

APRIL 1976/\$1

# AIR FORCE

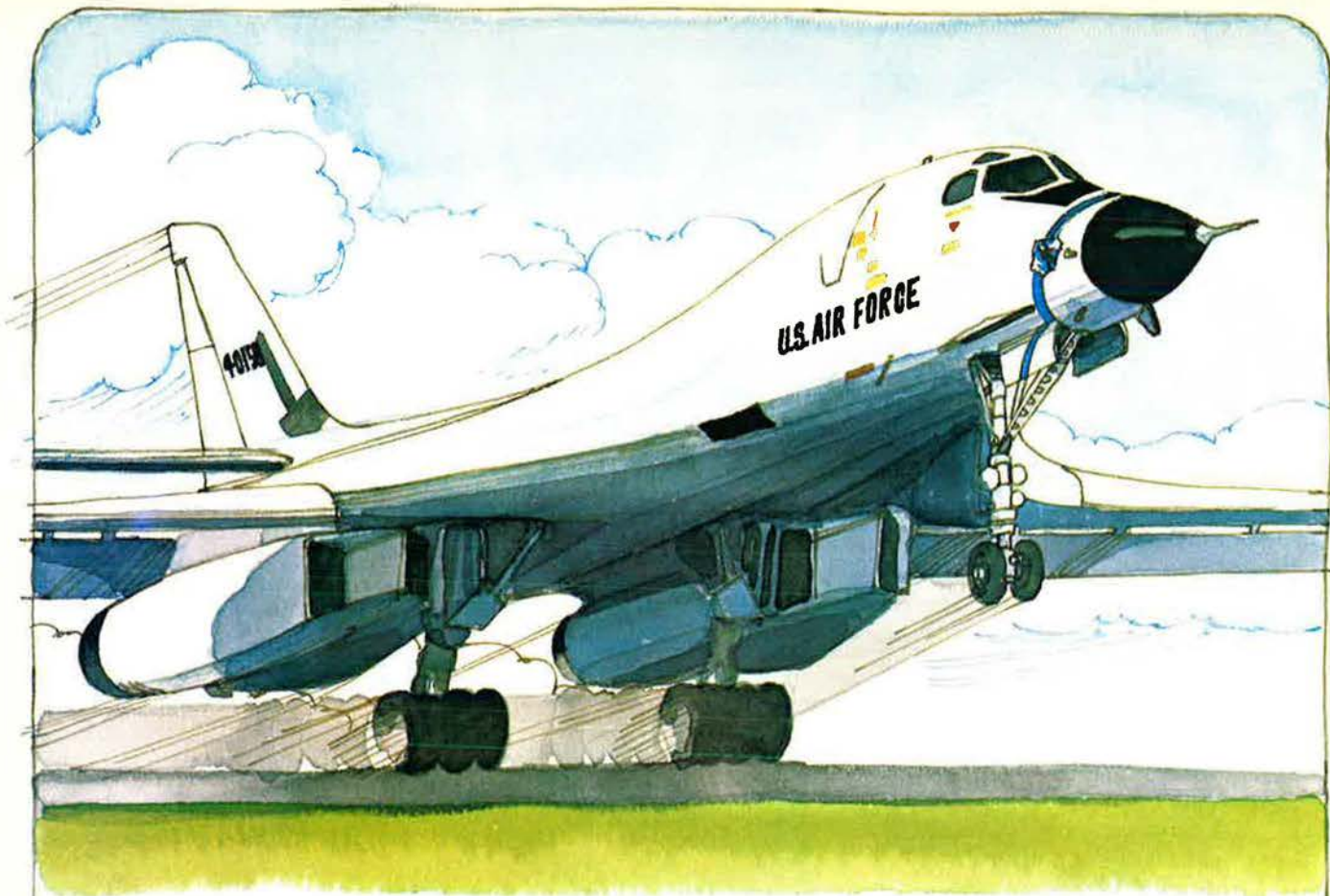
MAGAZINE

PUBLISHED BY THE AIR FORCE ASSOCIATION

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FOR THE 1980'S







## We produce VSDs for the F-15. Now the B-1 will have ours, too.

Sperry is fast becoming *the* name in cathode ray tube displays for aircraft of all types—fighter, bomber, transport and helicopter.

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Sperry CRTs have also been

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Sperry display in a C-141 during an all-weather landing program.

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B-1 VSD

 **SPEYRY**  
FLIGHT SYSTEMS



# AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE

APRIL 1976  
VOLUME 59, NUMBER 4

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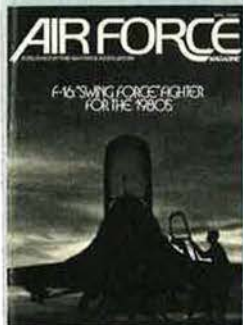
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## ABOUT THE COVER



The cover photo is by SSgt. Herman J. Kokojan, USAF/AAVS, Norton AFB, Calif., whose picture of the F-15 Eagle was on the February issue cover. Sergeant Kokojan has been named DoD "Military Photographer of the Year" for 1975. Our congratulations to him. The cover story on the F-16 begins on p. 30.



# The Selective Service Stretch-Out

By John F. Loosbrock, EDITOR

**I**T IS rare indeed, in these inflationary times, to find a budgetary item under \$10 million that one can term truly critical. At the same time, one does well to remember the missing horseshoe nail that, in simpler times, was responsible for losing a battle. The nail, in this case, is the national Selective Service System, which the FY '77. defense budget would virtually disband.

What has happened is a drastic reduction in funding for Selective Service, from \$37.5 million in FY '76 to a proposed \$6.8 million in FY '77. The cut represents the last step, short only of complete abolishment, of the only mechanism that can provide with reasonable equity the manpower that US armed forces would need in an emergency.

The best analysis of the problem we've seen is contained in a letter from US Rep. F. Edward Hébert, Chairman of the Subcommittee on Investigations, House Armed Services Committee, to Rep. Edward P. Boland of the House Committee on Appropriations, whose HUD-Independent Agencies Subcommittee has cognizance over Selective Service. Mr. Hébert's Subcommittee had pursued the matter in hearings in January and February.

In his letter, Mr. Hébert noted that the proposed cut in Selective Service funding was generated by the Office of Management and Budget, and that under the reduced level, the Director of Selective Service "indicates that the mobilization reaction time for Selective Service is stretched from 30 days to 4 months . . ." as a result of personnel cuts that preclude any registration or classification of draft-eligible youths.

Mr. Hébert went on to point out that Assistant Secretary of Defense for Manpower and Reserve Forces William K. Brehm decided "without consulting with the Chief of Staff of the Army, who is the principal customer of Selective Service during mobilization, or with the Joint Chiefs of Staff . . ." that the country could live with this stretch-out.

The Chairman of the JCS, Gen. George S. Brown, "stated that the JCS decided not to reclama the decision since in the order of priorities it was an acceptable risk." This does not mean, however, that the Joint Chiefs were happy about the decision. They were not.

Mr. Hébert further wrote that Secretary of Defense Donald Rumsfeld supports the cut in Selective Service funds, but that Dr. Curtis Tarr, Chairman of the Defense Manpower Commission, "saw a continuing need for a Selective Service System that would provide for annual

registration." Speaking for his Subcommittee, Mr. Hébert recommended that Selective Service be authorized \$18 million for FY '77.

A reader of this magazine might well ask why our interest and concern? The all-volunteer concept, under which the Air Force has operated since its inception, is currently working in all the services. Manpower is being reduced, not expanded, and the lack of draft pressure to produce enlistments, ROTC cadets, and Academy applicants is not a factor. Why, then, get upset about Selective Service?

There are good reasons.

The first is that, during the early and perhaps decisive phase of a big war, one fights with what and whom one has on hand. It is currently projected that the force on hand must be able to carry on without reinforcements for 110 days. Meanwhile, as pointed out above, a truncated Selective Service System would not be able to swing into action for four months and would not be able to deliver inductees for another two to three months. There is a critical gap here—one not calculated to serve as an inducement to prospective volunteers.

Nor do the Reserve and Guard, already included as integral parts of the force-in-being under the Total Force Policy, serve as future gap-fillers. They already are.

Additionally, the all-volunteer system has reduced the post-enlistment Reserve obligation of those who have already served. It has been proposed that this obligation be stretched out from six years to eight. In practical terms, this means that the first burden of service would fall upon those who have already served.

Another factor concerns how heavily one can depend on the continued effectiveness of the all-volunteer concept. As the economy swings upward and civilian jobs become more plentiful, enlistment quotas may not be met so easily, particularly if military benefits continue to erode.

The Air Force Association is on record with a resolution supporting a *viable* Selective Service System. "Viable" is the operable word. To us, it means a system that retains at least the essential elements at federal and state levels; a system that can be fleshed out rapidly if international tensions so demand; a system that can be thrown into motion immediately and that can deliver draftees by M+30 days. The limit of 100 civilian employees set by the Office of Management is, as Mr. Hébert put it, "unrealistic under any level of funding." ■



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## WHO HAS AN EDGE ON TOMORROW'S SPACE TRAVEL?

Each time the NASA Space Shuttle reenters the atmosphere, a special material we developed for the leading edge protects the wings and nose section from blazing temperatures. Not for just one mission like previous spacecraft. But to last through each of a Space Shuttle's 100 projected missions.

We're even building a unique space radiator system designed to provide proper temperatures for Space Shuttle crewmen, equipment and experiments.

Finding a hard-working solution to a tough problem. It's something we're also doing in a lot of other areas. Missile development. Major subcontracts. Ground transportation. Aircraft design and manufacturing.

Of course, we're not the only ones working on the Space Shuttle. But we have the edge.



VOUGHT CORPORATION / An **LTV** Company



# Airmail

## Maginot Line Syndrome?

Gen. T. R. Milton, in his [January '76] article, "Assault on Military Institutions," suffers from a Maginot Line syndrome that calls for batten- ing down the hatches, covering our heads, and closing our eyes in the belief that sooner or later our troubles will go away. The General is wrong. If we continue to shroud ourselves in this cloak of institution- alism too long, we will become an even easier target for radical change.

Especially today, when we must meet the challenges of the all- volunteer force, the total force concept, and the timidity of the American society for international commitment, we have to find new methods to solve our problems. It is too late to retreat into the sys- tem and bury our heads in the sand.

A democratic society demands from its military the exacting price of public scrutiny. We should wel- come this demand and start to listen closely and carefully to our critics. By opening up both internal and external lines of communica- tion, we will be assured of the necessary inputs to keep us mod- ern and strong.

Our real strength remains people, not traditions. And by giving each individual more direct participation, he or she will have increased con- fidence in our system. General, your blind loyalty is more blind than loyal. I am sorry, but we disagree. I have more confidence in the indi- vidual, that he may remain the strength of our defense.

Capt. Bradley D. Miller, MaANG  
Three Rivers, Maine

## Spike/Tack Caption

Congratulations on your excellent articles, "Needed: A New Family of EW Systems," and "Tac Air—History's Most Potent Fighting Machine" [by Edgar Ulsamer, Febru- ary '76 issue]. One error should be corrected, however. On page 30, you depict an F-4 carrying a Pave Spike pod in the Sparrow well. The caption identifies the pod correctly; however, the description following

is that of Pave Tack. The differences between the two are highly signifi- cant, as your article points out, plus Spike is operational while Tack is a bit down the road.

The proliferation of sophisticated new systems you describe in both articles will indeed increase our capabilities in all areas of tactical air warfare. General Dixon's com- ment that "training, exercising, and shaping this force . . . is TAC's foremost challenge" should be re- emphasized. No matter how sophis- ticated the hardware, it's the man in the cockpit who ultimately makes the difference. Our edge in past encounters has largely been due to superior training, and we in the USAF Fighter Weapons School feel we are continuing this tradition.

Maj. Lester D. Alford  
Terminal Guidance Flight Cmdr.  
414th Fighter Weapons Sqdn.  
Nellis AFB, Nev.

• *Major Alford is one hundred per- cent correct. Pave Spike is a sophis- ticated, flexible system for laser- guided weapons delivery.—THE EDITORS*

## AFA's MIA/POW Support

The National League of Families is very appreciative of the support the Air Force Association has continued to give us over the years and espe- cially now at a time when the num- ber of our most ardent supporters has diminished. The apathetic attitude of much of the American public is disheartening and disap- pointing to our POW/MIA families, but our spirits are bolstered by the continued loyalty your organization has shown.

We fully recognize the added work and expense AFA incurs through the continued frequent sup- ply of our mailing labels and com- puter readout sheets. The saving to us in time, effort, and money is incalculable and be assured these efforts are sincerely appreciated by all of us.

We are very pleased, and I would like to commend Bill Schlitz on his "MIA/POW Action Report," carried

in the magazine. Such writings and reporting serve to get the latest information concerning this most vital issue to a large group of mem- bers. . . . These articles have served us well in our POW/MIA adoptio- n program and have resulted in man- y AFA Chapters and individual mem- bers honorarily adopting some of our prisoners and missing men.

Again, may I express the appreci- ation of the entire membership of the National League of Families for your continued support and say a very simple—God bless you.

Col. Earl P. Hopper, Sr.,  
AUS (Ret.)  
Executive Director  
National League of Families  
Washington, D. C.

## Rebuffed

I noted with considerable dismay and chagrin your lack of editorial comment to Mr. O. D. Kulman's letter ("Airmail," February '76) re- garding the tenure of our last Secre- tary of Defense, Dr. James Schles- inger. I heartily agree that Dr. Schlesinger was indeed one of this country's finest Secretaries of De- fense ever. But I must take strong exception to Mr. Kulman's comment implying that Dr. Schlesinger's con- trol over the DoD was necessary to "preclude a *Seven Days in May* situation from occurring."

Allowing such a comment to go unanswered perpetuates and lends credence to the myths and un- supported assertions that are rife today regarding the role of our armed forces. As Dr. Schlesinger himself said on November 1, 1975, during his farewell remarks:

"We must correct this misleading impression reflected in headlines 'The Pentagon demands,' which suggests . . . that the Pentagon somehow is an organism detached from the rest of the United States or from the American public. We must convey that the military estab- lishment . . . is not an institution demanding something for its own purposes separate from the national purpose."

Mr. Kulman needs to understand that the members of the armed forces believe explicitly in the prin- ciple of military subservience to the civil authority. That conviction was manifest during the difficult transitional months, and at no time was the integrity of the constitu- tional process in doubt.



One final thought for Mr. Kulan's consideration: In the same speech, Dr. Schlesinger said:

"A democratic electorate has the right, every right, to allow the military balance to deteriorate. . . ."

As much as I deplore it happening, I support that proposition, and believe that all thoughtful members of the military profession do likewise. National security is everyone's job . . . but always within the framework of the Constitution.

Lt. Col. Richard G. Woodhull, Jr.  
Maxwell AFB, Ala.

#### **They Also Serve**

Reference your article, "USAFA's Liaison Officers," January '76 issue, which emphasizes 1,500 dedicated Reserve officers serving as admission counselors for the Air Force Academy: I don't think you meant to omit the fact that selected retired Regular officers also participate in this fine program.

Lt. Col. Robert C. Smith,  
USAF (Ret.)  
USAFA Liaison Officer  
Spokane, Wash.

• *Of course we didn't.*—THE EDITORS

#### **AFROTC Problems**

As an ex-information type, please accept my compliments for Ed Gates's article, "Manpower Malaise Hits the AFROTC," in the February issue. It says a number of difficult things very concisely and well; the description of the efforts of the personnel in Hq. USAF both to combat the problem and to respond to the needs of the ROTC cadets is truly factual.

Maj. Gen. James R. Brickel  
Commandant  
AFROTC (AU)  
Maxwell AFB, Ala.

Your article falls a bit short in depicting the ultimate effects of the officer resource shrinkage, *viz.*: (1) the impact on AFROTC cadets not yet under contract of such delays, Palace Options, etc., and (2) the impact on high school and junior college students as word of this filters down (and have no doubt, it will).

If the Air Academy Liaison Officer Program has a future which is "assured by the achievement of its past" (January '76), then its counterparts in the AFROTC—the Admis-

sions Counselors and Liaison Officers—are certainly in for a challenging future based on these recent events.

Maj. Victor J. Bliden  
Admissions Counselor, NC-29  
Boulder, Colo.

#### **Calling Colonel Roberts**

I propose writing a documentary-type book about the 480th Antisubmarine Group, which served at St. Eval, England, under British Coastal Command, and Port Lyautey, French Morocco, in conjunction with the Moroccan Sea Frontier, during World War II. In this connection, I am very anxious to contact Col. Jack Roberts, who was commander of the 480th, to set up a rapid and direct communication with him should certain aspects and information about the group be unobtainable elsewhere. Of course, his esoteric and/or subjective comments would add much of interest.

I am also hard at work on the last three chapters (final draft) of a WW II novel that grew out of my experiences with the 480th.

If anyone can give me information as to the whereabouts of Colonel Roberts it would be much appreciated.

Frank P. Gendusie  
2157 Anthony Dr.  
Ventura, Calif. 93003

#### **Get That Bill Moving!**

The item in your January '76 "Bulletin Board," p. 68, concerning support for Civil Air Patrol was very enlightening. As a CAP squadron commander, I can attest to the fact that CAP is, in fact, having difficulties.

The general financial situation in this country is of concern to me both as a wage earner and as a CAP member. Local financial support, our only source of income, is practically nonexistent. . . .

The CAP Supply Bill is not likely to see the light of day in the near future. It appears that the surplus material we rely heavily on is becoming even more difficult to obtain. The policy now is that any available surplus material is first offered to any government agency

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*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 interests of space or good taste. Names will be withheld on request, but unsigned letters are not acceptable.*

who wants it, military or civilian. If not wanted, it is then offered for sale. Any unpurchased material can then be offered to Civil Air Patrol. This, of course, leaves only equipment that is not fit for use.

CAP saved fifty-one lives in 1975. Our organization saves the taxpayers of this country in excess of \$7 million annually. (This is what it would cost the US Air Force to do the same job.) If we are to continue our Search and Rescue and Emergency Services program as well as our cadet program, we must have some support. Without it we simply cannot exist.

Yes, Civil Air Patrol is in trouble. From the squadron commander to the wing commander and on up, all realize the urgency of the matter. It's time that people in government and in the Air Force realize it. We are here to help, but we cannot stand alone.

Maj. James M. Hazelrigg, Cmdr.  
Huntington Composite Sqdn.  
Civil Air Patrol  
Huntington, W. Va.

#### **Members of Crew 809**

I write in the hope that readers can be of some assistance in locating a former B-29 crewmate of mine.

In 1944, I was an armorer-gunner on the crew of a B-29 attached to the 458th Bomb Squadron, 330th Bomb Group (VH), in training at Walker Army Air Base, Victoria, Kan. Shortly before the 330th was ordered to March Field for staging, two other enlisted men and I were removed from the crew and replaced. In my case, it was discovered that I needed immediate surgery. In the case of the tail gunner, a replacement was ordered for reasons never made clear to me. The enlisted radar operator was transferred at the last moment and replaced by a commissioned officer, apparently because our crew had been selected as the squadron's lead crew. In any event, Crew 809 of the 330th's 458th Bomb Squadron went to Tinian without us.

Some months later, Crew 809 was wiped out in a crash on Tinian. Apparently the B-29 struck a cliff on final approach. There was one survivor—the central fire control gunner. He had been relieved of duty that day in order that the squadron gunnery officer could go on the mission. As a result, of course, he did not fly.



# Airmail

Quite by accident, I have found Buddy Burkett, the tail gunner of Crew 809, living here in Richmond. Henry G. Mathis, the central fire control gunner, has been located in Price, Utah. Burkett and I are now interested in knowing whether the other survivor is still alive. His name is:

Anthony (or perhaps Antonio) Iacolino, radar operator. Home: West Haven, Conn.

We will be most grateful for any help in locating Iacolino.

Donald F. Murray  
Assistant to the Attorney General  
Commonwealth of Virginia  
Supreme Court Building  
1101 East Broad St.  
Richmond, Va. 23219

## Ghost Squadron Airshow

The Ghost Squadron of the Confederate Air Force is coming to Galveston, Tex., for the weekend of June 5-6, 1976. Some new acts will be introduced that were too short on rehearsal time to be in the AIRSHO 75 in Harlingen last fall.

Plans include a full-blown Normandy Invasion (C-47s, paratroops, gliders), balloonists, aerobatics, models, antiques, experimentals, and a field full of World War II warbirds.

Note your calendar and bring your best camera!

Col. Lorn W. Westfall, CAF  
Dickinson, Tex.

## Crashed or Ditched Aircraft

*Gentlemen:* At present I am working on a project to list all Eighth Air Force aircraft and their pilots lost in World War II. Those lost over enemy territory are easy to trace as they appear in official records. However, those aircraft that crashed, crash-landed in the United Kingdom, or were ditched in the sea, including the Atlantic (en route to or from the USA), are not so well-documented or listed.

I would appreciate it if anyone who was involved in such an incident, or had friends who were, would correspond with me.

Stan D. Bishop  
21 Roseford Road.  
Cambridge, CB4 2HA  
England

## UNIT REUNIONS

### 8th AF Tech Ops

The 9th reunion of 8th Air Force Technical Operations (Hough-Kelsey outfit) will be held in Chicago, Ill., June 25-27. Please contact

J. B. Crumrine  
233 E. Erie, Apt. 2105  
Chicago, Ill. 60611

### 14th Air Force Association

The 28th reunion of the 14th Air Force Association will be held in Tucson, Ariz., July 28-31. China hands serving with the AVG, CATF, and 14th Air Force please contact

Ed Chesin  
6205 Calle Alta Vista  
Tucson, Ariz. 85716

### 38th Bomb Wing (L)

The 38th Bomb Wing (L) reunion will be held April 30-May 2, at the Oak Hills Motor Inn, San Antonio, Tex. 78229. Cannot guarantee reservations after April 1. For additional information send stamped, self-addressed envelope to

Don Karschner  
9211 Old Gardner Cir.  
San Antonio, Tex. 78230

### 65th Fighter Squadron

The "Fighting" 65th Fighter Squadron will hold a reunion in Nashville, Tenn., July 23-25. A large number of the men who inspired the "Terry and the Pirates" comic strip are expected to gather for this big get-together. Interested persons should write

65th Fighter Squadron Reunion  
c/o Reunion Services  
Box 1304  
Hallandale, Fla. 33009

### 73d Bomb Wing

The 73d Bomb Wing Association (Superfort Groups 497, 498, 499, and 500, plus assigned and attached units on Saipan during WW II) will hold a reunion May 20-22, at Hays, Kan., near the now abandoned Walker Army Air Field. For registration form and information write

73d Bomb Wing Association  
105 Circle Dr.  
Universal City, Tex. 78148

### 90th Bomb Group

The 90th Bomb Group (H) "Jolly Rogers"—"The Best Damn Heavy Bomb Group in the World," 1942-1945—will hold their 6th annual reunion July 22-24, at Fairborn, Ohio, adjacent to Wright-Patterson AFB. Contact

Tom Fetter  
133½ E. Center St.  
Marion, Ohio 43302  
or  
Tom Keyworth  
38 Crestlyn Dr., E.  
York, Pa. 17402

### 98th Bomb Group

The Pyramiders 98th Bomb Group (H) Veterans Association will hold its reunion in Philadelphia, Pa., July 12-16, at the Holiday Inn City Line Motel. For further information and to get on the mailing list, please contact

Walter H. Bolling, Jr.  
Rt. 3, Box 67  
Gonzales, La. 70737

### 335th MAS

The 335th Military Airlift Squadron will hold a reunion and picnic Saturday, July 10, at McGuire AFB, N. J. Contact

Maj. David L. Catey  
P. O. Box 16113  
McGuire AFB, N. J. 08641

Phone: (609) 724-2100, ext. 3911  
Autovon 440-3911

### 366th Gunfighters

The 366th Tactical Fighter Wing Gunfighters Association will hold its annual reunion May 21-23 at the El Tropicano Hotel, San Antonio, Tex. All past and present officer members of the 366th TFW since the Wing's activation in 1943 are invited to join the Gunfighters Association and attend the reunion. Contact

Capt. Frank Mercy  
Gunfighters Reunion Committee  
Box 377  
Randolph AFB, Tex. 78148

Phone: (1-512) 653-8339

### 453d Bomb Group

A reunion of the 453d Bomb Group and all attached units of this WW II 8th AF outfit from Old Buckenham, England, will be held at Valley Forge, Pa., July 20-25. For further details contact

Donald Olds  
1403 Highland  
Rolla, Mo. 65401

### 456th Bomb Group

Former members of the 456th Bomb Group and attached units, 15th AF, WW II, are planning their first reunion since WW II. The reunion will be held in Atlanta, Ga., July 16-18. Write

456th Bomb Group Reunion  
c/o Reunion Services  
Box 1304  
Hallandale, Fla. 33009

### 832d Air Division

Former members of the 832d Air Division (TAC), Cannon AFB, N. M., will hold a reunion June 18-20, in Clovis, N. M. All personnel formerly assigned to the 832d, their family and friends are encouraged to attend. For further information please contact

Lt. Col. Gerald A. McDowell  
Box 6134  
Cannon AFB, N. M. 88101  
or  
Lt. Col. Joe "Turkey" Turner,  
USAF (Ret.)  
2705 Ross  
Clovis, N. M. 88101



# The airlifter that's better than new.



When Hercules first flew, it was a great advance in airlift. But Hercs rolling off Lockheed production lines today are far advanced over the first models.

Payload is up 26%. Engine power, up 20%. Range stretches out 52% farther. Cruise speed is 11% faster. And structural life has risen 100%.

And while Hercules keeps getting better and better, it's also looking better and better as fuel costs reach for the sky. Herc's turboprop engines use far less fuel than fanjet engines. 50% less in some cases.

Hercules was born with a classic airlift shape, so simple and functional that it has become almost time-

less. And within that simple shape, Lockheed has improved Hercules from nose to tail. All basic systems have been improved. New ones have been added.

The result: An airlifter that's far better than when it first flew. An airlifter that will be serving the Armed Services in the 21st century. An airlifter that's also been chosen by 36 other nations. An airlifter so versatile that it also serves as a tanker, search and rescue plane, ski plane, and in many other roles. An airlifter so rugged it can handle dirt, gravel, sand and snow runways.

Today Hercules is the world's biggest airlift bargain. And it keeps getting better and better.

## Lockheed Hercules

Lockheed-Georgia Company



# Airpower in the News

By Claude Witze, SENIOR EDITOR

## Waste Is Where You Find It

Washington, D. C., March 5

There has not been any measurable progress by Congress in its early consideration of the Fiscal 1977 budget, but there has been a lot of activity on the periphery. Almost a month ago, the *New York Times* reported the White House appears to be winning the debate on defense spending, although the argument is hardly under way. The *Times* senses a reluctance by Capitol Hill critics to challenge Administration claims that the Russians are running fast. The local press, which has the most impact in Washington, has been featuring news of revised estimates from the Central Intelligence Agency. These say the Kremlin is devoting twice as much of its Gross National Product to military efforts as previously calculated.

Military and civilian witnesses from the Pentagon are trooping to the House and Senate for their annual cross-examination. The usual appearances before the Armed Services and Appropriations Committees now are supplemented by demands of the new Budget Committees. On the House side, there is a National Security Task Force, chaired by Rep. Robert N. Giaimo of Connecticut, who also happens to be on the Defense Appropriations subcommittee. Gen. David C. Jones, USAF Chief of Staff, has made his appearance and defended the Air Force program, with emphasis on Soviet capabilities, the B-1 bomber, and the AWACS program. AWACS, he pointed out, is highly cost-effective, largely because it will upgrade the effectiveness of other systems. The General stressed that fifty percent of the anticipated cost of the B-1 is due to inflation that will have eroded purchasing power since the program started, and the other half is the real cost.

His charts demonstrated that the B-1 project management is, possibly, the best in USAF procurement history.

One reason the outlook on the House side is fairly optimistic may be that the chairman of the House Budget Committee, Rep. Brock Adams of Washington, already has recognized it may be impossible to find money for new spending programs. In late February, news came from London that the Labor Government, conceding that the cost of Britain's ambitious social welfare programs is crippling the economy, announced vast cuts. Commented Mr. Adams at a meeting of housing executives:

"We must face the fact that payroll taxes and income taxes are reaching, if they have not already reached, their upper limit. We must take a careful look now, unless we wish to imitate the horrendous experience of Great Britain, whose Labor Government has cut back social spending in face of its inability to raise taxes any higher without simply discouraging productivity."

This recognition of fact has not been so evident in the Senate. Sen. Hubert Humphrey was the first witness before the House Committee, and he came there to argue that the Ford budget is inadequate because it does not, in his opinion, take care of social welfare needs and provide enough public jobs. It is generally agreed, in this election year, that the issue will be pressed, particularly in the Senate with its presidential aspirants. There could be an almost destructive fight over priorities. President Ford appears to have won an early round. He vetoed an emergency \$6.2 billion public works bill, the kind Mr. Humphrey endorses, and the Senate failed by three votes to override his veto. The House did vote to override, 319

to ninety-eight. Supporters of the measure claimed it would create 600,000 new jobs.

Mr. Humphrey, it is certain, is not giving up. This week he gave his blessing to a study of "World Military and Social Expenditures, 1976," published by the Arms Control Association, the Institute for World Order, and the Members of Congress for Peace Through Law. The author is Ruth Leger Sivard, once an employee of the Arms Control and Disarmament Agency. In a foreword to her new thesis, Mr. Humphrey equates security with "social betterment" and declares the results of the Sivard study "frightening." It concludes that the US and Russia account for sixty percent of the world's military outlays and seventy-five percent of the world's arms trade. And, the two powers "rank lower than many other nations in indicators of social well being." The Senator is interested in "how to restrain the world's military colossus and turn the race for arms into a race for peaceful development."

The Sivard report, of course, does not consider the threat. It is replete with misleading comparisons and statistics. It estimates Soviet military expenditures in 1973 at \$67 billion, a figure that would be rejected by well-informed experts. The estimate listed last month in our Soviet Aerospace Almanac, expressed in 1977 dollars, was \$122 billion. One veteran military correspondent in the Pentagon, asked if he had seen the Sivard report, replied, "Yes, and when I saw the expenditure figures they use, I dropped it in the basket." The figures are used in an attempt to demonstrate that military spending, by all nations, is done at the expense of more inflation, less economic growth, and sheer neglect in the areas of education, health care, nutrition, and similar social requirements. So far as the United States is concerned, the report flies in the face of evidence that this country has restrained its military outlays while social welfare costs have soared.

Defense Secretary Donald H. Rumsfeld recently told the House Budget Committee: "It is out of the question to think that the nation's nondefense spending can be funded to any meaningful extent out of further cuts in defense budgets. The reordering of priorities about which



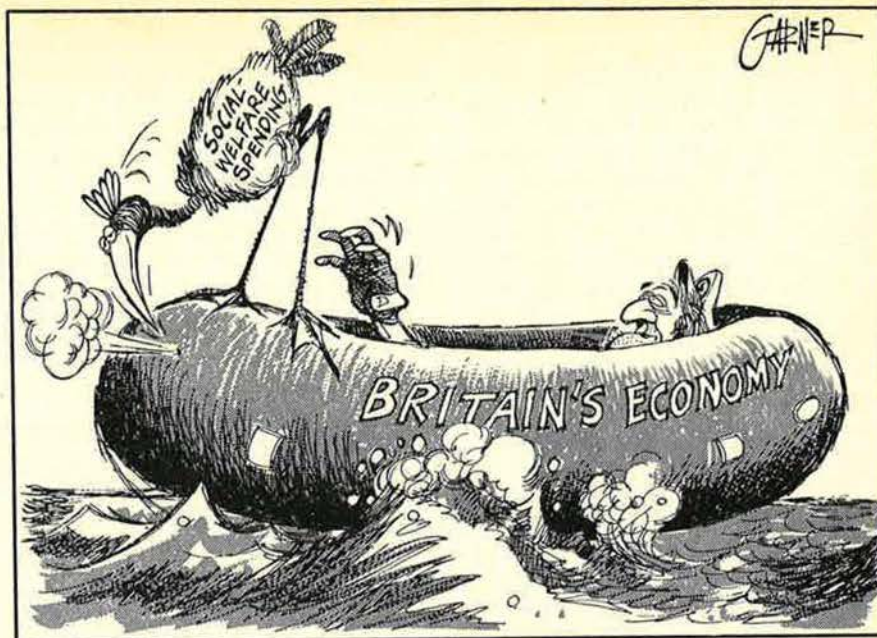
we have heard so much has taken place." He went on to say that, under the proposed FY '77 budget, "in real terms payments to individuals and grants will have been increased by about 134 percent since FY '67, while defense will have fallen by about twenty-nine percent."

There is nothing new about this equating of defense against social programs in terms of cost. A pioneer in the field is Dr. Seymour Melman of Columbia University, national cochairman of SANE and frequent critic of defense programs. A couple of years ago, Dr. Melman wrote a book called *The Permanent War Economy*. From it, he was able to draft, for the *New York Times*, a list of civilian and military trade-offs that he feels had merit. Dr. Melman showed, for example, that sixty-six low-cost homes would cost \$1 million, the price of a Huey helicopter. Or that another million, spent for a Main Battle Tank, could have bought a milk program for children. He pointed out that the Philadelphia schools had a deficit of \$40 million, the price then quoted for a B-1 bomber. The city of Newark needed \$125 million for urban renewal, but we spent the money, Dr. Melman deduced, for four destroyer escorts. Uncle Sam bought a C-5A aircraft with money that could have been used for federal mental health programs. Further examples are not necessary. The truth is that spending for all social programs was being increased, vastly, while the military inventory went into decline.

We have, of late, been keeping a record on how some of that money, provided for social programs, has been administered. And, using the Melman formula, attempted to show how the money could have been put to more gainful ends, using the 1977 Pentagon shopping list.

**Item:** Early this week District of Columbia police spread a net to catch local thieves and jailed more than 100 of them. Recovered property included, according to the local papers, \$1.2 million in US government checks stolen during office hours from an unattended vault at the Department of Housing and Urban Development. With \$1.2 million, the Defense Department could buy about 600 machine guns.

**Item:** Senate investigators probing irregularities in the Medicaid and Medicare programs for the current fiscal year found "at least" 45 million in fraudulent or unneces-



—BILL GARNER IN THE WASHINGTON STAR, BY PERMISSION

sary payments to clinical laboratories. The Army is requesting \$48.6 million, not much more than thrown away in the medical program, to buy 103 M-109A1 howitzers.

**Item:** According to the Associated Press, the Social Security Administration made overpayments of \$197 million to the nation's elderly, blind, and disabled in the first six months of a new distribution system. That amount of money would more than pay for the 350 Harpoon antiship missiles requested by the Navy in Fiscal '77. They are priced at \$186 million.

**Item:** According to the *Washington Star*, the Agriculture Department now lists as missing \$8.7 million—suspected of being stolen—from the accounts of registered agents who sell food coupons for the government. Again, the Army could have used this money. It would provide more than the \$8.1 million sought to purchase fifty-four MX-204 howitzers, guns that can be carried in a helicopter and used for artillery support.

**Item:** Again according to the *Washington Star*, the Social Security Administration "has now admitted making \$547 million in overpayments since the Supplemental Security Income program took over adult welfare programs from the states on Jan. 1, 1974." That is almost enough money to pay for Air Force's entire AWACS program in FY '77. USAF has requested \$474.7 million to buy six aircraft and \$109.6

million for research and development on the project, a total of \$584.3 million.

These examples will suffice. Our collection of news items illustrating waste in welfare programs is growing weekly. They are ignored, uniformly, by Senator Humphrey, Seymour Melman, and, presumably, Ruth Leger Sivard. They have resulted in no press releases by Rep. Les Aspin and no hearings, during the Christmas holidays, chaired by Sen. William Proxmire. The Department of Health, Education and Welfare has no equivalent of ASPR (Armed Services Procurement Regulations), so far as we know, and its mismanagement is outside the pale of the Renegotiation Board.

When this year's federal budget was sent to Congress a few weeks ago, it inspired at least a couple of newspaper cartoonists to depict the Defense Department as a monster machine or variety of a dinosaur, pushing "domestic needs" off the highway or gobbling up all the food in sight while millions starve. The fact is that defense spending, exclusive of retirement costs, is lower than it was twenty years ago. The welfare programs have increased at least sixfold. The cartoonists, and the antidefense zealots, simply don't read the news. On top of this, evidence indicates the Department of Defense probably is the best-managed agency of the federal government. Yet the hunt for waste in the Pentagon goes on, while HUD leaves



the office safe unattended and welfare programs are turned into a rip-off.

A recent public opinion poll, conducted by the New York Times and CBS News, shows that seventy percent of the American public agrees that "the federal government should see to it that every person who wants to work has a job." Senator Humphrey will applaud that decision. But, the same survey discloses that only thirty-seven percent of the people believe government spending for military defense should be reduced.

Secretary Rumsfeld has defined the dilemma for Congress:

"The days are past wherein the defense budget dominated expenditures on domestic programs, and could provide an inexhaustible mother lode from which these more immediately appealing activities could expand.

"The FY '77 defense budget has been through one of the toughest federal budget scrubs ever. It is not padded. Further cuts would require unacceptable reductions in national security. The days of finding funds for other programs by

cutting defense on the premise that 'they'll never miss it' are over. Additional savings, yes . . . but billions, no, not without cutting forces."

And, later:

" . . . we are already living in a world in which only one human being in five lives in real freedom, enjoying the political and civil rights we sometimes take for granted. Only one year earlier one in three had been considered free."

That is the trend, and it is a trend not included in the calculations of Ruth Leger Sivard that have so impressed Hubert Humphrey. ■

## The Wayward Press

*Journalists must avoid impropriety and the appearance of impropriety as well as any conflict of interest or the appearance of conflict. They should neither accept anything nor pursue any activity that might compromise or seem to compromise their integrity.*

In case you have forgotten, the commandment quoted above comes from the Statement of Principles of the American Society of Newspaper Editors, the text of which appeared in "The Wayward Press" in our February issue. Newspaper editors have been beseeched to memorize it and live up to its standards.

Now we have at hand an article about how 1,735 press people were wined, dined, feted, and burdened with gifts while they were visiting Miami in mid-January for the Super Bowl X football game staged by the National Football League. Full details are provided by Carla Marie Rupp in the January 24 issue of *Editor & Publisher*, the newspaper trade organ.

There is no mention, at any point, of the ASNE code of ethics. But, hear this:

There was a feast and party the night before the game "with stone crabs, beef, and many other assorted goodies, all the drinks you could down in the Press Lounge at the Konover Hotel." Football Commissioner Pete Rozelle said \$75,000 was spent on the bash. His director of public relations, Don Weiss, is quoted as calling it "primarily a celebration for the people who mean so much to pro football."

The guests, of course, work for the same newspapers that loudly criticize an admiral or a Congressman who goes hunting with a defense contractor. This point was not missed by Sen. Barry Goldwater, who put the E&P account in the *Congressional Record* of February 6. Said Mr. Goldwater, on the Senate floor:

"All you have to do these days is accept an invitation to go duck hunting and you stand a great chance of being pictured in the public press as the guy eager and willing to sell his country's interests to a defense contractor. . . . The liberal press has been having a field day with this kind of trivia. . . . So where does the press stand? . . . I say the press in many instances has its hand out for favors quicker than any other group."

The Senator found convincing support for this view in the story from Miami. The NFL, according to E&P, provided free Hertz cars for the writers to drive around town, and some of them were used to carry out champagne and wine swiped from the Friday night party. For those who did not drive, there were free buses headed "everywhere."

NFL was thoughtful. The previous year, six sportswriters had their pockets picked at the Super Bowl game in New Orleans. This year, the account says, "NFL gave all of the writers heavy suede wallets two weeks before the Super Bowl

so they'd be prepared with wallets that would create friction so the thieves couldn't get the wallets out of their pockets. . . . Besides the free wallet, every accredited media person was given a \$24 wrist watch."

After their money was safe and they knew what time it was, the Gentlemen of the Press could visit the bartender on duty from noon to early morning in the press "hospitality room," where they got the kind of service defense contractors are forbidden to dispense at trade meetings. Following the booze, the news media freeloaders could take advantage of complimentary tickets to "horse racing, jai-alai, and other events." Duck hunting, it appears, was not in season during January.

Mr. Weiss, the NFL publicity man, said, "We're not trying to buy anyone." He added:

"We're just giving people a souvenir of the game. People need a press kit. We think it's a service to provide you with a briefcase. We're not going to buy anyone with a watch. I respect the people who are here, and nobody's on our payroll. We don't tell anyone what to write. That's not why we do it."

The last time a corporate executive used almost identical language to explain his company's social activity he was subjected to ruthless ridicule in the press.

According to one reporter, quoted in E&P, there are some newsmen who cover the Super Bowl without ever conducting an interview or talking to a player. They rely for their copy on NFL handouts or quotes from the local newspapers. After all, there is a lot of fun, and it's all free. Even the news is free. Why work?

The article quotes Will Price of the Meridian (Miss.) *Star*, who has attended five Super Bowls. Said Will: "The NFL really goes all out to improve each one and make the media feel at home."

Then, there was Leo Pickney, sports editor of the Auburn (N. Y.) *Citizen-Advertiser*. This year he went to his eighth Super Bowl. Enthused Leo: "It's getting better every year. The party was great. I love the hospitality and that the press is treated real good."

Well, that's nice. We are proud of the fact that we have a free press in this country and that Will Price and Leo Pickney and 1,733 other media employees can have a good time, for nothing, at the Super Bowl. The pattern they are in is followed at any conclave of the craft: the real estate editors, the travel editors, the aviation editors, the fashion editors, the food editors, and all the rest, enjoy the ostentatious largess.

From this glass house, where the press lives, there should be no stones thrown in the direction of our defense industry or any other industry. And the editors, including the men in charge at the Meridian *Star* and the Auburn *Citizen-Advertiser*, should do what E&P suggested last December 13. They should read, memorize, and quote the Statement of Principles of the ASNE.



# What They're Saying...

## Attacks on Personnel Benefits

*Sen. Barry M. Goldwater, speaking to the National Space Club, Washington, D. C., on February 4, 1976.*

Congressional stone throwers who attack legal and earned benefits of our soldiers, sailors, and airmen should remember the little-known and often blatant privileges enjoyed by legislators in this glass house on the Hill. . . .

They assail proper inducements given to members of the armed forces to help in recruiting, to maintain morale, and to make the entire career military service more effective and attractive. They indulge in low humor and sneers unworthy of members of the House and Senate. These attacks are hypocritical, for no group in the United States has more fringe benefits, allowances—call them what you will—than members of Congress. Moreover, we voted them for ourselves, often as amendments to other legislation, and without fanfare. . . .

Almost every fringe benefit given the men and women in the Army, Navy, Air Force, and Marine Corps is being questioned, even including the pay scale and retirement provisions. Medical care has not escaped unscathed. Neither have military commissaries, travel, bonuses or enlistments, or service purchasing policies. . . .

Some of our rock throwers worry loudly about military commissaries, voiding the fact that we have heavily subsidized Senate and House restaurants. Some attack cost exchanges, conveniently forgetting our own basement stores which sell at reduced prices. . . .

Time and time again, retiring officers are lambasted for joining defense industries. . . .

But who among the stone throwers criticizes ex-legislators who join big-fee lobby and law firms downtown? . . .

Like most propaganda, true or false, attacks on the military are effective. While we see to it that congressional side benefits climb sneakily upward, traditional assistance for service men and women, and their dependents, descends.

Military hospitals have been forced to reduce medical care, or put dependents on clinic status. Under the CHAMPUS program, a service member pays \$100 per family, plus twenty percent of additional allowable charges. . . .

At the Capitol, legislators have fine medical offices, courtesy of the taxpayers. . . .

Look at retirement, a traditional inducement for the career military establishment. Military retirees now receive less than their federal civilian counterparts of like service. And there are proposals to reduce the military retirement formula in the future. Have any of these congressional sharpshooters proposed cutting their pensions? . . .

The Defense Department has just eliminated one Army benefit we don't have and probably could never earn. That is superior performance professional pay for enlisted members. . . .

Also gone under the barrage of cheap propaganda are educational benefits for servicemen. The undergraduate degree program that helped enlisted men and women attend college for up to eighteen months to complete a baccalaureate degree has been eliminated. Another contemptible trophy for the

stone throwers is the disappearance of the US Armed Forces Institute, which provided for high school and college testing, high school and college correspondence courses, centralized recordkeeping and textbooks. On the other hand, each Congressman is supplied with a \$1,000 set of law books that are his to keep when he leaves office. . . .

The military should not be above criticism. Abuses in the services should be exposed and corrected. But we should apply the same standards to Congress, or to any other part of the government.

Yet the petty fault-finding, outright misrepresentation, and malicious criticism do not fall entirely into the category of improving the military services. It really is part of a campaign to weaken our national defense. It is intended to slash the defense budget, which, to me, is a disastrous venture.

There is room for debate on a great national issue behind these scurrilous attacks. That issue is whether to spend more for social welfare and income transfer programs, or maintain an adequate defense. . . .

Honest men and women can differ on this issue. But let us take the question head on. It is cheap and unworthy for members to downgrade military personnel, and search out military errors, no matter how small, in order to slash our defense establishment. . . .

Our national interests need continual examination, and so does our defense budget. Perhaps we should spend more billions on income transfers and social welfare programs, taking the funds out of our defense budget.

If that is our decision, those of us who believe in a strong defense will regret it. But we will accept it if honestly decided. This is, thank God, still a democracy.

Let us, however, decide with the dignity and consideration expected of members of the House or Senate. Let us not act toward the military like unruly schoolchildren, throwing spitballs and smearing dirty words on the walls.

Let us stop being hypocrites, demagogues, and publicity seekers about the defense issue. Let us lift it to the higher plane where it belongs. ■



# Aerospace World News, Views & Comments

By William P. Schlitz, Assistant Managing Editor

Washington, D. C., March 8  
★ USAF's Air-Launched Cruise Missile made its first powered flight on March 5, over the White Sands Missile Range in New Mexico. (Also see story, p. 60.)

The ALCM, designated AGM-86, was launched from a B-52 and flew for about eleven minutes. USAF plans six additional ALCM flights, to be conducted between now and December. On conclusion of the test program, a decision will be made on full-scale engineering development of the strategic cruise missile.

The missile was launched at an altitude of 10,000 feet (3,048 m) with all subsystems operating as expected, officials said. Objectives of the first flight were safe launch and control surface unfolding, followed by engine start and level flight.

The carrier B-52 staged from Boeing Field in Seattle, Wash., and landed at Boeing's Wichita, Kan., facility, where the test program's remaining flights will originate. Boeing Co. is prime contractor for the AGM-86's airframe and integration.

The ALCM is powered by the F107-WR-100 turbofan engine developed by Williams Research Corp., Walled Lake, Mich. The engine weighs only 130 pounds (59 kg) and develops 600 pounds (272 kg) of thrust.

In later flights, the ALCM will be guided by equipment developed by McDonnell Douglas for the Navy. The B-52 launch gear is like that already in Air Force service for the Short Range Attack Missile, a weapon system deployed operationally with SAC.

The ALCM is designed for high subsonic speeds and is fourteen feet long, resembling a small air-

craft. While aboard its bomber carrier, the cruise missile's wings are retracted into its body, snapping open at launch.

To be launched in large numbers from an attacking bomber force, the nuclear-armed ALCMs would severely dilute enemy defenses and thus improve the ability of manned bombers to penetrate to their targets.

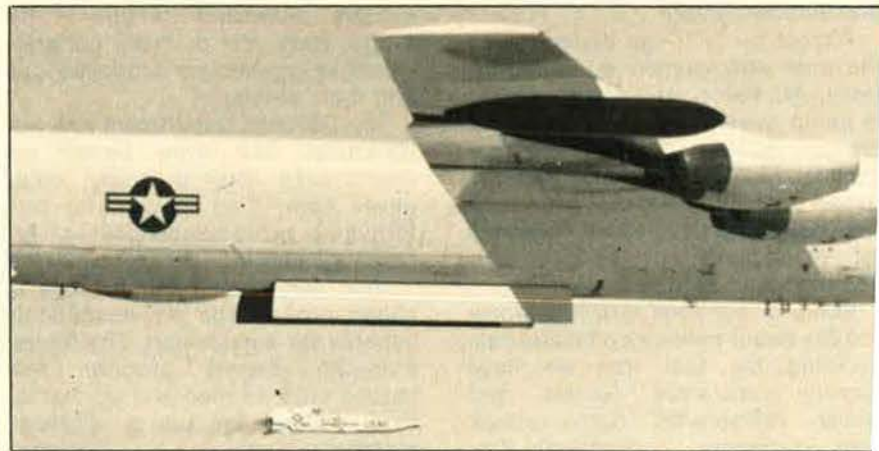
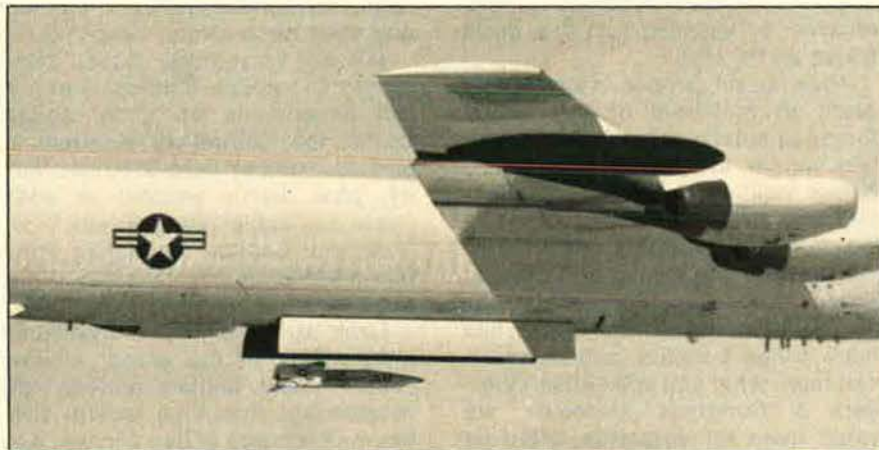
★ Headquarters Command USAF Bolling AFB, D. C., will be disestablished this summer.

The move is in line with USAF's effort to reduce personnel in the National Capital Region (NCR) by 1,000. Bolling and Andrews AFB Md., previously under the Command's jurisdiction, will be reassigned to MAC.

Headquarters Command mission and functions outside the NCR will become the responsibility of other organizations, the Air Force said.

Since its establishment in 1946 as Bolling Field Command, HQ COMD USAF has served as one of the most diverse and complex commands in the Air Force. Through the years, command duties ranged from welcoming foreign visitors to overseeing the USAF courier service.

In another cutback, USAF announced the closing of the Ballistic Missile Defense Center at the North American Air Defense Command's



Launch sequence of Air-Launched Cruise Missile's first powered flight. Top, release from aircraft; above, engine start. See adjacent item for details.



complex at Cheyenne Mountain in Colorado.

The closure is a result of congressional action that eliminated funds from the FY '76 defense appropriations bill for operation of the Safeguard Ballistic Missile Defense System, the missile and radar facilities of which were located in North Dakota.

As directed by the Congress, one Safeguard component, the perimeter acquisition radar, will continue in operation at Nekoma, N. D., as a part of NORAD's ballistic missile warning and attack assessment responsibilities. NORAD will also maintain Ballistic Missile Defense Center equipment found useful in the missile warning role.

★ Two problems recently surfaced in connection with the A-10, the Fairchild Industries aircraft that USAF is currently acquiring for the close-support role.

As reported to the Congress in the Selected Acquisition Reports (SARs) dated December 31, 1975, the A-10 program cost has been revised upward by some \$798.4 million. Officials explained this cost growth in terms of two factors: continued inflation and a cutback in the aircraft's monthly production rate—from twenty to fifteen. (The decision to stretch out procurement translates also into increased cost per unit.)

Regarding the forty-one major items of acquisition listed in December's SARs, the weapon system indicating by far the greatest increase in cost was the Navy's Trident missile submarine program. The estimated increase in the cost of Trident is \$2.038 billion.

In the other problem concerning the A-10, a seven-inch crack developed in the right wing center spar of an article undergoing fatigue testing. (At the time the difficulty arose, the fatigue article was at 118 percent of its estimated service life.) The cause of the failure was traced to a missing rivet.

Officials were quick to outline how the defect would be dealt with. Air Force Secretary Thomas C. Reed described the problem as one of the difficulties that can be expected to arise from a stringent test program, and, indeed, the reason for the test program in the first place. He said further that the incident would have no impact on

either the cost or schedule of the A-10 program.

★ Of the nineteen satellites or space probes NASA plans to launch in calendar 1976, the space agency will be reimbursed by the sponsors of fifteen.

In contrast, last year NASA had nine such reimbursable launches (for which customers provided the spacecraft and paid the space agency for the launch vehicles and associated costs).

This reimbursable launch activity is an indication of the space program's maturity, according to Joseph B. Mahon, NASA Director of Expendable Launch Vehicles. "When commercial firms and other outside-NASA organizations account for more than two-thirds of NASA launches, and pay for them, the age of space exploitation is really here."

For the most part, the launches planned for the Bicentennial year consist of various communications

for experiments aboard Spacelab. The experiments finally chosen will have a direct effect on the selection and training of scientific specialists assigned to Shuttle flights.

★ The National Oceanic and Atmospheric Administration, overseer of the National Weather Service, plans to invest about \$37 million over five years to bring further efficiency to weather-data collection and dissemination around the country.

The emphasis is on automation and electronics—to link together with high-speed communications the national net of weather offices.

On one level will be the automation of the fifty-two Forecast Offices, the four National Centers, and the fourteen River Forecast Centers. They'll all be plugged into the 11,620-mile quality telephone line called the National Distribution Circuit.

On a second level will be some degree of automation of the Forecast Offices' satellite units.

#### USAF MEDAL OF HONOR RECIPIENTS

Two Air Force officers, one posthumously, were granted the nation's highest award at recent White House ceremonies.

Col. George E. Day, a prisoner of the North Vietnamese for five and a half years, was presented his Medal of Honor "for conspicuous gallantry and intrepidity" following capture after his aircraft was shot down. Despite many injuries and the effects of enemy torture, Colonel Day escaped and made an incredible journey almost to friendly lines before being wounded and recaptured. Completely debilitated, he continued to resist enemy pressure.

Capt. Lance P. Sijan also was shot down over North Vietnam and evaded capture for six weeks. Although seriously injured, he overpowered a guard and escaped, only to be recaptured. Placed in solitary confinement and tortured during a long period of interrogation, he refused to divulge information to his captors. Captain Sijan died of pneumonia in January 1968, while still a prisoner.

satellites (including two NATO-sponsored). Others of note include an improved Tiros weather satellite and the Relativity Program Gravity Probe, designed to test a cornerstone of Einstein's famous theory.

In another NASA matter, the Marshall Space Flight Center, Huntsville, Ala., is currently initiating the spadework for the Spacelab 1 and 2 missions to be carried aboard the Space Shuttle in 1980. (Spacelab 1 is to be a joint NASA/European Space Agency project.)

An outgrowth of this will be an Announcement of Opportunity inviting scientists to submit proposals

Under AFOS—for Automation of Field Operations and Services—weather stations will be equipped with minicomputers and electronic displays that will eliminate the drudgery of acquiring and filing the huge volume of messages and maps that now move daily over teletypewriters and facsimile machines. For example, a weather map will arrive at a local station on its TV-like display in about fifteen seconds, rather than in the ten minutes a facsimile map required. Nationwide, the system will move in less than three hours the same data that now is distributed in twenty-four.



# Aerospace World

To be developed by Aeronutronic Ford, Palo Alto, Calif., AFOS in operation will require no additional manpower, officials said. Further, through increased efficiency, it should pay for itself in eight years.

★ A new era in maritime communications is dawning with the planned orbiting of a trio of Comsat General Corp. "Marisat" satellites. Heretofore, ships and shore stations have relied on standard radio communications, chronically the victims of adverse weather and atmospheric conditions.

Beginning with operation of the first Marisat, now in orbit and expected to be ready for service over the Atlantic sometime in April, ships and land stations will be afforded "instant and continuous" communications, Comsat officials said.

A second Hughes Aircraft-built Marisat is scheduled for launch (also into equatorial orbit) over the Pacific in May. Each of these satellites has a planned life of five years. (A third, European-built, Marisat will provide service in the Indian Ocean area, perhaps as early as next year.)

Comsat visualizes the eventual



*Marisat, the first maritime commercial telecommunications satellite, is scheduled to begin service over the Atlantic in April. See adjacent item for details.*

widespread use of the Marisat system among commercial shippers, offshore oil drilling rigs, and the like. The US Navy will be a big initial user, with all ships being converted to Marisat service by mid-1977. The Navy will have the exclusive use of Marisats' single ultrahigh frequency channel. Marisats will offer two very high frequency channels for routine commercial service.

★ Under the new Joint Surveillance System (JSS) currently being implemented to revamp the continental radar warning system, the Air Force is looking forward to annual savings in excess of \$100 million and a cut-back in 5,000 personnel slots.

The joint USAF/FAA JSS re-trenchment program also means that USAF-operated radar facilities will decrease from seventy-two to eighteen. Essentially, JSS will eventually consist of forty-eight long-range radars guarding the CONUS perimeter. (Forty-three will be under the control of FAA but used jointly by USAF. ADCOM will operate the remaining five independently.)

Of the fourteen sites planned for Alaska, twelve will be USAF, one FAA but used jointly by the Air Force, and one Air Force site operated jointly with FAA. The transition to the joint use of radars will be completed in 1980, officials said.

Although radar data will be shared by FAA and USAF, it was made clear that each will continue to perform its own mission. To that end, the Air Force will establish five Region Operations Control Centers (ROCCs) to handle air surveillance and command and control duties. The ROCCs—four in CONUS and one in Alaska—will replace the present SAGE and manual centers.

Canadian participation in JSS is being negotiated, officials said.

★ In another radar-related matter,

## EX-DIA CHIEF ASSESSES MILITARY BALANCE

At a February 24 luncheon in Washington, D. C., sponsored by the American Security Council, retired Army Lt. Gen. Daniel O. Graham, until recently Director of the Defense Intelligence Agency, said:

- The USSR is devoting twenty percent or more of its GNP to military programs, and has maintained that level of investment for the last ten to twelve years.

- During Nazi Germany's military buildup prior to World War II, Hitler is reported to have allocated about nineteen percent of Germany's GNP to war preparations.

- The US defense budget for FY '77, and projected budgets for the next five years, will not offset Soviet defense spending, which is expected to remain at about twenty percent of GNP into the early 1980s.

- For several years, US national intelligence estimates have underrated Soviet military spending by half or more. For the past five years, DIA has not concurred with CIA estimates, but has lacked the range of analytical capabilities needed to support independent estimates.

- The combined defense budgets of the US and its allies (principally the NATO nations) could balance out Soviet defense spending.

- We must not trade off US technological superiority in such areas as the Air-Launched Cruise Missile (ALCM) for Soviet concessions in SALT negotiations.

- If attacks on the US intelligence community continue, we soon will be "too blind" to defend ourselves.

- Given present trends in US and allied defense spending (coupled with the weakening of our intelligence capabilities), the US and its NATO allies would be defeated in a European war if one were to take place in 1980.

- China has abandoned its development of ICBMs and probably will build missile submarines instead.

- Although the Pike Committee Report, which was given by CBS newsmen Daniel Schorr to *The Village Voice*, recommends doing away with DIA, no official of that Agency was called to testify before the Committee.





USAF's new B-1 strategic bomber hugs the Mojave Desert during a recent high-speed test flight at Edwards AFB, Calif., to demonstrate its ability to utilize natural terrain to evade enemy radar. The B-1 System Program Office has been presented the Air Force Organizational Excellence Award for meeting or exceeding aircraft performance objectives.

work is going forward on USAF's 407L Tactical Air Control System (TACS) to equip it with the ability to exchange radar tracking information with Army, Navy, and Marine Corps command and control systems. (For a detailed rundown on TACS, see April '75 issue, p. 33.)

The object is to allow TACS to exchange secure, real-time data with the Navy's TADIL-A system, currently incompatible because of speed and format differences with the TADIL-B communications system used by the other three services.

In effect, under the TACS/TADS (Tactical Air Control/Tactical Air Defense Systems) program, computers called Message Processing Modules (MPMs) are under development to act as "go-betweens" to reconcile data exchange differences in the systems.

One MPM, built by Hughes Aircraft Co. during a previous development phase, is already under evaluation at USAF's TACS/TADS site at Camp Pendleton, Calif. (Software is in being and being tested with this prototype MPM.) Also called for is the modification of fourteen 407L transportable Control and Reporting Centers (CRCs) already in the field, plus associated training and support facilities.

TACS/TADS will provide interface between the 407L CRCs and the Army Air Defense Command Control and Coordination System; Navy's Tactical Data System/Air-

borne Tactical Data System; USMC's Air Command and Control System; and other classified systems.

★ The Air Force Materials Laboratory has taken a major step in the effort to expand the use of other-than-metallic materials in aircraft construction.

An outer wing panel assembly of advanced composite materials was successfully test-flown aboard an A-7 Corsair II early this year. This followed last fall's test-to-destruction of a similar Vought Corp.-built wing at 188 percent of design limit load, according to AFML officials.

The wing—both internal structure and skin surface—is made mostly of a reinforcing material of graphite and boron fibers supported

in an epoxy resin matrix. Such wings are to be fully service-tested by flying one each aboard twelve ANG A-7s, with the opposite wing of conventional aluminum.

USAF and others are pushing the use of composite materials in aircraft construction because, among other things, they are potentially cheaper than current aluminum and titanium structures. Also, lighter weight translates directly into longer range, bigger payloads, and less fuel consumption.

★ Hats off to the personnel of Davis-Monthan AFB in Arizona—and folks in the surrounding community—for taking on a unique Bicentennial project that will be of lasting value.

The base's Bicentennial com-



Four brothers serving in Ohio National Guard's 178th TFG are, from left, SSgt. Edward Cearley, Sgt. Terrance L. Cearley, SSgt. Stewart W. Cearley, and Airman Basic Raymond C. Cearley. Their unit is stationed at Springfield Municipal Airport.



# Aerospace World

mittee last fall decided to undertake a campaign to restore eighty-three dilapidated aircraft at adjacent Pima County Air Museum. The museum had spent years acquiring the historic aircraft and other artifacts but—strapped for money, personnel, and know-how—had made little headway in their restoration. The museum existed more or less in name only and could not be opened to the public.

Word of the Davis-Monthan project spread quickly and response was outstanding. By February 1976, forty planes and one venerable firetruck had been "adopted" by base and community individuals and groups.

In the project, "foster parents" are required to furnish manpower, some tools and equipment, time, and expertise.

Cleaning supplies and other materials are purchased through the Tucson Air Museum Foundation, a nonprofit organization established in 1967 to bring the air museum into being. (The foundation's newly elected president, William P. Chandler, is also AFA Vice President for the Far West Region.)

In a ready-or-not-here-we-come effort, the museum plans to open during Armed Forces Week in May, according to foundation officials.

★ In another project with a Bicentennial motif, engineers at the University of Dayton have designed a full-size look-alike Wright Flyer that is set to be first flown publicly at the Bicentennial Air Show at Cox Municipal Airport in July.

The design is the work of volunteer faculty, graduates, and undergraduates, and the plane itself is to be built under the supervision of the local Experimental Aircraft Association as Dayton's official Bicentennial project. A call has gone out to the community for financial aid, parts, and labor assistance.

Modeled on one of the later versions of the Flyer, first produced in quantity at Dayton beginning in 1911 under a military contract, the plane will be modified for

## CAUTION: MISUSE OF MAILS

An unidentified person has been mailing what purport to be classified documents on experimental aircraft, with AIR FORCE Magazine appearing on the envelopes as return addressee. The mailings we have seen all were postmarked in the Los Angeles area. Some of these "documents" also include what could loosely be called social commentary at its basest level.

This matter has been referred to the Postal Service for investigation. Readers who receive such material, or know of others who have received it, may be assured that neither the Air Force Association, AIR FORCE Magazine, nor any individual connected with the AFA staff has any part in this misuse of the mails.

safety, reliability, and ease of handling, officials said. The frame and covering will be metal rather than wood and cloth and the Flyer will weigh in at 3,000 pounds, compared to its predecessor's weight of 1,200 pounds.

With fuel capacity of twelve gallons, the plane will be able to stay airborne about an hour. Speed: sixty mph.

★ Grover Loening, holder of the first aeronautical degree granted by an American university and a member of Orville Wright's original design team, died at Key Biscayne, Fla., on February 29, at the age of eighty-seven.

Mr. Loening was born in 1888 at Bremen, Germany, where his father was US consul-general. He completed graduate work at Columbia University in 1913 and joined Orville Wright that year. In 1914, he became chief aeronautical engineer of the US Army's Aviation Section at San Diego. Later, Mr. Loening organized the Loening Aircraft Co., which produced a famous amphibian of the 1920s. He was one of the founders of Pan American Airways and served several times as

an adviser to the federal government on aviation policy.

Among the honors conferred on Mr. Loening were the Collier Trophy, the Wright Memorial Trophy, and the Exceptional Civilian Service Medal. He was admitted to the Aviation Hall of Fame in 1969. Mr. Loening was a member of AFA.

★ **NEWS NOTES**—All AFCS mobile communications units have been redesignated "Combat Communications" groups or squadrons—to more accurately describe their role, USAF said.

Air Force Academy **C1C Mark C. Chavez** has won the **Winston Churchill Memorial Scholarship** for two years of study at England's Oxford University. And **C1C William C. Musick II** has been awarded an **International Fellowship** for graduate study in history at the University of Geneva in Switzerland.

NASA has established the **Office of Planning and Program Integration** to oversee the long-term use of the Space Transportation System (Shuttle). The office is headed by old NASA hand **Philip E. Culbertson**.

The **Military Airlift Center, Europe**, at Ramstein AB, Germany, as

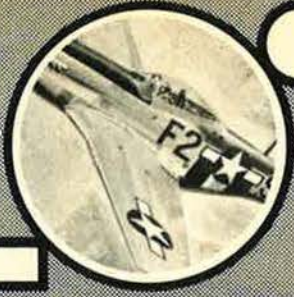
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# THE ELECTRONIC TRONIC AIR FORCE 1976

In July, AIR FORCE Magazine proudly presents its annual "Electronic Air Force" issue.

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In addition, the July issue will feature highlights

of the AFA-sponsored Strategic Weapons Development seminar at Vandenberg AFB, California.

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# Aerospace World

in this magazine. In a tribute to Mr. Buchan and his brainchildren published in the *Washington Post*, Chalmers M. Roberts said of *The Military Balance*: "It very soon became required reading at the White

House and in the Kremlin as well as in defense and foreign ministries in every nation that plays a role in international relations. No writer in this field could do without it, nor can he today." ■



TSgt. Dale Sutter, left, puts finishing touches on Bicentennial emblem adorning the tail of Thunderbird red, white, and blue T-38 Talon aircraft. Also celebrating the nation's 200th birthday are men of the 743d AC&W Squadron, above, assigned to Campion AFS, a remote radar site in Alaska.

sumed responsibility for managing all airlift for US forces in Europe in January.

The **Aerospace Rescue and Recovery Service** is credited with saving 824 lives worldwide in 1975; eighty AFCS air traffic controllers have been cited for saves of **fifty-eight aircraft and 166 lives** during potentially dangerous situations in 1975.

**Died: Lt. Col. William J. Lookadoo**, USAF (Ret.), AFA member and long-time Air Force information officer, of a heart attack at his home in Glen Cove, Md. He was sixty-four.

**Died: George S. Robinson**, an AFA member and retired Air Force civilian official, of a stroke in Fairfax, Va. He was seventy-one. Mr. Robinson was the recipient of a 1962 AFA Citation of Honor.

**Died: Alistair Buchan**, founder and former director of The International Institute for Strategic Studies, at his home in Buckinghamshire, England. He was fifty-eight. The Institute, which has attained a worldwide reputation since Mr. Buchan established it in 1958, is best known for its publication, *The Military Balance*, reprinted annually



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In case of a major war, the United States faces the most difficult airlift challenge of any country on earth. Further reductions in overseas support facilities could increase these difficulties. Fundamental to meeting the airlift challenge is the long reach that hinges on . . .

# ATCA—Key to Global Mobility

BY EDGAR ULSAMER, SENIOR EDITOR

**A**CCORDING to recent statements by Secretary of State Henry A. Kissinger and other Administration and military leaders, it is the consensus of the White House, the State Department, and the Pentagon that, for the time being, Soviet aggressive designs will remain confined to fomenting nonnuclear conflicts on a regional basis and predominantly along the periphery of the Warsaw Pact bloc. Prepositioning US forces in adequate numbers at or near all potential conflict sites obviously is impossible for political, economic, and other reasons. The job of deterring, or, if necessary, fighting, such conflicts requires highly mobile military forces, largely dependent on comprehensive airlift. The latter term takes in strategic airlift as well as tactical airmobility, both of which are, in the main, under Air Force purview.

Expansion and refinement of airmobility are the goals of a multifaceted program that, according to USAF Chief of Staff Gen. David C. Jones, is one of the Air Force's most pressing and vital priorities: "We are confronted today with the imperative of being able to operate almost any place in the world with little if any reliance on en-route bases and to project our forces quickly over great distances." Early projection of US conventional power, General Jones says, "can stabilize the situation if conflict has not yet erupted, can mount a better defense if it has, and, most important, can

offer the President an alternative between surrendering a vital national interest or crossing the nuclear threshold."

The Defense Department and Air Force budget requests for FY '77, and proposed budgets for subsequent years, emphasize strategic, tactical, and helicopter airlift. Proposed acquisition costs for modernizing the mobility forces of the four services through improved airlift amount to almost \$500 million, roughly double the current level, and are programmed for an increase to \$1 billion in FY '78, according to Defense Secretary Donald H. Rumsfeld. The Air Force's share increases from about \$170 million requested for FY '77 to about \$720 million proposed for FY '78. Except for prototype development of AMST, the Advanced Medium STOL Transport (which is to function primarily in intratheater missions while performing long-range sorties when necessary), all pertinent major USAF programs come under the broad heading of strategic airlift, a mission area for which the Air Force is designated as DoD's single manager.

There is no shortfall, according to General Jones, in USAF's ability to move troops or normal bulk cargo. The combined resources of the Military Airlift Command and the Civil Reserve Air Fleet (CRAF) are "quite adequate" in this regard, *provided* that en-route bases are available. Rather, the deficiency lies in what Secretary Rumsfeld termed a less

than optimum ability "to deploy the military equipment of our land and tactical air units in a balanced manner." The imbalance is caused by shortfalls in "oversize" cargo—rolling stock, artillery, armored personnel carriers, and similar equipment—even though the C-5s could easily meet delivery requirements of "outsize" cargo such as tanks and other heavy items that can't be carried by other military or CRAF transports.

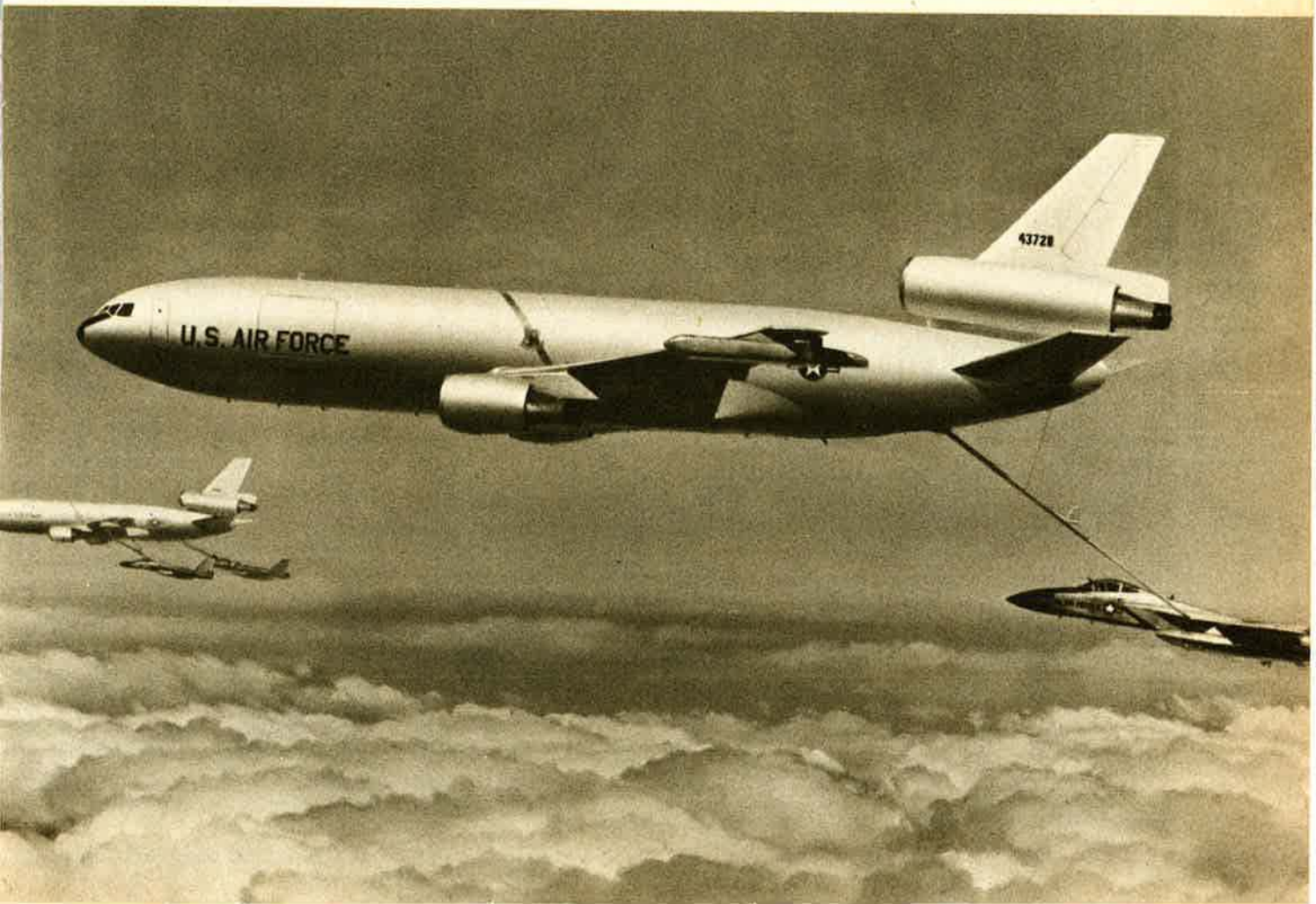
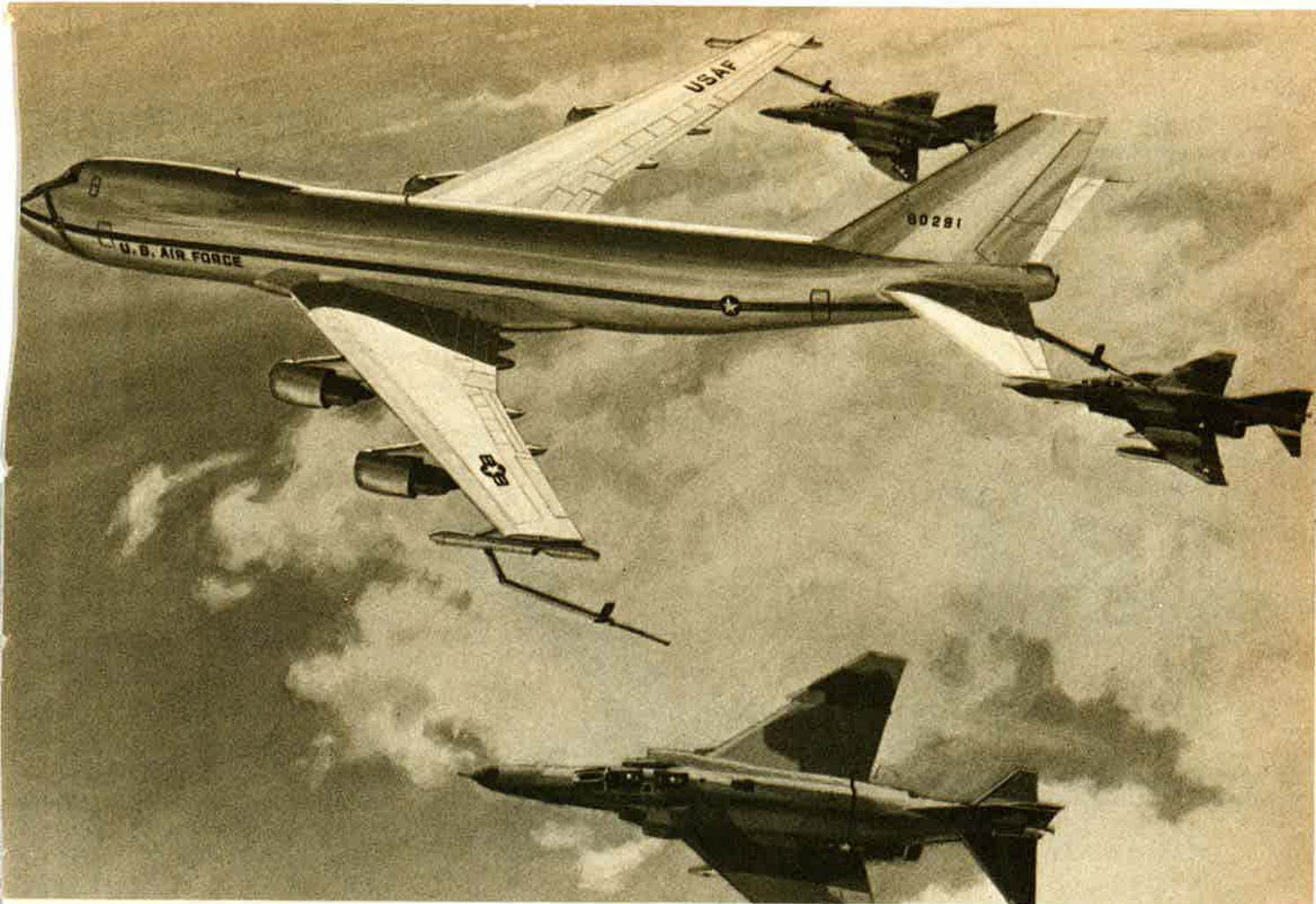
The US active airlift force consists of seventy C-5s, 234 C-141s, and about 235 C-130s. If Air Force Reserve and Air Guard C-130s are included, the total number of airlift aircraft comes to about 800. Augmenting this force are 153 long-range cargo and ninety-one long-range passenger aircraft of CRAF, some or all of which can be called up in case of national emergency. Of these aircraft, only the C-5s are capable of aerial refueling. The C-141s, which provide about seventy-five percent of the active strategic airlift force, are now dependent on overseas landing authorization and transit services for almost all missions in excess of 3,300 nautical miles.

## Air Mobility Enhancement

Planned improvements of the

*Intercontinental deployment self-contained tactical force is essential to global mobility. A 747-based ATCA (top) and a DC-10 derivative (bottom) shown in artists' concept.*







C-141 fleet, currently in early development, include the addition of aerial refueling capacity to give the aircraft global mobility and stretching the fuselage to increase the size of the cargo compartment by thirty percent. (The C-141 is "cube-limited," meaning that the aircraft's

payload capability is constrained more by interior size than weight.) If the prototype testing confirms the increased capability and Congress supports the program, modification of the C-141 fleet could begin as early as FY '78. Cost of modifying all 274 aircraft would be about \$640

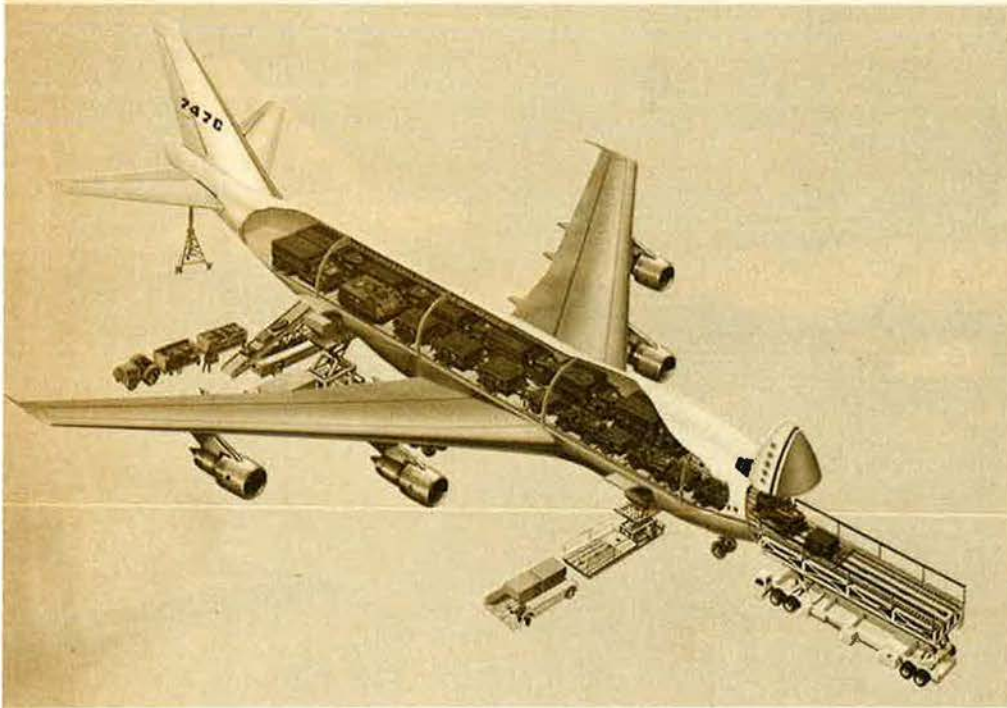
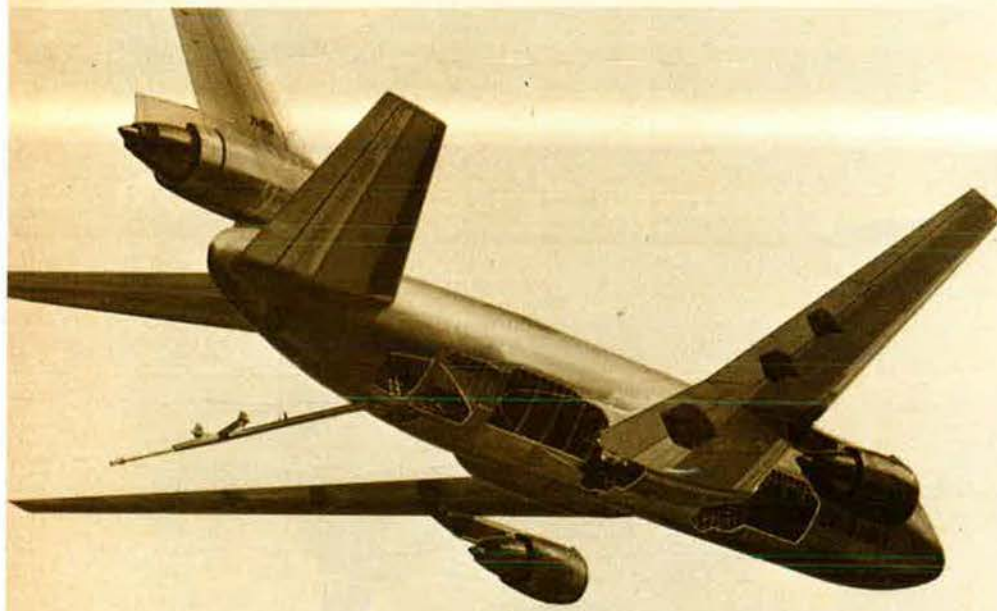
million and may be done on a competitive basis.

The single most cost-effective step to improve strategic airlift would be modification of a number of the wide-body, long-range passenger jets of the US flag carriers. The modification involves adding nose or side cargo doors to the 747 and DC-10 aircraft and reinforcing the flooring to handle heavy military cargo. Plane for plane, this program can produce more of the capacity increase sought by the Airlift Enhancement Plan than any other initiative and at a fraction of the cost of buying and operating organic military aircraft with a like capability. The cost to the government of the entire CRAF modification program would depend on the number of aircraft involved and the degree of modification needed. For example, the government would pay for hardware changes to passenger aircraft as well as provide some compensation to participating airlines for the purely economic disadvantages resulting from these modifications. Another option under consideration is a cost-sharing arrangement for modifying certain passenger aircraft to a permanent freighter role.

Correcting the wing fatigue problem of the C-5 is another key element of USAF's Airlift Enhancement. The Air Force proposes to replace the inner and center sections of the C-5's wing structure, starting in FY '81, at an estimated cost of about \$13 million per aircraft. This modification would more than triple present service life of the only aircraft in the Air Force inventory capable of carrying oversized cargo such as tanks.

#### Advanced Tanker Cargo Aircraft

Fundamental to global mobility of both tactical air and strategic airlift forces is ATCA, the Air Force's proposed new Advanced Tanker Cargo Aircraft. This system is quite different from USAF's 615 range-limited KC-135 aerial tankers. Operating from bases in the continental US, ATCA can provide both aerial refueling and airlift support for tactical combat or airlift forces. According to Secretary Rumsfeld, the system "would dramatically reduce our reliance on foreign bases for



Top: Cutaway of DC-10 ATCA shows the proposed Advanced Aerial Refueling Boom and the aircraft's interior configuration. Bottom: Cutaway of 747-200-based ATCA shows both its capacity and flexibility in terms of transportation of rolling stock. USAF plans to acquire about forty Advanced Tanker Cargo Aircraft, possibly under a total acquisition and maintenance contract.



## BROOKINGS' STRATEGIC BOMBER STUDY

The Brookings Institution of Washington, D. C., an independent "think tank" concerned mainly with public policy, earlier this year released a study entitled "Modernizing the Strategic Bomber Force—Why and How," that rejects any immediate need for USAF's B-1 strategic bomber and, instead, suggests the eventual conversion of wide-body superjets to the role of standoff bombers carrying cruise missiles. The Brookings study triggered considerable news coverage.

The authors, Alton H. Quanbeck and Archie L. Wood, formerly occupied senior positions in DoD's Office of Program Analysis and Evaluation or its predecessor, Systems Analysis. They launch their analyses from premises somewhat at odds with national security objectives, proposed restrictions of SALT II, and operational factors ascertained by Air Force and other DoD experience and assessments. In comparing costs of the B-1 and alternate systems, the study, categorically and without documentation, asserts that USAF's new strategic bomber requires a special tanker aircraft, thus biasing the resultant estimates. (See General Jones's accompanying comment.)

Two other basic assumptions by the authors influence the findings of the Brookings study and are at variance with DoD positions and information. One is the contention, albeit hazily stated and at times hedged, that the US deterrence capabilities should be confined to minimum assured destruction levels, a view that has been pretty thoroughly discredited over the past several years. Secondly, the authors' arguments in behalf of standoff bombers credit air-launched cruise missiles (ALCMs) with exaggerated qualities and compound the improbability by assigning ALCMs to the kinds of targets against which they are least likely to be effective—highly defended, high-value industrial and population centers.

The study's extreme enthusiasm for air-launched cruise missiles leads to such non sequiturs as the claim that the penetration capability of these weapons can be assured through wholesale suppression of the Soviet surface-to-air missile belts by prior US ICBM bombardment. Yet the very reason why bombers and cruise missiles are needed, according to the authors, is to provide a backup deterrent should the Soviets be able to launch a successful first (counterforce) strike against the Minuteman force. Further, there is straightforward acknowledgment that prior SAM suppression required by ALCM becomes almost impossible if those air defense systems are mobile; the fact that several of the USSR's most advanced SAM systems are either mobile or transportable is disregarded. ALCM is portrayed considerably larger than life-size and given a 1,500-nm range at 100 feet altitude. But, elsewhere in the study there is mention of SALT possibly limiting the range of these weapons to about 360 miles.

Unbridled enthusiasm for the standoff bomber concept also leads to another assertion not born out in DoD and industry analyses—that the efficiencies in cost as well as fuel consumption (and thus endurance) of a wide-body jet in the role of an ALCM-carrier tower above the B-1. While it is true that a Boeing 747, for instance, might be able to carry twice as many cruise missiles as the B-1 (which does not require this weapon in the first place), it also consumes fuel at twice the rate and requires about twice the air-refueling onload during airborne alert.

The central contradiction of the study arises from the claim that there is no foreseeable threat to the B-52's penetration capability, coupled to the assertion that if a threat were to develop, a standoff bomber launching ALCMs would be more survivable and effective than the B-1.

A nuclear-armed ALCM, as last year's DoD Joint Bomber study pointed out, is an important tool for the B-52 force in the 1980s. Its predominant merit is high accuracy; its central flaw is vulnerability to terminal SAMs. The vehicle, essentially a drone carrying a warhead similar in size to SRAM, flies a preprogrammed course to its target using inertial guidance and radar altimetry to match terrain features against information stored in its onboard computer, a technique known as TERCOM. That technique also guides the weapon to its target with an accuracy that some experts believe may eventually come close to being absolute. But the system can't perform evasive maneuvers, has no ECM capability, and flies at subsonic speed.

This combination of qualities makes it a relatively easy target for Soviet SAMs. But judiciously used, ALCM can multiply the effectiveness of the B-52 force by extending its range and flexibility. One B-52, for instance, can deploy ALCMs against as many as twenty undefended industrial targets or such high-value damage-limiting targets as ICBM silos, either housing missiles that the Soviets withheld from an initial strike, or may prepare for reloading. In short, ALCM has obvious merit, but it in no way can substitute for the unique flexible, real-time capabilities of a fast, hardened, and manned penetrator of the B-1 type.

In summary, the Brookings study's conclusions are refuted by a welter of careful, systematic Defense Department analyses, and in large part contradicted by the very information contained in the body of the study.

support of tactical or cargo aircraft being used in a force projection role." Ultimately, the Air Force plans to buy about forty of these aircraft. The precise number will depend on the aircraft selected and the air refueling mission requirements envisioned for the 1980s and 1990s. USAF's FY '77 budget request for about \$45 million to develop ATCA includes some \$37 million for long-lead procurement items and \$8 million for continued development of an improved air refueling boom system. (Three refueling points are possible.) These funds, General Jones told AIR FORCE Magazine, are essential for work associated with the purchase of five aircraft planned for FY '78. The proposed funding in that year for the ATCA program is \$354 million.

In developing ATCA, the Air Force seeks to satisfy three requirements of "flexible mobility," he said: "Refueling C-5 and C-141 aircraft; refueling the tactical aircraft of the Navy, the Marines, and USAF; and cargo delivery." ATCA might well perform all three missions in one sortie: "It could take off with and top off either C-5 or C-141 aircraft, escort fighters to Europe, and carry some cargo and people so that when the fighters land, they're ready to go into action with the help of ground support personnel and equipment." The Air Force's approach to ATCA is patterned after the airline industry's policy of maximum utilization and multiuse approach.

The case for ATCA, USAF's Chief of Staff points out, principally rests on two factors: "ATCA offers unique capabilities because its range/payload characteristics are unmatched by the KC-135 or any other aircraft, thereby allowing it to go to almost any place in the world *without* en-route bases." Secondly, ATCA is uniquely cost-effective in the broadest sense of that term. Either of the two aircraft under consideration for the ATCA mission—Boeing's 747 and McDonnell Douglas's DC-10 (international long-range version)—represent "sunk cost" systems whose development has been paid for by the manufacturing teams and the airline industry. Cost savings from this alone amount to hundreds of millions of dollars. Further, more



than 200 units of each competing model have been sold. Both are of proven reliability and endurance. Unit cost and cost of ownership, therefore, become advantageous to the Air Force, General Jones suggested.

Another intrinsic advantage is derived from the large and almost worldwide support base that the airlines industry has set up for these wide-body, long-range jetliners. Spares and maintenance are available at more than 100 airports scattered all over the world (except for the USSR and the Warsaw Pact countries), thus improving ATCA's operational flexibility and lowering support and operating costs.

An intriguing possibility, General Jones points out, is to purchase ATCA under a total acquisition and maintenance contract, either with the manufacturer alone or in concert with a US flag carrier that has extensive overseas depots. While he emphasized that the military mission and such unique aspects of ATCA as the boom system may preclude a completely commercialized maintenance arrangement, the Air Force plans to exploit all possible economies associated with "piggy-backing" on the commercial aviation system without jeopardizing operating capabilities under crisis or war conditions. A first step in this direction is the Air Force's decision to minimize the initial spares buy for ATCA because the manufacturers and the airlines already maintain a large supply.

On the other hand, General Jones told *AIR FORCE Magazine*, "we don't expect to place absolute reliance on overseas commercial facilities. The system will have a self-contained deployment capability to give us independence. During peacetime, of course, there is no pressing need for ATCA to operate in such a mode, and we plan to use available maintenance and other logistics support. But during political or military crises, we will shift to operating ATCA in a self-sufficient way."

The benefits of operating hand in glove with the commercial aviation sector far outweigh associated penalties, especially "when there is a need to concentrate on systems with low

manpower demands and decreased life-cycle costs, a trait that ATCA epitomizes. We can operate a modest fleet of these aircraft with considerably less organic military manpower than now required," according to General Jones. Both the 747 or the DC-10, he emphasized, have demonstrated a "proven high utilization rate and equally high dispatch reliability, [the latter] approaching ninety-nine percent," he added.

Even when the range deficiencies of the KC-135 are disregarded, a mix of KC-135s (designed more than fifteen years ago) and C-141s cannot compete with ATCA in cost-effectiveness, according to Air Force analyses. The cost-effectiveness of the wide-body jetliners powered by economical, high bypass ratio engines, justified the airline industry's decision in the 1960s to retire, or relegate to standby status, its as yet not amortized fleet of narrow body aircraft—representing an investment of billions of dollars—and shift to the more efficient family of wide-body aircraft that followed in the wake of the C-5 and its TF39 engine.

An added benefit of ATCA's commercial aviation origin is the availability of trained Reserve flight crews during crisis periods, according to General Jones. Reservists who crew 747 or DC-10 airliners can be called into service to operate ATCA without impairing the airlines' ability to operate the wide-body component of CRAF at maximum rate. This is possible because the airlines maintain crew ratios well above what would be required during national emergencies. "Instead of flying at a rate of seventy to eighty hours a month, they can increase flying hours well above that. On the other hand, the airlines are operating the wide-body aircraft at a very high utilization rate, sometimes close to the maximum. As a result, a call-up of some of these crews to fly ATCAs won't affect our ability to operate the CRAF fleet to the maximum rate of utilization the aircraft can sustain," according to General Jones.

A similar high "surge rate" is available for the C-5 fleet which ATCA might have to refuel during emergencies. Each of the Air Force's four active-duty C-5 squadrons is

collocated with an Associate Reserve unit that participates in operations and maintenance to permit rapid mobilization. An additional major economic plus associated with a 747/DC-10-based ATCA, General Jones points out, is the availability of comprehensive simulator facilities set up and in operation by the airlines.

Air Force analyses suggest that the eventual introduction of about forty ATCAs into the USAF inventory will capitalize on the available manpower and assure that the C-5s, the CRAF aircraft, and the new Tanker Cargo Aircraft can be utilized at a maximum rate with existing active-duty, Reserve, and airline manpower.

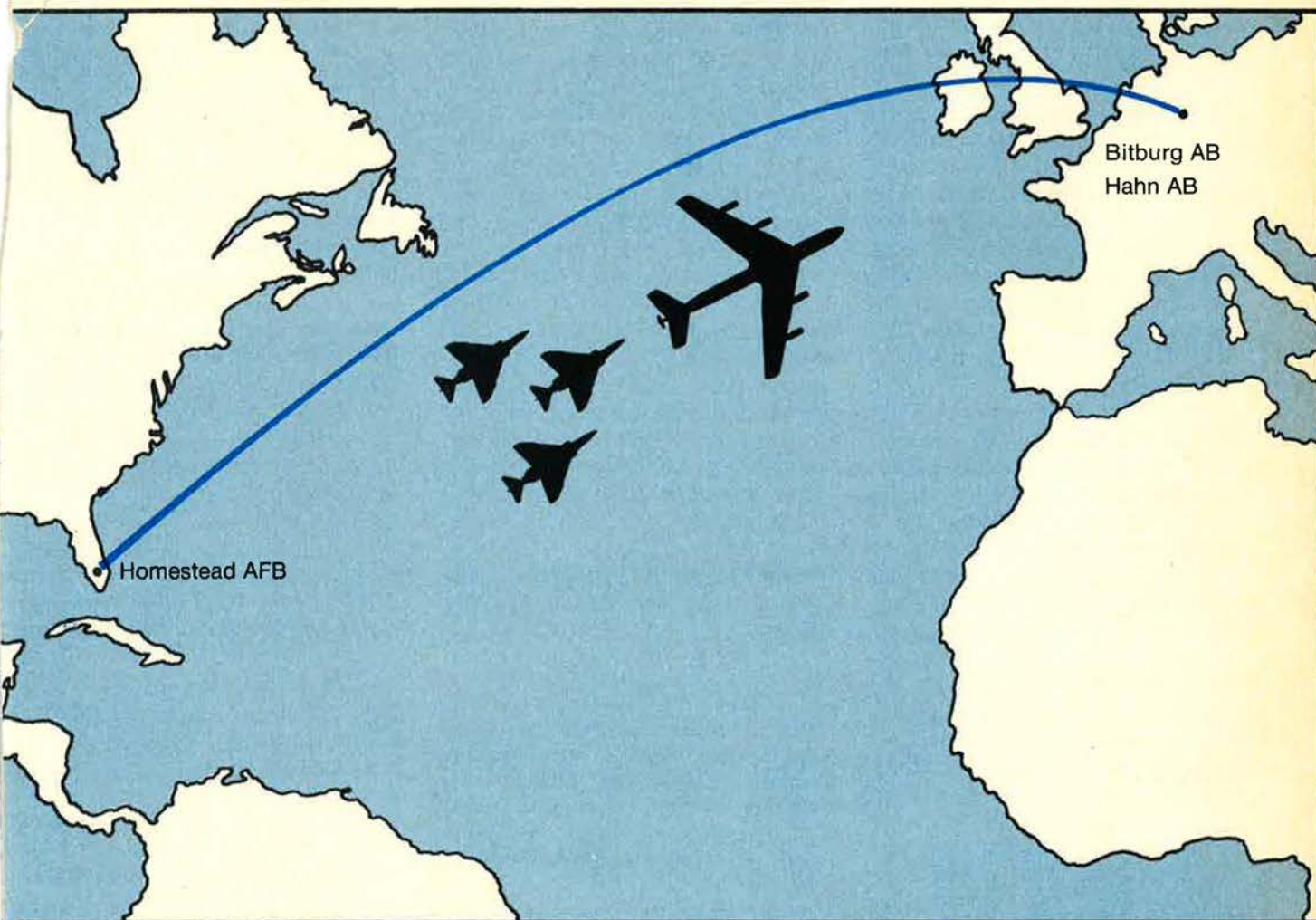
#### **ATCA Decision by Year's End?**

Possibly by the end of this calendar year, and certainly not later than the end of FY '77, the Air Force plans to select an aircraft for the ATCA mission, General Jones told this reporter. The decision will not be easy because both the DC-10 and 747 aircraft, for example, offer advantages that are unique in terms of performance, flexibility, and cost-effectiveness. For instance, the fuel off-load capability of the DC-10 over relatively short distances is below that of the heavier four-engine Boeing 747. However, the greater fuel efficiency of the three-engine aircraft apparently catches up with its competitors on long-distance sorties. This feature gains added importance if, as expected, the cost of the trijet is below that of the four-engine jumbojet, he said.

Air Force mission analysis studies indicate that a typical deployment of an F-4 squadron (twenty-four aircraft) from the US to NATO without an en-route stop, or to Korea with one en-route stop in Alaska, would require ten 747-based or fourteen DC-10-based tanker airlift support aircraft. If the mission is confined to refueling only, a 747-based ATCA can take four F-4s and a DC-10 derivative three F-4s to either of these two destinations.

The final selection among candidate aircraft will be a complex process considering such factors as total capability, competitive bids by con-





Depicted here is ATCA's ability (the example involves 747s) to deploy tactical fighters while simultaneously transporting the squadron equipment needed for combat operations. The case illustrated here assumes deployment of twenty-four F-4Es plus 720 tons of equipment from Homestead AFB, Fla., to Germany, a distance of 4,140 nm. In this scenario, eleven 747s would be needed to deploy the squadron in a single nine-hour trip.

tractors for production and support arrangements, life-cycle costing, and related conditions, according to General Jones.

The basic requirement for and final configuration of ATCA, General Jones emphasizes, is in "no way affected" by the B-1 strategic bomber program, assertions to the contrary (see box) notwithstanding: "The B-1 design mission is based on the characteristics and capabilities of the KC-135 and is in no way dependent on a new tanker. If the KC-135s, which we are reskinning to last into the twenty-first century, are not available for some reason, the B-1 can still perform its job although we might send it against different targets and use less complex tactics.

But the B-1 does not need a new tanker with special characteristics such as quicker launch and escape time or other qualities that some people contrive to support their contention that getting the B-1 also means getting a new tanker."

A form of ATCA, General Jones points out, is already approaching operational reality under Iranian aegis: "The Iranians are buying [three] 747s and putting on booms for aerial refueling. Their boom arrangement is not quite the same as we want, but still it is quite similar to ours."

Flight tests by AFSC's Aeronautical Systems Division in 1972 with the 747 showed that aerial refueling from multiple boom stations is fea-

sible and introduces no major vortex (gust) problems for the refueling fighters.

While the Air Force has not yet decided which command is to operate ATCA, General Jones indicated that both MAC and SAC are under consideration.

The Air Force's case for ATCA clearly gains from the system's undeniable cost-effectiveness. Yet, in the last analysis, no argument in its behalf can be more compelling than the fact that without a system of this type the tactical forces of the Air Force and the other military services, as well as USAF's strategic airlift, might be impaired in, if not prevented from, doing their job in many critical regions of the globe. ■



**In broad terms, how are responsibilities divided between the Chief and the Vice Chief?**

The Secretary is the head of the Department of the Air Force, and is responsible for all the affairs of the Air Force. The Chief, under his direction, exercises supervision over the members and organizations of the Air Force. The Chief also is a member of the Joint Chiefs of Staff, commonly referred to as JCS. My job as Vice Chief is to help the Chief in any way I can. He has not delegated specific responsibilities to me in writing, but we share responsibilities—working as a team.

The Chief must devote much of his attention to JCS matters. This duty takes precedence; it is an area he cannot delegate except during his absence. When he is absent, I represent him at all JCS meetings and speak for him with full authority. The Chief also devotes much attention to the preparation of the budget, and to defending the budget before the Congress. These are responsibilities he would prefer not to delegate, for understandable reasons. It is important for the Vice Chief to know the Chief well—to understand his objectives and policies—and in this way the Vice Chief can help supervise the administration and execution of Air Force policies more efficiently.

The Chief and I meet briefly and frequently during the day—to up-

date each other—to exchange views—to determine who will attend certain meetings—to report what each has done—to compare notes. It is the job of the Vice Chief to be flexible—to meet the Chief's needs, and to relieve him of many of the day-to-day problems that arise. In this way the Chief is able to focus his attention on the issues that he considers most important at that time.

The Chief and I are old and close friends, but more importantly, I have great personal and professional respect for him. I know what his policies are, what he wants done, and how he wants it done. I think we work well together, and I believe he has confidence in me; otherwise I doubt that he would have selected me to be his Vice.

**What kinds of problems are handled by the Assistant Vice Chief?**

He assists the Chief and me in

**The Vice Chief of Staff describes the close working relationships among USAF's top civilian and military leaders, discusses some unique aspects of the Air Staff, and evaluates the importance of Air Staff duty.**

the discharge of our duties in many ways. For the most part he exercises general supervision over administration of the Air Staff, and provides administrative services for the offices of the Secretary of the Air Force and his principal assistants. He will arbitrate differences that develop between Air Staff agencies and between those agencies and field commands, and we expect him to provide guidelines for the resolution of problem areas.

**How much of the Chief's time is devoted to his duties as a member of the Joint Chiefs of Staff?**

It is difficult to be anything but general with this question. It really depends on circumstances. It can range from almost full time, as during the *Mayaguez* incident, to three meetings a week during more routine times. The Joint Chiefs of Staff normally meet two or three times a week, but the preparation for some of these meetings can require considerable personal study and preparation. In addition, because of the nature of the Air Force's contribution to the Joint operations, to the unified and specified commands, much of the Chief's daily Air Force business could be considered as "devoted" to JCS matters.

**Obviously the Chief doesn't have time to meet with senior members of the Air Force on all the**

# THE AIR STAFF—A VIEW FROM THE TOP

**An Interview with Gen. William V. McBride  
Vice Chief of Staff, US Air Force**

**Photos By MSgt. Eddie McCrossan, USAF**



**problems handled by the staff. What are the areas in which General Jones stays in particularly close touch with his Deputy and Assistant Chiefs and members of the special staff?**

By working very long hours, and by budgeting his time well, the Chief stays in close touch with all key members of the staff. General Jones stays especially close to the staff on issues of policy—particularly in terms of the future of the Air Force, such as new weapon systems. Here his interest is in capability—alternatives, life-cycle costs, effectiveness—should we acquire them or shouldn't we.

One should not think that the Chief is so busy that someone else establishes Air Force policy. Not so. Although the Chief focuses on the big issues, I find he has much time for lesser problems, particularly if they involve people.

**How does the Chief coordinate his various functions with the Secretary of the Air Force?**

Coordination between the Chief and the Secretary is best described as close, personal, and continuous. There is the constant coordination that results from a two-way open-door policy and the short stroll in the E Ring to each other's offices. They, with the Under Secretary and the Vice Chief, meet formally on Tuesdays, have a working luncheon on Thursdays, and many topical meetings in between which they attend together. They have ample opportunity—and they exploit it—each day to personally coordinate with each other.

**The Secretary of the Air Force has his own staff, with elements paralleling most of the areas covered by the Air Staff (with the notable exception of operations). Why is it necessary to have these parallel staffs?**

The roughly parallel staffs of the Secretary of the Air Force and the Air Staff serve an important function. In all cases, the Secretary's staff provides us with the civilian

leadership our entire system of government is based on—puts that leadership into a position where it can provide guidance while at the same time having direct access to the information it needs. The Secretary's staff, albeit small, also serves as a bridge for the Air Staff to the Office of the Secretary of Defense and to outside agencies, again giving us that important civilian interface.

In certain functional areas, both the Air Staff and the Secretary use the same staff element, such as Comptroller, Inspector General, Legislative Liaison, and Information. So although the staffs are somewhat parallel, they are not unnecessarily duplicative—and always complementary.

**Does the Chief (or you) ever work directly with the Secretary of Defense and OSD?**

Essentially both the Chief and I deal with the Secretary of Defense either through the Secretary of the Air Force or through the Joint Chiefs, depending on the is-





sue. There are times, special situations, functions, or issues on which the Chief might be asked to deal directly with the Secretary of Defense, but even this is normally done in conjunction with the Secretary of the Air Force. On issues that are joint matters, without exception, service chiefs function through the JCS—develop joint positions that are presented by the Chairman. So it is an exception for the Chief to deal directly, and then it would most likely be in response to a SecDef request. This has been proven the most effective working arrangement.

***Do you and the Chief customarily deal directly with the commands and agencies in the field, or are relationships more likely to run through the Air Staff to the field?***

The nature of the subject is key here. If, in the opinion of the command involved, it's one that the staff can better handle, then the relationship will be between the command and a functional area in the Air Staff—or the Joint Staff in the case of a unified or specified command. If, in the opinion of the commander, he needs to elevate an issue because of its importance or any other reason, he will simply call the Chief or me directly—or write us a letter. I probably talk to four or five of the major commanders each day—and the Chief does the same. In short, the nature and importance of the subject determine the level of involvement; the nature of the organization determines whether that involvement will be with the Air Staff—or the Joint Staff.

***The functional responsibilities of most Air Staff elements are readily identified by office designation. Since every element performs studies in its functional area, how does the Assistant Chief of Staff, Studies and Analysis, fit into the picture?***

We have found it particularly productive to have a small group of select people focus hard on a few of our most difficult problems that cut across functional responsibilities. This organization can then analytically integrate the vari-

ous disciplines found across the staff. Moreover, we achieve extra value from the very characteristic you pointed out—since they are not functionally oriented, they are independent, with no special axes to grind. They provide a strictly unbiased look at a subject. We have found this arrangement very effective—and very helpful to the Chief and the Secretary.

***Another staff element that isn't found elsewhere in the Air Force is the Air Force Board Structure—a part of your immediate staff. Will you describe its purpose?***

The Air Force Board Structure provides a corporate review capability. It is the primary advisory group to our decision-making elements. It consists primarily of the Air Force Council and the Air Staff Board with associated committees and panels. Fundamentally, the Board Structure provides a useful way to develop conclusions and recommendations for decision, to permit the collective experience of senior Air Staff members to come into play on important matters, and to expedite coordination. It is not a decision-making body; it operates within the Air Force in an exclusively internal role.

The Air Staff Board has twelve panels, each with specific areas of responsibility such as airlift, simulators, and space, that make initial review of subjects. It also has the three committees—the Force Structure Committee, which deals with threat analysis and counterthreat requirements; the Program Review Committee, concerned with resource allocation; and the Security Assistance Committee, involved with foreign military sales. The Air Staff Board advises and coordinates at the Director level. The Air Force Council is a higher body both in level of subject matter addressed and the level of coordination, which is at the Deputy Chief of Staff level.

In all, this structure permits the best minds and the best effort to be placed on corporate concerns, with the leadership able to tap their advice and experience before making a decision. The final decisions are always made by the

Chief or Vice Chief—and when appropriate, the Secretary of the Air Force.

***Recently there have been appointed a considerable number of ad hoc committees to establish Air Force positions on a wide variety of subjects. Why are these matters not handled through normal staff procedures?***

On occasion, we have found it more effective to temporarily set up an ad hoc group, not bound by the traditional lines of functional staff organizations, to generate new ideas. We have found that a group that reviews a problem laterally as well as functionally—is frequently better able to put the subject in a proper context—the big picture look, if you pardon an overused cliché. Once they have developed their product or recommendations, we generally go back to the functional areas for staffing and implementing the new idea. This combination has been most productive.

***Under the Total Force Policy, particularly with reduction in the Regular establishment, the USAFR and ANG have assumed increased importance. Are the Reserve Forces adequately represented on the Air Staff?***

I certainly believe so—and we rely quite heavily on their contributions to the management of the Total Force. The Chief of the Air Force Reserve and the Director of the Air National Guard serve as the principal advisers to the Chief of Staff on Air Reserve Force matters. The Air element of the National Guard Bureau and the Office of Air Force Reserve effectively function as Air Staff activities and those agencies have approximately 350 people working in close concert daily with their active force counterparts.

There are about ninety additional Guard and Reserve positions directly assigned throughout the Air Staff to advise key functional managers on Air Reserve Force matters. I know you are also aware that our Assistant Secretary of the Air Force for Manpower and Reserve Affairs is daily concerned with the direction, guidance, and



supervision of Reserve component activities. His Deputy for Reserve Affairs and staff concentrate their full effort on these matters. We need the participation of our Guard and Reserve Force colleagues in meeting the challenges of Total Force management.

**As the Air Force has declined in total strength from about 1,263,000 in 1968 to about 828,000 projected for 1977, has the Air Staff been reduced proportionately?**

Yes. Our total Air Force strength will have declined about thirty-five percent from 1968 through our projected FY '77 position. As then constituted, Air Staff strength was reported at 5,375 in 1968, and will have been reduced to 3,511 in FY '77 (a reduction of 387 authorizations is projected this fiscal year) for a decline of about thirty-five percent. Similar reductions are planned in other elements of the Departmental Headquarters here in the Pentagon.

Actually, the beginning of streamlining the Air Staff predates the Vietnam involvement, and we had already made good headway toward the current posture by 1968. And we will continue to review the Air Staff organization to make further reductions when and where appropriate.

**How are people selected for Air Staff duty?**

We use very selective procedures for identifying people to come to the Air Staff—literally handpicking the people we get. We look for a combination of high professional qualifications as well as demonstrated superior performance, and experience in the skill we need. We want people who have been successful in the field—people who want to make a contribution.

**In line with the Chief's plan to keep people at bases for longer tours, will the Air Staff tour length be increased?**

First off, you have to realize that the four-year stabilized tour on the Air Staff is already longer than both the standard overseas tour (thirty-six months) and the

average CONUS tour (29.6 months for enlisted, 37.4 months for officers). Along with that we have found that the current four-year tour is generally an optimum time both for the Air Force and for the individual. It may be appropriate to extend a few people—in certain jobs possessing certain skills—but these will be excep-



General McBride has been Vice Chief of Staff since September 1975.

tions. We have no plans to extend the Air Staff tour at this time.

**Washington living costs and the unavailability of government quarters make Air Staff duty something of a hardship tour, especially for young officers and NCOs. From a career point of view, is Air Staff duty worth it?**

Your question asks for a value judgment that each individual must make for himself. If you ask me personally about each of my tours, I think it provides great opportunity for career broadening. The experience that I have gained in the Pentagon has been most valuable to me professionally. I have always believed that I had the opportunity in the Pentagon to make great contributions—and the only limitations were my own personal ones. I have found great personal satisfaction here, and I would

strongly recommend it to the young officer who wants to work hard—who wants to make a positive contribution.

From the personal rather than professional viewpoint, we understand the cost-of-living problems, and we are trying to do something about them. For example, we have much new on-base housing coming available to Air Force people, both married and single. We are continuing to modernize at Bolling, building some 800 NCO quarters and 130 field and company grade quarters. This won't solve the problem but should certainly help.

**With the cutbacks in TDY funds and airlift, are you fearful that members of the Air Staff will lose touch with the field?**

No. We devote sufficient resources for TDY and transportation to guarantee the Air Staff knows what's going on in the field. We may have to make some adjustments—but the Chief will ensure that every member of the Air Staff keeps in close touch with the field. He believes this is absolutely essential—and I agree with him.

**Does the constant press of urgent business leave you and the Chief any time for creative thinking?**

Of course the press of business itself demands a great deal of creative thinking, but I think you mean, just free wheeling, non-problem time related, conceptual thinking. Unfortunately, I don't have as much time for that as I would prefer, but there are still times in the day when I can squeeze some of that in—en route to meetings, on the aircraft traveling to and from TDYs. We also recognize that our jobs are twenty-four hours a day, all year round, and so we find that the quiet hours at home after normal duty hours, or even leave periods, provide very productive time for just this kind of thinking. This is one of the realities of the work—you wish you had more time for that, but you rarely do. We do our best to keep a proper balance in this regard. ■





**BY CAPT. ROBERT G. H. CARROLL, USAF  
CONTRIBUTING EDITOR**



At the end of its first year of full-scale development, the F-16 is meeting or exceeding its program goals in performance, versatility, and projected ownership costs. Here is a progress report on . . .

# F-16: Swing-Force Fighter for the '80s

**I**N TODAY'S climate of inflated prices and strained budgets, the nation's defense planners must constantly search for weapon systems that can incorporate the latest technology, provide outstanding performance, and promise low cost. The Air Force's F-16 Air Combat Fighter (ACF), the product of the Lightweight Fighter (LWF) prototype program, meets all these requirements. It is expected to outperform any known enemy threat in its class in the foreseeable future; it incorporates the latest in aerospace technology; and, best of all, it will be economical to own and operate.

In the year since then Secretary of the Air Force Dr. John L. McLucas announced the General Dynamics F-16 as winner of the Air Combat Fighter competition, the uniqueness and potential of the program have become increasingly evident. The F-16 is meeting or exceeding all performance standards. It is on schedule and by all indicators will be below original cost estimates.

Before examining the F-16's first year of full-scale development (FSD), it may be helpful to briefly review its evolution from a \$100 million prototype program into one with potential domestic and foreign sales of more than \$15 billion. (For details on the AF/LWF program, see October '73 issue, p. 64; January '74 issue, p. 51; and June '74 issue, p. 34.)

## Background

In April 1974, then Secretary of Defense James R. Schlesinger notified Congress of his intention to change the direction of USAF's Lightweight Fighter program. In

a letter to the Chairman of the Senate Armed Services Committee, he wrote, "DoD plans to actively consider full-scale development and eventual production of an Air Combat Fighter. . . . The Air Force LWF prototype program followed by a development program for the ACF provides the best option."

This decision was not made lightly. The USSR had overtaken the US fighter force in quantity and was threatening to do so in quality. It was imperative that USAF modernize its aging fighter force and at the same time maintain a force large enough to meet its deterrent commitments.

The McDonnell Douglas F-15 Eagle, designed as an air-superiority fighter, would have a qualitative edge over any known fighter, but its cost of more than \$15 million a copy could exceed Air Force procurement authorization if the aircraft were purchased in numbers considered adequate to counter the growing Soviet threat.

DoD, therefore, planned to develop the less-costly ACF to replace aging F-4s in both battlefield air-superiority and air-to-surface roles, augment the F-15, and meet the quantitative requirement. This combination of the sophisticated, high-cost F-15 and the smaller, more austere but technically advanced ACF, called the high-low mix, is a straightforward answer to the escalating cost of weapon systems and the need to increase force size.

In January 1975, the General Dynamics YF-16 was selected as winner of the ACF competition. At the same time, then Assistant Secretary of the Air Force for Installations and Logistics Frank A. Shrontz



Aerial refueling increases the F-16's 2,000-mile ferry range.



(who now holds a comparable position in DoD) was in Europe briefing a consortium of four NATO nations (Norway, Denmark, Belgium, and the Netherlands) that was evaluating the two ACF competitors and two European aircraft as replacement for the F-104s and F-100s in their air forces.

A major objective of the consortium governments was to work out an agreement giving them the best aircraft while still maintaining viable domestic aerospace industries.

This necessitated a coproduction agreement under which the consortium countries would share in the production of their own aircraft, those built by the winning country, and any sold to other foreign governments. This arrangement would allow the countries to maintain a constant aerospace work force, profit by technology transfer, and recoup at least part of their initial investment.

The US proposal was designed to meet consortium conditions:

- Ten percent of the purchase value (less nonrecurring R&D costs) of the 650 USAF F-16s would be produced in the consortium countries;

- Forty percent of the purchase value of the 348 F-16s for the consortium countries would be manufactured by them;

- Fifteen percent of the purchase value of aircraft sold to third countries would be consortium-manufactured.

Under this so-called "10-40-15"

arrangement, with a production of 1,500 aircraft, the countries would recover eighty-eight percent of their original investment. Sale of an additional 300 aircraft would put the four NATO countries at the 100 percent recoupment level. Since USAF purchases are expected to exceed 650 and third-country sales to be more than 1,000, the US proposal almost certainly guaranteed they could make a profit.

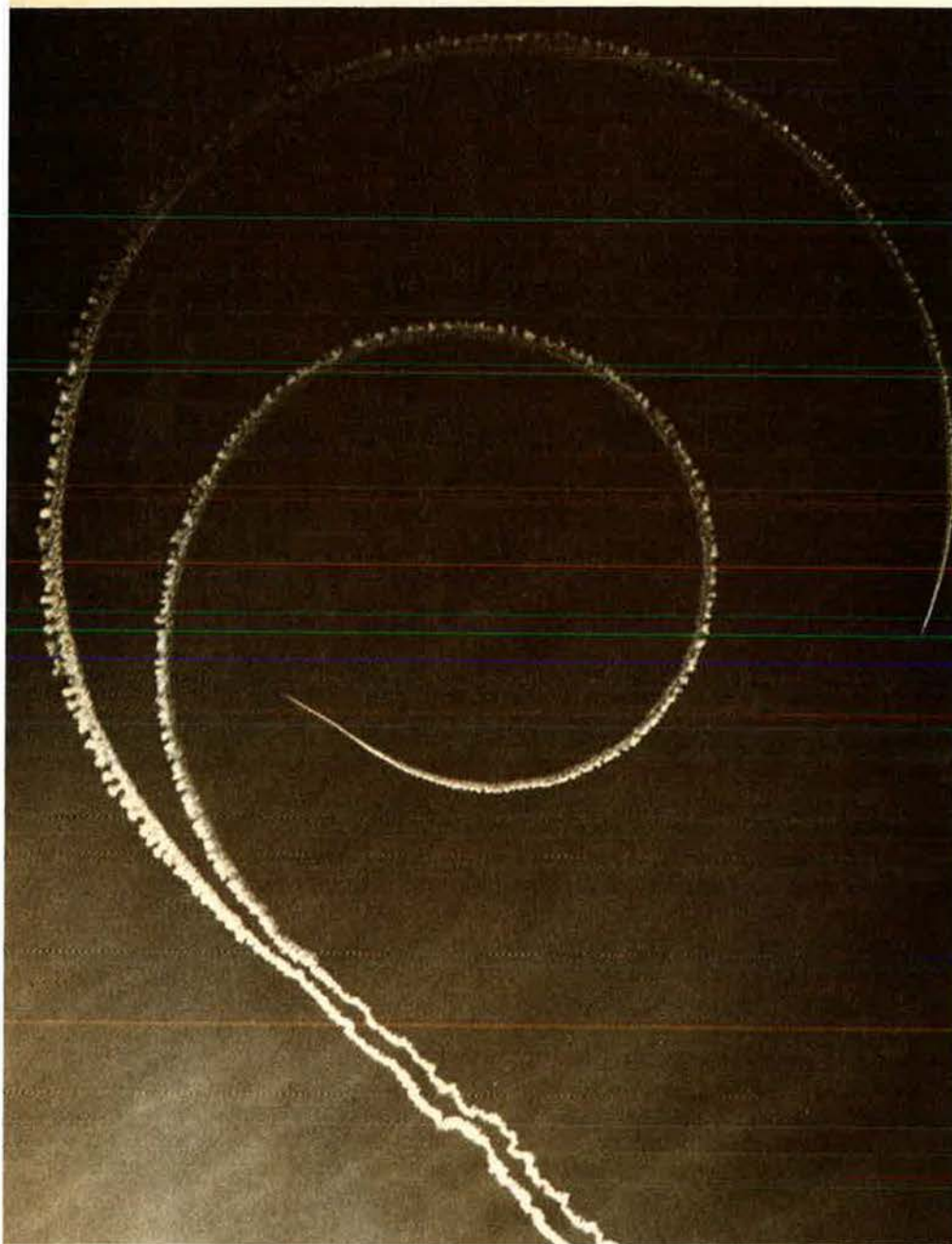
By the end of May 1975, three countries—Norway, Denmark, and the Netherlands—had decided to accept the US proposal, contingent on a favorable decision by Belgium. In June, the Belgian government announced its decision to purchase the F-16. (The consortium countries now are designated European Participating Governments, or EPG.)

In testimony before the Senate Appropriations Committee, Secretary Shrontz said, "The F-16 multinational program has a solid foundation that provides substantial economic benefits for the United States. . . . Of even greater significance are the operational and logistics efficiencies for NATO of standardized aircraft. It was these considerations that created and shaped the program plan."

### A Swing-Force Fighter

Air Force Chief of Staff Gen. David C. Jones has referred to the F-16 as filling a "swing-force" role in both air-superiority and ground-support missions. To understand why the F-16 fits that role and, incidentally, why the aircraft proved so attractive to the four NATO nations, let's look at the wide range of F-16 operational capabilities.

Air combat capabilities depend



The F-16's turning radius, fifty percent better than that of the F-4E, can be seen in this photo of the two aircraft starting simultaneous maximum turns. The F-16 (center contrail) is already rolling out on its original course.



mainly on three factors—pilot proficiency, performance of the aircraft, and its avionics and armament systems. USAF pilots consistently rank among the world's best, so it will be the other two factors that determine whether USAF has the capability to maintain battlefield air superiority in the years to come. How does the F-16 stack up in those areas?

At only half the weight of the F-4, which it ultimately will replace, the F-16 has twice the combat radius

and a fifty percent better turning radius. It accelerates twice as rapidly, carries a payload comparable to the F-4's twice as far in the surface attack mode, and, with its superior avionics system, can deliver nuclear or conventional ordnance with greater accuracy.

The importance of the F-16's dual munitions capability was underscored in recent congressional testimony by senior defense officials. Soviet tactical air forces, which have been primarily defensive and conventionally armed, are being re-equipped with modern, dual-capable fighters and fighter-bombers having the longer range, greater payload, and higher speed needed for offensive operations. When fully operational in the 1980s, the dual-capable F-16 should provide US and NATO commanders with a versatile, high-performance tactical force to help counter this newly developing threat.

The F-16's high performance is due not only to its advanced design but also to its engine. The Pratt & Whitney F100, an engine in the 25,000-pound-thrust class, gives the F-16 a high thrust-to-weight ratio and outstanding fuel economy and range. Fuel economy, in conjunction with the one-engine design, defense officials estimate, will save more than \$300 million during the life of the aircraft over such twin-engine aircraft as the YF-17 (the other prototype in the LWF competition). In addition, the F100 engine will produce savings in research and development funds since the engine will be fully developed when it is installed in the F-16, and in maintenance and logistics costs since the F100 is also used in the F-15.

The F-16's avionics center around

a 260-pound, \$203,500 modular radar system built by Westinghouse Corp. It will provide both air-to-air and air-to-surface capabilities for the US and NATO F-16s. This includes the ground-mapping feature that provides the pilot with a radar picture of the surface under attack. An added improvement to the ground-map feature, resulting in an eight-to-one picture resolution improvement over a selected portion of the terrain, will be evaluated during the FSD program and possibly incorporated

the F-16's capability to support the F-15 and A-10 in air-superiority and ground-support tasks respectively, and fully exploits its performance characteristics. For example, in an air-superiority configuration, the F-16 will be armed with infrared missiles and an internal 20-mm cannon. It can be ferried mission-ready from distant bases to a combat area. Once his air-superiority mission has been completed, the pilot can land at a forward operating base and his aircraft can be configured for either



Above, EPG pilots inspect the F-16 during its 1975 European tour. Right, Westinghouse technicians adjust the F-16's radar, which was installed on an F-4 aircraft for flight testing.



into the production radar at no additional cost to the USAF or EPG.

The radar's aerial or surface target can be acquired in a 120-degree cone forward of the flight path. Once lock-on to an aerial target is achieved, the radar will initiate automatic target track in both range and azimuth. In the manual lock-on mode, the pilot will place an acquisition symbol over the displayed target and manually initiate lock-on. In either acquisition mode, target velocity, range, and azimuth information will be displayed to the pilot. During the development program, special emphasis will be on the design-to-cost approach and high operational reliability.

The radar significantly increases



### Major Provisions of the Memorandum of Understanding

- The European Participating Governments (formerly referred to as the consortium) intend to purchase 348 aircraft, with Belgium, Denmark, and the Netherlands having an option to reduce their quantities.
- The US will fund and manage the F-16 program. The EPG's share of the full-scale development program will be about \$470,000 per aircraft.
- Third country sales will be negotiated by the US.
- The price, in 1975 dollars, for each EPG aircraft will not exceed \$6.09 million, excluding inflation. Final price will more likely be between \$5.7 and \$6.09 million.
- No nation will benefit from currency fluctuations.
- EPG countries can recoup in excess of 100 percent of their investment. (A US concession in the give-and-take negotiations.)
- A joint logistics and depot maintenance program will be developed.
- With few exceptions, components of the F-16 will be released for technology transfer. The items withheld will be released when security restrictions permit.

another air-to-air sortie or an air-to-surface mission.

The ground-map feature, and a heads-down visual display integrated with the fire-control computer, will provide the aircraft the latest in air-to-surface weapon-delivery capability. In a typical sortie, the F-16 can carry more than 8,000 pounds of mixed ordnance, including electro-optical (laser and TV) guided bombs, and still retain a self-defense capability.

The F-16 will require only one-third as many maintenance hours per flight hour as the F-4, and its operating and support costs should be about thirty percent less than those of the Phantom. Its life-cycle cost will be less than that of any tactical fighter now in the inventory. In FY '75 dollars, the annual cost of operating an F-16 squadron is

### F-16 Production Plans

Manufacture of the first full-scale development (FSD) F-16 began in 1975. The aircraft will be delivered to the Air Force in late 1976. The US production decision is to be made in 1977, with the first production aircraft rolling off the line in 1978. Air Force units should be flying the F-16 operationally in the early 1980s. General Dynamics will build all USAF F-16s at its Fort Worth, Tex., facility. With experience gained from the prototype program, the first F-16s will be built with production tooling using the latest in aircraft assembly procedures.

In line with the DSARC directive to meet baseline cost, the company is using precision casting as one method to reduce production costs. While initially expensive, the parts produced are so precise that no additional work has to be done prior to installation, except drilling the necessary holes.

As an example of how this reduces cost, General Dynamics officials cited a wing root fitting. Twenty-four are required for each aircraft. They cost about \$95 each for the prototype; in the production aircraft, the cost is expected to be \$8. This is a potential saving of more than \$2,000 per aircraft.

By using advanced construction methods, the total number of parts in the fuselage has been reduced by about ten percent. This will increase the maintainability of the F-16 and reduce life-cycle costs.

The EPG aircraft, which will be built on two assembly lines in Belgium and the Netherlands, are scheduled for initial delivery in 1979. Parts manufacture will be by European subcontractors located in the four participating nations. European subcontractor personnel are at the Fort Worth plant working with General Dynamics engineers and tooling experts, and Pratt & Whitney personnel are in Europe working with Fabrique National and other engine subcontractors.

estimated to be \$13.4 million vs. \$18.7 million for the F-4. This will result in a more than \$70 million saving per F-16 wing during the fifteen-year life cycle projected for the aircraft—theoretically almost enough to purchase an additional squadron of F-16s.

With the economies inherent in the F-16, Air Force planners hope to bring all of the twenty-six authorized tactical wings up to full strength by 1981. They also see the F-16's high foreign sales potential as a positive contribution to US balance of payments and to greater standardization of NATO tactical forces.

In addition, it is possible the F-16 will be considered along with the F-15 and F-14 in the Aerospace Defense Command's long-range FX program for a new interceptor to replace the F-106. This requirement has become more urgent in light of the high deployment rate of the Soviet's newest long-range bomber, the Backfire.

### The First Year

The first year of any major procurement program is usually the most important. The F-16 program has been no exception. However,

due to the outstanding success of the LWF prototype program, F-16 priorities were more clear-cut in the beginning. The first order of business following source selection was to finalize the F-16's design and cost estimates, after which final DoD program approval would be received and production started.

As a result of information gained from the LWF prototype program, the decisions of the first Design Review Board were a foregone conclusion—the F-16's design would require relatively little fine tuning. The Board did, however, approve design refinements that would optimize the F-16's cost and operational capabilities. Most were minor changes. As Lt. Gen. James T. Stewart, Com-

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*The author, Capt. Robert G. H. Carroll, is assigned to AIR FORCE Magazine for a year's training under the AFIT Education With Industry (EWI) program. Previously, Captain Carroll was assigned to the Air Force Office of Information in the Pentagon, where he had primary public affairs responsibility for the Lightweight Fighter and F-16 Air Combat Fighter programs.*



mander of AFSC's Aeronautical Systems Division (ASD), told AIR FORCE Magazine, "they were cost and performance effective—a good buy for the Air Force."

One of the major money-saving changes was the "10-300" modification. This standardized the fuselage of the single seat "A" and the twin-seat "B" trainer models. Originally the "B" was to be longer and heavier, which would have reduced its range, changed its flight-handling characteristics from that of the "A," could have required additional testing, and might have caused pilot-training and transition problems.

To retain more of the prototype performance, USAF added ten inches to the basic fuselage length and increased the wing area from 280 to 300 square feet. An increase of about \$11,000 per aircraft is expected because of the change, but will be more than offset by savings in life-cycle cost (LCC).

The biggest saving comes from the fact that the changes allowed the full-scale development test program to be restructured. In his March 1975 testimony before the House Armed Services Committee, Dr. McLucas said, "An assessment of the impact of these enhancements on the development program determined [they] would permit . . . reduction of the required number of

DT&E [Development, Test, and Evaluation] aircraft from fifteen to eight."

The importance of cost in the F-16 program was very evident when the program faced its first Defense System Acquisition Review Council (DSARC). Under DoD weapon-system guidelines, the program has to be reviewed on a continuing basis and be approved at major milestones before moving forward. This system enables DoD planners to spot potential problems and start corrective action with a minimum of delay and cost.

In an April 1975 letter of approval to the Air Force, Deputy Secretary of Defense William P. Clements made it clear that design changes and cost would be prime considerations when he noted he would be "greatly concerned over any further departure from the [approved] baseline configuration or additional cost increases which may combine to nullify our effort to produce a fighter . . . as the low element in the high-low mix concept."

The approved baseline flyaway design-to-cost goal covering airframe, engine, and avionics was established by DoD as \$4.5 million in FY '75 dollars for 650 production aircraft, based on a production rate of fifteen per month. Total program cost is \$6.0 billion in then-year

dollars. Budget authorization for FY '76 and FY '76T totaled \$285.4 million in development funds, and the FY '77 request was \$619.7 million for FSD and production funds for sixteen aircraft.

Now, a year later, Air Force program officials indicate they are confident that the F-16 will meet this cost baseline. With the first developmental aircraft well into fabrication and major section assembly, there are no indicators that would point to any cost increase.

Confidence on the part of Air Force officials was confirmed when F-16 program officials met informally with the DSARC principals in December 1975 to review the program at year's end. All indications from that meeting point to the fact that DSARC members were pleased by the progress of the program.

That is not to say that there aren't going to be some rough spots down the road. But the fact that the F-16 program had a successful first year enhances its ability to overcome future problems that may occur. By meeting or exceeding all performance specifications and by staying ahead of schedule and within cost parameters, the F-16 program gives promise of becoming one of the most successful weapon procurement programs in DoD history. ■

### "POTTS, THIS IS SPAATZ!"

On a day in March 1944, the Eighth Air Force ordered a maximum-effort mission against targets in Germany for the next day. At that time, I was commanding the 453d Heavy Bomb Group of the 2d Air Division, Eighth Air Force, at Old Buckenham, Norfolk, England. I readied thirty-seven flyable B-24s and thirty-seven crews for the mission.

The next morning, as the planes of my group were taxiing into position for takeoff, a snowstorm struck the base, reducing visibility to about twenty yards. I was in the control tower to direct the takeoff. When the snowstorm hit, I ordered a hold. We had been waiting about fifteen minutes for the visibility to improve, when the telephone rang. General Spaatz wanted to speak with me.

I was greeted by a voice saying, "Potts, this is Spaatz! I am watching the master board here at the Eighth Air Force Headquarters, and I see that you have not taken off any of your planes." I told General Spaatz that we had a snowstorm over the base, but that as soon as it cleared up, we would take off, cut our assembly short, and join up with the other groups of our division before we crossed into enemy territory.

"Well, Potts, it's not snowing down here," the General replied. "Get those damn planes off!"

I did. Visibility began to improve as the snow flurries abated. Somebody else must have heard General Spaatz, too.

—Contributed by Maj. Gen. Ramsay D. Potts, USAFR (Ret.)

(AIR FORCE Magazine will pay \$10 for each anecdote accepted for publication.)



**O**N NOVEMBER 23, 1965, the Associated Press reported, "North Vietnam's President Ho Chi Minh has blasted speculation that the Communists might be willing to go to the negotiations table without a prior withdrawal of US troops from Vietnam."

In a letter to Dr. Linus Pauling, Nobel Prize winner in physics and peace, Ho was quoted by the China News Agency as saying, "The South Vietnamese people will not bow down to the invaders. The US government has been clamoring that it does not intend to expand the war and is ready to negotiate."

The US government was in fact ready and eager to negotiate. President Johnson was faced with the prospect, by mid-January 1966, of having to announce to his public the necessity for a large-scale reinforcement in Vietnam. Defense budget increases would probably amount to \$25 billion. The result might well be higher taxes, controls on the economy, the danger of inflation, and the demise of the Great Society.

This would indeed be "bitter tea" to serve to the American people. By the end of 1965, they had little stomach left for the war. They had not been told enough about their country's involvement in the conflict and what the national stakes in its outcome really were. A Harris poll showed that seventy-three percent of the people favored a renewed effort for a cease-fire; fifty-nine percent wanted a bombing pause; sixty-one percent called for increased bombing effort if a cease-fire or pause failed to elicit interest from the other side. These attitudes clearly indicated that a solid preparation of the American people was going to be necessary to ensure that they would be willing to make major sacrifices.

**In late December 1965, President Johnson decided, on the advice of his civilian counselors, to extend the Christmas cease-fire to a bombing "pause" that would continue through January 31, 1966. A former member of the Joint Chiefs of Staff reveals how the decision was made, against the recommendations of the Chiefs and without their participation in the final deliberations.**

# THE BOMBING 'PAUSE': FORMULA FOR FAILURE

**BY GEN. WALLACE M. GREENE, USMC (RET.)  
FORMER COMMANDANT, US MARINE CORPS**

The Administration did not really expect Hanoi to respond in any significant way to an offer to bargain. But it was necessary, for political purposes, to make it crystal-clear to our citizens and to our friends and allies where the responsibility would lie for a continuation of the war. The US wanted to settle.

## **Prelude to the Bombing "Pause"**

According to Jack Valenti's account in his recent book, *A Very Human President*, it was on December 18, 1965, as a conclusion to several meetings with his civilian advisers, meetings to which the Joint Chiefs and even the Chairman were not invited, that President Johnson finally decided to execute a "pause" in bombing operations.

In the meetings with Mr. Johnson that led to this decision, Valenti reports that Secretary of State Dean Rusk had favored a pause although Rusk had said that he gave it only a one-in-twenty chance of success—even with possible assistance from the Russians. Secretary of Defense Robert S. McNamara, when he had sensed the President's inclination, had quickly switched from his initial position of "increase bombing—step up our attack" to one in which he assured the President that he could take on the recalcitrant Chiefs and impose any decision on them. George Ball was, as he had always been, adamantly opposed to further bombing of North Vietnam; McGeorge Bundy was for the "pause" and so were Alexis Johnson and Jack Valenti. Abe Fortas was more concerned about the aftermath of possible failure; Clark Clifford doubted success at this time and was convinced that Hanoi would bargain only if Ho Chi Minh believed that they were not winning the war—and we were certainly not at that stage.

It is interesting to note at this point that on December 17, the day before the decision was made, the President had sent for Gen. Earle Wheeler, then Chairman of the Joint Chiefs of Staff. The Chairman spent an hour with Mr. Johnson during which they reviewed the whole situation. The President appeared to be greatly worried, and discussed his problems in considerable detail. General Wheeler again voiced his objections and those of the Chiefs to any "pause." The President then asked him to think about it some more and, "If you have any further thoughts on the subject—that it would be alarming or dangerous to continue a pause from Christmas through Tet—communicate with me at once."

General Wheeler pointed out that he was about to depart for the Far East and the question was how to communicate. The Chairman suggested to the President that he, Wheeler, use a "back-channel" to the Director



of the Joint Staff, Gen. Andrew Goodpaster, who would then pass the message on to the President. Johnson agreed to this, saying that he would see Goodpaster at once anytime there was a message for him. It was clear, therefore, that this was to be a very private exchange with the President.

The Chairman did not report this arrangement to the Joint Chiefs until January 6, 1966, following his return from Saigon when he found himself faced with the disturbed and angry Chiefs.

General Wheeler told the Chiefs that while he was in Tokyo, Goodpaster had called him at 0130 in the morning (December 19, 1965) and had told him that the President wanted him to go immediately to Saigon. There he was to relate to Ambassador Henry Cabot Lodge and Gen. William Westmoreland the details of the conference he had had with the President on December 17. After having discussed the matter with Lodge and Westmoreland, he was to send back their comments. Goodpaster again conveyed the requirement for complete secrecy.

In a reply to Goodpaster, General Wheeler pointed out that Lt. Gen. Maurice A. Preston, Commander of Fifth Air Force, was having a dinner party for him that night and that the quickest way to ensure a great deal of publicity and speculation would be for Wheeler to have to forego the social occasion. The result was that he was authorized to delay until after the party and then to proceed directly to Saigon.

In Saigon, the Chairman conferred with Lodge and Westmoreland as directed, and the result was a message to Goodpaster for the President in which all three principals vehemently opposed a "pause."

### **The Chiefs' View Rejected**

Twenty-four hours after this "back-channel" cable had been sent, Wheeler received another telephone call from Goodpaster who said that he had just come from a long meeting at the White House and that there would be no extension of the Christmas cease-fire. Wheeler, Lodge, and Westmoreland were extremely happy to hear this but their euphoria was abruptly dashed on Christmas Day when another message was received, this time ostensibly from the Joint Chiefs, announcing a "pause" to extend the Christmas cease-fire through Tet (January 31).

Again it is of particular interest to note that this cable from the Joint Chiefs had actually been written within the office of the Secretary of Defense. Cyrus Vance, the Deputy Secretary, had presented it to the Acting Chairman of the Joint Chiefs, Gen. J. P. McConnell, USAF,

for signature and release. Since this order did not reflect the views of the Chiefs, McConnell quickly refused to sign the dispatch. Subsequently, the message was signed and released by Vance but with the JCS heading retained!

General McConnell had wanted to go with Vance to the President about this message, its contents, and McConnell's action; but Vance demurred, saying that the President had already made up his mind.

General Wheeler told the Chiefs that he had left Saigon for Bangkok the same day and while en route had drafted another message for the President wherein he again took issue with the decision.

The Chairman, along with Westmoreland and Adm. U. S. G. Sharp, CINCPAC, had also received a message from retired Gen. Maxwell Taylor advocating a prolonged bombing "pause" in order to expose, once and for all, the futility of letting up pressures on the enemy. It would be a worthwhile exercise despite the military disadvantages, said Taylor.

General Wheeler told the Chiefs he had assumed that, if the subject of a "pause" should come up in Washington while he was away, the usual and normal procedures would have made his views available to the Chiefs. But his private arrangement with the President had been unusual and abnormal. As a result, the Chiefs had not seen the exchange of messages for nine days, although they were being passed to the White House and Secretary of Defense by the Director of the Joint Staff.

This, then, was how the Christmas cease-fire of thirty hours gradually, deviously, and inexorably grew into the great bombing pause of thirty-seven days in Southeast Asia in 1965-66. Bombing of North Vietnam (Rolling Thunder) was prohibited, as were similar B-52 operations (Arc Light) against the enemy in South Vietnam. Bombing in Laos was permitted, but could not be mounted from bases in South Vietnam. And it was emphasized that, regardless of small incidents, our forces would not be the first to renew the fighting. Only normal security patrols and actions for self-defense were authorized.

In actuality, the Christmas truce was allowed to slide over into December 26 and 27 without anything further being done about its extension. On December 28, President Johnson finally decided to defer resumption of the bombing for several more days—possibly into the following week. No formal announcement of this was to be made. Air, ground, and sea operations in South Vietnam would continue or be resumed as well as air activity over Laos. Key Communist governments, as well as the North Vietnam (DRV) consul-general in

"... the message [announcing a bombing 'pause'] was signed and released by Vance but with the JCS heading retained!"





Upon graduation from the National War College in 1953, the author, then Colonel Greene, was assigned to the office of Gen. John Gerhart, USAF, Special Assistant to the JCS for National Security Council Affairs, where he worked for two years with then-Col. John Vogt, USAF, on the Planning Board of the National Security Council. During 1959, as a major general, Greene served as Deputy Chief of Staff (Plans) and Operational Deputy for the Marine Corps

in the JCS. In 1960, Lieutenant General Greene became Chief of Staff to Gen. David Shoup, the twenty-second Commandant of the Marine Corps. In 1964, he succeeded Shoup as Commandant. During the next four years, General Greene sat with the Joint Chiefs, where he was closely associated with his friend Gen. Curtis LeMay. Retiring in 1968, General Greene now lives in McLean, Va., where he is occupied with research and writing.

Rangoon, were being notified of the US offer to negotiate. The United States wanted to ensure that the message reached Hanoi.

### Continued JCS Opposition

During the morning of the same day (December 28), members of the Joint Chiefs made representations to the Acting Secretary of Defense, Mr. Vance, strongly objecting to the fact that the Chiefs had not been included in the deliberations concerning the "pause." Mr. Vance assured them that all echelons above the Joint Chiefs, including the President, had been advised of the views of the Chiefs, and those of Admiral Sharp and of General Westmoreland.

Adm. David McDonald, Chief of Naval Operations (remember Admiral Sharp's Rolling Thunder bombing attacks had been stopped during the "pause"), was still not satisfied. That afternoon, when he learned that Secretary of Defense McNamara had returned from a long weekend vacation, he visited McNamara in his office and again made known his own views and those of the other Chiefs. As a result of this protest, the Defense Secretary repeated the assurances Mr. Vance had given that morning. He also gave Admiral McDonald a copy of a dispatch that had gone out from the State Department to Saigon and said that the rest of the dispatch traffic the Chiefs had not seen would be distributed to them immediately.

By December 29, the JCS were worrying about the proposals for a stand-down over Tet. They reviewed the results of the Christmas cease-fire and its extension and concluded that no advantage, military or political, had resulted. In fact, a number of major disadvantages had been seen. The cease-fire proposal by the Viet Cong, to last for twelve hours at Christmas, had not developed as we had expected and hoped. There had been numerous significant violations of their own cease-fire by the Viet Cong. Numerous killed and wounded on both sides had resulted. The Viet Cong had enjoyed complete freedom of movement. Cessation of air operations and artillery fire had increased the vulnerability of our

security patrols to guerrilla attacks. Enemy airfields had been left unobserved for forty-eight hours. Overflights of North and South Vietnam were halted, severely hampering operations in Laos. Enemy infiltration of men and supplies across the DMZ, unrestricted logistic buildup, and unhindered repair of roads and railroads by the enemy had resulted. Equally bad, there had been a distinct psychological letdown among our forces and a reduction in alertness. Therefore, it was considered that a stand-down of similar scope during Tet was undesirable.

So incensed was Admiral Sharp over the continued prohibition of his Rolling Thunder bombing operations that he messaged the Joint Chiefs that "The Armed Forces of the US should not be required to fight with one arm tied behind their backs!"

### McNamara Meets With the Chiefs

That same day, the Secretary of Defense, apparently feeling that the Chiefs might be getting out of hand, called a special conference at which he told them that the increased budget, higher expenditures, rising deployments of US troops, and the lack of public support for the operations in Vietnam had led to the decision to extend the bombing "pause." He had recommended this to the President, he said, on November 7 and 30.

And then, as a sop to the Chiefs, he continued, saying that one of the greatest dangers of the "pause" would be how to get out of it—to avoid being mousetrapped by the Communists. There is no question but that we must continue to escalate our military forces in South Vietnam, he said. There will be air action over North Vietnam in 1966 if we continue escalating as planned. Haiphong Harbor must be mined, too—around March 1966. The Chinese Communists have moved planes to South China to meet our bombing threat. There must be a very substantial escalation during '66 if no settlement comes from the "pause." We had better prepare to do this after the "pause" if there are no peace terms. The US effort during the "pause" will stop the Soviets to some degree from responding militarily against the US if we eventually escalate. Soviet emissary Alexander Shelepin's current visit to Hanoi has no relation to the "pause." The visit was arranged before the stand-down commenced (Moscow, on December 28, had announced the approaching visit to Hanoi of Shelepin, a member of the Soviet Presidium. Speculation immediately arose—whether the Russians were timing the trip to pressure the DRV to accept President Johnson's offer to negotiate). The Secretary continued, saying that the US would also benefit immeasurably by showing the US public what we had tried to do during the "pause." This action would likewise have a beneficial effect on the opinions of the other countries of the West.

Although no one had talked with the Secretary, Eric



“... our civilian leaders... displayed a gross ignorance of how to employ the tools of war in the extension of foreign policy.”

Severeid reported that McNamara had twice torpedoed attempts at negotiation. This article had done irreparable damage, the Secretary announced bitterly.

We must direct our primary effort toward the situation in South Vietnam. We are not making the progress we expected six months ago, the Secretary said.

There now ensued a period of great activity on the part of the US. Presidential emissaries commenced to scurry about the world giving briefings to the leaders in more than eighty countries—including the Pope. They were being told that President Johnson desired to continue the “pause” and to negotiate an end to the war. It was emphasized that, if the DRV and Viet Cong didn’t accept the offer, the blame for the resulting expanded warfare would lie at their door. There was no doubt that the President was desperately seeking a settlement or hoping to establish a suitable environment for escalation of the US effort. In spite of this massive attempt to end the war by negotiation, it became clear by the end of Tet that Ho Chi Minh had no intention of accepting our bid. In fact, he did not even deign to reply directly to President Johnson’s offer or to worldwide approaches.

#### Why the “Pause” Failed

The reasons for this disturbing failure were several. Viewed from the Communist side, it did not appear that the US was willing to bring anything worth trading to a bargaining table—certainly not the complete withdrawal of US forces, which Ho had demanded as a prerequisite for even talking. The US had also indicated that it would not accept the four basic bargaining points of North Vietnam or the five demands of the Viet Cong. As for the Communist side, it would not discuss the fourteen-point position of the Americans.

Furthermore, it was clear that US offensive operations had been so hampered by political restrictions and leadership timidity that military action by the Communist side had not yet been seriously affected. Not enough pressure by bombing and mining of North Vietnam had been exerted to convince Ho Chi Minh that he was losing the war. In fact, he was convinced that he was winning—so let the US meet his terms! This position meant more face throughout Asia and increased support from anti-war advocates in the West.

In retrospect—Monday morning quarterbacking—we can now clearly see what was evident to the Joint Chiefs from the beginning. The US bombing and air war against the enemy had been crippled by political considerations in the selection of targets, by the piecemeal commitment of forces (McNamara called it “flexible response”), and by plain timidity on the part of our civilian leaders in the use of bombing to bring about a victory for our side. First of all, these leaders were afraid of what Red China and the Soviet Union

might do. And they displayed a gross ignorance of how to employ the tools of war in the extension of foreign policy. Although many were so-called “intellectuals” or “old school tie boys,” they had not learned from history, either.

What was equally serious was President Johnson’s failure to properly and adequately inform the American people and their Congress as to our national stakes in Southeast Asia and why we had committed forces to South Vietnam. This fact was reflected in the media polls and was brought to focus in the failure of the bombing “pause” to produce desired results.

The President and his staff had not consulted with nor kept the Joint Chiefs properly informed of their plans and decision for a “pause.”

President Johnson failed to heed the recommendations of his military advisers in Washington, Honolulu, and Saigon. He did not accept the advice of his own ambassador in Saigon. Astute in domestic politics, expert in the manipulation of congressmen and voters on local issues, secretive to an excess, wary, cautious, and essentially a “loner,” with a vast gap in his grasp of international politics, and surrounded by key civilian advisers as inexperienced, for the most part, as he was, the President would have brought to any conference table a very poor poker hand, indeed. His adversaries sensed this and, consequently, wouldn’t even take a seat.

Thus, the great bombing “pause” of the winter of 1965–66 resulted in a miserable failure for the US and greatly increased the danger to our efforts in Vietnam.

By January 29, President Johnson realized the full extent of this disaster and had made up his mind to resume bombing. Twenty-five senators were urging him not to do so, but Air Force reconnaissance had revealed large enemy convoys of men, ammunition, and supplies streaming southward with impunity, during broad daylight, to cross the border into South Vietnam. With complete freedom from attack, herculean efforts were being made by the North Vietnamese to repair roads, bridges, and rail lines in evident preparation for further operations. The President knew what this threat meant to our forces below the DMZ, and he had the courage to make the unpalatable decision to end the “pause” and to start bombing again.

Much later, after retiring to his ranch in Texas, the former President, discussing the US failure in Vietnam with a visiting general officer, said that, looking back, he had made two serious errors in his treatment of the problem. First—he had not kept the American people adequately informed regarding our involvement in Southeast Asia and what the national security stakes there really were. Lack of information by the public had led to lack of support of the President. Secondly—he had not consulted with and relied upon the Joint Chiefs of Staff for military advice as much as he should have. ■



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Revival of the dispute between Iceland and the UK over fishing rights once again puts the future of the ASW base at Keflavik in question as a new . . .

## Codfish War Threatens NATO's Northern Flank

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

**T**here are some of us still around whose mothers believed in cod-liver oil. A daily spoonful of that filthy stuff was supposed to do wonders for the growing boy, and for all I know, it did. The fact remains that cod-liver oil was not addictive, or even habit forming, and the codfish has never been one of those issues in this country that sets men's blood boiling and brings on wars. It is, nonetheless, the codfish that poses the newest threat to the North Atlantic Treaty Organization as Iceland, with only a Coast Guard of five gunboats to serve as a Navy, attempts to keep the British away from their traditional fishing waters.

This is not the first time the Codfish War has threatened the Alliance. The dispute first surfaced in 1958, when Iceland, whose economy depends almost entirely on fishing, began to take steps to limit the catch in the waters of the Icelandic shelf, waters that serve as the breeding ground for much of the North Atlantic cod. The British have resisted these Icelandic measures, especially the extension of Icelandic territorial waters to 200 miles. The cod is also pretty important to the UK, a nation that does not need any new problems and does not submit easily to pressure.

The latest episode in this old dispute is the most serious one yet. It is, after all, very trying to an alliance if two of its members have broken diplomatic relations. Since Iceland has no armed forces, its contribution

to NATO is the base at Keflavik, a bleak and barren moonscape with modern buildings and runways. In the years since the Americans built it, early in World War II, Keflavik has been Iceland's most visible international asset. To many Icelanders it has also been its most visible headache, the symbol of Iceland's emergence from a tight and closely guarded cultural entity into the troubled outside world. Thus, from time to time the issue of the base, and its occupancy by US forces, becomes central to an Icelandic election. So far the outcome has always favored the continuance of the arrangement, to the immense relief of all the NATO nations, for Keflavik is not just another base, it is nearly indispensable.

The place has had a curious history, just as has Iceland itself. Dr. Karl Haushofer, the old German geopolitician whose theories on the strategic importance of geography have become something one studies in war colleges, said that Iceland was a pistol aimed at Europe and North America, or something like that. Hitler was introduced to that idea, only to have the British preempt him by occupying Reykjavik. The Americans replaced the British in 1942 and built the base at Keflavik, thirty miles west of Reykjavik, on a low, windswept promontory jutting into the North Atlantic.

During World War II the place was literally jumping with activity: ferried aircraft, transports, antisubmarine

patrols, all gave that remote spit of land the air of a metropolitan airport. With the end of the war the place became a shambles. Our disorderly demobilization stripped outposts like Keflavik of men, leaving equipment and supplies behind. The clusters of deserted Quonset huts, scattered all over the place for dispersal purposes, were full of unknown treasure. As transatlantic commercial travel began to grow after the war, Keflavik again assumed importance. For a time we ran it under contract. Then, in 1949, Iceland joined NATO, and the US military returned shortly thereafter as the NATO force in Iceland.

Transatlantic jets once again turned Keflavik into a way station, useful but not very important to commercial aviation. Since World War II mass ferry movements were also a thing of the past, the Air Force interest in Iceland became largely one of air defense. But as the Soviet submarine fleet began to multiply, Keflavik took on a new and critical importance to any war in the Atlantic.

Any Soviet submarine heading for the Atlantic must pass by Iceland, either in the Denmark Strait on the north or through the Faroes Gap to the south. The US Navy has established at Keflavik a most sophisticated antisubmarine capability. Without the complex at Keflavik the job of keeping track of Soviet subs in peacetime, and doing something about them in wartime, would become infinitely more difficult.

So the Codfish War is serious business. The Icelanders are tough and stubborn descendants of the Vikings. They are not really happy with the idea of foreigners operating a base in their land, and they look forward to a day when the foreigners leave. So far the people of Iceland have judged the importance of the base as overriding their own antipathies to the arrangement. Everyone in NATO, including their trusted and ancient relatives the Norwegians, will continue to impress on them the essentiality of Iceland's contribution to NATO. But if the codfish situation does not get straightened out, the Icelanders may turn once again to isolation and defenseless neutrality.

Scarcely anything would please Admiral Gorshkov, the imaginative and aggressive Soviet Navy Chief, more. ■



# JANE'S

ALL THE WORLD'S AIRCRAFT SUPPLEMENT



*E-2C Hawkeye carrier-based early-warning aircraft landing on USS John F. Kennedy, December 1975 (Brian M. Service)*

**GRUMMAN**  
GRUMMAN AEROSPACE CORPORATION; Head Office and Works: Bethpage, New York 11714, USA

**GRUMMAN HAWKEYE**  
**US Navy designation: E-2**

The E-2 Hawkeye was evolved as a carrier-based early-warning aircraft, but is suitable also for land-based operations from unimproved fields. The prototype flew for the first time on 21 October 1960, since when the following versions have been built:

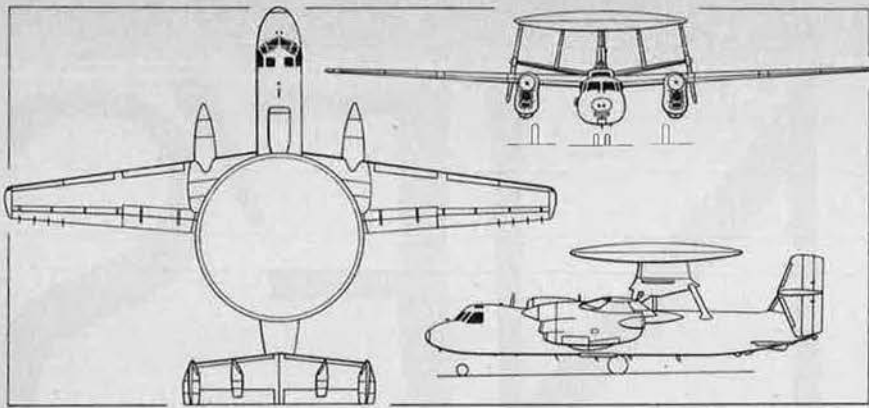
**E-2A** (formerly W2F-1). Initial production version, the first of which, equipped with full early-warning and command electronics system, flew on 19 April 1961. Delivery to the US Navy began officially on 19 January 1964, when the first Hawkeye was accepted at San Diego for training of air and ground crews of airborne early-warning squadron VAW-11. This unit became operational on USS *Kitty Hawk* in 1965. Second Hawkeye unit was VAW-12. Total of 62 built; delivery completed in Spring 1967.

**E-2B.** The prototype of this version flew

for the first time on 20 February 1969. It differs from the E-2A by having a Litton Industries L-304 microelectronic general-purpose computer. A retrofit programme, completed in December 1971, updated all operational E-2As to E-2B standard. In service with VAW-113, VAW-116, VAW-125, and VAW-126 in 1974.

**E-2C.** First of two E-2C prototypes flew on 20 January 1971. Production began in mid-1971 and the first flight of a production aircraft was made on 23 September 1972. The E-2C has an advanced Grumman/Gen-





Grumman E-2C Hawkeye twin-turboprop airborne early-warning aircraft (Pilot Press)

eral Electric-developed radar that is capable of detecting airborne targets in a land-clutter environment. Improvements for increased reliability and easier maintenance have been provided. First entered service, with airborne early-warning squadron VAW-123 at NAS Norfolk, Virginia, in November 1973, and was first deployed at sea on board the USS *Saratoga* on 27 September 1974. This initial operational use of the type, involving six months in the Mediterranean, terminated with the return of VAW-123 to NAS Norfolk on 19 March 1975. Second E-2C deployment, involving VAW-125, with F-14A Tomcat squadrons VF-14 and VF-32, to the Mediterranean on the USS *John F. Kennedy*, began in June 1975.

Each E-2C carries some 10,000 lb (4,536 kg) of avionics equipment, and during these first deployments with the fleet the aircraft have demonstrated an extremely high degree of reliability and availability, as well as an AEW capability in excess of that envisaged. Grumman E-2Cs and F-14A Tomcats, operating as a team, have been shown to extend a fleet's air defence perimeter to more than 435 nm (500 miles; 805 km). Each Hawkeye is capable of controlling three squadrons of interceptors, using data link, and its radar can detect and track several hundred targets, maintaining a computer file on the course, speed, and altitude of each.

To make this possible, highly sophisticated equipment is carried by the aircraft, including a Randtron Systems AN/APA-171 antenna system housed in a 24 ft (7.32 m) diameter saucer-shaped rotodome mounted above the rear fuselage of the aircraft. The rotodome revolves in flight at 6 rpm, and can be lowered 1 ft 10¼ in (0.64 m) to facilitate aircraft stowage on board ship. The Yagi type radar arrays within the rotodome are interfaced to the on-board electronic systems, providing radar sum and difference signals plus IFF.

Major detection capability stems from the General Electric AN/APS-120 radar and OL-93/AP radar detector processor (RDP). The radar is able to spot distant airborne targets despite heavy sea or land echo "clutter", as well as surface targets. It is linked to the tracking and intercept computer via the RDP, which carries out automatic detection, and signals target reports which the computer needs for automatic tracking.

To provide the Combat Information Center (CIC) staff with the essential man/machine interface, the Hazeltine Corporation's AN/APA-172 control indicator group consists of three identical display stations, each with a 10 in (25.4 cm) main and a 5 in (12.7 cm) auxiliary display. The main display shows target track information, while the auxiliary provides alpha-numeric information with random-write capability. Sta-

tion controls allow each of the three CIC operators to select independently specific information for their displays, so that each may have the same or a different perspective on any tactical situation. Other Hazeltine equipment includes an OL-76/AP IFF detector processor, providing automatic Mk X SIF processing capability in a single integrated system. Signals generated by the OL-76/AP enable the CIC operators to obtain instant range, azimuth, and altitude positions of a friendly target. In order to identify that target as friend or foe, an RT-988/A IFF interrogator "challenges" and identifies the aircraft, feeding its information direct to the OL-76/AP for processing.

Accurate navigation is critical for an aircraft which, after hours on patrol, needs to find without delay its mobile carrier base. Such a requirement is catered for by Litton Industries' AN/ASN-92 (LN-15C) carrier aircraft inertial navigation system (CAINS), an important feature being its capability of rapid alignment and orientation following take-off from a rolling and pitching carrier deck. Litton's Amecom division's AN/ALR-59 passive detection system provides early-warning capability. Able to capture short-duration signals in real time, its four-band simultaneous coverage ensures highly-accurate direction finding, even in an environment cluttered with enemy signals.

Linking all this advanced equipment is Litton Data Systems division's L-304 computer, which processes radar, Link 4 and Link 11 communications, navigation, and passive detection data in real time. It comprises two L-304 processors, eight 8,192-word memory units (expandable to ten), power supplies, a recorder producer, power converter, system test module, a 4,096-word refresh memory for the displays, input/output buffers for each function, plus display,

E-2C Hawkeye of training squadron RVAV-120, with wings folded, at NAS Norfolk, Virginia (US Navy)



radar, navigation, communications, and passive detection converter modules.

In addition to the L-304 computer, the E-2C has also a Conrac Corporation CP-1085/AS air data computer (ADC). Combining solid-state pressure transducers with a special preprogrammed digital computer, it provides outputs of altitude, altitude hold, indicated airspeed, true airspeed, and Mach number in analogue and digital format, to interface with the navigation, flight control, and display subsystems.

Under development for the E-2C is an Advanced Radar Processing System (ARPS) which has the designation AN/APS-125. A development of the system currently in service, it uses Moving Target Indication (MTI) digital processing techniques to reduce clutter by allowing the display of moving targets only, and rejects all kinds of interference and jamming so that several hundred targets can be detected and tracked automatically over land. A prototype ARPS was first flown on board an E-2C in October 1974, and the first production Hawkeye to have an ARPS installation (E-2C No. 34) is scheduled to come off the production line during the latter months of 1976.

As a result of the Aeroproducts N41 propeller being found to have an early fatigue life, Hamilton Standard was selected to produce a new propeller suitable for installation on Grumman C-2 and E-2 aircraft. Each blade of Hamilton Standard's new propeller is essentially a hollow steel spar with an outer glassfibre shell. The space between the spar and the shell is filled with a high-density lightweight foam. These new propellers are being fitted to all C-2 and E-2 aircraft, and the programme is scheduled for completion by mid-1976. The requisite standards of strength, weight, and flight characteristics have all been met by this propeller; additionally, it causes less interference with radar signals and is quieter.

The following details apply to the E-2C:  
**TYPE:** Airborne early-warning aircraft.  
**WINGS:** Cantilever high-wing monoplane of all-metal construction. Centre-section is a structural box consisting of three beams, ribs, and machined skins. Hinged leading-edge is non-structural and provides access to flying and engine controls. The outer panels fold rearward about skewed-axis hinge fittings mounted on the rear beams, to stow parallel with the rear fuselage on each side. Folding is done through a double-acting hydraulic cylinder. Trailing-edges of outer panels and part of centre-section consist of long-span ailerons and hydraulically-actuated Fowler flaps. When flaps are lowered, ailerons are drooped automatically. All control surfaces are power-operated and incorporate devices to produce artificial feel forces. Auto-



matic flight control system (AFCS) can be assigned sole control of the system's hydraulic actuators, or AFCS signals can be superimposed on the pilot's mechanical inputs for stability augmentation. Pneumatically-inflated rubber de-icing boots on leading-edges.

**FUSELAGE:** Conventional all-metal semi-monocoque structure.

**TAIL UNIT:** Cantilever structure, with four fins and three double-hinged rudders. Tailplane dihedral 11°. Portions of tail unit made of glassfibre to reduce radar reflection. Power control and artificial feel systems as for ailerons. Pneumatically-inflated rubber de-icing boots on all leading-edges.

**LANDING GEAR:** Hydraulically-retractable tricycle type. Pneumatic emergency extension. Steerable nosewheel unit retracts rearward. Main wheels retract forward, and rotate to lie flat in bottom of nacelles. Twin wheels on nose unit only. Oleo-pneumatic shock-absorbers. Main-wheel tyres size 36 x 11 Type VII 24-ply, pressure 260 lb/sq in (18.28 kg/cm<sup>2</sup>) on ship, 210 lb/sq in (14.76 kg/cm<sup>2</sup>) on land. Hydraulic brakes. Hydraulically-operated retractable tailskid. A-frame arrester hook under tail.

**POWER PLANT:** Two 4,910 ehp Allison T56-A-422 turboprop engines, driving originally Aeroproducts N41 four-blade metal fully-feathering reversible-pitch constant-speed propellers. All E-2 aircraft in service are being refitted with Hamilton Standard propellers (see *introductory copy*). Spinners and blade cuffs incorporate electrical anti-icers.

**ACCOMMODATION:** Crew of five on flight deck and in ATDS compartment in main cabin, consisting of pilot, co-pilot, combat information centre officer, air control officer, and radar operator. Downward hinged door, with built-in steps, on port side of centre-fuselage.

**ELECTRONICS:** AN/APA-171 rotodome and antenna, AN/APS-120 search radar, RT-988A IFF interrogator, RT-859A/APX-72 IFF transponder, OL-93/AP radar detector processor, OL-76/AP IFF detector processor, AN/APA-172 control indicator group, OL-77/ASQ computer programmer, L-304 airborne computer, ARC-158 UHF data link, ARQ-34 HF data link, ASM-440 in-flight performance monitor, ARC-51A UHF com, ARQ-34 HF com, AIC-14A intercom, AN/ASN-92(V) (LN-15C) CAINS carrier aircraft inertial navigation system, CP-1085/AS air data computer, APN-153(V) Doppler, ASN-50 heading and attitude reference system, ARN-52(V) Tacan, ARA-50 UHF ADF, ASW-25B ACLS, and APN-171(V) radar altimeter.

**DIMENSIONS, EXTERNAL:**

Wing span 80 ft 7 in (24.56 m)  
Length overall 57 ft 7 in (17.55 m)  
Height overall 18 ft 4 in (5.59 m)  
Diameter of rotodome 24 ft 0 in (7.32 m)

Propeller diameter 13 ft 6 in (4.11 m)

**AREA:**

Wings, gross 700 sq ft (65.03 m<sup>2</sup>)

**WEIGHTS:**

Weight empty 37,678 lb (17,090 kg)  
Max fuel (internal) 12,400 lb (5,624 kg)  
Max T-O weight 51,569 lb (23,391 kg)

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

Max level speed 325 knots (374 mph; 602 km/h)  
Cruising speed 269 knots (310 mph; 499 km/h)  
Stalling speed (landing configuration) 74 knots (85.5 mph; 137.5 km/h)  
Service ceiling 30,800 ft (9,390 m)  
T-O run 1,890 ft (576 m)  
T-O to 50 ft (15 m) 2,520 ft (768 m)

Ferry range  
1,394 nm (1,605 miles; 2,583 km)

**BELL**

**BELL HELICOPTER TEXTRON; Head Office: PO Box 482, Fort Worth, Texas 76101, USA**

**BELL MODEL 409**

**US Army designation: YAH-63**

The Bell YAH-63 is one of two contenders in the US Army's AAH (Advanced Attack Helicopter) competition, for which RFPs (Requests for Proposals) were issued in November 1972. Initial submissions were received from Bell Helicopter, Boeing Vertol, Hughes, Lockheed, and Sikorsky, and on 22 June 1973 it was announced that the Bell and Hughes designs had been selected for development. These are designated, respectively, YAH-63 and YAH-64.

The Bell contract, valued at \$44.7 million, covers the construction of two flight test prototypes and a ground test vehicle. A static test airframe has also been completed.

The ground test vehicle was rolled out on 31 January 1975, and on 19 April 1975 began a programme totalling more than 100 hours, which included 50 hours of ground running, and vibration, proof-load, and other tests. The first flying prototype (22246) made its first flight at Arlington, Texas, on 1 October 1975, and was followed by the second on 21 December 1975. Both aircraft, and the two Hughes prototypes, are due to be delivered to the US Army by 31 May 1976 for a fly-off competition lasting approximately four months, and announcement of the winning design is anticipated by November 1976. This will mark the end of Phase 1 of the AAH programme.

Phase 2 will involve the fitting of the winning prototypes with advanced avionics, visionics, and weapon fire control systems, for further evaluation; continued development of the airframe; and the manufacture of three more aircraft. The US Army has stated a requirement for 472 AAHs; production, if approved, would begin in the late 1970s.

The following description applies to the YAH-63 prototypes:

**TYPE:** Prototype armed helicopter.

**ROTOR SYSTEM:** Two-blade semi-rigid teetering main rotor and two-blade tail rotor. Main rotor blades are of wide chord and constant Wortmann FX-69-H-083 section throughout, with raked tips. Each blade has a leading-edge, twin spars, and forward skin of stainless steel, with an aluminium honeycomb filling between the spars; and a non-structural rear portion with a non-corroding Nomex core and

glassfibre skin. The blades are attached to the hub by flapping axis moment springs which provide control power in zero g manoeuvres to give instant fuselage response to cyclic control without risk of control reversal. These springs also eliminate the need for blade tiedown, and permit starting in winds of up to 60 knots (69 mph; 111 km/h). The blades, which can be folded manually, are tested to retain their structural integrity after a chord-line hit by a 23 mm shell. The main rotor hub incorporates elastomeric bearings, to accommodate all flapping and feathering motions and to ease maintenance requirements. A two-position rotor mast is fitted: this is in the extended position for flight and for weapons "super elevation" clearance, but can be retracted manually to reduce the aircraft's profile for air transportation by C-141 or C-5A. The rotor pylon suspension system incorporates nodalised dynamic beams to reduce crew fatigue, extend airframe component and subsystems life, and provide a more stable gun platform. The tail rotor, located on the port side, has wide-chord, high-thrust, stainless steel blades, a flex-beam hub, and redundant pitch-change controls.

**ROTOR DRIVE:** Main transmission is driven directly by the two engines via a "flat-pack" of laterally-disposed herringbone and spiral bevel gears and a collector gear, without the need for intermediate or reduction gearboxes. The rotating controls are ballistically tolerant, with pitch links and clevis arms tested to continue operating safely after a 12.7 mm hit. All fixed controls are redundant and well separated. Tail rotor is driven by an externally-mounted driveshaft (also 12.7 mm survivable) via a single tail rotor gearbox.

**WINGS:** Cantilever mid-wing monoplane, of low aspect ratio, mounted aft of cockpit. Two hardpoints under each wing for the carriage of mixed ordnance and/or drop-tanks.

**FUSELAGE:** Of low-profile gunship configuration. Forward portion, of conventional semi-monocoque construction with a minimum of compound curvatures, forms the major load-bearing structure. Circular-section tailboom, with riveted skin, is survivable against hits from 23 mm weapons.

**TAIL UNIT:** Of all-swept "I" configuration, comprising main and ventral fins, fixed-incidence tailplane, and a smaller lower horizontal surface, also fixed. Tail surfaces are removable for transportation.

**LANDING GEAR:** High-floatation, non-retractable type, with single wheel on each main unit and twin nosewheels. Main legs fold rearward to reduce profile for storage or transportation. Gear designed to absorb

First prototype of the Bell YAH-63 (two 1,536 shp General Electric T700-GE-700 turboshaft engines)





sink rate of up to 42 ft (12.8 m)/sec.  
**POWER PLANT:** Two 1,536 shp General Electric T700-GE-700 turboshaft engines, mounted one on each side of fuselage aft of stub-wings. Fuel in two fuselage tanks aft of cockpit and below engine air intakes. All fuel tanks are crash-resistant, self-sealing, and incorporate internal and external void-filling foam.

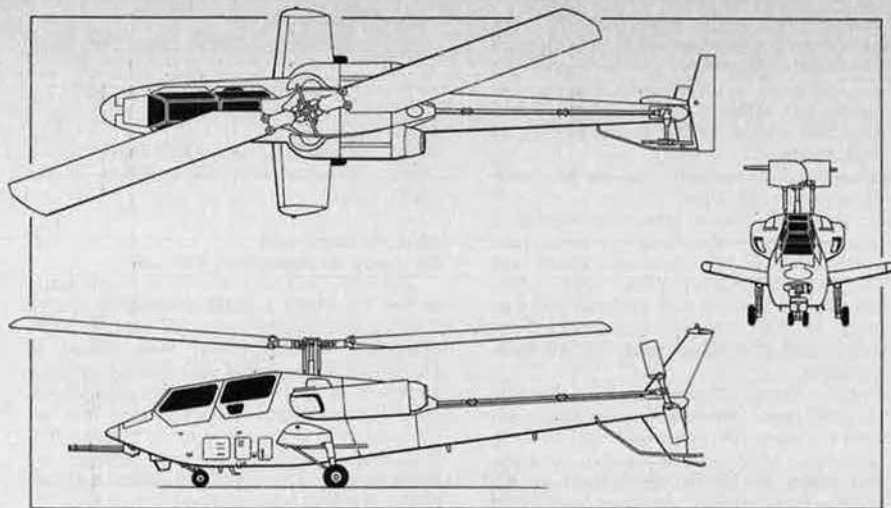
**ACCOMMODATION:** Pilot and co-pilot/gunner in tandem, under four-plane flat-surface glint-reducing canopy. Both crew members sit in armoured (12.7 mm resistant) bucket seats, and are separated by a 23 mm resistant transparent plastics screen; pilot occupies front seat, co-pilot/gunner the elevated rear seat. Access to both cockpits is from port side, via a one-piece upward-opening framed transparency to which the side-panel armour is attached. A redundant ballistic canopy-jettison system permits emergency egress from either side of the aircraft. Armour protection panels in sides and floor of cockpit. Barrier of approx 4 in (10 cm) thick aluminium/glassfibre-reinforced plastics sandwich between cockpit and ammunition compartment.

**SYSTEMS AND EQUIPMENT:** Hydraulic boost system for main rotor. Large avionics and electronics compartment in forward fuselage, below cockpits, with external access via three doors on each side. Accessory gearbox, mounted between engines, is driven by the main transmission or by an integral APU. Navigation equipment includes Loran C/D.

**ARMAMENT AND OPERATIONAL EQUIPMENT:** Fixed armament consists of a General Electric XM-188 three-barrel 30 mm cannon, mounted in a turret under the extreme nose. This gun, which is aimed and fired by the pilot, has a normal rate of fire of 600 rds/min (200 rds each barrel), but this can easily be doubled or tripled if required. The chin-mounted stabilised sight is aft of the gun turret and incorporates a night vision FLIR (forward-looking infra-red), optics, and laser. Both crew stations are equipped with non-mechanical helmet sights, and the pilot also has a direct-fire sight. Space, weight, and power provisions are made for a pilot's night vision system (PNVS). The linkless ammunition for the XM-188 gun (800-1,200 rds) is carried in a container outside the primary airframe structure, in the fuselage floor amidships, and is stored pointing downward so that it would explode away from the crew compartment in the event of a hit in the container. Although designed to survive such a hit, the ammunition container can be jettisoned if required. The co-pilot/gunner is responsible for the air-launched weapons carried on the four underwing stations. These can comprise up to sixteen TOW anti-tank missiles or seventy-six 2.75 in folding-fin rockets in their launchers, or combinations of both weapons, or up to four drop-tanks. The TOW missiles are guided by stabilised telescopic sight by day, and by an infra-red vision system at night.

**DIMENSIONS, EXTERNAL:**

Diameter of main rotor	51 ft 0 in (15.54 m)
Diameter of tail rotor	9 ft 6 in (2.90 m)
Main rotor blade chord (constant, each)	3 ft 6.6 in (1.08 m)
Tail rotor blade chord (constant, each)	1 ft 5 in (0.43 m)
Wing span	17 ft 2.4 in (5.24 m)
Length overall, tail rotor turning	52 ft 5.85 in (16.00 m)
Length overall, both rotors turning	60 ft 8.85 in (18.51 m)
Height to top of cabin	9 ft 10.6 in (3.01 m)



Bell YAH-63 advanced attack helicopter (Michael A. Badrocke)

Height to rotor hub	12 ft 2.72 in (3.73 m)
<b>WEIGHT:</b>	
Design mission T-O weight	approx 15,000 lb (6,805 kg)
<b>PERFORMANCE</b> (estimated, with 8 TOWs and 800 rds of 30 mm ammunition, at 4,000 ft; 1,220 m and at 35°C):	
Sustained cruising speed	145-175 knots (167-202 mph; 269-325 km/h)
Vertical rate of climb at 95% power	more than 500 ft (152 m)/min
Hovering ceiling out of ground effect	6,500 ft (1,980 m)
Endurance	1 hr 54 min
<b>PERFORMANCE</b> (envelope explored to 18 November 1975):	
Total flight time	27 hr
Max T-O weight	15,940 lb (7,230 kg)
Forward speed	142 knots (163.5 mph; 263 km/h)
Sideways speed	35 knots (40 mph; 65 km/h)
Backward speed	20 knots (23 mph; 37 km/h)
High-speed taxi	40 knots (46 mph; 74 km/h)
Altitude	4,000 ft (1,220 m)
Continuous run	1 hr 30 min

**HUGHES**

**HUGHES HELICOPTERS** (Division of Sunma Corporation); Head Office and Works: Culver City, California 90230, USA

**HUGHES ADVANCED ATTACK HELICOPTER**

**US Army designation: YAH-64**

The YAH-64 is Hughes' entry in the US Army's Advanced Attack Helicopter (AAH) programme, in which it is in competition with the Bell YAH-63. The US Army announced on 22 June 1973 the award to Hughes of a \$70.3 million contract to build two flight test prototype helicopters and a ground test vehicle for competitive evaluation against the Bell contender. The disparity between the Hughes contract and that for Bell (\$44.7 million) is due to the fact that Hughes had done less preliminary work than Bell; the Hughes contract covers, in addition, the development of the XM-230 chain gun to be installed in the YAH-64. The Defense Department has emphasised that final unit costs and overall programme costs for the selected helicopter are more important than those for prototype development. The recurring flyaway cost per unit has to remain within a target figure, in 1972 dollars, of \$1.6 million, based on

a stated US Army requirement for 472 AAHs.

The YAH-64 ground test vehicle began ground running in late June 1975, and by 19 September had completed the first 50 hours of its test programme. It was followed by the first flights of the first prototype (22248) at Palomar Airport, California, on 30 September and the second on 22 November 1975. By 1 January 1976 these two aircraft had completed more than 65 of a total of 300 hours due to be flown before they are handed over to the US Army in May 1976 for competitive fly-off with the YAH-63. The ground test programme has included static test, rotor flutter, and vibration; firing tests of the XM-230 gun, rockets, and TOW missiles have also been completed. Hughes is teamed with Teledyne Ryan Aeronautical, which built the fuselage structure of the prototypes, and a 12-company major subcontracting team; systems installation was carried out by Hughes.

As noted under the Bell entry, announcement of the winning AAH design is anticipated by November 1976, and will be followed by Phase 2 of the programme. This will involve fitting the winning prototypes with advanced avionics, visionics, and weapon fire control systems, for further evaluation; continued development of the airframe; and the manufacture of three more aircraft.

The following description applies to the YAH-64 prototypes:

**TYPE:** Prototype armed helicopter.

**ROTOR SYSTEM:** Four-blade fully-articulated main rotor and four-blade tail rotor, with blades manufactured by Tool Research and Engineering Corporation (Advanced Structures Division). Main rotor blades are of high-camber aerofoil section and broad chord. Each blade has five aluminium spars, a laminated stainless steel skin, and a fixed trailing-edge flap. Blades are attached to hub by a laminated strap retention system similar to that of the OH-6A, and are fitted with elastomeric lead/lag dampers and offset flapping hinges. Four-blade tail rotor comprises two sets of two blades, mounted on port side of pylon/fin support structure at optimum quiet setting of approx 60°/120° to each other. Rotor mast similar to that of OH-6A, with driveshaft turning within a hollow, fixed outer shaft. Entire system capable of flight in zero g conditions.

**ROTOR DRIVE:** Transmission to main rotor via Litton (Precision Gear division) engine nose gearboxes, and to tail rotor via Western Gear intermediate and tail rotor



gearboxes, with Bendix driveshafts and couplings. Redundant flight control system for both rotors. Selected dynamic components constructed of 70/49 aluminium and electro-slag remelt (ESR) steel; critical parts of transmission (eg, bearings) have ESR collars for protection against hits by 12.7 mm or 23 mm ammunition. Rotor/engine rpm ratios approx 66.7 for main rotor, approx 14.3 for tail rotor.

**WINGS:** Cantilever mid-wing monoplane, of low aspect ratio, aft of cockpit. Trailing-edge flaps deploy automatically as function of control attitude and airspeed (max deflection 20°), and can be deflected 45° upward to offload wings in an emergency autorotative landing. Wings are removable, and attach to sides of cabin for transport and storage. Two hardpoints beneath each wing for the carriage of mixed ordnance.

**FUSELAGE:** Conventional semi-monocoque aluminium structure, built by Teledyne Ryan Aeronautical. Designed to survive hits by 12.7 mm and 23 mm ammunition.

**TAIL UNIT:** Fixed fin and cantilever T tailplane. Tail section folds to port to reduce overall length for storage and transportation.

**LANDING GEAR:** Menasco tailwheel type, with single wheel on each unit. Main legs fold rearward to reduce overall height for storage and transportation.

**POWER PLANT:** Two 1,536 shp General Electric T700-GE-700 turboshaft engines, derated for normal operations to provide reserve power for combat emergencies. Engines mounted one on each side of fuselage, above wings.

**ACCOMMODATION:** Crew of two in tandem, with co-pilot/gunner in front and pilot aft on 19 in (48 cm) elevated seat. Large, curved, transparent cockpit enclosure for optimum field of view. Canopy and crew escape system by Hi-Shear Corporation. Lightweight boron armour shields in cockpit floor and sides. Cockpits separated by armour plating and an anti-23 mm inner plastics shield.

**SYSTEMS AND EQUIPMENT:** Large avionics bay adjacent to gunner's position, in lower fuselage. Bertea hydraulic control system. Bendix electrical power system, with two fully-redundant engine-driven generators and standby DC battery. Sperry Flight Systems automatic stabilisation equipment. Garrett infra-red suppression and integrated pressurised air systems. Solar APU.

**ARMAMENT AND OPERATIONAL EQUIPMENT:** Fixed armament consists of a Hughes-developed XM-230 30 mm chain gun, mounted in an underfuselage turret between the main-wheel legs, and having a normal rate of fire of 700 rds/min. Ammunition load is 800-1,200 rds. Turret designed to collapse into fuselage floor in a crash-landing. Four underwing hardpoints, on which can be carried up to sixteen Hughes BGM-71A TOW anti-tank missiles, in pylon-mounted streamlined pods; or up to seventy-six 2.75 in folding-fin rockets in their launchers; or a combination of TOW missiles and rockets. CPG stabilised sight in forward fuselage, ahead of cockpit, incorporates day and night (FLIR: forward-looking infra-red) sighting equipment, laser ranger and target designator, and TOW tracking equipment. Co-pilot/gunner has primary responsibility for firing all weapons, but pilot can override his controls to fire gun or launch rockets. Space and power provision made for pilot's night vision system (PNVS), in extreme tip of nose. Forward avionics bay includes electronics for stabilised sight, missiles, and fire control computer; design assistance in fire control computer provided by Teledyne Systems Inc.

**DIMENSIONS, EXTERNAL:**

Diameter of main rotor 48 ft 0 in (14.63 m)  
 Diameter of tail rotor 4 ft 0 in (1.22 m)  
**AREA:**  
 Main rotor disc 1,809 sq ft (168.06 m<sup>2</sup>)  
**WEIGHTS:**  
 Weight empty 9,500 lb (4,309 kg)  
 Primary mission gross weight 13,200 lb (5,987 kg)  
 Structural design gross weight 13,950 lb (6,328 kg)  
 Max T-O weight 17,400 lb (7,892 kg)  
**PERFORMANCE (estimated, at 13,200 lb; 5,987 kg AUW, ISA except where indicated):**  
 Max never-exceed speed 204 knots (235 mph; 378 km/h)  
 Max level speed 166 knots (191 mph; 307 km/h)  
 Max cruising speed 156 knots (180 mph; 289 km/h)  
 Max vertical rate of climb at S/L 3,200 ft (975 m)/min  
 Max vertical rate of climb at 4,000 ft (1,220 m) at 35°C 1,390 ft (424 m)/min  
 Service ceiling 20,500 ft (6,250 m)  
 Service ceiling, one engine out 11,900 ft (3,630 m)  
 Hovering ceiling in ground effect 14,600 ft (4,450 m)

Hovering ceiling out of ground effect 11,800 ft (3,600 m)  
 Max range, internal fuel 312 nm (359 miles; 578 km)  
 Endurance at 4,000 ft (1,220 m) at 35°C 1 hr 54 min  
 Max endurance, internal fuel 3 hr 12 min

**PERFORMANCE (envelope explored to 2 December 1975):**  
 Total flight time more than 40 hr  
 Max T-O weight 14,900 lb (6,758 kg)  
 Forward speed 130 knots (150 mph; 241 km/h)  
 Sideways speed 35 knots (40 mph; 65 km/h)  
 Backward speed 30 knots (34.5 mph; 55.5 km/h)  
 Altitude 12,000 ft (3,660 m)

**ROCKWELL INTERNATIONAL**  
 ROCKWELL INTERNATIONAL CORPORATION (Los Angeles Aircraft Division); Address: International Airport, Los Angeles, California 90009, USA

**ROCKWELL INTERNATIONAL/NASA HiMAT**

HiMAT (Highly Manoeuvrable Aircraft Technology) is a programme evolved jointly by the US Department of Defense and NASA's Flight Research Center at Edwards AFB, California. Its basic purposes are to speed up the progress of advanced design technology into the flight test phase; to assist designers in taking larger technological steps forward between generations of aircraft; and, more specifically, to provide a low-cost, low-risk means of testing the advanced manoeuvring capability of future aircraft.

After receipt of programme proposals from Grumman Aerospace Corporation, McDonnell Aircraft Company, and Rockwell International, NASA announced in October 1975 the award of an \$11.8 million contract to Rockwell for the design and construction of two prototype HiMAT remotely piloted research vehicles (RPRVs). The general appearance of these can be seen in the three-view drawing on the next page. In a 30-month programme, of which some 18 months will comprise the flight test phase, NASA and the USAF will evaluate jointly a number of advanced design technology features by means of the HiMAT vehicles.

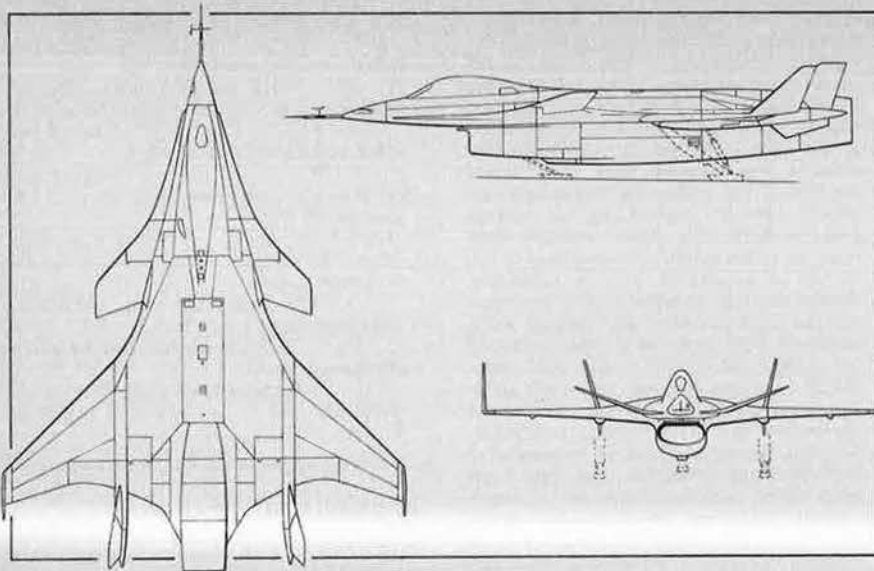
To meet the requirements of the programme, HiMAT's design consists of a basic core vehicle, with a design life of 100 hours, which will include the engine and all essential subsystems. To the core vehicle will be added, as modular units, the main wings, canard surfaces, tail surfaces, and engine intake and afterburner/exhaust structures. In this way the modular components can be replaced during the programme, at minimum cost, with others of alternative design. Among these is expected to be a so-called "2D" vectored-thrust exhaust nozzle; other features to be tested include advanced supercritical wings, variable-camber wings, deformable self-trimming outer wings, CCV (control configured vehicle) techniques, a digital fly-by-wire system, and a variable-thrust engine control system.

Subject to a preliminary design review scheduled for April 1976, the two HiMAT prototype vehicles are expected to be delivered to NASA in October and November 1977, and to make their first flights in February and April/May 1978. They will be air-launched at about 45,000 ft (13,720 m) from a B-52 carrier aircraft, and their performance will be monitored by TV, telemetry, and radar.

Both Hughes YAH-64 flight test prototype aircraft shown, 22 November 1975, during maiden flight of the aircraft on the left. Note TOW missile pods on aircraft at right







Rockwell International/NASA HiMAT remotely piloted research vehicle  
(Michael A. Badrocke)

Meanwhile, in 1975 NASA began evolving control techniques for the HiMAT programme, first by using one of the three three-eighths-scale unpowered glassfibre models of the F-15 fighter used in that aircraft's development programme, and later with five modified US Air Force BQM-34F Firebee II target drones to evaluate control in powered, supersonic flight.

The following description applies to the prototypes as envisaged in early 1976:

TYPE: Remotely piloted research vehicle.

WINGS: Blended wing/body design, of roughly double-delta configuration. Cantilever mid-wing, with sharply-swept main wings and canard forebody surfaces. Main wings have neither dihedral nor anhedral, and have ailerons and flaps/airbrakes on the trailing-edges. Canard surfaces have marked dihedral, are fitted with elevators, and have ogival-curve leading-edge strakes.

FUSELAGE: Blended wing/body, with area ruling.

TAIL UNIT: Twin, swept vertical tail-fins at extremities of main wings; and twin, swept, outward-canted fins and rudders on short booms extending from trailing-edges of main wings at approx mid-span.

LANDING GEAR: Retractable tricycle gear, of skid type for landing on dry lake bed at Edwards AFB. All units retract rearward, main units into wing/tail booms, nose unit into underside of engine air intake trunk.

POWER PLANT: One General Electric J85-GE-21 turbojet engine (3,500 lb; 1,588 kg st dry and 5,000 lb; 2,268 kg st with afterburning), mounted centrally under fuselage.

GUIDANCE AND CONTROL: Primary control from ground console, by TV, telemetry, and radar link with on-board systems. If ground control is lost, backup inputs from the RPRV will be relayed to a TF-104G chase-plane. On occasions when the TF-104G is out of control range, the HiMAT has an on-board self-righting system that will bring the RPRV into straight and level subsonic flight until the former can resume control.

EQUIPMENT: On-board equipment includes TV camera in cockpit, radar altimeter under nose, and angle of attack sensor on the nose probe.

**DIMENSIONS, EXTERNAL:**

Wing span 15 ft 2.4 in (4.63 m)  
Length overall, incl probe 21 ft 1.2 in (6.43 m)  
Height overall 4 ft 3.6 in (1.31 m)

**WEIGHTS:**

Weight empty 2,800 lb (1,270 kg)  
Max air-launching weight 3,400 lb (1,542 kg)

Thrust/weight ratio approx 1

**PERFORMANCE (estimated):**

Max level speed (for 3 min at 40,000 ft; 12,200 m) Mach 1.4  
g limit +8

**WAR**

WAR AIRCRAFT REPLICAS; Head Office: 348 South Eighth Street, Santa Paula, California 93023, USA

**WAR AIRCRAFT REPLICAS  
FOCKE-WULF 190**

War Aircraft Replicas is a new company formed to market plans and kits from which amateur constructors can build 1/2-scale replicas of a series of second World War aircraft. The term "1/2-scale" is not strictly accurate, but refers to the general overall dimensions of the aircraft. For example, to provide adequate accommodation for the pilot, the cockpit is considerably larger than 1/2-scale, and the area of the horizontal and vertical tail surfaces has been increased beyond scale to ensure adequate stability.

The basic concept involves the use of a common-design wooden fuselage box and spar structure. The desired contours to duplicate a particular aircraft are obtained by using carved polyurethane foam, covered with high-strength laminating fabric and epoxy resin to form a lightweight and rigid structure that is stressed to  $\pm 6g$ , allowing for aerobatic manoeuvres. By changing fuselage contours, using different engine cowlings and wingtips, and by shape changes to tail unit surfaces, it was considered that a number of different aircraft could be copied with reasonable similarity to the full-scale combat types.

The Focke-Wulf 190 was chosen as the first prototype to be completed, its design starting in July 1973 and construction in February 1974. The first flight of this aircraft was made in August 1974 and 60 sets

of plans had been sold by 1 March 1975. Prototype replicas of the Vought F4U Corsair, Hawker Sea Fury, and Republic P-47 Thunderbolt are under construction.

The description which follows applies specifically to the Focke-Wulf 190 replica, but will be applicable generally to the range of aircraft for which the company intends to produce plans and kits initially:

TYPE: Homebuilt 1/2-scale aircraft replica.

WINGS: Cantilever low-wing monoplane, built in three sections: nominal 8 ft (2.44 m) centre-section, integral with fuselage box, and two nominally 6 ft (1.83 m) outer panels. Wing section NACA 23015 at root, 23012 at tip. Dihedral 5°. Incidence 2°. Washout 2°. Primary structure of wood, with a laminated hollow plywood-covered front spar and solid laminated rear spar. Plywood ribs are used at the root, both faces of the centre-section joints, and at the tip sections, with intermediate ribs of polyurethane foam. Aerofoil contours built up with carved polyurethane foam, bonded in place. High-strength laminating fabric and epoxy resin used for covering and for internal strengthening. Frise-type ailerons with wooden front spar bonded to a shaped form of urethane foam with fabric/epoxy covering. No flaps. Ground-adjustable tab on each aileron.

FUSELAGE: Of similar general construction to wings, with a standard four-longeron box built from 3/4 in fir stringers, 3/4 in by 1/2 in diagonals and cross pieces, 1/8 in birch plywood covering and a metal-faced 1/8 in plywood firewall. Fuselage contoured by carved polyurethane foam with fabric/epoxy covering.

TAIL UNIT: Cantilever wood structure, utilising the same construction technique as for the wings. Fixed tailplane with elevators. Ground-adjustable trim tab on rudder and each elevator.

LANDING GEAR: Electrically-retractable tail-wheel type, with manual emergency retraction system. Main wheels retract inward into undersurface of wings. Oleopneumatic shock-struts on main units. Main wheels and tyres size 3.50 x 4.10 - 6. Cleveland hydraulic disc brakes.

POWER PLANT: One 70 hp 1,600 cc Volkswagen modified motor car engine, driving a three-blade fixed-pitch wooden propeller with spinner. Fuel tank in fuselage, immediately aft of firewall, with capacity of 12 US gallons (45.5 litres). Refuelling point on upper surface of fuselage, forward of windscreen.

ACCOMMODATION: Single seat beneath aft-sliding cockpit canopy. Accommodation heated and ventilated.

SYSTEMS: Hydraulic system for brakes only. Electrical system powered by 12V engine-driven alternator.

**DIMENSIONS, EXTERNAL:**

Wing span 20 ft 0 in (6.10 m)  
Wing chord at root 4 ft 6 in (1.37 m)  
Wing chord at tip 3 ft 1 in (0.94 m)  
Wing aspect ratio 5.7  
Length overall 16 ft 7 in (5.05 m)  
Height overall 7 ft 0 in (2.13 m)  
Tailplane span 7 ft 6 in (2.29 m)  
Wheel track 6 ft 8 in (2.03 m)  
Wheelbase 10 ft 8 in (3.25 m)  
Propeller diameter 5 ft 0 in (1.52 m)  
Propeller ground clearance 1 ft 3 in (0.38 m)

**AREAS:**

Wings, gross 70 sq ft (6.50 m<sup>2</sup>)  
Ailerons (total) 7 sq ft (0.65 m<sup>2</sup>)

**WEIGHTS AND LOADINGS:**

Weight empty 610 lb (277 kg)  
Max T-O weight 900 lb (408 kg)  
Max wing loading 12.85 lb/sq ft (62.7 kg/m<sup>2</sup>)  
Max power loading 12.9 lb/hp (5.84 kg/hp)



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

Max never-exceed speed	174 knots (200 mph; 322 km/h)
Max level speed at 3,500 ft (1,065 m)	143 knots (165 mph; 266 km/h)
Max cruising speed at 3,500 ft (1,065 m)	122 knots (140 mph; 225 km/h)
Econ cruising speed at 3,500 ft (1,065 m)	108 knots (125 mph; 201 km/h)
Stalling speed	48 knots (55 mph; 89 km/h)
Max rate of climb at S/L	1,000 ft (305 m)/min
Service ceiling	12,500 ft (3,810 m)
T-O run	1,000 ft (305 m)
Landing from 50 ft (15 m)	1,800 ft (550 m)
Landing run	1,200 ft (365 m)
Range with max fuel	347 nm (400 miles; 643 km)

**NAGLER**

**NAGLER HELICOPTERS INC;** Address: 3807 West Lower Buckeye Road, Phoenix, Arizona 85036, USA

Nagler Helicopters Inc, formerly Nagler Aircraft Corporation, is an outgrowth of the earlier Vertigyro and Vertidynamics companies established in March 1971 by Bruno Nagler, whose first helicopter was built in Vienna in the early 1930s.

First project of this company was a prototype "cold-jet" tip-driven helicopter, the Honcho 100, intended to serve as a testbed for a two-seat development version to be known as the Honcho 200. Both aircraft were described in the 1974-75 *Jane's*.

The company has completed and flown the prototype of a production helicopter derived from the Honcho 200, and this has the designation Model 202. Other projects of the company include a four-seat Model 421 and four/five-seat compound helicopter designated Model S11.

**NAGLER MODEL 202**

Following upon the data accumulated from the single-seat and two-seat testbed helicopters, which had the designations Honcho 100 and Honcho 200 respectively, Nagler was able to finalise the design of a new helicopter which is regarded as a production version of the Honcho 200. Designated Model 202, its construction began in 1974 and its first flight was recorded in January 1975.

Like the research helicopters which preceded it, it uses tip-mounted "cold-jets" to drive the rotor, this method of propulsion eliminating the need for a tail rotor and



*War Aircraft Replicas Focke-Wulf 190, a half-scale reproduction of the wartime German fighter, with a 70 hp Volkswagen engine (Howard Levy)*

also for a complicated drive mechanism for the lift and propulsion rotor. Because of this, only a simple and comparatively lightweight pylon structure is required to mount the rotor shaft.

**TYPE:** Two-seat lightweight helicopter.

**ROTOR:** Two-blade rotor, driven by tip-mounted "cold-jets" which derive their thrust from a bleed air compressor. Design rotor speed 350 to 550 rpm, with normal operating speed of 420 rpm. Rotor blades, which are hollow light alloy extrusions, are mounted to the rotor hub by tension torsion straps. Simple pylon structure immediately aft of cabin bulkhead. Rotor blades do not fold. No rotor brake. No tail rotor.

**FUSELAGE:** Tear-drop shape structure\* of welded steel tube with glassfibre shell. Enclosed cabin. Rotor pylon consists of an "A" frame.

**TAIL UNIT:** Large dorsal and ventral fins. Movable rudder of metal construction, mounted centrally in efflux from turbine compressor.

**LANDING GEAR:** Fixed tubular steel skids.

**POWER PLANT:** One 225 hp T-100 bleed air compressor. Single fuel tank within fuselage, capacity 50 US gallons (189 litres).

**ACCOMMODATION:** Two seats, side by side, in enclosed cabin. Door on each side, hinged at forward edge. Conventional helicopter controls.

**ELECTRONICS:** Prototype has only a battery-powered com transceiver.

**DIMENSIONS, EXTERNAL:**

Rotor diameter	36 ft 0 in (10.97 m)
Rotor blade chord	10 in (0.254 m)
Length overall	10 ft 0 in (3.05 m)
Height to top of rotor hub	8 ft 0 in (2.44 m)

**DIMENSIONS, INTERNAL:**

Cabin: Length	3 ft 10 in (1.17 m)
Max width	4 ft 2 in (1.27 m)
Max height	4 ft 10 in (1.47 m)

**WEIGHTS:**

Weight empty	680 lb (308 kg)
Max T-O weight	1,400 lb (635 kg)

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

Max never-exceed speed	104 knots (120 mph; 193 km/h)
Max level speed	96 knots (110 mph; 177 km/h)
Max cruising speed at 4,000 ft (1,220 m)	78 knots (90 mph; 145 km/h)
Econ cruising speed at 3,000 ft (915 m)	74 knots (85 mph; 137 km/h)
Max rate of climb at S/L	1,000 ft (305 m)/min
Service ceiling	16,000 ft (4,875 m)
Range with max fuel	208 nm (240 miles; 386 km)

**BRITTEN-NORMAN**

**BRITTEN-NORMAN (BEMBRIDGE) LTD** (Member of the Fairey Group); Head Office: Bembridge Airport, Bembridge, Isle of Wight PO35 5PR, England

**BRITTEN-NORMAN TURBO ISLANDER**

On 29 October 1975 Britten-Norman announced a new version of the Islander. To be known as the Turbo Islander, it is to be powered by two 600 shp Avco Lycoming LTP 101 turboprop engines, flat rated at 400 shp to an altitude of 14,000 ft (4,265 m). Preliminary performance estimates indicate that the increased power available from these engines will give a cruising speed in excess of 174 knots (200 mph; 322 km/h), as well as improved take-off and landing performance from grass fields. Two model numbers have been allocated: **BN-2A-40** for the basic Turbo Islander, and **BN-2A-41** for a version with optional tanks in wingtips.

Design of this aircraft began in August 1975. Apart from reinforcement of the wing and fuselage, to cater for the increased loading resulting from a gross weight increase of 700 lb (318 kg) and the improved performance, it is generally similar to the long-nose version of the piston-engined Islander. The first flight of a prototype was scheduled for early 1976, and it is planned to obtain

*Prototype of Nagler Model 202 two-seat lightweight helicopter*





CAA and FAR certification in time for initial deliveries of production aircraft to be made during the early months of 1977.

The following description applies to the BN-2A-41 version with tip-tanks:

**TYPE:** Twin-turboprop business and feeder-line transport.

**WINGS:** Cantilever high-wing monoplane. NACA 23012 constant wing section. No dihedral. Incidence 2°. No sweepback. Conventional riveted two-spar torsion-box structure in one piece, using L72 aluminium-clad aluminium alloys. Flared-up wingtips of Britten-Norman design. Slotted ailerons and single-slotted flaps of light alloy construction. Flaps operated electrically, ailerons by pushrods and cables. Ground-adjustable tab on starboard aileron. BTR-Goodrich pneumatic de-icing boots optional.

**FUSELAGE:** Conventional riveted four-longeron semi-monocoque structure of pressed frames, stringers, and skins, using L72 aluminium-clad aluminium alloys.

**TAIL UNIT:** Cantilever two-spar structure, with pressed ribs and skins, using L72 aluminium-clad aluminium alloys. Fixed-incidence tailplane and mass-balanced elevator. Rudder and elevator are operated by pushrods and cables. Trim tab in elevator. BTR-Goodrich pneumatic de-icing boots optional for leading-edges of fin and tailplane.

**LANDING GEAR:** Non-retractable tricycle type, with twin wheels on each main unit and single steerable nosewheel. Cantilever main legs mounted aft of rear spar. All three legs fitted with Fairley Hydraulics oleo-pneumatic shock-struts. All five wheels and tyres size 16 x 7-7, supplied by Goodyear. Tyre pressure: main 35 lb/sq in (2.46 kg/cm<sup>2</sup>); nose 29 lb/sq in (2.04 kg/cm<sup>2</sup>). Foot-operated hydraulic brakes by Cleveland on main units. Parking brake. Floats and wheel/ski gear available optionally.

**POWER PLANT:** Two 600 shp Avco Lycoming LTP 101 turboprop engines, flat rated at 400 shp to 14,000 ft (4,265 m) altitude, each driving a Hartzell three-blade constant-speed fully-feathering propeller. Integral fuel tank between spars in each wing, outboard of engine, and in wingtip extensions, with total combined capacity of 1,872 lb (849 kg). Additional pylon-mounted underwing auxiliary fuel tanks, each of 50 Imp gallons (60 US gallons; 227 litres) capacity, available optionally. Refuelling point in upper surface of wing above each internal tank.

**ACCOMMODATION:** Up to 10 persons, including pilot, on side-by-side front seats and four bench seats. No aisle. Seatbacks fold forward. Access to all seats via three forward-opening doors, forward of wing and at rear of cabin on port side, and forward of wing on starboard side. Baggage compartment at rear of cabin, with port-side loading door in standard versions. Additional baggage stowage in fuselage nose. Exit in emergency by removing door windows. Special executive layouts available. Can be operated as freighter, carrying more than 2,240 lb (1,016 kg) cargo; in this configuration the passenger seats can be stored in the rear baggage bay. In ambulance role, up to three stretchers and two attendants can be accommodated. Other layouts possible, including photographic and geophysical survey, parachutist transport or trainer (with accommodation for up to eight parachutists and a dispatcher), or public health spraying. A 130 Imp gallon (590 litre) chemical tank can be installed in the cabin, supplying liquid to wing-mounted rotary atomiser spray units.

**SYSTEMS:** Southwind cabin heater standard. 45,000 BTU Stewart Warner combustion



Model of the Britten-Norman turboprop Islander, of which a prototype is scheduled to fly early this year

unit, with circulating fan, provides hot air for distribution at floor-level outlets and at windshield demisting slots. Fresh air, boosted by propeller slipstream, is ducted to each seating position for on-ground ventilation. Air-conditioning system optional. Intercom system, including second headset and passenger address system are standard. Oxygen system optional. Details of electrical system not finalised. Hydraulic system for brakes only. Pneumatic system for optional wing and tail unit de-icing.

**ELECTRONICS AND EQUIPMENT:** Blind-flying instrumentation standard. Dual flying controls and autopilot standard. A wide range of VHF and HF communications and navigation equipment available as standard and optionally.

**ARMAMENT AND MILITARY EQUIPMENT:** Is available optionally, including four NATO standard underwing pylons for a variety of stores, the inboard pair each carrying up to 700 lb (317.5 kg) and the outboard pair up to 450 lb (204 kg).

**DIMENSIONS, EXTERNAL:**

Wing span	53 ft 0 in (16.15 m)
Wing chord (constant)	6 ft 8 in (2.03 m)
Wing aspect ratio	8.2
Length overall	39 ft 5 1/4 in (12.02 m)
Height overall	12 ft 5 in (3.78 m)
Tailplane span	15 ft 4 in (4.67 m)
Wheel track	11 ft 10 in (3.61 m)
Wheelbase	16 ft 0 3/4 in (4.90 m)
Propeller diameter	7 ft 4 in (2.23 m)
Propeller ground clearance	1 ft 7 in (0.48 m)
Cabin door (front, port):	
Height	3 ft 7 1/2 in (1.10 m)
Width	2 ft 1 1/4 in (0.64 m)
Height to sill	1 ft 1 1/4 in (0.59 m)
Cabin door (front, starboard):	
Height	3 ft 7 1/2 in (1.10 m)
Max width	2 ft 10 in (0.86 m)
Height to sill	1 ft 10 1/2 in (0.57 m)
Cabin door (rear, port):	
Height	3 ft 7 in (1.09 m)
Width:	
top	2 ft 1 in (0.64 m)
bottom	3 ft 11 in (1.19 m)
Height to sill	1 ft 8 1/2 in (0.52 m)
Baggage door (rear, port):	
Height	2 ft 3 in (0.69 m)
<b>DIMENSIONS, INTERNAL:</b>	
Passenger cabin, aft of pilot's seat:	
Length	10 ft 0 in (3.05 m)

Max width	3 ft 7 in (1.09 m)
Max height	4 ft 2 in (1.27 m)
Floor area	32 sq ft (2.97 m <sup>2</sup> )
Volume	130 cu ft (3.68 m <sup>3</sup> )
Baggage space aft of passenger cabin:	
standard	30 cu ft (0.85 m <sup>3</sup> )
maximum	49 cu ft (1.39 m <sup>3</sup> )
Nose baggage compartment	22 cu ft (0.62 m <sup>3</sup> )
Freight capacity:	
aft of pilot's seat, incl rear cabin baggage space	166 cu ft (4.70 m <sup>3</sup> )
with four bench seats folded into rear cabin baggage space	130 cu ft (3.68 m <sup>3</sup> )
<b>AREAS:</b>	
Wings, gross.	342 sq ft (31.78 m <sup>2</sup> )
Ailerons (total)	75.6 sq ft (7.02 m <sup>2</sup> )
Flaps (total)	39.0 sq ft (3.62 m <sup>2</sup> )
Fin	36.64 sq ft (3.41 m <sup>2</sup> )
Rudder	17.2 sq ft (1.60 m <sup>2</sup> )
Tailplane	73.0 sq ft (6.78 m <sup>2</sup> )
Elevator, incl tab	33.16 sq ft (3.08 m <sup>2</sup> )
<b>WEIGHTS AND LOADINGS:</b>	
Max T-O weight	7,300 lb (3,311 kg)
Max zero-fuel weight	6,800 lb (3,084 kg)
Max landing weight	6,935 lb (3,146 kg)
Max wing loading	21.3 lb/sq ft (104 kg/m <sup>2</sup> )
Max power loading	9.13 lb/shp (4.26 kg/shp)
Max floor loading, without cargo panels	120 lb/sq ft (586 kg/m <sup>2</sup> )
<b>PERFORMANCE (estimated at max T-O weight):</b>	
Max level speed	more than 191 knots (220 mph; 354 km/h)
Max cruising speed at 10,000 ft (3,050 m)	more than 191 knots (220 mph; 354 km/h)
Stalling speed, flaps down	50 knots (57.5 mph; 92.5 km/h)
Max rate of climb at S/L	1,800 ft (549 m)/min
Rate of climb at S/L, one engine out	440 ft (134 m)/min
Absolute ceiling	above 30,000 ft (9,145 m)
Absolute ceiling, one engine out	14,300 ft (4,360 m)
T-O to 50 ft (15 m)	1,165 ft (355 m)
Landing from 50 ft (15 m)	1,050 ft (320 m)
Range with max fuel, 45 min reserve	680 nm (783 miles; 1,260 km)



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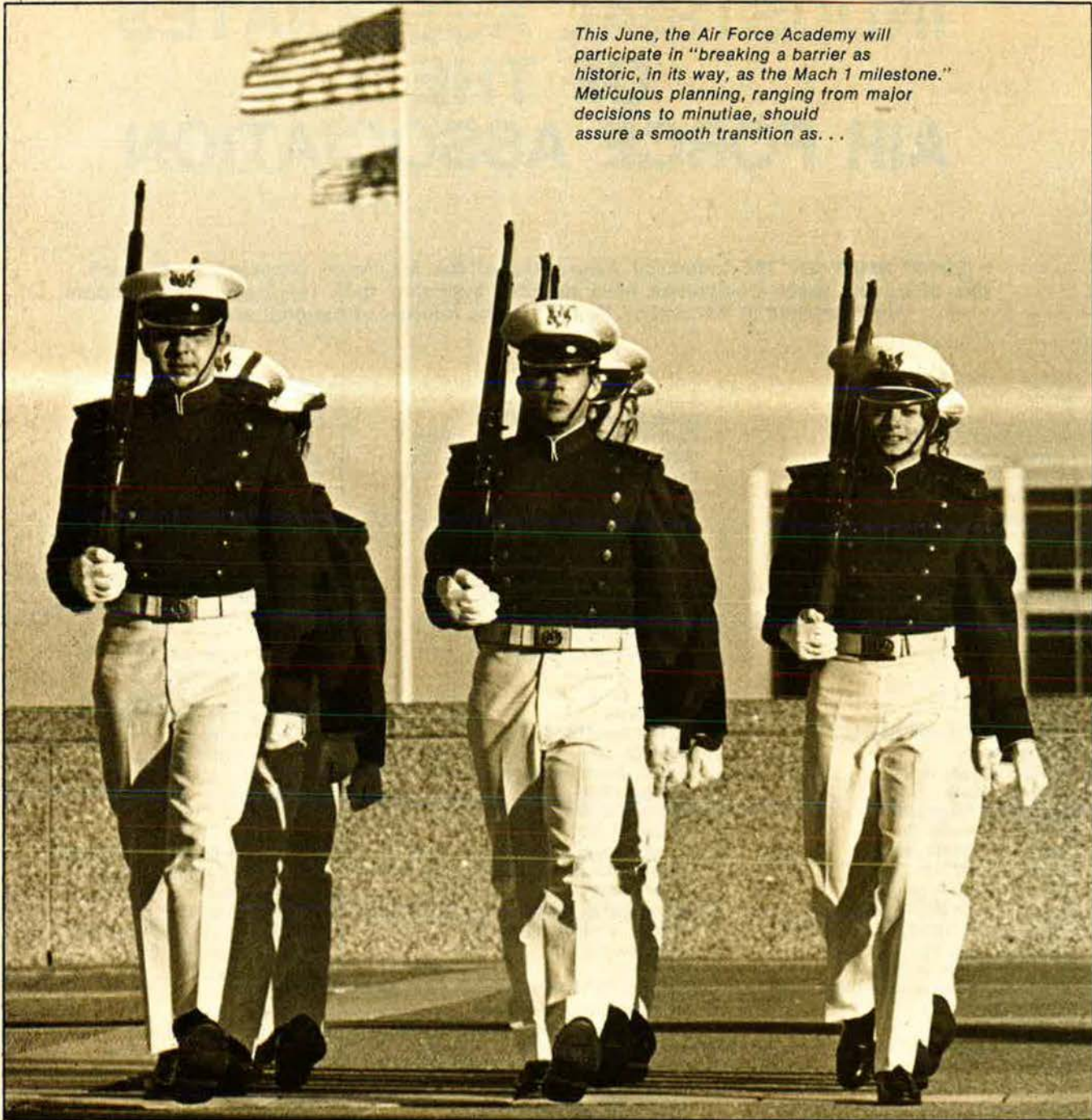
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*This June, the Air Force Academy will participate in "breaking a barrier as historic, in its way, as the Mach 1 milestone." Meticulous planning, ranging from major decisions to minutiae, should assure a smooth transition as...*



## **USAEA Prepares For First Women Cadets**

**BY JAMES R. PATTERSON**



**A**IR FORCE ACADEMY cadets have traditionally been bright, athletic, zealous, and courageous, but for the first time in the history of the school a number of those entering next June may also be beautiful! The incoming class of 1980 will include about 150 women cadets, thus breaking a barrier as historic, in its way, as the Mach 1 milestone.

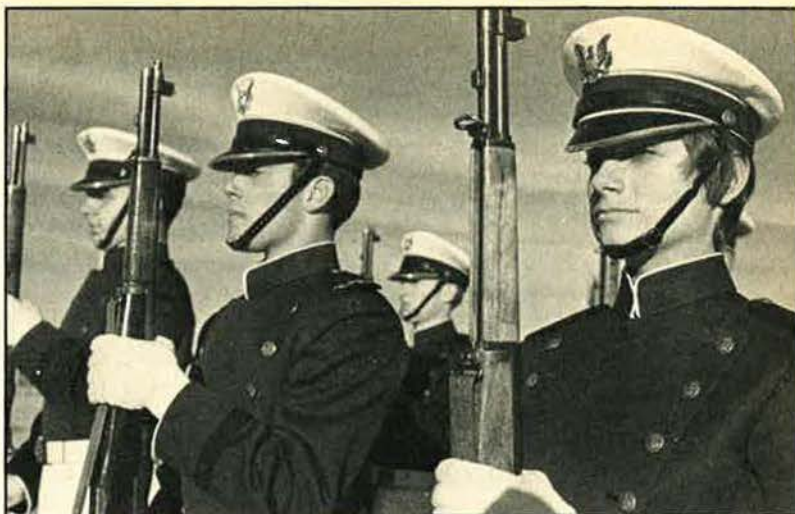
Authorities at the service academy north of Colorado Springs are unanimous, however, in stressing that high standards of physical fitness, academic excellence, and military proficiency will be maintained, and that women cadets will not be transformed into a troop of hard-nosed Amazons.

If meticulous advance planning and the enthusiastic support of the Academy staff can achieve these twin goals, the present optimism pervading the school appears justified. Since Congress passed the Equal Rights Amendment in March 1972 and sent it to the state legislatures for ratification, preparations have been under way at the Academy. Detailed plans for admitting female cadets were completed last summer after the service academies were opened to women by an amendment to the military procurement bill. When President Ford signed the bill into law last October 7, Lt. Gen. James R. Allen, Superintendent of the Academy, ordered into force Operation Plan No. 76-75, a seventy-seven-page document that represented months of research and study.

As part of the research that led to the final plan, the Academy sent teams to Air Force facilities where women are trained, such as the Basic and Officer Training Schools at Lackland AFB, Tex., and ROTC summer camps. Other teams visited previously all-male colleges that had gone coed, the Merchant Marine Academy, and the Los Angeles Police Academy to learn what problems might be expected and how they could be solved. A bibliography, arranged in functional categories and listing nearly 800 books, articles, and reports on women in the military, was prepared as an aid to planners.

### Mark II ATOs

One of the most significant preparatory steps has been to adopt a procedure similar to that which worked so well when the Academy opened in July 1955, when young commissioned officers were used as upperclassmen to help train the incoming freshmen. For the female cadets in the class of 1980, young women officers (designated Air Training Officers) will perform a comparable function. Fifteen ATOs now being trained at the Academy will act as surrogate upperclassmen for the first two years of the Academy's coed existence. They will share with male upperclassmen the military training of the women cadets and also will serve as "role models" for the young women students.



*Women and men cadets will drill together (top). Above: Academy Prep School cadets talk of their Air Force future.*

Prior to arrival of the new class on June 28, the ATOs will have completed five and a half months of physical conditioning, military training, and academic work similar to that which will be given the first contingent of women undergraduates. This rugged schedule, starting with basic training and ending with the Survival, Evasion, Resistance, Escape (SERE) course, is expected to serve a dual purpose. ATO training will reveal where modifications should be made in the program for the female cadets. Also, the experience will increase the confidence and competence of the ATOs and give them a closer rapport and greater prestige with their younger charges.

The ATOs, all volunteers, were selected after



James R. "Jimmy" Patterson, a frequent contributor to this magazine, has been a free-lance writer living near the Air Force Academy in Colorado since his retirement from the United Aircraft Corp. in 1971. A former public relations executive, Mr. Patterson is also a retired Air Force Reserve colonel.

an Air Force-wide search that began with the computers of the Military Personnel Center at Randolph AFB, and ended with two days of interviews and examinations at the Academy. See accompanying box for a list of their names.

Col. James P. McCarthy, Vice Commandant of Cadets and officer in charge of the ATO program, called the performance of the young women officers "outstanding," after they passed the same basic training that is given male cadets.

"Our experience with the ATOs so far," Colonel McCarthy said, "has given us confidence that our research and planning data is sound. We have experienced no surprises or encountered any problems beyond one or two minor logistical ones."

General Allen, who has followed the program closely, said the young women officers had done "extremely well, and we are very optimistic about women's success as cadets."

The ATOs have been quartered in the sixth-floor dormitory of Vandenberg Hall, which has been set aside and adapted (mostly the modification of toilet facilities) for the women cadets who will join them next June. In basic cadet training (BCT), their at-the-double day began at 5:45 a.m., ended at 10:15 p.m., and was filled with mile runs, close-order drill, manual of arms, and both team and individual sports.

"We're under great mental and physical pressure," Lt. Susan Hamilton said, "not only to do better out of our own sense of pride, but to show that women can compete with male cadets."

Lt. Terry Walter believes "the hardest part is the continuous necessity to make a 150 percent effort." She added that she had no doubt as to the ultimate success of the program.

Lt. Rhoda Sweitzer said the training schedule had left her so little free time that it had been two weeks before she managed to send her first message home—a postcard written by flashlight after lights out.

These comments were not complaints. All fifteen ATOs display an unmistakable dedication and zest. And when the BCT phase of their training was completed and they began the airman's part of the program, beginning with soaring, *their* spirits soared.

### USAF's Coed Prep School

Another group of young women also is preparing for the day the Academy opens its doors to women. There are twelve Air Force enlisted women studying at the Air Force Academy Preparatory School about five miles south of the cadet campus. (There were originally fourteen but two dropped out.) As "cadet candidates," they have an excellent chance of being in the first contingent of women to enter the Academy following the completion of the prep school

term. The curriculum consists of intensive courses in English and mathematics, along with military training and physical conditioning.

Airman Kathleen B. Marron and Airman Joanne L. Rock are typical of the women cadet candidates in the prep school. Both had completed one year of college before enlisting.

Why do they want to be Academy cadets?

Kathleen wants to make the Air Force a career. "That being so, the Academy is the best way to go, and to get a fine education, too."

Joanne agrees and believes women cadets can meet the physical and academic standards of the Academy. "It's all in motivation," she said, "and I think we have it."

Apparently a lot of other young women believe that, too. By early February, more than 1,000 had been nominated for appointment as cadets, thus assuring the projected enrollment of about 150 female students. Based on past experience, one out of five nominees qualifies for acceptance.

The target figure of 150 women cadets is based on an Air Force projection of the number of women officers to be commissioned in 1980 and the expected Air Force Academy attrition rate of thirty percent.

### Few Program Changes

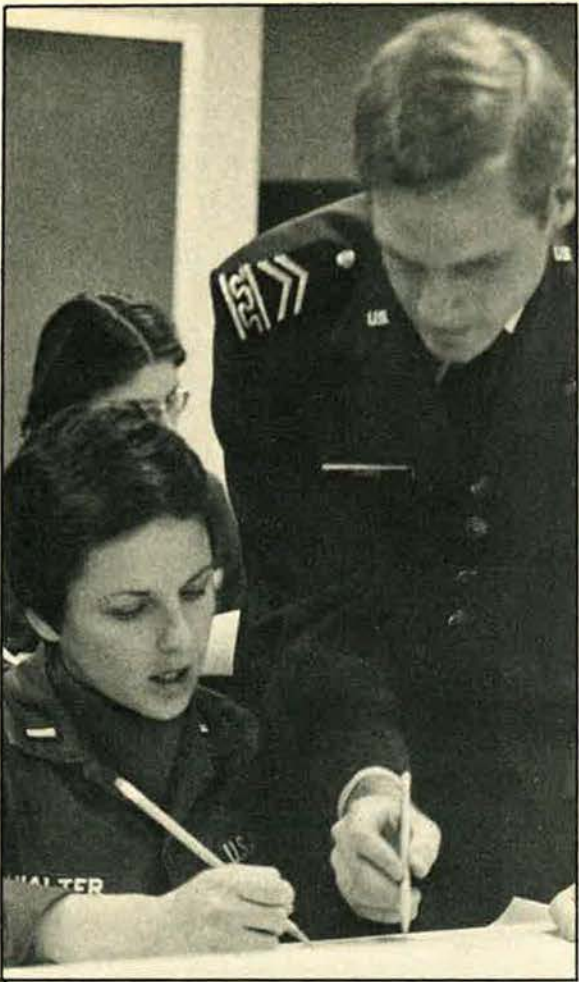
Academy officials see no problems in the scholastic field for the female cadets. Brig. Gen. William T. Woodyard, Dean of the Faculty, is confident that women cadets can maintain the Academy's swift and difficult academic pace.

"First of all," the Dean points out, "they will have to be outstanding students to pass the entrance examinations with high enough marks to win appointment. And as for scholastic aptitude, there has been no difference historically between male and female students."

There is a general belief that the women cadets—certainly the first group—will be so highly motivated and keenly competitive that the grade average of the entire student body will be raised. It is in the areas of physical conditioning and military training that uncertainties exist. Essentially the same physical standards now required for women commissioned into the Air Force will be used for the female cadets. However, an obligatory physical aptitude test will have no minimum standards until an average is established by the women admitted in the class of 1980.

Present plans call for the female cadets to drill with the nine-and-a-half-pound M-1 rifle and to qualify on the firing range with the M-16 and the standard .38-caliber service revolver. They also will go into bivouac in Jacks Valley in the rugged hills north of the campus for two weeks of strenuous military and athletic competitions. The "single track" training of





*Women ATOs (left and above), now undergoing extensive training at the Academy, will act as upperclassmen for the freshmen women cadets.*



*The legend on the arch will not be modified when women join the Cadet Wing, since it refers to "mankind," not exclusively to men.*



male and female cadets will be followed as closely as possible.

Some substitutions will be made in sports, where, for instance, fencing will take the place of wrestling, and varsity football will remain an all-male athletic event—at least for the foreseeable future. Women undergraduates will be encouraged to enroll in such programs as parachuting, soaring, and ballooning and to join the student aviation club to earn a civilian private pilot's license. Whether they will be allowed to take flight indoctrination in their senior year, as do qualified male cadets, depends largely on the outcome of the present Air Force pilot training program for women.

The young women entering early next summer will be integrated into twenty of the Academy's forty squadrons that comprise the cadet wing. The theory is that the women will adjust more easily being assigned six or seven to a squadron rather than spread too thinly throughout the wing. They will be housed in their

separated sixth-floor section in Vandenberg Hall.

After the women cadets are sworn in, one of their first duties will be to report to the barber for a haircut. It will not be as severe as the "white sidewall" given the men, but their hair will be styled to clear the collar, and may be cut even shorter for the period they are in basic cadet training.

One of the questions most frequently asked Academy authorities is: "Will women and men cadets be allowed to date each other?" This is the official answer:

"Yes. Women cadets will be allowed to date men cadets as covered by the Academy fourth class system. That is, fourth class (freshmen) cadets may date only fourth class cadets. During the next three years, sophomore, junior, and senior women cadets may date anyone they wish except freshmen."

Much of the building modification necessitated by the approaching enrollment of women has involved toilet and bathing facilities. The total cost of the entire remodeling and new construction program is expected to be only about \$100,000, including \$5,100 for a beauty parlor in Vandenberg Hall to accommodate the women cadets and ATOs.

### The Academy's New Air Training Officers

1st Lt. Paula A. Gathright, formerly an administrative officer at Randolph AFB, Tex.

2d Lt. Elizabeth Goolsby, on first assignment since being commissioned.

2d Lt. Irene L. Graf, recent graduate of air traffic control officer school at Keesler AFB, Miss.

1st Lt. Charlotte Greene, formerly weapons controller with senior rating, Kotzebue AF Station, Alaska.

2d Lt. Susan M. Hamilton, former NORAD space surveillance officer in the Cheyenne Mountain complex.

2d Lt. Yardley M. Nelson, recent graduate of air traffic control officer school.

2d Lt. Shirley L. Popper, formerly explosive ordnance disposal officer at Araxos, Greece.

2d Lt. Virginia Procino, formerly base fuels management officer at Craig AFB, Ala.

2d Lt. Dawn M. Reed, formerly team chief, combat targeting section, Grand Forks AFB, N. D.

2d Lt. Rebecca J. Ritchey, recent graduate of air traffic control officer school.

2d Lt. Ronda M. Roszel, formerly an information officer at Rickenbacker AFB, Ohio.

2d Lt. Kathryn L. Sheridan, formerly a finance officer at George AFB, Calif.

2d Lt. Bonnie L. Stephan, formerly squadron chief, weapons loading section, George AFB, Calif.

2d Lt. Rhoda A. Sweitzer, formerly a computer programmer at Tinker AFB, Okla.

2d Lt. Terry J. Walter, formerly an avionics maintenance officer at Eglin AFB, Fla.

### Controversy and Consensus

Admission of women to the Academy has not been accepted with universal enthusiasm by the blue-suit community. Reactions outside the Academy range from strong opposition through cautious approval to unqualified endorsement. One senior officer who believes it was a wise move is Gen. Daniel "Chappie" James, Jr., Commander in Chief of NORAD.

"I think admitting women to the service academies was long overdue," General James said. "Women have proved time and again that they can compete favorably with men and often excel in areas that are compatible with their physical characteristics. Just as we have led in the field of equal opportunity for people of all races and creeds, the Air Force will be a leader in ensuring that women are not denied equality in our profession if they are qualified."

Perhaps most important is the attitude of the more than 4,000 cadets now attending the Air Force Academy. From such sounding boards as the cadet council, the commandant briefings, and personal interviews, it is clear that a majority of the cadets favor admitting women, but with varying degrees of enthusiasm. The one deep, overriding concern expressed in the undergraduate consensus is that academic and military training not be relaxed for the women.

General Allen is in complete accord.

"We will not lower standards," he said, "or in any way lessen the traditional prestige of being a graduate of the United States Air Force Academy." ■



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## Agenda

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and General Russell E. Dougherty, CINCSAC.

### Deterrence in the Age of Detente

Dr. John F. Lehman, Jr.  
Deputy Director, Arms Control and  
Disarmament Agency

### Nuclear Weapons Technology

Maj. Gen. Edward B. Giller, USAF(Ret.)  
Director, Weapons Development, Energy  
Research and Development Administration

### Strategic Airlift

Gen. Paul K. Carlton  
Commander, Military Airlift Command

### Flexible Options vs. A High Nuclear Threshold

Lt. Gen. John W. Pauly  
Deputy Chief of Staff, Plans and  
Operations, USAF

### Command and Control

Lt. Gen. Ray B. Sitton  
Director, J-3 (Operations), Joint Chiefs of Staff

### Technological Options

Gen. William J. Evans  
Commander, AFSC

### Space: The New Military Frontier

Lt. Gen. Thomas W. Morgan  
Commander, SAMSO

### Guarding Against Technological Surprise

Dr. George H. Heilmeyer  
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### The Space Shuttle

Dr. James C. Fletcher  
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Just six years ago, the Air Force's rated officer inventory consisted of 40,000 pilots and 18,000 navigators, a force sustained by an undergraduate training program that churned out nearly 4,000 new pilots and 1,400 navigators annually. Yet actual needs were barely maintained.

All that has changed, dramatically and suddenly. The phase-out of the Vietnam War, the fuel crisis, massive cuts in flying hours, slashes in personnel strength, and budget crunches—all have contributed to the plunge in rated officer requirements.

Today, the rated force is down to 32,300 pilots and 13,500 navigators (plus 320 active flight surgeons). And more trimming lies ahead, for the present inventory contains a surplus of more than 3,000 pilots and 1,000 navigators, USAF personnel and operations officials told AIR FORCE Magazine in a report on the rated corps.

The switch has directly affected

thousands of flyers. It has also reduced the level of flying experience Air Force-wide, something authorities are determined to correct.

The "rated turbulence" has impacted on assignments and career progression; a larger percentage of flyers are flying desks. On maintaining proficiency; flying hours have been halved. On pay; some pilots may have to scramble to meet the operational requirements of the 1974 Aviation Career Incentive Act (ACIA) to ensure no break in flight pay. On USAF as a future resource for airline crews; with military pilot production going downhill, the carriers within a few years may have to look elsewhere for recruits (*see box, p. 58*).

Nowhere are the changes involving the rated force more pronounced than in the training establishment. Instead of about 4,000 new pilots annually, Air Training Command's undergraduate pilot training (UPT) bases will produce an estimated 1,675

this year and only 1,275 in FY '77. And in the year following, Air Force Assistant Secretary (Manpower and Reserve Forces) David P. Taylor recently told Congress, budget planning calls for a shockingly low 1,050 new pilots. These rates are below "sustaining levels," Secretary Taylor noted.

Lt. Gen. Kenneth L. Tallman, USAF's top military personnel executive, and other Hq. USAF officials echoed concern over the potential threat to a viable training structure. Maintaining reasonably stable production is essential to meeting future emergencies.

New navigator production is plunging just as rapidly—from 1,350 in FY '74 to 810 this year, and to a programmed 650 in FY '77. Furthermore, Air Force's FY '78 budget calls for only 350 new navigators!

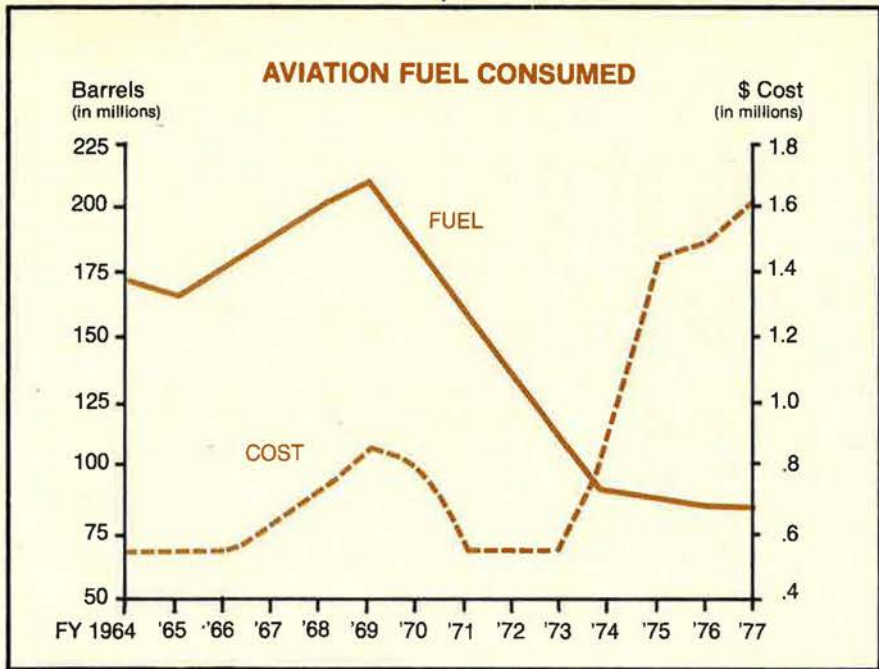
Not surprisingly, competition for the dwindling flying training spaces is razor-sharp, according to Col. Francis K. Fanning, chief of the

"Rated turbulence," far from over, will have long-term effects throughout the Air Force, but particularly on rated people. This detailed analysis describes what Air Force officials are doing to alleviate a growing problem.

# Air Force Moves to Counter Rated Turbulence

BY ED GATES  
CONTRIBUTING EDITOR





The spectacular cost escalation of aviation fuel is responsible for some of USAF's problems with its rated force. As the chart shows, a decade ago the service used more than 175,000,000 barrels of fuel at a cost of about \$600 million. This year, though Air Force slashed consumption to under 100,000,000 barrels, the cost has skyrocketed to an estimated \$1.6 billion.

Flying Training Branch, Hq. USAF. And the caliber of those who manage to win a coveted training spot was never higher, he added.

While the overall short-range prospects for high school and college youths getting into military aviation are gloomy, authorities see improvement by 1980. USAF flyer surpluses will be eliminated by then, they believe.

With the cutback in flying training spaces, the best route to Air Force wings today is via the Academy, provided one can snare one of the highly competitive appointments. Most qualified Academy cadets, following graduation, are enrolled in flying training immediately, whereas AFROTC products wait for up to two years to gain a slot. This delay, of course, has damaged morale among many AFROTC cadets and recent graduates. USAF's efforts to reduce these delays and absorb the excess of pilot hopefuls from ROTC units were reported in the February

"Speaking of People" column, and in this month's "Bulletin Board."

A handful of flying school spaces remain earmarked for Officer Training School graduates and nonrated officers. The latter category will soon include women, the first twenty of whom will enter UPT schools within the next year. At press time, a decision was pending on whether a token number of female officers would enter navigator training.

Although law prevents assignment of women to aircraft engaged in combat missions, Air Force authorities expect to find meaningful flying billets for them without compounding the rated officer surplus dilemma.

#### Reducing the Rated Surplus

New flying trainees who complete the courses spend a demanding forty-nine weeks in UPT, thirty-three weeks at navigator school. Approximately eighteen percent of the pilot trainees and twelve percent of the navigator contenders wash out, with Academy graduates continuing to chalk up the best survival records.

The service, meantime, remains under heavy pressure to shorten

training time, drop some of its eight UPT schools, and expand inter-service training.

The Defense Department has announced two such actions to begin next fiscal year: (1) all undergraduate helicopter training will be conducted by the Army at Fort Rucker, Ala., and (2) Navy and Marine Corps navigator training will be conducted by USAF at its lone navigator base, Mather AFB, Calif. More curtailment announcements are near.

Once an officer wins his wings, of course, it takes about two more years of training—at great expense—before he's combat ready.

Reducing rated officer production requires considerable lead time, and even then will only partially erase flyer overages. So Air Force has additional special projects in motion or around the corner to complete the job. Several hundred excess pilots, for example, have been shifted to operational staffs. Others may become instructor pilots within ATC, although there already exists the problem of how to absorb pilot instructors who are clamoring for assignments with operational units in TAC, SAC, MAC, and ADCOM. Headquarters authorities also are trying to smooth out the surpluses among copilots in SAC and MAC.

A plan under study would allow up to 300 pilots to fly occasionally with Air Force Reserve and Air National Guard units able to provide some flying hours. This would be accomplished at collocated sites to save travel funds. Meantime, during the past three years, many rated officers have taken an early release from the active force and joined Reserve Forces units.

Under a unique surplus-cutting



project launched last year, the service is about to "furlough" several hundred young pilots on a voluntary basis. They will depart with the option of returning to active duty in three to four years. The program's architects hold that by then the current surpluses will have become deficits and these pilots can be accommodated. The betting is that few will elect to return.

A related program encourages commanders to remove from flying jobs those rated officers who are within two years of an established date of separation. And numerous flyers who were not career-minded have departed under the various early release opportunities Air Force has offered.

All the surplus-paring and release projects are interrelated and closely linked with retention, pilot production, weapon systems, cockpit requirements, career development, ability of individuals to meet ACIA pay "gates," and desired experience levels that differ by aircraft. The overall program requires extremely careful management; at stake is USAF's state of readiness. By 1980, authorities believe, the rated overage will be history.

#### **The Declining Experience Level**

The experience-level decline, triggered partially by an increase in retirements following the Vietnam conflict, worries Air Force leaders. It is accentuated by the huge reduction in flying hours. Brig. Gen. Norman C. Gaddis, the Hq. USAF Deputy Director of Operations and Readiness, noted that six years ago

#### **AIRLINE PILOT JOB OUTLOOK HOPEFUL**

Military pilots hoping to crack the airlines sometime soon are likely to be disappointed. Although seventy-plus percent of US airline pilots came from the services (mostly Air Force), the no-hiring sign is up. Spokesmen for United Airlines, Eastern Airlines, and others told AIR FORCE Magazine that their present hiring is limited to occasional recalls of pilots they furloughed earlier.

But bright spots dot the horizon. The Air Line Pilots Association estimates that during the next decade about 13,000 of the country's 45,000 airline pilots will retire or leave the cockpit for medical reasons. This estimate stems from a World War II pilot "hump" that peaks in 1979, catching up with the carriers' mandatory age-sixty retirement rule.

Just how many of the upcoming retirees will be replaced depends on airlines' expansion, the economy, the number of wide-body aircraft in service, and other factors. ALPA estimates at least 10,000 new hires over the ten years.

American Airlines, meanwhile, is optimistic about the future. In January, a spokesman reported, it had reduced its list of furloughed pilots to just two dozen. He added that openings for qualified military pilots might not be far away.

American's officials view the eventual opportunities for bright young military pilots as excellent. They noted that with the services producing fewer new flyers than in the past, the "military resource" will be greatly reduced. If other airlines come to the same conclusion, it could augur well for new and future USAF officers who view military aviation as a springboard to a career with the airlines.

USAF flew about seven million hours. The FY '76 allocation is just half that; yet, even so, jet fuel expenditures have soared.

As JCS Chairman Gen. George S. Brown explained to congressional leaders recently, "In the Air Force the most significant restriction to readiness is the limitation of flying hours due to inflation and funding levels."

Further reductions in flying hours are near, though officials expect to offset them by a major increase in the use of training simulators. With simulators substituting more and more for flying hours, proficiency flying is rapidly fading from the picture. Some congressional leaders would end it entirely.

Currently, only about 1,200 Air Force pilots holding jobs that don't require flying are performing proficiency flying.

All told, more than \$1 billion is going into the USAF simulator explosion. When completed by 1985,

the program figures to save 500,000 additional flying hours annually. (For a detailed report on Air Force simulator plans, see "Dogfights at Zero Mach," in the October '75 AIR FORCE Magazine.)

General Gaddis, in outlining other Air Force efforts to shore up flying expertise, said:

- Tours in the cockpit may be lengthened; instead of serving five years in operational units, certain pilots may stay for six, even eight years. There are obvious problems linked with such an effort, though it contains the advantage of meshing with the Pentagon's drive to cut PCS outlays.

- "Low-cost aircraft" (LCA) training is being tested at several locations. Pilots checked out in various frontline aircraft augment their flying experience, at least temporarily,



in the less-expensive T-37 and T-38 trainers. While new LCA trainers are under study, General Gaddis said, "We hope to validate this concept [during the test] before deciding on a particular LCA aircraft." He stressed that the LCA concept stems from the sharp reduction of flying hours that "has significantly lowered the average level of young pilot flight experience."

Crediting simulator time for award of senior and command pilot ratings also is receiving a close look. So is a related plan that would tie the award of the ratings to years of operational duty.

Not helping the service's rated utilization woes was the recent refusal by Congress to let USAF boost C-5 and C-141 crew ratios from 3.0 to 4.0. The requested increase, though it would help ease the pilot surplus, was tied mainly to DoD's desire to increase forces and equipment for deployment from the US to Europe early in a NATO conflict. But the lawmakers, in rejecting the necessary funds in the FY '76 budget, insisted that larger crew ratios would increase the number of hours MAC would fly "on unproductive training flights without carrying cargo loads. . . ."

### **Restrictions on Rated Supplement**

Congress, in working over the same budget, hit the services hard on flying costs, spreading no joy among flyers assigned to the "rated supplement." For example, it rejected a "surge supplement" request of just \$5 million the Air Force wanted in order to allow certain pilots now flying desks, but who

would be the first to return to the cockpit in wartime, to train in their combat-designated aircraft. The service had even identified the flyers who were to join the initial surge group.

In denying the funds, the Senate Appropriations Committee, in language adopted by the Senate, said its "long-term goal is to eliminate proficiency flying and achieve the associated economies not only in flying hours and maintenance costs, but the economies that would result from not taking time away from an individual's primary duties for proficiency flying."

Blunt talk indeed. And it underscores USAF's difficulties with authorities who hold the purse strings on national security expenditures. Nevertheless, the Air Force has just gone back to Congress for surge funding in the FY '77 budget, a request Secretary Taylor calls "critically important."

The rated supplement is, in effect, an accounting system for rated people. Though a category most Air Force rated officers prefer to avoid, it is generally held to be an improvement over the pre-1970 helter-skelter method of accounting for flyers. The supplement embraces all flyers holding nonrated positions. Those who would return to the cockpit after a war starts are identified by weapon systems and the time frame.

Whatever the major problems concerning the rated force, the flying pay and related features of the Aviation Career Incentive Act are not among them. That legislation, in overhauling the method of qualifying for flight pay, packed more of it into the "retention-critical flight-intensive years" of a flyer's career. It also ended the controversial "excusal" policy.

Most USAF officers appear to be meeting the performance-standard "gates," though some may find this difficult in the years ahead. The gates are expressed in years of aviation service and operational flying. Thus, a person meeting the first gate

of twelve years' rated service, including at least six in operational flying, is assured flight pay through the eighteenth year. The rather complex formula spells out additional, but generally reasonable, flying requirements needed to qualify for pay to the twenty-fifth year of service.

Effective in June 1977, all rated officers with more than twenty-five years' commissioned service will go off flying pay, even though some will continue to fly. This includes numerous high-level commanders actively engaged in flying operations. It's a situation authorities say may become a problem as the removal date nears.

Their actual loss will be \$165 per month, the law's designated rate for senior flyers. Officers with six to eighteen years of service receive the top rate of \$245, junior officers \$100 per month. Air Force-wide flight pay averages out to a modest \$2,500 a year. That adds up to about \$115 million this fiscal year, a figure the Defense Department says will decline as the rated force suffers further losses.

For the immediate future, Air Force managers face tough decisions dealing with rated overages, AFROTC input, flying training, production rates, proficiency time, flying hours, and experience levels. But the leadership appears to have a firm handle on the situation and is pushing steadily to resolve these problems.

Meantime, despite the loss of some flying expertise, the quality of the Air Force rated establishment is extremely high, Generals Tallman, Gaddis, and other Hq. USAF officials declared. And with competition increasing for the dwindling number of available pilot and navigator training slots, it will probably reach even higher levels in the years ahead. ■



Among the Defense Department's long-term technology programs are such revolutionary concepts as laser-powered spacecraft and protection of satellites against jamming by hostile laser systems.

## On the Technological Frontier:

# LASER-POWERED ROCKETS AND DARK SATELLITES

BY  
**EDGAR ULSAMER**  
SENIOR EDITOR

**T**HE current crop of DoD and military service posture statements and annual reports on the state of national defense differs from past years: There is less ebullience about offsetting the Soviet quantitative advantage in strategic and general-purpose forces through US qualitative superiority, and more implied recognition that, short of a fundamental reversal of public and congressional attitudes, the USSR is headed toward a decisive lead in military capabilities.

Secretary of Defense Donald H. Rumsfeld, in the preface of his FY '77 report, contrasts mushrooming growth in Soviet military capabilities with declining US efforts, and points out that the crucial question is "whether the United States will have a sufficient military capability for defense, deterrence, and détente in the future if these trends continue." There is nothing sanguine about this warning by Gen. George S. Brown, Chairman of the Joint Chiefs of Staff: "I have grave concern about the future should the strategic nuclear balance not be assured by Strategic Arms Limitation Negotiations and should we not maintain a strong technology base to provide options for vigorous modernization."

Three comments by the Pentagon's ranking technology expert, Dr. Malcolm R. Currie, Director of Defense Research and Engineering, stand out from his detailed posture statement. First, failure to halt past erosion of the US technology base might mean that within a few years, "we could find that our strategic forces are unable to deter a Soviet-initiated counterforce strike; unable to achieve the level of destruction in retaliation for Soviet attacks against our cities that is required to deter the USSR from such attacks; unable to deter the initiation of limited nuclear attacks; and unable to support other forces operating to deter Soviet adventurism."

Second, straightforward extrapolation of current trends in Soviet research, development, and deployment leads to the conclusion that the USSR, "on balance and including the combination of quality and quantity, can achieve domi-

nance in terms of deployed military technology in the 1980s."

Finally, Dr. Currie makes this alarming judgment: "...by 1977 the Soviets could, theoretically, initiate a counterforce strike against the US, absorb a counterforce response, and then still have sufficient forces to attack Chinese and NATO nuclear capability; attack US population and military targets; and then still have a remaining throw weight larger than ours. Beyond 1977 things will get worse."

The \$10.9 billion R&D program proposed by the Pentagon for FY '77, up by almost \$1.5 billion from FY '76 (counting neither the one-time transition period nor the effects of inflation), is portrayed as the minimum requirement to maintain something akin to a technological balance. USAF's share of this total is \$3.9 billion, roughly equal to that of the Navy.

### R&D in Support of Strategic Requirements

Defense Department funding of RDT&E in the strategic area accounts for less than one-fourth of the total or barely half of the corresponding investment in the tactical mission. DoD's R&D funding request of \$2.4 billion in the strategic sector represents a decreasing level of real effort. The Defense Department formulates these R&D programs in response to the Administration's perception of the Soviet strategic threat. Specifically, DoD posits that the Soviets don't regard nuclear war as "unthinkable," don't accept the premise of mutual suicide, and that consequently the threat of assured destruction alone is insufficient for credible deterrence. A key challenge that arises, according to Dr. Currie, is "the progressive vulnerability of our fixed land-based forces as the Soviets deploy larger numbers of more accurate high-yield MIRVed warheads."

In direct response to this threat, MX, USAF's Advanced ICBM, is to be structured as a "prudently paced" program to discourage "any possible Soviet first-strike counterforce ambition." The proposed new missile, which is not scheduled to complete concept formulation (basic design and performance specifications)



until 1978, would "multiply the retaliatory capability of any residual force after taking a first strike. It will also be designed with a multiple aim-point survivability option that will be implemented gradually only if Soviet lack of constraint so dictates," according to Defense Department testimony. (Multiple aim or launch point basing has replaced the term "ground mobile ICBMs," presumably to avoid the connotation that ICBMs armed with multiple warheads might be moved around the countryside on public highways. The presently preferred, but still tentative, approach to multiple aim-point basing is hardened tunnels constructed on government-owned land in which ICBMs can be transported and launched after a special hydraulic device punches a hole through the ceiling. Enemy detection systems would not know the location of the missile within the cement tunnel, which may be several miles long.) Multiple aim-point basing, according to Dr. Currie, is to make the survivability of the US ICBM force "nearly insensitive to further threat evolution."

Another US counter to the Soviet search for a first-strike capability centers on improved accuracy and confidence in the US sea-based deterrence in order to increase its effectiveness against hardened industrial, political, and military targets. R&D efforts to explore new concepts in reentry vehicles and guidance systems, including "terminal fixing and maneuvering,"

are to intensify in FY '77. Two key programs, according to Dr. Currie, are the Advanced Maneuvering Reentry Vehicle (MaRV) and the Advanced Ballistic Reentry Vehicle (ABRV). In the case of the latter, DoD plans to develop an experimental vehicle whose characteristics are optimized for MX.

MaRV is now scheduled for first flight "prior to 1980" to demonstrate the feasibility of an RV flying an inertially guided trajectory during reentry and evading an advanced interceptor while maintaining an accuracy equal to or better than the current family of ballistic missiles.

A third major element of DoD's ABRES (Advanced Ballistic Reentry Systems) Program, operated by USAF as the executive agency, is the technology of terminal fixing. This is to culminate in flight-test of a terminally guided reentry vehicle in the "intermediate future." At a proposed funding level of \$106 million in FY '77, ABRES gives visible proof to the USSR that "we are prepared to increase our force effectiveness in a variety of ways and . . . that we have the ability to penetrate any missile defense," thus making it clear that there is no "benefit to trying to outdo us," according to Dr. Currie. (DoD also disclosed that last year four successful tests of an evading RV for the Navy's new Trident submarine-launched ballistic missile took place.)

Even though production of Minuteman III

### Antilaser Protection of Satellites

Late last year, several newspapers and a leading aerospace publication headlined reports about alleged Soviet laser jamming of the US Early Warning Satellite system, the nation's pivot in terms of strategic warning. These reports, apparently the product of leaked information of an interim intelligence assessment, were denied subsequently. Unofficially, DoD sources indicated that the "spooking" of the crucial warning system was caused by massive venting of a Soviet oil pipeline in Siberia, which released enough energy to saturate the sensors aboard the satellite, thus leading to the suspicion that the Soviets had jammed the US spacecraft with a powerful ground-based laser. There had been earlier reports that Early Warning Satellites were blinded by quirky solar energy reflection from clouds and the ocean. Implicit in official DoD reaction in all instances was the admission that hostile laser illumination of the sensors can indeed temporarily blind the warning satellites. At a press conference, Dr. Malcolm R. Currie asserted that technological efforts are under way to solve this problem.

DARPA Director Dr. George H. Heilmeier, in the space section of his annual report to Congress, apparently focused on this issue, stating: "The ability to sense laser radiation, identify it spectrally [in the sense of wave length], and quickly change the spectral window of the sensor, can mitigate the influence of a laser jamming attack." In a practical sense, this would suggest that the system might be equipped with an "overload" feature, meaning that if critically high-energy levels in a given frequency are encountered, the computer directs the sensor to skip over that danger area. (In a jamming sense, the laser may be considered handicapped because, by its very nature, it must function in a discrete frequency.) DARPA, according to Dr. Heilmeier, "has identified several techniques such as the use of acousto-optical tuned filters for rapid spectral adaptation. These devices can be packaged in the large focal planes and automatically controlled by the integrated processors." The underlying technology, he said, is charge coupled devices (CCD), new, revolutionary building blocks of electronic circuits.



**Stark Statistics from "United States/Soviet Military Balance:  
A Frame of Reference for Congress," prepared by the Library of Congress**

	1965			1975			Net U.S. change
	United States	Soviet	United States (difference)	United States	Soviet	United States (difference)	
<b>STRATEGIC OFFENSIVE</b>							
Personnel	220,800	308,000	-87,200	76,700	414,000	-337,300	-250,100
Army	16,550	8,000	+8,550	18,400	14,000	+4,000	-4,150
Air Force	204,250	300,000	-95,750	58,300	400,000	-341,700	-245,950
Ballistic/cruise missiles:							
ICBM	854	224	+630	1,054	1,603	-549	-1,179
Heavy	54	224	-170	54	613	-559	-389
Light <sup>1</sup>	800	0	+800	1,000	990	+10	-790
MIRVed	0	0	( <sup>40</sup> )	550	110	+440	+440
SLBM	496	120	+376	656	725	-69	-445
MIRVed	0	0	( <sup>40</sup> )	416	0	+416	+416
ALCM <sup>2</sup>	1,260	190	+1,070	1,140	185	+955	-115
SLCM	140	0	+140	0	349	-349	-208
Submarine	0	92	-92	0	300	-300	-208
Surface	0	48	-48	0	48	-48	-0
Bombers	935	1,420	-485	529	635	-106	+379
Heavy <sup>3</sup>	630	210	+420	463	135	+328	-92
Medium <sup>4</sup>	305	1,210	-905	66	500	-434	+471
Tankers <sup>5</sup>	1,000	0	+1,000	615	50	+565	-435
Ballistic missile submarines:							
Nuclear	31	40	-9	41	73	-32	-23
Diesel	0	15	-15	41	54	-13	-29
MIRV	0	25	-25	0	19	-19	+6
ICBM/SLBM warheads	1,702	390	+1,312	6,794	3,442	+3,352	+2,040
MIRV	528	0	+528	480	514	-34	-494
MIRV	0	0	( <sup>40</sup> )	5,810	640	+5,170	+5,170
<b>STRATEGIC DEFENSIVE</b>							
Personnel <sup>6</sup>	120,750	500,000	-379,250	25,100	600,000	-574,900	-196,850
Army	23,050	400,000	-376,950	900	500,000	-499,100	-122,150
Navy	3,950	0	+3,950	1,200	0	+1,200	-2,750
Air Force	93,750	100,000	-6,250	23,000	100,000	-77,000	-70,750
ABM missiles <sup>7</sup>	0	0	( <sup>40</sup> )	100	64	+36	+36
SAM launchers <sup>8</sup>	2,694	8,900	-6,206	330	9,500	-9,170	-2,964
Interceptors <sup>9</sup>	1,113	3,800	-2,687	396	2,700	-2,304	+383
<b>GROUND FORCES</b>							
Army:							
Personnel <sup>10</sup>	939,950	1,800,000	-860,050	789,100	2,500,000	-1,710,900	-850,850
Divisions <sup>11</sup>	16	147	-131	16	168	-152	-21
Mechanized <sup>12</sup>	8	0	+8	6	0	+6	-6
Armor	1	90	-89	4	113	-109	-20
Airborne	2	50	-48	4	47	-43	-3
Airmobile	4	7	-3	1	8	-7	-2
Tanks <sup>13</sup>	10,200	30,500	-20,300	10,100	40,000	-29,900	-9,600
Heavy	0	2,500	-2,500	0	2,500	-2,500	0
Medium	8,200	25,000	-16,800	8,500	34,500	-26,000	-9,200
Light	2,000	3,000	-1,000	1,600	3,000	-1,400	-400
Armored carriers <sup>14</sup>	20,700	35,000	-14,300	19,000	40,000	-21,000	-6,700
SSM <sup>15</sup>	0	101	-101	0	1,853	-1,853	+14
IRBM	0	608	-608	0	87	-87	+112
MRBM	0	0	0	180	1,170	-990	-100
SRBM	0	0	0	0	100	-100	+450
Nuke artillery <sup>16</sup>	1,750	0	+1,750	700	0	+700	-14,800
Other artillery <sup>17</sup>	1,750	0	+1,750	2,100	17,000	-14,900	-3,600
AT missiles <sup>18</sup>	16,500	0	+16,500	2,400	6,000	-3,600	+6,420
Helicopters	4,000	0	+4,000	9,000	2,580	+6,420	
Marines:							
Personnel	190,000	10,000	+180,000	197,000	12,000	+185,000	+5,000
Divisions	3	0	+3	3	0	+3	-5
Separate regiments <sup>19</sup>	0	0	( <sup>40</sup> )	0	5	-5	-145
Tanks	545	75	+470	475	150	+325	-203
Artillery	840	75	+765	710	150	+560	-25
Aircraft	478	0	+478	458	0	+458	-25
Fighter	228	0	+228	204	0	+204	+15
Attack	249	0	+249	254	0	+254	+68
Helicopters	419	0	+419	487	0	+487	-200,000
Border Guards	0	200,000	-200,000	0	400,000	-400,000	
<b>NAVAL FORCES</b>							
Personnel <sup>20</sup>	650,500	292,000	+358,500	515,400	386,000	+129,400	-229,100
Aircraft carriers	32	0	+32	21	3	+18	-2
Attack <sup>21</sup>	16	0	+16	14	0	+14	-10
ASW	9	0	+9	7	2	+5	-2
Other <sup>22</sup>	7	0	+7	0	2	+2	-6
Cruiser <sup>23</sup>	33	22	+11	27	33	-6	-11
SSM <sup>24</sup>	0	14	-14	0	20	-20	-6
Other	33	8	+25	27	13	+14	-11
Destroyer <sup>25</sup>	217	150	+67	70	85	-15	-4
SSM <sup>26</sup>	0	24	-24	0	20	-20	+4
Other	217	126	+91	70	65	+5	-86
Other escorts <sup>27</sup>	(38)338	103	(-27)-235	(34)64	105	(-7)-41	(+20)+24
Attack submarines <sup>28</sup>	169	322	-153	73	253	-180	-13
Conventional	29	12	+17	62	35	+27	+1
Diesel	140	310	-170	11	150	-139	+31
SSM <sup>29</sup>	0	14	-14	0	68	-68	-54
Nuclear	0	0	( <sup>40</sup> )	0	40	-40	-40
Diesel	0	14	-14	0	28	-28	-14
Boats	0	460	-460	7	230	-223	+237
SSM <sup>30</sup>	0	110	-110	4	135	-131	-21
Motor torpedo	0	350	-350	3	95	-92	+258
Amphibious ships <sup>31</sup>	118	14	+104	57	85	-28	-132
Tactical aircraft <sup>32</sup>	4,729	800	+3,927	3,543	766	+2,777	-1,152
Ashore/amphib	352	800	-448	450	715	-265	+183
Bombers <sup>33</sup>	400	0	+400	0	480	-80	-80
Patrol/ASW <sup>34</sup>	352	400	-48	450	350	+90	+138
Afloat <sup>35</sup>	2,132	0	+2,132	1,508	53	+1,455	-677
Fighter	712	0	+712	473	0	+473	-239
Attack	961	0	+961	836	0	+836	-125
ASW <sup>36</sup>	459	0	+459	199	53	+314	-314
Fixed wing	222	0	+222	119	0	+119	-103
Helicopter	237	0	+237	80	53	+27	-210
Sealift <sup>37</sup>	2,778	1,345	+1,433	1,009	2,358	-1,349	-2,782
<b>AIR FORCES</b>							
Personnel <sup>38</sup>	531,000	400,000	+131,000	530,700	500,000	+30,700	-100,300
Tactical aircraft <sup>39</sup>	5,800	3,250	+2,550	5,000	5,350	-350	-2,900
Fighter/attack <sup>40</sup>	3,800	2,800	+1,000	2,300	3,590	-1,290	-2,290
Recon/ECM	820	450	+370	340	750	-410	-780
Airlift:							
Strategic <sup>41</sup>	26	8	+18	300	60	+240	+214
Tactical <sup>42</sup>	620	750	-130	500	800	-300	-170

<sup>1</sup> US reductions reflect the inactivation of strategic bomber squadrons.  
<sup>2</sup> Definition of "heavy" ICBMs conforms to US SALT I unilateral statements. Includes US Titans; Soviet SS-7, SS-8, SS-9, SS-18, SS-19, although SALT II accords may eventually consider SS-19s in the "light" category. An estimated 100 of them were deployed in January 1975.  
<sup>3</sup> Definition of "light" ICBMs conforms to US SALT I unilateral statements. Includes US Minuteman II, III; Soviet SS-11, SS-13, SS-17.  
<sup>4</sup> ALCMs with nuclear warheads include US Hound Dog, SRAM; Soviet AS-3 (Kangaroo), AS-4 (Kitchen), AS-6. Where statistics are lacking, but mass production confirmed, figures shown reflect standard force loadings—for example, 2 Hound Dogs per B-52, 1 AS-3 per Bear bomber, 2 AS-111s per Backfire.  
<sup>5</sup> Strategic sea-launched cruise missiles currently are limited to Soviet Shaddock, which has a maximum range of about 250 nautical miles (nm). Its estimated effective range is closer to 150 nm. Figures shown are tubes only, not missiles. Their primary mission probably is antiship.  
<sup>6</sup> "Heavy" bombers include US B-52; Soviet Bear, Bison.  
<sup>7</sup> "Medium" bombers include US B-47, B-58, FB-111; Soviet Badger, Blinder, and Backfire.  
<sup>8</sup> US 1965 tanker figure includes, 50 squadrons (average 20 aircraft each).  
<sup>9</sup> US reductions reflect the inactivation of interceptor squadrons, SAM batteries, and radar sites.  
<sup>10</sup> Soviet 1965 ABM figure excludes abortive deployment of possible first-generation missiles around Leningrad.  
<sup>11</sup> SAM air defense launchers include US Bomarc, Hawk, Nike-Hercules, both active and National Guard. Soviet forces include SA-1 through SA-5. Soviets have 12,000 missiles for 9,500 launchers.  
<sup>12</sup> Interceptors include US Air National Guard squadrons as well as those in the Regular Air Force.  
<sup>13</sup> Army strengths exclude strategic nuclear elements. US figure for 1965 parallels that prior to the Vietnam War buildup. The peak in Fiscal Year 1968 was 1,570,000.  
<sup>14</sup> US figures exclude separate brigades and regiments which sometimes are used to calculate "division equivalent" strengths. Soviet tank divisions are shown as armor. Soviet motorized infantry divisions are shown as mechanized.  
<sup>15</sup> US medium tanks include M-48 and M-60; all others are light tanks. Soviet heavy tanks include JS-2/3, T-10; T-54/55, T-62 are mediums; PT-76 is light.  
<sup>16</sup> US figures are limited to armored personnel carriers. Soviet statistics include scout cars.  
<sup>17</sup> US SRBMs include Pershing, Lance, and Honest John (Lance has entirely replaced Honest John in Europe). Soviet SRBMs include Scud A/B, Scaleboard, Frog. The Soviet LRCM is Shaddock, a land-based version of their strategic nuclear SLCM.  
<sup>18</sup> US nuclear artillery includes 155-mm and 8-in howitzers. The Soviets may have nuclear rounds for 203-mm gun-howitzers and 240-mm mortars, but perhaps only for training purposes.  
<sup>19</sup> Conventional artillery excludes mortars, antitank guns, rocket launchers, recoilless weapons, and antiaircraft artillery.  
<sup>20</sup> US antitank missiles include Dragon and Tow. Soviet models include Snapper, Swatter, and Sagger. No Soviet missiles are helicopter mounted.  
<sup>21</sup> Soviet marines (naval infantry) in 1965 comprised small units with the 4 fleets (Northern, Baltic, Black Sea, and Pacific). They now are organized into regiments.  
<sup>22</sup> Naval personnel strengths include naval air elements, but exclude ballistic missile submarine forces.  
<sup>23</sup> The Soviet V/STOL carrier Kiev is sometimes called a cruiser.  
<sup>24</sup> Soviet helicopter carriers of the Moskva class are sometimes called helicopter cruisers. US counterparts are commonly categorized as amphibious ships.  
<sup>25</sup> US Navy reclassified many cruisers, destroyers, and other escorts in the spring of 1975 to conform more closely to international terminology. The 1965 column reflects 1975 classifications to facilitate comparisons.  
<sup>26</sup> SSM refers to antisurface-ship cruise missiles in this table. Soviet SS-N-2, 3, 9, 10, and 11 are included. SS-N-3s (Shadocks) are shown as strategic missiles, but have antiship missions.  
<sup>27</sup> Escorts include frigates, destroyer escorts, and other comparable oceangoing craft of 1,000 tons or more. US Naval Reserve ships, shown in parentheses, are immediately available to augment active forces in emergency. US Coast Guard vessels are omitted.  
<sup>28</sup> Soviet coastal submarines are excluded.  
<sup>29</sup> Amphibious ships exclude helicopter carriers and landing craft (such as LCU, LCM, LCVP).  
<sup>30</sup> Total aircraft for Navy and Air Force include all types. Subordinate entries, which include selected types only, do not equal the total.  
<sup>31</sup> Soviet naval bombers include Badger, Blinder, Beagle, Backfire.  
<sup>32</sup> Soviet naval patrol/ASW aircraft include Bear, May, and Mail. The latter is an amphibian.  
<sup>33</sup> US naval aircraft float exclude those assigned to Marine squadrons.  
<sup>34</sup> The sharp drop in US Navy ASW aircraft between 1965 and 1975 reflects the decommissioning of 9 ASW aircraft carriers.  
<sup>35</sup> US sealift included 329 vessels in the Military Sealift Command (MSC)-controlled fleet in 1965 and 118 in 1975. (MSC was called Military Sea Transport Service in 1965). The remainder are Merchant Marine. No such breakout is possible for Soviet ships.  
<sup>36</sup> Air Force personnel strengths exclude strategic nuclear and naval air elements.  
<sup>37</sup> Current Soviet fighter/attack figures include 2,000 aircraft intended primarily for counterair missions and 1,500 earmarked primarily for close air support of ground forces.  
<sup>38</sup> Strategic airlift forces include US C-5 and C-141 aircraft, Soviet Cook and Candid.  
<sup>39</sup> Tactical airlift forces include US C-130s, active and reserve. Soviet figures indicate Cub only.  
<sup>40</sup> Parity.



is being terminated (unless a countermanding decision is issued soon by the National Security Council), about \$102 million is being invested this year in R&D to improve the existing force through upgraded silo hardness, higher-yield warheads, and greater accuracy. Approximately a third is for continued development of the Mk-12A reentry vehicle, a high-yield variant of the Mk-12 system currently deployed on Minuteman III missiles.

### Cruise Missile Technology

About \$260 million of DoD's '77 R&D budget request is earmarked for USAF and Navy cruise missiles. The air-launched version (ALCM) will be deployed by the B-52 force and the sea-launched missile (SLCM) by submarines. SLCM uses a special booster rocket that permits underwater launch from the standard torpedo tubes of US submarines. It also can be adapted to surface ship launch or shore launch with only minor modification. (Such a system is a promising candidate for shoring up tactical nuclear forces, or TNFs, especially in Europe, to offset the Soviets' recent massive deployment of longer-range nuclear-capable tactical aircraft and significant advances in their medium and intermediate-range ballistic missiles.) SLCM also serves as a hedge against performance shortfalls in the ALCM program and will maintain "a competitive environment," according to Dr. Currie, since "we are protecting, through design modifications, the option to carry and launch the SLCM from the B-52." SLCM's range, according to Dr. Currie, is about 2,000 nm.

ALCM, because of the size constraints imposed by the B-52's internal rotary SRAM launcher, has less range than SLCM. This deficiency can be ameliorated by carrying the missile externally, which permits use of a jettisonable external fuel tank "to substantially increase its range," Dr. Currie said. (See also p. 12.) Such an arrangement could boost range from 750 nm to 1,500 nm. Either cruise missile is economically attractive because it uses existing launch platforms yet forces the Soviets to field new and better air defenses.

Operationally, cruise missiles can be used to attack targets that are not defended by high-quality terminal SAMs. The majority of SIOP targets are not so defended. A "bonus" for the penetrating bomber force is derived from ALCM through dilution and possibly saturation of the enemy's air defense net. Also, cruise missiles, in effect, extend the range of the B-52 force by their ability to destroy outlying, isolated targets. This reduction in B-52 range requirements can be converted into more payload or higher probability of bomber recovery through increased

low-level flight. USAF's first powered flight test of ALCM took place at the White Sands, N. M., missile range on March 5 (see also p. 12).

Almost half of all R&D funding in the strategic area goes to two systems well along in the development cycle: Trident (almost \$600 million) and the B-1 (about \$483 million). These weapon systems continue to represent the Defense Department's top requirement in the field of offensive strategic capability.

### High-Energy Lasers

The FY '77 RDT&E budget request puts increased emphasis on command, control, warning, surveillance, and attack assessment systems that are "absolutely essential to our strategic posture." A total of \$283.5 million is being sought for these systems. Publicly recognized for the first time in that context is the importance of high-energy laser systems. In his Annual Statement, the Director of the Defense Advanced Research Projects Agency (DARPA), Dr. George H. Heilmeier, disclosed that "the US continues to increase its reliance on strategic offensive and defensive systems, which totally or partially involve space as the environment. It is in this environment that one of the most significant properties of the high-energy laser may be exploited more fully—the ability to precisely transmit energy over long distances at the speed of light."

Indicative of progress in this otherwise highly classified area of advanced technology is a comment by Dr. Heilmeier that his agency's investigations seek to determine "the extent to which High-Energy Lasers (HEL) offer an economically and technically attractive alternative to conventional chemical rocket propulsion for launching military payloads into space." The principle involved, he said, "is the use of high-energy lasers to beam energy up to launch vehicles. The energy received by the vehicle is focused into a properly designed rocket engine where it could theoretically heat a seeded hydrogen plasma to 3,000–4,000°K. This would produce specific impulses [thrust] ... roughly three times those available with conventional chemical fuels."

Because the expensive, reusable laser system remains on the ground and eliminates the need for complex and expensive multistage spacecraft, laser propulsion derived from high-energy laser developments might lead to a sharp drop in the cost of putting military payloads in orbit. Cost per pound of payload delivered into orbit might be reduced from \$1,000 at present (or about \$400 once the NASA Space Shuttle becomes operational in the 1980s) to between \$10 and \$30 a pound, opening "whole new frontiers of space exploitation," according to the DARPA



Director's recent congressional testimony.

Laser radar is another advanced technology of great importance to military space operations because of its ability to detect and identify objects in space over great distances, according to Dr. Heilmeier. "The combination of range, resolution, and target detail that will result from our radar efforts will create an entirely new dimension in instrumentation for precise and economical ground-based physical characterization of satellites," he told Congress. Augmented by new optical search sensors employing charge coupled devices, a potentially revolutionary technology in electronic circuitry, these systems should "significantly enhance and compress the space object detection and identification cycle," according to the DARPA Director.

Presumably, this takes in the so-called dark or hidden satellite technology. Satellites that are in extremely high-altitude orbits, possibly several times the 22,300-mile distance of geosynchronous systems from the earth, cannot be detected with existing means if all on-board power is turned off until the system is called into action upon command from the ground or another satellite. (DoD spokesmen have indicated that two "invisible" satellites are to be launched this year.) The "owner" of such a system, of course, can't track it either unless he

activates its avionics or resorts to station-keeping (use of on-board thrusters to fix its position), either of which might be detected by infrared sensors.

Overall, the importance of lasers to military space operations is summed up by Dr. Heilmeier's statement that a key question DARPA seeks to answer is: "Is a space-related use of high-energy lasers possible and could it threaten our vital satellite network and strategic deterrent capability? Conversely, could such a laser serve the United States in a defensive way?"

National security obviously precludes the Defense Department from answering this question in public. Dr. Currie did report to Congress that we know "the Soviets have a comprehensive program in laser research and development, and that they are leading us in some areas. While we have little information about their military applications programs, we know they have made large investments in facilities, some of which seem oriented toward development of laser weapons."

The Defense Department is requesting about \$187 million in FY '77 for its high-energy laser programs, \$89 million of which is earmarked for use by the Air Force. (New technological initiatives pertaining to general-purpose force capabilities included in the FY '77 budget will be dealt with in a subsequent article.) ■

### Currie: Stop Apologizing for National Defense Cost

Dr. Malcolm R. Currie, Director of Defense Research and Engineering, recently articulated a long-overdue, welcome change in attitude on the part of Defense Department leaders in justifying investments in national defense. "I believe it is time," Dr. Currie said, "we stop apologizing for the cost of national defense. It is time that we stop appearing hat-in-hand before Congress and before the American people. I believe that it is time to lay the facts and our concerns on the table and the public will respond as it always has in the past in moments of national danger."

Declaring that the new budget request supports an "austere but adequate program to start us along the path of maintaining and rebuilding our strength for the uncertain years ahead," he saw evidence of a "new undercurrent" affecting the congressional leadership. "I believe," he said, "there is an upswelling of sentiment from the American people that we will not be pushed around, that the investment is a sound one, with the secure future of our nation and, ultimately, our freedom in the balance. And I have confidence that Congress will respond."

At a subsequent press conference, Dr. Currie acknowledged that his original FY '77 RDT&E request for \$12 billion had been pared back to less than \$11 billion. This reduction caused the deletion of several proposed programs. Dr. Currie singled out deferral of work on radar satellites, an important technology pioneered by the Soviets.

In assessing the Soviet technology effort, the Pentagon's R&D chief listed key areas that are being pursued vigorously by the Soviets and where the USSR appears to be in the lead. These programs, he pointed out, suggest that the Soviet "military R&D effort is in transition from the conservative incrementalism of the past to innovation and bold new undertakings in speculative but high payoff areas." Among them is the so-called "wing-in-ground effect vehicles" technology, a sophisticated aerodynamic shape suitable for very large, high-payload aircraft. The Soviets also appear to lead in high-pressure technology, essential to the development of metallic, solid hydrogen, considered the aeronautical superfuel of the future. (See *March '76 issue*, p. 36.)



**T**HE B-25G evoked a variety of expressions—mainly of awe—when it first appeared at Columbia Army Air Base, S. C., in the early spring of 1943. Small wonder: In its funny-shaped nose it carried a 75-mm cannon, surely one of the biggest pieces of armament ever mounted on an airframe.

Most expressions were in the form of slack-jawed questions:

“Who fires that thing?”

“Holy mackerel! Doesn’t the airplane almost stop when you fire it?”

“Who loads it?”

“What’s it sound like in the airplane when the cannon fires?”

And most relevant of all: “*Can you hit anything with it?*” Somebody always had to get that one in.

In sequence, the answers to the foregoing were: the pilot; no; whoever’s in the navigator’s compartment; loud; and occasionally.

Those of us who were volunteered to train in the airplane certainly thought at the time we could hit

things with the cannon. We flew practice gunnery missions in which we shot an occasional hole in a large, nonhostile wooden target at point-blank range while skimming over an uninhabited section of Myrtle Beach. There were annoying times on those flights when everything said that the shell should have gone into the target but didn’t. Maybe we had been jolted by a thermal during the gunnery run or distracted at the last minute—something more practice and experience would explain.

After a year of combat in the “G,” as it came to be called, I was still asked those same questions since the airplane remained an oddity. With real experience behind me, the question of our ability to hit anything irritated me because it was simultaneously too difficult and too easy to answer, but more because it should have been asked before the model was ever built.

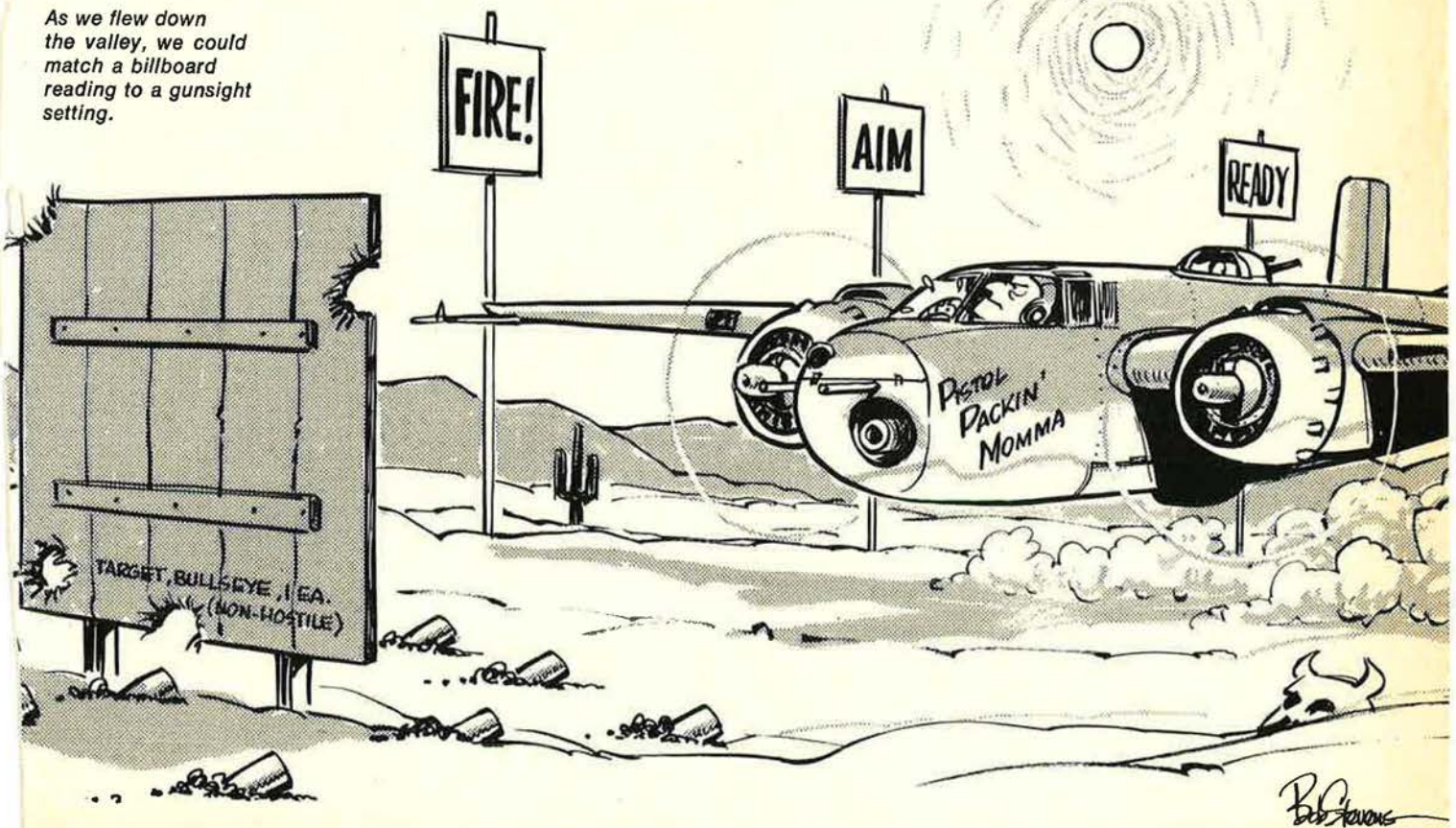
Depending on how I felt from

# AAF's Flying Artillery— The 75-mm Baker Two-Five

*Early in World War II, someone—certainly not an artilleryman—decided to put a 75-mm cannon in the nose of a B-25. One of the first flying cannoners describes his experiences, hair-raising and hilarious, as he and his squadron mates stooged their unaimable airborne artillery around the Mediterranean looking for a mission.*

**BY LT. COL. JIM BEAVERS,  
USAF (RET.)  
CARTOONS BY BOB STEVENS**

*As we flew down the valley, we could match a billboard reading to a gunsight setting.*



Bob Stevens



time to time, I may have replied "No," and let it go at that. For all practical purposes, that was an accurate answer. Or I may have said, "Yes, under the right circumstances." However, that was not only evasive but open-ended. It was an invitation to ask what were the right circumstances, and the answer to that was a can of worms. If pressed about it, I had to say, "On the ground, in a secure area with the parking brakes set and the muzzle pressed firmly against the target."

### Looking for a Mission

My crew and six others were the first to take the G to combat in May of 1943. Another small contingent left close behind us, and by the time we had flown the South Atlantic and collected ourselves at Souk el Arba in Tunisia, we numbered about a baker's dozen. We were assigned to a somewhat bewildered 47th Bomb Wing (M) that normally stocked conventional B-25s, and were dubbed the "47th Gun Squadron."

We didn't know specifically what it was we were supposed to do. And despite a certain amount of officious bustling around our airplanes, it quickly became clear that the staff of the 47th Bomb Wing didn't know either. Which gave rise to the question: What was the G for?

There should have been clues in its configuration. At the outset, the G was really a model C with its nose chopped off, eliminating the bombardier's compartment. The 75-mm cannon was installed in what had been the bombardier's crawlway, and the nose was reconstructed around it and two fixed .50-caliber machine guns.

Losing the nose meant losing part of the bombing system. Bombardier, bombsight, bomb bay door control, and intervalometer were lost to the hacksaw.

Somebody decided that the pilot would absorb what remained of the bombardier's functions. The bomb bay door control was moved into the cockpit, as was the intervalometer. The pilot's control wheel was ringed with buttons—one for bomb release, one for cannon firing, one for machine guns, one for radio and interphone operation, and, in a few cases, one for photography.

The arrangement gave the G pilot pretty much the same chores an A-20 pilot had. Since the latter managed without a copilot, equal justice required removing the copilot's seat from the G. His control wheel and rudder pedals remained, but no seat.

It follows, of course, that we had copilots, and I for one was glad we did, though they weren't much help on the long flight to Africa. We had to improvise seats for them, and the best I was able to rig up was an accumulation of luggage that left my assistant roughly at eye level with the parking brake handle. He rode all the way to Africa with his knees up around his ears. When I required relief, he reached up in sim-



ian fashion to the control wheel and steered chiefly by instinct. I returned to the cockpit occasionally to find us wandering casually around the South Atlantic.

Other modifications based on combat experience were made to the airplane soon after we joined the 47th. They consisted of dropping useless equipment like the lower turret and adding good things like waist and tail guns and seat armor, and two more .50s in the nose. Oh, and a copilot's seat.

The configuration resulting from these alterations was a gun platform with superficially impressive firepower. However, one critical deficiency was never overcome. With the equipment available at the time, there was no way to estimate range for a cannon moving at better than 200 mph and accelerating, and hence no way to aim it at any distance

from the target. So what was the airplane for?

We, of course, had our share of rumors at Columbia. The straight word was that the G was designed for attacks against enemy shipping, that its cannon was intended to suppress anti-aircraft fire during low-level skip-bombing runs. There were other straight words, but this one dominated.

Skip-bombing had been done with conventional B-25s, armed with one flexible and sometimes one fixed forward-firing .50, during Rommel's evacuation from Cape Bon. They were reportedly real hair-raisers. It was necessary to fly directly over the target vessel in order to skip-bomb, and since the B-25 was extremely vulnerable in making that transit, relative success depended on whether the ship was being defended by anti-aircraft fire. The assumption was that the G's cannon would constitute a great equalizer. So much for rumors.

### If at First . . .

My crew drew a bye for the first G combat mission. Unaccountably, the target was a German radar station on Sardinia, a selection that seemed to suggest uncertainty in high places about the airplane's intended purpose. The mission was not exactly a turning point in the war. The Gs drew a shower of small-arms fire, and, except for the language barrier, the station might have provided radar vectors home.

That sort of thing was first among many that the G was apparently not designed to do. A significant precedent was set on that first mission, though. It was flown in a standard four-ship fighter formation that became the norm for us.

A comparative history of the G's use in the ETO and in the Pacific seems to point at that tactic as a basic error on our part, which became pretty much set in concrete as the only way to fly. As a result, we never discovered the available massed firepower of larger formations. Our combat tactics also evolved largely from the fighter formation, and they diluted even the collective firepower of the four-ship flight.

After Sardinia, it was decided that we would fly conventional missions



at medium altitude while people gave the G some more thought, and we were distributed among the squadrons of the 321st Bomb Group. Doing routine bombing was a simple matter of presetting the intervalometer and dropping on the lead ship. Then command of the 47th Bomb Wing changed hands, and the new incumbent perceived that we were not exploiting the airplane. The next experiment was low-level operations against shipping.

We had already flown several generally meaningless missions of that kind when we weren't needed for medium-altitude operations—long, tedious drills that covered hundreds of miles of open Mediterranean where, it turned out, enemy shipping was least likely to be found at that stage of the war. But one of those missions had gone right up the Italian coastline, and in a small harbor had encountered more floating armed hardware than it could handle. So that was where the action was.

The wing commander decided to see for himself if the G could be used effectively against shipping. As it happened, he gave us our first opportunity to put to the test an awful lot of theory, some of it running all the way back to the drawing board. It was our first encounter with a surface vessel of any size, alone and—it turned out—unarmed.

We took off in the early morning. The wing commander, a brigadier general, was flying copilot in the lead ship. Other than that, it was a flawless Mediterranean day. Flying the four-ship formation we had adopted, we angled northeast past Sicily, then east to intercept the coast of Italy. We turned north about a mile offshore and began a search for shipping. Within a few

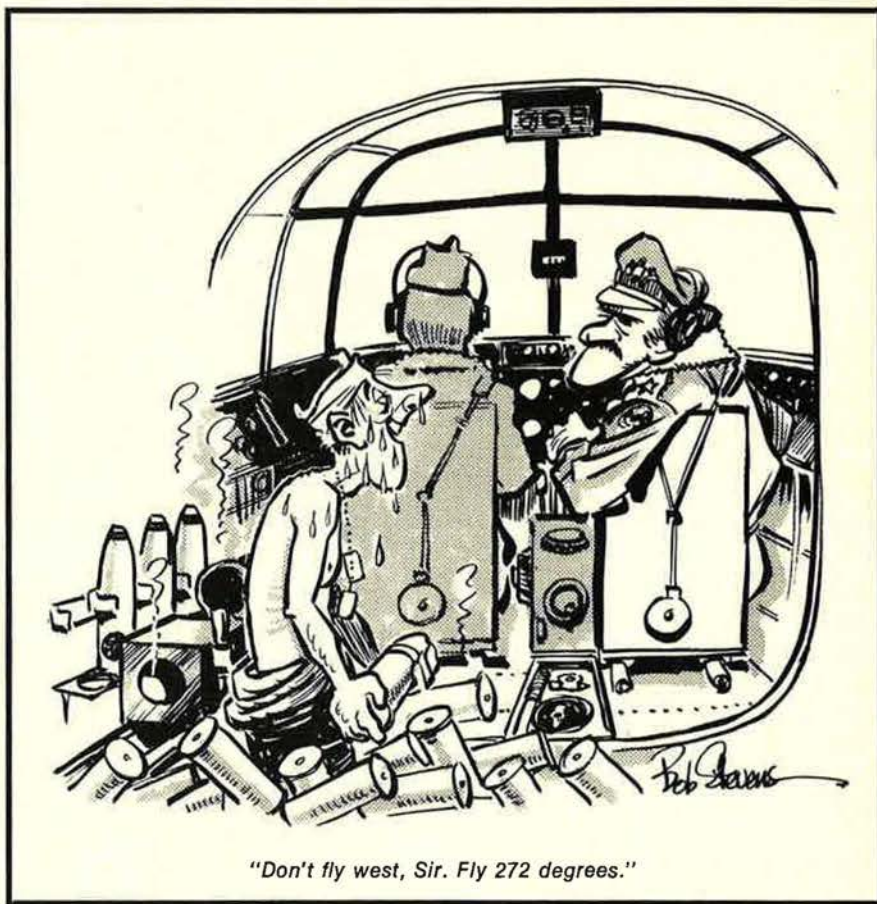
*Undaunted by his combat tour in the B-25G, the author, Jim Beavers, decided to go for twenty. After earning a degree in physics from the University of North Carolina in 1948, he spent most of his Air Force career in R&D work, specializing in nuclear weapons applications. At the time of his retirement in 1963, he was serving on the Air Staff in War Plans. He is now president of a small company in Winter Park, Fla.*

minutes, we stumbled onto an old tanker.

The flight commander signaled echelon left, and we complied briskly. After a moment's hesitation that surely included second thoughts about all this, he peeled off and thundered down that long and lonely run that would come to dominate our thinking. Individual attacks seemed a natural outgrowth of the fighter formation, and they too became standard. With the benefit of 20-20 hindsight, I can say with some

brated in yards. The bad thing was that it was calibrated in thousands of yards, at one click per thousand.

And therein lay the G's fatal flaw as an aimable standoff weapon. Setting the gunsight to the nearest approaching thousand yards was sheer guesswork. There were calibrations intermediate to the clicks—ten subdivisions, I believe—and estimating range to the nearest tenth of a thousand yards was guesswork compounded by an order of magnitude. Since the difference between hitting



"Don't fly west, Sir. Fly 272 degrees."

authority that they were another fundamental mistake.

I was last in line. I rolled out of my turn, flipped up the cannon and machine gun safing switches, set the gunsight at some value, and began firing. After these attacks, the ship was not visibly damaged by anything other than the ravages of time.

If I can reconstruct this accurately, my airplane was moving toward the tanker at about 260 miles per hour, which is about 380 feet per second, which is about 127 yards per second. Which is relevant only because the hand-adjusted gunsight was cali-

and missing the tanker was at most a matter of twenty yards in slant range, the tanker was never in serious trouble. Like the other pilots, I fired round after round without coming near it.

The general reached the limit of his forbearance during the four uniformly ineffective runs at the tanker. He turned in wrath to the navigator, an apple-cheeked, imperturbable farm boy from Missouri, and demanded a withdrawal course.

The navigator was stripped to the waist and streaming sweat from loading the cannon. He stood calf-deep in expended casings and



clutched a provisional next shell at the ready. Without blinking, he said, "Fly west, General."

This struck the general as flippant, and he snarled something to the effect that when he asked for a course, he wanted one a little more precise than a hot-dang cardinal point on the compass.

The rosy-cheeked lieutenant listened, then turned around and returned the shell to its storage rack. He clattered and clanged through the casings to reach his chart, con-

the cannon, but that's about all that could be expected in light of the fact that instructors and instructees laid eyes on the first G simultaneously. If the former were less than aggressive about making students press home attacks on the wooden targets along the beach, that was understandable too. The combination of newly winged pilots, newly configured airplanes, ten feet of altitude at speeds of about 260 mph, and recurring explosions in the navigator's compartment as the cannon went off unex-

fore heaving each shell into the cannon. Without realizing it, he was cutting the fuze to its minimum setting. When fired, the shell detonated right before his eyes. Putting two and two together, he concluded that an unseen gun battery was matching him shot for shot.

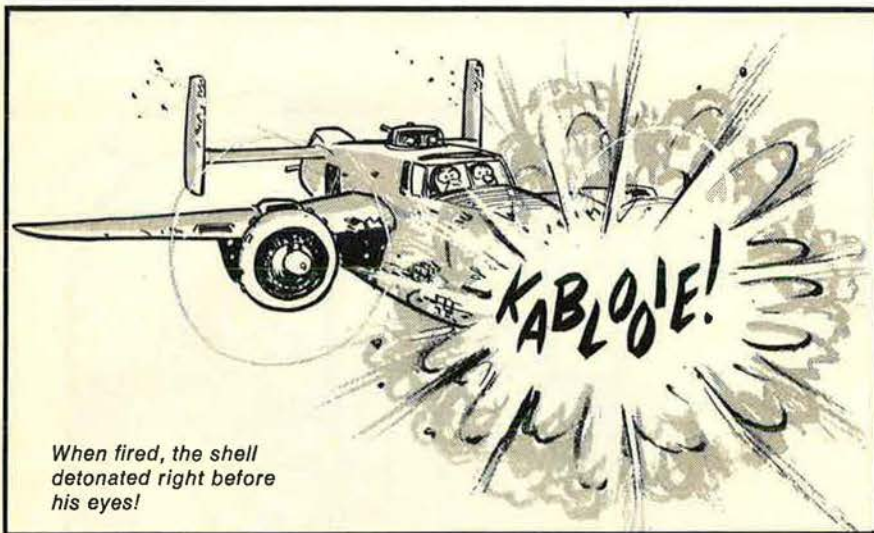
While I wouldn't categorize that man as your basic Rhodes Scholar, it's only fair to reaffirm that nobody gave us any instructions on the HE shell. That little omission typified our training as artillerymen when we brought the G to combat.

Early in our tour, before anybody fully recognized the enormity of the rangefinding problem, we flew training missions predicated on the assumption that it could be learned. The scruffy mountains south of our Tunisian base contained a little horseshoe valley in which the previous wing commander had built a series of billboards approaching a monster bull's-eye right in the toe. They announced the distance in thousands of yards to the target, and as we flew down the valley we could match a billboard reading to a gunsight setting, fire a round and observe the results. Our collective marksmanship remained poor despite being told when to fire by a passing road sign.

In frustration, the wing commander finally gave us permission to experiment and innovate. I think I was the one who suggested that, since range was the apparently insurmountable difficulty, we might try to get around it by dive-gunnery. The thought here was that a vertical attack would eliminate the range question, since target and ocean would be essentially the same distance from the airplane at any point (what this proved is a little obscure, in retrospect). Diving straight down on the target would reduce the gunnery problem, it was argued, to a two-dimensional matter of azimuth and elevation. That it had never been anything else was lost in the semantics somewhere.

The next day, several of us flew out to sea to try dive-gunnery, using an uninhabited rock as a target.

The obvious had already occurred to us: (1) a truly vertical attack was not feasible in a B-25, and (2) anything approaching a vertical attack would have to be conducted with engines idled and landing flaps full down. What should have been obvi-



*When fired, the shell detonated right before his eyes!*

sulted it briefly, and clanged and clattered back to the edge of the flight deck. He tapped the general on the shoulder. "Don't fly west, Sir," he counseled. "Fly 272 degrees."

It was an eminently forgettable day.

### **Assaulting the Symptoms**

Nobody could really fault the general's peevishness, I guess, because an impressive amount of effort had gone into training us, only to have us go to the plate and come away 0 for 4. Much of it had been instigated by the man he replaced. And there had been those Myrtle Beach outings back in the States. What about those?

Realistically, our Stateside training had taught us only a little more than how to fly the airplane, which, in its cannon-carrying configuration, was heavy and not too stable, judging from the number of sandbags lashed into the tail section. That training had familiarized us with the optics, mechanics, and circuitry of

pectedly was enough to moisten any IP's armpits.

What little Stateside experience we got with the cannon was limited to use of armor-piercing shells. We didn't know the HE (high-explosive) variety existed until they were handed to us, without enlightening comment, in Africa. Figuring out the difference was an individual problem. The HE shell had a safing pin and a bright aluminum disk in the nose with flat edges on two sides that accommodated a wrench we found with the ammunition. Some mysterious little numbers around the disk were intended to tell us something, I'm sure, because after the safing pin was removed we could turn the disk to align an arrow with any of them.

We had one G replacement pilot who reported that he was drawing heavy, accurate flak during every training mission against an old beached hulk we sometimes used as a practice target. It evolved that he was using HE shells and was "winding up the fuze to make it go" be-



ous was not. Throttling back the engines to idle at 12,000 feet in cold, moist air, dropping like a safe with the door closed to less than 500 feet, then opening the throttles for a fast getaway wasn't feasible either.

The tests showed that landing flaps did not serve as dive brakes. Before I had lost 500 feet I had exceeded the allowable flap-down speed. To hang onto the flaps, I put them up and promptly exceeded the maximum allowable speed in any configuration. This proved to be a blessing in disguise as I eased the airplane out of the dive and found both engines dying from carburetor ice. Trying to get them going again during the long run-out while the airspeed bled off to believable numbers, my copilot and I established new time records for four-handed exercises.

That was it for dive-gunnery.

We also briefly examined formation gunnery, on the theory that in a salvo many errors might average into a hit. What we got was a lot of average errors. To my knowledge, only four of us made a brief stab at formation gunnery and quickly dismissed it. Ironically, it was close to a tactic that proved successful in the Pacific, even if not quite the same.

### Meanwhile, in the Pacific

New Gs and crews began pouring in from the States as if the airplane were a godsend. Soon there were so many that it was decided to reequip the 310th Bomb Group with them. To those of us who had brought the originals over, it meant we were now flight commanders, for lack of anybody more experienced. My squadron was detached soon thereafter and sent to the Libyan coast for operations with the RAF against German shipping in the Aegean Sea. The other three squadrons of the 310th remained in Tunisia in a quasi-training status, flying an occasional four-ship combat mission that still doggedly involved aiming the cannon, and without notable success.

On the other side of the world, the Fifth Air Force was taking a much more pragmatic view of the G. It concluded early that aiming the cannon was a waste of time. Depending on target size, it put six, nine or twelve Gs in a line abreast

and used them as a covering force for strafing A-20s and other B-25s with forward-firing .50-caliber machine guns that were used as gunships. The G pilots were briefed not to aim at individual targets but to fire as many rounds as fast as possible. It was not unusual for each G to get off eighteen to twenty rounds in a single run. The resulting barrage was intended to do one thing—suppress defenses for the strafers to follow. It worked.

Gen. Richard H. Ellis, now Com-

a cannon and a gunsight for it calibrated in thousands of yards. To our uninstructed minds, it followed that it was possible to hit a target thousands of yards away. Since that reasoning precluded consideration of the inadequacies of a rapidly moving and not always stable airplane as a gun platform, the problem was to discover what we pilots were doing wrong when we missed. One high-ranking officer concluded it was a disciplinary matter. He proposed that pilots be required to sign state-

*One of the biggest pieces of armament ever mounted on any airframe was the 75-mm cannon on the B-25G. It turned out to be more impressive in appearance than in application.*



mander in Chief, US Air Forces in Europe, and then one of the A-20 or B-25 pilots (he flew both) who came in for the kill behind the Gs, recalls that it was very comforting to follow them into a heavily defended complex such as an airfield. The barrage tactic was used successfully against enemy shipping and even to soften up beachheads.

Why didn't we think of that—the barrage tactic? There are several answers. General Ellis suggests one. Targets in the Pacific were different from those in Europe, he points out, and were such that low-level attack was a major Fifth Air Force tactic throughout the war. It was uncommon in the Mediterranean.

There was something else. All our early experimentation with the airplane had the objective of finding a way to aim the cannon effectively. It had nothing to do with tactics as such but with technique, and involved a sort of naïve, GI faith. The airplane was issued to us with

ments of charges for shells that went astray. That, too, may have been a major difference between ourselves and the Fifth Air Force.

In early 1944, my squadron was recalled from Libya to a new base on Corsica, where we were to finish out our tours doing conventional bombing. It had been a full year since we first began flying the G, and few of us ever flew it again.

The B-25 remained in the Air Force inventory for years after World War II for administrative and pilot proficiency uses. It was a solid, stable, dependable old bird that could be trusted in fair weather and foul. Two versions of the airplane that were junked immediately at war's end, however, were the G and its successor, the J. It seemed nobody could find a peacetime application for an airborne 75-mm cannon. I don't find that surprising. Nobody in my theater of operations could figure out what to do with one in wartime. ■



# Airman's Bookshelf

## A Special Breed of Men

*Masters of the Art of Command*, by Martin Blumenson and James L. Stokesbury. Houghton Mifflin, Boston, Mass., 1975. 393 pages with index. \$12.50.

"The process of motivating human beings and controlling impersonal forces during a clash of arms is extremely complicated and difficult, and successful practitioners of the art of command have been a special breed of men, distinguished by strength, will and flair," according to Martin Blumenson, one of the authors of this book.

Blumenson and Stokesbury have assembled several meaningful and revealing essays on leadership in combat. The essays, largely from service journals, describe combat leadership from the Meuse-Argonne exploits of Lt. Samuel Woodfill (whom Pershing called the "outstanding soldier of the AEF") to the high-level activities of Rochambeau and Eisenhower, astute managers of complex coalitions.

Not surprisingly, given Blumenson's association, George S. Patton emerges as the common denominator of the work. Patton is treated specifically in two articles—as a master of mobile warfare and as a diplomat in North Africa—and he is mentioned in several other articles. If a book on warriors needs a common denominator, undoubtedly Patton's name is among the first to come to the minds of most soldiers.

Stokesbury's introduction is an excellent capsular treatment of military history from the Hittites and Assyrians to the Vietnamese War, and as such is one of the most valuable parts of the book.

The maps are simple and inval-

able complements to the text. There are no illustrations, and that is unfortunate, because when one deals with soldiers such as these, it is meaningful to see what they looked like.

Airmen and sailors will be disappointed that none of their number has been included as "masters." The authors have selected their subjects from the ranks of ground soldiers. In my view, this is no oversight. Command is most personal for those who lead men into the face of the enemy, on the ground. There, at the cutting edge, the responsibility for each soldier's life and for mission accomplishment can neither be escaped nor diffused. This was as true for Charley Stone, the maverick general in Vietnam, as it was for Sulla and Saxe.

*Masters of the Art of Command* is one of the best compendiums of essays on leadership in ground combat to be published in recent years. It is an invaluable source for those who aspire to lead fighting men, and for those who seek to understand land combat so that they can better manage their specific resources to support it. It should be on every officer's bookshelf.

—Reviewed by Maj. David H. Price, USA, Department of History, USAF Academy.

## Fighters and Tactics

*World War II Fighter Conflict*, by Alfred Price. Macdonald and Jones, 8 Shepherdess Walk, London N1 7LW, England, 1975. 160 pages. \$7.00 postpaid.

The author, a former RAF pilot and a member of the Royal Histori-

cal Society, has produced a fascinating history of the evolution of fighter aircraft, engines, armament, and tactics during World War II and the immediately preceding years. The book is well illustrated with photographs, drawings, and cutaways of the principal fighters of that period, their cockpit arrangements, armament, and ordnance, and with tactical diagrams.

After tracing the development of fighter hardware, Mr. Price makes a detailed comparison of the combat capabilities of the FW-190A, P-51B, Hawker Tempest V, and Zeke 52. He then plays each against a range of other fighters, including the Spitfire, V, IX, and XIV; P-38; Me-109G; F4U; and F6F.

A highlight of the book is the chapter on evolution of fighter tactics between 1938 and the close of the war. Much of that chapter is drawn from a paper, "Hints on Hunting Huns," written by Reade Tilley, an American who flew with the RAF's No. 121 Eagle Squadron before transferring to the AAF in late 1942. His paper, based on extensive combat experience, was written in early 1943 while he was assigned to the AAF Tactical School at Orlando, Fla., where new group and squadron commanders "were given a final polish before taking their units overseas." Tilley, who retired from USAF as a colonel in 1971, was one of those responsible for introducing the combat-tested "finger four" formation that undoubtedly saved a great many AAF fighter pilots who would not have survived in Europe had they gone into combat using the modified World War I tactics that were in vogue in the AAF early in the war.

Besides being exciting reading for World War II aviation enthusiasts, this book will serve as an authoritative arbiter of arguments over the relative merits of Allied and Axis fighters and combat tactics.

—Reviewed by John L. Frisbee, Executive Editor of this magazine.

## Command in a Political War

*A Soldier Reports*, by William C. Westmoreland. Doubleday, Garden City, N. Y., 1976. 425 pages. \$12.95.

In *A Soldier Reports*, Gen. William C. Westmoreland recalls the high



points of his entire military career, but clearly focuses on his Vietnam assignment. It is well written, easily read, and one of the important works to emerge on Vietnam. For the professional airman, it is a must for what it says about both the uses and misuses of airpower. The General tells us that the B-52 was the weapon most feared by the enemy and that graduated bombing of North Vietnam was one of the most lamentable mistakes of the war. For the senior Air Force officer, the book is a testimonial to the problems of using military force in Communist-inspired insurgencies.

The role of the American soldier in Vietnam was quite different from his role in World War II or Korea. The American military tradition holds that the soldier's task is to fight wars and stay aloof from politics. This memoir is the story of one soldier who tried to live up to that tradition in a struggle that was fundamentally political. The General was not on his own. Political interference continually compromised and modified military objectives. Westmoreland, the soldier, supported his Commander in Chief and stayed out of the political debates on the war. In *A Soldier Reports*, he finally speaks.

His account holds nothing back. He describes, analyzes, and defends all aspects of the war from small-unit operations to White House decision-making. He asserts that while Vietnam was a swamp, it was at least a navigable one. Opportunities to successfully conclude the war were lost in 1965 when the White House opted for the policy of graduated bombing of North Vietnam and again in 1968 when the denial of troop reinforcements prevented the exploitation of the enemy's military defeat during Tet.

The benefit of hindsight makes it valid to question the thesis that Vietnam could have been brought to a successful conclusion by adopting the appropriate military strategy. The question of winning in Vietnam was probably never in Westmoreland's hands. He could certainly deny the enemy an outright military victory, but struggles such as the one in Vietnam are ultimately decided in the political arena. In insurgent wars *political leadership* is decisive. Neither the White House nor the Presidential

Palace in Saigon appeared able to match the political skill of the politburo in Hanoi.

To what extent was Westmoreland culpable for the eventual outcome in Vietnam? To the degree he influenced major political decisions that ultimately decided the war's outcome. It was here that the apolitical tradition of the American soldier haunted Westmoreland. While today's military leaders must not engage in politics, they must be ready to question political goals that exceed military capabilities. Even General Westmoreland, in retrospect, admits that he might have adopted a more questioning posture.

—Reviewed by Maj. Richard E. Porter, Assistant Professor of History, USAF Academy.

### New Books in Brief

*Aeroflot—Soviet Air Transport Since 1923*, by Hugh MacDonald. Aeroflot, the Soviet air transport conglomerate, serves 250,000,000 people inhabiting the largest national land mass on earth. The study relates Aeroflot's past and present activities to the unique characteristics of the Soviet Union—its politics, economy, climate, and terrain. Included are details on types of aircraft, fare schedules, and routes. Photos, maps, tables, and statistical appendices. Putnam & Co., London, 1975. 323 pages. \$13.65.

*Amateurs at Arms*, by George Wunder. A beautifully bound Bicentennial book by the creator of "Terry and the Pirates." Here are brief, one-page stories of forty-two American colonial citizens who temporarily set aside their private lives to fight the British. Full color, one-page illustrations by the author complement each story. Stackpole Books, Harrisburg, Pa., 1975. 96 pages. \$9.95.

*Bombers in Service: Patrol and Transport Aircraft Since 1960*, by Kenneth Munson. The world's leading bombers in three-view, full-color illustration with authentic color scheme, text, and index in a pocket-size volume. Macmillan Publishing Co., New York, N. Y., 1975. 159 pages. \$6.95.

*Defence Yearbook 1975/76*, ed-

ited by The Royal United Services Institute for Defence Studies, London. This second edition of the study, formerly known as Brasse's Annual, reviews the year's major defense events—Vladivostok and the future of arms control, Sino-Soviet relations, secret services and democracy—and surveys modern weapon technology and the year's defense literature. Westview Press, Boulder, Colo., 1975. 418 pages. \$24.75.

*The Directory of Defense Electronic Products and Services: US Suppliers 1976*. Expanded second edition includes descriptions of services as well as military products from the US electronics industry, with technical information on overall performance capabilities. List of manufacturers, glossary of technical terms, and a cross-referenced index. Bermont Books, Washington, D. C., 1976. 188 pages. \$20.00.

*Goebbels*, by Viktor Reimann. Translated by Stephen Wendt. Fast-moving story of a man who stopped at nothing to create a myth. As Propaganda Minister, Goebbels presented Hitler to the German people as savior, mystic, good and generous leader sacrificing himself for the people. The author is an Austrian historian. Doubleday and Co., New York, N. Y., 1976. 352 pages. \$12.50.

*The Lightplane Since 1909*, by John Underwood and George Collinge. Covers private lightplanes from Santos-Dumont's Demoiselle to the Bede 5 Jet, with photographs, three-view drawings, specifications, and brief text. Included is a list of suppliers of plans and kits for amateur lightplane builders. Heritage Press, Glendale, Calif., 1975. 104 pages. \$5.95.

*Military Aircraft of the World*, by John W. R. Taylor and Gordon Swanborough. The most complete coverage of the world's military aircraft available anywhere in a compact single volume. More than 250 photos, three-view silhouette drawings, specifications, and developmental histories of every combat-type aircraft known to be in service in 1975. Charles Scribner's Sons, New York, N. Y., 1976. 240 pages. \$6.95.

—Reviewed by Robin Whittle



# The Bulletin Board

By James A. McDonnell, Jr., MILITARY RELATIONS EDITOR

## Benefits: Some Good News

Different government elements recently endorsed or approved major improvements in five military benefits programs: per diem, PCS mileage, survivor benefits, enlisted subsistence payments, and trailer allowances. The actions contrast with the general "cut-the-benefits" atmosphere that has prevailed for many months. The new steps are:

1. After months of foot-dragging, the Senate Armed Services manpower subcommittee approved the military per diem bill, which authorizes an increase in daily payments from \$25 to \$35, and up to \$50 in certain high-cost areas. The action was expected to be supported promptly by the full Senate, and, since the House passed it last year, the measure could be law by the

time this report is published. The bill puts the military on an equal footing with government civilians who travel on their jobs.

2. The Defense Department disclosed that if Congress doesn't object, it will increase the PCS mileage rate for military members from eight to ten cents a mile, effective October 1. The government's added cost will be partially offset by imposition of a thirty-one-cent-a-mile limit for an entire family. Service-wide, the changes are estimated to cost the government about \$24 million annually, a rare people-program increase these days. Congress is expected to go along with the plan.

3. The Defense Department threw its official support behind two amendments to the survivor benefits program. One would cancel the

retiree's pay deduction when his beneficiary dies first or they are divorced. The other cuts from two years to one the time between the date a retiree remarries and the date coverage for the new spouse is effective.

The Pentagon asked Congress to incorporate the changes in the controversial Retirement Modernization Act, which a House subcommittee is expected to take up again in late spring. AFA has supported these survivor benefits changes vigorously and is continuing to press for a removal of the Social Security offset provision.

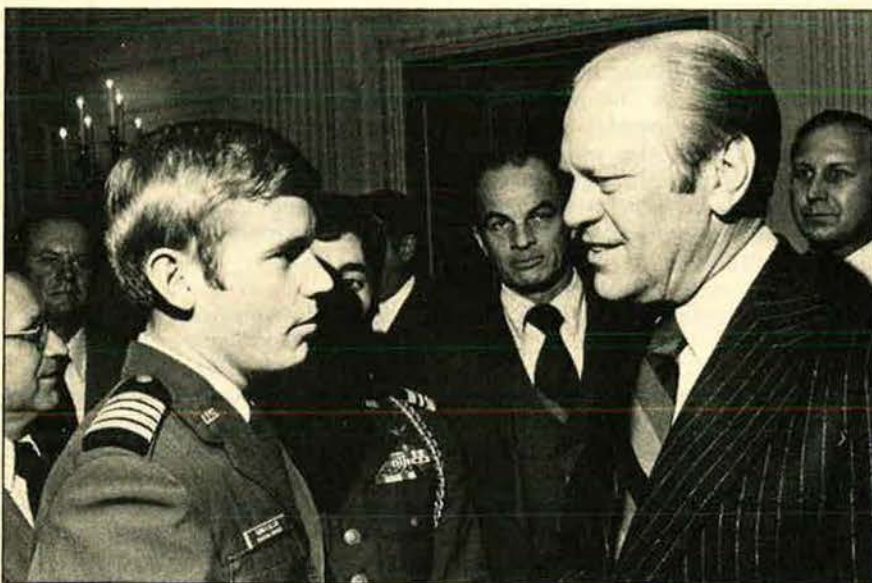
4. The Air Force took the first step in a three-pronged plan to give nearly all single airmen cash subsistence payments. Immediate winners are bachelor and unaccompanied E-7s through E-9s in "supervisory type duties." This covers nearly all persons in the category, an official said. They'll receive the current BAS of \$75.90 per month and eat where they please.

A subsequent second step will give BAS to all single enlisteds on weekends, and step three will extend it to all times. However, those steps, supported by AFA resolution, won't be laid on until USAF completes tests, determines the budgetary impact, and scrounges up the extra millions of dollars required. All that, an official told AIR FORCE Magazine, may take two or three years.

5. The Defense Department at long last is pushing for larger trailer moving allowances. Its new plan, identical to an AFA resolution, would remove the present seventy-four-cent-per-mile allowance ceiling, authorize the dislocation allowance for trailerites, and provide reimbursement of trailer move costs. The present restrictive rules have embittered trailer owners; many claim they spend hundreds of dollars of their own money to move at transfer time. The proposal needs final approval in the Administration before going to Congress.

## Many Seek, Few Gain Regular Commissions

Winning a Regular Air Force line commission takes some doing. The quotas are low, the competition keen. And, contrary to some reports,



Arnold Air Society National Commander Brig. Gen. Thomas R. Nelson, from Brigham Young University, visits with President Ford at a White House reception. Next to Nelson is AAS Northeast Regional Commander Cadet Steve Ribuffo, and looking on (center) is AAS Executive Secretary William Morley.



the vast majority who are offered Regular status grab it—even the youngsters in the two-, three-, and four-year groups.

Heretofore undisclosed selection-acceptance statistics covering the past five years tell the story. And the competition for Regular—with the job protection, career opportunities, and prestige it provides—generally will remain stiff after passage of the Defense Officer Personnel Management Act (DOPMA).

There is an exception. DOPMA will provide the break of a lifetime for one group of non-Regular officers eyeing Regular.

USAF has about 57,000 Regular officers and 44,000 active-duty Reservists. Appointment quotas for the latter change periodically, depending on projected vacancies throughout the year-group structure. Overall during the FY '70-FY '75 period, they averaged about twenty percent; that's five competitors for each RegAF vacancy. But in certain categories, opportunities were much smaller.

For example, in the FY '75 four-year group contest, 1,195 nonrated officers competed, but only 127, or eleven percent, were chosen. In the FY '75 seven-year group race, 386 pilots vied, but just twenty-one, or five percent, made it.

At the same time, selection rates in the two- and three-year groups were in the twenty to twenty-five percent bracket. In the older year group selections, quotas have averaged around ten percent. One fact emerges: Many talented, high-quality people aren't receiving bids.

And acceptances? Among the younger year groups, eighty to eighty-five percent of those tendered RegAF status grabbed it. That's a high rate considering that many in these groups supposedly were noncareerists.

In the seven-, ten-, and sixteen-year groups—the older categories—the results were predictable: ninety-five percent accepted their tenders.

The accompanying table shows other typical examples in the selection-acceptance process that underscore the rugged competition.

USAF currently has three- and seven-year group boards in session, with selection quotas ranging from five to twenty-five percent. Meantime, the system is being changed

in part to tie many future appointments to promotion selection. The first FY '77 board will be linked to the panel choosing lieutenants for promotion to captain.

Under DOPMA, an all-Regular force at the eleventh year of commissioned service will be created, with a two-year transition period. Thus, as Reserve officers are chosen for major they will automatically make Regular; heretofore, just ten percent of those advanced to major also won Regular status. Those failing to make gold leaves,

likely to approve it by late spring.

The Senate's DOPMA timetable was uncertain, a spokesman saying no new hearings were scheduled. However, House action could lead quickly to full congressional endorsement. DOPMA contains the permanent grade tables USAF so urgently seeks, for its existing authority to promote expires September 30. If DOPMA continues to lag, USAF officials will back another temporary extension of this authority, but there is no certainty Congress would approve it. Without

### RUGGED COMPETITION IN THE SELECTION-ACCEPTANCE PROCESS

Program	Group	Considered	Selected	%	Accepted	%
FY '75	3-yr pilot	2,521	500	20	436	87*
FY '75	4-yr nav	554	169	31	141	83*
FY '75	10-yr R&NR	501	50	10	49	98
FY '74	2-yr NR	2,861	700	24	597	85
FY '74	3-yr pilot	2,838	714	25	665	93
FY '74	7-yr R&NR	1,036	120	12	119	99
FY '74	10-yr R&NR	636	75	12	75	100
FY '74	16-yr R&NR	117	20	17	17	85

\* Additional acceptances pending.

(R = rated; NR = nonrated)

of course, will continue to be separated.

Also under the switch to DOPMA, nearly all of the 3,000 non-Regulars in the nine-through-fifteen-year groups who have already made major will receive Regular appointments. This is a one-shot deal and a classic example of being at the right place at the right time; were DOPMA not on the horizon, their chances of ever making Regular would be almost nil.

Still, for Reservists in the lower year groups and non-Academy products yet to enter the force, the road to Regular will be as tough as ever.

#### DOPMA Lags

The Defense Officer Personnel Management Act (DOPMA) was not making progress on Capitol Hill early this year, as the committees with jurisdiction gave major attention to the FY '77 DoD authorization bill. However, a spokesman for the House Armed Services subcommittee that held DOPMA hearings last year predicted his unit would take up the measure again around late April and that the full House of Representatives would be

DOPMA or an extension, Air Force will face the promotion-freeze and demotion debacle it has warned the government so often about in recent years.

#### Hike Rise Due—If All Goes Well

Hq. USAF is expecting a return to "a normal officer promotion year" in FY '77. If it pans out, the promotion pace will perk up sharply from what officials call the recent "lean years." For example, while only about 700 officers are making colonel in FY '76, the FY '77 projection is 960. The much smaller projected cut in the total officer strength in that year is the major reason promotions should improve, USAF said.

The planned hikes for FY '77 follow: to General, six; Lt. Gen., eleven; Maj. Gen., thirty-two; Brig. Gen., fifty; Colonel, 960; Lt. Col., 2,151; Major, 3,139; Captain, 5,264; and 1st Lt., 3,948.

Officials said two things could upset this reasonably favorable forecast: a congressional cut in budgeted officer end-FY '77 strength, and/or failure of Congress to approve DOPMA or extend USAF's current temporary grade ceilings.



# The Bulletin Board

## RIF Off: Procurement, AECF Affected

Of USAF's 44,000 active-duty Reserve officers, 18,000 were in the vulnerable zone for RIF in June, having been screened late last year. But the firings of 1,000, possibly more, have been canceled. Reason: with a strong push from USAF's top leadership, personnel officials went all out to open early release doors, ease retirement curbs, and slash new officer procurement. Enough responded to avoid a RIF.

But whereas for years 10,000 to 12,000 or more new officers entered USAF annually, only 6,000 are entering this fiscal year (and many of these are medics, dentists, etc). The big slices are in rated hopefuls, and this worries planners looking down the road.

"This constrained procurement level could result in serious experience deficiencies in the out-years if allowed to continue," officials said recently. While they hope it won't become a trend, FY '77 will be another extremely low procurement year—around 6,000 again. A similar pattern the following year or two could spell trouble in USAF experience and leadership levels in later years.

Air Force, meanwhile, is budgeting for a 1,100-officer RIF in FY '77, but there's a good chance it won't come off. If it does, the forced exits will probably occur in September 1977, when that fiscal year ends.

The current cancellation could spell good news for airmen straining to earn commissions via the Airmen Education Commissioning Program. One reason Congress refused to let airmen enter AECF the past two years is that the service had too many officers and was RIFing some of them. Now that the RIF is off, the lawmakers might change their minds. USAF is seeking only 200 AECF spaces in the FY '77 program.

## UPT Doors Closed to Hundreds

USAF has taken drastic steps to erase the huge backlog of AFROTC graduates and senior cadets earmarked for undergraduate pilot training by removing hundreds of them from the UPT entry lists. The available pilot training slots have been reserved for AFROTC distinguished graduates.

This is a bitter pill for many youths primed on winning USAF pilot wings. But the service's rated overages, two-year delays (going on three and even more) for UPT call-up, and slashes in training spaces, triggered the move. (See February "Bulletin Board" and "Air Force Moves to Counter Rated Turbulence" on p. 56 of this issue for additional details.) The new action involves two groups:

- The 1,500 pilot candidates already commissioned and waiting. The 400 distinguished graduates in this group are being offered pilot training this spring and summer. The other 1,100 can become non-rated officers or take the ninety-day Palace Option active-duty tour, which is followed by transfer to the Reserves. Those going nonrated can enter active duty by September.

- The 2,500 cadets slated to graduate during March-June 1976. They can enter active duty, or either terminate their contracts or take Palace Option. Again, the UPT spaces are reserved for distinguished graduate pilot candidates.

Navigator school candidate backlogs are not acute, and officials expect all 210 UNT hopefuls now waiting will be enrolled by August.

By September 1977, all AFROTC backlogs should be wiped out, "unless there are further reductions" in UPT slots, authorities said.

## Women-in-Combat Bill Surfaces

Sen. Birch Bayh (D-Ind.) has introduced a bill that would eliminate what he calls "discriminatory treatment" against women in enlistment, promotion, and "placement" in the armed forces. Although the Senator did not mention it in presenting the bill to the Senate, a Bayh aide said the measure would open combat duty to female service members. This includes combat flying missions, he made clear.

Bayh, a presidential candidate, charged that women face higher

enlistment requirements than men but don't share proportionately in promotions. Limiting jobs for military women means they have a tougher time getting good paying jobs after separation, he also declared.

## GS "Grade Creep" Puzzles DoD

The Defense Department has reversed the "grade enrichment trend"—that's Pentagonese for "grade creep"—among the military forces, but not among its civilian General Schedule (GS) employees. Defense's average GS grade has grown from 5.4 in FY '54 to 7.7 now and is projected to reach 7.8 in FY '77, according to William K. Brehm, Assistant Defense Secretary (Manpower and Reserve Affairs).

"I cannot explain . . . the large change since 1965," he told Congress recently. But he's studying it and said he may decide to apply some form of "grade limitation." The three senior grades (GS-13 to GS-15) had 42,000 DoD employees in FY '64 and 60,000 by FY '73, declining to 58,200 last year. GS supergrades have decreased from 1,366 in FY '64 to a projected 1,288 next fiscal year.

## More Reserve Backing Sought

Over sixty percent of the US work force is now covered by employer agreements supporting the Reserve Forces, the National Committee for Employer Support of the Guard and Reserve reports. And while the group's efforts have played an important role in the components attaining nearly 100 percent manning, the Committee's chairman, James M. Roche, wants more "positive action" by employers.

Mr. Roche, former Board Chairman for General Motors, said employers should "encourage" workers to join Reserve Forces units, urge them to reenlist, and provide full pay in all cases where members take their two-week training periods.

His remarks surfaced about the same time the Administration disclosed its proposed "adjustments" in Reserve pay practices. One such adjustment would end the "dual payment" that federal employees who are Reserve-Guard participants receive (their regular pay plus drill



## Overkill in Reporting Benefits Cuts

Are military benefits actually being eroded? Significantly? Just a little bit? Or does the military community, conditioned by steady pounding on the theme by service-oriented publications, just think they are?

Service members' perception of pay and benefits and the impact on morale long ago touched off a controversy among military people. Executives in the Pentagon and congressional leaders have also been concerned, and the flap recently was intensified.

It was touched off when JCS Chairman Gen. George S. Brown, USAF, in early testimony on the FY '77 military budget, hit three prominent military-oriented newspapers—*Army Times*, *Air Force Times*, and *Navy Times*—for their heavy concentration on the erosion of benefits. That concentration, General Brown indicated, is hurting morale and encouraging talk of military unions.

Defense Comptroller Terence McClary leveled a similar broadside. Sen. Strom Thurmond (R-S. C.) jumped into the fray, declaring that service newspapers are "brainwashing" military people by making them feel that "Congress . . . and the Department of Defense are taking away their benefits, and I would like to see that stopped. . . ."

Sen. Barry Goldwater (R-Ariz.) excoriated his fellow lawmakers for complaining about commissaries, enlistment bonuses, and the retirement system, while quietly feathering their own nests with goodies ranging from \$1,000 worth of free law books to annual pensions of up to \$35,000. (See p. 11 for excerpts from Senator Goldwater's remarks.)

While "almost every fringe benefit" given the military is "being questioned," Goldwater declared in rushing to the defense of military personnel, not one "critical word . . . about our own side benefits" has been carried in the *Congressional Record*. The former Presidential candidate also lambasted congressional critics of retired officers who join defense industries; these officers serve with distinction and integrity, he said.

Some quarters at the Pentagon have long felt that the services, through their own official channels, have not kept the troops fully informed on the status of benefits, that they have yielded this responsibility to the unofficial military-oriented press.

Air Force Chief of Staff Gen. David C. Jones, however, recently told his personnel and information staffs to come up with new internal publicity covering this crucial issue.

The Pentagon holds that while personnel benefits have not been reduced by any significant degree, manpower costs must be closely controlled to keep them from going out of sight and to assure that reasonable sums are available for R&D, new weapons, operations, and other projects essential to national security. And there is some official acknowledgment of paring.

Defense authorities now speak of "adjustments" and "restraints" in their tampering with people-type programs to trim rising costs; military people view them as erosions.

Thus, Defense hopes to "adjust" military pay by putting a five percent cap on the next raise. Such actions—and this particularly irritates officials who must defend such tough decisions—are usually described in newspaper headlines as "cuts." A five percent raise, of course, is not a cut, but it's more dramatic and far easier to headline than "less of a raise than expected."

On a related issue, the Defense Department is angling to pack larger portions of future pay raises into BAQ, thus making the stipend more equal to the actual value of quarters and off-base housing. Administration officials see this as a reasonable step to save money in surrendered BAQ, but uniformed people view it as a cut in benefits.

The same with the Administration's plan to remove the one-percent "kicker" in the retired pay raise formula. Officials, who regard the kicker as unjustified in the first place and feel that Uncle Sam has been extremely generous with the flurry of retired pay hikes in recent years, see the move as a fair way to save the government more than \$400 million annually by FY '80.

That service-oriented publications spotlight the government's efforts to remove the kicker, and generally downplay the many automatic retired pay raises also annoys various authorities. "Unbalanced reporting," they say.

The Administration's position on the touchy retirement pay issue is that, with what it calls "staggering" outlays projected for the immediate years ahead (\$8.4 billion in FY '77, rising to \$11.3 billion in FY '80), economies must be invoked promptly.

Equally explosive is the CHAMPUS program, but commissaries remain the single most controversial issue. The commissary battle continues to rage as the Defense Department, following its defeat last year, has launched a new drive to phase out the federal subsidies that pay for store employees' salaries. The savings, DoD estimates, would reach \$280 million a year by FY '79.

Defense insists it will keep the commissary system. The government's current approach, according to Assistant Secretary (Manpower and Reserve Affairs) William K. Brehm, is to treat commissaries "more like the essentially self-supporting" exchanges which "continue to provide valuable service to the military community. . . ."

Commissary customers now receive about a twenty percent saving which, without the salary subsidy, would be halved, Mr. Brehm told Congress recently. "Management improvements" should restore two percent, he said, adding that the overall reduction would cost an E-4 \$10 to \$20 a month. But the stores will still offer "significant savings," he said.

Sen. Sam Nunn (D-Ga.), Chairman of the Senate Armed Services personnel subcommittee, praised Brehm for trying "to control growth in compensation because our very national security is at stake." But both Brehm and Nunn, as have many other influential government officials, expressed concern over the adverse impact on morale brought about by incursions on many extras long part of the military picture.

USAF members, meantime, can expect from the Pentagon an increase in official literature devoted to benefits, compensation, and personnel prestige projects. The campaign will attempt to show that these items still add up to an attractive package and are not being slashed, but that there is urgent need for restraint in view of dollar limitations.

Most service people will understand the message, but agreeing with it is something else. Military leaders, in trying to convince the membership that significant erosion is not setting in, have a tough selling job ahead. ■



# The Bulletin Board

pay, and with no loss of leave time during the two-week period).

A Committee spokesman acknowledged that the Administration's proposal—in the FY '77 military budget—came as "something of a blow" and said it could erode the Committee's efforts to get employers to let their employee-Reservists train without forfeiting vacations.

The Administration's plan to trim Reserve pay, which has caused

concern throughout the Reserve establishment, would save the government \$60 million a year, Defense says.

Mr. Roche, meantime, said employees usually return from Reserve-Guard training better equipped for their civilian jobs. AFA continues to support the NCESGR.

## Kin of Disabled Vets Aided

Some 80,000 children of totally disabled veterans are receiving medical care from private physicians and hospitals through a program called CHAMPVA, for Civilian Health and Medical Program of the Veterans Administration. It's an extension of the military's CHAMPUS.

Children of veterans who died of service-connected causes also can use CHAMPVA, if not eligible for CHAMPUS.

VA has also disclosed that 48,000

children of veterans are receiving schooling, mostly college-level, under VA sponsorship. The agency pays up to \$270 per month to help educate children of vets permanently and totally disabled from service-connected causes or whose parents died as a result of military service. Also eligible are children of MIAs.

Information on CHAMPVA and the education program is available from any VA office. The agency also announced that:

- It has chosen a 624-acre tract at the Quantico Marine Corps Base, Va., as the site for a new national cemetery. The first twenty acres are slated to open in 1979. When fully developed, the new cemetery will provide burial space for 300,000 veterans and their families.

- John L. Levitow, who as an Air Force crewman in Vietnam in 1969 earned the Medal of Honor, has joined the VA as a congressional liaison staff member on Capitol Hill. Levitow, thirty, was a loadmaster aboard an AC-47 that was hit by a rocket. He is credited with saving the aircraft and its entire crew from certain death.

## AFA Councils Push Projects

AFA's Enlisted and Junior Officer Advisory Councils took on special projects for 1976 at a meeting of the Council Executive Committees in Arlington, Va., February 5-7.

The Enlisted Council's special project centers on improved communication between senior and junior enlisted members. Noting that "economic constraints" have caused the Air Force to "ask more" of its people, the Council said it is seeking ways in which "genuine understanding can be fostered" between junior and senior airmen.

The JOAC will look into a "Base Level Career Development Program." With military travel curtailed, career development must be more closely linked to Air Force bases. And the JOAC feels that good opportunities for "reciprocal job orientation and/or informal exchange programs" exist at base level.

The three-day event included briefings on the military balance, legislation, the FY '77 budget, USAF personnel programs, and recruiting. Former Air Force Secretary (now head of FAA) John L. McLucas was honored at a luncheon. A highlight of the gathering was the AFA Thirtieth Anniversary reception and dinner honoring staff members of AFA (see p. 78).

Council members also heard from Maj. Gen. Bennie L. Davis, USAF's Director of Personnel Plans, and the Adviser to the JOAC. General Davis commended the Councils for their 1975 project, a more than 200-page compendium of management ideas that have worked at local or command level, but have not surfaced elsewhere.

CMSgt. of the Air Force Thomas N. Barnes, the Enlisted Council Adviser, was out of Washington at the time of the meetings, but met earlier with AFA President George M. Douglas to discuss his endorsement of the 1976 project.

AFA's Junior Officer Advisory and Enlisted Councils advise the AFA President on matters of concern to these important AFA constituencies. Each Council consists of representatives from the major commands and separate operating agencies. Capt. Monroe S. Sams, Headquarters MAC, is the 1976 JOAC Chairman, while CMSgt. David Noerr of the USAF Inspector General's Office, Norton AFB, Calif., serves as the Enlisted Council Chairman.

## Short Bursts

What a Pentagon spokesman calls the "first full, complete set of CHAMPUS rules and regulations ever published" was nearing publication at press time. Insiders say they will contain important new "guidelines," a term used in some quarters for "benefit reductions." The new package was to appear first in the Federal Register, later in DoD and service directives. This development follows the disclosure that because CHAMPUS authorities recently—and quietly—switched to the government's Medicare rate payment system, many military families probably will have to pay a larger portion of their medical bills.

The Air National Guard in late February had deferred its earlier decision to demote 250 E-9s and was searching "for other alternatives." As reported here last month, the ANG has had supergrade overages.

As part of its drive to reduce overhead, Air Force will eliminate Headquarters Command this summer. It's been a long-time fixture at Bolling AFB, D. C., and nearby Andrews AFB, Md. The new setup



will feature a MAC air division, probably located at Andrews, and two air base wings, one at each base. The action will save 170 military and civilian spaces, authorities said. (Also see p. 12.)

Forty-six top Pentagon officials, civilian and military, until recently were assigned chauffeured sedans. The list was suddenly cut to twelve with removal of Defense and service Assistant Secretaries, though they still rate service from the executive motor pool. It was described as an "economy move."



Defense Secretary Donald H. Rumsfeld addresses the recent semiannual meeting of the Executive Committee of the National Committee for Employer Support of the Guard and Reserve (see item, p. 74). The Executive Committee also heard from JCS Chairman Gen. George S. Brown, USAF. NCESGR, which is headed by John M. Roche, has obtained signatures of support from 320,000 employers of more than 50,000,000 workers, or sixty percent of the US work force.

An average of about 200 USAF members apply for recruiting duty each week, but around eighty of them find their applications returned or delayed because they do not include proper supporting documents. This, USAF says, hurts their acceptance chances. AFR 39-11 contains the full story on what's required.

Dropping rapidly are the number of people serving with the forty-four US MAAGs and military groups overseas. Eight years ago, nearly 5,000 US military and civilian members so served; the number now is down to about 1,455 military and fewer than 200 civilians. Air Force's military complement includes 360 officers and 200 airmen.

The General Accounting Office, meanwhile, says most of the MAAGs have "outlived their usefulness" and should be closed. With some members of Congress

looking in the same direction, they could all be shut down in a couple of years.

### Senior Staff Changes

**PROMOTIONS: (Air National Guard)** To be **Major General**: Grover J. Isbell; Raymond A. Matera. To be **Brigadier General**: Rudolph D. Bartholomew; Charles R. Campbell, Jr.; John L. France; David B. Hoff; William H. O'Bryan, Jr.; Ben L. Patterson, Jr.; Oscar T. Ridley; Paul N. Rogers; Carl L. Trippi. (Air

NORAD Rgn. with addl. duty as Cmdr., 26th ADiv., Luke AFB, Ariz., to C/S, US Taiwan Def. Cmd., Taipei, Taiwan . . . **M/G Daniel L. Burkett**, from Dep. Cmdr., Army-AF Exchange Svc., Dallas, Tex., to Dir., AF Commissary Svc., Kelly AFB, Tex. . . . **B/G Robert W. Clement**, from Cmdr., 2750th AB Wg., AFLC, Wright-Patterson AFB, Ohio, to Cmdr., 35th TFW, TAC, George AFB, Calif. . . . **B/G Thomas E. Clifford**, from Dir. of Insp., AFISC, Norton AFB, Calif., to Cmdr., 26th NORAD Rgn., with addl. duty as Cmdr., 26th ADiv., ADCOM, Luke AFB, Ariz.

**Col. (B/G selectee) James S. Creedon**, from Cmdr., 14th FTW, ATC, Columbus AFB, Miss., to Jt. Test Dir., Electronic Warfare (during close air support joint test), DCS/Plans & Ops., Hq. USAF, Washington, D. C. . . . **Col. (B/G selectee) Herbert L. Emanuel**, from Dep. Dir. for Pers. Plans & Policy, DCS/P, Hq. USAF, Washington, D. C., to Dep. Asst. DCS/P for Mil. Pers. and Dep. Cmdr., AFMPC, Randolph AFB, Tex. . . . **B/G Clyde H. Garner**, from Cmdr., 81st TFW, USAF, RAF Bentwaters, England, to Asst. DCS/Plans & Intel., USAF, Ramstein AB, Germany . . . **M/G Charles F. Minter, Sr.**, from Dir., Log. Plans & Pgms, DCS/S&L, Hq. USAF, Washington, D. C., to Asst. DCS/S&L, Hq. USAF, Washington, D. C., replacing retiring **M/G Eugene L. Hudson**.

**M/G James G. Randolph**, from Cmdr., Oklahoma City ALC, AFLC, Tinker AFB, Okla., to DCS/Logistics, SAC, Offutt AFB, Neb. . . . **M/G Thomas M. Ryan, Jr.**, from DCS/Logistics, Hq. SAC, Offutt AFB, Neb., to Dir., Logistics Plans & Pgms., DCS/S&L, Hq. USAF, Washington, D. C. . . . **M/G Carl G. Schneider**, V/Cmdr., Warner Robins ALC, AFLC, Robins AFB, Ga., to Cmdr., Oklahoma City ALC, AFLC, Tinker AFB, Okla. . . . **B/G George L. Schulstad**, from Cmdr., Army-AF Exchange Svc., Pacific, Honolulu, Hawaii, to Dep. Cmdr., Army-AF Exchange Svc., Dallas, Tex. . . . **B/G William L. Shields, Jr.**, from 321st Strat. Msl. Wg., SAC, Grand Forks AFB, N. D., to Dir., Office of Space Systems, SAF, Hq. USAF, Washington, D. C. . . . **B/G Daryle E. Tripp**, from DCS/Tech. Tng., Hq. ATC, Randolph AFB, Tex., to DCS/Plans, Hq. ATC, Randolph AFB, Tex. ■

**Force Reserve)** Nominated to be **Major General**: Michael Collins; George M. Douglas; Irving B. Holley, Jr.; John W. Huston; Orrin W. Mathews; Joseph M. F. Ryan, Jr. To be **Brigadier General**: Stuart P. French; George W. Frimpter; Rex A. Hadley; Gilbert S. Harper, Jr.; Donald E. Haugen; Billy M. Knowles; James E. McAdoo; George W. Miller, III; David L. Stanford; Thoralf T. Thielen; Joseph A. Thomas; Victor H. Thompson, Jr.

**RETIREMENTS**: B/G Kenneth E. Allery; M/G Eugene L. Hudson.

**CHANGES**: **B/G William P. Acker**, from Dep. Asst. DCS/P for Mil. Pers. and Dep. Cmdr., AFMPC, Randolph AFB, Tex., to Dep. Cmdr., Armed Forces Entrance & Examination System Cmd., US Army Recrtnng Cmd., Ft. Sheridan, Ill. . . . **B/G Dan A. Brooksher**, Cmdr., 26th





## AFA's Thirtieth Anniversary "Family Dinner"

BY DON STEELE, AFA AFFAIRS EDITOR

On February 6—two days after the actual anniversary date—AFA's National Officers and Directors, State Presidents, members of several committees and councils, and their wives, celebrated AFA's Thirtieth Anniversary at a "family dinner" honoring the members of AFA's staff.

The event highlighted two days of meetings at the Sheraton-National Hotel in Arlington, Va., including a Board Meeting, an AFA Leaders' Defense Policy Seminar (see p. 76), and several committee and council meetings.

During the short dinner program, AFA President George M. Douglas paid tribute to AFA's sixty-two staff members and introduced them by seniority groups. Three—Nellie Law, Special Assistant to the Deputy Executive Director; John F. Loosbrock, Deputy Executive Director, and Assistant Publisher and Editor of AIR FORCE Magazine; and Richard M.

Skinner, Associate Publisher and Managing Editor—are in their twenty-fifth year. Willie Randolph, Chief of Mail Services, is in his twenty-sixth year; and James H. Straubel, Executive Director and Publisher, is in his twenty-ninth year.

Special recognition was given Clarine Penewell, switchboard operator and receptionist, who is in her thirtieth year with the Association. Mr. Douglas presented Clarine a gold medallion necklace with the figure 30 engraved on it and underlined with three pearls—the Thirtieth Anniversary jewel—one pearl for each ten years of service. Clarine's response, which she emphasized "was not edited by Mr. Straubel," was the highlight of the evening.

Then, Mr. Douglas introduced the Past National Presidents and Board Chairmen (see photo on opposite page). Three of AFA's early leaders—Edward P. Curtis, the man selected

by Gen. Hap Arnold to launch an independent civilian airpower organization that became the Air Force Association, and AFA's first Board Chairman; Julian B. Rosenthal, one of AFA's nine founders, its National Secretary for twelve years, and Board Chairman in 1959; and Robert S. Johnson, AFA's fourth National President—were called on for their recollections of AFA's formative years.

Entertainment was provided by the United States Air Force Band's Strolling Strings, directed by 2d Lt. Lowell Graham, and the Singing Sergeants, directed by Maj. Al Bader (see photo above).

In closing the formal program, Mr. Douglas paid "special tribute to the many wives who have lived with AFA over the years—lived with it by living alone or at home with the kids while AFA's elected leaders and staff members spent long hours at the office and on trips for the Association." ■





Clarine Penewell, AFA's switchboard operator and receptionist, received special recognition as AFA's oldest employee, in years of service. It is apparent that her reaction to the gift she received delighted Mr. Douglas.



AFA Executive Director James H. Straubel acknowledges his introduction. Mr. Straubel, who is in his twenty-ninth year with the Association, was given a standing ovation by AFA's leaders when introduced.



Eight Past National Presidents, many of whom also served as Board Chairmen, and three former Board Chairmen, join AFA National President George M. Douglas and Executive Director James H. Straubel for a 30th anniversary photo with AFA's birthday cake. They are from left, Jack B. Gross, Mr. Straubel,

John P. Henebry, John R. Alison, Robert S. Johnson, Edward P. Curtis, Julian B. Rosenthal, Martin M. Ostrow, George D. Hardy, Mr. Douglas, Jess Larson, Peter J. Schenk, and Joe L. Shosid.



AFA President George M. Douglas, left, congratulates Edward P. Curtis, one of AFA's founders and its first Board Chairman, after his remarks about the founding and early days of AFA.



Julian B. Rosenthal, left, one of AFA's founders and a former Board Chairman and National Secretary, tells a fellow Georgian, AFA National Director Dr. Dan Callahan, how it was in the early days of AFA.



Robert S. Johnson, AFA's fourth National President, tells of his first visit to the AFA Headquarters in offices in Washington after his election in 1949, and of his appointment at that time of Jim Straubel as AFA's Executive Director.



# AFA News

By Don Steele, AFA AFFAIRS EDITOR

## Units of the Month

THE COLORADO STATE ORGANIZATION AND THE ROBERT F. TRAVIS CHAPTER, CALIFORNIA . . . cited for consistently effective programming in support of the mission of AFA, most recently exemplified in their Third Annual High School Aerospace Education Symposium and Air Reserve Forces Seminar, respectively.



The Robert F. Travis Chapter recently sponsored an Air Reserve Forces Seminar at Travis AFB, Calif., followed by a dinner honoring the Air Force Reserve and the California Air National Guard. Brig. Gen. J. L. Wade, Commander, 452d Tactical Airlift Wing (AFRes), March AFB, presided over the presentations on the Air Force Reserve, and Col. Lester Gobel, ANG Coordinator, 22d AF, presided during the Air National Guard presentations. A broad spectrum of topics was covered, including global strategic airlift, tactical airlift, air defense, air rescue, air weather "hurricane watchers," mobile communications, and tactical air support of ground forces. Dr. James P. Gilligan, Deputy Assistant Secretary of the Air Force (Reserve Affairs), was the dinner speaker. In the photo, Chapter President Art Littman, right, welcomes Brig. Gen. Sidney S. Novaresi, center, Commander, Western Reserve Region, AFRes, one of the panelists, and Colonel Gobel. In recognition of this outstanding program, AFA President George M. Douglas names the Robert F. Travis Chapter as a corecipient of AFA's "Unit of the Month" award for April.



Gen. David C. Jones, USAF Chief of Staff, and Brig. Gen. H. "Jerry" Dalton, Jr., Director of Information, Office of the Secretary of the Air Force, were guests at a recent meeting of AFA leaders. Shown are, from left, National Director Gerald V. Hasler, General Dalton, National Treasurer Jack B. Gross, National President George M. Douglas, General Jones, Board Chairman Joe L. Shosid, National Secretary Martin H. Harris, National Directors Martin M. Ostrow and John R. Allison, and Executive Director James H. Straubel.

## Cross Country

More than 300 members and guests attended the **Grand Strand, S. C., Chapter's recent banquet** in the Myrtle Beach AFB Officers' Open Mess. The guest of honor and speaker, Gen. David C. Jones, USAF Chief of Staff, commented on military defense and the American public's ambivalent views on the matter. He indicated that the public desires a defense second to none,

but wants the costs of maintaining it trimmed. Also, he pointed out that today's Air Force is the smallest since before the Korean War and that the Soviet Union's uniformed strength is currently twice that of the US. Distinguished guests and members included Rep. John W. Jenrette, Jr. (D-S. C.); Gen. Frank Everest, USAF (Ret.); Lt. Gen. James V. Hartinger, Ninth AF Commander; South Carolina State AFA

President Roger Rhodarmer, Maj. Gen. USAF (Ret.); and Chapter President Storm C. Rhode.

The **Fresno, Calif., Chapter's 11th Annual Air Force Honors Night Banquet and Awards Ceremony**, observing the anniversary of the Air Force and saluting the Women in the Air Force, also provided the occasion for the Chapter and local Air Force units to honor their Outstanding Member of the Year. John F. Loosbrock, Editor and Assistant Publisher of AIR FORCE Magazine, was the keynote speaker, and Martin M. Ostrow, former AFA National President and Board Chairman, was the master of ceremonies. Distinguished guests included Fresno Mayor Ted C. Wills; City Councilman Elvin C. Bell; Col. James Kilpatrick, 144th FIW Commander and the military host; Col. Charles Pierce, Castle AFB Commander; Navy Capt. Roger C. Bos, Chief of Staff, US Pacific Fleet Light Attack Wing; George Lindsey, Chairman, Military Affairs Committee, Fresno Chamber of Commerce; John Toomasian, Chairman of the Board of Education, Fresno City Unified School District; and California State AFA President L. T. "Zack" Taylor. Local Air Force Week activities, highlighted with the banquet, included Air Force displays and exhibits, and a series of Chapter-sponsored intelligence briefings on the Middle East, which were presented to the Fresno State University AFROTC; USMC Training Center, Lemoore Naval Air Station; and a joint AFA/ Chamber of Commerce luncheon.

Dr. James P. Gilligan, Deputy Assistant Secretary of the Air Force (Reserve Affairs), was the guest speaker at a recent dinner meeting of the **California State AFA's newly chartered San Mateo County Chapter**.

AFA National Director **Jack Withers** of Dayton, Ohio, was the



# chapter and state photo gallery

## AFA LEADERS' DEFENSE POLICY SEMINAR

In conjunction with the observance of AFA's 30th Anniversary (see pp. 78-79), AFA's National Officers and Directors, State Presidents, and members of several committees and councils convened at the Sheraton-National Hotel in Arlington, Va., for a Board Meeting, a series of committee and council meetings, and an AFA Leaders' Defense Policy Seminar. The top photo shows some of the 100 AFA leaders who attended the seminar. AFA Executive Director James H. Straubel was the moderator, and panelists included John F. Loosbrock, Deputy Executive Director and Editor, AIR FORCE Magazine; John O. Gray, Assistant Executive Director; Claude O. Witze, Senior Editor, AIR FORCE Magazine; and Edgar E. Ulsamer, Special Assistant to the Executive Director and Senior Editor, AIR FORCE Magazine. Topics discussed included The Threat; US Defense Posture; Air Force Requirements, and related matters; the Fiscal Year '77 Defense Budget; and an assessment of the Congress relative to defense issues. The bottom photo shows the panelists for the first session, from left, Messrs. Ulsamer, Loosbrock, and Straubel.



guest speaker at a recent meeting of the Rebecca Galloway Chapter, Daughters of the American Revolution. Mr. Withers spoke on "The Heritage of the Air Force Association."

### Coming Events

**Arnold Air Society and Angel Flight National Conclave**, Sheraton Hotel, Philadelphia, Pa., April 12-14 . . . **Massachusetts State AFA Convention**, Hanscom AFB Officers' Club, April 23-24 . . . **New England Regional Meeting**, Hanscom AFB Officers' Club, April 25 . . . **AFA Symposium on "Tomorrow's Strategic Options,"** Vandenberg AFB, Calif., April 28-29 . . . **Washington State AFA Convention**, McChord AFB, Washington, April 30-May 2 . . . **Colorado State AFA Convention**, Stouffer's Denver Hotel, Denver, May 7-9 . . . **South Carolina State AFA Convention**, Shaw AFB, May 7-8 . . . **Utah State AFA Convention**, Defense Depot Ogden Officers' Club, Ogden, May 8 . . .

**Florida State AFA Convention**, International Inn, Tampa, May 14-16.

**South Central Regional Convention**, including the Alabama, Arkansas, Louisiana, Mississippi, and Tennessee AFAs, Craig AFB, Ala., May 14-15 . . . **California State AFA Convention**, Berkeley Marriott, Berkeley, May 21-23 . . . **AFA Golf Tournament and Reception**, The Broadmoor, Colorado Springs, Colo., May 28 . . . **AFA Nominating Committee and Board of Directors Meetings**, The Broadmoor, Colorado Springs, Colo., May 29 . . . AFA's annual dinner honoring the **Outstanding Squadron at the Air Force Academy**, The Broadmoor, Colorado Springs, Colo., May 29 . . . **New York State AFA Convention**, The Beeches, Rome, New York, June 10-13 . . . **Pennsylvania State AFA Convention**, Airport Hilton Inn, West Pittsburgh, June 11-12.

**Oklahoma State AFA Convention**, Tinker AFB Officers' Club, June 18-19 . . . **Michigan State**

**AFA Convention**, Selfridge AFB, June 19 . . . **Georgia State AFA Convention**, Holiday Inn, Warner Robins, June 26 . . . **Texas State AFA Convention**, Stouffer's Greenway Plaza Hotel, Houston, July 23-25 . . . **AFA's 30th Anniversary National Convention and Aerospace Development Briefings and Displays**, Sheraton-Park Hotel, Washington, D. C., September 19-23 . . . **Eighth Annual Bob Hope AFA Charity Golf Tournament**, March and Norton AFBs, Calif., October 1-2 . . . **Air Force Ball**, Beverly Wilshire Hotel, Beverly Hills, Calif., October 23. ■

### INTERESTED IN JOINING A LOCAL CHAPTER?

For information on AFA chapters in your area, write:  
Assistant Executive Director/Field Operations  
Air Force Association  
1750 Pennsylvania Ave., N. W.  
Washington, D. C. 20006



# AFA News



Two hundred and ninety-six aerospace education students (AFJROTC and CAP cadets, and high school students), and fifteen Aerospace Educators from the Denver metropolitan area and Fort Collins, Colo., attended the Colorado State AFA's Third Annual High School Aerospace Education Symposium at Lowry AFB, on January 9. The basic objectives of the day's briefings, static displays, and field trips are to promote a vigorous dynamic Aerospace Education program at the high school level in Colorado, and to relate the roles of the Air Force, the AFA, the Navy, and the CAP. In the photo, Maj. John Gunnison, USAFR, a member of AFA's Front Range Chapter, briefs several AFJROTC and CAP cadets on the B-52 shown in the background. In recognition of this outstanding program, AFA President George M. Douglas names the Colorado State Organization as a corecipient of AFA's "Unit of the Month" award for April.



Sen. Barry Goldwater (R-Ariz.) was the guest speaker at the Annual Fall Dinner Meeting of AFA's Cheyenne Chapter. More than 500 members and guests attended the dinner in Cheyenne's Little America Hotel. Shown with Senator Goldwater are, from left, Roy A. Haug, Vice President for AFA's Rocky Mountain Region; Chapter President Robert R. Scott, Brig. Gen. USAF (Ret.); Senator Goldwater; and Col. Edwin Witzemberger, USAF (Ret.), Treasurer of the State of Wyoming, and a Past President of the Chapter.



— USAF PHOTO



Before getting into serious agenda business at the February 6 Board Meeting, Board Chairman Joe L. Shosid, right, presented a portrait to AFA's National Treasurer Jack B. Gross in appreciation of his more than thirteen years in that job. The portrait was painted by a Spanish artist and portrays Mr. Gross as a Spanish "Conquistador." Mr. Gross, left, was both surprised and delighted.



AFA National President George M. Douglas was the guest speaker at the L. G. Hanscom Chapter's annual Christmas Dinner-Dance at Hanscom AFB, Mass., Officers' Club. Shown are, from left, Mrs. Douglas, Chapter President Joe Scott, Mr. Douglas, and Mrs. Scott. Chapter Vice President Mary Conners was the program chairman.



For the second consecutive year, AFA's El Camino Real Chapter, Calif., provided an AFA display at the annual Sunnyvale AFS Open House. In the photo, Chapter President G. S. Chapman, right, explains the Chapter's activities to two visitors. Chapter Vice President James Fitzpatrick, Jr., left, helped man the display.

Former Hawaii Gov. William F. Quinn, right, shares a light moment with members and guests of AFA's Hawaii Chapter during its first meeting of the Bicentennial year. Head-table guests are, from left, Gen. Louis L. Wilson, Jr., Commander in Chief, PACAF; Honolulu Bishop Harry A. Kennedy; and Chapter President James K. Dowling.



# chapter and state photo gallery



AFA was well represented at the January 9 dedication of a new FAA Air Traffic Control Tower at Teterboro Airport, N. J., and at the luncheon that followed. Shown with FAA Administrator John McLucas, former Secretary of the Air Force, and Arthur Godfrey, radio and television personality and recipient of AFA's Hoyt S. Vandenberg Award in 1956, are, from left, Teterboro-Bendix Chapter Vice President Ben Rock, Chief of FAA's Engineering and Manufacturing District Office at Teterboro; an unidentified member of the McLucas party; AFA National Director Herbert O. Fisher; Anthony DiSteffano, Director, Teterboro School of Aeronautics and a Past President of AFA's Teterboro-Bendix Chapter; AFA National Director James Grazioso; Teterboro-Bendix Vice President Joseph Bischof; Dr. McLucas; Union Morris Chapter President Amos Challi; Mr. Godfrey; Brig. Gen. William T. Seawell, USAF (Ret.), Chairman and Chief Executive Officer, Pan American World Airways; Teterboro Chapter President Leonard Schiff; and Frank R. Gerard, New Jersey's Director of Aeronautics and a brigadier general in the New Jersey Air National Guard.



Former and present officers of AFA's Wright Memorial Chapter, Dayton, Ohio, met recently with Gen. F. Michael Rogers, Commander, Air Force Logistics Command; and Lt. Gen. James T. Stewart, Commander, Aeronautical Systems Division (AFSC), to discuss Chapter support of current Air Force programs. Shown are, from left, Salvador Ramos, Secretary; Ken Puterbaugh, Treasurer; Dutch Heilman, Executive Vice President; General Rogers; Fred Orazio, President; General Stewart; Joe Losier and Dale Ross, Vice Presidents for Operations and Administration, respectively.



AFA's Curtis E. LeMay Chapter of Orange County, Calif., hosted the California State AFA's recent Midyear Conference at the Newport Beach Marriott and held its annual Awards Luncheon in conjunction with the conference. Maj. Steve Ritchie, USAFR, the Air Force's only pilot ace of the Vietnam conflict, was the luncheon speaker and, during the program, awards were presented to the outstanding AFJROTC Cadet from each of three high schools in Orange County. Shown are, from left, Chapter President Robert J. Eichenberg; Cadet Thomas Cowan, El Dorado High School; Major Ritchie; Cadets Henry Castano, Anaheim High School, and Steve Schrader, Mater Del High School; and California State AFA President L. T. "Zack" Taylor.

During a recent 911th Tactical Airlift Group, USAFRes, Commander's Call, at Greater Pittsburgh International Airport, the official Bicentennial flag was presented to the Group by AFA's Air Force Mothers and Greater Pittsburgh Chapters. From left are, Air Force Mothers Chapter President Mary Coyne; Col. James Brown, 911th Commander; Col. Gerald Kintigh; and Greater Pittsburgh Chapter President Tillie Metzger.



On February 4, the Alamo Chapter, Tex., celebrated AFA's 30th anniversary with a birthday party at the Officer Training School Open Mess, Lackland AFB. More than 300 members and guests attended. Chapter President Bill Roth, left, the host, exchanges pleasantries with Col. Parker E. Reed, Vice Commander of OTS.



PHOTO BY L. ANDA EICHENBERG

PHOTO BY DOUGLAS K. FIDLER



# AFA News photo gallery



Dr. Robert F. Mager, President of Mager Associates and Director of Research for the Aerospace Education Foundation, was the speaker at a recent dinner meeting of AFA's San Mateo Chapter, Calif. During the program, Brig. Gen. James Wade, Commander, 452d Tactical Airlift Wing (AFRes), March AFB, the master of ceremonies, made the formal presentation of Dr. Mager's Jimmy Doolittle Fellow plaque. Head-table guests included, from left, William P. Chandler, Vice President for AFA's Far West Region; Dr. Mager; Chapter President Angie Anderson; General Wade; and Thos. F. Stack, a former AFA National President and Board Chairman. The Chapter Certificate of Merit held by General Wade was presented in recognition of his outstanding support of AFA activities and is written in both the English and the Choctaw Indian Nation languages. General Wade is part Choctaw Indian.



Among the distinguished guests at the Richmond, Va., Chapter's recent awards dinner were, from left, Col. Claude F. Heath, Commander, 192d Tactical Fighter Group, Va., ANG; AFA National Director A. A. "Bud" West; Willard G. Plentl, Director, Virginia Division of Aeronautics; Dr. Dana F. Hamel, Chancellor of Virginia's Community College System; Maj. Gen. William J. McCaddin, Adjutant General of Virginia and the guest speaker; Neil J. November, Chairman, Capital Region Airport Commission of Richmond; and Richard Emrich, Vice President for AFA's Central East Region.



Betty McGinnity, drive chairperson, and TSgt. Jerry Shaw, pack food items donated by employees at the Air Force Accounting and Finance Center, the Air Reserve Personnel Center, and other organizations for the Silver and Gold Chapter's Needy Family Drive. Members of the Chapter delivered the food and clothing to seventy-two needy families in the Greater Denver area.



At a recent meeting of AFA's David J. Price Chapter at the Beale AFB, Calif., Officers' Open Mess, Gen. Curtis E. LeMay, USAF (Ret.), former USAF Chief of Staff, and a permanent member of AFA's Board of Directors, presented an AFA Membership Award for 1975 to the Chapter. Shown are, from left, Brig. Gen. Albert L. Melton, 14th Air Division Commander, Beale AFB; Chapter President S. D. "Shakey" Johnson; General LeMay; and Maj. Gen. Edgar S. Harris, Jr., Vice Commander, 15th AF, the guest speaker.

Col. Billie M. Bobbitt, USAF (Ret.), former Director of Women in the Air Force, was the speaker at a recent dinner meeting of the General Thomas P. Gerrity Chapter at the Tinker AFB, Okla., Officers' Club. Shown visiting with Colonel Bobbitt are, from left, Chapter President Harley A. Main; Colonel Bobbitt; Maj. Gen. James G. Randolph, Commander, Oklahoma City Air Logistics Center, Tinker AFB; and Oklahoma State AFA President David Blankenship.





# 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): **James B. Tipton**, 3032 Hill Hedge Dr., Montgomery, Ala. 36111 (phone 205-263-6944).

**ALASKA** (Anchorage, Fairbanks): **Edward J. Monaghan**, 2401 Telequana Dr., Anchorage, Alaska 99503 (phone 907-279-3287).

**ARIZONA** (Phoenix, Tucson): **Robert J. Borgmann**, 2431 E. Lincoln Cir., Phoenix, Ariz. 85016 (phone 602-955-7845).

**ARKANSAS** (Blytheville, Fort Smith, Little Rock): **Jack Kraras**, 120 Indian Trail, Little Rock, Ark. 72207 (phone 501-225-5575).

**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): **Liston T. Taylor**, 4173 Oakwood Road, Lompoc, Calif. 93436 (phone 805-733-2723).

**COLORADO** (Aurora, Boulder, Colorado Springs, Denver, Ft. Collins, Grand Junction, Greeley, Littleton, Pueblo): **James C. Hall**, P. O. Box 30185, Lowry AFB Station, Denver, Colo. 80230 (phone 303-366-5363, ext. 459).

**CONNECTICUT** (East Hartford, Stratford, Torrington): **Margaret E. McEnerney**, 1476 Broadbridge Ave., Stratford, Conn. 06497 (phone 203-377-3517).

**DELAWARE** (Dover, Wilmington): **George H. Chabbott**, 33 Mikell Dr., Dover, Del. 19901 (phone 302-421-2171).

**DISTRICT OF COLUMBIA** (Washington, D. C.): **James M. McGarry**, 2418 N. Ottawa St., Arlington, Va. 22205 (phone 703-534-2663).

**FLORIDA** (Bartow, Broward, Ft. Walton Beach, Gainesville, Jacksonville, Orlando, Panama City, Patrick AFB, Redington Beach, Sarasota, Tampa): **Jack Rose**, 5723 Imperial Key, Tampa, Fla. 33615 (phone 813-855-4046).

**GEORGIA** (Athens, Atlanta, Rome, Savannah, St. Simons Island, Valdosta, Warner Robins): **James D. Thurmond**, 219 Roswell St., Marietta, Ga. 30060 (phone 404-252-9534).

**HAWAII** (Honolulu): **James Dowling**, 2222 Kalakaua Ave., Honolulu, Hawaii 96815.

**IDAHO** (Boise, Pocatello, Twin Falls): **Larry L. Leach**, 6318 Bermuda Dr., Boise, Idaho 83705 (phone 208-344-1671).

**ILLINOIS** (Belleville, Champaign, Chicago, Elmhurst, O'Hare Field): **Charles Oelrich**, 711 East D St., Belleville, Ill. 62221 (phone 618-233-2430).

**INDIANA** (Logansport, Marion, Mentone): **C. Forrest Spencer**, 910 W. Melbourne Ave., Logansport, Ind. 46947 (phone 219-753-7066).

**IOWA** (Des Moines): **Ric Jorgensen**, P. O. Box 4, Des Moines, Iowa 50301 (phone 515-255-7656).

**KANSAS** (Topeka, Wichita): **Albin H. Schweers**, 7221 Woodward St., Overland Park, Kan. 66204 (phone 816-374-4267).

**KENTUCKY** (Louisville): **John B. Conaway**, P. O. Box 13064, Louisville, Ky. 40213 (phone 502-895-0412).

**LOUISIANA** (Alexandria, Baton Rouge, Bossier City, Monroe, New Orleans, Shreveport): **Toulmin H. Brown**, 6931 E. Ridge Dr., Shreveport, La. 71106 (phone 318-424-0373).

**MAINE** (Limestone): **Alban E. Cyr**, P. O. Box 160, Caribou, Me. 04736 (phone 207-492-4171).

**MARYLAND** (Baltimore): **James W. Poultney**, P. O. Box 31, Garrison, Md. 21055 (phone 301-363-0795).

**MASSACHUSETTS** (Boston, Falmouth, Florence, Hanscom AFB, Lexington, Taunton, Worcester): **Arthur D. Marcotti**, 215 Laurel St., Melrose, Mass. 02176 (phone 617-665-5057).

**MICHIGAN** (Detroit, Kalamazoo, Lansing, Marquette, Mount Clemens, Oscoda, Sault Ste. Marie): **Dorothy Whitney**, 3494 Orchard Lake Rd., Orchard Lake, Mich. 48033 (phone 313-682-4550).

**MINNESOTA** (Duluth, Minneapolis, St. Paul): **Joseph J. Sadowski**, 1922 Malvern St., St. Paul, Minn. 55113 (phone 612-631-2781).

**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): **Robert E. Combs**, 2003 W. 91st St., Leawood, Kan.

66206 (phone 913-649-1863).  
**MONTANA** (Great Falls): **Jack K. Moore**, P. O. Box 685, Great Falls, Mont. 59403 (phone 406-761-2555).

**NEBRASKA** (Lincoln, Omaha): **Lyle O. Remde**, 4911 S. 25th St., Omaha, Neb. 68107 (phone 402-731-4747).

**NEVADA** (Las Vegas, Reno): **Cesar J. Martinez**, 4214 Grace St., Las Vegas, Nev. 89121 (phone 702-451-3037).

**NEW HAMPSHIRE** (Manchester, Pease AFB): **R. L. Devoucoux**, 270 McKinley Rd., Portsmouth, N. H. 03801 (phone 603-669-7500).

**NEW JERSEY** (Andover, Atlantic City, Belleville, Camden, Chatham, Cherry Hill, E. Rutherford, Forked River, Fort Monmouth, Jersey City, McGuire AFB, Newark, Trenton, Wallington, West Orange): **Joseph J. Bendetto**, 2164 Kennedy Blvd., Jersey City, N. J. 07305 (phone 201-420-6154).

**NEW MEXICO** (Alamogordo, Albuquerque, Clovis): **Harry L. Gogan**, 2913 Charleston, N. E., Albuquerque, N. M. 87110 (phone 505-264-2315).

**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** (Charlotte, Fayetteville, Goldsboro, Greensboro, Raleigh): **Dozier E. Murray, Jr.**, 1600 Starbrook Dr., Charlotte, N. C. 28210 (phone 704-523-0045).

**NORTH DAKOTA** (Grand Forks, Minot): **Leo P. Makelky**, 611 16th Ave., S. W., Minot, N. D. 58701 (phone 701-839-5186).

**OHIO** (Akron, Cincinnati, Cleveland, Columbus, Dayton, Newark, Toledo, Youngstown): **Robert L. Hunter**, 2811 Locust Dr., Springfield, Ohio 45504 (phone 513-323-2023).

**OKLAHOMA** (Altus, Enid, Oklahoma City, Tulsa): **David L. Blankenship**, P. O. Box 51308, Tulsa, Okla. 74151 (phone 918-835-3111, ext. 2207).

**OREGON** (Corvallis, Eugene, Portland): **Philip G. Saxton**, 15909 N. E. Morris, Portland, Ore. 97230 (phone 503-254-0145).

**PENNSYLVANIA** (Aliquippa,

Allentown, Chester, Erie, Homestead, Horsham, King of Prussia, Lewistown, New Cumberland, Philadelphia, Pittsburgh, State College, Washington, Willow Grove, York): **Lamar R. Schwartz**, 390 Broad St., Emmaus, Pa. 18049 (phone 215-967-3387).

**RHODE ISLAND** (Warwick): **Matthew Puchalski**, 143 TAG RIANG, Warwick, R. I. 02886 (phone 401-737-2100, ext. 36).

**SOUTH CAROLINA** (Charleston, Columbia, Greenville, Myrtle Beach, Sumter): **Roger K. Rhodarmar**, 412 Park Lake Road, Columbia, S. C. 29204 (phone 803-788-0188).

**SOUTH DAKOTA** (Rapid City): **James Anderson**, 913 Mt. Rushmore Rd., Rapid City, S. D. 57701.

**TENNESSEE** (Chattanooga, Knoxville, Memphis, Nashville, Tullahoma): **James W. Carter**, 314 Williamsburg Rd., Brentwood, Tenn. 37027 (phone 615-373-9339).

**TEXAS** (Abilene, Austin, Big Spring, Corpus Christi, Dallas, Del Rio, El Paso, Fort Worth, Houston, Laredo, Lubbock, San Angelo, San Antonio, Waco, Wichita Falls): **Vic Kregel**, P. O. Box 9495, San Antonio, Tex. 78204 (phone 214-266-2242).

**UTAH** (Brigham City, Clearfield, Ogden, Provo, Salt Lake City): **Robert D. Walker**, 283 W. 550 N. Clearfield, Utah 84015 (phone 801-825-0267).

**VERMONT** (Burlington): **R. F. Wissinger**, P. O. Box 2182, S. Burlington, Vt. 05401 (phone 802-863-4494).

**VIRGINIA** (Arlington, Danville, Harrisonburg, Langley AFB, Lynchburg, Norfolk, Petersburg, Richmond, Roanoke): **Lester J. Rose**, 177 Corinthia Dr., Denbigh, Va. 23602 (phone 804-877-4372).

**WASHINGTON** (Port Angeles, Seattle, Spokane, Tacoma): **Theodore O. Wright**, P. O. Box 88850, Seattle, Wash. 98188 (phone 206-237-0706).

**WEST VIRGINIA** (Huntington): **Evelyn E. Richards**, 10 Berkley Pl., Huntington, W. Va. 25705 (phone 304-529-4901).

**WISCONSIN** (Madison, Milwaukee): **Charles W. Marotske**, 7945 S. Verdev Dr., Oak Creek, Wis. 53154 (phone 414-762-4383).

**WYOMING** (Cheyenne): **Robert R. Scott**, 508 W. 27th St., Cheyenne, Wyo. 82001 (phone 307-634-2121).





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35-39	50,000	<del>40,000</del>	12,500	10.00
40-44	35,000	<del>25,000</del>	12,500	10.00
45-49	20,000	<del>15,000</del>	12,500	10.00
50-54	12,500	<del>10,000</del>	12,500	10.00
55-59	10,000	<del>10,000</del>	12,500	10.00
60-64	7,500	<del>7,500</del>	12,500	10.00
65-69	4,000	<del>4,000</del>	12,500	10.00
70-75	2,500	<del>2,500</del>	12,500	10.00

### The AFA High-Option Plan

20-24	\$112,500	<del>\$100,000</del>	\$12,500	\$15.00
25-29	105,000	<del>90,000</del>	12,500	15.00
30-34	97,500	<del>85,000</del>	12,500	15.00
35-39	75,000	<del>60,000</del>	12,500	15.00
40-44	52,500	<del>37,000</del>	12,500	15.00
45-49	30,000	<del>22,500</del>	12,500	15.00
50-54	18,750	<del>15,000</del>	12,500	15.00
55-59	15,000	<del>15,000</del>	12,500	15.00
60-64	11,250	<del>11,250</del>	12,500	15.00
65-69	6,000	<del>6,000</del>	12,500	15.00
70-75	3,750	<del>3,750</del>	12,500	15.00

#### AVIATION DEATH BENEFIT:

A total sum of \$15,000 under the Standard Plan or \$22,500 under the High-Option Plan 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.

#### Optional Family Coverage

(May be added either to the Standard or High-Option Plans)

Insured's Age	Spouse Benefit New	Spouse Benefit Old	Benefit, Each Child**	Monthly Cost Family Coverage
20-24	\$10,000	<del>\$6,000</del>	\$2,000	\$2.50
25-29	10,000	<del>6,000</del>	2,000	2.50
30-34	10,000	<del>6,000</del>	2,000	2.50
35-39	10,000	<del>6,000</del>	2,000	2.50
40-44	7,500	<del>5,250</del>	2,000	2.50
45-49	5,000	<del>4,050</del>	2,000	2.50
50-54	4,000	<del>3,000</del>	2,000	2.50
55-59	3,000	<del>3,000</del>	2,000	2.50
60-64	2,500	<del>2,250</del>	2,000	2.50
65-69	1,500	<del>1,200</del>	2,000	2.50
70-75	750	<del>750</del>	2,000	2.50

\* In the event of an accidental death occurring within 13 weeks of the accident, the AFA plan pays a lump sum benefit of \$12,500 in addition to your plan's regular coverage benefit, except as noted under AVIATION DEATH BENEFIT, below.

\*\* Each child has \$2,000 of coverage between the ages of six months and 21 years. Children under six months are provided with \$250 protection once they are 15 days old and discharged from the hospital.

**AFA'S DOUBLE PROTECTOR**—now with substantial benefit increases—gives you a choice of two great plans, both with optional family coverage. Choose either one for strong dependable protection, and get these advantages:

**FAMILY PLAN.** Protect your whole family (no matter how many) for only \$2.50 per month. Insure newborn children as they become eligible just by notifying AFA. No additional cost.

**Wide Eligibility.** If you're on active duty with the U. S. Armed Forces (regardless of rank, a member of the Ready Reserve or National Guard (under age 60), A Service Academy or college or university ROTC cadet, you're eligible to apply for this coverage. (Because of certain limitations on group insurance coverage, Reserve or Guard personnel who reside in Ohio, Texas, Florida and New Jersey are not eligible for this plan, but may request special applications from AFA for individual policies which provide similar coverage.

**No War Clause,** hazardous duty restriction or geographical limitation.

**Full Choice of Settlement Options,** including trusts, are available by mutual agreement between the insured and the Underwriter, United of Omaha.

**Disability Waiver of Premium,** if you become totally disabled for at least nine months, prior to age 60.

**Keep Your Coverage at Group Rates to Age 75,** if you wish, even if you leave the military service.

**Guaranteed Conversion Provision.** At age 75 (or at any time on termination of membership) the amount of insurance shown for your age group at the time of conversion may be converted to a permanent plan of insurance, **regardless of your health at that time.**

**Reduction of Cost by Dividends.** Net cost of insurance to AFA insured persons has been reduced by payment of dividends in 10 of the last 13 years. However, dividends naturally cannot be guaranteed.

**Convenient Premium Payment Plans.** Premium payments may be made by monthly government allotment, or direct to AFA in quarterly, semi-annual or annual installments.

**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. 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 trustee 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 shall 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.

#### PLEASE RETAIN THIS MEDICAL INFORMATION 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.



# Increase in Premium MILITARY GROUP LIFE INSURANCE



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 \$10 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**

**STANDARD PLAN**

Members Only      Members and Dependents  
 \$ 15.00       \$ 17.50  
 \$ 45.00       \$ 52.50  
 \$ 90.00       \$105.00  
 \$180.00       \$210.00

**Mode of Payment**  
 **Monthly** government allotment. I enclose 2 months' premium to cover the period necessary for my allotment to be established.  
 **Quarterly.** I enclose amount checked.  
 **Semiannually.** I enclose amount checked.  
 **Annually.** I enclose amount checked.

Members Only      Members and Dependents  
 \$ 10.00       \$ 12.50  
 \$ 30.00       \$ 37.50  
 \$ 60.00       \$ 75.00  
 \$120.00       \$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 \_\_\_\_\_

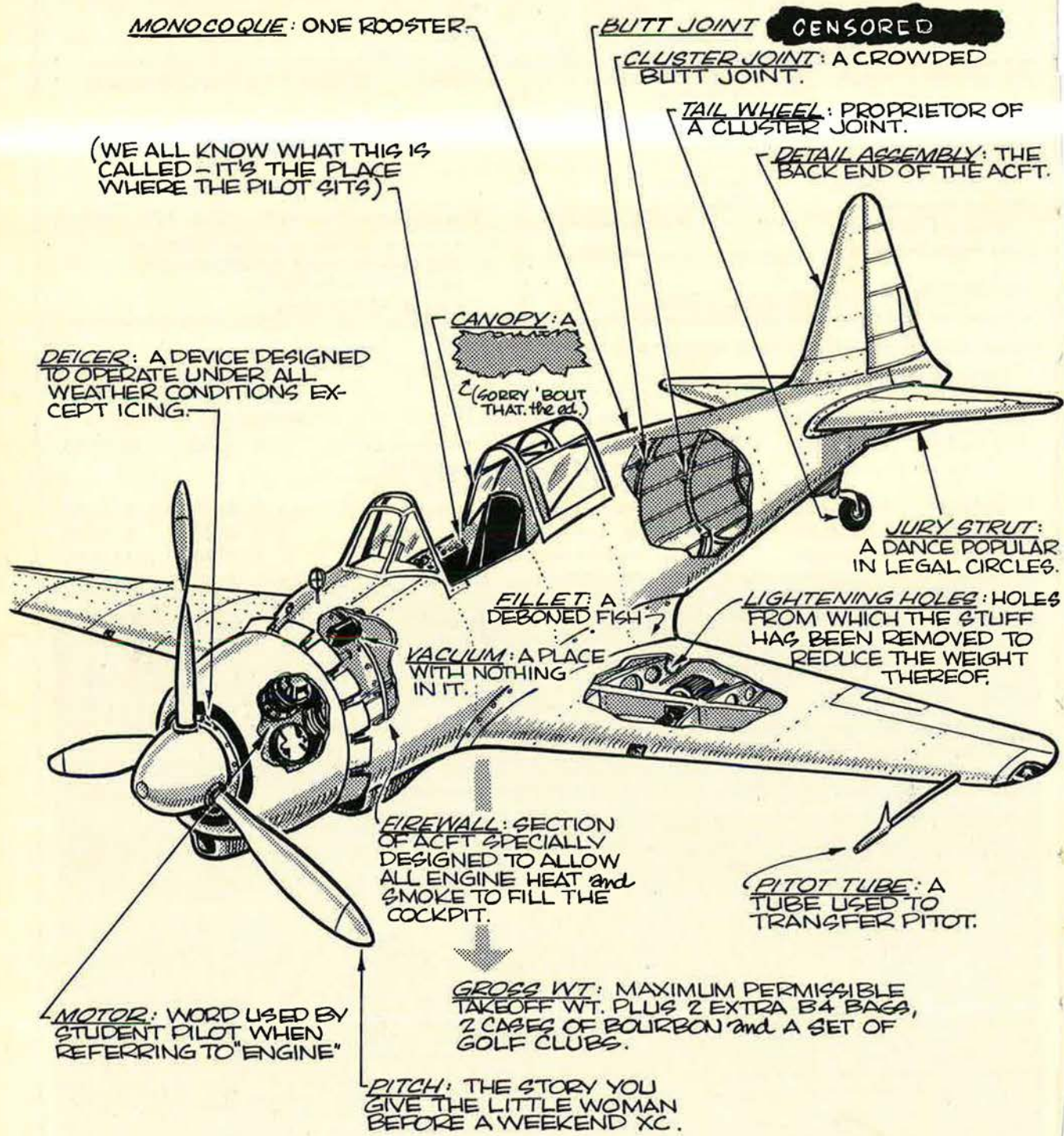


Bob Stevens'

# "There I Was..."



NOW IT CAN BE REVEALED-THE REAL NOMENCLATURE OF A WWII FIGHTER! WE PROVIDE YOU AIRCRAFT HISTORIANS THIS "PHANTOM" CUTAWAY SHOWING THE INTRICACIES OF A TYPICAL WAR BIRD. THESE ARE THE OFFICIAL TERMS OF THE CONFEDERATE AIR FORCE WHICH THEY REPORT HAVE BEEN STOLEN FROM ONLY THE MOST AUTHENTIC PUBLICATIONS



Bob Stevens

THEY'RE BOTH BEST BELLEERS! VOLS. I and II OF "THERE I WAS..." SEND \$ 7.50 CK OR M.O. TO: VILLAGE PRESS, FALLBROOK, CA. 92028.



# What's our mild-mannered civilian turbofan engine doing in a tough bird like this? Just proving a point, just proving a point.

The bird is the new CASA C-101 trainer/light attack aircraft.

The engine, Garrett's TFE 731 turbofan.

And the point is this:

Our TFE 731 has what it takes to perform as efficiently and reliably in the combat environment as it does in the world of the business jet.

The C-101, being developed by CASA (Construcciones Aeronauticas S.A.) for the Spanish Air Force, is a basic and advanced trainer, with an air-to-air and air-to-ground weapons delivery capability. Armed recon,

ECM and photo recon missions are also planned because of the CASA's maneuverability and long endurance at low level.

Its Garrett engine will be essentially the same fuel-saving, low-pollution turbofan now used by four leading business jet builders — Dassault, Israel Aircraft Industries, Learjet and Lockheed. The TFE 731 is also the conversion engine for AiResearch Aviation's 731 JetStar.

The CASA 101. As the forerunner of a new breed of economical, virtually smokeless combat aircraft, it makes sense to power it with the turbofan that powers the economical clean-flying business jets.



**The Garrett Corporation** One of The Signal Companies



# GARRETT'S TFE 731 TURBOFAN The only one in its class

Northrop Corp. and Messerschmitt-Boelkow-Blom (MBB) are partners in the development of the C-101.



# The DC-10 tanker/cargo jet:

## Optimum way to upgrade U.S. military airlift capability.

Recent events have dramatically emphasized the importance of military airlift and at the same time have highlighted the need for increasing the non-stop range of the airlift fleet. Aerial refueling is a low-cost way of increasing the range of the airlift fleet.

The DC-10 aerial refueling capability will permit the airlift fleet, operating from U.S. bases, to reach all major areas in the world. In addition, the military DC-10 tanker and cargo capability can support an integrated deployment of tactical fighters and their associated unit support. The DC-10 tanker/cargo aircraft represents the

most economical solution in terms of initial cost, total cost of ownership and fuel consumed.

The lower unit cost of the military DC-10 compared to contemporary four engine wide-bodied transports permits the purchase of more DC-10s for a given investment. The resulting larger DC-10 force offers increased flexibility, with

capability to support simultaneous worldwide operations.

The DC-10 is proving day after day in commercial service that its fuel, operating and maintenance costs are low and its departure reliability record is high — important considerations for military operations.

**MCDONNELL DOUGLAS**



DC-10 tanker capability was demonstrated in company-funded flight test in October, 1971.

