has deepened, portending grievous  
consequences for the Western world  
if left untended. But Turkey's eco-  
nomic difficulties eclipse all other  
regional problems in urgency and  
magnitude. Only vigorous American  
leadership can assure the extra-  
ordinary multinational assistance  
effort required to deal with Turkey's  
economic distress." General Haig  
also pointed out that "in the past ten  
years, the Soviets have launched  
theater nuclear force improvements  
whose aggregate impact has been  
to transform former Western supe-  
riority into current Soviet advantage,  
especially in longer-range theater  
nuclear systems." ■

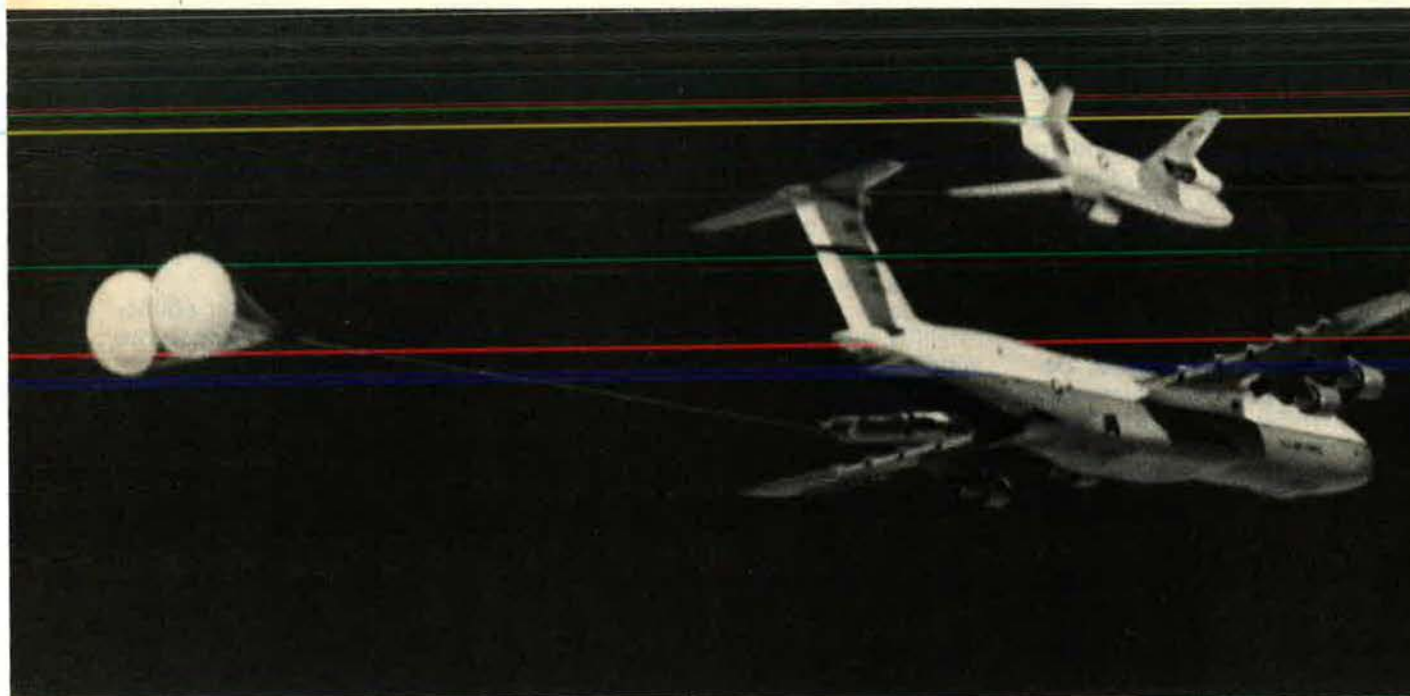
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## Air-launched ICBM champion.

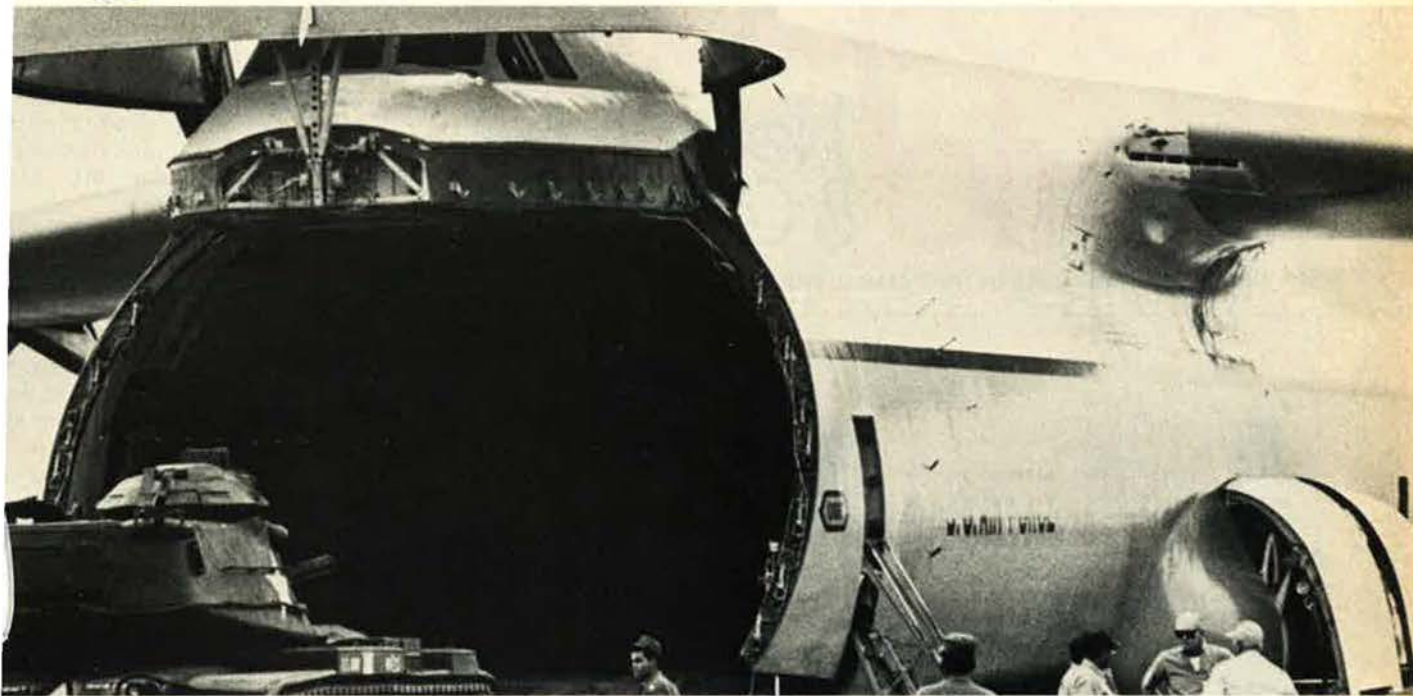
The C-5 has successfully launched a Minuteman intercontinental ballistic missile. It's the only aircraft in the world that has been able to achieve

There's a lot more to the C-5's versatility. Its high-flotation landing gear enables it to lift the Army's heaviest tank into and out of semi-prepared runways as short as 3500 feet. Its advanced navigational

systems enable it to operate in remote areas of the world. These and other features give the C-5 inherent versatility. Moreover, it can be adapted to many missions at low cost. The C-5. Built on the c

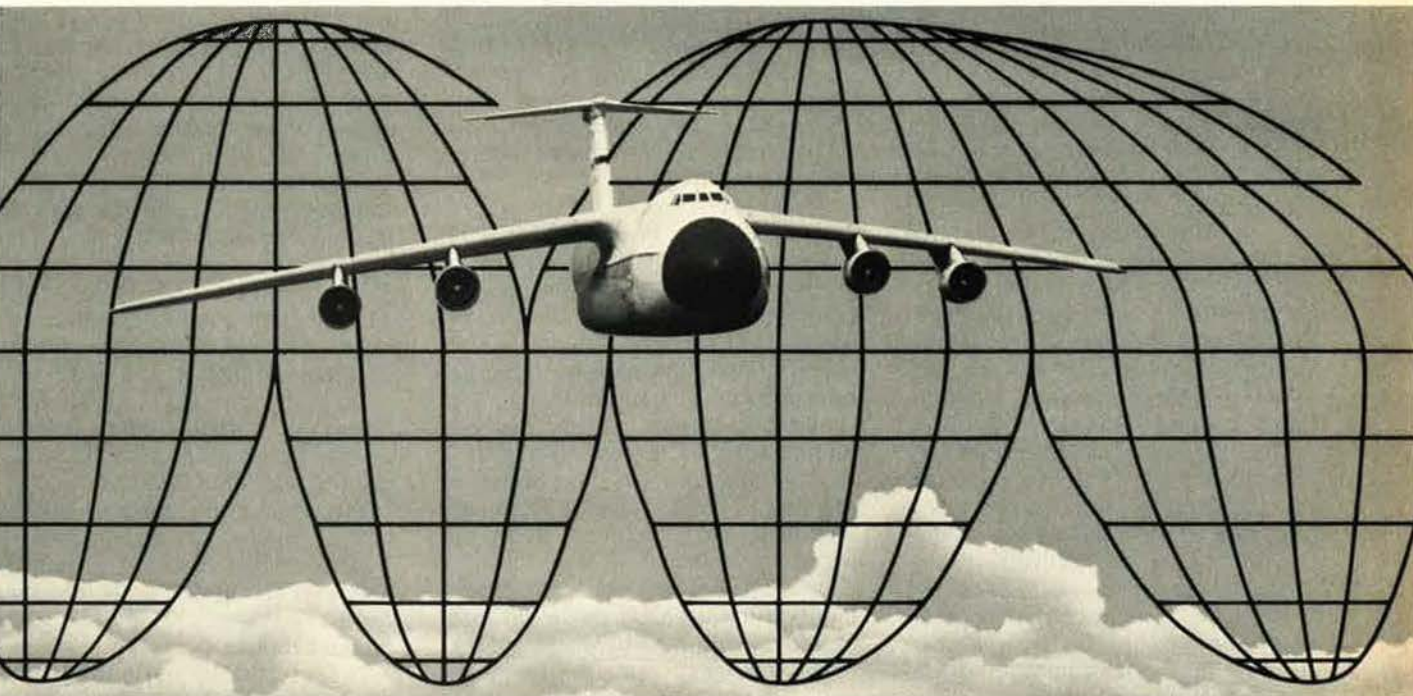


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## Lockheed C-5

# Aerospace World News, Views & Comments

By William P. Schlitz, ASSISTANT MANAGING EDITOR



Flight testing of this 30-mm gun pod is currently taking place aboard a Northrop F-5E at Edwards AFB, Calif. The GE-developed gun pod is designed to give the F-5E added firepower on air-to-ground missions, especially against tanks. The pod weighs less and is slightly smaller than the standard 275-gallon centerline fuel tank. The gun can fire at the rate of 2,400 rounds per minute.

Washington, D. C., March 6

★ The Air Force picked Hughes Aircraft Co.'s Missile Systems Group, Canoga Park, Calif., and Raytheon Co.'s Missile Systems Division, Bedford, Mass., to begin prototype validation of the Advanced Medium-Range Air-to-Air Missile (AMRAAM).

The two were chosen from five competitors in the Pre-Prototype Design Concept Phase. Hughes and Raytheon are to receive \$45 million and \$39 million respectively.

The Validation Phase is expected to last thirty-three months, following which the winning design will move through full-scale engineering development into production. AMRAAM will succeed the radar-guided AIM-7 Sparrow missile widely in use by USAF and the Navy. It will arm the latest US fighters—the F-14, F-15, F-16, and F/A-18—and perhaps a number of NATO aircraft.

AMRAAM is expected to remain

in the inventory from 1985 to 2005.

The new missile will depend less on the fire-control system of the launching aircraft than do current weapons. Launched beyond visual target range, the missile's inertial reference unit and microcomputer "will apply target coordinates obtained from the launching aircraft's radar system for the first phase of the flight." During the final phase, an active radar seeker will guide the missile to its target.

Among the missile's improvements are increased speed, greater capability against countermeasures, better low-level attack performance, and greatly increased multiple-attack capability. According to USAF, the missile will be smaller, lighter, more reliable, more easily maintained, and less expensive than current weapons of its type.

AMRAAM is the first Air Force program that complies with the Of-

fice of Management and Budget adaptive management concept that aims at maximum contractor inventiveness with minimum governmental controls.

★ Late in February, two Soviet cosmonauts reoccupied orbiting Salyut 6 space station, to conduct experiments as well as check its possible further potential for the Soviet manned space program.

Mission commander Lt. Col. Vladimir Lyakhov and Valery Ryumak, a civilian flight engineer, were launched on February 25 aboard Soyuz-32.

The mission was the first manned flight since November 2, 1978, when a Soviet crew returned to earth after a record 139 days in space. At the latest docking in February, Salyut 6 had been in orbit sixteen months. It is the first orbiting space station to be equipped with two docking stations.

★ The Air Force and NASA have under joint development a form of aeronautical technology that, if applied to aircraft of the future, could dramatically increase aircraft flight performance.

The technology is centered on the "mission-adaptive wing," under study for a number of years. The wing does not use conventional flaps and has a smooth uninterrupted upper surface. Internal mechanisms are used to vary the wing camber by physically bending leading and trailing edge surfaces during flight to achieve the most efficient air flow.

Now, under a fifty-four-month, \$12.4 million contract, Boeing Aerospace Co. will move into analytical preliminary design, and wind-tunnel tests of the concept. This will be followed by modification of an F-15 fighter test-bed aircraft and major ground and flight testing.

First goal of the program, according to Boeing, is to demonstrate "cruise camber control," the precise shaping of the wing for maximum cruise efficiency and hence enhanced range.

In fact, "the ability to reshape the wing airfoil at will in flight will improve aerodynamic performance at all speeds and altitudes . . . [resulting] in dramatic improvements in payload, range, maneuverability, ride quality, and structural fatigue life," an official said.

Initially, modification of the F-15

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# Aerospace World

flight control system will be minimal, with the variable camber surfaces to be moved relatively slowly. Later, it is hoped that a digital flight control system will permit high-speed automatic movements of the variable camber surfaces to make possible:

- Quicker dogfight-type maneuvers without overloading the aircraft structure.
- Changes in the aircraft's attitude and altitude without altering its flight path.
- Gust load alleviation in turbulent air to improve ride quality and increase fatigue life.

★ USAF has grounded sixty-eight T-38 Talons as a result of "a lower metal toughness factor in the wings which made them less resistant to cracking." Replacement wings are being procured from Northrop Corp., the planes' manufacturer. The wing flaw was discovered as a result of extensive precautionary materials testing.

ATC owns sixty-four of the affected T-38s; SAC, two; and Navy and NASA, one each. USAF has more than 1,000 Talons in its inventory.

No TAC T-38s have been grounded, officials said. Many of these in "high-stress" use have already been equipped with a new thick-skin wing, and the remaining are still being refitted.

USAF hopes to have all sixty-eight aircraft back in active service by late 1980 or early 1981. No adverse impact on flying training is anticipated.

★ In rollout ceremonies at Burbank, Calif., in late January, Canada's newest maritime patrol aircraft, the Lockheed-built CP-140 Aurora, made its first public appearance.

The long-range Aurora is the first of eighteen that will replace Canada's Argus, in service for more than twenty years. The \$700-million purchase order for the aircraft, signed in 1979 and to include support equipment, is the largest export sale in Lockheed's history, the company said.

Identical in appearance to the Navy's P-3C Orion, Aurora is equipped with the sophisticated ASW systems of USN's carrier-based S-3A, also built by Lockheed.

Besides its role of surveillance of Canadian coastal waters and the Arctic, the CP-140 is to be charged with a number of other missions including monitoring Canada's fisheries, ice reconnaissance, search and rescue missions, topographic

A "News Note" in the January 1979 issue described the restoration work being done on a World War II Flying Fortress at Dover AFB, Del. Now, with more details available . . .

## The Saga of Shoo Shoo Baby

In May 1944, the B-17G four-engine bomber dubbed *Shoo Shoo Baby* had completed a bomb run on Posen, Poland—her twenty-second mission with the Eighth Air Force's 401st Bomb Squadron, 91st Bomb Group. With two engines out, *Shoo Shoo* headed for neutral Sweden rather than chance the return flight across the Channel to England. She lost yet another engine before landing, but got down safely, to be interned for the duration.

Given to Sweden at war's end, *Shoo Shoo* then flew for the Royal Danish Air Force and Navy before being converted to a commercial airliner by Danish Airlines. Later sold to France, she served with the French National Oceanic Institute, before being abandoned at a French airfield in 1961.

Rediscovered by the Air Force Museum in 1972 and with French acquiescence, the aircraft was dismantled and crated by a USAF team and flown to the Museum at Wright-Patterson AFB, Ohio. *Shoo Shoo* was considered by Museum officials to be historically significant because she might be the last existing "G" version of the four-engine bomber built during World War II. These aircraft were characterized by the protruding "chin turret" designed to discourage German fighters from making head-on attacks.

*Shoo Shoo* remained in her crates at the Museum until brought to Dover AFB, Del., last year as a restoration project of the 512th Military Airlift Wing, an AFRES unit at the base.

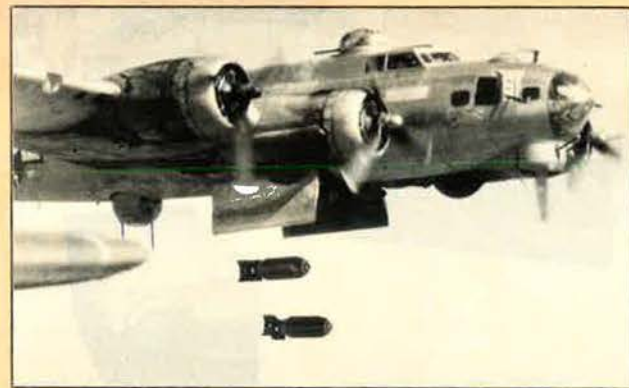
Now, *Shoo Shoo* is well into the restoration process, a truly monumental effort considering the shape she was in. The project, begun last July, should require another two years to complete. Once restored, *Shoo Shoo* will remain on public display at Dover for about a year before returning to Wright-Patterson, where at the Museum she'll be the center piece of a major exhibit.

Besides her original unit markings, *Shoo Shoo* is to don her combat colors—olive green on top and light gray beneath. A final touch will be the replacement of the shapely blonde pin-up on her nose, copied from a 1944 snapshot of the original. (For those of us too young to remember, *Shoo Shoo Baby*

was a popular song of the '40s, sung by the Andrew Sisters. At least six B-17s and three B-24s were so named.)

Dover's *Shoo Shoo*, being restored by the "512th Antique Restoration Group," as it is known, will be equipped with four good-as-new Wright Cyclone engines that have never flown before, donated to the project through the Air Force Museum. In fact, donations—of time by volunteers and replacement parts and other memorabilia by outsiders—have eased the burden of the restoration considerably. As the donated maps, photos, clothing, and other items continue to arrive, they are added to a special display set up near the work area.

Visits—and donations and contributions—to the restoration by the public are encouraged. The group has for sale to defray expenses a *Shoo Shoo Baby* patch (\$2.25). For information or to arrange a guided tour, write the group c/o the 512th Military Airlift Wing, Dover AFB, Del. 19901, or phone (302) 678-6971.



The "G" version of World War II's B-17 was characterized by the protruding "chin turret" designed to deal with frontal attacks by German fighters.



The CP-140 Aurora, recently rolled out at Burbank, Calif., is tailored to perform a range of Canadian military and civil missions. The first of eighteen Lockheed-built Auroras is to be delivered to Canada in May.

Mapping, the location and control of mineral resources, and the monitoring of sources of pollution.

The Auroras will operate from Canadian Forces' bases at Greenwood, N.S., and Comox, B. C.

With the worldwide resurgence of interest in ballooning, the Fédération Aéronautique Internationale has reactivated the Gordon Bennett Cup race, a gas balloon competition.

The aeronautical classic, established by James Gordon Bennett, veteran New York editor, and to be sponsored by the National Aeronautic Association's Balloon Federation of America, was conducted annually between 1905 and 1938. During those years, the race was held in the US nine times and attracted balloonists from all over the world. Flights lasting more than forty hours and covering more than 1,000 miles were not uncommon.

Rules for the upcoming race, planned for May 22 at Long Beach, Calif., are almost identical to those laid down by Orville Wright for the 1927 race held in the US. They have been revised, however, to take into consideration air traffic and other modern technology, including a requirement for appropriate electronic aids to be carried aboard competing balloons.

The 1979 race is dedicated to

Ward van Orman, who competed in seven of the races and won three. He died in March 1978 at age eighty-four.

Besides the US, teams will be fielded from Austria, Belgium, England, France, Holland, Germany, and Switzerland, and perhaps the Soviet Union and Poland. (The Gordon Bennett Cup trophy was last won

by Poland in 1938, where it was lost during World War II. A sponsor is being sought for a new trophy, and a fund to finance the race has been established. Tax-deductible contributions from corporate and other sources can be sent to the Gordon Bennett Race Committee, c/o NAA Headquarters, 821 15th St. N. W., Washington, D. C. 20005.)



This Sikorsky Advancing Blade Concept (ABC) research helicopter recently achieved 165 knots during high-speed flight tests being conducted at the Sikorsky facility near West Palm Beach, Fla. The program's goal is a speed of 300 knots. A feature of the aircraft is two outboard-mounted Pratt & Whitney J60 turbojet engines for auxiliary thrust. The ABC system consists of two counterrotating blades mounted on a single shaft, eliminating the conventional tail rotor and providing "greater maneuverability and improved hover efficiency over conventional rotary-wing aircraft," the company said. Further, the ABC system "effectively combines the vertical lift and low-speed flight efficiency of the helicopter with the forward high-speed flight efficiency of fixed-wing aircraft."

# Aerospace World

★ The *Gossamer Condor* now is on display at the National Air and Space Museum in Washington, D. C., having earned its niche in history for its man-powered flight in August 1977.

According to Paul MacCready, who designed and built the *Condor*, a successor aircraft—the *Gossamer Albatross*—will attempt another man-powered flight in May of this year, this time across the English Channel. *Albatross* is said to be an improved version of the *Condor*. The prize has improved, too: British industrialist Henry Kremer has offered \$200,000 for the feat: he paid out \$85,000 for the *Condor* flight.

★ The History and Traditions Museum at Lackland AFB, Tex., has put out a call for donations of "almost anything" related to basic training that began at the base in the 1940s and has continued there since.

The items will be displayed in a special section of the museum.



Navstar navigation aids being field-tested at the Yuma Proving Grounds in Arizona. Weighing twenty-seven pounds in backpacks, the equipment receives signals from orbiting satellites to determine ground location within thirty feet. Sponsored by USAF's Space and Missile Systems Organization, Navstar equipment is being developed for all the services. Nine NATO nations are interested.



The first "C" version of the F-15 Eagle, with twenty percent more internal fuel capacity plus fittings for FAST Pack conformal fuel pallets, flew in late February at McDonnell Douglas Corp.'s McDonnell Aircraft division in St. Louis.

## AFA Airpower Symposium Set for Chicago

As part of AFA's continuing function of keeping the public informed about crucial national defense matters, an Airpower Symposium will be conducted in Chicago on May 11 and 12 under the auspices of the Chicagoland O'Hare Chapter, AFA's Great Lakes Region, and the Illinois State organization.

This second annual two-day program is designed to bring the public up to date on aerospace matters and current strategic policies. A panel of prominent defense leaders will participate.

For details, see p. 85.

which is open year-round (except Christmas Day) to airmen and their families, and to the public.

The new section is aimed at linking new recruits visually with basic training of the past and thus the museum is seeking "uniforms, foot lockers, insignia, meal cards, messes, draft notices, training manuals, metal eating trays, photos, travel orders, and banners or patches" among other things, officials said.

To contact the museum write in care of Maj. Gil Nickles or 2d Lt. Marcia Valentin, AFMTC/XR, Lackland AFB, Tex. 78236, or call (512) 71-2966.

**NEWS NOTES—The Aerobic**

**Club of America and the International Aerobic Club** have literally joined forces (the two organizations are planning a formal merger) to host the World Aerobic Championships at Wittman Field, Wis., in August 1980.

Beginning in July 1980, **E-3A Sentry** airborne warning and control aircraft will be rotated on 150-day cycles from **Tinker AFB, Okla.**, to **Kadena AB, Okinawa, Japan**, the first time the new E-3A has been assigned to the Pacific theater.

In March 1980, the **Air Force Senior NCO Academy** will be relocated from **Gunter AFS, Ala.**, to **Maxwell AFB, Ala.**, thus becoming a part of the professional military education complex at Maxwell.

In concert with the 1979 celebration of the **twenty-fifth anniversary of the Air Force Academy** (see also cover story, beginning on p. 34), a series of **permanent displays depicting the heritage of manned flight** is being readied for exhibit in Fairchild Hall, the Academy's main academic building. Of "special historic importance," the displays are intended to "help develop a sense of appreciation" in the cadets for accomplishments in manned flight.

Also observing its **twenty-fifth anniversary** is the **Air Reserve Personnel Center**, Lowry AFB, Colo. Managing the careers of close to 500,000 Reservists and Guardsmen, ARPC is charged with rapid mobilization in times of trouble. Thus far, it has responded in 1961 (the Berlin Wall



*Agena, here atop an Atlas, has been in use twenty years. See item below.*

Crisis); 1962 (the Cuban Missile Crisis); and 1968 (the *Pueblo* seizure).

Smithsonian Institution Under Secretary **Michael Collins** and the staff of the **National Air and Space Museum**, Washington, D. C., have been named to receive the **Frank G. Brewer Trophy**, sponsored by the National Aeronautic Association and presented annually for outstanding achievement in aviation and space education.

The major commands and separate operating agencies have been asked to **nominate candidates** to replace **Robert D. Gaylor**, stepping down as fifth Chief Master Sergeant of the Air Force August 1.

The **Agena rocket** marked its twentieth birthday on February 28. Thus far, Lockheed-built Agenas have been used in **more than 300 successful DoD and NASA launches.**

**Died: Robert B. Young**, Aerojet-General Corp. executive and rocket propulsion pioneer, of cancer in El Monte, Calif., in February. He was sixty-one. ■

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# HOW TO DEAL WITH THE RUSSIANS:

## The Basics of Negotiation

BY THE HON.  
CLARE BOOTHE LUCE

**T**HE principles and techniques of the art of negotiation are not arcane. They are universal. Any successful labor union negotiator, corporation lawyer, or real-estate broker could set them forth in a few pages.

The objective of any negotiator is to reach an agreement that represents a gain, or an improvement, over his prenegotiation status. Obviously, no agreement can be reached unless it also represents a gain for the other party.

Agreement is reached through the classic triad of *persuasion*: the appeal to self-interest; *negotiation*: the exploration of all the possible *quid pro quos*; and *compromise, compromise, compromise*: the slow, step-by-step descent of the negotiators from their optimum goals to the minimum they will "settle for."

The game model of all negotiations is poker.

An excellent and witty little book on this subject was written some twenty years ago and appeared in *Fortune Magazine*. A highly entertaining application of Professor von Neumann's "Theory of Games," it was called, *Politics, Business, War, and Poker*.

The game of poker depends on the art of bluffing. The player who never bluffs is a sure loser. So is the habitual bluffer. The winner is the "honest bluffer"—the player who may—or may not—be bluffing when the stakes are highest.

I remember I gave Professor von Neumann's book to Jack Kennedy during his presidential campaign. He told me later, after the Cuban missile crisis, that the book was right. "The nuclear showdown," he said, was an "utterly terrifying game of poker." Kennedy thought, of course, he had won it, but Khrushchev, in his memoirs published much later, said that the acquisition of Cuba as a political and potential Soviet base was a prime strategic objective of Soviet policy. And he insisted that even though he knew that Kennedy held the winning hand of nuclear aces, he, Khrushchev, nevertheless had won, because he had bluffed Kennedy permanently out of Cuba. Khrushchev also learned, from the naval blockade and the nuclear showdown, the strategic value of nuclear and naval superiority.

In any event, the aim of all sound negotiators is to remove as much as possible the factor of "bluff"—honest or dishonest—from the game. For example, Company A's negotiators, considering a purchase or merger with Company B, will, unless they are morons, insist on seeing as many of Company B's cards as possible. They will demand, so to speak, on-the-site inspection of Company B. A smart negotiator can't know too much about the other fellow's business. Or about the other fellow. Company A's negotiators will want to know such things, for example, as the private reasons why the president of highly profitable Company B was willing to negotiate in the first place. Many a good deal has turned out to be a sour one because of a negotiator's failure to dig up the unfactored factors.

Time, and timing, are important factors in negotiations. The negotiator who is in a hurry, or is under pressure to conclude a deal, never does as well as the patient, unhurried negotiator.

But once an agreement is reached between citizens in democracies, and when the legal papers are drawn up, and the fine print is scrutinized, the agreement, for good or ill, is binding on both parties. That is, it is upheld by the law, and cannot be broken with impunity by either signatory.

Diplomatic negotiations are something else. The classic triad of diplomacy is still persuasion, negotiation, and compromise. But in the jungle world of the sovereign nations, there is no law above or behind the diplomatic negotiators except the law of force. The threat of force, the nation's triad of land, sea, and airpower, stands in the shadowy background of all diplomatic negotiations. The very essence of sovereignty is the right to exercise force in the pursuit of its objectives.

The nation with predominant power, and the willingness to use it, seldom has much trouble reaching satisfactory agreements with its



ess-powerful world neighbors. In the nineteenth century, British diplomats received many kudos for their subtle negotiating skills, which really belonged to Her Imperial Majesty's admirals.

Twenty-five hundred years ago, little Sparta, informed of a Greek plan to attack it, sent envoys to Athens, pointing out the injustice of such an attack, and pleading for peaceful negotiations. The Athenians cynically replied that "the question of justice and negotiations only arises between equals."

Negotiations between nations who perceive themselves to be more or less equal in power are always long and drawn out, and the gains for either side are minimal. And where negotiations begin to cut close to the bone of "vital issues," they are always fraught with great tensions. As these approach the crisis, or confrontation stage, both sides may equally fear, and equally wish to avoid, the arbitrament of arms, since wars between equals are always the riskiest and the bloodiest and the most likely. But it is precisely here that the "honest bluffer," the nation with the greater military credibility, has the advantage. Generally, even the veiled threat of a nation with military credibility to resort to force is sufficient to bring the other side's negotiators around to offering an acceptable compromise.

One other point about international negotiations is worth mentioning. All treaties are essentially "scraps of paper." It takes two to sign an agreement but only one to break it. The only judge a sovereign nation can be hauled in front of is the mouth of the cannon. When an agreement no longer serves a nation's interest, that nation will generally break it, since there is no way, short of war, that it can be made to keep it, and, when the chips go down, very few treaties are worth the price of a war. The Soviet Union's record for breaking its agreements and treaties, and often before the ink is dry, is virtually unblemished.

In any event, such is the mortality rate of treaties that a wise diplomatic negotiator will never sacrifice an immediate gain—however small—for a future advantage, however great. One very small bird in the nation's hand is worth ten big ones in the international bushes.

### Negotiating With the Russians

About negotiating with the Soviet Union: Their negotiating techniques are no different than ours—or any other nation's. The difference in our national characters are of very little importance. So what does it matter that our negotiators prefer the two-martini lunch, while theirs prefer the ten-vodka dinner. *What is important—all important—is the difference between our two systems.*

The Soviet Union is a closed and—at the government level—hermetically sealed society. All Soviet political, economic, scientific, military intentions and capabilities of even the smallest significance are closely—and successfully—guarded secrets.

Take, for example, what the Soviets call the "correlation of forces." By this they mean the relative economic, political, military, ideological, and psychological strengths of our two countries. Ours is an open, not to say, wide-open-mouthed society. They know all our strengths and weaknesses, and, *mutatis mutandis*, our intentions, capabilities, and objectives. A democracy, we play our negotiating games with all our cards face up on the table. Only the Soviets know their own strengths and weaknesses, their own intentions and objectives. They know, and we do not know, the real score on the "correlation of forces."

The element of Soviet bluff in our negotiating games simply cannot be estimated, because all their cards are held close to the chest. Wherefore, our negotiators play the game under a most serious handicap.

Now the proof that our government does not know the "correlation of forces" is the intense controversy about it among our political, military, and foreign policy "experts."

I shall never forget the dramatic confrontation before PFIAB (the President's Foreign Intelligence Advisory Board) between the "A" and

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**"The Soviet Union's record for breaking its agreements and treaties, and often before the ink is dry, is virtually unblemished."**

**"... our negotiating posture is further weakened by the fact that US military credibility is at a historic all-time low."**

*Clare Boothe Luce was US Ambassador to Italy from 1953-57. Earlier, she served two terms in Congress. Before entering politics, Mrs. Luce was associate editor of Vogue and managing editor of Vanity Fair. She is the author of several books, many articles and short stories, and a number of plays, including "The Women" and "Kiss the Boys Goodbye."*

"B" teams. Arguing from the same known facts, they reached widely different conclusions about the Soviet intentions and capabilities. Obviously, this was because of their different *a priori* estimates of Soviet objectives. It was not what the experts know, but what none of them really knows, that led to this confrontation. These same unfactored factors have produced ten years of dangerously off-the-mark NIEs (National Intelligence Estimates).

What Soviet negotiators tell US negotiators about anything of more than trivial significance may—or may not—be true. The point is, it cannot be verified. Signal intelligence is, indeed, a formidable tool. But, of course, it has its limitations. The fact is that our human intelligence, our espionage, has failed to penetrate even the lower echelons of the Soviet bureaucracy—much less the Kremlin. The only secret that the CIA has been able to conceal successfully—from the White House, the Congress, and the country—is the extent of this failure. What cannot be concealed are the effects of this failure on our Soviet policies. They are tragically ambivalent, ambiguous, vacillating, contradictory, confused. Our Soviet estimates are at best informed guesstimates. Beyond that, our negotiating posture is further weakened by the fact that US military credibility is at a historic all-time low.

Today, President Carter couldn't bluff Castro out of his afternoon siesta, much less out of Africa. The known unwillingness of the people and the Congress to back up diplomatic negotiations or Presidential rhetoric anywhere in the world, even with a seven-veiled threat of force, subtracts the factor of even covert coercion from the US negotiating process, not only vis-à-vis the USSR but with all other countries. In these circumstances, we must be prepared to see our diplomatic negotiations and initiatives fail, as they have so tragically failed in the Middle East—and will fail in Africa. Or we must be prepared to conclude our negotiations by making the sorts of compromises and concessions that have come to be called appeasement. All the skills of even the most experienced negotiators, as Henry Kissinger has learned, cannot offset the disadvantages of negotiating with a powerful enemy who can chest all his cards, and who knows not only all the cards you hold, but that you are being forced, by public opinion, to discard your aces. And that, I venture to suggest, is where it is at, in our great game of poker with the Soviet Union.

### **American Illusions**

The current case of SALT II illustrates an important point.

From the beginning, SALT has been to me a totally incomprehensible exercise in American statecraft.

Why would any nation, possessing superiority in a decisive weapon system, voluntarily negotiate itself into a position of equality with an avowed enemy of a quarter of a century?

Obviously, this extraordinary, perhaps historically unique, diplomatic and military initiative had to be based on some rationale. It was probably based on the George Kennan assumption that Soviet hostility, and its military buildup, was a natural nationalistic reaction to our own hostile cold war global containment policies; that the Soviets, like ourselves, were essentially defense, and not offense, minded; that they feared nuclear war as much as ourselves; that they believed it just as unthinkable, and unwinnable, as we did; and that, therefore, they would be satisfied with nuclear parity and an arms-control arrangement that would guarantee their security by a perpetual nuclear standoff. It was no doubt further reasoned that even if this nifty arrangement should come unstuck, or cease to be safely symmetrical, the nuclear, and strategic, *status quo* could always be restored by another and still another SALT negotiation. And thus "peace" would become the beamy, bright-eyed child of a MAD mother. These autistic hopes have always seemed to me doomed from the beginning.

Nature abhors, even as much as she does a vacuum, both the *status*

quo and equality. The only thing that does not change in nature, or the affairs of mankind, is change itself. Even the great continents and the mighty mountains, seemingly fixed on the floor of the planet, are constantly changing their shape, size, and position. All history evidences that the shape, size, and status of nations change considerably faster.

"Equality" is a mathematical concept. No two things in nature, or in human affairs, are ever more than approximately "equal," and then only for a fleeting second. Even as between two scorpions in a bottle, one will have a longer sting than another, and grow wearier of life in the bottle faster. When "Greek meets Greek," even though they seem equal, when the tug of war begins, one always proves, in the end, to be "a little more equal" than the other. The "correlation of forces" is never equal.

The ancient Greeks chose the arrow as the symbol of the state, to remind themselves that a nation, in its dynamic trajectory through time and space, is always either rising or falling, and hitting or missing its target.

With every hour of every passing day, the "nuclear balance," and the correlation of forces, is either changing in favor of the US—or against it. Today, against our very will—or the will of the Soviets—dozens of factors, including technology, driven by the demon computers, are changing it. Our lack of an energy policy is changing it. And unless we can shoot all fissionable material, and the secrets of using it, back into sidereal space, the "nuclear balance" will go on changing.

Curiously enough, even the SALT idealists—when they bother to think hard about it—find the prospect of a perpetual balance of terror maintained by nuclear equality both irrational and a little repulsive.

But the SALT concept is rooted in three great contemporary American illusions: That armaments are the cause of war; that all international conflicts of interests can be resolved by "patient negotiation"; and that the Tree of Liberty is watered, not by blood, but by moral rhetoric. All three illusions were expressed by President Carter in his speech at Notre Dame last year.

So, grabbing for their crystal balls, the SALT idealists see SALT III, IV, or mayhap V, leading to a US-USSR agreement to "do away altogether" not only with all nuclear weapons, but all conventional weapons as well. That is, over and beyond "adequate" national frontier police forces. This was the dream President Carter presented in his Inauguration address.

I fear it will require some very painful and humiliating events to awaken the SALT devotees from their dream of it as the way to world disarmament. If they cannot be awakened, the dream will turn into the nightmare of World War III.

But a concluding thought about the SALT negotiations:

How great, really, is our own devotion to the SALT concept of strategic equality?

Assuming that US advances in particle beam weapon technology would represent a significant increase in our defense—and consequently, our offense capabilities—are we now prepared—are the Pentagon and the Congress prepared—either to share that technology with the Soviets, or to abandon it, as we did the B-1 bomber? If not, the Soviets certainly can, and with good reason, claim that our refusal to do so is totally inconsistent with our present SALT and détente policies.

In conclusion, my advice to US SALT negotiators, when in Moscow, is to enjoy the ballet and the museums, and lay off the vodka, which tends to deposit a peculiarly high level of fat in the liver. I would also counsel them to enjoy their historic negotiating contributions to SALT II, since the way things are going in this best of all possible worlds, the chances of a SALT III are about on a par with the chances of Ruth Carter Stapleton converting Idi Amin. ■

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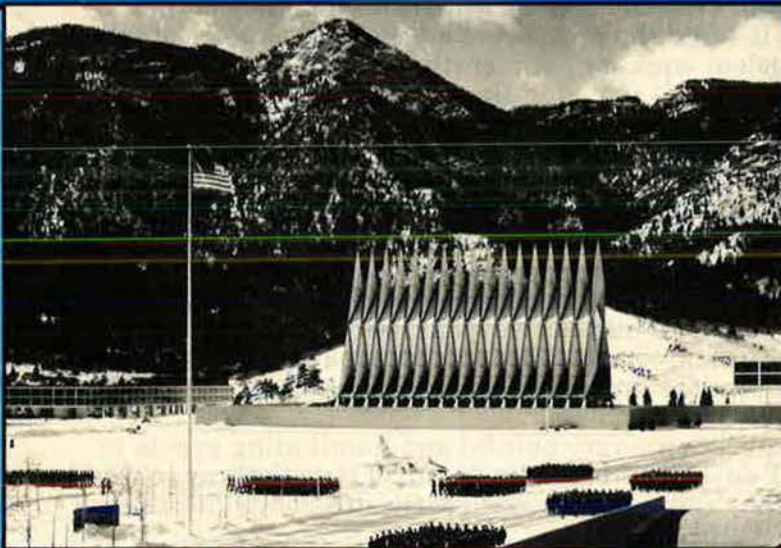
**"If [the SALT devotees] cannot be awakened, the dream will turn into the nightmare of World War III."**

## The Air Force Academy's Silver Anniversary

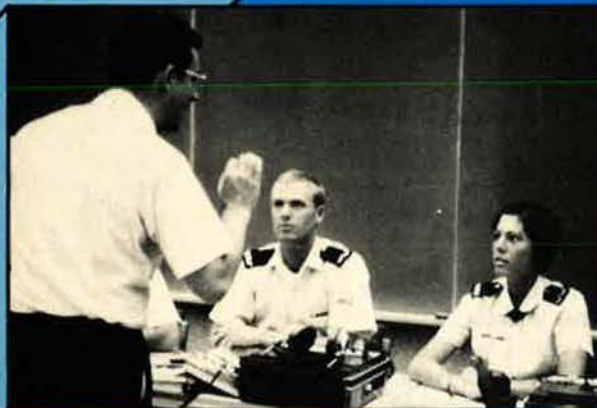
On April 1, 1954, President Eisenhower signed the bill that created the Air Force Academy. The school has evolved, as would be expected, into a different and more complex institution than envisioned by its founders. Today "no other school in the land can offer more in the way of an education, a career, and stimulating associations" than ...

# THE AIR FORCE ACADEMY: A FINE TWENTY- FIVE YEARS

BY GEN. T. R. MILTON, USAF (RET.)



*The Air Force Academy, at the foot of the Rampart Range, looks east across the Great Plains.*



*The Academy combines an academic program that has produced twenty Rhodes Scholars*



*intramural and intercollegiate participation in nineteen sports, and*

**W**HEN World War II ended, it was the Army Air Forces that, as the song had it, nothing could stop. The AAF had all but achieved its total independence during that war, a fact testified to by the fifty-mission caps and other abstract variations on the Army uniform. It was a pretty cocky service, and, with its accelerated promotion system and flight pay, a pretty insufferable one as well in the eyes of the ground Army. And yet, as the AAF approached the status of a separate service, there were some feelings of inadequacy.

The war had seen the AAF balloon from a branch that in 1939 had 1,650 regular pilots, 850 reserves, and a total strength of 22,500, to a service with 380,000 officers alone in 1945. The trouble was that there was some suspicion that a great many of them were not really officers—not in the traditional meaning of the term. Technicians, but not officers. Furthermore, they were a little shy on formal education as compared with the Army and the Navy.

And so, two years later, when the Army Air Forces finally became the United States Air Force, it had also, almost unaccountably in a service with such an exuberant history, acquired a slight inferiority complex. Only forty-one percent of its officers had baccalaureate degrees, compared with seventy-five percent in the Navy and seventy-two percent in the Army. Of that forty-one

percent, only ten percent had graduated from a service academy, less than a third of the average for the other two services. Not that service academy graduates were especially revered in either the AAF or the new United States Air Force. There were, in fact, some West Point graduates who felt life went more smoothly if the class rings were kept in the box.

Still, there was a strong feeling in this new air arm that there should be a service academy to match those of the other services. It was part of a general concern about the postwar education of career officers, a concern that had produced some interesting and thoughtful suggestions from, among others, Gen. Henry H. Arnold. General Arnold held the view that undergraduate training should begin at a combined—non-denominational, so to speak—services academy for the first two years, pursuing a largely academic curriculum. Following these first two years, General Arnold would then have sent the successful students on to a final two years at a military, naval, or air academy. He saw in this scheme a way of giving career officers a common grounding in military customs and traditions and a reduction, by this early joint experience, in interservice rivalry and friction later on.

Predictably enough, even his own service disagreed with Hap Arnold. Since there appears to be no record

of the Arnold proposal's reaching the Army and Navy for comment, we can only guess at their probable negative reactions to this antiparochial scheme.

Beginning in 1944, there was a steady process of planning within the Army on this matter of undergraduate training for career officers. While West Point was prepared to expand and take the load for both the ground and air arms, the AAF, and then the Air Force, wanted its own school.

There was a divergence of opinion within the Air Staff as to whether or not this new air academy would include flying training as an integral part of the curriculum. West Point had produced pilots during the war years, but at some sacrifice, many felt, to their overall education. It was a matter that would not be settled until the academy was actually founded, but the decision to provide some flying training was given a powerful assist by Carl Vinson, the omnipotent Chairman of the House Armed Services Committee. Mr. Vinson informed Air Force Secretary Stuart Symington, in March 1950, that he opposed the concept of an air academy that did not teach flying. It was an observation that did wondrous things toward straightening out the thinking on that subject. Future discussions on flying training would be limited to how much, rather than whether.

Even by 1948, however, the general concept for an Air Force academy was by no means clear. The Fairchild Board, a group of senior officers and distinguished educators under the chairmanship of Gen. Muir S. Fairchild, Vice Chief of Staff of the new Air Force, met at the Air University to discuss plans for the proposed academy. One plan, favored by the majority, which included a number of West Point graduates, would have given the undergraduates two years at a civilian institution followed by three years at a military academy.

One of the strongest opponents of this scheme was a Jesuit educator, Father Hunter Guthrie of Georgetown University, who argued that "the service academies



*military training that ranges from marksmanship to leadership and a variety of airmanship activities.*

would lose something . . . basic in the training of these young men if they didn't have them for a full four years . . . from the beginning to the end of their military baccalaureate-level training." Air Force DCS/Personnel Lt. Gen. Idwal Edwards shared Father Guthrie's views, and these two were persuasive. Gen. Hoyt Vandenberg, the Air Force Chief of Staff, overruled the majority in favor of a four-year Air Force Academy.

At the end of 1949, Lt. Gen. Hubert R. Harmon was recalled from retirement and appointed Special Assistant for Academy matters

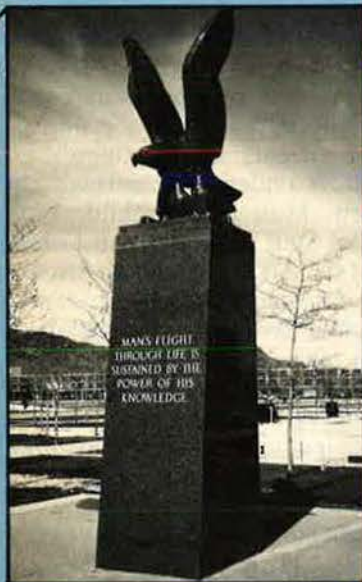
in anticipation of early legislation creating the school. It was going to be a long wait. There were arguments over location, self-serving bills to assure the location at a particular place, and discussions as to the need for another academy. Then the Korean War came along to put the whole subject quietly on a back burner. It was not until 1954 that the Congress finally approved the legislation. President Eisenhower signed the bill on April 1, 1954, and the Academy was in business, at least on paper. There remained, of course, the selection of a faculty and staff, finding a site for the

school, and getting under way with the first freshman class.

Given the Army ancestry of the Air Force, it was only natural that West Point should have served as the model for the new academy. Thus, the first faculty was chosen, like the faculty at West Point, from within the service. It has remained essentially a commissioned officer faculty ever since, although there are usually one or two visiting professors from civilian universities to add a touch of academic ecumenism.

The site selection was a little more complicated. After an initial

*President Eisenhower signed the Academy bill on April 1, 1954. With him, from left, Air Force Secretary Harold E. Talbott, Carl Vinson, Gen. Nathan Twining, Dewey Short, James H. Douglas, and Lt. Gen. Hubert Harmon.*



*Far left, the Eagle Statue, symbolic of the Academy's mission. Left, the Academy was located temporarily at Lowry AFB, Denver, while the permanent site was under construction.*

consideration of existing bases, including Randolph AFB, Tex.; the "West Point of the Air," the choices narrowed down to a spot on the bank of the Mississippi near Alton, Ill., Lake Geneva, Wis., and Colorado Springs. Community resistance in the first two, and community enthusiasm in Colorado Springs were the deciding factors. The selection committee, a group that included Charles Lindbergh and retired Gen. Carl "Tooney" Spaatz, recommended Colorado Springs, and Secretary of the Air Force Harold Talbott concurred.

During the years the new school was under construction, the Academy, under its first Superintendent, Lt. Gen. Hubert Harmon, operated at a temporary site on Lowry AFB in Denver. Construction by the firm of Skidmore, Owings and Merrill went on briskly but not without some controversy. There were cost overruns to be explained away, and then there was the chapel that offended a considerable number of congressmen and senators, who had their own ideas of what a chapel should look like. Not to minimize the skirmishes, the chapel survived as conceived and sits there below the Rampart Range today, the most distinctive architectural feature of the Academy.

Now it is twenty-five years and 12,133 graduates later. Of those 12,133 graduates, 9,362 are still on active duty. Not perfect, but not bad either as evidence of the commitment the graduates have made toward an Air Force career. Twenty of those graduates have won Rhodes Scholarships, a remarkable record for this still-young school and one that puts the Air Force Academy just behind the Ivy League and West Point in these coveted awards. There have been forty-two Guggenheim Engineering Scholarships won in those twenty-five years, and 144 graduates have achieved some sort of all-American acclaim, though only one or two have made it in football.

On the somber side, 105 graduates have been killed in action and nineteen more are still carried as missing. One, Capt. Lance P. Sijan, was awarded, posthumously, the Medal of Honor. A dormitory, Sijan Hall, has been dedicated to his memory.

Some have gone on to become Ph.D.s, a few are now M.D.s, a program that has ended with the establishment of the Defense Medical School. There has been a sprinkling of astronauts, White House Fellows, and now, this past year, the first brigadier general. In a very few years we can expect to see Academy graduates prominent throughout the Air Force from top to bottom of the commissioned ranks. It is, after all, the main idea.

### **A Sound Mind . . .**

The present Superintendent, Lt. Gen. Kenneth Tallman, like all his predecessors, has to keep in mind that basic purpose of the Academy: to turn out career officers—the best possible career officers—for the Air Force. Simple as that seems, it is not always an easy mission to keep in focus. From his spacious third-floor office in Harmon Hall, General Tallman looks out past the seventeen wigwams of the chapel to the quadrangle of the cadet area. At the east end of the area is the main academic building, the scene this past year of a small tempest over the status of the academic dean. The dean is chosen from among the permanent professors and thus is a somewhat different sort of brigadier general from those found in the Air Force at large. A superintendent wishing to change deans has, accordingly, a different problem from, say, the Commander in Chief of the Strategic Air Command who decides to move a division commander.

Professors at the Air Force Academy are, as we noted earlier, drawn from the ranks of the career military. They go by military titles and wear their uniform to work, all of which tends to conceal the fact

that these professors have, like professors in other colleges with high academic standards, graduate degrees—usually doctorates—and can aspire to tenure, which is to say permanent faculty status. They then come under a different statute from that governing their fellow officers—one that fixes them in place, gives them sabbaticals, and allows them to stay on until they are sixty-five, though that privilege has yet to be exercised.

The faculty, in short, is unlike the rest of the uniformed military, emphasizing the fact that the Academy is first of all an academic institution. A military academic institution plain enough, but one fully accredited by the civilian world of education. There is an intense competition for a cadet's time in this self-contained little world at the base of the Rockies. The professors have laid on an impressive academic load—153 semester hours in the core curriculum, against an average of 124 semester hours in comparable civilian institutions. The difference lies in the requirement for military studies and physical education, neither being either incidental or superfluous to the basic mission of the Academy. There is not much time left in a cadet's day for either reflection or mischief.

Gradually, over the years, academics have become the focus of a cadet's existence. In the beginning there were no course majors. The curriculum, following the old West Point pattern, was basically science and engineering and was the same for everybody. A generous amount of time was allotted to military training, including a thoroughgoing airmanship program, one in which cadets graduated with navigator wings. There was extensive flying

*USAF Chief of Staff Gen. Nathan Twining delivered the dedication address on July 11, 1955.*



experience throughout the entire four years, along with summer field trips and individual assignments to operational squadrons.

Today, there are twenty-three course majors offered the Academy undergraduate, along with the academic enrichment program, an imaginative concept that encourages cadets to take validating examinations in subjects they have previously studied. Thus freed from traveling over familiar ground, they can go on to explore new areas. The academic workload, as we have previously noted, is impressive by any standards, but, as is always the case in this unforgiving world, you never get something for nothing. In this case, the increased academic load has been accompanied by a decrease in military training. The airmanship program is, compared to the old days, fairly superficial.

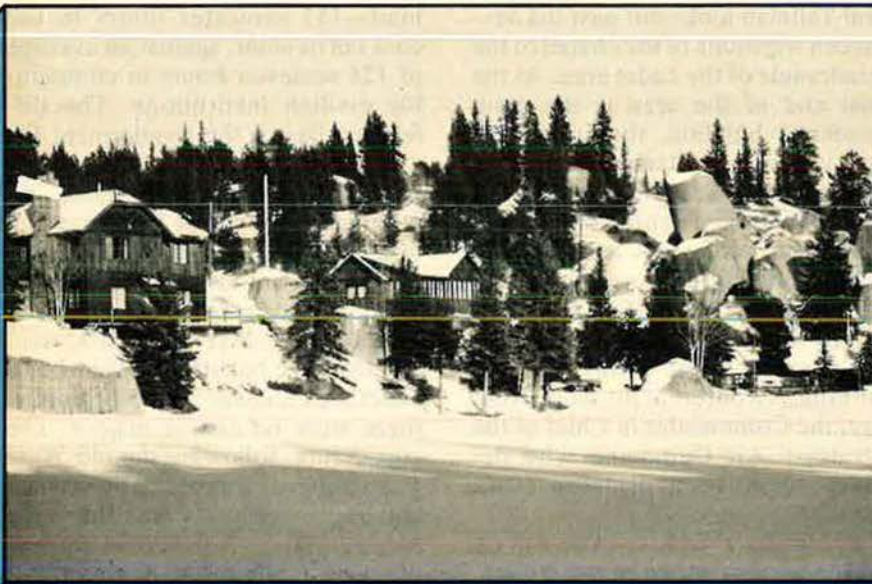
Classes no longer graduate with navigator wings, nor do the cadets see as much of the active Air Force—the “real Air Force,” as they put it—as in former times.

It is a tough school that has grown out of those early years, as the lights burning late at night in the dormitories testify. From time to time over the years there has been some questioning as to whether the academic load might not be too heavy, with too much emphasis on studies and high entrance scores and not enough on the military and physical side of things. The recent dismal football season, with Air Force losing both to Army and Navy as well as to almost everyone else, coming on the heels of other recent dismal seasons, has raised the question again. Losing football seasons are no joking matter, for it is football, not Congress, that un-

derwrites the rest of the Academy's athletic program. A losing team means empty seats and, worse yet, no televised games.

### A Sound Body

As we all know, college football at the championship and big-bowl level has become one of the anachronisms—there are less polite and more accurate words—of the American higher education scene. There is no real mystery about assembling a powerful football team, only a certain cynicism and a benevolent attitude toward scholasticism. Clearly, the Air Force Academy cannot aspire to a truly big-time football team and maintain its other high standards. At the same time, there is no statistical proof that Guggenheim or Rhode Scholars make any better Air Force officers than do good athletes.



*Farish Memorial Recreation Area (left) offers cadets riding, fishing, and snowmobiling. Below, a woman cadet is briefed before a jet orientation flight.*



*The Field House has facilities for basketball, ice hockey, and track. There also is a Cadet Gymnasium and 120 acres of outdoor playing fields.*



Somewhere in between, say the critics, lies the answer.

The Superintendent's job is not an easy one.

Actually, the Air Force Academy is, aside from football in recent years, a highly successful competitor in collegiate sports. The swimmers have a sparkling record, as do the gymnasts, the soccer team, and the pistol and rifle shooters. From time to time the hockey team scores a sensational victory over one of those teams made up of players, many of them Canadian, with professional ambitions. The basketball team, facing obstacles similar to the football program in this era of astronomical professional salaries and their consequent effect on college basketball, is beginning to look ahead to some successful years.

As for the Air Force Academy women, they are demolishing the opposition. With only three classes of women yet in residence, their intercollegiate record is spectacular. In basketball, for instance, they have lost only two games in two years, and one meet in swimming. There is obviously something basically competitive about a young woman who can survive that hard and essentially miserable first cadet summer.

All in all, then, the Academy does very well in athletics, especially in the kinds of athletics that do not lead to professional athletic careers. Unhappily, these are also the sports that do not attract big crowds, bring in revenue, and get the headlines in the sports pages. It is a problem well understood at the Air Force Academy.

### **Changing Philosophy**

Looking back at the formative years of this twenty-five-year-old school, one is struck by the attention directed at the business of turning out pilots. If it was not the entire philosophy of the founding fathers, it was certainly a dominant one. Ninety percent of the early entering classes had to be physically qualified for pilot training. It was almost axiomatic that most—practically all—of the cadets had their sights set on pilot training. A large percentage of the remainder would go to navigation school. One way or another flying training was to be the

first step after graduation for the great majority.

The years have seen some changes in that philosophy. Only sixty percent of the entering class need now be pilot-qualified. Since four years always sees some falling off here and there in twenty-twenty vision, the graduating classes can now expect to have less than sixty percent pilot-qualified. And even here, as a sort of sign of the times, there is a further loss to pilot training by some otherwise qualified cadets who choose not to go that route.

To some extent, this trend away from pilot training and a career closely tied to airplanes is simply a reflection of the trend in the Air Force itself. The old days, those wonderful old days when being a pilot meant being able to fly your whole active-duty life, are gone forever. There are no longer proficiency airplanes at Andrews to lighten the lives of the poor souls trapped in the Pentagon. Flying now is something reserved for those serving in flying jobs, and there are fewer and fewer of those jobs. Cadets know this, and it is reflected in the tentative way many of them look ahead to an Air Force career. It is also reflected, not so much in the attrition rate of the cadet wing itself but in the way this attrition makes itself felt.

In the long-ago days of prewar West Point, for instance, most of the attrition came from academic and disciplinary failures. Voluntary resignation was a very small statistic. To a great extent, this was also true in the early days of the Air Force Academy. Now, voluntary resignations are by far the largest factor in cadet attrition, running about thirty percent against a cumulative total of around thirty-eight percent losses for all causes. It is fair to assume that these voluntary resignations are tied to what cadets see, or think they see, down the road.

### **Liberated Authoritarianism**

These are difficult times for any enterprise that interferes with individual liberties and rights. By its very nature, the Air Force Academy finds itself in that category, an essentially authoritarian institution in a libertarian era. The

fact that it exercises a very liberated kind of authoritarianism is, to some young people, beside the point, and so the voluntary resignations will probably continue to be a major factor in the attrition rate. Another factor is undoubtedly the six-year service commitment that now follows pilot training. Again, in this easy-come era, commitments are something to be viewed with deep suspicion.

And yet, in refutation of that statement, there is the honor system, a hoary relic of simpler times, that has survived intact, with the cadets themselves its fiercest preservers. It is a system that gives these young men and women a common bond of trust in one another, and what better basis than that can there be for people in the military profession? It is a fragile system, one that can be destroyed if it is abused or made to do the work of the authorities. The authorities, from the superintendent on down, understand this wonderfully well.

One of the most remarkable events in the past twenty-five years has been the admission of women to this previously all-male institution, something not even remotely contemplated by the founding fathers back in those days after World War II. It is very much a sign of our changing times that this transformation took place with so little commotion. Beyond a certain amount of male chauvinistic griping at the idea of coeducation, the women have become, in the three years since they were first accepted, as unremarkable as women are on any campus. It will take some years before we will know whether or not this is the best way to provide women officers for the Air Force, but there is no arguing the success of the Academy's effort to admit women with the least possible disruption to the basic mission and routine. The experience thus far is encouraging. The women are good cadets, take their duties as well as their studies seriously, and seem to look forward, for the most part, to an Air Force career.

For the most part, they all do, men and women alike. The fact that an Air Force career is no longer as easily visualized as it was years ago is a complicating factor in a cadet's motivation toward that career. It

has, thus, become more important than ever for the Air Force to take a close and proprietary interest in its Academy. Unhappily, for reasons of economy and others that are not so evident, the interest somehow does not seem as intense as it was in the early days of the school. Perhaps it is simply a reflection of the fact that Academy graduates are not yet very numerous in the higher ranks. Still, if the Air Force Academy is to fulfill its destiny and have the sort of support its sister academies enjoy, the Air Force at large must come to look on this school as its own.

### A Summing Up

All things considered, we are a lucky nation to have such a school, and we owe a great deal to the vision of those men—Hap Arnold, Tooey Spaatz, Father Guthrie, all of them—who saw the need for an Air Force Academy. Some of their original ideas have, of course, been altered or even abandoned with the passing of time. But in those same years what has not changed?

Looking back to those years when this school was just an idea in the minds of some forward-looking

*Gen. T. R. Milton graduated from West Point in 1940. A bomber pilot in World War II, he subsequently served as Director of Operations at MATS (now MAC), Executive to the Secretary of the Air Force, Commander of 41st Air Division and of Thirteenth Air Force, Chief of Staff of TAC, and Comptroller of the Air Force. His combat decorations include the DSC, Silver Star, DFC, Bronze Star, Air Medal, and Purple Heart. Prior to his retirement in 1974, he was US Representative to the NATO Military Committee. Now a regular contributor to AIR FORCE Magazine as well as to other defense-related publications, General Milton lives in Colorado Springs.*

men, it is fair to wonder if everything has turned out the way they would have wanted it to. That it did not turn out exactly the way they visualized it would is clear enough, but that is just the way the world has gone. The founding fathers could not have foreseen the trauma of Vietnam and what it might do to young people's attitudes toward a military career. The fact that it had so little effect and that outstanding young people would continue to apply in record numbers would surely please those men. It is doubtful if they foresaw the change that would come, in those twenty-five years, to the Air Force itself. They were realistic fellows, however, and knew that plans, military or otherwise, rarely come off unchanged.

A fair guess is that they, Hap Arnold and all the rest, would be emi-

nently satisfied with what they brought about. So would Dwight Eisenhower who, together with Dr. Stearns of the University of Colorado when they were both university presidents, drafted the report that set the basic academic tone for the still-unborn institution. Aside from a few rocks in the road, it has been a steady ride for this Air Force Academy, one that has seen it take note of the rapidly changing mood of the country while holding fast to its original course.

The problems that have surfaced from time to time have been, on the whole, transitory. The Academy has not only weathered them but has emerged stronger from the experiences. The cheating scandal in 1965 was traumatic, no doubt about that, and it left a few scars. However, the years since have seen the honor system not only survive but become better—more deeply—understood. When the courts did away with compulsory religious services, there were visions of the famous landmark chapel becoming a mausoleum. Church attendance, after a temporary decline, has recovered most of the Cadet Wing. Beyond that, the services, being voluntary, have a higher degree of cadet participation and sheer joyfulness than was ever the case when cadets were marched to church.

Now, as the Academy begins its twenty-sixth year, there are more than 8,000 candidates for admission. There is a distinctly rising trend in the test scores and other attributes of this year's applicants, an encouraging sign of the Academy's growing nationwide reputation.

It deserves that reputation. There is no other school in the land that can offer more in the way of an education, a career, and stimulating associations, to say nothing of its scenery and its many diversions, than the Air Force Academy.

All in all, it has been a fine twenty-five years. ■



*In 1955, the first class of cadets selected the falcon as the Cadet Wing mascot.*

The sweptwing Republic F-84F Thunderstreak could carry a big load of conventional or nuclear ordnance and had no bad habits in the air. As a flight leader in a midwinter deployment to NATO, the author had a close call while . . .

# Flying the F-84F

BY MAJ. DOUGLAS K. EVANS, USAF (RET.)

**T**HE most fitting place to begin the exciting process of checkout in a new fighter is in the cockpit, so it was with a mixture of anticipation and relief that I was called from the midst of the MTD (Mobile Training Detachment) course to the flight line to fly the F-84F. I had flown the straight-wing F-84C some years before, but the F was sweptwinged and a new adventure.

First flights are great moments in the career of a fighter pilot. There's nothing in the flying business as challenging to one's imagination and confidence as strapping into a strange, winged powerhouse with a single seat.

I can't honestly say that we fighter pilots were overjoyed at the switch from the F-86F Sabrejet to the F-84F. However, our outfit was in the fighter-bomber business, and we were intrigued by the opportunity to handle a different airplane, a fighter, that is.

The Republic F-84F Thunderstreak was powered by the Wright J65, an American version of the British Sapphire engine, which initially put out 7,200 pounds of

thrust. In clean configuration, on a day of comfortable temperature, takeoff and climbout of the F were about average for fighters of the early 1950s. There were no surprises in its flight characteristics. But, in the fashion of the F-84 line, when grossing about 28,000 pounds with fuel tanks and other stores, takeoff roll for the F, particularly on a warm day, became a long gallop for the horizon.

In fairness, I must add that virtually all jets of the late '40s and early '50s, when used as bomb-haulers, were sadly underpowered. The early thrust-to-weight ratios were so dismal that the real thrills of the race into the jet age were along the ground, sweating out when you would be airborne.

Once in the air, the F-84F was very stable, with dependable handling qualities. The elevator and aileron trim seemed just right. The controls were not as sensitive as those of the F-86, so the maneuvering transition was rather a relaxing ride. After touchdown, aerodynamic braking was noticeably effective with the nose held well up for a

good portion of the landing roll. Also typical of the '84 line, an over-strenuous back-stick during rollout could generate expensive noises caused by a meeting of tailpipe and runway.

The few planes available for checkout were hard to keep in commission, so, after three quick hops in two days, I spent a week waiting to go to the Republic Aviation plant with some other pilots to ferry additional fighters. That flight out of Republic in December 1954 was my first with drop tanks. The runway seemed shorter, what with a parking lot off one end and a graveyard off the other.

Those of us with extensive fighter experience were immediately set to work getting our planes and squadrons into action on the variety of missions of which the '84 was capable. Early on, I participated in an ordnance display for visiting VIPs at our bombing range. There were diverse loads among the several planes involved. Mine happened to be loaded with a combination of bombs, napalm, and rockets. That wasn't a particularly heavy load,



Delivery of F-84Fs to both TAC and SAC began in 1954. The F had six .50 guns and could carry 6,000 pounds of ordnance. Some 1,300 were produced for NATO allies; the ANG flew the F until 1971.

"I never flew another plane as close to the ground at such speeds (nibbling Mach 1—and the grass) where a hiccup could result in disaster."



The F-84F could deliver various combinations of the bombs and rockets shown in the front row, or nuclear weapons using over-the-shoulder techniques. Its range could be extended by aerial refueling or by using the tanks shown above.

but it did have an oddball, asymmetrical appearance and, I thought, unusual drag potential. But once the plane parted from the earth, it carried all that assorted ironmongery to the target with the greatest of ease. It seemed to treat any load with nonchalance. One reason was the very wide spread in the main landing gear. That allowed fuel tanks or the heaviest ordnance to be carried close to the fuselage without interference to trim and balance—a great plus in the fighter-bomber trade.

As all '84F outfits found out to

their surprise or dismay, that same loading advantage became a disadvantage when the wide-tread gear was planted on wet or icy runways. The widely spaced main wheels and sensitive brake boost system made for deceptively easy, inadvertent, differential braking, even with "dainty" use of one's toes on the pedals—and who could be dainty while wearing flight boots? On a slick runway, all it took was for one wheel to brake a fraction before the other and the unfortunate pilot could be in a hopeless skid.

Without anyone really thinking about it, it seems that Republic Aviation sort of had a handle on the "area-rule" design when they built the F-84 line. The fuselages had slim contours and a distinctive baseball-bat appearance. When the nose went down in a dive, all '84s took off like greased toboggans. In the Thunderjet straight-wing series this meant keeping one eye on the airspeed redline, alert for speed brakes. In the Thunderstreak sweptwing series, it meant slipping through Mach 1 and zapping the countryside with a sonic boom far more easily than in the F-86. The excellence of trim and stability made it an ideal craft for those hot-rock, low-level passes so loved by fighter pilots, and a perfect plane for opening an air show. I never flew another plane as close to the ground at such speeds (nibbling Mach 1—and the grass) where a hiccup could result in disaster.

While we were busy with the transition program, pilots checking out were urged to keep up their power and airspeed in the landing traffic pattern. The tongue-in-cheek admonition at the time, especially for new pilots, was that the '84F was perhaps the first plane able to stall out while in a vertical dive if the throttle was suddenly reduced to idle.

### Close Call at Lajes

In 1955, my squadron, the 390th Fighter-Bomber Squadron (before the universal designation of tactical fighter), was selected to be the first TAC '84F unit for rotation duty with NATO.

When the time for our NATO deployment arrived, the weather outlook in Newfoundland was hardly cheerful. It rarely is in December. We flew nonstop, with aerial refueling, from England AFB, La., to Harmon AB, Newfoundland. Wet

“My last comment was, ‘Everybody gets his instrument check on this one. If you don’t pass, you won’t be able to make it up.’ ”

runways were bad enough for the F-84F, but the Harmon strip was a sheet of ice, and it was snowing. By some miracle we all got down with our fighters and pride unfractured.

Somewhere I had picked up a terrible cold, and after landing at Harmon, I went right to bed. I had to be sick to miss the partying that went on while the weather caused go, no-go juggling of our departure. I didn’t dare see a flight surgeon; a doctor wouldn’t have understood the situation and probably would have grounded me. In such a hairy situation as a mid-winter North Atlantic crossing in fighters, especially for a flight leader as I was, only two broken arms would be a plausible DNIF (Duty Not Involving Flying) excuse to your squadron mates. Anything less would so tarnish your honor you’d have no choice but hara-kiri.

At the predawn final briefing, the heavy snowfall appeared as solid fluorescent matter through the beams of floodlights. My last comment was, “Everybody gets his instrument check on this one. If you don’t pass, you won’t be able to make it up.”

Visibility in the blowing snow was so bad that a “Follow Me” vehicle had to lead each fighter to the runway starting point. No runup check could be performed—the brakes wouldn’t hold on the ice-covered pavement. It was just jam on the power and blast off into the blizzard and over Saint Georges Bay—each man alone, hoping to rendezvous on top of the storm. It was as big a stomach grabber as a combat mission.

Actually, my cold may have been just the thing that allowed me to get plane and self on the ground again in one piece, as we’ll see. After a prolonged and trying rendezvous with the tankers, my flight finally got its turn in the vicinity of Torbay. Then



*The Thunderstreak's excellent trim and stability made it a good firing platform. Here it launches rockets against a simulated enemy convoy at the Nellis AFB range. USAF F-84Fs served during the Cold War, but never were used in combat.*

there was the seemingly endless flight, struggling to top the cloud mass that covered the route to Lajes AB in the Azores Islands. Clear weather merely seems to give the endlessness of an ocean flight a more stark effect. To the single-seater pilot, an Atlantic crossing is miles and miles of miles and miles.

Our only navigational equipment was the radio compass, erratic in the storm and no help over the expanse of ocean. We flew 200-mile rhumb lines, with small heading changes at each line interval, hoping

that the winds would behave as forecasted or else the long and tedious heading hold would be worthless. To lessen the sinus and ear-block complications of a descent from high altitude, which I faced with my cold, I decided early to make a gradual letdown when approaching our destination.

Over that long ocean flight, no navigational check was available until close to the Azores, some 1,500 miles from Harmon AB. The first indication we were on course—and a welcome one it

was—came from the radio beacon at Flores, the first island en route to our destination on Terceira Island. When my radio compass pointed to that beacon, about 125 miles out, I was greatly relieved at how well we had stayed on course.

The sun had set on the short winter day so we were cruising in the dark, still on top of a high overcast. Once I got a compass swing on Flores to estimate my distance from Lajes AB, I decided to begin our letdown, and we penetrated the weather, throttling back with a comfortable rate of descent.

After we broke out of the overcast, lights were visible ahead and, though unfamiliar, marked our destination on Terceira. I timed the letdown to allow a long level entry into the traffic pattern for Lajes AB. In that way, speed brakes weren't needed till on the pitch to downwind. It was after putting the flap handle to "down" that I noticed my speed had stopped decreasing and the unsafe light was still glowing in the landing gear handle, also down.

The flap gauge showed zero flaps. My first thought was the plane's hydraulics. The system gauges told the bad news: Utility System (landing gear, flaps, speed brakes)—zero pressure. Primary System (flight controls)—failing pressure. This meant I had no speed brakes to reduce traffic pattern speed, no flaps to help in slow speed flight, and I had to blow the nose gear to get all wheels down and locked.

At the rate my flight control system pressure was bleeding off I knew I had only minutes left before I would lose control. The thought of bailing out on a pitch-black night, over an unfamiliar island with no air-sea rescue facilities, made me very eager to land on the one and only pass I had left. I gambled on a long, flat, final approach to clear the terrain, and attempted to keep my speed reasonable.

Without the help of speed brakes and flaps, I couldn't get my final to drop off below 180 knots, a blistering velocity for landing an empty F-84F. I came close to parting the hair of the island folks living in the town of Angra, off the approach end of the runway. As soon as the end of the runway was under me, I planted my plane, three-point.

*Maj. Douglas K. Evans, USAF (Ret.), flew F-86 Sabrejets in Korea, where he scored two kills and one probable. He described that experience for us in the article "My Love Affair With the Sabre" in the October '78 issue (p. 78). Major Evans later served as a fighter pilot on exchange duty with the Navy and Marine Corps, and in USAF's Aerospace Defense and Tactical Air Commands. Early in the Vietnam War, he helped establish the Forward Air Control program, flying L-19s with the VNAF. He retired in 1968 and now lives in Fort Myers, Fla.*

The landing roll was like riding a runaway locomotive down a lighted tunnel. It dawned on me then that my brake boost had also failed. As the brake pedals slowly died and collapsed forward, leaving only the tips of my toes in contact, my locomotive finally came to a halt. The nose intake obscured my view of the runway threshold lights that spelled "the end."

As if that hadn't been enough sweat, my stick locked on the taxiway, indicating total failure of the hydraulic flight controls. I thought about when that would have happened if I had not had a cold, and if I'd used my speed brakes to begin a steeper descent from high altitude.

The final shocker came the next day. I took a jeep ride to the end of the runway where I had barely stopped. It was truly "the end." A 180-foot cliff dropped down to the Atlantic. Waves crashed against the boulders at the base. In the dark, at least I had been spared that hair-raising view.

### **A Multinational Life**

In the three years that my outfit operated the F-84F, the aircraft underwent many modifications. The hydraulic system was completely changed, automatic-sequence ejection seats were provided, spoilers were installed in the wings to augment the ailerons and increase the rate of roll, and drag chutes were added under the tailpipe to reduce landing problems on wet or icy runways. Still later versions of the F had more powerful engines, putting out 7,800 pounds of thrust.

All of us who flew the '84 line were intrigued with the possibilities of the experimental F-84J. Only two planes became J versions, with the larger, 9,000-pounds-of-thrust GE J73 engine. All that power should have made a hot plane out of such a clean design, but the expense was

considered excessive and the project was dropped.

The F-84H also got our attention in those years. It was another experimental version with a turboprop up front. However, like other turboprop fighter proposals, it could find no real favor and was dropped.

The reconnaissance version of the sweptwing '84 line, the RF-84F, had a solid nose for camera housing and side intakes for airflow to the engine. The RF was named the Thunderflash. An odd departure of the reconnaissance version was the K model, conceived with global girdling in mind, to be clutched under the belly of special B-36 bombers. The RF-84K had a retractable grappling device, or hook, installed in the nose to join with the B-36, and a drooped elevator slab to clear the B-36 bomb bay. I never knew anyone who was particularly keen on that scheme, and it was eventually canceled.

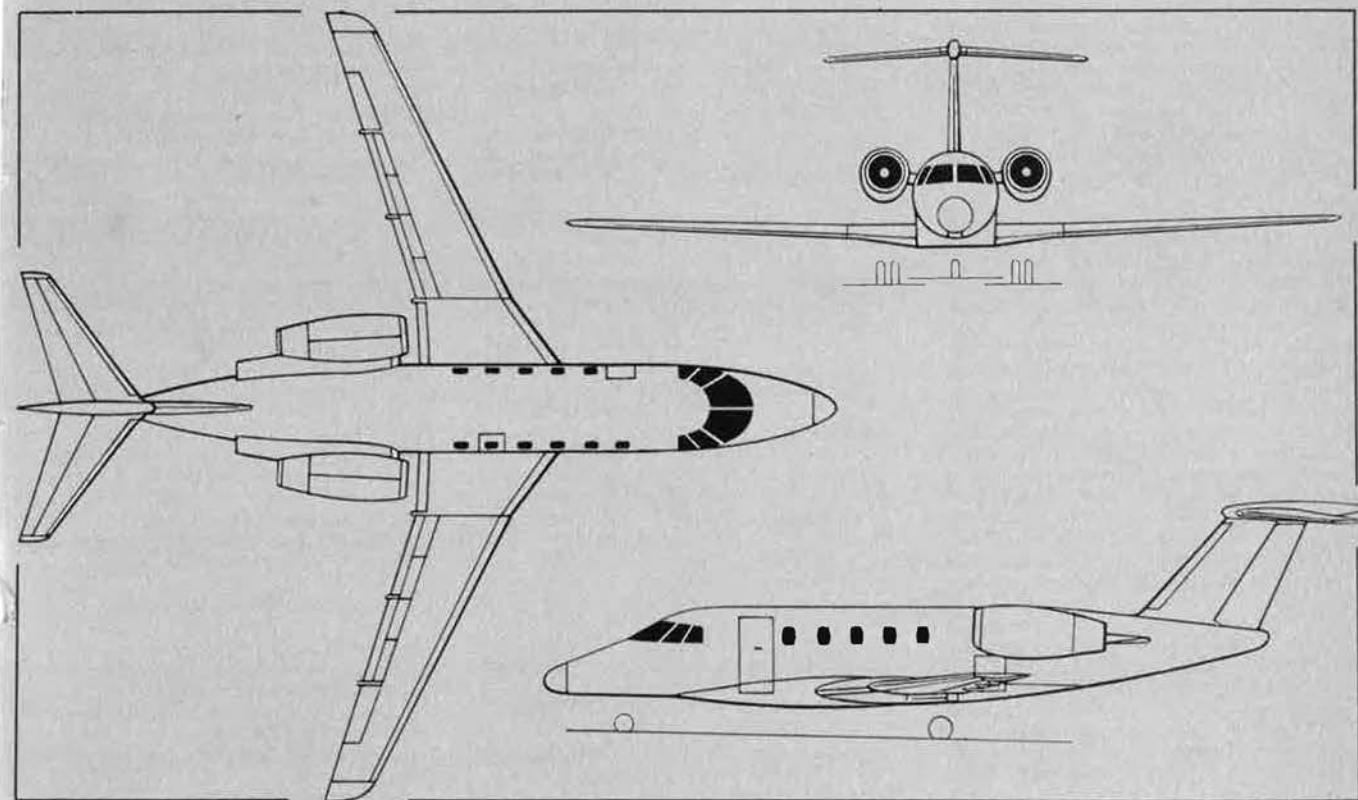
In all, 2,711 F-84F Thunderstreaks and 715 RF-84F Thunderflashes were produced and served worldwide in many air forces. Most of the late-model F-84Fs went to our allies in Europe where the F became, for many years, the standard NATO fighter-bomber. The earlier versions that I flew were eventually transferred to the Air National Guard, which used them for many years.

After all the modifications, the reliability and availability of the F became so commonplace as to be taken for granted. It was shortly after the US Air Force had worked up to that pleasant stage that we had to switch to the next generation of tactical fighters with all the attendant initiation pains. While wearing the USAF insignia, the F-84F had flown through its duty years without getting into a shooting war. But it carried a big load, successfully, through a critical period of the cold war. ■

# JANE'S

ALL THE WORLD'S AIRCRAFT SUPPLEMENT

APRIL 1979



Cessna Citation III with modifications embodied in prototype, including new T-tail (Pilot Press)

## CESSNA

CESSNA AIRCRAFT COMPANY: Head Office and Works: Wichita, Kansas 67201, USA

### CESSNA CITATION III

While retaining some general configuration similarity with earlier versions of the Citation series, the Citation III, which is scheduled for initial production delivery in early 1981, is a very different aeroplane. The most noticeable external difference is a T-tail, which has now been adopted to obtain the best possible efficiency from the NASA-developed supercritical wing. Several other improvements have been incorporated in the design since the initial details were released in early 1978.

One which results from continued wind tunnel testing consists of an undersurface wing-to-fuselage fairing, which extends from a point beneath the flight deck almost to the rear of the engine nacelles. Dual wheels on the main landing gear units, and increases in cabin height and volume, are included in these changes. Single-point refuelling and fuel heaters are optional. Instead of using an installed APU, one engine is to be run at idling power on the ground to supply essential services. An extended-range version of the Citation III will also be available, with additional fuel in fuselage tanks.

First flight of the Citation III is scheduled for May 1979. In late 1978 a Garrett AiResearch TFE 731 turbofan was being test flown in the port nacelle of a

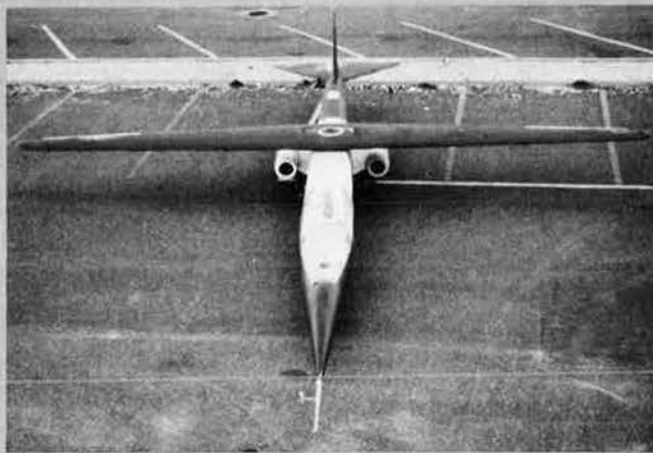
Citation I, and certification of the TFE 731-3-100S engine to power production aircraft was anticipated by June 1979.

All available details follow:

**TYPE:** Twin-turbofan medium/long-range executive transport.

**WINGS:** Cantilever low-wing monoplane. Swept wing of NASA-developed supercritical section. Conventional two-spar structure of light alloy, utilising bonded and riveted construction. Anticing of wing leading-edges. Hydraulically-actuated trailing-edge flaps and spoilers.

**FUSELAGE:** Conventional semi-monocoque light alloy structure of circular cross-section; fail-safe in pressurised area.



The NASA Ames AD-1 oblique-wing research aircraft, nearing completion in January 1979. These photographs show it with the wing in conventional and skewed positions

**TAIL UNIT:** Conventional cantilever T-tail structure of light alloy, with swept vertical and horizontal surfaces. Anti-icing of tailplane leading-edges.

**LANDING GEAR:** Hydraulically-retractable tricycle type. Twin wheels on main units, single wheel on hydraulically-steerable nose unit. Oleo-pneumatic shock-absorbers. Hydraulic anti-skid braking system with pneumatic backup.

**POWER PLANT:** Two Garrett AiResearch TFE 731-3-100S turbofan engines, each rated at 16.24 kN (3,650 lb st) for take-off, mounted in pod on each side of rear fuselage. Hydraulically-operated thrust reversers optional. Two independent fuel systems, with integral tanks in each wing; max normal capacity 3,746 litres (990 US gallons). Extended-range option has 681 litre (180 US gallon) fuel cell in aft fuselage. Single-point pressure refuelling optional (standard with extended-range version). Engine intake anti-icing system.

**ACCOMMODATION:** Crew of two on separate flight deck. Eight to thirteen passengers. Standard interior has four forward-facing and four aft-facing individual seats, with toilet at rear of cabin. Storage in fuselage nose for crew baggage. Main baggage space in tailcone. Aft fuselage fuel cell for extended-range option reduces baggage capacity by 0.425 m<sup>3</sup> (15 cu ft). Windscreen anti-icing.

**SYSTEMS:** Environmental control system, with separate control of flight deck and cabin conditions. Direct engine bleed pressurisation system, with nominal pressure differential of 0.65 bars (9.4 lb/sq in), provides 2,500 m (8,000 ft) cabin altitude to max certificated altitude. Dual parallel electrical buses. Hydraulic system of 207 bars (3,000 lb/sq in) with backup system to provide emergency power. Oxygen systems for crew and passengers.

**AVIONICS:** Standard avionics package provides full Category 2 capability, and includes an integrated flight director autopilot with VNAV, dual nav/com and RMI, transponder, DME, ADF, and weather radar. A wide range of optional avionics is available to customer's requirements.

**DIMENSIONS, EXTERNAL:**

Wing span	16.26 m (53 ft 4 in)
Wing aspect ratio	8.94
Length overall	16.83 m (55 ft 2½ in)
Height overall	5.18 m (17 ft 0 in)
Wheel track	2.87 m (9 ft 5 in)
Wheelbase	6.50 m (21 ft 4 in)

**DIMENSIONS, INTERNAL:**

Cabin: Length, front to rear bulkhead	
	7.01 m (23 ft 0 in)
Max width	1.73 m (5 ft 8 in)
Baggage capacity: nose	0.28 m <sup>3</sup> (10 cu ft)
aft fuselage	2.10 m <sup>3</sup> (74 cu ft)

**AREA:**

Wings, gross	29.0 m <sup>2</sup> (312 sq ft)
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**WEIGHTS (estimated):** A: standard. B: extended-range version:

Certificated weight empty:	
A	4,230 kg (9,325 lb)
B	4,264 kg (9,400 lb)

**Max T-O weight:**

A	7,711 kg (17,000 lb)
B	8,301 kg (18,300 lb)

**Max landing weight:**

A, B	7,121 kg (15,700 lb)
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**Max zero-fuel weight:**

A, B	5,897 kg (13,000 lb)
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**PERFORMANCE (estimated, at max T-O weight of 7,711 kg; 17,000 lb unless stated otherwise):**

Max cruising speed at average cruise weight of 6,214 kg (13,700 lb)

469 knots (869 km/h; 540 mph)

Stalling speed, flaps and gear down, at max landing weight

88 knots (164 km/h; 102 mph) CAS

Max rate of climb at S/L 1,615 m (5,300 ft)/min

Rate of climb at S/L, one engine out:

A 495 m (1,625 ft)/min

B 445 m (1,460 ft)/min

Certificated ceiling 15,240 m (50,000 ft)

Ceiling, one engine out 9,525 m (31,250 ft)

FAA T-O field length at S/L 1,190 m (3,900 ft)

Landing distance at max landing weight

945 m (3,100 ft)

Range, with two crew and four passengers, standard fuel, allowances for T-O, climb, descent, and 45 min reserves

2,496 nm (4,626 km; 2,875 miles)

Range, with two crew and ten passengers, standard fuel, allowances as above

1,902 nm (3,524 km; 2,190 miles)

Range, with two crew and four passengers, extended-fuel capacity, fuel allowances as above

3,000 nm (5,555 km; 3,450 miles)

Range, with two crew and ten passengers, extended fuel capacity, fuel allowances as above

2,388 nm (4,426 km; 2,750 miles)

**AIC**

AMES INDUSTRIAL CORPORATION; Address: 55 Orville Drive, Bohemia, New York 11716, USA

**NASA/AMES AD-1 OBLIQUE-WING RESEARCH AIRCRAFT**

Ames Industrial Corporation announced on 15 January 1979 that the company had almost completed construction of the AD-1 oblique-wing research aircraft for which it had received a fixed-price contract from NASA on 20 February 1978. Designated AD-1 (Ames/Dryden-1), this pivoting-wing research aircraft emanated from a concept from NASA's Dryden Flight Research Center at Edwards, California. It has been built to serve as a low-cost vehicle to explore the fundamental aspects of piloting such an aircraft.

At low flight speeds the wing will be positioned conventionally, providing efficient operation for take-off, low-speed flight, and landing. For high-speed flight the wing will be pivoted to form an oblique angle of up to 60° with the fore and aft centreline of the aircraft's fuselage, reducing drag and permitting increased speed and range for the same fuel consumption.

Detail design for the manufacture of the AD-1

was carried out by Mr Burt Rutan, who is well known for the VariViggen and VariEze light aircraft designed for construction by homebuilders. Completion of the AD-1 was scheduled for mid-February 1979, with the first flight to follow shortly.

**TYPE:** Oblique-wing research aircraft.

**WINGS:** Pivoting cantilever high-wing monoplane, with wing constructed in one piece. Thickness/chord ratio 12%. No dihedral. Incidence 2° at root, 0° at tip. No sweepback. Composite structure based on a foam core with glassfibre/epoxy laminate covering. Conventional manually-operated ailerons of similar construction. No trailing-edge flaps. Electrically-operated trim tab in starboard aileron.

**FUSELAGE:** Composite semi-monocoque structure, utilising foam core with glassfibre/epoxy laminated covering for bulkheads and skin.

**TAIL UNIT:** Conventional tail unit with cantilever fixed-incidence tailplane. Fixed surfaces and control surfaces constructed on a foam core with glassfibre/epoxy laminate covering. Electrically-operated trim tab in port elevator. All controls manually operated.

**LANDING GEAR:** Non-retractable tricycle type, with glassfibre/epoxy laminate cantilever struts manufactured by Jiran Glider Repairs. Single wheel on each unit. Cleveland 127 mm (5 in) main wheels and tyres, pressure 6.56 bars (95 lb/sq in). Nosewheel tyre pressure 3.11 bars (45 lb/sq in). Cleveland brakes.

**POWER PLANT:** Two 0.98 kN (220 lb st) Ames Industrial Corporation TRS 18-046 turbojet engines, mounted on short mid-set stub wings on each side of fuselage, with their intakes just aft of the leading-edge of the pivoting wing. Two fuel tanks in fuselage with combined capacity of approx 303 litres (80 US gallons). Refuelling points on fuselage upper surface, one forward and one aft of the wing. Oil capacity 1.44 litres (0.38 US gallons).

**ACCOMMODATION:** Seat for pilot only, beneath transparent cockpit canopy hinged on starboard side. Accommodation ventilated.

**SYSTEMS:** Electrical system powered by two 600W engine-driven DC generators, 28V SAFT nickel-cadmium battery, Scott Executive Mk II oxygen system.

**DIMENSIONS, EXTERNAL:**

Wing span	9.75 m (32 ft 0 in)
Wing chord at root	1.31 m (4 ft 3.4 in)
Wing chord at tip	0.47 m (1 ft 6.4 in)
Length overall, incl nose probe	11.68 m (38 ft 4 in)

Width, wing skewed	4.93 m (16 ft 2 in)
Height overall	1.98 m (6 ft 6 in)
Tailplane span	2.44 m (8 ft 0 in)
Wheel track	0.99 m (3 ft 3 in)
Wheelbase	4.27 m (14 ft 0 in)

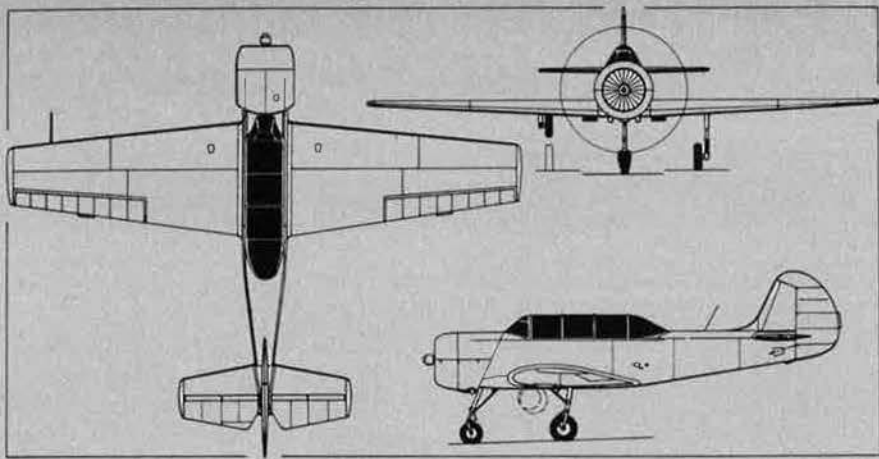
**DIMENSIONS, INTERNAL:**

Cockpit: Length	
	1.52 m (5 ft 0 in)
Max width	0.57 m (1 ft 10.3 in)
Max height	0.84 m (2 ft 9 in)

**AREAS:**

Wings, gross	8.64 m <sup>2</sup> (93 sq ft)
Vertical tail surfaces (total)	1.29 m <sup>2</sup> (13.9 sq ft)





**Yakovlev Yak-52 tandem two-seat primary trainer (Pilot Press)**

Horizontal tail surfaces (total)  
2.46 m<sup>2</sup> (26.5 sq ft)

WEIGHT (estimated):  
Max T-O weight 907 kg (2,000 lb)

### YAKOVLEV

ALEXANDER SERGEVICH YAKOVLEV DESIGN BUREAU: USSR

Evolution of a new generation of training and sporting aircraft from the veteran Yak-18 began with the Yak-18T. First exhibited at the 1967 Paris Air Show, this has an all-metal semi-monocoque rear fuselage, instead of the former fabric-covered steel tube structure, and an enclosed four-seat cabin. By the time it entered service as the standard basic trainer at Aeroflot flying schools, it had also been re-engined with the more powerful 269 kW (360 hp) Vedenev M-14P, as used in the Kamov Ka-26 helicopter.

Next to appear was the Yak-50 single-seat aerobatic aircraft, which took first and second places in the men's event, the team prize, and first five places in the women's event at the 1976 World Aerobatic Championships. In this case, the configuration was even closer to that of the Yak-18PS, with tailwheel landing gear, but was updated in significant respects. Overall dimensions were reduced; control surface hinge-lines were moved to keep control forces light; and overall structural strength was increased by switching entirely to metal covering. Like the Yak-18T, the Yak-50 has a semi-monocoque rear fuselage and M-14P engine; the cantilever tailplane represents a further refinement of the well-proven basic design, and the Yak-18's wing centre-section is deleted.

Stage three involves replacement of the basic

two-seat Yak-18, which has been the standard *ab initio* trainer for Soviet military pilots for more than 30 years. Announced in late 1978, the Yak-52 is a tandem-cockpit variant of the Yak-50, with unchanged span and length, but with a semi-retractable tricycle landing gear. Although aesthetically unattractive, this last feature is intended to reduce damage in a wheels-up landing.



The semi-retractable landing gear of the Yak-52 is well shown in this photograph

Yakovlev has believed for many years that aeroplanes to be flown by young people should be designed by members of Komsomol youth brigades and light aircraft enthusiasts, under experienced leadership. The enthusiasm engendered by this policy led to first flight of the prototype Yak-52

less than a year after its design was started. Flight testing was then undertaken by pilots qualified as Soviet Masters of Sport, as well as professional test pilots. Production may be entrusted to the Romanian aircraft industry, under the COMECON (Council for Mutual Economic Assistance) programme.

### YAKOVLEV Yak-52

**TYPE:** Tandem two-seat piston-engined primary trainer.

**WINGS:** Cantilever low-wing monoplane of single-spar stressed-skin all-metal construction. Each wing comprises a single straight-tapered panel, attached directly to the side of the fuselage. Fabric-covered slotted ailerons. Light alloy split trailing-edge flaps. Ground-adjustable tab on each aileron.

**FUSELAGE:** Conventional light alloy semi-monocoque structure.

**TAIL UNIT:** Cantilever light alloy structure. Fixed surfaces metal covered; control surfaces fabric covered. Horn-balanced rudder, with ground-adjustable tab. Mass-balanced elevators. Controllable tab in port elevator.

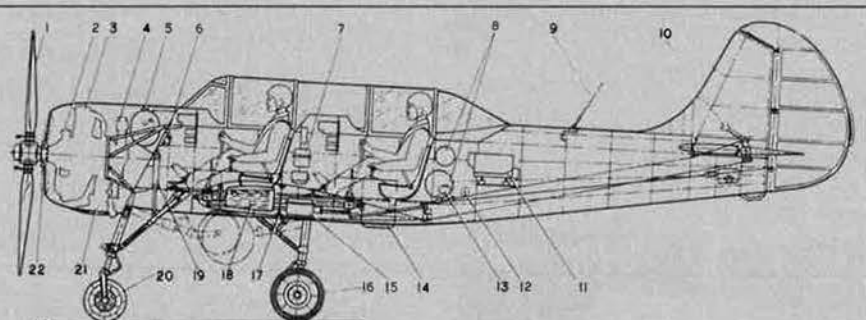
**LANDING GEAR:** Semi-retractable tricycle type, with single wheel on each unit. Pneumatic retraction, nosewheel rearward, main units forward. All three wheels remain fully exposed to airflow, against the undersurface of the fuselage and wings respectively, to offer greater safety in the

event of a wheels-up emergency landing. Oleopneumatic shock-absorbers. Main-wheel tyre size 500 x 150; nosewheel tyre size 400 x 150. Pneumatic brakes. Skis can be fitted in place of wheels for Winter operations, permissible at temperatures down to -42°C.

**POWER PLANT:** One 269 kW (360 hp) Vedenev M-14P nine-cylinder air-cooled radial engine, driving a two-blade variable-pitch propeller type V-530TA-D35, without spinner. Louvres in front of cowling to regulate cooling. Two-part cowling, split on horizontal centreline. Two fuel tanks, in wing roots forward of spar, each with capacity of 65 litres (14.25 Imp gallons). Additional tank of 5.5 litres (1.25 Imp gallons) capacity supplies engine during inverted flight. Oil capacity 20 litres (4.5 Imp gallons).

**ACCOMMODATION:** Tandem seats for pupil and instructor (at rear) under long 'glasshouse' canopy, with separate rearward-sliding hood over each seat. Seats and dual flying controls are adjustable. Sides of cockpit have a soft synthetic lining. Heating and ventilation standard.

**SYSTEMS:** No hydraulic system. Independent main and emergency pneumatic systems, for flap actuation, landing gear retraction, engine starting, and wheel brake control. Pneumatic systems supplied by two compressed air bottles, mounted behind rear seat and recharged in flight by an AK-50T compressor. GSR-3000M engine-driven generator supplies 27V electrical system. Battery in port wing.



- |   |   |  |
|---|---|--|
| 1 Type V-530TA-D35 variable-pitch propeller | 8 Compressed air bottles for pneumatic system | 15 Battery (in port wing)                      |
| 2 Type R-2 regulator                        | 9 Whip aerial for radio                       | 16 Main wheel, tyre size 500 x 150             |
| 3 Vedenev M-14P engine                      | 10 Elevator control lever with mass balance   | 17 Wing main spar                              |
| 4 GSR-3000M electrical generator            | 11 Nav/com equipment                          | 18 Wing fuel tank                              |
| 5 Oil tank                                  | 12 Pneumatic ground servicing point           | 19 Pneumatic retraction jack for nosewheel leg |
| 6 Electrical junction box                   | 13 Electrical ground supply socket            | 20 Nosewheel, tyre size 400 x 150              |
| 7 Navigation and flight control equipment   | 14 Radio compass antenna                      | 21 Heated carburettor                          |
|   |   | 22 Louvres to regulate engine cooling          |

Diagram shows details of the Yakovlev Yak-52 primary trainer

**ELECTRONICS AND EQUIPMENT:** Dual engine and flying instruments. Equipment includes GMK-1A gyro-compass, ARK-15M automatic radio compass, Landysh-5 VHF com, and SPU-9 intercom.

**DIMENSIONS, EXTERNAL:**

Wing span 9.50 m (31 ft 2 in)  
 Length overall 7.676 m (25 ft 2 3/4 in)  
 Height overall 2.95 m (9 ft 8 1/4 in)  
 Propeller diameter 2.40 m (7 ft 10 1/2 in)

**AREA:**

Wings, gross 15.00 m<sup>2</sup> (161.5 sq ft)

**WEIGHTS AND LOADINGS:**

Basic operating weight 1,000 kg (2,205 lb)  
 Max T-O weight 1,290 kg (2,844 lb)  
 Max wing loading 86.0 kg/m<sup>2</sup> (17.61 lb/sq ft)  
 Max power loading 4.80 kg/kW (7.90 lb/hp)

**PERFORMANCE:**

Never-exceed speed 194 knots (360 km/h; 223 mph)  
 Max level speed 154 knots (285 km/h; 177 mph)  
 Landing speed 60 knots (110 km/h; 69 mph)  
 Max rate of climb at S/L 600 m (1,970 ft)/min  
 Service ceiling 6,000 m (19,700 ft)  
 T-O run 170 m (558 ft)  
 Landing run 200 m (656 ft)  
 Range with max fuel 297 nm (550 km; 341 miles)  
 Endurance with max fuel 2 h 50 min  
 g limits +7; -5

**TRIDENT**

TRIDENT AIRCRAFT LIMITED: Address: PO Box 2428, Sidney, British Columbia V8L 3Y4, Canada

**TRIDENT TR-1 TRIGULL**

Design of the Trigull started in Canada in July 1971. The first prototype (CF-TRI-X), powered by a 212.5 kW (285 hp) Teledyne Continental Tiara engine, flew for the first time on 5 August 1973. A second prototype made its first flight on 2 July 1976, and a third airframe was completed for static tests. Certification from the Canadian Dept of Transport and the FAA was received on 28 October and 16 December 1976 respectively. The aircraft meets the requirements of FAR Pt 23 up to amendment 13 for strength and flying qualities.

Production of the Trigull has begun, and first deliveries are scheduled for June 1980, from new facilities near Victoria, Vancouver Island. Trident is to undertake all assembly work, but may subcontract the manufacture of some components.

**TYPE:** Six-seat light amphibian.

**WINGS:** Cantilever high-wing monoplane. Wing section NACA 23015R-4 (modified). Dihedral 2° from roots. Incidence 2° 15'. No sweepback. Two-spar aluminium (2024-T3) stressed-skin fail-safe structure, of constant chord, with drooped leading-edges. Electrically-operated

single-slotted aluminium Fowler flap and Frise-type aileron on each trailing-edge. Ground-adjustable tab on port aileron.

**FUSELAGE:** Flying-boat type, with single-step hull and rear boom to support tail unit. Conventional semi-monocoque structure. Cabin, above the boat hull and forward of the engine pylon, is of glassfibre/foam sandwich. Engine cowling panels and doors are of glassfibre; wingtip float bottoms and other fairings of ABS plastics.

**TAIL UNIT:** Cantilever type, of 2024-T3 aluminium stressed-skin construction, with single sweptback fin and rudder. Variable-incidence tailplane, actuated by screwjack, with electrical trim. Balanced elevator, with tips of ABS plastics. Trim tab on rudder.

**LANDING GEAR:** Fuselage hull and independently retractable wingtip floats. Manually retractable water rudder, extending from air rudder. Retractable tricycle-type gear for operation on land, with single wheel on each unit. Electrical retraction of floats, hydraulic retraction of wheeled gear. Main wheels retract outward into wings, nosewheel (which is steerable) upward to lie semi-recessed in nose to act as bumper. Oleo-pneumatic shock-absorbers. Cleveland hydraulic disc brakes and parking brake. Main wheels and tube-type tyres size 7.00-6, nosewheel tyre size 6.00-6. Tyre pressure 2.41 bars (35 lb/sq in).

**POWER PLANT:** One 223.5 kW (300 hp) Lycoming IO-540-M1A5D flat-six fuel-injection engine, driving a Hartzell three-blade constant-speed reversible-pitch metal pusher propeller. A 261 kW (350 hp) turbocharged Lycoming TIO-540-J2BD engine is to be offered optionally. Fuel in single bag-type tank in lower hull, capacity 378 litres (100 US gallons). Refuelling point in hull. Oil capacity 11.4 litres (3 US gallons).

**ACCOMMODATION:** Seating for pilot and up to five passengers, in three pairs, in enclosed, heated, ventilated, and soundproofed cabin. Access via large forward-hinged door on each side and centre-hinged bow door on starboard side. Space for 68 kg (150 lb) of baggage aft of cabin, in compartment with restraint net, tiedown points, and exterior lockable door. Dual controls optional. Alternative layouts available, for use as ambulance (one stretcher and one medical attendant in addition to pilot) or freighter.

**SYSTEMS:** Hydraulic system for landing gear actuation; manually operated standby pump. Electrical system includes 28V 50A alternator, 24V battery, and 28V voltage regulator.

**AVIONICS AND EQUIPMENT:** Basic VFR and IFR instrumentation standard. Radio and other avionics to customer's specification. Standard equipment includes cabin speaker, electric clock, magnetic compass, instrument panel glare shield, sensitive altimeter, outside air temperature gauge, rate of climb indicator, audible stall warning indicator, turn co-ordinator, flap position indicator, landing gear position indicator lights and audible warning indicator, aileron and elevator

control locks, instrument post lights, cabin carpeting, pilot's storm window, windscreens defroster, overhead dome light, map pockets, inertia-reel shoulder harness for crew, front and rear adjustable cabin ventilators, tiedown and docking rings, landing/strobe/navigation lights, and tow-bar. Optional equipment includes anchor light, cabin cargo floor, courtesy lights, ELT, engine winterisation kit, fire extinguisher, first aid kit, two floor baggage containers, passenger headrests, microphone and headset, portable oxygen system, propeller spinner, quick-drain oil valve, rear bench seat with lap belts, seaplane operating kit, and tinted windows.

**DIMENSIONS, EXTERNAL:**

Wing span: floats up 12.73 m (41 ft 9 in)  
 floats down 11.84 m (38 ft 10 in)  
 Wing chord, constant 1.83 m (6 ft 0 in)  
 Wing aspect ratio: floats up 7.11  
 floats down 6.55  
 Length overall, wheels down 8.94 m (29 ft 4 in)  
 Height overall 3.81 m (12 ft 6 in)  
 Hull: Max width 1.22 m (4 ft 0 in)  
 Elevator span 4.70 m (15 ft 5 in)  
 Wheel track 3.66 m (12 ft 0 in)  
 Wheelbase 3.68 m (12 ft 1 in)  
 Propeller diameter 2.08 m (6 ft 10 in)  
 Passenger doors (each): Height 1.04 m (3 ft 5 in)  
 Width 1.036 m (3 ft 4.8 in)  
 Bow door (stbd): Height 0.99 m (3 ft 3 in)  
 Width 0.70 m (2 ft 3.4 in)  
 Baggage compartment door:  
 Height 0.39 m (1 ft 3.4 in)  
 Width 0.50 m (1 ft 7.7 in)

**DIMENSIONS, INTERNAL:**

Cabin: Max length 2.46 m (8 ft 0.8 in)  
 Max width 1.19 m (3 ft 11 in)  
 Max height 1.275 m (4 ft 2.2 in)  
 Volume (cargo) 3.03 m<sup>3</sup> (107 cu ft)  
 Aft baggage compartment volume 0.36 m<sup>3</sup> (12.9 cu ft)

**AREAS:**

Wings, gross: floats up 22.78 m<sup>2</sup> (245.2 sq ft)  
 floats down 21.39 m<sup>2</sup> (230.2 sq ft)  
 Ailerons (total) 0.89 m<sup>2</sup> (9.6 sq ft)  
 Trailing-edge flaps (total) 4.11 m<sup>2</sup> (44.2 sq ft)  
 Fin 2.91 m<sup>2</sup> (31.3 sq ft)  
 Rudder 0.91 m<sup>2</sup> (9.8 sq ft)  
 Tailplane 2.75 m<sup>2</sup> (29.6 sq ft)  
 Elevators (total) 2.44 m<sup>2</sup> (26.3 sq ft)

**WEIGHTS AND LOADINGS:**

Basic operating weight, empty 1,134 kg (2,500 lb)  
 Max T-O weight 1,723 kg (3,800 lb)  
 Max wing loading:  
 floats up 75.64 kg/m<sup>2</sup> (15.50 lb/sq ft)  
 floats down 80.57 kg/m<sup>2</sup> (16.51 lb/sq ft)  
 Max power loading 7.70 kg/kW (12.67 lb/hp)

**PERFORMANCE (at max T-O weight):**

Never-exceed speed 183 knots (339 km/h; 211 mph)  
 Max level speed at S/L 148 knots (274 km/h; 170 mph)  
 Max cruising speed (75% power) at 1,830 m (6,000 ft) 140 knots (259 km/h; 161 mph)  
 Cruising speed at 3,050 m (10,000 ft):  
 65% power 136 knots (252 km/h; 157 mph)  
 60% power 131 knots (243 km/h; 151 mph)  
 45% power 107 knots (198 km/h; 123 mph)  
 Stalling speed, gear or floats down, power off 50 knots (93 km/h; 58 mph) CAS  
 Stalling speed, gear and floats up, power off 56 knots (104 km/h; 64.5 mph) CAS  
 Max rate of climb at S/L 326 m (1,070 ft)/min  
 Max rate of climb at 3,050 m (10,000 ft) 168 m (550 ft)/min  
 Service ceiling 5,490 m (18,000 ft)  
 T-O run at S/L, ISA: from land 275 m (900 ft)  
 from water 408 m (1,340 ft)  
 T-O to 15 m (50 ft) at S/L, ISA:  
 from land 503 m (1,650 ft)  
 from water 615 m (2,015 ft)  
 Landing from 15 m (50 ft) at S/L, ISA:  
 on land 485 m (1,590 ft)  
 on water 415 m (1,360 ft)  
 Landing run at S/L, ISA: on land 265 m (870 ft)  
 on water 238 m (780 ft)  
 Range with max usable fuel and 317.5 kg (700 lb)



Trident TR-1 Trigull prototype, with wingtip floats retracted



Above: Special missions Learjet 35A, with Hayes International TGX-1 visually-augmented target under starboard wing and Interdyne Corporation LJ-25 sonobuoy/flare dispenser under port wing. Right: Loading LUU-2B flares into the Learjet's LJ-25 dispenser

payload, incl pilot and allowances for T-O, climb, cruise, descent, and landing, plus 45 min reserves:

- 75% power at 1,830 m (6,000 ft)  
760 nm (1,408 km; 875 miles)
- 65% power at 3,050 m (10,000 ft)  
825 nm (1,529 km; 950 miles)
- 60% power at 3,050 m (10,000 ft)  
868 nm (1,609 km; 1,000 miles)
- 45% power at 3,050 m (10,000 ft)  
977 nm (1,810 km; 1,125 miles)
- Range with max payload, reserves as above  
109 nm (201 km; 125 miles)

and display information provided by the infra-red scanner, radar, and television cameras. Optional features available to enhance the capability of this sea patrol aircraft include a drop hatch for rescue supplies, camera port, sonobuoy system for anti-submarine warfare, and external lights for surface illumination.

Multi-mission capability for the Learjet 35A has dictated the company's selection of the Alkan 165B ejector rack: it is able to carry, drop, or launch a variety of external stores which can include sonobuoys, flares, electronic countermeasures pods, reconnaissance cameras and sensors, weapons for practice missions, smoke markers, chemical dispensers, rescue pods, targets, and side-looking airborne radar (SLAR).

It is reported that important weight savings have been made in the basic aircraft, details of which can be found in the 1978-79 *Jane's*.

31 will prove to be a strong competitor in this market.

Developed from the experience gained by operation of earlier examples of the Jetstream, this new model will be powered by two Garrett AiResearch TPE 331 turboprop engines, and will be available in three versions:

**Commuter.** Basic version, designed to carry 18/19 passengers and baggage, and able to operate three 87 nm (160 km; 100 mile) stage lengths without refuelling.

**Corporate.** Executive version, designed for eight to ten passengers, and able to carry eight passengers for 870 nm (1,610 km; 1,000 miles).

**Special.** Intended for military operation, and specialist roles such as airfield calibration, resources survey and protection.

It is intended to obtain FAA certification to FAR Pt 25; the Jetstream 31 will qualify for the currently proposed amendment to FAR Pt 23, and also the longer-term proposal for FAR Pt 24 which applies to commuter airlines. The first prototype is scheduled to fly in late 1979, and initial production deliveries will be made in 1981. All available details follow:

**TYPE:** Light commuter/executive transport.

**WINGS:** Cantilever low-wing monoplane. Wing section NACA 63A418 at root, NACA 63A412 at tip. Dihedral 7° from roots. Incidence 2° at root, 0° at tip. Sweepback 0° 34' at quarter-chord. Aluminium alloy fail-safe structure. Aluminium alloy manually-operated Frise-type ailerons. Hydraulically-operated aluminium alloy double-slotted flaps. No slats or leading-edge flaps. Trim tab in each aileron. Goodrich pneumatic rubber-boot de-icing system for leading-edges.

**FUSELAGE:** Conventional aluminium alloy semi-monocoque fail-safe structure, with chemically-milled skin panels. Fully pressurised.

**TAIL UNIT:** Cantilever two-spar aluminium alloy structure. Fixed-incidence tailplane. Manually-operated control surfaces. Trim tabs in rudder and each elevator. Goodrich pneumatic rubber-boot de-icing system for leading-edges.

**LANDING GEAR:** Retractable tricycle type, with nosewheel steering. Hydraulic retraction, main wheels inward into wings, twin nosewheels forward. British Aerospace oleo-pneumatic shock-absorbers on all units. Dunlop wheels and tyres: main-wheel tyres size 28 x 9.00-12, pressure 3.93 bars (57 lb/sq in); nosewheel tyres size 6.00-6, pressure 2.34 bars (34 lb/sq in). No brake cooling. Anti-skid units.

**POWER PLANT:** Two 701 kW (940 shp) Garrett AiResearch TPE 331-10 turboprop engines, each driving a Hartzell four-blade variable- and reversible-pitch fully-feathering metal propeller. Fuel in integral tank in each wing, total capacity 1,745 litres (384 Imp gallons; 461 US gallons). Refuelling point on top of each outer wing.

**ACCOMMODATION:** Two seats side by side on flight deck, with provision for dual controls, though aircraft can be approved (subject to local regulations) for single-pilot operation. Main cabin can

## LEARJET

GATES LEARJET CORPORATION: Corporate Offices, Aircraft Division: Mid-Continent Airport, PO Box 7707, Wichita, Kansas 67277, USA

### SPECIAL MISSIONS LEARJET

In late 1978, Gates Learjet had in the final stages of development a special missions version of the Learjet. Scheduled to make a worldwide demonstration tour during 1979, this variant of the standard Learjet 35A is intended primarily for offshore patrol. Its Garrett AiResearch TFE 731-2 turbofan engines offer high-speed low-level search capability, with an endurance in excess of four hours.

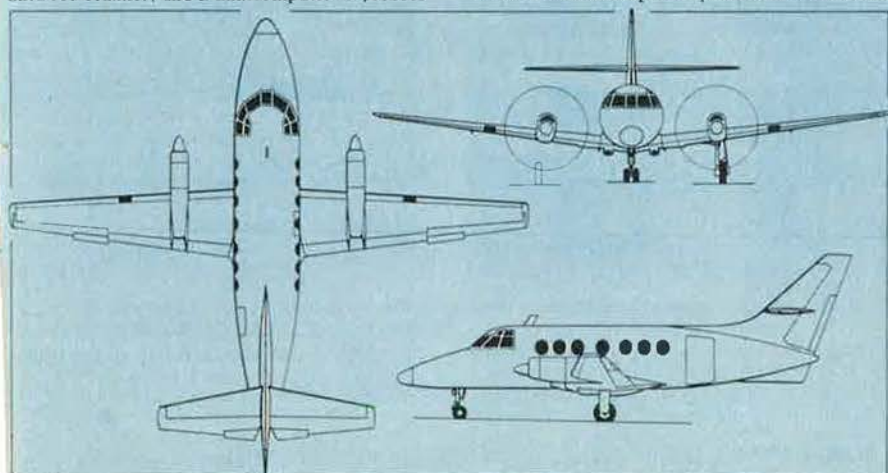
To allow for the carriage of a wide variety of external stores, hardpoints have been built into each wing at approximately one-third span, and these can each accommodate an Alkan 165B ejector rack with a capacity of 227 kg (500 lb). Specialised avionics and equipment for offshore patrol include an advanced-design Litton APS-504 sea patrol radar system with 360° coverage, a low-light-level television with new-technology video display, Daedalus infra-red scanner, and a minicomputer to process

## BRITISH AEROSPACE

BRITISH AEROSPACE AIRCRAFT GROUP, SCOTTISH DIVISION: Offices and Works: Prestwick International Airport, Ayrshire KA9 2RW, UK.

### BAe JETSTREAM 31

British Aerospace announced on 5 December 1978 that a decision had been made to proceed with development and production of this new version of the Jetstream, brief information on which was given in the 1978-79 *Jane's*. Extensive investigation into the market potential for a light turboprop-powered transport, suitable to meet the known current and future needs of commuter airlines, corporate operators, and military authorities, had indicated a long-term requirement for such aircraft into the mid-1980s. British Aerospace expects that the Jetstream



BAe Jetstream 31 twin-turboprop multi-purpose transport (Pilot Press)

be furnished in commuter layout for up to 18 passengers, or with executive interior for 8/10 passengers, but optional layouts are available. Downward-opening passenger door, with integral airstairs, at rear of cabin on port side. Emergency exit over wing on starboard side. Baggage compartment in rear of cabin, aft of main door. Entire accommodation pressurised, heated, ventilated, and air-conditioned. Toilet, galley, and bar optional.

**SYSTEMS:** Air-conditioning system with cabin pressurisation at max differential of 0.38 bars (5.5 lb/sq in), providing a 2,500 m (8,000 ft) cabin altitude at 7,600 m (25,000 ft). Single hydraulic system with dual engine-driven pumps, for actuation of flaps, landing gear, brakes, and nosewheel steering. Details of electrical and oxygen systems not yet finalised. APU optional.

**AVIONICS AND EQUIPMENT:** Not yet defined.

**DIMENSIONS, EXTERNAL:**

Wing span	15.85 m (52 ft 0 in)
Wing chord at root	2.19 m (7 ft 2½ in)
Wing chord at tip	0.80 m (2 ft 7¼ in)
Wing aspect ratio	10
Length overall	14.37 m (47 ft 1½ in)
Height overall	5.32 m (17 ft 5½ in)
Tailplane span	6.60 m (21 ft 8 in)
Wheel track	5.94 m (19 ft 6 in)
Wheelbase	4.60 m (15 ft 1 in)
Propeller diameter	2.69 m (8 ft 10 in)
Passenger door: Height	1.42 m (4 ft 8 in)
Width	0.86 m (2 ft 10 in)
Emergency exit: Height	0.91 m (3 ft 0 in)
Width	0.56 m (1 ft 10 in)



Artist's impression of the BAe Jetstream 31, of which a prototype will fly later this year

**DIMENSIONS, INTERNAL:**

Cabin, excl flight deck:	
Length	7.32 m (24 ft 0 in)
Max width	1.85 m (6 ft 1 in)
Max height	1.80 m (5 ft 11 in)
Floor area	8.35 m <sup>2</sup> (90 sq ft)
Volume	16.92 m <sup>3</sup> (598 cu ft)
Baggage compartment volume (according to layout)	1.94-2.53 m <sup>3</sup> (68.5-89.5 cu ft)

**AREAS:**

Wings, gross	25.08 m <sup>2</sup> (270 sq ft)
Ailerons, aft of hinge line (total)	1.52 m <sup>2</sup> (16.4 sq ft)
Trailing-edge flaps (total)	3.25 m <sup>2</sup> (35.0 sq ft)
Vertical tail surfaces (total)	7.72 m <sup>2</sup> (83.1 sq ft)
Horizontal tail surfaces (total)	7.80 m <sup>2</sup> (84.0 sq ft)

**WEIGHTS AND LOADINGS (estimated):**

Manufacturer's weight empty	3,450 kg (7,606 lb)
Max T-O and landing weight	6,350 kg (14,000 lb)
Max ramp weight	6,400 kg (14,110 lb)
Max zero-fuel weight	6,100 kg (13,448 lb)
Max wing loading	253.19 kg/m <sup>2</sup> (51.85 lb/sq ft)
Max power loading	4.53 kg/kW (7.45 lb/shp)

**PERFORMANCE (estimated, at max T-O weight):**

Max level speed	263 knots (488 km/h; 303 mph)
Max cruising speed	253 knots (469 km/h; 291 mph)
Stalling speed, flaps down	96 knots (179 km/h; 111 mph)
Max rate of climb at S/L	680 m (2,230 ft)/min

**Rate of climb at S/L, one engine out**

	163 m (535 ft)/min
Service ceiling	9,630 m (31,600 ft)
Service ceiling, one engine out	4,665 m (15,300 ft)
T-O run to 15 m (50 ft)	858 m (2,815 ft)
Landing from 15 m (50 ft)	818 m (2,684 ft)
Range with max fuel, six passengers, 30 min reserves at cruising power at optimum altitude, plus 5%	1,108 nm (2,053 km; 1,275 miles)
Range with max payload, reserves as above	420 nm (778 km; 484 miles)

**BELL**

**BELL HELICOPTER TEXTRON** (Division of Textron Inc), Address: PO Box 482, Fort Worth, Texas 76101, USA

**BELL MODEL 209 HUEYCOBRA and SEACOBRA**

**US Army designations: AH-1G, AH-1Q, and AH-1R**

**US Navy/Marine Corps designations: AH-1J and AH-1T**

**Spanish Navy designation: Z.16**

Bell Helicopter Textron initiated the Model 209 in March 1965 as a company-funded development of the UH-1B/C Iroquois intended specifically for armed helicopter missions. The original design combined the basic transmission and rotor system and (in its standard form) the power plant of the

have been converted to TH-1G dual-control trainers. Following the decision to equip the HueyCobra with TOW missiles, 93 AH-1Gs were converted to interim AH-1Q standard; most of these have subsequently been updated further to Mod AH-1S standard.

**AH-1J SeaCobra.** Initial twin-turboshaft version for US Marine Corps, powered by a 1,342 kW (1,800 shp) Pratt & Whitney Aircraft of Canada T400-CP-400 coupled free-turbine turboshaft engine, a military version of the PT6T-3 Turbo Twin Pac. Engine and transmission flat rated at 820 kW (1,100 shp) continuous output, with increase to 932 kW (1,250 shp) available for T-O or 5 min emergency power. Following an initial USMC order for 49, placed in May 1968, a pre-production example was displayed to representatives of the US armed forces at Enless, Texas, on 14 October 1969. Deliveries of these 49 began in mid-1970 and were completed in 1971; a further 20, ordered in early 1973, were delivered between April 1974 and February 1975. The last two of this batch were converted later as prototypes for the AH-1T. Under a \$38.5 million contract announced on 22 December 1972, 202 TOW-capable AH-1Js were supplied to the Imperial Iranian Army Aviation from 1974, the US Army acting as purchasing agent.

**AH-1Q HueyCobra.** Interim anti-armour version for US Army, converted from AH-1G to fire Hughes TOW anti-tank missiles. First of eight 'pre-production' examples delivered in early 1973; first 'production' deliveries on 10 June 1975. Of 93 converted, 20 have since been further upgraded by Bell to Mod AH-1S standard. A further 62, based in Germany, are being upgraded locally to the same standard by Dornier under a May 1978 US Army contract; the first three of these were redelivered to the US Army on 16 June 1978.

**AH-1R HueyCobra.** As AH-1G, but with 1,342 kW (1,800 shp) T53-L-703 turboshaft engine. No TOW missile installation.

**AH-1S HueyCobra.** Advanced and modernised TOW-capable version for US Army; described separately.

**AH-1T Improved SeaCobra.** Improved version of twin-engined AH-1J for US Marine Corps. Last two of 69 AH-1Js modified as prototypes under a US Army Aviation Systems Command contract, with updated components for significantly increased payload and performance. Incorporates features of AH-1J airframe, but embodies dynamic system of Bell Model 214, some technology developed for Bell Model 309 KingCobra, and upgraded power plant (1,529 kW; 2,050 shp T400-WV-402) and transmission. Lengthened fuselage. Initial contract for 10 announced in June 1975; total of 57 ordered by 1978, of which 23 are scheduled to be modified to TOW configuration. First AH-1T (USN serial number 59228) delivered to USMC on 15 October 1977.

The following description applies primarily to the AH-1G and AH-1Q, except where indicated otherwise:

**TYPE:** Single-engined (AH-1G/Q/R/S) and twin-engined (AH-1J/T) close support and attack helicopters.

**ROTOR SYSTEM AND DRIVE (AH-1G/J/Q/R):** Model 540 two-blade wide-chord 'door-hinge' main rotor, similar to that of UH-1C. Interchangeable blades, built up of extruded aluminium spars and laminates. Rotor brake fitted. Blades do not fold. Two-blade all-metal flex-beam tractor tail rotor on starboard side, of honeycomb construction; blade chord increased on AH-1J, which also has push/pull tail rotor controls. Shaft drive to both main and tail rotors. Main rotor rpm 294-324.

**ROTOR SYSTEM AND DRIVE (AH-1T):** Similar to that of Bell Model 214, with strengthened main rotor hub incorporating Lord Kinematics Lastoflex elastomeric and Teflon-faced bearings. Main rotor blades have increased chord, and swept tips which reduce noise and improve high-speed performance. Tail rotor also similar to that of Model 214, with increased diameter and blade chord.

**WINGS:** Small mid-mounted stub-wings, to carry armament and offload rotor in flight.

**FUSELAGE:** Conventional all-metal semi-monocoque structure, with low silhouette and

UH-1C with a new, streamlined fuselage designed for maximum speed, armament load, and crew efficiency. Relatively small, its low silhouette and narrow profile make it easy to conceal with small camouflage nets or to move under cover of trees. Tandem seating provides the best possible field of view for the crew of two.

The Model 209 prototype made its first flight on 7 September 1965, and was sent to Edwards AFB in December 1965 for US Army evaluation. The Army's intention to order the aircraft was announced on 11 March 1966, the initial model being known as the AH-1G HueyCobra. Total orders to date exceed 1,800.

Versions announced so far are as follows:

**AH-1G HueyCobra.** Original version for US Army, powered by a single 1,044 kW (1,400 shp) Lycoming T53-L-13 turboshaft engine, derated to 820 kW (1,100 shp) for T-O and max continuous rating. Development contract for two pre-production aircraft placed on 4 April 1966, followed on 13 April by an initial order for 110 aircraft plus long-lead-time spares. Subsequent contracts raised the total US Army order to 1,078 by mid-1971. Deliveries began in June 1967, and two months later the AH-1G was deployed operationally in Vietnam; it played a particularly important part in the Tet offensive in 1968, and in Laos in the Spring of 1971. The US Marine Corps acquired 38 AH-1Gs during 1969, for transition training and initial deployment pending deliveries of the AH-1J; these are included in the above total. The Spanish Navy received 20, for anti-shipping strike duties, and six were supplied to Israel in 1974. A number of AH-1Gs



**Bell AH-1T, improved version of the twin-engined SeaCobra for the US Marine Corps**

narrow profile. AH-1T has forward fuselage lengthened by insertion of a 0.305 m (1 ft 0 in) plug, to accommodate tankage for additional 181.5 kg (400 lb) of fuel, and tailboom lengthened by 0.79 m (2 ft 7 in).

**TAIL UNIT:** Sweptback vertical fin/tail rotor pylon, strengthened on twin-engined models to cater for increased power. Elevator, of inverted aerofoil section, mid-mounted on tailboom forward of fin.

**LANDING GEAR:** Non-retractable tubular skid type. Ground handling wheels optional.

**POWER PLANT:** Single or twin turboshaft engines, as detailed under model listings. Fuel capacity (G and J) 1,014 litres (268 US gallons). (Fuel loads, where known, are given under 'Weights' heading.) Refuelling point in port side of fuselage, aft of cockpits.

**ACCOMMODATION:** Crew of two in tandem, with co-pilot/gunner in front seat and pilot at rear. Crew are protected by seats and side panels of Norton Co 'Noroc' armour; other panels protect vital areas of aircraft.

**SYSTEMS:** Hydraulic system, with Abex pumps, for flight controls and other services. Battery-powered 28V DC electrical system. Environmental control and fire detection systems.

**AVIONICS:** Communications equipment in AH-1G includes AN/ARC-54/131 FM radio; AN/ARC-51 and AN/ARC-134 voice com; KY-28 secure voice system.

**ARMAMENT AND OPERATIONAL EQUIPMENT (AH-1G):** Initial production AH-1Gs were fitted with GAU-2B/A 7.62 mm Minigun in Emerson Electric TAT-102A undernose turret (see 1978-79 *Jane's*). This was superseded by an M-28 turret, able to mount either two Miniguns (each with 4,000 rds), or two M-129 40 mm grenade launchers (each with 300 rds), or one Minigun and one M-129. The Miniguns in these turrets have two rates of fire, controlled by the gunner's trigger: 1,600 rds/min for searching or registry fire, or 4,000 rds/min for attack. The M-129 fires at a single rate of 400 rds/min. Four external stores attachments under stub-wings can accommodate seventy-six 2.75 in rockets in four M-159 launchers, 28 similar rockets in four M-157 launchers, or two M-18E1 Minigun pods. An initial batch of six AH-1Gs were delivered to the US Army in December 1969 equipped with a Bell/General Electric M-35 armament subsystem. This unit consists of an M-61 six-barrel 20 mm automatic cannon on the port inboard wing station, having a firing rate of 750 rds/min. Two ammunition boxes faired flush to the fuselage below the stub-wings each accommodate 500 rds, and total installed weight of the system is 531 kg (1,172 lb). A total of 350 M-35 kits was ordered subsequently by the

US Army. All wing stores are symmetrically or totally jettisonable. In normal operation, the co-pilot/gunner controls and fires the turret armament, and the pilot (aided by an M-73 adjustable reflex rocket sight) normally fires the wing stores. The pilot can fire the turreted weapons only in the stowed (*i.e.*, dead ahead) position; the turret returns to the stowed position automatically when the gunner releases his grip on the slewing switch. The gunner also has the capability to fire the wing stores if required. Other operational equipment on the AH-1G includes an M-130 chaff dispenser.

**ARMAMENT (AH-1J):** Electrically operated General Electric undernose turret, housing an M-197 three-barrel 20 mm weapon (a lightweight version of the M-61 cannon). A 750-rd ammunition container is located in the fuselage directly aft of the turret; firing rate is 750 rds/min, but a 16-round burst limiter is incorporated in the firing switch. Barrel length of 1.52 m (5 ft) makes it imperative that the M-197 is centralised before wing stores are fired. Gun can be tracked 110° to each side, 18° upward, and 50° downward. Four attachments under stub-wings for various loads, including LAU-68A/A (seven-tube) or LAU-61A/A (19-tube) 2.75 in rocket launchers, or M-18E1 Minigun pods. Total possible armament load 245 kg (542 lb) internal, 998 kg (2,200 lb) external.

**ARMAMENT (AH-1Q):** M-28 turreted weapons as for AH-1G. Anti-armour configuration involves installation of eight Hughes TOW missile containers, disposed as two two-round pods on each of the outboard underwing stations. The inboard wing stations remain available for other stores, as listed for AH-1G. In the TOW configuration, a Sperry Univac helmet sight is used by both crew members to cue the turreted weapon or the TOW stabilised sight. In addition, the co-pilot/gunner may use the 2x or 13x magnification offered by the M-65 TOW system's telescopic sight unit for turret weapon engagements.

**DIMENSIONS, EXTERNAL:**

Diameter of main rotor:	
G, J, Q, R	13.41 m (44 ft 0 in)
T	14.63 m (48 ft 0 in)
Main rotor blade chord:	
G, J, Q, R	0.69 m (2 ft 3 in)
T	0.84 m (2 ft 9 in)
Diameter of tail rotor:	
G, J, Q, R	2.59 m (8 ft 6 in)
T	2.96 m (9 ft 8 1/2 in)
Tail rotor blade chord: G, Q, R	
J	0.21 m (8.4 in)
T	0.29 m (11 1/2 in)
Wing span (all)	
Length overall, main rotor fore and aft:	

G, Q, R	16.14 m (52 ft 11 1/2 in)
J	16.26 m (53 ft 4 in)
T	17.68 m (58 ft 0 in)
Length of fuselage: G, J, Q, R	
J, T	13.59 m (44 ft 7 in)
T	14.68 m (48 ft 2 in)
Width of fuselage: G, Q, R	
J, T	0.965 m (3 ft 2 in)
J, T	0.98 m (3 ft 2 1/2 in)
Height overall: G, Q, R	
J	4.12 m (13 ft 6 1/4 in)
J	4.15 m (13 ft 8 in)
Elevator span (all)	
Width over skids (all)	
Width over TOW missile pods: G, Q	
3.26 m (10 ft 8 1/4 in)	

**AREAS:**

Main rotor disc:	
G, J, Q, R	141.26 m <sup>2</sup> (1,520.53 sq ft)
T	168.11 m <sup>2</sup> (1,809.56 sq ft)
Tail rotor disc: G, J, Q, R	
T	5.27 m <sup>2</sup> (56.75 sq ft)
T	6.88 m <sup>2</sup> (74.03 sq ft)

**WEIGHTS:**

Operating weight empty, incl amounts shown for crew, fluids, avionics, and armour:	
G (404 kg; 891 lb)	2,754 kg (6,073 lb)
J (398 kg; 877 lb)	3,294 kg (7,261 lb)
Weight empty: T	
3,635 kg (8,014 lb)	
Operating weight empty: T	
3,904 kg (8,608 lb)	
Mission fuel load:	
G (871 litres; 230 US gallons)	680 kg (1,500 lb)
J	725 kg (1,600 lb)
Max useful load (fuel and disposable ordnance):	
T	2,445 kg (5,392 lb)
Mission weight: G	
J	4,266 kg (9,407 lb)
J	4,523 kg (9,972 lb)
Max T-O and landing weight:	
G, Q, R	4,309 kg (9,500 lb)
J	4,535 kg (10,000 lb)
T	6,350 kg (14,000 lb)

**PERFORMANCE (at max T-O weight, ISA):**

Never-exceed speed:	
G, Q, R	190 knots (352 km/h; 219 mph)
J	180 knots (333 km/h; 207 mph)
Max level speed:	
G, Q	149 knots (277 km/h; 172 mph)
J	180 knots (333 km/h; 207 mph)
Max crosswind speed for hovering:	
J	40 knots (74 km/h; 46 mph)
Max rate of climb at S/L, normal rated power:	
G, Q	375 m (1,230 ft)/min
J	332 m (1,090 ft)/min
Service ceiling, normal rated power:	
G, Q	3,475 m (11,400 ft)
J	3,215 m (10,550 ft)
Hovering ceiling IGE: G, Q	
J	3,015 m (9,900 ft)
J	3,794 m (12,450 ft)
Range with max fuel:	
G, Q, both at S/L, 8% reserves	
310 nm (574 km; 357 miles)	
J, no reserves	
311 nm (577 km; 359 miles)	

**BELL MODEL 209 HUEYCOBRA (MODERNISED VERSION)**

**US Army designation: AH-1S**

The AH-1S is an advanced version of the single-engined TOW-capable HueyCobra for the US Army, with upgraded power plant, gearbox, transmission, and many other improvements. Current Army planning calls for the acquisition of 690 of this model by mid-1981, and the supply of an undisclosed number to Israel has been authorised. The first of a succession of US Army contracts was placed in 1975, and 680 had been ordered by the beginning of 1979, as follows:

**Mod AH-1S.** This designation (the 'Mod' in this case indicating 'Modified') applies to 290 AH-1Gs already brought up to 'Production AH-1S' standard and redelivered to the US Army. These include 82 of the 93 AH-1Gs previously converted to AH-1Qs, 20 of which have since been further modified by Bell to Mod AH-1S; 62 others, remaining in Germany, are being brought up to the same standard locally by Dornier, under a US Army contract dated 2 May 1978. The first three Dornier-modified aircraft were redelivered to the US Army in Germany on 16 June 1978.

**Production AH-1S.** Under Step 1 of a three-step new-production programme, 100 Production AH-1S HueyCobras were built and delivered to the US Army between March 1977 and September



**AH-1S version of the single-engined Bell Model 209 HueyCobra, with TOW missile launchers**

1978. These aircraft have a new flat-plate canopy, improved instrument panel layout, continental United States (CONUS) navigation equipment, radar altimeter, improved communication radios, uprated engine and transmission, push/pull anti-torque controls, and (from the 67th aircraft onwards) new Kaman-developed composite rotor blades. First unit to receive this version, in August 1977, was the 82nd Airborne Division at Fort Bragg, North Carolina.

**Up-gun AH-1S.** The next 98 new-production aircraft (Step 2) have all the improvements detailed for the Production AH-1S, plus a new universal 20/30 mm gun turret, an improved wing stores management system for the 2.75 in rockets, automatic compensation for off-axis gun firing, and a 10kVA alternator to provide the necessary additional electric power. Deliveries of this version began in September 1978 and are scheduled for completion in October 1979.

**Modernised AH-1S.** This version, not to be confused with the 'Mod AH-1S' referred to earlier, represents the fully-upgraded standard for the AH-1S, and will be reached beginning with the 199th new-production aircraft. To the improvements already mentioned for the two preceding stages will be added, as Step 3, a new fire control subsystem (comprising a laser rangefinder and tracker, ballistics computer, low-air-speed sensor, and pilot's head-up display), air data system, Doppler navigation system, IFF transponder, infra-red jammer, hot-metal and plume infra-red suppressor, closed-circuit refuelling, and new secure voice communications. Deliveries of the 192 Modernised AH-1S so far ordered are scheduled to take place between November 1979 and June 1981.

The US Army hopes eventually to bring all of its AH-1S HueyCobras up to the full Modernised AH-1S standard over a period of about five years. Current plans envisage, first, the conversion of a further 372 AH-1Gs to Modernised AH-1S in 1979-82; the 290 'Mod AH-1S' aircraft would then be upgraded to Modernised AH-1S in 1982-83; and finally, the 100 Step 1 aircraft (in 1983-84) and 98 Step 2 aircraft (in 1984) would be brought up to the full Step 3 standard.

The major differences between the AH-1S and earlier single-engined HueyCobras may be summarised as follows:

**TYPE:** Anti-armour attack helicopter.

**ROTOR SYSTEM AND DRIVE:** Upgraded gearbox and transmission, the latter rated at 962 kW (1,290 shp). From 67th new-production AH-1S onward, new main rotor blades of composite construction are fitted, developed by Kaman Aerospace Corporation and equipped with tungsten carbide bearing sleeves. The outer 15% of these blades, which are tolerant of damage by weapons of up to 23 mm calibre, is tapered in both chord and thickness.

**FUSELAGE:** Tailboom strengthened to increase survivability against weapons of up to 23 mm calibre. Entire airframe has an anti-infrared paint finish.

**POWER PLANT:** One 1,342 kW (1,800 shp) Lycoming T53-L-703 turboshaft engine. Closed-circuit refuelling on Modernised AH-1S.

**ACCOMMODATION:** New flat-plate canopy has seven planes of viewing surfaces, designed to minimise glint and reduce possibility of visual detection during nap-of-the-earth (NOE) flying; it also provides increased headroom for pilot. Improved instrument layout and lighting, compatible with use of night vision goggles. Improved, independently-operating window/door ballistic jettison system to facilitate crew escape in emergency.

**SYSTEMS:** 10kVA AC alternator added to electrical system. Battery-driven Abex standby pump, for use in event of main hydraulic system failure, can be used for collective pitch control and for boresighting turret and TOW missile system. Improved environmental control and fire detection systems.

**AVIONICS AND EQUIPMENT:** Standard lightweight avionics equipment (SLAE) includes AN/ARC-114 FM, AN/ARC-164 UHF/AM voice com, and E-Systems (Memcor Division) AN/ARC-115 VHF/AM voice com (compatible with KY-58 single-channel secure voice system). Other avionics include AN/ARN-123 CONUS navigation system with VOR/ILS receivers, glideslope, marker beacon, and indicator lights (Doppler navigation system in Modernised AH-1S); HSI; VSI; radar altimeter; push/pull anti-torque controls for tail rotor; co-pilot's standby magnetic compass.

**ARMAMENT AND OPERATIONAL EQUIPMENT:** M-65 system with eight TOW missiles on outboard underwing stations, as in AH-1Q. Beginning with the 101st new-production AH-1S (the first 'Up-gun' example), the M-28 (7.62/40 mm) turret in

earlier HueyCobras is replaced by a new electrically-powered General Electric universal turret, designed to accommodate either a 20 mm or a 30 mm weapon and to improve stand-off capability. Initially, the 20 mm M-197 three-barrel Vulcar (with 750 rds) is mounted in this turret, with the 30 mm Hughes XM-230E1 single-barrel Chain Gun (with 500 rds) scheduled for installation in mid-1981. Rate of fire of both guns is 730 rds/min. Turret position is controlled by the pilot or co-pilot/gunner through helmet sights, or by the co-pilot using the M-65 TOW missile system's telescopic sight unit. Field of fire is up to 110° to each side of aircraft, 20.5° upward, and 50° downward. Also from the first 'Up-gun' AH-1S, the helicopter is equipped with a new Baldwin Electronics XM-138 wing stores management subsystem, providing the means to select and fire, singly or in groups, any one of five types of external 2.75 in rocket store. These are mounted in launchers each containing from 7 to 19 tubes, and are additional to the TOW missile capability.

In addition to these installations the 199th new-built AH-1S (the first to full 'Modernised' standard) will introduce a new fire control subsystem which includes a Kaiser head-up display for the pilot, Teledyne Systems digital fire control computer for the turreted weapon and underwing rockets, omnidirectional airspeed system to improve cannon and rocket accuracy. Hughes laser rangefinder (accurate to 10,000 m; 32,800 ft), and AN/AAS 32 airborne laser tracker. Other operational equipment includes a Marconi Avionics air data subsystem, AN/APX-100 solid-state IFF transponder, Sanders AN/ALQ-144 infra-red jammer, suppressor for infra-red signature from engine hot metal and exhaust plume, AN/APR-39 radar warning receiver, AN/ALQ-136 radar jammer (with M-130 chaff system as backup), Perkin-Elmer laser warning receiver.

**DIMENSIONS, EXTERNAL:** As AH-1G except:

Main rotor blade chord (from 67th new-production AH-1S) 0.76 m (2 ft 6 in)  
Tail rotor blade chord 0.29 m (11½ in)

**WEIGHTS:**

Operating weight empty 2,939 kg (6,479 lb)  
Mission weight 4,524 kg (9,975 lb)  
Max T-O and landing weight 4,535 kg (10,000 lb)

**PERFORMANCE (at max T-O weight, ISA):**

Never-exceed speed (TOW configuration) 170 knots (315 km/h; 196 mph)  
Max level speed (TOW configuration) 123 knots (227 km/h; 141 mph)  
Max rate of climb at S/L, normal rated power 494 m (1,620 ft)/min  
Service ceiling, normal rated power 3,720 m (12,200 ft)  
Hovering ceiling IGE 3,720 m (12,200 ft)  
Range at S/L with max fuel, 8% reserves 274 nm (507 km; 315 miles)



**The US Army hopes to bring all its AH-1S HueyCobras up to full Modernised AH-1S standard over a period of about five years**

Secretary Brown's report to Congress is "a sobering account of the trouble we are in." Finding a way out is up to us; the danger can't be papered over by counting allies.

# The Limitations of Alliances

By Gen. T. R. Milton, USAF (Ret.)

**B**UDGET statements by Secretaries of Defense are seldom chosen for light reading on a Sunday afternoon. More often than not, there isn't much reason to read them at all. Secretary Harold Brown's report this year, in defense of the Fiscal 1980 Defense Budget, is one of the exceptions. Despite some inconsistencies here and there and a few doubtful claims to optimism—Defense Secretaries are, after all, politically appointed—it is a sobering account of the trouble we are in. As Harold Brown points out, the Soviets have, year after year, increased their own Defense Budget, oblivious to what we did to ours. If we increased, they increased. If we cut back, they increased. It has been a steady, unrelenting program designed to achieve both strategic and conventional superiority, and now they have it.

The question remains as to what they are going to do with this ever-growing military superiority, and, in turn, what will we, what *can* we, do to stop them?

Secretary Brown takes note of our allies' capabilities in seeking to put a better face on this military imbalance, and so he should, so long as everyone is clear on a significant point. Our allies, all of them, are allies only for a very specific purpose. In Europe, for instance, they are allied with us solely for the defense of NATO Europe. To put it bluntly, we are *their* allies; they are not necessarily ours. We had this brought home to us in the fall of 1973 during the last war between Egypt and Israel, the so-called Yom Kippur War, when our NATO allies denied us the free use of NATO bases in the resupply airlift to Israel. National interests, in this case the fear of Arab wrath and a consequent oil embargo, were the governing factors. The alliance was

for other purposes, not Mideastern conflicts.

Thus, it is not fair to add up all the assets of our friends in calculating the strength of our side. If the Soviets should challenge us in the unlikely arena of Central Europe, then everything counts. But on a worldwide basis, and that appears to be where the challenges may be coming, it is pretty much ourselves against the USSR. Any help from our friends will be greatly appreciated, but we had better not count on it.

Buried midway in this very interesting Secretary of Defense statement, following a discussion of the military balance between our side and the Soviets, is an arresting sentence: "We are completely committed, however, to engineering their defeat wherever they attempt to challenge our interests." Secretary Brown goes on to say the range of possible challenges is obviously very large and may fall outside our treaty commitments, a nice way of saying our alliances are for specific purposes.

Those challenges are beginning to come thick and fast. There is scarcely any area in the world where our national interests would seem to be more at stake than in the Persian Gulf. So far, our reactions to that danger have not been the signal of a strong nation completely committed to a defense of its interests. Instead, we have seen a carrier task force diverted from entering the Persian Gulf during the Shah's last days on his throne. The F-15s to Saudi Arabia, a good enough gesture when first announced, were then loudly proclaimed to be unarmed. And then, during the abject and humiliating evacuation of American nationals from Iran, there was no mention of any military task force anywhere in sight, unless we count the sixty-nine Marines in Turkey.

Meanwhile, the trouble in South-east Asia continues to spread. The

Prime Minister of Thailand paid us a great compliment in coming to Washington a few weeks ago seeking weapons and reassurance of US support. It was a compliment because the Thais are notoriously pragmatic. As the only nation in that part of the world that has never been colonized or even overrun, the Thais qualify as survivors. Like all true survivors, they weigh the odds. The fact that they still look to us for support is an encouraging sign. The question is, are we up to it?

There is, first of all, our national will as we approach the 1980s, an era that may well prove to be the most dangerous in our history. That will failed its last test in a war, however disagreeable, that did not really take much of a toll when compared to some wars this nation has faced up to. There were other forces at work during Vietnam. But assuming the national will is once again healthy, there remains a question of capabilities.

Our NATO preoccupation is an understandable one. To a considerable extent, it is essential to the continuation of the alliance, and no reasonable person can deny the need for that. At some point, however, we have to look beyond that alliance to all the places we may be challenged and consider our ability to meet those challenges.

It should now be increasingly clear that, SALT II or no SALT II, our strategic forces are in desperate need of refurbishing. So is our strategic airlift, and so, most certainly, is our navy. This evermore dangerous world facing us in the 1980s is not going to become safe through negotiation, nor are there allies enough, and in the right places, to pull us through. It will be up to us if we are, as Harold Brown puts it, to engineer the defeat of anyone challenging our interests. ■

Important shifts in the nation's strategic deterrence policy, and hence in required offensive capabilities, have been suggested by senior Defense officials in recent congressional testimony. At the core of the policy changes is the somewhat enigmatic . . .

# 'Countervailing Strategy'

BY EDGAR ULSAMER  
SENIOR EDITOR

"IT WOULD be a mistake . . . to underestimate the problems created by the military buildup of the Soviet Union. These problems are real. They are serious. They could become critical—and if they do, we would regret not having started to build up our own military capability now. It may be too late if we wait much longer."

This unemotional, somber conclusion reached by Defense Secretary Harold Brown in the FY '80 Annual Report of the Defense Department may herald a new tone and direction of the Administration's approach to national security requirements. What's more, the Administration's message of concern—but not alarm—about where the military posture is heading appears to have struck a receptive chord in Congress. The general tenor of initial congressional hearings on the new defense budget was sympathetic, but laced with skepticism about the adequacy of the US response to Soviet arms momentum—and the soundness of its underlying logic—especially in the strategic offensive sector. The prognosis, therefore, is that Congress won't excise the "muscle" of the new Defense budget even though areas deemed peripheral to fundamental needs probably will be affected by the general austerity and anti-inflation drive that has strong support across the political spectrum.

By contrast, where the Administration *really* wants to go in the all-important area of strategic and theater nuclear deterrent policy is obscured by the circumspection with which the Defense Department makes—and at times dilutes—its case. To wit, while acknowledging that a strategy and force structure designed only for assured destruction constitute inadequate nuclear deterrence, the Annual Report juxtaposes that "we have to admit that we have not developed a plausible picture of the conflict we are trying to deter."

Dr. William J. Perry, Under Secretary of Defense for Research and Engineering, struck a similarly Delphic stance when he testified before the Senate Armed Services Committee that "in planning our own strategic forces we walk a fine line, not configuring them to be so threatening to the Soviet Union that we fuel an arms race, or provide an incentive to the Soviets to preempt, but at the same time making sure that enough can survive a Soviet attack to provide an effective deterrent. Almost month by month, this task becomes more difficult."

This open-ended strategic force sizing and planning have caused the Defense Department to espouse what Secretary Brown defined as a "true countervailing strategy." OSD's definition of this term involves more exclusions than conclusions. A countervailing strategy,



according to the Annual Report, acknowledges the congenital deficiencies of counterforce and damage-limiting postures—large uncertainties about the extent to which damage can be limited and about how and when nuclear exchanges can be terminated—and posits that “the strategic nuclear forces can deter only a relatively narrow range of contingencies, much smaller in range than was foreseen only twenty or thirty years ago.”

One way out of the dilemma, Secretary Brown hypothesized, “would be to design our forces on the basis of essential equivalence,” meaning either a straightforward balance in throw-weight, delivery systems, and equivalent megatonnage, or a more flexible mix of differing capabilities that in the aggregate matches the other side. But essential equivalence somehow doesn’t measure up to the Administration’s goals because it “mixes together our deterrent strategy with our arms-control criteria.” Also, one learns from the Annual Report that “to plan our forces, and measure their adequacy, simply on the basis of essential equivalence would give no assurance that the forces would perform their essential deterrent functions.”

OSD’s Annual Report next reasons quite plausibly that “we must insist on essential equivalence with the Soviet Union to symbolize the equality that both sides accept in this realm. But we must not mistake symbols, however important, for the substance.”

Ultimately, OSD’s argument against essential equivalence seems to become elliptical with the assertion that “we may be able to obtain deterrence, and can achieve assured destruction or more, without equivalence; it is by no means certain that equivalence alone will give us deterrence.”

It is tempting to think that the authors of the foregoing subscribe to the notion that US superiority represents a better deterrent than parity or inferiority. But, no doubt, such a notion is unwarranted. Without further clues as to why and how, the Defense Department’s bottom line—“a true countervailing strategy”—is reached and its diverse and generally sound features explained: “We must have forces in sufficient numbers and quality so they can: (1) survive a well-executed attack; (2) react with the timing needed, both as to promptness and endurance, to assure the deliberation and control deemed necessary by the National Command Authorities (NCA); (3) penetrate any enemy defenses; and (4) destroy their designated targets.”

There is no argument with other traits of OSD’s new strategic concept: “We must also have the redundancy and diversity built into these forces to ensure against the

failure of any one component of the capability, to permit the cross-targeting of key enemy facilities, and to complicate the enemy’s defenses as well as his attack. Survivable command control communications are equally essential if we are to respond appropriately to an enemy attack and have some chance of limiting the exchange. High accuracy and reduced nuclear yields can be equally important in minimizing collateral damage and the escalation that could follow from it. Even some measure of



*Defense Secretary Harold Brown (above) and Under Secretary William J. Perry (left) report that the Soviet Union is developing the capability to fight nuclear war on a sustained basis.*



*MX in a survivable basing mode is the "most important program we have in the Department of Defense," according to General Jones. The photo shows an MX mockup with a ninety-two-inch diameter and a seventy-two-foot length.*

civil defense evacuation can be desirable, if only to reduce the effects produced by attacks on targets other than population centers."

A countervailing strategy, the Annual Report also notes, must include the option to target—or, conversely spare—the other side's cities "both as a deterrent to attacks on our own cities and as the final retaliation if the particular deterrent should fail." But the new policy is far less defined and resolute when it comes to hard targets, such as missile silos, command bunkers, and nuclear weapons storage sites. The "hang-up" here probably is caused by tenuous assumptions about Soviet strategic doctrine, namely that the USSR tends to exploit technological opportunity in response to US action rather than preemptively: "As the growing Soviet threat to our ICBM force indicates, this kind of [hard target] targeting, by forcing the other side to respond with redesigned capabilities, is bound to affect long-term stability in what could be (but need not be) a negative way."

But OSD's reservations about hard-target kill capabilities don't deny that the answer to the problem might lie in being able to cover "hard targets with at least one reliable warhead with substantial capability to destroy the target and [also] in having the retargeting capability necessary to permit reallocation of these warheads either to a smaller number of crucial hard targets, or other targets on the list. Even with slow-reacting capabilities such as cruise missiles, this would ensure that an enemy's silos are not a kind of sanctuary from which he can shoot with impunity."

Secretary Brown argues in similar fashion that "no enemy should be left with the illusion that he could disable portions of our nuclear forces—CONUS-based or overseas—as a preliminary to attack on specific theaters with his general-purpose forces. The latter can and should be targeted. Under many conditions, moreover, they may be more time-urgent targets than residual missiles. So might the command control, war reserve stocks, and lines of communications necessary to the conduct of theater campaigns. In some circumstances, we might also wish to take war-related industries under attack, especially those decoupled from cities."

The authors of the countervailing strategy seek force levels that provide the option to reply to any form of attack "in a controlled and deliberate way, and to proportion our response to the nature and scale of the provocation." Yet, at the same time they counsel against having, "after an exchange, a residual capability—whether measured in throw-weight or warheads—that is equal to or larger than the residual capability of the Soviet Union, especially if both nations had been reduced to radioactive rubble in the meantime."

Many Americans probably won't agree that a US force structure that gains in strength relative to that of its adversary after an exchange represents bad deterrence, even though such a condition is unlikely to be greeted by the Kremlin with cries of hosanna—or proper Marxist equivalents. But to advocate that the US should come out of such an exchange with inferior forces denies the essence of deterrence and stability—which is to leash a potential attacker by demonstrating that his attack will gain him no advantage, or might even leave him weaker than he was before the exchange.

Admittedly, if the exchange reduces both nations to

"radioactive rubble"—regardless of whose residual forces come out ahead—a high degree of deterrence is in effect. But this line of logic is locked in on an assured destruction scenario and disregards both the flexible options sought by the new countervailing strategy and the Soviet Union's crystal-clear commitment to a war-fighting capability anchored in endurance and multiple exchanges. The latter point was brought out by Dr. Perry's testimony in February when he reported to Congress that "recent studies have pointed out that Soviet strategic doctrine does not envision a nuclear war as ending in a matter of hours, but rather, as continuing until one side or the other has gained military ascendancy. Whatever doubts one may have about the realism of such expectations, the response to an attack of this type—and its deterrence—requires long-term survivability and operability of both command control and communications systems and nuclear strike systems." Secretary Brown, in addition, told the House Armed Services Committee that the Soviet strategic forces "come much closer to a war-fighting capability" than the US in terms of endurance, hard-target capability, and command and control capabilities.

### Continuation of the Triad

The best way to realize the US goal of "maintaining deterrence and stability" is to continue "the diversity, redundancy, and flexibility of the current triad," Dr. Brown told the House Armed Services Committee. By having three largely independent survivable systems, he explained, "our capability has been well hedged in the past, [but] three key problems must be addressed if we are to ensure the continued effectiveness of our strategic programs: [first,] a solution must be found to the problem of increasing vulnerability of land-based ICBMs; [second,] the high survivability of the SLBM force must be maintained as Polaris/Poseidon submarines reach the end of their planned service life; and, [finally,] high reliability, survivability, and penetration for weapons assigned to the air-breathing leg must be continued."

Several members of the House Armed Services Committee, aware of press reports (including this publication's) about the White House's inclination to gradually phase out the triad and shift to a dyad, questioned Dr. Brown about his specific recommendations to President Carter on this point. While refusing to divulge private and privileged communications between the Defense Department and the President, Secretary Brown confirmed in a heated exchange with Rep. Robin Beard (R-Tenn.) that not to modernize or remove the vulnerability of the US ICBM force "would have serious military and political consequences" and that he had so informed President Carter. JCS Chairman Gen. David C. Jones further told the committee, "It is my judgment that it would cost more if you attempted to do the same thing with the dyad as with the triad, but in fact you couldn't do the same because each leg of the triad brings unique features and capabilities." Hence, going to a dyad, General Jones testified, would not only be costly and unwise, but induce a "very unstable situation."

Dr. Perry also advocated continuation of the triad before the Senate Armed Services Committee and urged modernization of its components to counter the Soviet strategic arms buildup. Focusing on the urgency of cor-

recting the obsolescence and vulnerability of the ICBM leg of the triad—with the Minuteman II force "already showing signs of deterioration" and Minuteman IIIs bound to develop similar symptoms in the next decade—Dr. Perry pointed out that it takes about ten years to bring a new missile into the inventory.

The vulnerability of the US ICBM force—brought on by the growing number of highly accurate warheads carried by the Soviet Union's new ICBMs—could be eased somewhat through the deployment of ballistic-missile defenses, Dr. Perry testified. For this reason, he said, the Defense Department carries out intensive research in this field which in the years to come may "provide an enhanced survivability posture for our ICBM force, even in the presence of extensive threats." Deployment of such weapons—beyond the 100 systems permitted under the SALT I ABM treaty—is, however, prohibited.

Another "remedy," the adoption of a "launch-under-attack" policy, also turns out to be flawed, according to Dr. Perry: "We have the technical capability to launch our ICBM force prior to an attack, and we plan to maintain this capability. However, we should not depend on this tactic, since it does not provide for stability in crisis situations, nor does it take account of countermeasures against our warning systems. Nonetheless, we are [improving] our early warning sensors and our ability to correlate warning information to characterize such an attack."

For the time being, the US ability to assess such an attack is limited and probably inadequate for a counterattack against those Soviet ICBMs that are withheld. US sensors, for instance, can detect rapidly and reliably the ICBM field from which an individual missile has been fired. These sensors lack the resolution, however, to pinpoint the silo within a field from which the launch took place. Thus, the US might waste a high percentage of its ICBMs attacking empty silos in order to cope with those housing missiles held in reserve.

### MX—The Paramount Weapon Program

The "most important program we have in the Department of Defense, at least in my judgment," is MX, a modern, survivably based ICBM, General Jones told the House Armed Services Committee. It is vital, he testified, that "we get on with full-scale development" simultaneously with the examination of alternative basing modes.

Dr. Perry defined the latest MX concept in his testimony: "This system, as we see it now, would consist of a missile larger than Minuteman III [and] having several times its capability in terms of payload and nearly twice the accuracy." There would be an "option for the development of an eighty-three-inch-diameter missile [constrained by the Trident submarine's launch tube diameter] having two stages applicable to Trident II as that [new SLBM] system matures. . . . Each MX missile could carry about the same number of warheads as the [Soviet SS-18 and SS-19 ICBMs, *i.e.* between six and ten]—although smaller in size—so the program would redress the balance as well as solve the force obsolescence and vulnerability problems."

The new missile's basing mode has not yet been selected. Dr. Perry is scheduled to present to Secretary Brown by April the results of current basing mode

studies by the Air Force and his office. There are indications, however, that this deadline may have to be slipped somewhat. Further, Dr. Brown told Congress that his own review of this information might take until the end of this summer. There is no way of gauging the time between the Defense Department's recommendation for full program go-ahead and its acceptance by the White House, or of predicting whether the President will accept these recommendations.

Two basing schemes are under consideration. A basing mode that is promising from a technical viewpoint, Dr. Perry testified, "is the Multiple Protective Structure [MPS—formerly MAP] approach. In this approach, several thousand vertical in-ground structures would be built, each one capable of containing a missile or missile simulator. Several hundred missiles and several thousand missile simulators would be moved about randomly in this field of protective structures as necessary to protect the actual location of the missile." But this concept, he said, "while meeting the technical requirements for survivability, has been questioned in terms of its verifiability and our capability to bound the threat should the Soviets adopt a similar system."

For this reason, the Defense Department directed the Air Force late last year to study also an airmobile/air-launch concept involving the use of STOL aircraft—designed to launch ICBMs in flight—that could be operated from thousands of small airfields. The reaction of the two congressional armed services committees to this decision has been skeptical, with frequent allegations that the Administration plans to "study MX to death."

Both General Jones and USAF Chief of Staff Gen. Lew Allen, Jr., encountered probing and at times leading questions by some members of Congress on this point, causing the JCS Chairman to warn that "we may not have an MX at all if we get into too much controversy about the basing mode. . . . Let's keep all the options open for awhile and then make a decision [on basing] later. . . . What we want to do is . . . build a missile which is the long pole in the tent. That missile can go into a silo; it can go into a vertical shelter; it can go into a [covered] trench; or it can go airmobile. *But*, let's get on with building the missile [and not jeopardize the program] by trying prematurely to decide on a basing mode which may not survive" because of as yet not clearly understood political and other drawbacks. Nevertheless, General Jones acknowledged before the House Armed Services Committee that the Joint Chiefs and the Air Force, "ignoring environment [and] verification issues," prefer the MPS basing mode "at this time."

Congressman Richard Ichord (D-Mo.), in a spirited colloquy with General Allen on February 1, 1979, said: "We start and we stop; we hesitate; we start and we stop and hesitate. I am worried . . . we might be hesitating again [by] bringing up an airmobile concept, something that we studied—you said we have studies as high as your head—time and time again. When will we make a decision that will give us survivability of our ICBM force?" After General Allen replied that he hoped the decision will be made this spring, Representative Ichord wanted to know how firm that hope was. General Allen answered: "Well, you really must ask the Secretary of Defense [about] his recommendation to the President, and, of course, what the President's decision would be,

and I can't speak for them. But I think we will be able to provide the technical data which addresses the airmobile option and also provide better answers to the Secretary's . . . concerns about the [MPS] system."

### Other Triad Considerations

"We don't expect a Soviet threat against our SSBNs within the next decade, but can project a [potentially] significant ASW problem by the 1990s," according to Dr. Perry. The modernization of the US ballistic missile fleet that will get under way this year with the retrofit of the Trident I 4,000-mile-range SLBM on twelve Poseidon submarines in the fall of 1979 and the entry of the first Trident submarine late in 1980 provides for broad, long-term viability of this leg of the triad. According to Vice Adm. Charles H. Griffiths, the US Navy's Deputy Chief of Naval Operations for Submarine Warfare, the "at-sea availability [the percentage of time an SSBN can spend on patrol] of Trident will be sixty-six percent, compared to fifty-five percent for Poseidon. Quieter, faster, and carrying twenty-four missiles, rather than the Poseidon's sixteen, Trident eventually is to accommodate a new follow-on missile, the D-5, featuring improved accuracy, greater throw-weight, and greater full payload range [and thus] will provide our sea-based deterrent forces with the capability to cover the entire Soviet target spectrum," the Admiral told the Senate Armed Services Committee.

One of the problems attending the retrofit of the Trident I missile into the Poseidon fleet is that it deepens the "trough" in US vs. Soviet strategic capabilities in the early 1980s. At that time, the older Polaris SSBNs will be deactivated and large segments of the Poseidon fleet will be offline for prolonged periods while being equipped with the new missile. Also, the Air-Launched Cruise Missile (ALCM) will not yet be operationally ready (the first ALCM-equipped B-52 squadron won't reach operational status until December 1982) to take up the slack. Conversely, the surprisingly rapid gain in Soviet ICBM accuracy is now expected to put the Minuteman force at risk as early as 1980. No countervailing US capability exists or is planned before late in the 1980s when MX might become available.

The effectiveness of the air-breathing leg of the triad, over the long term, according to Dr. Perry, could depend to a large measure on the survivability of the ICBM force: "If we should not deploy a more survivable ICBM system, the Soviets could concentrate their ICBMs not used in a silo attack and their SLBM forces in a barrage attack against our bombers and cruise missiles to destroy them near their airfields. Eventually—actually in a time which is short on the scale of development and deployment of strategic systems—the survivability of the air-breathing element of the triad could depend on the survivability of our ICBMs."

Even when this linkage between ICBMs and the air-breathing weapons is disregarded, Dr. Perry testified, "major advances" by the Soviets over the past five years in technologies threatening to the US strategic bombers and air-launched cruise missiles could become acute by the mid-1980s. Additionally, he pointed out, even after "the bomber or cruise missile carrier has safely escaped the SLBM attack (and ICBM barrage, if that materializes), the next problem is penetration. The Soviets are continuing to develop a new surface-to-air missile

system, the SA-X-10, which could be used against low-altitude penetration targets. We estimate that the system . . . will begin deployment in the near future.

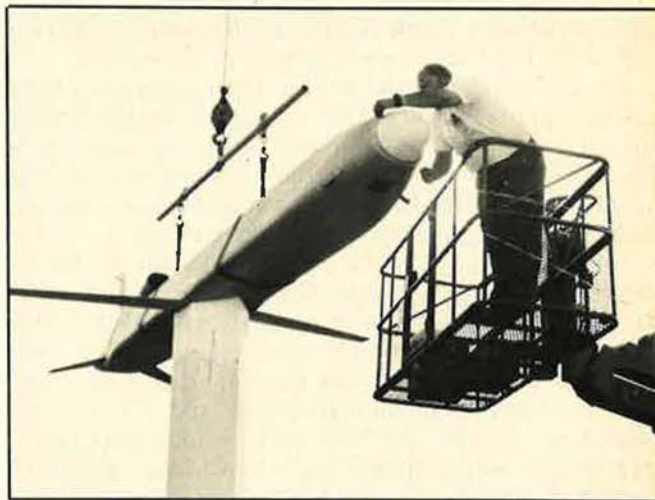
"To be effective against the force of small, low-altitude cruise missiles that we plan to deploy, the Soviets would need to deploy five hundred to a thousand SA-X-10 sites. This would represent a massive investment which would take to the late 1980s to complete. The Soviets are also working on look-down/shoot-down technology which will improve their capability to engage low-altitude bombers and cruise missiles. . . .

"While Soviet technology is considerably behind US technology in this area, we can expect a large-scale deployment capability by the late 1980s. To be effective in using a look-down/shoot-down capability, the Soviets would need some means of vectoring fighters to their targets. This could be accomplished with a system like the US AWACS, and we believe the Soviets are developing such a capability though its characteristics are uncertain."

Countervailing US measures under consideration at present, the Defense official reported, include the addition of advanced electronic countermeasures (ECM) to the B-52 and FB-111 force "to improve protection against both surface-to-air missiles and look-down/shoot-down fighters." Similarly, there is the option to equip second-generation ALCMs with lightweight ECM and to increase the number of ALCMs in the future air-breathing force, requiring "the defensive systems to have much greater detection sensitivity and to be deployed by the thousands instead of the hundreds," according to Dr. Perry.

The new Defense budget also provides for research and development of a cruise missile carrier (CMC) as part of the bomber modernization program. The CMC, according to Dr. Perry, "may be viewed as a force enhancement program and, perhaps, a replacement for the B-52Gs, rather than accepting the reliability and penetration problems and expenses involved in maintaining that fleet beyond 1990 (by which date the B-52Gs will be thirty years old). We would expect to modify a transport-type aircraft for this application, thereby minimizing R&D expenses. The major options are . . . a wide-body commercial jet (like the 747), which could carry sixty to seventy cruise missiles and . . . an AMST-like transport which could carry twenty to thirty cruise missiles. Lower-cost derivatives of the B-1 are also being considered. We also envision moderate expenses for upgrading the B-52Hs (including new avionics and a new ECM system) to maintain them as a penetrating bomber force."

The new budget's focus on modernizing the US strategic forces obviously is salutary. The real question is, is it already too late? As General Jones pointed out to the nation in his posture statement, "It is now generally accepted by most defense analysts that, regardless of US actions, Soviet strategic capability will increase relative to that of the US through the mid-1980s, with or without a SALT agreement. Statistically, any margin may not be great, but a significant overall edge could have profound influence, not only on the perceptions and apparent options open to the decision-makers in Washington and Moscow, but also on the policies and alignments of other nations." ■



*Second-generation air-launched cruise missiles could incorporate lightweight ECM systems to defeat Soviet air defenses.*

# The Pros and Cons of a

BY BONNER I

**W**HILE the Air Force is in the midst of modernizing its tactical aircraft, there is an internal debate over the missions and flexibility of three particular planes.

Both sides of the debate are citing the same reason for their positions: fiscal restraints imposed on defense spending. But they come to opposite conclusions.

The argument centers on the F-15 air-superiority fighter—its equipment and missions—and also on the capabilities of the A-10 and F-16 aircraft. The F-111, considered the most effective deep penetrating aircraft in the US arsenal, is not involved in the mission performance debate, though there are studies also to expand its uses.

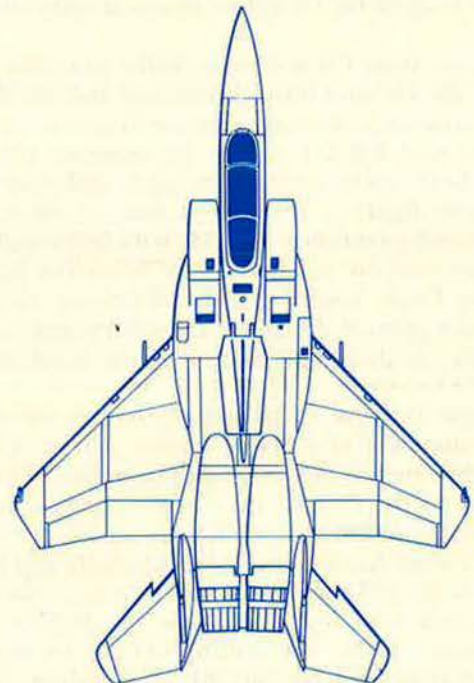
One view within the Air Force holds that the limited amount of money available for modernization and the growing sophistication of technology make it difficult or impossible for aircraft to be used effectively for more than one mission. They make the point that at the outset of the current acquisition programs, the F-15 was designed to provide the high performance required to overwhelm enemy fighters and to win air superiority over the battlefield. The F-15s would be supported in the air-superiority role by the less-capable but lower-cost F-16. After control of the air over the battleground is achieved, the multipurpose F-16 would be freed to assist the A-10 in its role of supporting ground troops, attacking enemy troop concentrations, artillery positions, and other ground targets.

The second view holds that conventional warfare defies such planning of the air war. The nature of conventional war, according to this view, is that it evolves in so many directions that it is impossible to plan ahead on the numbers of aircraft required for any single mission. When multimission aircraft are purchased, according to this view, the US is better prepared regardless of the tactical situation. In the view of one planner: "I would rather be able to do a pretty good job of three missions than a superior job of only one mission."

There is a constant tradeoff of conflicting needs in the purchase of aircraft and other weapon systems, so such divisions of opinion pose a constant tension on force planning. The division, furthermore, is not a simple one: Every plane has the inherent ability to perform more than one mission, though it may be designed primarily for a specific mission.

The unusually heated debate over the mission and equipment of the tactical air forces, however, is generated by the stringent limits placed on aircraft acquisition, combined with the awesome growth of the Soviet and Warsaw Pact air forces facing the US and our allies in Europe. The search is for a mix that, despite budget limits, will be capable of defeating a mix of Soviet and Warsaw Pact forces that not only has a roughly two-to-one edge in deployed tactical air forces, but also possesses superiority in numbers of almost every category of con-

**"Multimission advocates say the [F-15, F-16, and A-10] have not been equipped to exploit their full potential."**



# Itimission Fighter Force

R EDITOR

ventional weaponry—most notably in armored fighting vehicles and artillery that are the core of offensive ground tactics.

In current US defense planning, moreover, the Air Force, which has about half of NATO's tactical airpower, is charged with defeating numerically superior enemy air forces, while augmenting the outnumbered NATO ground forces sufficiently to defend Europe against the Soviet Union and its allies. In short, the Air Force role in theater warfare is greater than ever before, though the Air Force is not getting proportional increases in its share of defense dollars. This puts increased pressure on US planners to squeeze as much capability as possible out of every Air Force dollar.

The focus is not on the acquisition program that now is in progress and is scheduled to be completed in Fiscal Year 1983. The policy debate centers on whether the forces acquired should be provided additional equipment to extend their missions, whether additional aircraft should be bought instead, or whether a mix of the first two options should be pursued.

The F-15 Eagle, which became operational in 1977, is continuing to replace squadrons of the older F-4 Phantoms. Current plans call for the Air Force to buy 729 F-15s. The aircraft are equipped for air-superiority missions, though some are planned for interceptor duty. Under discussion, however, are proposals to buy bomb racks, associated equipment, and munitions so the plane can attack ground targets.

The A-10, designed to take out tanks and provide other ground support, also is replacing squadrons of the multimission F-4. Some 733 A-10s are scheduled to be bought within the next few years. Combat-ready A-10s are on station at both US and European bases. Proposals now under study call for using the plane in air-to-air missions against helicopters.

The first production models of the F-16 were delivered to the Air Force in January. This plane is equipped for both air-superiority and ground-support missions. The Air Force has contracted to buy 650 F-16s, but has long-range plans to buy at least 1,388. Planners say additional equipment would increase the plane's effectiveness in night and bad-weather operations.

During Fiscal Year 1980 alone, four F-4 squadrons will be replaced and augmented by two F-15 squadrons, two A-10 squadrons, and three F-16 squadrons.

Multimission advocates say the three planes have not been equipped to exploit their full potential.

In the case of the F-15, they argue that bomb racks and other equipment needed for maximum air-to-ground effectiveness are small in cost compared to the dramatic benefits achieved. Says one planner: "The easiest way to win air superiority is to destroy enemy aircraft while they are on the ground. If the enemy aircraft do manage to get

off their airfields, F-15 pilots can jettison their bombs and fight them in the air." The alternative, according to this view, is buying additional aircraft for ground attack.

Similarly, multimission advocates see the F-16 evolving with relatively little expense as an all-weather fighter with the addition of Forward-Looking Infrared (FLIR) sensors and other equipment.

In the case of the A-10, designed specifically for the single mission of supporting ground forces, there also is room for growth, say some Air Force planners. Its potential effectiveness against the growing number of Warsaw Pact helicopters was noted earlier. According to one planner: "Smart munitions are going to increase the capability of the A-10 in ways we don't yet appreciate."

The specter that haunts multimission advocates is a war in which more planes for a particular mission are needed than are available, while other planes, limited by equipment, are idle. A conventional war in Europe is cited as an example where the US might run short of ground support and interdiction aircraft, while the F-15, having accomplished its control over the battle skies, would be available but not equipped to help.

Against this evolving acquisition plan are advocates of continued purchases of the present aircraft or follow-on planes with the same, limited missions.

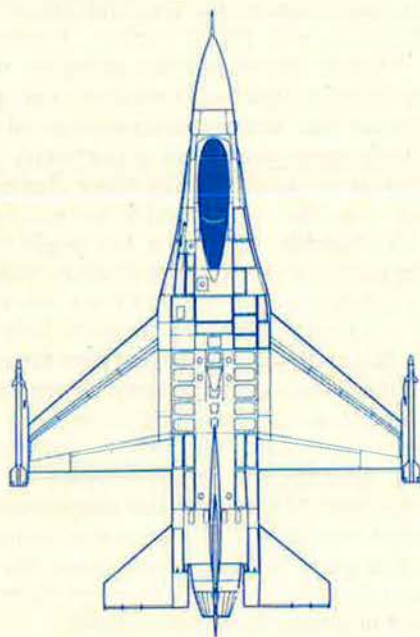
They argue that the single mission plane does the job better than multimission planes, whatever the assignment. In the case of the F-15, the single-mission assignment permits maximum design and equipping for the one mission. The pilot, similarly, can focus his training on one job and therefore become more proficient than if he had several missions for which to train.

In the case of the A-10, advocates point out it was developed at a time when the Army was upset over the number and capability of planes assigned to the ground-support mission. In an effort to alleviate Army concerns that not enough ground-support aircraft would be available when needed, the A-10 was designed for ground-support missions, with survivability, firepower, and low-altitude/low-speed maneuverability not feasible in a high-performance fighter.

Another strong argument for single-mission aircraft is the growing sophistication of aircraft and munitions. By limiting the missions, the plane is not weighted down and the pilot is not overwhelmed with flying chores. Aircraft also are limited by size in the range of capabilities that can be added to an initial design. One force planner emphasizes: "There is a point at which you have to stop cramming more equipment into the plane."

Some make the point that single-mission aircraft are cheaper, and in the case of ground support, do not risk as great a loss as high-performance aircraft in the same mission. The F-15 is cited in this argument as too expensive an aircraft to risk in tank-killing missions.

**"The crucial test of the modernization program . . . is the performance of the US force against that of the Soviet and Warsaw Pact military forces."**



The crucial test of the modernization program, however, is the performance of the US force against that of the Soviet and Warsaw Pact military forces. US Air Force aircraft have always been more sophisticated and more flexible than Soviet planes. And, so far, USAF aircraft have outperformed Moscow's best—in Korea, in the Middle East, and in Southeast Asia.

The question air planners now ponder is whether US planes can continue performing more than one mission and at the same time outperform their opposition.

Advocates of the single-mission strategy see a new trend in the Soviet tactical forces of the 1970s. They say that some Soviet aircraft systems have drawn abreast of US counterparts in important areas, such as terrain-following radar and guided munitions, while Soviet theater air defenses have become increasingly effective against US strike aircraft.

Because of these trends, they say, the US no longer can enjoy the flexibility that has been inherent in multimission tactical aircraft. Rather, they must be prepared to use every inch of aircraft space for the equipment and munitions that will achieve one assigned mission. Similarly, Soviet improvements in aircraft and anti-air ground defenses mean US pilots must devote all their energies to training for their principal missions. Otherwise, the US loss rate against Soviet forces will be unacceptable.

Airpower planners believe that to contain the Soviet conventional threat in Europe, larger numbers of aircraft are needed to cope with the high loss rate anticipated in such a conflict. Limiting the missions of aircraft, in one view, permits larger aircraft buys.

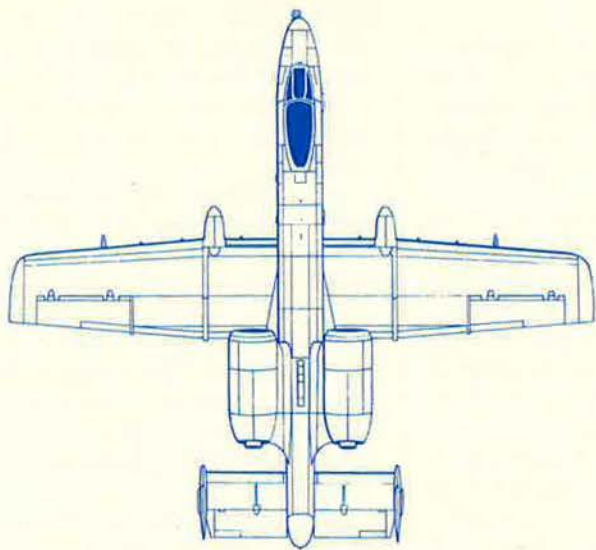
Proponents of multimission aircraft see a move by the Soviet Union from simple planes such as the MiG-15 of the 1950s to more complex aircraft such as the MiG-23 now being added to the Soviet forces in Europe. The basic version of the MiG-23 is equipped for air-superiority missions, while a modified version, the MiG-27, is a low-altitude, penetrating strike aircraft. The Su-7, Su-17, and Su-19 are designed specifically for ground attack.

The move from small, simple tactical planes to larger and more complex aircraft is partly the result of advancing technology. But US air warfare experts also say it reflects a move on the part of Soviet strategists from defensive warfare to offensive warfare. The larger planes, with longer ranges and greater payloads, can carry the war far beyond the immediate battle area.

The trend, according to some experts, is explained this way: After World War II, the Soviet Union was constrained by costs and limited technology and as a general trend built small aircraft defensive in nature but built them in large numbers. The US, by contrast, built smaller numbers of more complex aircraft, many of which were offensive in nature, though for deterrent purposes, as part of the "Forward Defense" strategy.



**"Aircraft designs are not decided on doctrine alone in today's climate of cost restraints, interservice claims to resources, and domestic policies."**



In planning for the future, the US must place its emphasis on complex, multi-mission aircraft rather than single-mission planes if it wants to avoid a shift from forward to defensive military planning, say some airpower experts. Their reasoning: Longer-range, multi-mission planes with bigger payloads would permit the commander to regain territory or initiate military advances.

Ironically, the advocates of multi-mission aircraft and the increased flexibility they provide have official Air Force doctrine, if not the budget managers, on their side. Flexibility is called, in Air Force doctrine, "the most significant operational characteristic of tactical air forces."

The doctrine further stresses that: "The flexibility of tactical air forces provides a unique capability for exercising initiative in that they can rapidly shift from one to another of the various tasks of tactical air operations."

But aircraft designs are not decided on doctrine alone in today's climate of cost restraints, interservice claims to resources, and domestic politics. Senior leaders charged with allocating Air Force resources say the budget restraints do not permit the doctrine of flexibility to be the only governing factor in force planning. Flexibility advocates insist, however, that the restraints mean the doctrine should be observed more closely than ever.

In pilot training, there is general agreement that multi-mission aircraft pose special training problems. Some pilots simply cannot take on the additional work required in multi-mission aircraft and perform these jobs adequately. The solution, multi-mission advocates say, is to select only exceptional pilots for multi-mission aircraft.

The pressure for both added flexibility and a larger force of tactical aircraft reflects the growing Soviet conventional force threat in Europe. In numbers, the Soviet Union is adding significantly to its tactical air forces. Since 1970, the Soviet Union has produced more than 5,000 tactical aircraft, about four times the number produced by the US. The total aircraft buy of the US Air Force has doubled to a rate of 400 a year since 1976.

It is in the face of the growing imbalance of numbers of aircraft and improving Soviet air defenses that the pressure to respond by trading flexibility for numbers is so great.

But the unpredictable nature of conventional war is the second horn of the dilemma that continues to confront planners. In the words of one top Air Force officer: "Commanders in a conventional war do not know how their weapons will have to be used. Unlike strategic nuclear planning, a great influence in all defense planning, conventional war cannot be reduced to numbers and equations. The unknowns of conventional war are such that everything in air resources may have to be thrown into the air battle. Or, under different circumstances, all available airpower may be required to prevent a disastrous breakthrough of enemy tank columns." ■

# Putting Up-Or-Out in Perspective

The up-or-out concept of officer personnel management has been around in some form for a long time. Is it really the disaster many now believe it to be?

BY ED GATES  
CONTRIBUTING EDITOR

**T**HE culprit [causing officer management problems] is not increased airline hiring, but the damnable up-or-out system. . . . Let's get rid of it!"

"Why is it necessary to be promoted to be of value?"

"Why can't a person put in twenty to twenty-five years as a technical specialist and retire as a major?"

"With the Air Force policy of up-or-out, there are a lot more officers going out than up."

Pretty strong stuff. And wide of the mark. Many times more officers are promoted each year than are eliminated. Yet these statements, from letters in the January '79 AIR FORCE Magazine and in other military publications, are typical of the startling increase of such complaints from throughout the Air Force community.

Almost overnight, it seems, "up-or-out" has become a dirty name. Never mind that the up-or-out system has been in operation since 1947 and in much its present form since 1959. During all those years, modest numbers of officers who failed of promotion were involuntarily separated in about the same numbers as now.

Yet, until recently, there was no flood of denunciations from the officer corps, little demand that the system be removed. A few barbs did surface in 1976 when the Defense

Manpower Commission described the up-or-out concept as "failure oriented" and urged sharp changes. But the DMC report was quietly shelved, and little has been heard of it since.

Also during the recent past, the Senate Armed Services manpower subcommittee, headed by Sen. Sam Nunn (D-Ga.), has attacked aspects of the up-or-out program, touching off some headlines. And doubtless laying the foundation for the present uproar by the troops.

At least part of the commotion over up-or-out stems from the Officer Effectiveness Report brouhaha, Hq. USAF officials say. Before Air Force removed the controls from OERs, the competition for the few "1" ratings—the top box—had reached fever pitch. Many officers looked on ratings lower than "1" as only a step removed from failing of promotion—and, presto, elimination. Up-or-out system at work.

At that time the OER system drew the heavy fire. But when USAF, alarmed at the intensity of the bitterness, removed all the controls last fall, OERs no longer were the number-one whipping boy. Up-or-out, despite its long tenure with only slight grousing from the officer corps, assumed the guilty role.

But is up-or-out the disaster the new critics say it is? Will USAF and the other services, in the face of growing pressure against it and rising voluntary exits among pilots and some other officer groups, modify or eliminate up-or-out?

First, let's backtrack a few years.

## Evolution of Up-or-Out

An up-or-out of sorts first emerged in 1916 when the Navy got a law enacted containing the rudiments of a selective promotion system, as opposed to the promotion shambles that was based solely on seniority.

Until then, only if an officer died or resigned—and few resigned—could another advance, in both the Navy and Army. Navy's 1916 statute set up minimum time-in-grade criteria and maximum age limits, all designed to advance the "best-fitted" officers and ease out the others. But the Navy watered down this proviso by allowing some to be judged just plain "fitted," and they were promoted rather than eliminated. These "fitted" officers, it was reported, did not pull their weight in World War II. One admiral called them "second-class officers who were not much of an asset."

Before World War II, the Army had no force-out or early retirement provisions, and the results were predictable: fourteen-year-in-grade lieutenants, decrepit seventy-year-old generals, and promotion blockage at all levels. The average age of US Army lieutenant colonels in 1935 was 52.4 years, about ten years older than USAF lieutenant colonels today.

Shortly after the big war, Army and Navy tackled the problems of promotion stagnation, aged and unfit officers, and the need for quality leadership ready to fight at the outset of war. General Eisenhower, in hearings on corrective legislation, focused on the "military-must-be-capable-of-immediately-waging-war" theme. "Not over five" of the Army officers available to take command of divisions and corps actually went through the war, he said. "All the rest . . . had to be replaced and gotten out of the way, and younger men had to come along and take over the job," Ike testified.

The upshot was enactment of the 1947 Officer Personnel Act, which remains the cornerstone of today's up-or-out system. OPA also gave Air Force and Army the authority to conduct the "dual-promotion" program, involving both temporary and permanent selections. The Penta

gon, via the Defense Officer Personnel Management Act (DOPMA), wants to replace it with a single promotion setup.

Under the thirty-two-year-old permanent promotion system, regular officers are considered for advancement not later than the following years-of-service points: seven to permanent captain, fourteen to major, and twenty-one to lieutenant colonel. Promotion to colonel begins about the twenty-third year of service.

Regulars passed over twice to permanent O-3 and O-4 are separated, although some enter enlisted or Reserve status to protect their retirement equity. Permanent regular majors who twice fail to make permanent lieutenant colonel normally have more than twenty years of service and, as a result, are assured retirement.

Permanent regular O-5s and O-6s enjoy a unique status: They can be passed over for colonel and brigadier general year after year, yet cannot be forcibly retired until completing twenty-eight and thirty years of service, respectively. DOPMA, however, contains machinery to early-retire officers in these groups who are not carrying their weight.

The temporary promotion system was designed to provide for temporary advancement for both regulars and Reserves while personnel strength exceeded regular officer legal limits. The authors of OPA thought that within ten years the force level would plunge, leaving a small all-regular officer force. Temporary promotions, they felt, would disappear.

But they did not anticipate the cold war, the Korean War, and other subsequent events dictating larger forces. Active-duty manpower did not drop; it soared. Since 1951, Air Force officer strength has ranged up to 72,000 above the regular officer legal ceiling. In fact, the regular limit set in 1947 was increased from 27,500 to the current 9,425 (DOPMA would remove it entirely).

About 40,000 of the present 55,000 active-duty USAF officers are Reservists. The temporary promotion system remains the chief means of promotion for all officers. The accompanying chart outlines the dual promotion system and points up its complexities (which the

# “... the 1947 Officer Personnel Act . . . remains the cornerstone of today's up-or-out system”

DOPMA legislation would remove).

## Dimensions of the Problem

At first under OPA, there were no grade limits or forced attrition in the temporary system. Accordingly, field-grade strengths soared and Congress became edgy about “grade creep.” It slapped on year-to-year temporary field-grade ceilings, but this caused new promotion turmoil because the services didn't know in advance what their annual grade limits would be.

To straighten that out, Congress in 1954 passed the Officer Grade Limitation Act (OGLA), giving each service temporary field-grade limits at all strength levels. But being a young service, Air Force received very low ceilings. Not surprisingly, in five years USAF's grade stagnation returned; the OGLA authorizations were nearly full, and attrition was negligible—only 2,500 Air Force officers had enough service to retire.

Furthermore, Reserve officers weren't eliminated for temporary promotion failure, and many stayed aboard past twenty years. Regular officers, meantime, were promoted permanently under the “fully qualified” system, meaning that ninety-five to ninety-nine percent of all contenders were advanced. Up-or-out, in short, was almost dormant.

Promotions slowed to a trickle; the gripes escalated. To cope with the 1959-60 stagnation, the Air Force:

- Got Congress to provide extra

field-grade spaces, but the solons made the relief temporary, not permanent. Air Force, as a result, has been back eight times for continued temporary grade ceiling relief. DOPMA contains the permanent grade tables Air Force so urgently needs.

- Began forcing attrition of Reserve officers twice failed to temporary major.

- Started to forcibly retire nearly all Reserve officers at the twenty-year service point. (USAF late last year relaxed this policy by allowing 359 such officers to serve to twenty-two years.)

- Increased regular officer attrition by installing “best-qualified” selections for permanent major and lieutenant colonel.

- Summarily retired about 1,000 senior regulars, under the so-called “White Charger” legislation, several years before their normal tenure provided.

All these changes, according to Hq. USAF, provided “reasonable opportunity for advancement under the temporary system . . . during the 1960s and 1970s.” But with the end of the Vietnam War, the service was forced to cut strength in different ways. This has reduced and delayed some promotions and increased passovers.

How many promotion-failed officers are forcibly separated prior to retirement eligibility? Hq. USAF puts the annual figure at slightly under 1,000 since FY '76, with those not selected for promotion to tem-

porary O-3 accounting for the lion's share (see accompanying table).

Over the past decade (FY '69-78), however, force-outs averaged only 428 per year; many who were not promoted were "continued" on active duty to meet Vietnam War requirements.

Even based on almost 1,000 such separations annually, the force-out rate is about one percent of the 95,000-member officer force, not the massive exodus some quarters would suggest. Severance pay, long limited to \$15,000, would increase to a ceiling of \$30,000 under the DOPMA legislation.

Headquarters personnel officials also note that many such separatees are not cut loose in the full sense. An estimated twenty percent of

Temp Grade	FY '76	FY 1977*	FY '77	FY '78**
O-1	3	1	6	—
O-2	132	50	110	—
O-3	707	2	774	—
O-4	74	1	58	—
	917	54	948	1,000

\*FY '77 transition quarter  
 \*\*FY '78 statistics had not been completed at press time, but the official estimate is "about 1,000." The FY '79 estimate: "less than that."

them elect to enlist; they serve out their twenty years as airmen, then retire as officers. Some 1,000 are currently on active duty, authorities said.

They also report that numerous other passed-over separatees sign up with the Air Reserve and Air Guard,

as officers. They aim to complete at least twenty active-duty and Reserve years and thus qualify for retirement benefits at age sixty. If they have considerable active-duty time, say twelve or more years, their equity in retirement is substantial because each active-duty year gener-

### The Dual-Promotion System

Under the complicated "dual-promotion" system, both regular and active-duty Reserve officers are considered for temporary promotion at the years' service points indicated below. Involuntary separation (or retirement, if officers have enough service) normally occurs after two passovers. An exception is to temporary O-4 where the officer leaves after the first failure unless he asks to stay aboard for a second consideration. And, by policy, the Air Force does not forcibly separate Reservists twice deferred for

temporary O-5. Reserves rarely are considered for temporary O-6; they are retired too early to be eligible. Permanent regular boards, which consider regular officers only, convene later than temporary boards. Thus, few permanent regular hikes result in insignia changes. It takes two permanent passovers to separate a regular. Under DOPMA, a single promotion system and an all-regular force past the eleven-year service point would replace the dual apparatus, and all officers would be treated alike.

Years' Service	Temporary System (Reserve & Regular)			Permanent System (Regulars Only)		
	Event	Quota	Reserves Invol Sep/Ret	Event	Quota	Regulars Invol Sep/Ret
2	Cons to T O-2	FQ	Yes			
3				Cons to P O-2	FQ	Yes
3½	1st Cons to T O-3	FQ	No			
4	2d Cons to T O-3		Yes			
6½				1st Cons to P O-3	FQ	No
7½				2d Cons to P O-3		Yes
11	1st Cons to T O-4	80%	Yes			
12	2d Cons to T O-4		Yes			
13				1st Cons to P O-4	Min 80% New Elig	No
14				2d Cons to P O-4		Yes
15	1st Cons to T O-5	70%	No			
16	2d Cons to T O-5		No			
19				1st Cons to P O-5	Min 80% New Elig	No
20				2d Cons to P O-5		Ret at 22 YOS
21	1st Cons to T O-6	50%	No			
22	2d Cons to T O-6		No			
22				1st Cons to P O-6	50%	No
23				2d Cons to P O-6		Ret at 28 YOS

Cons = Considered  
 FQ = Fully Qualified  
 P = Permanent  
 T = Temporary  
 YOS = Years of Service

ates about six times as many training points as straight Reserve service. By continuing in this fashion they receive a generous pension and other military retirement privileges about the time they are retiring for good.

### USAF Supports Up-or-Out

Air Force leaders, meanwhile, say they remain solidly behind up-or-out. They like the way it has helped produce promotion vacancies and a youthful, vigorous force, and they are reiterating their support for the embattled program.

Lt. Gen. Bennie L. Davis, the Hq. USAF DCS/Manpower and Personnel, fired a major salvo of support when he declared recently that allowing deferred captains to stay aboard until twenty years would mean their "going sixteen years without a promotion, eight [to] ten years without much hope of one, six years without even a longevity raise. . . ."

In addition, he told the AFA Chapter at Pease AFB, N. H., "it would mean serving as a captain alongside old friends and former classmates who are lieutenant colonels and colonels. . . . Motivation to serve and excel" would be highly questionable, he said.

Still, according to General Davis's aides, up-or-out is not inflexible in application. They cited the recent USAF move to promote to temporary captain on a fully qualified rather than the previously employed best-qualified basis. This means advancing larger numbers of eligibles—in the case of the recent temporary O-3 selections an estimated 200 more. And that many fewer passovers!

General Davis tied this move to the service's reduced input of new officers in the early 1970s that is showing up now, or soon will, in a "shortage of middle managers and a smaller pool of officers available to provide future senior leadership. . . ." Later this year, the permanent regular majors board may also promote 200 or so more officers than originally intended, he said. That means fewer forced separations too.

These moves, General Davis indicated, will help overcome the potential middle-management shortage. At the same time, they remove some of the sting of the up-or-out system.

Further moves to ease forced separations and perhaps placate the Nunn subcommittee, and hopefully improve DOPMA's chances, would not be surprising.

Senator Nunn has made his position clear by stating that up-or-out "prohibits the continuation on active duty of highly qualified officers even when they wish to continue and the services need them."

Up-or-out critics also insist that such "extended tenure" would reduce turnover, slash replacement training costs, soften the impact of promotion failure, and save the government money. They contend that many highly skilled performers, trained at considerable expense, would jump at the chance to stay in,

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**“. . . the force-out rate is about one percent . . . not the massive exodus some quarters would suggest.”**

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to continue to fly or otherwise perform in their specialties, even without promotion and pay incentives.

"Every officer need not be in the running for Chief of Staff," opponents of the system often add.

The Air Force, however, holds that the savings would be more than offset by increases in basic and retired pay. But the service's major contention, shared by the other military departments, is that the absence of incentives would dull the performance of officers allowed to stay aboard following two promotion failures. Too many would "retire" on active duty, they insist.

So, while willing to trim promotion-failure ousters just a bit, Air Force opposes any sizable retention of such officers, mainly for fear that force quality would be eroded.

The up-or-out debate, in any event, may just be warming up. ■

A few days spent in Noncommissioned Officer Professional Military Education courses convinced the author that they are extremely effective in . . .

# SEASONING THE SERGEANTS

**F**IVE Professional Military Education courses prepare Air Force noncommissioned officers to advance to the top of their profession. Participation in the program is extensive: Last year more than 95,000 NCOs completed at least one course. The Air Force is so pleased with the results that personnel planners will increasingly rely on PME's role in preparing the enlisted force to assume a bigger share of managing the Air Force.



The most often used teaching forum in NCO PME is the discussion seminar.

## The Five Phases

Enrollment in PME begins when an airman is promoted to senior airman. A 19.5-hour NCO Orientation Course designed to help the transition from airman to NCO introduces him to NCO authority and responsibilities. The course must be completed before a senior airman may be appointed to noncommissioned-officer status.

Some officials are concerned that the two to three years between Basic Military Training and the NCO Orientation Course is too long for young enlisteds to go without PME instruction. There is some consideration being given to possible additional instruction that would fill this void; if adopted, it could become a sixth offering in the NCO curriculum.

PME II is for the first-time supervisor, either military or civilian. Its fifty-two-hour USAF Supervisor's Course emphasizes the basics of managing personnel and material resources.

The first two courses are mandatory. Curricula and instructor training are standardized throughout the Air Force and are managed by the Air Force Leadership and Management Development Center at Maxwell AFB, Ala.

Most NCOs are selected to attend the third course, a 140-hour NCO Leadership School, usually during their second enlistment. There are forty-six leadership schools in the Air Force, each giving special emphasis to teaching the mission, organization, and operation of its par-



Personal appearance and grooming are a fundamental part of NCO PME courses.

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BY MAJ. CHARLES G. TUCKER, USAF, CONTRIBUTING EDITOR





*The ATC Academy seminar rooms are some of the most attractive in USAF.*

ent major command (MAJCOM).

Many Air Force bases offer the first two courses. Usually they are taught at a consolidated PME center assigned to the base education office or the base director of personnel. The NCO Leadership course is generally taught at one or two central schools, except in ATC and TAC, where it is presented at most of their bases.

The fourth course, considered to be the heart of enlisted education, is the command NCO academy. Criteria for selecting the technical and master sergeants who attend the fourteen academies vary among the commands. Most commands use a selection board to screen candidates and to select students. NCOs will have about an eighty-five percent opportunity to attend an academy during their period of eligibility.

The top NCO course is the nine-week USAF Senior NCO Academy at Gunter AFS, Ala. A central Air Force selection board chooses about 1,200 senior and chief master sergeants to attend the Senior Academy each year. Opportunity for attendance is around sixty-five percent for eligibles.

### **The Education Process**

The curricula for all PME courses cover essentially four academic areas, but in increasing depth and detail. Principles of management and leadership includes background instruction in psychology and human behavior. Communication skills covers writing, speaking, listening, and applying these skills on

the job. Instruction in world affairs enhances the students' understanding of world events and their importance to the US. Military studies reviews Air Force history, organization, mission, and military law. A final part of the course, physical skills, encompasses physical conditioning and drill and ceremonies.

During late 1978, the USAF Occupational Measurement Center began a survey of more than 12,000 NCOs. By mid-1979, the results will be used to review and change, as necessary, the curricula of the five-phased program. Also, host commands survey graduates and commanders each year to help keep the schools responsive to Air Force needs.

Correspondence versions are available for PME courses four and five, the major command and senior NCO academy courses, but most students attend in residence. Completion of a correspondence course, which awards the same promotion points as a residence course, provides an alternative for those who cannot attend in residence because of duty location or mission requirements.

SMSgt. Joe Lake, superintendent of the NCO PME section at the Air Force Manpower and Personnel Center, told *AIR FORCE Magazine*: "The overriding consideration throughout USAF's NCO PME program is commitment to quality education, using the latest educational developments." A closer look at two PME schools shows how this quality is achieved.

### **How Two Academies Operate**

The Tactical Air Command (TAC) and Air Training Command (ATC) NCO Academies are typical of the other twelve USAF phase-four schools.

The TAC academy recently celebrated its sixteenth anniversary and its third year at Bergstrom AFB, Austin, Tex. The 1975 move from Langley AFB, Va., to Bergstrom provided a more central location among TAC units and also doubled school facilities, permitting larger student enrollment.

The TAC academy is accredited by the Commission on Occupational Education Institutions of the Southern Association of Colleges and Schools. All academies and most leadership schools are accredited by the appropriate civilian association. This means their courses are recognized by more than 1,500 US schools and colleges for transfer of academic credit. In addition, the Community College of the Air Force (CCAF) awards from four to eleven credit hours, depending on the course completed.

Eight classes of 149 students each attend the TAC academy annually. There is less than a two percent failure rate, par for phase-four schools. Three-quarters of the students come from TAC units, but all commands are encouraged to exchange students to save travel funds and provide diversity in backgrounds.

Two three-story brick buildings are home for the TAC academy. These former enlisted dormitories now have faculty offices, seminar





*Physical conditioning classes include exercises and competitive sports.*

rooms, and living quarters that accommodate two students per room. The buildings' wall-to-wall carpeting was a gift from local civilian organizations and the Austin Chapter of the Air Force Association. The buildings also have study rooms, a reading improvement laboratory, library, museum, and a remedial instruction room for reviewing videotaped instructor presentations.

The TAC academy does not have a lecture hall large enough to hold an entire class, so a two-way closed-circuit television system, complete with radio and camera monitors in each seminar room, allows simultaneous presentations to all students.

Students spend most of their classroom time in discussion groups of from sixteen to twenty-one NCOs, led by faculty members who are volunteers, NCO academy graduates, and well experienced in teaching. Many either hold college degrees or are pursuing them after normal duty hours.

There are relatively few women students at NCO academies. In Tactical Air Command, fewer than fifty women NCOs hold the rank required to attend the command's academy. Air Force's emphasis on recruiting more women will eventually change this situation.

Air Training Command's NCO academy at Lackland AFB, Tex., differs from the TAC academy mostly in its facilities and three unique programs. The school is located on the Lackland Training Annex, formerly called the Medina

Annex, and site of the USAF Officer Training School (OTS).

The academy is housed in a modern three-story building that for years served as an officer trainee dormitory. Toward the end of 1975, when OTS quotas were at a low level, the vacant building was assigned to the ATC academy. The building has better facilities than the academy's previous quarters, and is close to Forbes Hall, the Training Annex academic building. Forbes is one of many Training Annex facilities, including drill pads, swimming pool, dining hall, dispensary, base exchange, and athletic fields shared by officer trainees and NCOs.

The ATC school's seminar rooms are some of the most attractive in the Air Force. In 1976, when the rooms needed refurbishing, Training Command bases and units selected one room each and remodeled it. Each room was named in honor of its sponsoring unit or base. As a result, seminar rooms sport a varied array of bookcases, cabinets, and murals depicting the sponsor's location and activities.

The spirit of the remodeling project is exemplified by Lloyd Machen, a civilian employee at Laughlin AFB, Tex. Mr. Machen volunteered to design and construct the built-ins for the Laughlin Room. Because there were no funds to bring him and his crew to Lackland to install the fixtures, Mr. Machen took leave and paid his own way to San Antonio to complete the job.

The Training Command academy has two other one-of-a-kind pro-

grams. The academy uses the Leadership Reaction Course, an OTS facility patterned after Squadron Officer School's "Project X." Thirteen problems simulate field conditions to teach teamwork. Challenges such as cliff scaling, river crossing, and carrying injured personnel confront five or six NCOs who are given a specified time to solve the problem. An assortment of barrels, planks, ropes, and "distractors" are provided to assist or confuse the students. When a problem is solved, or time expires, faculty members critique the students on their actions, and point out examples of group dynamics and emerging leadership.

Civilian students are also unique to the ATC academy. About twenty-eight percent of ATC personnel are civilians. Most are supervisors, but there was no course appropriate to their jobs. The academy made some modifications to its curriculum so the Lackland course could be opened to ATC civilians on a test basis. Employees in the GS-7 to GS-9 grades and comparable grade blue-collar civilians voluntarily competed for selection.

Seventeen civilian students have graduated since the test program began in May 1978. Military and civilian students attend the same classes except for the twenty-one hours of drill and ceremonies. Civilians, instead, are given additional instruction in subjects of particular value to them as supervisors of military personnel. These include military justice, enlisted promotions, and enlisted assignment procedures.

The reaction of military students to civilians at the academy has been positive, according to end-of-course critiques. Military students welcome the opportunity to work closely with civilians and to gain a better understanding of their perspectives and their contributions to USAF. What better way, many say, to have "total training for the 'total force.'"

Civilian students are also enthusiastic. Mrs. Milene Wells, a civilian employee at Chanute AFB, Ill., and one of the first two civilians to attend the course, commented: "The most important lessons I learned weren't in textbooks and assembly room lectures, but were those after class when students worked as a team, helping one another. . . . What really matters isn't what we wear, but the dedication we have to accomplishing the goal and how willing we are to give of ourselves to see that it is achieved."

The ATC test program ends in August 1979 and its findings will be analyzed to determine the value of opening all NCO academies to civilian students.

### Student Life

Dormitory life at the TAC and ATC academies is generally similar. Maid service frees the students to devote more time to studies. Rooms are not required to be in "white-glove" inspection order, but must comply with rules pertinent to fire safety, cleanliness, and good order.

Personal appearance and grooming must meet Air Force regulations. CMSgt. Emory Walker, Director of Education at the ATC academy, told AIR FORCE Magazine: "If we expect our students' personal and quarters appearance to be more rigid here than back home, we've in essence established a double standard. Our experience has been that most students, especially those from Training Command units, already know how to wear their uniforms correctly, and to spend classroom time preparing for and conducting rigid inspections doesn't support the reasons why this school exists."

Some academies have a different philosophy. Traditional military-style room and personal inspections are a daily part of the USAF Security Service (USAFSS) Academy at Goodfellow AFB, Tex. CMSgt. Jim Heath, the school's commandant,

says the more traditional approach, "puts the MILITARY back in PME. We believe that personal discipline resulting from a strong emphasis on military practices and traditions is a vital part of performing the kinds of jobs we do in Security Service. Sure, a lot of students arrive at the academy apprehensive about returning to the kind of environment they had at basic military training, but they graduate with a new respect for the self-discipline it instills in them."

### Measuring the Benefits

Academy officials at all schools report they often have trouble enrolling enough qualified students. NCOs are not always enthusiastic about the five- to six-week temporary duty associated with attending an academy. Also, supervisors protest that they cannot get along without their best NCOs, typically the ones selected to attend, and often substitute a less-qualified NCO to fill the school levy. Many times this NCO gains enough additional points to be promoted ahead of his peers. This situation appears to be coming under control, however. Commanders at all levels are getting more involved in endorsing the value of NCO PME and assuring that those selected are released from their jobs to attend.

Regardless of their enthusiasm or reluctance when they enroll in an academy, or the degree to which military tradition is emphasized, most graduates leave as supporters of the schools. The impressions of TSgt. Dennis Suckstorf are typical. He is assigned to the 3480th Technical Training Group at Goodfellow and is a graduate of the Security Service academy.

In an interview with AIR FORCE Magazine, he said: "Before I went to the NCO academy, PME was a necessary evil that had to be worked around while doing your job. When the PME roster was circulated, you marked the 'volunteer' block, but added that you were unable to attend due to shortage in manning or mission demands. My opinion changed once I got to school. I found that with the training I received, my job became easier because I learned how to work with people, and, equally important, how to get people to work for me. . . . PME has become more to

me than just a grade on a computer card that says, 'You're a leader and a manager.'"

### Looking Ahead

The future of NCO PME is bright. NCO graduates speak enthusiastically about the benefits they received from the courses, and this boosts the program's credibility among younger airmen. Many PME schools and courses have associations of graduates to promote attendance and to encourage NCOs while they are students. Supervisors of graduates speak of the advantages of taking a top-notch NCO, giving him some additional training and insights, and returning him to his job with a fresh approach.

Enlisted PME interests are well represented at the top Air Force level by Chief Master Sergeant of the Air Force Robert D. Gaylor. Chief Gaylor has been a part of PME for much of his career—as a student, then an instructor and administrator, and most recently in 1975 when he served as an advisor to the Air Force Management Improvement Group (AFMIG). Chief Gaylor told AIR FORCE Magazine: "Lt. Gen. Kenneth Tallman and his AFMIG members developed the current five-phase program, and we have had almost three years to evaluate the effect. I say without hesitation that its success far exceeds our expectations. Commanders, supervisors, and graduates are unanimous in their praise of our present Air Force Professional Military Education."

Chief Gaylor says some NCOs may view PME as a square-filling exercise to enhance promotion. "There's no doubt the completion entry on your records does help, but the most important factor is the self-confidence gained by satisfactorily meeting the requirements of the course. If you think you are better, you are more apt to try new ways and to lead more effectively. This is what gets a person promoted, not just an entry on a record."

NCO PME is working effectively to provide Air Force noncommissioned officers with the training they need to be more professional in their jobs, more military in their career orientation, and better educated to meet the increased demands of future assignments. ■

# Perspective Comment & Opinion

By Capt. Leon Trenton Pauley, USAF, USMOG/UNTSO

## Increasing the Combat Effectiveness of CAS Pilots

Every Air Force pilot understands that he must have a complete knowledge of his weapon system in order to use it effectively and efficiently. Pilots flying close air support (CAS) missions have two additional and unique requirements: (1) to have a thorough knowledge of Army tactics, and (2) to have sympathetic understanding of the ground soldier. I propose that the Air Force adopt a training program to meet these requirements.

From the overall perspective of the battlefield, with Air Force pilots flying CAS for the Army, it is obvious that employment of CAS and Army weapons must be closely coordinated to put maximum firepower on the enemy. By broad definition, the CAS pilot's weapon system includes not only his aircraft but also its simultaneous employment with ground force weapons. Consequently, the CAS pilot must understand the Army's tactics that are an extension of his weapon system.

Understanding the ground soldiers' combat environment also will increase the pilot's motivation to support them. *Oberst* Hans-Ulrich Rudel, Germany's foremost tank killer in World War II with 519 confirmed kills, claimed his underlying motivation was an unshakable empathy with the soldier on the ground. I can testify to gaining increased understanding and willingness to give the extra effort to help the ground soldier, or "grunt," as he is affectionately known by those of us who have been there, after my tour as a brigade air liaison officer (ALO).

The program I propose calls for all Air Force pilots with a primary air-to-ground mission to spend a short time in the field with ground forces. Specifically, one or two pilots from a wing would be attached to an Army unit for a particular ex-

ercise or training event. These usually last no longer than five days.

The pilots would receive a briefing and equipment issue from the division or brigade ALO and then be detailed to the battalion or Army unit commander until the end of the exercise. Pilots would accompany the battalion's lead elements, the ones that usually encounter the most action. And, since the pilots will be supporting infantry, armor, airborne, artillery, etc., they should be attached to various types of Army units to learn firsthand their unique tactics, problems, support requirements, and even living conditions. Actually living with the troops in the field gives one an appreciation of the ground soldier that he never could get in any other way.

From my own experience with the 82d Airborne Division, and that of other ALOs with whom I have talked, here is a sample of what the CAS pilots might learn or do during a field exercise. Depending on the type of unit, pilots might have an opportunity to drive a tank or APC, charge a hill with the leg infantry, fly a helicopter, participate in an airborne assault, assist in planning a live-fire exercise or dry CAS, work with artillery officers to plan simultaneous CAS and artillery attacks, and fire weapons ranging from the M-16 to a 155-mm howitzer. Throughout the exercise, contact would not be limited to the unit commander and his officers. The

pilots must get to know on a personal basis the ground soldiers they support from the air.

When, in an exercise scenario, it is time for the fighters to do their work, the CAS pilots should be up front for the ground attack or defense. Here they can see what 200, 500, or 1,000 meters looks like on the ground. This experience reinforces the need for accuracy and makes it easier for the pilots to understand why there often are run-in restrictions. A few hours with an artillery unit will shed further light on this requirement, and it will be easier to understand why field commanders do not or cannot cease artillery firing so fighters can drop their ordnance. (The theory of big sky, little bullet.)

Cost of the program would be minimal because pilots would live under field conditions with the Army units. (Ask any ALO and he will be happy to detail the TDY rate under these circumstances.) The primary expense, for travel, could be minimized by assigning pilots to nearby Army units.

The program would more than pay for itself with increased CAS effectiveness. The more Air Force CAS pilots know, sense, experience, and understand Army life, tactics, and needs, the better they can support the ground soldiers. The Air Force and the Army will fight together in the next battle. Why not build the kind of understanding that will increase CAS effectiveness?

*Captain (Major selectee) Pauley is currently serving with the United Nations Truce Supervision Organization, headquartered in Jerusalem. A 1967 graduate of West Virginia University and commissioned through AFROTC, he flew 196 missions in F-4s in Southeast Asia and fifty in A-7Ds. He graduated from the Army's Jump School at Fort Benning in 1975 and served in various ALO posts, including Division Fighter ALO for the 82d Airborne Division, until May of last year.*

### HOW TO SHARE YOUR PERSPECTIVE

The purpose of this department is to encourage the presentation of novel ideas and constructive criticism pertinent to any phase of Air Force activity or to national security in general. Submissions should not exceed 1,000 words. AIR FORCE Magazine reserves the right to do minor editing for clarity, and will pay an honorarium to the author of each contribution accepted for publication.

# Airman's Bookshelf

## A Personal View of Hiroshima

*The Tibbets Story*, by Paul W. Tibbets with Clair Stebbins and Harry Franken. Stein and Day, Briarcliff Manor, N. Y., 1978. 310 pages, photographs and index. \$9.95.

Paul W. Tibbets etched his name in history when he piloted the *Enola Gay* and delivered the first atomic bomb on Japan. Tibbets became the focus of many who later challenged America's decision to use atomic weapons. He bore both the acclaim and criticism—the latter out of proportion to the role he played.

Tibbets now gives us his story: a very readable biographical sketch revealing his boyhood days, his love of flying, and the events leading to his historic mission in 1945. Thereafter, his text becomes fragmented and anticlimactic—skipping from topic to topic and held together only by chronology. The reader is not given a deep insight into Tibbets's personality. He learns the author was a no-nonsense flyer who demanded and received excellence from his men. Tibbets is portrayed as an independent man who moved in his own circle and at his own pace.

The author is obviously disturbed by events that followed his famous mission. Tibbets enjoyed somewhat limited success in the postwar Air Force—earning a brigadier's star—and he endured frequent and often mindless criticism for America's decision to drop the atomic bomb and for his role in that action. On the first count, the narrative itself gives some hint as to his troubles. Tibbets firmly believes his promotion beyond colonel was stymied by generals guilty of playing favorites and personal politics. In this regard, he may be correct. Certainly the personal correspondence of several general officers in the postwar period describes con-

siderable political in-fighting within the upper ranks. The phenomenon, however, is not new. Personal politics thrived in Caesar's army and will continue as long as men remain ambitious.

Tibbets, it is significant to note, had difficulty in the environment he describes; therefore his criticism must be viewed with some skepticism. Blaming others for his career frustrations does little for Tibbets's image. Readers expect better than bitter comments from their heroes.

In his last chapter, "Reflections," the author addresses the issue of using the bomb. He defends the decision in a clear and rational manner but with no new arguments. Essentially, Tibbets contends the new weapon hastened the end of the war and thereby saved lives. Unfortunately, the atomic bombing of Hiroshima and Nagasaki has become such an emotionally charged issue that logic is frequently set aside when these historical events are discussed.

Many of those appalled by the huge number of lives lost—75,000 and 35,000 respectively—are unaware that in a single day more than 80,000 were killed by American fire bombing of Tokyo in March 1945. They forget that eighty-two years earlier, Generals Lee and Meade lost 40,000 men at Gettysburg. At the Battle of the Somme, the British alone suffered nearly 60,000 casualties on the first day.

Simply put, war, regardless of mode, costs lives. Fortunately, man's horror of war checks its frequency. To charge, as do many critics, that World War II could have ended with less loss of life by not using atomic bombs is conjecture at best and, in all probability, wrong. Certainly Tibbets concludes his book with a clear and logical defense: The atomic bomb was an appropriate weapon in August 1945. His argu-

ments, however, are not expected to change the views of his critics.

Tibbets's volume has several unfortunate errors. The then Col. C. S. Irvine is called "Ervine" and Maj. Gen. St. Clair Streett is referred to as "Sinclair Streett." These errors make the reader wonder what other mistakes may have crept into the story. *The Tibbets Story*, however, is both enjoyable and worthwhile. Even his bitter chapters and comments serve to educate the reader about achieving success in the military.

—Reviewed by Maj. Harry R. Borowski, Associate Prof. Department of History, USAF Academy.

## US Airpower in World War I

*The U.S. Air Service in World War I, Volume II*, compiled and edited by Dr. Maurer Maurer. Government Printing Office, Washington, D. C. 20402, 1979. 460 pages with index. \$8.25.

When World War I began, there were many in the US Army who could foresee no other military use for aircraft than to provide observation services to the ground forces. But before the war ended, the aircraft had become a vital weapon.

The wartime operations of the American Expeditionary Forces' Air Service included visual and photographic reconnaissance, artillery adjustment, infantry liaison, counterair operations, bombing and strafing in close support of ground forces, and interdiction of the enemy's lines of communication.

Documents in *Early Concepts of Military Aviation*, the second volume of the four-volume series, reflect the changes in US military aviation from the purchase of the first military aircraft from the Wright brothers through World War I. During that period, federal appropriations for air services rose from \$5,000 in 1909 to \$952 million in 1918.

Dr. Maurer Maurer, former Chief of the Albert F. Simpson Historical Research Center, Maxwell AFB, Ala., selected, compiled, and edited the material. He also has provided a helpful running commentary.

The documents reveal the controversy behind strategic bombardment, differences on the role of military aircraft, and ideas on air superiority.

Included in the book is a series of operations bulletins written by Brig

Gen. William Mitchell, based on his experiences as commander of the Air Services of the First Army during the war.

The relation of the Air Service with Congress is reflected in selections of testimony. Brig. Gen. George P. Scriven, Chief Signal Officer, testified in 1917 to the fragile nature of early aircraft of the period: "If a machine goes along without an accident, I suppose anywhere from six to ten months is about as long as you can expect it to last."

—Reviewed by Bonner Day,  
Senior Editor.

### New Books in Brief

"Eurocommunism"—*Implications for East and West*, by Roy Godson and Stephen Haseler. Drawing on research provided by a team of leading specialists throughout Europe, the authors describe goals and strategies and assess the growing strength of the major Western European Communist parties. They conclude that while there have been significant changes, these parties remain largely outside the democratic consensus and pose a new liability for the West. Notes, index. National Strategy Information Center. St. Martin's Press, New York, N. Y., 1978. 144 pages. \$16.95 cloth; \$6.95 paper.

*Man In Flight: Biomedical Achievements in Aerospace*, by Arnold Lott and Eloise Engle. The Aerospace Medical Association commissioned this comprehensive volume dealing with the role of medicine and its allied sciences in the success of manned flight—from early balloon ascents to space travel. Written in conversational style and incorporating scientific facts with little-known anecdotes, the book is directed not to medical experts alone, but to a diversified audience. Scheduled for publication in May, the book is available at the discount prepublication price of \$13.95. Regular price, \$15. Aerospace Medical Association, Washington National Airport, Washington, D. C.

*No Victor, No Vanquished: The Yom Kippur War*, by Edgar O'Bal-lance. As the title indicates, the 1973 Arab-Israeli war ended in a draw, although both sides now claim victory. The author, a respected journalist, has compiled a detailed, comprehensive analysis and blow-by-blow account of the October war.

The final chapter sums up the war's effect on military thinking. Index. Presidio Press, San Rafael, Calif., 1978. 371 pages. \$14.95.

*The Wright Brothers: Heirs of Prometheus*, edited by Richard P. Hallion. The Smithsonian Institution's National Air and Space Museum commemorates the seventy-fifth anniversary of powered flight with this collection of essays. Written especially for the anniversary by a group of distinguished aviation historians, the book includes a photo essay; technical information on the Wright flyer and engine; a chronology; Orville Wright's explanation of events; the first published eyewitness account of the flight; and a guide to further research. Smithsonian Institution Press, P. O. Box 1641, Washington, D. C. 20013, 1978. 224 pages. \$15 cloth; \$5.95 paper.

—Reviewed by Robin Whittle

### Recent and of Interest

*Aeronca C-2, The Story of the Flying Bathtub*, by Jay P. Spenser, Smithsonian Institution Press, Washington, D. C., 1978. 70 pages. \$4.95. The second in the series of famous aircraft of the National Air and Space Museum.

*F-86 Sabre*, by Maurice Allward, Charles Scribner's Sons, New York, N. Y., 1979. 128 pages. \$9.95. History with pictures.

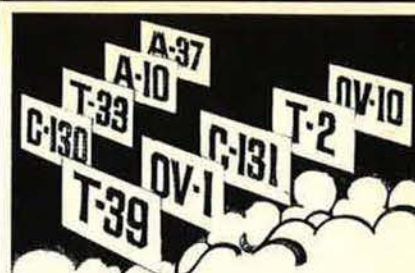
*Military Publications*, by Richard Weiner, Richard Weiner, Inc., New York, N. Y., 1979. 100 pages. \$15. Provides circulation, advertising rates, other information about newspapers and magazines.

*Moonport, A History of Apollo Launch Facilities and Operations*, Charles D. Benson and William Barnaby Faherty, Government Printing Office, Washington, D. C., 1978. 636 pages. \$8.

*National Interests and Presidential Leadership: The Setting of Priorities*, by Donald E. Nuechterlein, Westview Press, Boulder, Colo., 1978. 246 pages. \$18. A look at historic US national interests.

*Space Shuttle and Spacelab Utilization*, two volumes, edited by George W. Morgenthaler and Manfred Hollstein, Univelt, Inc., San Diego, Calif., 1978. 382 and 320 pages. \$35 each. Sponsored by the American Astronautical Society.

*Spitfire at War*, by Alfred Price, Charles Scribner's Sons, New York, N. Y., 1979. 160 pages. \$15.



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**S**UDDENLY there was a profound silence as both engines went dead. There was nothing to do except put the airplane in the drink, which the pilot did very skillfully.

Most likely, the B-25 shouldn't have been flying in the first place. A classmate of mine was at the controls, and there was a gaping hole in the instrument panel where the automatic pilot had been removed. The opening exposed a lot of wiring, some of it associated with the ignition system.

As if that weren't hazard enough, the right seat was occupied by a brand-new copilot, just graduated from flying school, a brassy character who had been quick to point out my classmate's good fortune in falling heir to him.

Part of the training there at Columbia, S. C., in early 1943 was learning to skip-bomb at the nearby Lake Murray range, and that's where they were, skimming the surface of the water en route to a vertical target simulating a ship.

The gaping hole in the instrument panel was temporarily filled with a piece of wood cut to the approximate size. It kept falling part way open. That fascinated the new copilot, and he began adjusting it, trying either to make it stay closed or to get a better look at what was behind it.

The pilot repeatedly told him to leave it alone, but the fascination evidently was stronger than the copilot's sense of subordination.

Midway through the run, the piece of wood fell open again, and the persistent copilot slammed it shut. It wasn't clear how he managed it, but he effectively disconnected the master ignition switch. Both engines quit.

The pilot, a muscular Irishman, told me later that his first impulse was to see whether the copilot's head could be adapted to that opening in the instrument panel, but there wasn't time for that.

When the airplane came to rest on the lake and began sinking, escape was a matter of some urgency. The pilot reached up and released the overhead escape hatch. As if having waited for that little courtesy to be extended, the copilot stood up, climbed first on his seat, and then onto the pilot's right shoulder as a convenient step to use in his effort

*Strapped in the right seat for the first time in his combat flying career, this veteran "first-chair" aviator had an eye-opening experience typically reserved for . . .*

# The Brave Copilots

BY LT. COL. JIM BEAVERS, USAF (RET.)  
Cartoons By Bob Stevens

to push himself through the hatch.

As the Irishman hoisted his own frame out of the cockpit, he was undoubtedly drawing some generalized conclusions about copilots as a species. He himself was but a scant two months out of flying school, and the brassy character was his first, but not his last, copilot.

My own views about copilots were a lot slower in developing. Like my classmate, I'd never been assigned as one. But unlike him, was about to run into a series of odd circumstances that kept me in the left seat—with one exception to come nearly a year later—on a permanent basis. It was that one exception, which we'll come to in due



course, that straightened me out about copilots.

### Shopping at the Slave Market

It was timing, and nothing else, that determined who sat where in the cockpit. I was in Class 43-A. I got to Columbia a month ahead of my first copilot, who was in 43-B, and just as a full combat group was leaving for the Pacific. With the whole bunch gone, the instructors were left with nothing to do except start over. I fell into that training vacuum, as did almost everybody else who checked in during January.

After days of doing little but sit in ground school—or in a parked airplane, learning to find every control and switch blindfolded—it suddenly became my turn on the end of the whip. An instructor took another novice and me on the short flight to a satellite base called North Field—which, just to get things off on the right foot, was south of Co-

lumbia. The other tyro was in the left seat, and I kept the flight engineer company in the navigator's compartment through a series of touch-and-go landings that he counted with the assistance of an unusual set of beads.

Then the airplane taxied to a stop, and with the engines still running, the first novice got out of the left seat and I got in it. The engineer began anew on his beads. That was nice. He was going to count my takeoffs and landings for me, too.

My flight records reveal that I shot five apiece that morning, logging one hour and thirty minutes total. I flew the airplane back to Columbia and landed. I had lunch, returned to the flight line, and was surprised to find myself scheduled to fly again—this time with one of my classmates as copilot. He had gone through the same routine I had that morning, and perhaps our instructors decided we deserved each

other. He accepted his fate philosophically, filled out some papers to be left with his personal effects, and climbed into the airplane with me. Somehow, we made it through the afternoon. I had yet to fly as copilot except with a couple of instructors on cross-country boondoggles, and no teaching in the process.

Not long afterward, several of us 43-A graduates were told to go select crews for ourselves. We were officially first pilots—the expression “aircraft commander” didn’t come along until we were overseas—without ever having been card-carrying copilots.

Copilots were chosen by a dehumanizing process. They, along with navigators, bombardiers, flight engineers, radio operators, and gunners were stored like so many cans of stewed prunes in separate wooden buildings along the flight line. The ritual was to walk in, pick up a roster of names, select one, call it out, have the man stand up, and either take him or reject him on the basis of nothing more than what he looked like. If I accepted him, he was crossed off the roster by an NCO whose job closely resembled that of cashier at a slave market. I did what seemed the least embarrassing thing for everyone involved: I took the first available name on the list.

My first copilot resented his role. A big, handsome guy, he had played trumpet with some of the top names in the Big Band Era of the late 1930s and early 1940s. Apparently he drew a simple equivalency between first trumpet and first pilot. *He* should have been in the left seat, and I should have been pulling up *his* wheels there in B-25 replacement training, and he never let me forget it. Maybe he was right. I couldn’t even read music.

As we and our crews neared the end of whatever served as a training syllabus for the course, the ugliest airplane I’ve ever seen came in to land at Columbia. It was the cannon-carrying B-25G, with a 75-mm gun occupying what had been the bombardier’s compartment in the nose. Fourteen crews were designated to fly it. Mine was one of them. In May, my crew and six others boarded a train for Savannah, where I signed for B-25G

*“I had nothing to do but sit there. . . .”*



No. 42-32501. In a matter of days, we were on our way to Africa in the strange-looking bird.

### **Ignominious Introduction**

Our arrival at Souk el Arba in Tunisia prompted a visit by some senior types from Twelfth Air Force Hq., among them Maj. Gen. Jimmy Doolittle. He climbed into the nearest B-25G, cranked it up, and flew it in the local area for perhaps twenty minutes. He landed and issued an order: Only pilots who had trained in them were to fly the Gs. Having so decreed, he got back into his own airplane and returned to his headquarters.

The order was a logical one, but it created a small problem when the decision was subsequently made to use the bombsightless B-25Gs as wingships in standard, medium-altitude missions while we were still experimenting with low-level tactics for using the heavy artillery in its nose.

To further complicate the problem, when a conventional non-cannon-carrying B-25 crew arrived in the theater, it was disbanded immediately. Its first pilot became copilot to a veteran who had flown enough missions to deserve his own crew. The seasoned ex-copilot was often given the entire crew that had just arrived—minus the copilot, who sometimes wound up with the veteran's old job. All that, too, was logical.

It was the rocky road to success in combat, if you were a pilot and not an original member of the group. You flew as somebody's right-seater until you learned the rules about flying in formation under fire. There was much to learn that hadn't been taught in replacement training centers because it was unteachable in a friendly environment. General Doolittle's order precluded that indoctrination for us. The 321st Bomb Group was stuck with having us as intact crews, green as grass, on our first medium-altitude mission. The only available compromise was to give each of us an experienced copilot for that initial foray, and hope for the best.

I'd guess that the copilot fingered to fly with me was representative of the others. To say that he was incensed at the idea of having to ride with me at all, much less suffer the

humiliation of having to accept sundry orders and instructions from me, would be to understate the case badly. The man wasn't just incensed—he was livid. And I didn't blame him.

The target was a railroad marshaling yard at a small town in Italy. The weather was CAVU, and we could see the town in crystal detail from fifty miles south. As we got nearer, peculiar black roses began to unfold in the azure blue sky above it. They were at our exact altitude, whatever they were.

I leaned over to the grim-faced copilot. "What," I asked in ringing innocence, "is that black stuff?"

He spoke the only word of conversation—if you could call it that—to pass his lips during the entire mission. With disdain written all over his face, he looked at me and said, "Flak!"

What he left unsaid behind that single word came through as loud as if he had shouted it.

Nevertheless, he served his purpose. I would no more have wavered in his presence on that bomb run than I would have tried to get out and walk home. Besides, I discovered very quickly that the man in the left seat of an airplane in formation on a bomb run doesn't see much. The group closed ranks as the run started. I was so busy holding position, opening the bomb bay doors myself because I'd forgotten to show the copilot where the door handle was in the G, and waiting with my thumb poised over the bomb release button for the first piece of ordnance to emerge from the lead ship, that the whole thing was over before I realized it.

When we landed back in Africa, my stand-in copilot stalked silently away, and I don't think our paths ever crossed again.

So now I was a fully certified and official combat first pilot. I was on a winning streak. I had survived B-25 replacement training at Columbia as an aircraft commander without having endured very many rides in the right seat. And here I was, with one medium-altitude combat mission to my credit, still an aircraft commander, while guys around me who had graduated from flying school eight classes ahead of me, who had as many as thirty missions or more, and who had twice as much flying

time as I were still closing and opening cowl flaps for somebody else.

In a sense, that really *was* rank injustice, I suppose, but it wasn't all that clearcut. If the experienced copilots on the conventional B-25 crews were clamoring to take over the Gs, that was the quietest clamor of the century—about as audible as a cry for help from a man held captive in an overstaffed harem. I think it was the principle that mattered, and the specifics were worth having second thoughts about.

### **Copilots With Complaints**

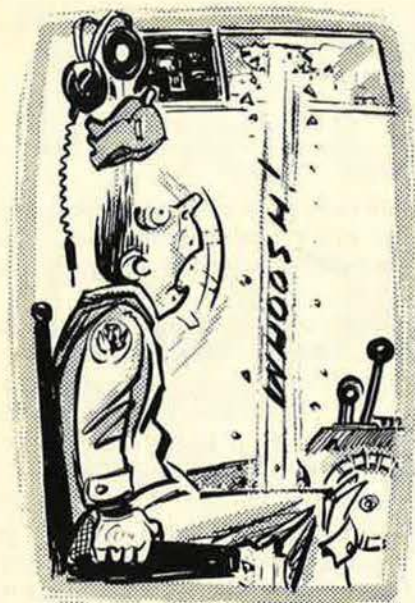
Mine was not the only copilot with complaints. One of the B-25Gs had been forced to land wheels-up in Puerto Rico on the way overseas. No more Gs were available at the time, and the crew ferried a standard model to Africa, arriving weeks behind the rest of us. The ordinary B-25 was taken away from them as soon as they arrived, and the crew sat gnawing its fingernails while the others of us were slowly racking up sorties.

The copilot, who shared a six-man tent with me at the time, resolved that he would not change his uniform until his first combat mission came along. Inasmuch as that involved borrowing somebody else's airplane, and inasmuch as nobody was in a lending mood, the wait stretched into weeks, and the copilot was becoming gamier by the hour as he carped about his misfortunes.

The day came. His crew was scheduled for an early morning, low-level mission to the Italian coast to look for shipping. The copilot was up before dawn, performing his ablutions in an inverted steel helmet and donning a fresh, starched set of khakis last laundered in the United States. He was as crisp as a new dollar bill. Some hours later he was back, and for reasons best known to him, he took off the clean uniform and put the dirty one back on. He'd had his first combat mission, it turned out, and as far as he was concerned, it was his last.

The four-ship flight flying at low level had stumbled into a harbor massively protected by antiaircraft fire and containing, along the fog-shrouded escarpment overlooking it, an anchored Italian cruiser. In





"... a 40-mm shell ...  
passed between the  
copilot's legs ..."

the donnybrook that ensued, what was surmised to be a 40-mm shell came through the belly of the airplane, passed between the copilot's sprawled legs, and went out through the top, rupturing the pilot escape hatch, miraculously without exploding.

*Fini la guerre*, the copilot insisted. Enough, already. Whatever the consequences, he was through. A very young man, he was transferred to the Air Transport Command. I ran into him many months later, and his hangups included not only combat but flying copilot—putting his life in another man's hands. He was ferrying fighters around the theater, sounded confident, and was apparently doing a good job.

My own former big band star was an incessant griper who seemed to hold me personally accountable for the fact that he was not yet in charge of the bomb group or perhaps squadron C.O., or barring that, at least premier aircraft commander and first among equals. He regarded as a trivial detail—which in a way it was—the argument that he didn't know how to fly the B-25, and, though I was working on that problem, there weren't too many opportunities for simple transition training. When we weren't flying medium-altitude missions, we were

grubbing around on the deck, trying to devise some tactic that would give meaning to the big gun in the nose.

It was obviously in my own interests to get him qualified in the airplane just in case something unpleasant happened to me during a mission. Beyond that, I was very anxious to have him discover what it was like to see six other faces, wearing an expression of hopeful trust combined with blind faith, looking at him for reassurance—reassurance that he couldn't guarantee—before climbing into the airplane for a flight into enemy territory. And I secretly hoped that when the time came for him to get in the left seat on a permanent basis, he would have in the right one a crabby copilot who was outraged at his assignment as chief of hydraulics.

Eventually, he got his own crew, which by then he had earned. He was transferred to another squadron, and I was given another copilot. It might have looked as if, knowing the quality of his instruction, I had insisted that he fly in the company of others, but that wasn't true. I had nothing to do with his transfer. Still, I couldn't wait to meet his copilot, and I frankly counted on the worst. Disgustingly, it turned out, the guy seemed happy as a clam. I consoled myself afterward that it was just because they were on the ground at the time.

### A Laying-on of (Cold) Hands

After nearly forty missions, I still had not flown as copilot under fire and, for what it was worth, had been a flight commander for some time. Left-seat-wise, I was still winning. We B-25G crews had reverted to low-level cannoneering, and for about six months had operated out of an RAF base in the Mideast against German shipping. Because there was a war to be won, and since we weren't causing Hitler any loss of sleep where we were, we were recalled to Corsica, there to resume medium-altitude missions. There my luck ran out.

I had been checked out as a first pilot in medium-altitude operations, and had sort of evolved as a flight commander in the low-level business, since there was nobody with prior experience in the B-25G to do

any checking. But I was not certified as flight commander at medium altitude. Yet I was one of the squadron's four troops officially designated to the position.

One of the other three, a classmate of mine, did it first. To be qualified in our new mode, he rode as copilot in a conventional lead ship for a man who had been leading at medium altitude for a living. It was something akin to the laying-on of hands. As soon as my classmate was ordained, he was in a position to ordain me. Not long after his ride, he was assigned to lead the squadron—and the group—to a fiercely contested target called San Stefano, and I don't know to this day what the Germans were so uptight about there. Whatever, I was posted as his copilot, to be checked out as flight commander.

After so many months in the left seat, I thought I exhibited admirable forbearance and cooperation in closing his cowl flaps on the takeoff roll, raising the landing gear, adjusting the rpm, hoisting the wing flaps, turning off the boosters, and tidying up the cockpit. We circled the field, collecting the thundering herd, and headed out to sea and up to altitude. To that point, and all the way to the bomb run, I think I regarded the whole drill as something of a freebie. The classmate, an old buddy named Dick Johnson, had to do the flying and the worrying, while I just sat there and enjoyed the view. Dick was unquestionably a top-notch pilot, so what was there to sweat?

Then the navigator was strapping flak vests on us, and that put a slight pall on what was thus far a Sunday outing. Minutes later, the bomb run started. Dick was immediately immersed in the job of getting the airplane exactly on altitude and holding it there, adjusting the airspeed, following the pilot's directional indicator that tracked movement of the bombsight in the nose, and listening to instructions from the bombardier. Although the weather was clear, he was flying on instruments, doing a flawless job of it, and completely oblivious to anything transpiring outside the cockpit.

The flak started, and it wasn't just a little bit. In seconds, we were flying through a heavy stratum of black

smoke reinforced by multiple bursts all around us. There were sounds like those of many automobile engines detonating under load and the pinging noise of shrapnel hitting the airplane in showers. And all I could do was sit there. I had no control wheel in my left hand. I had no throttles in my right. I had no rudder pedals under my feet—none that I could use. I had no flight instruments or directional indicator before me to demand my attention. I had no trim tabs to adjust. I had no orders to give. I had nothing to do except sit there and look at that God-awful sea of flak breaking around us and listen to the pings. I had seen and heard it before, but it wasn't the same—not the same at all. I was scared stiff! No, that doesn't say it. It wasn't simple fear. It was more like stark terror.

I was desperate for something to do with my hands. I ran the rpm up to 2,100 and ran it back again. I turned on the booster pumps and turned them off. I pushed the mixture controls to full rich and then pulled them back to cruising lean. I wanted more than anything in the world to take the controls away from Dick, but to have tried it would have been inexcusable. Finally, the bombs were away and we were turning.

Only then did Dick look up from his instruments to reacquaint himself with the outside world. He was perspiring lightly. I was sweating like a horse.

Johnson smiled. "Wanta take it a while, Beav?" he asked. He nodded at the controls.

I lunged for them.

That was the only time I ever flew copilot in combat, and it was an eye-opening experience. I had just learned what it was like to have no control whatever over my destiny, and that was what I think has always bothered copilots. Very likely, it dates back to some dark and stormy night when the first aircraft commander in history turned to his assistant and announced, "I know the man said it was a hundred feet and a quarter-mile in heavy rain, but we're going in anyway. I've gotta learn to fly instruments *some* time, haven't I?"

### The Hero's Seat

The concern is somewhat the

*Jim Beavers's whimsical accounts, ranging from B-25 adventures in World War II to life as an Air Staff planner—and all adorned with Bob Stevens cartoons—have enlivened earlier issues of AIR FORCE Magazine. Retired since 1963, Colonel Beavers now lives in Winter Park, Fla., where he divides his time between running his own business and writing.*

same for other crew members, I'm sure. I had a navigator once who could stand the gaff only so long, and then his hand would snake up into the cockpit, weaving like a cobra in front of a flute, in the narrow space between the copilot's seat and mine.

"For God's sake, *do some evasive action!*" he'd shout from behind us.

It probably helped, if only to relieve the tension. There were times when I would have liked to try it myself, but I had nobody to shout at.

The concern is somewhat the same for others—but not quite. Unless something's stalking you from the rear and gaining, there's only one spot in the airplane where the whole ugly truth about the perils of the moment is fully recognized and appreciated, and that's the cockpit. When there are two pilots in that cockpit and one of them is by statute and by regulation in command, the other has the worst seat in the house. He's in the same crap game as the aircraft commander, with it all at stake, but he never gets his hands on the dice. For the copilot, it's the only game in town where

you have to sit and watch the guy in the other seat gamble with your bankroll. That right seat was for heroes.

Both of my copilots were brave men. Like me, my grumpy trumpeter couldn't tolerate the right seat, but the reason was, in his case, that he was a born leader, and he resented everything that the seat's occupancy implied. It may sound farfetched, but there really was something of an equivalency between first trumpet and first pilot. I'm a firm believer in the proposition that leadership is where you find it. I hadn't found it in a big band graduate because I wasn't looking for it. But when he got his own crew, his personality changed overnight. He became affable, confident, and pleasant to be around, and he was very obviously top honcho in the eyes of his crew members—including his copilot.

The B-25 stayed around, as I did, after the war. It was an honest airplane with no tricks up its sleeves, easy to maintain and easy to fly. As I moved from assignment to assignment in the late 1940s and early-to-mid-1950s, I encountered the old bird with its familiar gull wings everywhere I went, from Rapid City to Kirtland to Barksdale to Bolling, and it was always a matter of seeing an old friend in a crowd of new faces. I flew it often. And since I had flown it as first pilot in combat, there was usually a local presumption that I somehow wouldn't fit into that hero seat on the right. Maybe each checkout pilot along the way recognized that beneath my sheep's clothing, there beat the heart of a resolute chicken.

If so, they were probably right. It still bugs me to think about what might have been if I had, like both my copilots, been in 43-B instead of 43-A. But of course I don't readily admit to that. When my kids asked me in later years why I had to drive the airplane while those other men rode, it did give me an easy answer, though. I said, "I just wasn't in their class." ■



"For God's sake! Do some evasive action!"

# The Bulletin Board

By James A. McDonnell, Jr., MILITARY RELATIONS EDITOR

## Draft Issue Heats Up

The Defense Department, Congress, and the media have generated a lot of heat on the topic of revitalizing the Selective Service System.

Many have forgotten that, with the advent of the All-Volunteer Force, the law required that the draft machinery be "maintained as an active standby organization, with first, a complete registration and classification structure capable of immediate operation in the event of a national emergency. . . ." While there are charges and countercharges as to who did—or didn't—do what, to and for the SSS, some facts are clear:

- In 1972, Selective Service had a budget of close to \$100 million.
- In 1973, the President's induction authority was allowed to lapse.
- In FY '74, preinduction physicals stopped; classification action was limited to only 500,000 men.
- In FY '76, continuous registration and classification came to an end.
- In FY '77, the budget was down to some \$6 million, local boards and state systems were eliminated, and the on-board force of Selective Service was reduced to 100 "planners."

The Department of Defense says it would take at least 120 days, in an emergency, to get the first person through the system and into uniform. The acting director of Selective Service says it could be done in a little more than half that time. But many observers, including AFA, feel that this begs the question and that what is needed is a "now" capability. Given the current sad state of most Guard and Reserve manning and the now-three-months-in-a-row shortfall in Air Force recruiting—USAF had previously always met its recruiting goal—obviously something must be done.

Adding more heat, if not light, to this issue were the remarks of Secre-

tary of Defense Harold Brown before the House Armed Services Committee earlier this year. He expressed the opinion that any draft process "should include registration of women." With this in mind, Rep. G. V. (Sonny) Montgomery (D-Miss.), who was preparing to introduce legislation calling for return of the draft—for men—regrouped and shortly afterward introduced his H.R. 1901, which provides for registration and classification of *all* eighteen-year-olds and induction of 200,000 a year into the Individual Ready Reserve, with not less than three months of training.

The lottery callup system would be used. The most important thing about this bill is that it would revitalize the system. In introducing his bill, Congressman Montgomery said, ". . . with the Selective Service System in impotent, deep-standby status, the *status quo* has become unendurable. . . ."

Other bills on this subject are expected to be introduced. Sen. John C. Stennis (D-Miss.) has said flatly that the draft must return. Sen. Sam Nunn (D-Ga.) has asked for hearings. Other voices are raising variations on this theme, including some that are calling for a form of National Service. This looks to be a major defense issue of 1979. AFA's position, outlined in our 1978-79 Policy Paper on Defense Manpower Issues, is clear: "We must face up to the problems that pervade the All-Volunteer Force. . . . A return to some form of Selective Service is necessary."

## Recruits to Pick a Base

In an imaginative plan to bolster dropping enlistment rates, the Air Force has authorized a new base-of-choice enlistment option for qualified recruits signing up for guaranteed training in some thirteen specialties.

The authorizations are on a month-to-month basis; January's included some 850 guaranteed assignments in more than thirty states. Assignments are open on a first-come, first-served basis, and not all specialties are available at each base. More than fifty bases are involved, and the recruit is guaranteed the assignment after basic training and any required tech school.

## ANG, AFRES Lack Bonus Money

It could be another lean enlistment-reenlistment bonus year ahead for the Air National Guard and Air Force Reserve. The President's FY '80 bud-



Unveiled at a ceremony at Scott AFB, Ill., recently was a plaque dedicating the base's gymnasium in the name of the late Gen. Daniel "Chappie" James, Jr. From left, Col. John A. Doglione, 375th Aeromedical Airlift Wing Commander; Mrs. Dorothy James, General James's widow; US Rep. Melvin Price; and Gen. William G. Moore, Jr., MAC Commander in Chief. General James's career spanned thirty-five years; he died on February 25, 1978, twenty-four days after his retirement.

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get contains a mere \$500,000 for such payments to Air Guardsmen and only \$400,000 for Air Reservists. Army Guardsmen and Army Reservists, however, are earmarked for about \$25 million.

The proposed division of FY '80 funds is similar to the allocations for the present year.

Both the ANG and the AFRES have urged the Defense Department to increase their shares, and a spokesman for Deputy Assistant Defense Secretary (Reserve Affairs) Harold W. Chase said the requests were being considered. He indicated that reprogramming might take place and spring some more funds for the two air components. AFA has long supported reasonable incentives for the ANG and AFRES.

The Air Force Reserve has a definite need for more bonus money than the budget provides, even though the Army components need sizable funds to bail them out of their manpower difficulties. The en-

listment bonus, when funds are available, pays up to \$1,500, and it contains an educational assistance option feature. The reenlistment bonus pays up to \$1,800.

Officials from Mr. Chase's office briefed AFA and other military-oriented associations recently on various programs they are massaging in an effort to improve Reserve Forces manning and readiness. One interesting proposal under study, they said, is a bonus of up to \$30,000 to attract hard-to-recruit physicians for Reserve service.

## Military Justice Unfair?

The military justice system is inequitable, unfair, and needs reforming, according to a steady stream of congressional, judicial, and other critics in recent years. The latest static comes from Elmer B. Staats, the Comptroller General of the United States. He and his probers at the General Accounting Office have issued a new report highly critical of the system, particularly of that old bugaboo, "Command Influence."

These critics contend that military commanders exercise too much power; they act as court-martial-convening authorities by detailing the judges, juries, and defense and trial counsels, and they also control

the funding of witnesses and support staff, often to the detriment of defense witnesses.

Commanders can all too easily influence the cause of justice and damage military discipline and morale, Mr. Staats declares in his report. His principal recommendations to Congress would:

- Strip commanders of their authority for administering and funding the military justice system. He would let them retain responsibility for referring cases to trial and exercise clemency power.

- Consolidate defense and trial counsel organizations and other facets of the justice system where military installations are located close together. Examples include Fort Bragg and Pope AFB in North Carolina and the USAF and Army bases around San Antonio, Tex. In other words, certain JAGs from the different services would report to a special defense-trial group in their area rather than to their respective services.

USAF's Deputy General Counsel Stuart R. Reichart doesn't think much of the Staats proposals. Pulling a JAG from his own service to work for a consolidated defense-trial group would serve little purpose, interfere with his training, and

Ed Gates . . . Speaking of People

## Our Retiree "Mobilization Assets"

Manpower planning for wartime, already a lively topic in and out of government, seems certain to heat up in the months ahead. Will the manpower market tighten as predicted? Can the active-duty force maintain present quality levels? Do we stay with the All-Volunteer Force? Reinstate draft registration? Launch a genuine draft? How ready are the Reserve Forces? Can Reserve-Guard vacancies be filled?

Such questions point up the military manpower concerns of many persons and groups, all of whom seek to make the best possible use of the nation's "mobilization assets." Amid all the discussions, one likely asset is seldom mentioned—the 1,200,000 military retirees.

Pentagon officials are looking into the idea of tapping retired service members during an emergency or wartime. It's just one of several on-going studies designed to tighten up Reserve Forces readiness.

Meanwhile, a partial look at the issues involved in mobilizing military retirees appears in a section of a recent Defense Department report on the All-Volunteer Force. The AVF report, titled *America's Volunteers*, was prepared by the Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics) after an exhaustive two-year study headed by Dr. Gary R. Nelson, the Deputy Assistant Defense Secretary for Requirements. Eighteen other Defense and service officials participated in the study.

*America's Volunteers* examines the services' FY '78 non-

disability retirees by component, grade, age, skills, length of time since retirement, and other data. It determined that 428,000 persons, including 182,000 Air Force retirees, are available and "constitute a major mobilization asset." Just how individuals may feel about possible post-retirement service was not addressed.

The Nelson study says "it is perhaps surprising that 428,000 trained and experienced military retirees should be available for mobilization. . . . Yet it is clear there are appropriate positions for them."

In FY '78, the report continues, "there were 598,000 active military assigned to Mission Support and Central Support Forces. Replacing two-thirds of those with retirees," it explained, "will release large numbers of younger active members for reassignment to combat elements, where shortages occur. . . ."

The report does not cite the fact that many members retire from military service in their late thirties and early forties, thereby drawing federal pensions for extraordinarily long periods. Nor is there any suggestion that the lengthy pension, patriotism, or any other factor might constitute justification for the government requiring younger retirees to perform extra military service.

The availables actually average about forty-eight years in age, twenty-two years of service, and five years retired. The report holds that that length of time out of uniform will not prevent their regaining their military skills rapidly.

hurt his professional career in his own service, Reichart told the Defense Department.

He also faulted the Staats report for urging that commanders surrender most of their authority in the operation of the justice system. Commanders must be involved in order to enforce discipline. Additionally, Reichart said, the GAO "report reflects an entirely unwarranted image of commanders as unfair, unjust, and oppressive."

### VA Honors Counseling Specialist

In a ceremony at VA's Washington headquarters attended by congressional leaders, AFA representatives, and others interested in veterans affairs, the first annual Olin E. Teague Award for outstanding rehabilitation of war-wounded veterans was presented by retired Congressman Teague. It went to Dr. Myron G. Eisenberg, a psychologist with the Spinal Cord Injury Service at the VA medical center in Cleveland, Ohio.

Dr. Eisenberg, a pioneer in the development of sex education and counseling programs for spinal cord injury patients, was honored for his work in helping veterans with such injuries adjust to the sexual problems caused by this type disability.



The first annual Olin E. Teague Award for work in rehabilitating war-wounded veterans and named for the retired Congressman was recently presented to Dr. Myron G. Eisenberg, left, of the VA medical center in Cleveland, Ohio. Shown here at the presentation are Max Cleland, center, Administrator of Veterans Affairs, and Mr. Teague. (See adjacent item.)

He is the author of *Sex and the Spinal Cord Injured: Some Questions and Answers*, acknowledged as the definitive work on this topic for laymen.

Former Texas Congressman Teague presented the award (see photo). He served on the House Committee on veterans affairs for thirty-one years, eighteen of them as chairman. Upon Teague's retirement last year, VA Administrator Max Cleland es-

tablished the award, which will go annually to the VA employee, or team, whose achievement has been extraordinarily beneficial to the rehabilitation of war-injured veterans.

### Takes Longer to Separate

Starting last month, officers asking to separate from USAF must give at least six-months' notice, instead of the present three.

The accompanying chart breaks out the retiree mobilization assets by service, age, etc. Note that 60,000 are considered available for combat.

But can retirees legally be recalled to active duty? The answer, the Nelson report declares, is a definite yes, although different groups are treated differently. Retired regulars are more readily available than retired reserves, and Army and Air Force retired regulars more than Navy and Marine retired regulars.

Specifically, retired Army and Air Force regulars "can be recalled by the President at any time without any legal restrictions." This means that some 279,000 retired regulars of those two services are available; that's sixty-five percent of all the availables.

Stated another way, the report holds that "most of the retirees are more readily available than all of the traditional sources [e.g., the Reserve Forces] except the active forces." This is because the laws on recall differ. The nearly 800,000 members of the Ready Reserve, for instance, can be called up without their consent for two years, *only* if a national emergency has been declared by the President. Retired Reserves are less available than that, requiring a war or congressionally declared national emergency.

The Nelson report, it should be noted, did not include retired Reserve enlisted members because there are so few of them.

The 181,995 Air Force retirees the study calls mobilization assets include 117,281 regular enlisted members with under thirty years of service; 36,370 regular EM with more than thirty years of service; 20,647 regular officers; and 7,697 Reserve officers.

An important difference between service policies was noted: Only Navy and Marine Corps retirees—they are officially assigned to the Fleet Reserve prior to completing

a total of thirty active and retired years of service—receive regular training and physical examinations. This is a bonus for those services in mobilization planning. However, similar programs for Army and Air Force retirees are not authorized.

*America's Volunteers* disclaims any attempt to defend or attack the AVF or to recommend specific alternatives. It does, however, set a framework for "the national debate that seems to be forming around the future of the All-Volunteer Force." Certainly the question of recalling the fit and qualified from the fast-growing military retirement pool—it contains more than 1,200,000 persons—figures to be an ingredient of that debate.

While the report does not actually recommend specific steps, it advances what it calls "conclusions." The major conclusion is that the services should "screen their retirees, particularly their regular retirees, and those capable of serving effectively should receive mobilization assignments."

They "could then receive periodic training in their mobilization assignment." And, when and if needed, orders for active duty. ■

### Nondisability Military Retirees Considered as Mobilization Assets, FY '78

(in thousands)

Service	Estimated Available	Estimated Combat Available	Average for Available Retirees		
			Age	Years Svc.	Years Ret.
Army	121	28	48	23	6
Navy	103	12	50	22	5
USMC	21	4	50	22	5
USAF	182	17	47	22	5
Total (rounded)	428	60			

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Three months often causes departing officers and their families hardships and creates "continuity-of-operations" problems within the departees' units, the Hq. USAF announcement said. It did not mention that the extended notification rule will curb separations for at least a brief period and possibly deter some officers from separating at all. Numerous other moves to shore up officer retention have been invoked in recent months.

Before 1971, voluntary officer separations required a six-month lead time between application and exit

dates. It was cut to three months that year to accelerate departures under the strength-reduction program of that period. But now Air Force is straining to maintain, not reduce, authorized officer strength levels.

## Education Regs Tardy

How long does it take for the government to crank out regulations? In the case of the veterans' contributory education program, more than two years. Congress approved the program in 1976, to affect persons entering service after December 31 of that year (they were cut out of the GI Bill at the same time).

The contributory plan has been operating—without much success—on a sort of *ad hoc* basis, but the Veterans Administration's official regulation, all forty-two pages of it, didn't surface until this February in

the Federal Register. The document is expected to become official about now.

Air Force officials knock the program for its lack of recruiting pizzazz. To participate, new members must kick in part of their pay. But service newcomers don't earn enough, Air Staffers declare. The program expires at the end of 1981, though Congress will probably extend it—and perhaps sweeten it to attract more enlistees.

## Many Seek Humanitarian Assignments

The Military Personnel Center reports that it is handling about 600 requests a month for assignments and deferments based on humanitarian reasons. Many are CHAP-related, e.g., where transfer is needed because of children requiring special schooling, medical help, etc. Be-

## Senior Staff Changes

**PROMOTION:** To Major General, NYANG: John B. Conley.

**RETIREMENTS:** Gen. John W. Roberts; B/G Everett L. True; B/G Donald N. Vivian; AFRES M/G John S. Warner.

**CHANGES:** Col. (B/G selectee) Clarence R. Autery, from Cmdr., 28th BMW, SAC, Ellsworth AFB, S. D., to Dir., Comd. & Control, Hq. SAC, Offutt AFB, Neb., replacing B/G Kenneth L. Peek, Jr. . . . B/G Walter J. Bacon II, from DCS/Log., Hq. TAC, Langley AFB, Va., to C/S, Hq. TAC, Langley AFB, Va. . . . B/G Richard T. Boverie, from Dep. Dir. for Plans & Policy, DCS/OP&R, Hq. USAF, Washington, D. C., to Dep. to DASD, Policy Plans & NSC Affairs, OSD/ISA, Washington, D. C. . . . Col. (B/G selectee) John A. Brashear, from Cmdr., 93d BMW, SAC, Castle AFB, Calif., to Cmdr., 14th AD, SAC, Beale AFB, Calif. . . . Col. (B/G selectee) William M. Charles, Jr., from Cmdr., 320th BMW, SAC, Mather AFB, Calif., to DCS/Plans, Hq. ATC, Randolph AFB, Tex., replacing retiring B/G Everett L. True.

M/G Billy J. Ellis, from DCS/Ops., Hq. TAC, Langley AFB, Va., to V/C, 9th AF, TAC, Shaw AFB, S. C., replacing M/G Fred A. Haeffner . . . AFRES B/G Stuart P. French, from Mob. Asst. to Dep. Dir. Legislative Liaison, OSAF (SAF/LL), Washington, D. C., to Mob. Asst. to Dir. Legislative Liaison, OSAF (SAF/LL), Washington, D. C., replacing retiring AFRES M/G John S. Warner . . . M/G Fred A. Haeffner, from V/C, 9th AF, TAC, Shaw AFB, S. C., to DCS/Plans, Hq. TAC, Langley AFB, Va., replacing B/G Larry D. Welch . . . Col. (B/G selectee) John J. Halki, from Cmdr., USAF Med. Gen., AFLC, Wright-

Patterson AFB, Ohio, to Dir. of Med. Insp., AFISC, Norton AFB, Calif., replacing retiring B/G Vivian.

B/G William E. Masterson, from Cmdr., 40th AD, SAC, Wurtsmith AFB, Mich., to Dep. Dir. for Plans & Policy, DCS/OP&R, Hq. USAF, Washington, D. C., replacing B/G Richard T. Boverie . . . B/G Robert E. Messerli, from Cmdr., 48th TFW, USAF, RAF Lakenheath, U. K., to Cmdr., 45th AD, SAC, Pease AFB, N. H. . . . Col. (B/G selectee) Horace W. Miller, from Asst. DCS/Ops., Hq. ATC, Randolph AFB, Tex., to Insp. Gen., Hq. ATC, Randolph AFB, Tex., replacing B/G John P. Rollston.

B/G Kenneth L. Peek, Jr., from Dir., Comd. & Control, Hq. SAC, Offutt AFB, Neb., to Dep. Asst. DCS/Mnpwr & Pers. for Mil. Pers. & V/C, AFMPC, Randolph AFB, Tex. . . . Col. (B/G selectee) Raymond C. Preston, Jr., from C/S, Hq. AFSC, Andrews AFB, Md., to Dep. General Manager of the NATO AEW&C Programme Management Agency, Brussels, Belgium . . . Col. (B/G selectee) Albert G. Rogers, from Asst. DCS/Log. Maint., Hq. TAC, Langley AFB, Va., to DCS/Log., Hq. TAC, Langley AFB, Va., replacing B/G Walter J. Bacon II.

B/G John P. Rollston, from Insp. Gen., Hq. ATC, Randolph AFB, Tex., to Asst. DCS/Mnpwr & Pers., Hq. AFLC, Wright-Patterson AFB, Ohio . . . Col. (B/G selectee) Perry M. Smith, from Cmdr., 36th TFW, USAF, Bitburg AB, Germany, to DCS/Ops., Hq. 2d ATAF, Mönchen Gladbach, West Germany . . . M/G Hoyt S. Vandenberg, Jr., from Asst. DCS/OP&R, Hq. USAF, Washington, D. C., to Vice CINC, Hq. PACAF, Hickam AFB, Hawaii . . . B/G Larry D. Welch, from DCS/Plans, Hq. TAC, Langley AFB, Va., to DCS/Ops., Hq. TAC, Langley AFB, Va., replacing M/G Billy J. Ellis. ■

cause of the heavy load, Center officials would prefer that transfer applicants don't call in about the status of the case. Delays action, they say.

### Flood of Bills Continues

As the Ninety-sixth Congress settles in, new bills are being introduced at a rapid clip. Some of interest to AIR FORCE Magazine readers include:

• **H.R. 143** (Charles E. Bennett, D-Fla.) would give a cost of living increase to Health Professions Scholarship Program recipients. This cost-of-living escalator now goes to those students enrolled in a similar HEW program but not to the DoD-bound people—a touchy point with medical recruiters. The Air Force would like to see this passed to enable them to compete with HEW doctor training programs.

• **S. 154** (Frank Church, D-Idaho) would let US civilians who spent time in enemy POW camps count such time toward federal pensions, annuities, and similar benefits.

• **H.R. 159** (William M. Brodhead, D-Mich.) would allow VA decisions on benefits to be reviewed by US courts. Now the VA's ruling is final.

• **H.R. 575** (Donald J. Mitchell, R-N. Y.) would award one preference point to Guard and Reserve vets applying for Civil Service jobs. Now, Reservists with only active-duty-for-training credit are not eligible for any veterans preference. Mitchell also submitted H.R. 577, which would remove the time limits for beginning GI Bill education, now barred after ten years.

• Several bills that would bring back recomputation and others that would establish national cemeteries in various states have also been entered. The survival rate for the thousands of bills introduced in each Congress is low.

### Short Bursts

**Deputy Defense Secretary Charles W. Duncan, Jr.**, is unhappy with the distribution of baccalaureate degrees held by Air Force officers. Only eleven percent of them hold advanced degrees in the scientific and technical disciplines, and this figure will drop to 7.5 percent in four years, he told an Air Force Institute of Technology audience recently.

The Veterans Administration has just published an updated pamphlet

outlining all the many benefits available to veterans, young and old, and their dependents and survivors. All the improvements the government made last year are included. Per copy charge is \$1.50, and it's worth every penny. The title is *Federal Benefits for Veterans and Dependents*. Write Superintendent of Documents, US Government Printing Office, Washington, D. C. 20402.

Headquarters once again is advertising for retirees to apply for club officers' jobs. These are Civil Service posts at Stateside and overseas bases; active-duty officers no longer hold the slots. Starting pay ranges from \$15,000 to \$26,000.

In February's "Bulletin Board," we noted that **Maj. Gen. William Lyon**, Chief of the Air Force Reserve, was retiring "this month." His actual departure date is April 15. Welcome back, General Lyon.

Also in February, an item about AFJROTC mentioned that units not maintaining an enrollment of eighty-five for two consecutive years would be dropped. Hq. AFROTC has reminded us that the correct enrollment figure that must be maintained for a viable unit is 100. ■

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## Airpower Pioneers

Benjamin D. Foulois, in 1910 the Army's only pilot, rose to become Chief of the Air Corps. Largely because of his unrelenting pressure, the War Department grudgingly granted the air arm a semi-independent organization, recognized the legitimacy of strategic bombardment, and began to develop aircraft capable of carrying out the mission of strategic airpower.

# Benjamin D. Foulois: Chief of the Air Corps, 1931-35

**D**ESPITE persistent financial neglect at the hands of the Hoover and Roosevelt Administrations, the Army Air Corps made real progress during the 1931-35 period—progress toward autonomy and combat effectiveness. Military aviators achieved four notable gains during those years: a semi-independent mission, a centrally controlled air strike force in the form of the General Headquarters (GHQ) Air Force, War Department recognition that strategic bombardment had some military value, and technologically advanced aircraft that could turn the potential of airpower into reality.

One man deserves the lion's share of the credit for these achievements: a small, rather plain, aviation pioneer named Benjamin D. Foulois, who was Chief of the Air Corps from December 19, 1931, to December 21, 1935. A former enlisted man, Lieutenant Foulois in 1909 was Orville Wright's passenger on the Army's final acceptance test of the Wright Flyer. As Foulois explained it, Orville offered him this unique opportunity not because of his "intellectual and technical ability" but because

BY MAJ. JOHN F. SHINER, USAF



*Foulois (left) with General Pershing in France, where he was Assistant Chief of the Air Service (AEF) and the US representative on several joint aviation committees.*

of his "short stature, light weight, and map-reading experience." For the young lieutenant, that event marked the beginning of a

lifelong love affair with flying.

Over the next three decades, Foulois was intimately involved in the

growth and development of military aviation. In 1910, he became the Army's one-man air force when the War Department ordered him to take the Wright Flyer to Texas and teach himself to fly. Probably the only military aviator to win his wings by means of a "correspondence course," Lieutenant Foulois would write the Dayton, Ohio, inventors after each of a continuing series of crack-ups, soliciting their advice on questions of pilot technique.

Assigned to ground duty in 1911, "Benny" Foulois soon worked his way back into an aviation assignment and subsequently commanded the 1st Aero Squadron in the 1916 Mexican Punitive Expedition against the elusive bandit and revolutionary Pancho Villa. When, in 1917, the United States entered World War I, Foulois, then a temporary brigadier general, was sent to France to take over the duties of Chief of the Air Service, American Expeditionary Force (AEF). Since he had had no previous experience running a large organization, he was ill-equipped to end the chaos within the rapidly expanding AEF air arm.



General Pershing soon replaced him with a nonflyer, the very able Maj. Gen. Mason Patrick. Foulois stayed on as assistant chief. After the war, Foulois filled a variety of billets before being selected as Assistant Chief of the Air Corps in 1927. In 1931, the Secretary of War elevated him to the Army's top aviation post upon Maj. Gen. James Fechet's retirement.

Benjamin Foulois was not a dynamic, flamboyant figure like Billy Mitchell. In fact, he was nearly the antithesis of Mitchell, a man he loathed. Foulois had come from humble origins and was not a particularly articulate public speaker. Throughout his career he preferred a flight suit to a neatly tailored uniform. Happier in a cockpit or out visiting an operational flying unit than at a desk in the nation's capital, he did not move in the higher circles of Washington society. For relaxation he preferred a good drinking party and a game of poker with his fellow officers. He was a "doer" rather than a deep thinker, but he possessed a wealth of practical knowledge about military aviation. The officers and men of the Air Corps respected Foulois, and he, for his part, did an effective job of representing their interests during his four-year tenure.

### An Early Step Toward Autonomy

As Chief of the Air Corps, Foulois quickly established himself within the War Department as an unrelenting military aviation advocate. Time and again he cajoled the General Staff leadership to accept changes favorable to the Army air arm. He wanted military aviation to grow into a decisive, autonomous striking force, and he worked tirelessly to that end. The pressure for



*In the early '20s, Foulois served in Germany as an observer and assistant military attaché.*

change that he generated within the General Staff and before Congress won him no friends among the ground officers who controlled the Army, yet his constant carping forced them to rethink their collective position on a host of aviation-related topics.

By the time Foulois succeeded to the chief's job in December 1931, Chief of Naval Operations Adm. William Pratt had already agreed with Army Chief of Staff Gen. Douglas MacArthur that the Air Corps would be responsible for aerial coast defense in the event the fleet was away from coastal waters. The General Staff, however, did nothing in succeeding months to explain how it intended to use the air arm to carry out its newly confirmed mission.

Foulois began badgering the War Department over its lack of employment policy as soon as he took office. After bombarding the General Staff with correspondence decrying the lack of air defense doctrine, speaking to MacArthur personally about the situation, and proposing his office's own plan for air defense, the air chief eventually beat War Department inertia on the issue.

In January 1933, General MacArthur officially endorsed a revised version of the Air Corps's proposal for coastal air defense employment. In a policy letter to all commanders, the Chief of Staff confirmed the air arm's right and responsibility to range far out to sea in search of an enemy fleet, approved independent counterinvasion air operations when the enemy was still beyond the range of Army shore guns, and accepted, at least in theory, the need for a centrally controlled, consolidated air strike force to carry out the air defense mission. Foulois's efforts had resulted in real progress. The Air Corps had gained, for the first time, a semi-independent mission not directly related to land combat—something the Army had never allowed its prized auxiliary to have before.

General Foulois also was the prime mover behind the General Staff's belated acceptance of air arm reorganization. The Army's leadership had agreed as early as 1923 that it made sense to use military air resources in a concentrated manner under centralized control in any future war. Yet, the War Department did nothing to bring this force into being until pressured into doing so by Foulois and his staff. As with the coast defense issue, the air chief campaigned persistently within the War Department and before Congress in support of a peacetime GHQ Air Force. He wanted immediate General Staff action to create a strike force composed of all Army attack, bombardment, and pursuit aircraft under the command of a senior Air Corps officer, and he could not be dissuaded from this goal.

Correspondence on the issue passed with a fury be-

tween his office and the General Staff between 1931 and early 1934. The air chief eventually wore down General Staff resistance, for his argument was too powerful to deny. War plans called for employing military air in a concentrated fashion under a single commander. Therefore, charged Foulois, the existing arrangement of parceling out air units to ground commanders all over the United States made no sense at all. In the event of a military emergency, these dispersed air resources would have to withstand the chaos of hasty reorganization before they could fight—clearly an unsatisfactory situation. Foulois sought to sweeten the pot slightly in 1932 and again in 1933 by hinting in memos to MacArthur and General Staff officers that creating a GHQ Air Force might also moderate the Air Corps's continuing quest for autonomy.

Benny Foulois's persistent chiding eventually paid



*General Foulois died in 1967. He lived at Andrews AFB, Md., and had been a frequent AFA speaker.*

off. The General Staff was pressured into rethinking its stand and in October 1933 finally endorsed the establishment of a GHQ Air

Force in peacetime. The War Department hoped that this action would encourage Foulois and other Air Corps officers to abandon their covert efforts to achieve eventual freedom from General Staff control. The Army's leadership quickly learned, however, that simply endorsing the reorganization was not enough, for in the absence of action to bring the GHQ Air Force immediately to life, Foulois stepped up his campaign to gain complete autonomy through legislative action.

### **Bringing GHQ Air Force to Life**

No friend of the General Staff, Foulois had first spoken before Congress in behalf of air arm autonomy in 1919. On that occasion he damned the War Department's lack of concern for aviation:

The General Staff of the Army is the policymaking body of the Army, and, either through lack of vision, lack of practical knowledge, or deliberate intention to subordinate the Air Service's needs to the needs of the other combat arms, it has utterly failed to appreciate the full military value of this new military weapon and, in my opinion, has utterly failed to accord it its just place in our military family.

In subsequent years, the salty aviation pioneer did not change his views on the General Staff. As Chief of the Air Corps, he usually spoke more cautiously before congressional committees, but he continued to work behind the scenes to father an autonomous air organization. In early 1934, after the War Department had taken no further steps to bring the GHQ Air Force to life, unknown to his superiors, he and his staff

prepared and forwarded to a most receptive Congressman John McSwain, Chairman of the House Military Affairs Committee, a bill providing for Air Corps autonomy. Foulois would later be denounced by members of the General Staff when the War Department learned of the bill's true origin.

McSwain introduced the bill as his own and announced he would shortly commence hearings on it. The War Department reacted with horror. Realizing that the creation of a GHQ Air Force would temper the Army aviators' advocacy for autonomy and thereby decrease the possibility that such legislation would be adopted by Congress, Douglas MacArthur and his General Staff tarried no longer. At the behest of the War Department, the Baker Board—which had been convened by the Secretary of War in the spring of 1934 to investigate the state of military aviation—recommended in its final report that the Army organize a GHQ Air Force immediately. In response, the General Staff set to work at once, bringing the centrally controlled air strike force to life in March 1935. Now possessing a semi-independent combat organization, the Army air arm had drawn one step closer to autonomy.

### **Foundation of Strategic Airpower**

General Foulois likewise deserves a share of the credit for winning limited War Department acceptance of strategic bombardment as a legitimate military aviation mission. Foulois was by no means an innovative strategic thinker, but he fully endorsed and supported his fellow aviators' conclusions that strategic air op-

*Maj. John F. Shiner is Associate Professor of History at the USAF Academy, where he teaches a course in the history of airpower. He was commissioned through AFROTC at Capital University, Columbus, Ohio, in 1964. Major Shiner is a senior pilot and holds a Ph.D. in Military History from Ohio State University.*

erations would be decisive in future war.

Senior ground officers traditionally had deprecated long-range bombing as a waste of resources. Placing a high value on military aviation, they did not want it to stray far from the battlefield. They were aware that, if given the chance, the Air Corps would concentrate on the strategic air mission and neglect ground support. Even so, the pressure from Foulois and his staff and the efforts of Maj. Gen. Charles Kilbourne, a forward-thinking ground officer then serving as chief of the General Staff War Plans Division, gained the War Department's grudging limited endorsement of strategic bombardment as a viable, though not decisive, instrument of war.

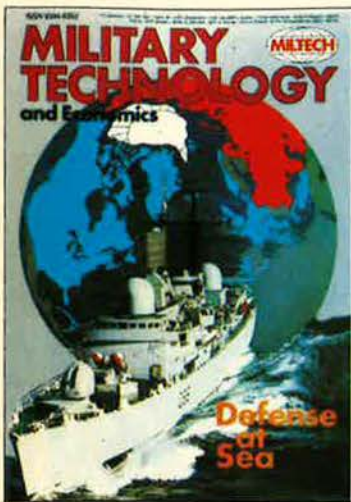
The air doctrine adopted by the War Department in 1935 continued to emphasize tactical aviation, but, for the first time, it listed "operations beyond the sphere of influence of ground forces" as an acceptable mission and acknowledged the benefit to be derived from destroying strategic targets.

Foulois had again stimulated War Department rethinking of an important military aviation issue, and the result had again benefited the air arm. He and his staff, with considerable assistance from Kilbourne, had opened the way for War Department acceptance of strategic aerial warfare in World War II.

Foulois also acted to sell the General Staff on aircraft that would make strategic bombardment a reality. Realizing that the War De-

partment still was not very favorably disposed toward air attacks on an enemy's vital centers, he and his fellow aviators used the nation's coast defense needs—the protection of Hawaii, the Philippines, and the Panama Canal from hostile sea or air attack—as the rationale in arguing for long-range bombers. The subterfuge worked, as the Army bought its first B-17s and provided research money to develop prototype bomber aircraft with even greater range. The B-17 proved inadequate as a bombing platform against enemy ships, and the prototype aircraft never fully met Air Corps expectations, yet these technological developments of the mid-1930s ultimately provided the United States with the aircraft needed to carry out successful strategic air campaigns against Germany and Japan in the next decade.

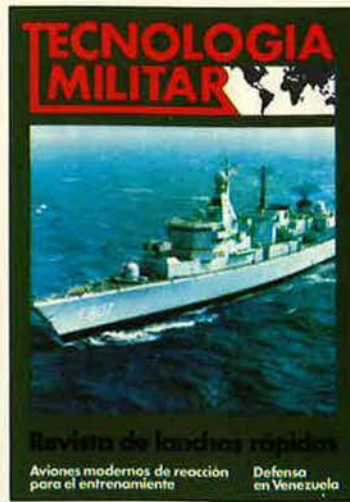
The many important advances occurring between 1931 and 1935—the confirmation of the mission of coast defense and the subsequent evolution of employment doctrine, the birth of the GHQ Air Force, the War Department's limited endorsement of the worth of strategic bombardment, and the creation of the long-range bomber—represented important steps in developing an effective, autonomous combat air organization. The man responsible for all this retired in 1935. Little remains to remind us of his contributions, save for a collection of memorabilia in the Andrews AFB Officers' Club. Surely Benjamin D. Foulois deserves better. ■



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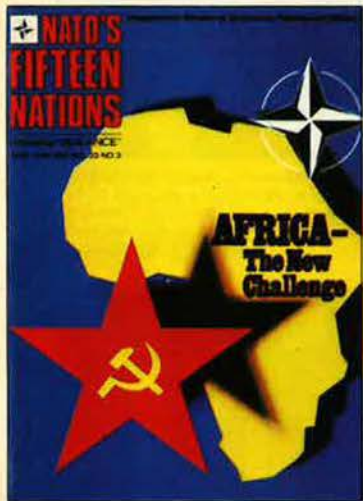
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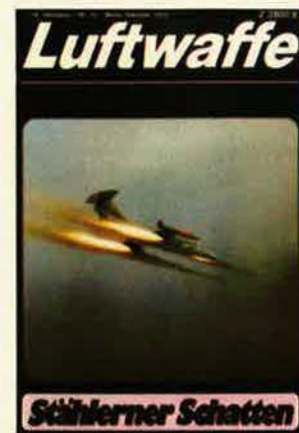


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# AFA News

By Don Steele, AFA AFFAIRS EDITOR



Guests at Northern Virginia Chapter's recent Salute to 75 Years of Powered Flight included a number of senior USAF and AFA officers from the local area. The head table included, from left, Mrs. Lydia Dyer; Mrs. Paul W. Myers; James Straubel, AFA Executive Director; Lt. Gen. Paul W. Myers,

the Surgeon General of the Air Force; Mrs. Lee Patterson, Chapter Secretary; Laurence S. Dyer, Chapter President; Mrs. Jean Burlando; and Chapter Treasurer Everett (Buck) Burlando.



The Chattanooga Chapter, Tennessee AFA, recently presented a collection of aviation books to the Chattanooga Public Library. Attending the presentation were, from left, Dr. C. Wayne Shearer, Chattanooga Chapter President; Mrs. Vicky Leathers, library manager; and Chattanooga City Commissioner Jim Eberle.

## COMING EVENTS

- Florida State AFA Convention, Cape Coral, April 28 . . .
- Washington State AFA Convention, Seattle, May 4-6 . . .
- Connecticut State AFA Convention, Howard Johnson's Red Coach Conference Center, Windsor Locks, May 5 . . .
- Tennessee State AFA Convention, Airport Hilton Hotel, Nashville, May 11-12 . . .
- Utah State AFA Convention, Snowbird, May 11-13 . . .
- Ohio State AFA Convention, Rickenbacker AFB, May 12 . . .
- New Jersey State AFA Convention, Golden Eagle, Cape May, May 18-20 . . .
- California State AFA Convention, San Bernardino, May 18-20 . . .
- Alaska State AFA Convention, May 19 . . .
- Massachusetts State AFA Convention, Hanscom AFB, May 19 . . .
- AFA Golf and Tennis Tournaments, The Broadmoor, Colorado Springs, Colo., May 26 . . .
- Twentieth Annual Dinner Honoring the Air Force Academy's Outstanding Squadron, The Broadmoor's International Center, Colorado Springs, Colo., May 26 . . .
- Michigan State AFA Convention, June 9 . . .
- New Hampshire State AFA Convention, Pease AFB, June 9 . . .
- Missouri State AFA Convention, St. Louis, June 16 . . .
- Pennsylvania State AFA Convention, Viking Motor Inn, Pittsburgh, June 29-30 . . .
- Virginia State AFA Convention, Arlington, June 30 . . .
- Colorado State AFA Convention, Stapleton Plaza, Denver, June 29-30 . . .
- New York State Convention, Dutch Inn, Islip, Long Island, July 13-15 . . .
- AFA's 33d Aerospace Development Briefings and Displays, Sheraton-Park Hotel, Washington, D. C., September 18-20.

Photo by John Penalver

# chapter and state photo gallery



Capt. Edward G. Hoffman, a member of the "Wings of Blue" Air Force Academy parachute team, demonstrates proper parachute fit to USAF Junior ROTC and CAP cadets. The cadets were at Lowry AFB, Colo., attending the Sixth Annual High School Aerospace Education Symposium. The event was cosponsored by Colorado AFA, AFJROTC, and the Colorado Wing of CAP.



Civil Air Patrol and AFJROTC cadets are briefed on air-launched ordnance during their visit to Lowry AFB. Nearly 300 cadets attended the symposium.



The Idaho State AFA was among a group of civic-minded organizations that sponsored a defense-oriented seminar conducted at Boise, January 19 and 20, which drew more than 100 attendees. In photo, from the left, Roger Gleason, Idaho State AFA Vice President; Idaho State Air Guard TSgt. John Logan, State AFA Treasurer; Dwight Ewing, Merced, Calif., Far West Regional AFA Vice President; Chinese/Soviet affairs expert

Dr. Richard Thornton, Professor of History at George Washington University, D. C.; Middle East expert Dr. Gerald Steibel, Director of Foreign Affairs Research, Research Institute of America; Col. Von R. Christianson, 366th TFW, Mountain Home AFB; and Idaho State AFA President Ronald R. Galloway.

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# AFA News photo gallery



Lt. Gen. Bennie L. Davis, USAF Deputy Chief of Staff, Manpower and Personnel, was guest speaker at Pease, N. H., Chapter's January meeting. Pictured during the pre-dinner reception are, from left, Col. Edward Batchelor, 45th Air Division Commander; Charles J. Sattan, President of New Hampshire AFA and the Pease Chapter; General Davis; R. L. "Dev" Devoucoux, Vice President of AFA's New England Region; and Col. J. McKay Greer, Commander of the 509th Bomb Wing, Pease AFB.



Lyle O. Remde, right, Nebraska State AFA President, presents a special Ak-Sar-Ben Chapter award for aviation excellence to Larry Newman, crew member of the Double Eagle II transatlantic balloon. Looking on are the other Double Eagle II crew members: Ben Abruzzo, center, and Maxie Anderson, right rear. The balloonists were honored at December 8 Chapter dinner in Omaha, Neb., attended by more than 600 people.



MSgt. Joe Rickey, right, First Sergeant for the 406th Combat Support Group, Zaragoza AB, Spain, and a member of AFA, has been selected as Sixteenth Air Force Outstanding First Sergeant for the Year for 1978. In a ceremony honoring his selection, Sergeant Rickey received a handsome trophy from Maj. Gen. William R. Nelson, Jr., Vice Commander of Sixteenth Air Force.

# AFA State Contacts

Following each state name, in parentheses, are the names of the localities in which AFA Chapters are located. Information regarding these Chapters, or any place of AFA's activities within the state, may be obtained from the state contact.

**ALABAMA** (Auburn, Birmingham, Huntsville, Mobile, Montgomery, Selma): **Donal B. Cunningham**, 1 Keithway Dr., Selma, Ala. 36701 (phone 205-875-2450).

**ALASKA** (Anchorage, Fairbanks): **David W. Robinson**, P. O. Box 1120, Anchorage, Alaska 99510 (phone 907-274-3561).

**ARIZONA** (Phoenix, Tucson): **E. D. Jewett, Jr.**, 7861 N. Tuscany Dr., Tucson, Ariz. 85704 (phone 602-297-1107).

**ARKANSAS** (Blytheville, Fort Smith, Little Rock): **Gordon W. Smethurst**, RR #2, Box 43D, Cabot, Ark. 72023 (phone 501-374-2245).

**CALIFORNIA** (Apple Valley, Edwards, Fairfield, Fresno, Hawthorne, Hermosa Beach, Long Beach, Los Angeles, Marysville, Merced, Monterey, Novato, Orange County, Palo Alto, Pasadena, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, San Mateo, Santa Barbara, Santa Monica, Tahoe City, Vandenberg AFB, Van Nuys, Ventura): **Edward A. Stearn**, P. O. Box 5867, San Bernardino, Calif. 92412 (phone 714-889-0696).

**COLORADO** (Aurora, Boulder, Colorado Springs, Denver, Ft. Collins, Grand Junction, Greeley, Littleton, Pueblo, Waterton): **Stephen L. Brantley**, 1089 S. Buchanan St., Aurora, Colo. 80010 (phone 303-320-7153).

**CONNECTICUT** (East Hartford, North Haven, Stratford, Windsor Locks): **Joseph R. Falcone**, 14 High Ridge Rd., Rockville, Conn. 06066 (phone 203-565-3543).

**DELAWARE** (Dover, Wilmington): **John E. Strickland**, Rt. 6, Box 408, Dover, Del. 19901 (phone 302-678-6070).

**DISTRICT OF COLUMBIA** (Washington, D. C.): **George L. J. Dalferes**, 12602 Tartan Ln., Oxon Hill, Md. 20022 (phone 301-897-6620).

**FLORIDA** (Bartow, Broward, Cape Coral, Ft. Walton Beach, Gainesville, Jacksonville, New Port Richey, Orlando, Panama City, Patrick AFB, Redington Beach, Sarasota, Tallahassee, Tampa): **Eugene D. Minietta**, Box 286A, Route 1, Oviedo, Fla. 32765 (phone 305-420-3868).

**GEORGIA** (Athens, Atlanta, Rome, Savannah, St. Simons Island, Valdosta, Warner Robins): **William L. Copeland**, 1885 Walthall Dr., NW, Atlanta, Ga. 30318 (phone 404-355-5019).

**HAWAII** (Honolulu): **James Dowling**, 2222 Kalakaua Ave., Honolulu, Hawaii 96815 (phone 808-923-0492).

**IDAHO** (Boise, Twin Falls): **Ronald R. Galloway**, Box 45, Boise, Idaho 83707 (phone 208-385-5247).

**ILLINOIS** (Belleville, Champaign, Chicago, Elmhurst, Peoria): **C. W. Scott**, P. O. Box 159, O'Fallon, Ill. 62269 (phone 618-632-7003).

**INDIANA** (Indianapolis, Lafayette, Logansport, Marion, Mentone): **Roy P. Whitton**, 916 Oak Blvd., Greenfield, Ind. 46140 (phone 317-636-6406).

**IOWA** (Des Moines): **Ric Jorgensen**, 4005 Kingman, Des Moines, Iowa 50311 (phone 515-255-7656).

**KANSAS** (Topeka, Wichita): **Cletus J. Pottebaum**, 6503 E. Murdock, Wichita, Kan. 67208 (phone 316-681-5445).

**KENTUCKY** (Louisville): **Stanley P. McGee**, 5405 Wending Ct., Louisville, Ky. 40207 (phone 502-368-6524).

**LOUISIANA** (Alexandria, Baton Rouge, Bossier City, Monroe, New Orleans, Shreveport): **Thomas L. Keal**, 404 Galway, Shreveport, La. 71115 (phone 318-868-9688).

**MAINE** (Limestone): **Alban E. Cyr**, P. O. Box 160, Caribou, Me. 04736 (phone 207-492-4171).

**MARYLAND** (Andrews AFB, Baltimore): **Robert J. Beatson**, 7813 Locris Ct., Upper Marlboro, Md. 20870 (phone 301-336-5400).

**MASSACHUSETTS** (Boston, Fallmouth, Florence, Hanscom AFB, Lexington, Taunton, Worcester): **Mary Anne Gavin**, 38 Tremlett St., Boston, Mass. 02124 (phone 617-282-2059).

**MICHIGAN** (Battle Creek, Detroit, Kalamazoo, Lansing, Marquette, Mount Clemens, Oscoda, Petoskey, Sault Ste. Marie, Southfield): **Howard C. Strand**, 15515 A Dr., N., Marshall, Mich. 49068 (phone 616-963-1596).

**MINNESOTA** (Duluth, Minneapolis, St. Paul): **David J. Little**, 1888 Princeton Ave., St. Paul, Minn. 55105 (phone 612-699-3600).

**MISSISSIPPI** (Biloxi, Columbus, Jackson): **Billy A. McLeod**, P. O. Box 1274, Columbus, Miss. 39701 (phone 601-328-0943).

**MISSOURI** (Kansas City, Knob Noster, Springfield, St. Louis): **Donald K. Kuhn**, 3238 Southern Aire Dr., St. Louis, Mo. 63125 (phone 314-892-0121).

**MONTANA** (Great Falls): **Lucien E. Bourcier**, P. O. Box 685, Great

Falls, Mont. 59403 (phone 406-453-1351).

**NEBRASKA** (Lincoln, Omaha): **Lyle O. Remde**, 4911 S. 25th St., Omaha, Neb. 68107 (phone 402-731-4747).

**NEVADA** (Las Vegas, Reno): **James L. Murphy**, 2370 Skyline Dr., Reno, Nev. 89509 (phone 702-786-2475).

**NEW HAMPSHIRE** (Manchester, Pease AFB): **Charles J. Sattan**, 53 Gale Ave., Laconia, N. H. 03246 (phone 603-524-5407).

**NEW JERSEY** (Andover, Atlantic City, Belleville, Camden, Chatham, Cherry Hill, E. Rutherford, Edison, Forked River, Fort Monmouth, Jersey City, McGuire AFB, Newark, Trenton, Wallington, West Orange): **Leonard Schiff**, 1216 Taurus Ct., Forked River, N. J. 08731 (phone 609-693-7886).

**NEW MEXICO** (Alamogordo, Albuquerque, Clovis): **Joseph H. Turner**, P. O. Box 1946, Clovis, N. M. 88101 (phone 505-762-4557).

**NEW YORK** (Albany, Bethpage, Binghamton, Buffalo, Catskill, Chautauqua, Griffiss AFB, Hartsdale, Ithaca, Long Island, New York City, Niagara Falls, Patchogue, Plattsburgh, Riverdale, Rochester, Staten Island, Syracuse): **Kenneth C. Thayer**, R. D. #1, Ava, N. Y. 13303 (phone 315-827-4241).

**NORTH CAROLINA** (Asheville, Charlotte, Fayetteville, Goldsboro, Greensboro, Kitty Hawk, Raleigh): **William M. Bowden**, 509 Greenbriar Dr., Goldsboro, N. C. 27530 (phone 919-735-4716).

**NORTH DAKOTA** (Concrete, Fargo, Grand Forks, Minot): **Ernest J. Collette, Jr.**, Box 345, Grand Forks, N. D. 58201 (phone 701-775-3944).

**OHIO** (Akron, Cincinnati, Cleveland, Columbus, Dayton, Newark, Toledo, Youngstown): **Robert J. Puglisi**, 1854 SR 181, Crestline, Ohio 44827 (phone 419-683-2283).

**OKLAHOMA** (Altus, Enid, Oklahoma City, Tulsa): **William N. Webb**, 404 W. Douglas, Midwest City, Okla. 73110 (phone 405-734-2658).

**OREGON** (Corvallis, Eugene, Portland): **Roy G. Loughary**, P. O. Box 66127, Portland, Ore. 97266 (phone 503-775-3616).

**PENNSYLVANIA** (Allentown, Beaver Falls, Chester, Dormont, Erie, Harrisburg, Homestead, Hor-

sham, King of Prussia, Lewistown, Philadelphia, Pittsburgh, State College, Washington, Willow Grove, York): **Lamar R. Schwartz**, P. O. Box 79, Fogelsville, Pa. 18051 (phone 215-967-3387).

**RHODE ISLAND** (Warwick): **Charles H. Collins**, 143d TAG (RIANG), Warwick, R. I. 02886 (phone 401-737-2100).

**SOUTH CAROLINA** (Charleston, Columbia, Greenville, Myrtle Beach, Sumter): **Robert H. Morrell**, RR 2, Hopkins, S. C. 29061 (phone 803-776-2041).

**SOUTH DAKOTA** (Rapid City): **Ken Guenther**, P. O. Box 9045, Rapid City, S. D. 57701 (phone 605-348-0579).

**TENNESSEE** (Chattanooga, Knoxville, Memphis, Nashville, Tri-Cities Area, Tullahoma): **Thomas O. Bigger**, Sverdrup/ARO, Inc., AEDC Div., Arnold AFS, Tenn. 37389 (phone 615-455-2611, ext. 243).

**TEXAS** (Abilene, Austin, Big Spring, Commerce, Corpus Christi, Dallas, Del Rio, Denton, El Paso, Fort Worth, Harlingen, Houston, Kerrville, Laredo, Lubbock, San Angelo, San Antonio, Waco, Wichita Falls): **Frank Manupelli**, P. O. Box 5250, San Antonio, Tex. 78201 (phone 512-349-1111).

**UTAH** (Brigham City, Clearfield, Ogden, Provo, Salt Lake City): **Lee Mohler**, 2605 Bonneville Terr., Ogden, Utah 84403 (phone 801-777-3421).

**VERMONT** (Burlington): **John Navin**, 134th DSES, ANG, Burlington IAP, Vt. 05401 (phone 802-658-0770).

**VIRGINIA** (Arlington, Danville, Harrisonburg, Langley AFB, Lynchburg, Norfolk, Petersburg, Richmond, Roanoke): **Jon R. Donnelly**, 8539 Sutherland Rd., Richmond, Va. 23235 (phone 804-649-6425).

**WASHINGTON** (Seattle, Spokane, Tacoma): **Frank R. Troutman**, 190 Dorado Dr., Issaquah, Wash. 98027 (phone 206-655-0540).

**WEST VIRGINIA** (Huntington): **James Hazelrigg**, Rt. 2, Box 32, Barboursville, W. Va. 25504 (phone 304-755-2121).

**WISCONSIN** (Madison, Milwaukee): **Charles W. Marotske**, 7945 S. Verdev Dr., Oak Creek, Wis. 53154 (phone 414-762-4383).

**WYOMING** (Cheyenne): **Lloyd A. Flynn**, 1907 Laurel Dr., Cheyenne, Wyo. 82001 (phone 307-634-5901).

**NEW  
FOR MEMBERS  
UNDER 30 — MAJOR  
BENEFIT INCREASES!**

Now... The Sixth Major Benefit Increase for Air

# \$85,000 STANDARD PLAN.

## Other Important Benefits

**COVERAGE YOU CAN KEEP.** Provided you apply for coverage under age 60 (see "ELIGIBILITY") your insurance may be retained at the same low group rates to age 75.

**FULL TIME, WORLD WIDE PROTECTION.** The policy contains no war clause, hazardous duty restriction, combat zone waiting period or geographical limitation.

**DISABILITY WAIVER OF PREMIUM.** If you become totally disabled at any time prior to age 60 for at least a 9-month period, your coverage will be continued in force without further payment of premiums as long as you remain disabled.

**FULL CHOICE OF SETTLEMENT OPTIONS.** All standard forms of settlement options, as well as special options agreed to by the insured and United of Omaha, are available to insured members.

**CONVENIENT PAYMENT PLANS.** Premium payments may be made by monthly government allotment (payable to Air Force Association), or direct to AFA in quarterly, annual or semi-annual installments.

**DIVIDEND POLICY.** AFA's primary policy is to provide maximum coverage at the lowest possible cost. Consistent with this policy, AFA has provided year-end dividends (16.67% for 1977) to insured members in thirteen of the past sixteen years, and has now increased basic coverage on six separate occasions.

## Additional Information

**Effective Date of Your Coverage.** All certificates are dated and take effect on the last day of the month in which your application for coverage is approved, and coverage runs concurrently with AFA membership. AFA Military Group Life Insurance is written in conformity with the insurance regulations of the State of Minnesota. The insurance will be provided under the group insurance policy issued by United of Omaha to the First National Bank of Minnesota as trustees of the Air Force Association Group Insurance Trust.

**EXCEPTIONS:** There are a few logical exceptions to this coverage. They are: **Group Life Insurance:** Benefits for suicide or death from injuries intentionally self-inflicted while sane or insane will not be effective until your coverage has been in force for 12 months.

**The Accidental Death Benefit and Aviation Death Benefit** shall not be effective if death results: (1) From injuries intentionally self-inflicted while sane or insane, or (2) From injuries sustained while committing a felony, or (3) Either directly or indirectly from bodily or mental infirmity, poisoning or asphyxiation from carbon monoxide, or (4) During any period a member's coverage is being continued under the waiver of premium provision, or (5) From an aviation accident, either military or civilian, in which the insured was acting as pilot or crew member of the aircraft involved, except as provided under AVIATION DEATH BENEFIT.

## Eligibility

All active duty personnel of the Armed Forces of the United States and members of the Ready Reserve\* and National Guard\* (under age 60), Armed Forces Academy cadets\*, and college or university ROTC cadets\* are eligible to apply for this coverage provided they are now, or become, members of the Air Force Association.

\*Because of restrictions on the issuance of group insurance coverage, applications for coverage under the group program cannot be accepted from cadets or Reserve or Guard personnel residing in Florida, New York, Ohio or Texas. Members in these states may request special application forms from AFA for individual policies which provide coverage quite similar to the group program.

## Please Retain This Medical Bureau Prenotification For Your Records

Information regarding your insurability will be treated as confidential. United Benefit Life Insurance Company may, however, make a brief report thereon to the Medical Information Bureau, a nonprofit membership organization of life insurance companies, which operates an information exchange on behalf of its members. If you apply to another bureau member company for life or health insurance coverage, or a claim for benefits is submitted to such a company, the Bureau, upon request, will supply such company with the information in its file.

Upon receipt of a request from you, the Bureau will arrange disclosure of any information it may have in your file. (Medical information will be disclosed only to your attending physician.) If you question the accuracy of information in the Bureau's file, you may contact the Bureau and seek a correction in accordance with the procedures set forth in the federal Fair Credit Reporting Act. The address of the Bureau's information office is P.O. Box 105, Essex Station, Boston, Mass. 02112. Phone (617) 426-3660.

United Benefit Life Insurance Company may also release information in its file to other life insurance companies to whom you may apply for life or health insurance, or to whom a claim for benefits may be submitted.

## CURRENT BENEFIT TABLES

AFA STANDARD PLAN		PREMIUM: \$10 per month	
Insured's Attained Age	Basic Benefit*	Extra Accidental Death Benefit*	Total Benefit
20-29	\$85,000	\$12,500	\$97,500
30-34	65,000	12,500	77,500
35-39	50,000	12,500	62,500
40-44	35,000	12,500	47,500
45-49	20,000	12,500	32,500
50-54	12,500	12,500	25,000
55-59	10,000	12,500	22,500
60-64	7,500	12,500	20,000
65-69	4,000	12,500	16,500
70-74	2,500	12,500	15,000

**Aviation Death Benefit:\***  
Non-war related \$25,000  
War related \$15,000

AFA HIGH OPTION PLAN		PREMIUM: \$15 per month	
Insured's Attained Age	Basic Benefit*	Extra Accidental Death Benefit*	Total Benefit
20-29	\$127,500	\$12,500	\$140,000*
30-34	97,500	12,500	110,000
35-39	75,000	12,500	87,500
40-44	52,500	12,500	65,000
45-49	30,000	12,500	42,500
50-54	18,750	12,500	31,250
55-59	15,000	12,500	27,500
60-64	11,250	12,500	23,750
65-69	6,000	12,500	18,500
70-74	3,750	12,500	16,250

**Aviation Death Benefit:\***  
Non-war related \$37,500  
War related \$22,500

\*The Extra Accidental Death Benefit is payable in the event an accidental death occurs within 13 weeks of the accident, except as noted under **Aviation Death Benefit** (below).

\***AVIATION DEATH BENEFIT:** The coverage provided under the Aviation Death Benefit is paid for death which is caused by an aviation accident in which the insured is serving as pilot or crew member of the aircraft involved. Under this condition, the Aviation Death Benefit is paid in lieu of all other benefits of this coverage. Furthermore the non-war related benefit will be paid in all cases where the death does not result from war or an act of war, whether declared or undeclared.

## OPTIONAL FAMILY COVERAGE

(may be added to either Standard or High Option Plan)

PREMIUM: \$2.50 per month

Insured's Attained Age	Life Insurance Coverage for Spouse	Life Insurance Coverage for each Child*
20-39	\$10,000	\$2,000
40-44	7,500	2,000
45-49	5,000	2,000
50-54	4,000	2,000
55-59	3,000	2,000
60-64	2,500	2,000
65-69	1,500	2,000
70-74	750	2,000

\*Between the ages of six months and 21 years, each child is provided \$2,000 coverage. Children under 6 months are provided with \$250 coverage once they are 15 days old and discharged from hospital.



# \$127,500 HIGH OPTION PLAN



**APPLICATION FOR  
AFA MILITARY GROUP LIFE INSURANCE**



Group Policy GLG-2625  
United Benefit Life Insurance Company  
Home Office Omaha Nebraska

Full name of member \_\_\_\_\_  
Rank Last First Middle

Address \_\_\_\_\_  
Number and Street City State ZIP Code

Date of birth \_\_\_\_\_  
Mo. Day Yr.  
Height \_\_\_\_\_  
Weight \_\_\_\_\_  
Social Security Number \_\_\_\_\_

Name and relationship of primary beneficiary \_\_\_\_\_

Please indicate category of eligibility and branch of service.

Extended Active Duty       Air Force  
 Ready Reserve or National Guard       Other \_\_\_\_\_  
 (Branch of service)  
 Air Force Academy       \_\_\_\_\_ Academy  
 ROTC Cadet \_\_\_\_\_  
 Name of college or university

Name and relationship of contingent beneficiary \_\_\_\_\_

This insurance is available only to AFA members

I enclose \$13 for annual AFA membership dues (includes subscription (\$9) to AIR FORCE Magazine).  
 I am an AFA member.

Please indicate below the Mode of Payment and the Plan you elect.

HIGH OPTION PLAN		Mode of Payment	STANDARD PLAN	
Members Only	Members and Dependents		Members Only	Members and Dependents
<input type="checkbox"/> \$ 15.00	<input type="checkbox"/> \$ 17.50	<b>Monthly</b> government allotment. I enclose 2 months' premium to cover the period necessary for my allotment (payable to Air Force Association) to be established. <b>Quarterly.</b> I enclose amount checked. <b>Semiannually.</b> I enclose amount checked. <b>Annually.</b> I enclose amount checked.	<input type="checkbox"/> \$ 10.00	<input type="checkbox"/> \$ 12.50
<input type="checkbox"/> \$ 45.00	<input type="checkbox"/> \$ 52.50		<input type="checkbox"/> \$ 30.00	<input type="checkbox"/> \$ 37.50
<input type="checkbox"/> \$ 90.00	<input type="checkbox"/> \$105.00		<input type="checkbox"/> \$ 60.00	<input type="checkbox"/> \$ 75.00
<input type="checkbox"/> \$180.00	<input type="checkbox"/> \$210.00		<input type="checkbox"/> \$120.00	<input type="checkbox"/> \$150.00

Names of Dependents To Be Insured	Relationship to Member	Dates of Birth			Height	Weight
		Mo.	Day	Yr.		

Have you or any dependents for whom you are requesting insurance ever had or received advice or treatment for: kidney disease, cancer, diabetes, respiratory disease, epilepsy, arteriosclerosis, high blood pressure, heart disease or disorder, stroke, venereal disease or tuberculosis? Yes  No

Have you or any dependents for whom you are requesting insurance been confined to any hospital, sanitarium, asylum or similar institution in the past 5 years? Yes  No

Have you or any dependents for whom you are requesting insurance received medical attention or surgical advice or treatment in the past 5 years or are now under treatment or using medications for any disease or disorder? Yes  No

IF YOU ANSWERED "YES" TO ANY OF THE ABOVE QUESTIONS, EXPLAIN FULLY including date, name, degree of recovery and name and address of doctor. (Use additional sheet of paper if necessary.)

I apply to United Benefit Life Insurance Company for insurance under the group plan issued to the First National Bank of Minneapolis as Trustee of the Air Force Association Group Insurance Trust. Information in this application, a copy of which shall be attached to and made a part of my certificate when issued, is given to obtain the plan requested and is true and complete to the best of my knowledge and belief. I agree that no insurance will be effective until a certificate has been issued and the initial premium paid.

I hereby authorize any licensed physician, medical practitioner, hospital, clinic or other medical or medically related facility, insurance company, the Medical Information Bureau or other organization, institution or person, that has any records or knowledge of me or my health, to give to the United Benefit Life Insurance Company any such information. A photographic copy of this authorization shall be as valid as the original. I hereby acknowledge that I have a copy of the Medical Information Bureau's prenotification information.

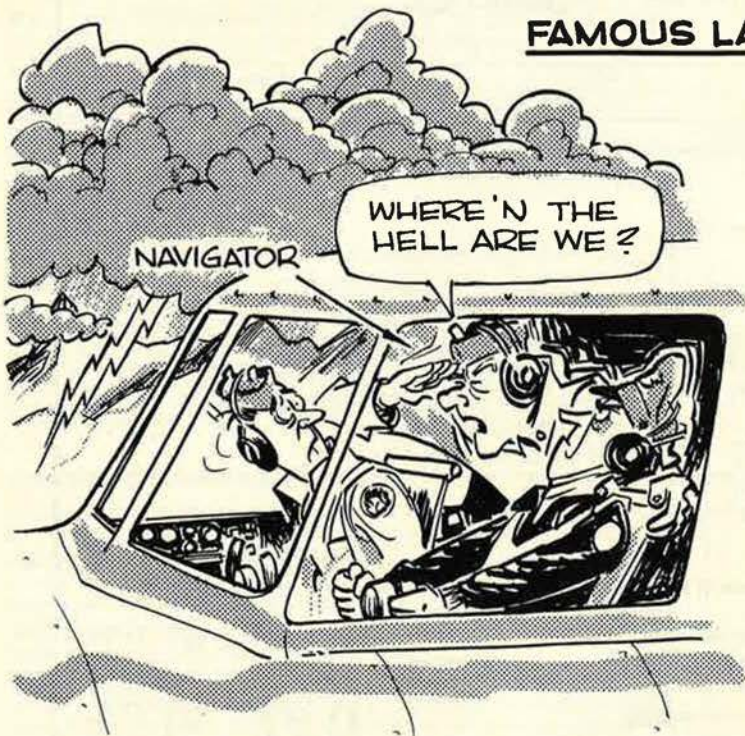
Date \_\_\_\_\_, 19\_\_\_\_ Member's Signature \_\_\_\_\_

Bob Stevens'

# "There I Was..."

CONTINUING A SPORADIC SERIES BEGUN LONG AGO, WE LOOK AT AIRMEN UTTERANCES THAT MAY OR MAY NOT HAVE PROVED TERMINAL. IF THERE WERE SURVIVORS, HOWEVER, THEY NEVER FORGOT THIS DEATHLESS PROSE:

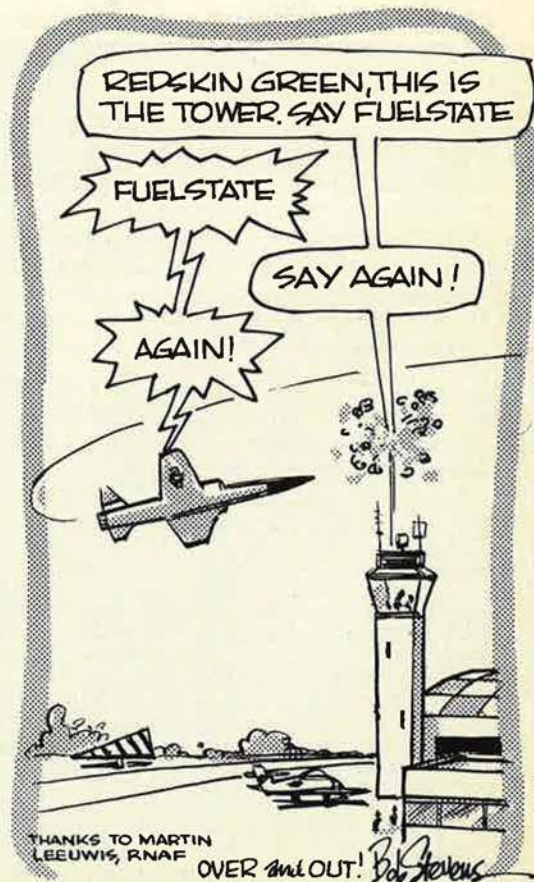
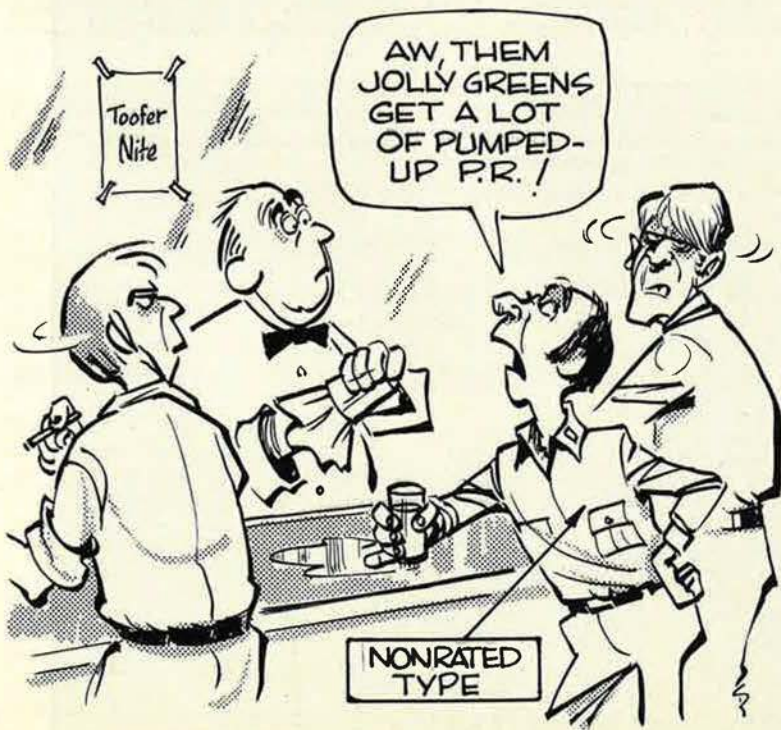
## FAMOUS LAST WORDS



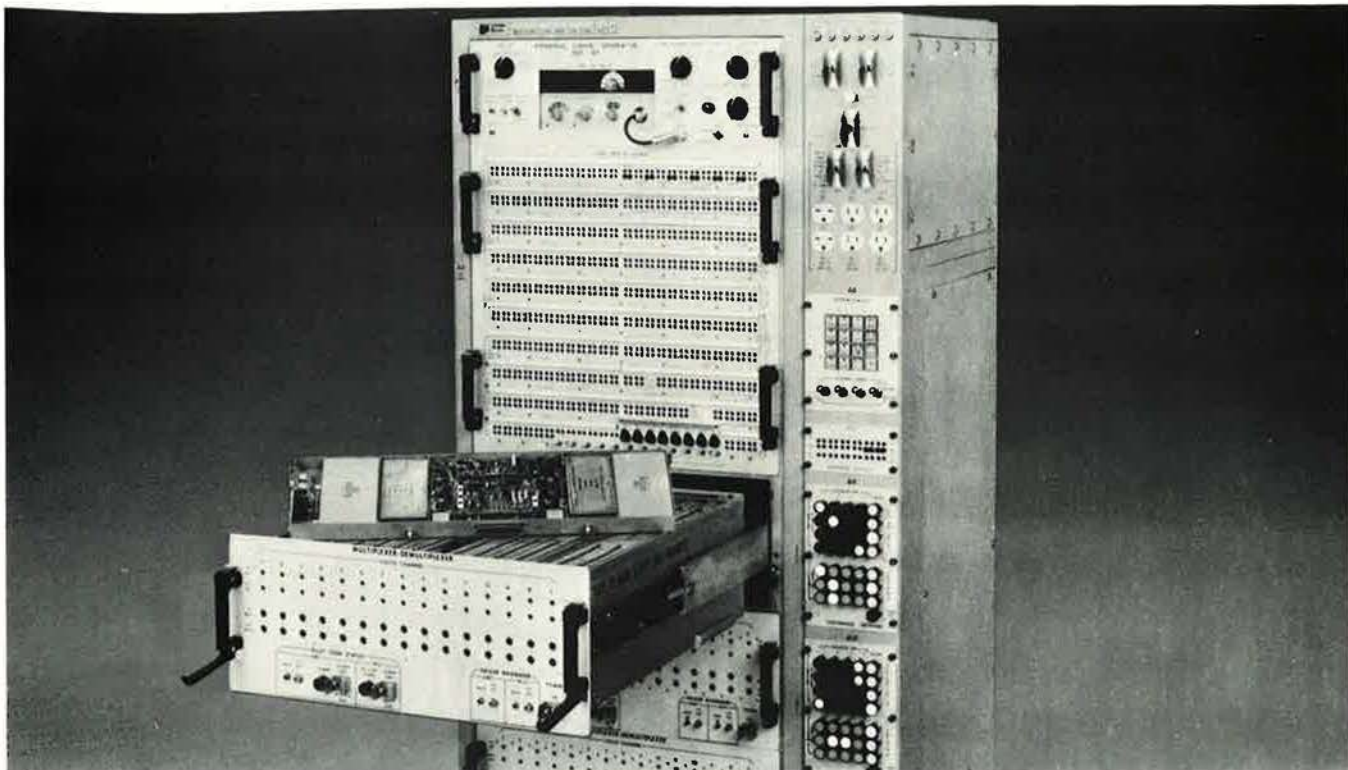
AFTER SITTING IN A PITCH-BLACK ROOM TO ADAPT YOUR EYES FOR A NIGHT FLIGHT, YOU STUMBLE OUT TO YOUR BIRD...



AND AT A VIETNAM FIGHTER BASE BAR-



THANKS TO MARTIN LEEUWIS, RCAF OVER and OUT! Bob Stevens



## **Frequency division multiplexers this sophisticated can come only from a sophisticated military communications systems house.**

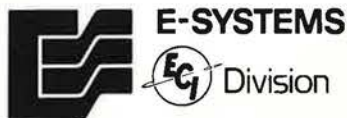
The new AN/ACC-6(V) frequency division multiplexer, developed by E-Systems ECI Division under Air Force contract and already selected by the Air Force for use in the Worldwide Airborne Command Post, is the most sophisticated equipment of its type ever developed. A look at a few of its features will show you why.

It is expandable from 15 to 90 channels. It's designed to ensure high quality transmission of speech, facsimile, graphics, and data. The functionally modular design helps achieve extraordinary channel availability and an extremely low channel restoral time—less than two minutes. Adaptive interfaces and tech control features are built-in. There's no question that the multiplexer is a state-of-the-art achievement.

Yet, the multiplexer is easily integrated into existing military communications systems. Only a company with long, detailed experience in developing both complete communications systems and individual elements for those systems could produce a multiplexer as sophisticated as the ECI AN/ACC-6(V). That's why it came from ECI.

Our systems accomplishments over the years have ranged from communications systems for airborne command posts to data systems for shipboard missile control and transportable communications systems for tactical ground application.

We're constantly broadening our capabilities to develop and produce the most sophisticated communications systems and equipment. That's just part of the job when you're as sophisticated a communications systems house as we are. For more information on ECI developments such as the multiplexer, or on our total systems capability, call or write: E-Systems, Inc., ECI Division, P. O. Box 12248, St. Petersburg, Florida 33733. (813) 381-2000.



**ECI's AN/ACC-6(V) Frequency Division Multiplexer,  
another element of total communications systems capability at E-Systems.**

# We know the lay of the land.

At speeds approaching Mach 1, and at extremely low altitudes, the missile streaks across the countryside, evading radar and visual detection from above and below, to strike the target several hundred miles away.

It's a test. But when our nation needs it, McDonnell Douglas will be ready with a Cruise Missile Guidance System that knows the lay of the land.

Before launch, the system is fed launch site, target location, and flightpath check-point data. Flying over land, down-looking radar constructs terrain profiles of pre-selected segments of the flightpath.

On-board systems compare this information with computer-stored digital map data to provide adjustments in the missile's flight, keeping it on a pre-selected but evasive path to the target.

Working under a full-scale development contract with the Joint Cruise Missiles Project, we're building the navigation and guidance systems for the air, ground and sea launched cruise missiles to be deployed in the 1980s.

For all these missile guidance systems, we know the way. All the way to the target.

