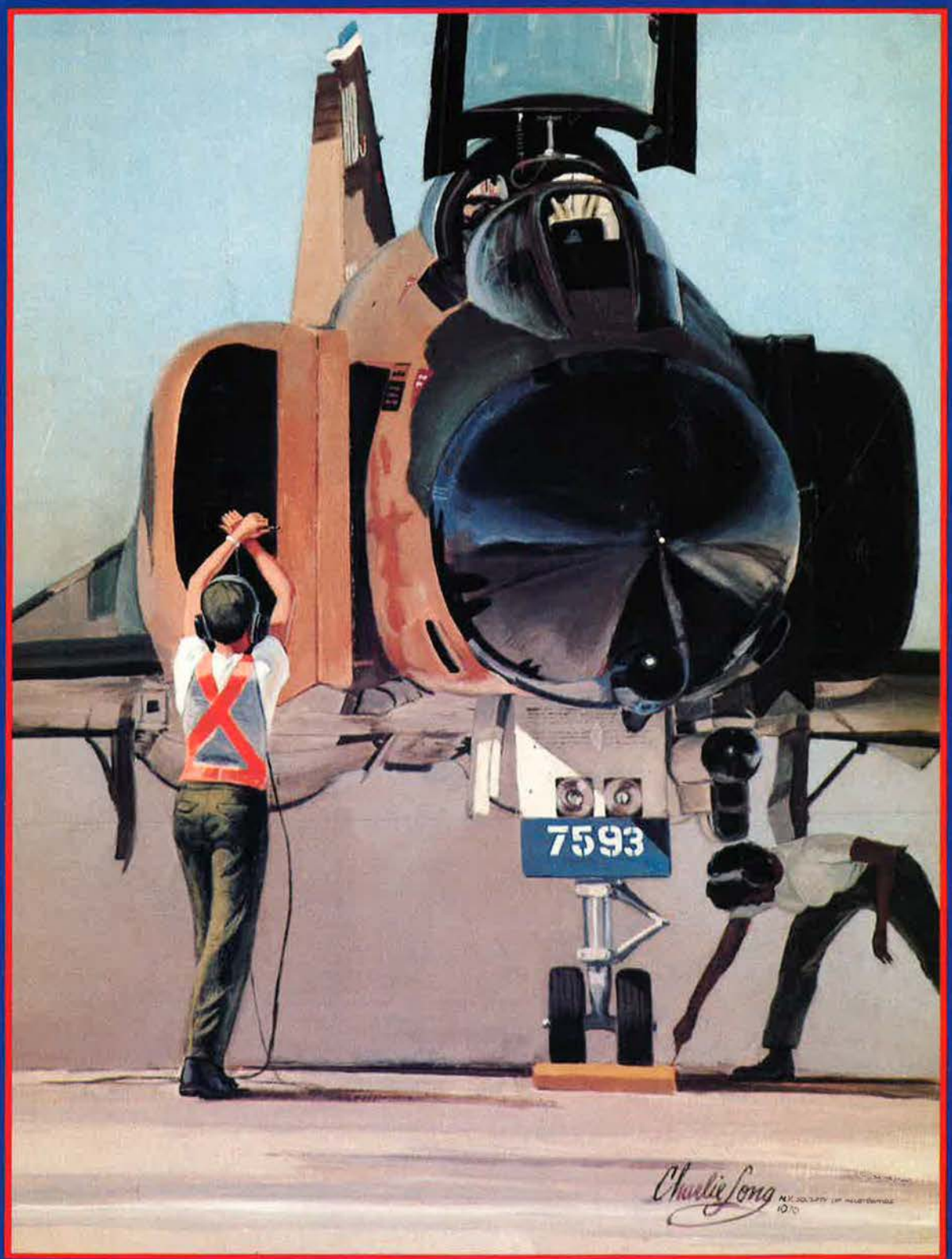
JANUARY 1977/$1

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE



Red Flag Launch, Nellis AFB, By Charlie Long—USAF Art Collection, See Page 40

WORLD'S BEST INTERCEPTOR

...BY DESIGN!

- It has the largest surveillance volume — three times that of the nearest competitor.
- It can detect targets at a range 30% greater than its nearest competitor.
- It carries the only weapon system able to launch missiles at more than one target at a time — it can attack six while continuing to monitor 24, simultaneously.
- Its Phoenix missiles have scored an unprecedented 85% success rate against a variety of targets from distances of 2 to 110 miles.
- It costs no more to do the job than any competitor.

F-14/Phoenix . . . The only new concept in air superiority . . . the only one designed originally as an air-defense interceptor . . . and the only one ready now!

GRUMMAN AEROSPACE CORPORATION

AIR FORCE MAGAZINE
PUBLISHED BY THE AIR FORCE ASSOCIATION

This Month

4 **Seeing Is Believing** / An Editorial by John F. Loosbrock

13 **The B-1: Still on the Hill** / By Claude Witze

25 **The Honor Code** / By Lt. Gen. James R. Allen, USAF

27 **Industrial Associates of the Air Force Association**

30 **Jane's Aerospace Review, 1976/77** / By John W. R. Taylor

40 **Red Flag: TAC's Realistic Approach to Readiness**
By Maj. Terry A. Arnold, USAF

45 **Every Man a Tiger!** / By Lt. Col. Jim Beavers, USAF (Ret.)

50 **The Annual Battle of the Budget** / By Edgar Ulsamer

54 **New Look at the Air War College** / By Ed Gates

59 **The Question of National Interest**
By Gen. T. R. Milton, USAF (Ret.)

60 **Flying the Early Birds: The P-26A**
By Brig. Gen. Ross G. Hoyt, USAF (Ret.)

62 **The New Five-Year Defense Plan** / By Edgar Ulsamer

74 **Second Careers in Civil Service** / By Ed Gates

76 **AFA's 1976–77 Standing Committees and Councils**

78 **"Magical Air Force Ball"** / By Don Steele

ABOUT THE COVER

TAC pilots benefit from "the most realistic combat training program ever developed." It's called Red Flag, and our article about it begins on p. 40. The cover painting, by Charlie Long, "Red Flag Launch, Nellis AFB," appears by courtesy of the Air Force Art Collection.

Departments

6 **Airmail**
10 **Unit Reunions**
13 **Airpower in the News**
15 **The Wayward Press**
16 **Aerospace World**
22 **Index to Advertisers**
25 **What They're Saying**
69 **The Bulletin Board**
74 **Speaking of People**
75 **Senior Staff Changes**
80 **AFA News**
85 **This Is AFA**
88 **There I Was**

JANUARY 1977
VOLUME 60, NUMBER 1

Publisher: James H. Straubel

Assistant Publisher: John F. Loosbrock

Associate Publishers:
Charles E. Cruze, Richard M. Skinner

Editor: John F. Loosbrock

Executive Editor: John L. Frisbee

Senior Editors:
Claude Witze, Edgar Ulsamer, James H. Taylor

Military Relations Editor:
James A. McDonnell, Jr.

Contributing Editors:
Ed Gates, Don Steele, John W. R. Taylor ("Jane's Supplement"), Maj. Terry A. Arnold, USAF

Regional Editors:
Stefan Geisenheyner, Wiesbaden, Germany
Irving Stone, Los Angeles, Calif.

Managing Editor: Richard M. Skinner

Ass't Managing Editor: William P. Schiltz

Director of Design and Production:
Robert T. Shaughness

Art Director: William A. Ford

Special Assistant to the Editor: Nellie M. Law

Editorial Assistants:
Nellie M. Law, Pearlie M. Draughn, Grace Lizzio

Administrative Assistant to the Publisher:
Ethel J. Vernon

Assistant for Editorial Promotion:
Robin Whittle

Advertising Director:
Charles E. Cruze
1750 Pennsylvania Ave., N.W.
Washington, D.C. 20006
Telephone: (202) 452-7330

Advertising Service Manager:
Patricia Teevan

Area Sales Managers:
Bayard Nicholas, Stamford, Conn.
(203) 357-7781
James G. Kane, Chicago (312) 296-5571
Harold L. Keeler, Los Angeles (213) 879-2447
William Coughlin, San Francisco
(415) 546-1234
Yoshi Yamamoto, Tokyo 535-6614

European Sales Representative:
Richard A. Ewin
Overseas Publicity Ltd.
214 Oxford St.
London W1N OEA, England
Telephone: 01-636-8296

AIR FORCE Magazine (including SPACE DIGEST) is published monthly by the Air Force Association, Suite 400, 1750 Pennsylvania Ave., N.W., Washington, D.C. 20006. **Phone:** (202) 452-7300. Second-class postage paid at Washington, D.C. **Membership rate:** $10 per year (includes $9 for one-year subscription); $24 for three-year membership (includes $21 for subscription). **Subscription rate:** $10 per year; $5 additional for foreign postage. Single copy $1. Special issues (Soviet Aerospace Almanac, USAF Almanac, Anniversary issue, and "Military Balance" issue) $2 each. **Change of address** requires four weeks' notice. Please include mailing label. Publisher assumes no responsibility for unsolicited material. Trademark registered by Air Force Association. Copyright 1977 by Air Force Association. All rights reserved. Pan-American Copyright Convention.

BPA Circulation audited by Business Publication Audit

When you need direction, Bendix can steer you right.

It all began when we built the earth inductor compass that Lindbergh used to steer the "Spirit of St. Louis" to Paris. And we've been showing people how to find their way ever since.

Precision measurement and the computation of angles, time, speed—we know these functions from every direction.

Bendix gyro stabilized compasses, air data computers, visual omni-range receivers, instrument landing systems, automatic direction-finders, distance measuring equipment and Doppler radar navigation systems are known and respected by military, commercial and private pilots worldwide.

The Apollo astronauts know Bendix, too. They depended on our inertial measuring unit to provide stabilization and precision guidance data to acquire orbits, and for translunar injection.

Recently, we introduced our new Omega airborne navigation system — a long-range system destined to find widespread use both domestically and overseas.

And we've just introduced to the general aviation market a new automatic radio direction-finder with sensitivity that far exceeds competitive systems.

For the future, we're working on cathode-ray tube presentations of navigation data that ultimately will reduce the number of instruments required in the cockpit.

These are all products of Bendix Flight Systems Division, Bendix Guidance Systems and Bendix Avionics Division—three of the many divisions which combine technological expertise through the Bendix Aerospace-Electronics Group.

For more information write for our brochure, "Worlds of Creativity." The Bendix Corporation, Aerospace-Electronics Group, Dept. 110-C, 1911 North Fort Myer Drive, Arlington, Virginia 22209.

Bendix


Spirit of St. Louis

AN EDITORIAL

Seeing Is Believing

By John F. Loosbrock, EDITOR

AT THE core of any debate about the national security budget lies what we are able to learn about the shapes and dimensions of the threats, present and potential, that face this nation. Even the richest nation in the world, which the United States still is, cannot afford to squander its resources on things it does not need—whether these be weapons or welfare. So the critical factor becomes what our government knows about its potential needs and, therefore, in the last analysis, what the public is told about what its government knows and, above all, what the public believes about what it is told.

It is to this latter point that we address ourselves. Many years ago—it must be twenty or more—we asked Jimmy Doolittle how he would spend an added $5 billion to best improve national security. Without hesitating he replied, "I'd spend it on intelligence. That's where it would really pay off."

We doubt that even the prescient Doolittle could have foreseen the exponential leaps in intelligence-gathering capabilities that the marriage of space technology with highly sophisticated sensor systems would bring about in a few short years. The late President Lyndon Johnson once said, and without hyperbole, that the entire US investment in space was worth the price in terms of intelligence alone.

With these facts in mind it is difficult for us to understand why defense critics continue to voice skepticism about the magnitude, the thrust, and the direction of the unprecedented armament effort in which the Soviet Union is currently engaged. Defense spokesmen have made the point time and time again, and yet their assessments are greeted with the kind of cynicism that used to be applied to the Navy's annual sightings of submarines off our coasts. Or worse, simply ignored apathetically.

In the past, skepticism often was justified, as in the case of the mythical missile gap of the late '50s and early '60s—an issue that had much to do with John Kennedy's election to the Presidency. Intelligence over the centuries was a matter of arriving at an estimate by looking at a partially assembled jigsaw puzzle from which most of the pieces were missing. This has not been the case for a number of years.

At least a decade ago officials were saying that our satellite photos were so good that you could distinguish a manhole cover in a Russian street. And the state of the reconnaissance art has improved immeasurably since, as NASA's earth resource photos, publicly released, clearly indicate. In fact, a NASA photographic map of the Soviet Union, which found its way into print, told alert reporters more about the Soviet launch sites at the Baykonur Cosmodrome and at Kapustin Yar than the average American knows about our own facilities at Cape Canaveral and Vandenberg Air Force Base. The quality of our satellite photography is unbelievable, literally, to those who have not seen it. And maybe that's the problem.

Recall, if you will, the skepticism about the movement of Soviet missiles into Cuba back in 1962. It was public release of our U-2 aerial reconnaissance photos that convinced the skeptics. Seeing is believing, as the old saying goes. And it is belief that is lacking today, a lack that could be satisfied easily and safely by public release of a representative sample of what our experts are looking at in the Soviet Union every day. If a picture is worth a thousand words, think of the savings in mimeograph paper alone.

If, indeed, there is a real desire to convince the American people of the Soviet buildup, and if, indeed, our satellite photography does back up what is being said publicly, we fail to understand official reluctance to prove what is being said.

The stock answer is that we don't want the Soviets to know how really good our pictures are. This is malarkey. The Soviets know. In fact, we've showed them in the course of SALT negotiations when they've denied doing what our pictures clearly showed they were doing.

One or both of only two conclusions can be drawn. The first is that we have a tacit agreement with the Soviets, who are said to fear greatly the need to admit to their own people that they are under constant surveillance. Soviet uneasiness in this regard would presumably upset détente. Or, the second conclusion is that our government doesn't want to upset its own people, at least not to the extent that support would be generated for increasing defense expenditures.

Seeing is believing. Why can't the American people have a look for themselves? ■

SCIENCE/SCOPE

A cockpit-mounted, electronically generated map on a cathode ray tube display can give tomorrow's Air Force pilot a composite presentation of his aircraft's flight path overlaid with terrain features, checkpoints, and target locations. Dynamic data including command information or warnings can also be added to the map display. Cartographics are generated on the cathode ray tube by a programable display generator. Geographic information for the map is stored in a magnetic-disc data base and retrieved according to the aircraft's position.

The electronic map is part of the controls and displays being developed by Hughes for the USAF Avionics Laboratory's Digital Avionics Information System (DAIS) program. DAIS is bringing advanced, integrated, digital processing to aircraft avionics design, with modular, standardized equipment used to handle all avionics subsystem functions.

As part of the US Navy's standard hardware program, the Hughes-built AN/UYK-30 microprocessor has been designed onto six Standard Electronic Modules (SEMs) in a 20-cubic-inch space. The SEM-2A modules are 1.9 x 5.6 inches. The 16-bit UYK-30 has already been integrated into 11 military-system programs that involve application with the Navy, Army, and Air Force.

Like the existing production version of the UYK on three 5.6 x 6.5 inch modules, this new SEM version will use multisource, off-the-shelf, bipolar Schottky TTL LSI microprocessor chips for a capability of 340-660 thousand operations/sec, using up to 65,000 words of memory. Value of the SEM concept, of course, is a family of off-the-shelf, reliable, electronic modules, each performing certain standard functions. This facilitates the design, production, and support of electronic systems.

Clear, color closeups of the giant planet Saturn, its rings, and its satellite Titan will be transmitted to earth beginning in 1979, when Pioneer 11 is closest to the planet. Regular observations will begin in July 1977. Two instruments aboard the spacecraft were built by Santa Barbara Research Center (SBRC), a Hughes subsidiary. One, an imaging photopolarimeter, will take the pictures; the second, an infrared radiometer, will measure the temperatures of the planet and its rings.

While the spacecraft is on its way, the temperatures it takes will be telemetered home so that scientists can continue to study the delicate heat balance of the solar system.

A series of electronic test systems called REMUS has been ordered from Hughes by the Federal Republic of Germany. REMUS is a German acronym for "computer-controlled measurement and test system." This versatile, automatic system can check a variety of electronic units used in radar, fire control, and communications. REMUS is made up of functionally oriented test stations; these perform intermediate-level tests on field-replaceable electronic units to find faulty modules. In addition, proper functioning of repaired units can be verified.

Creating a new world with electronics

HUGHES

HUGHES AIRCRAFT COMPANY

Airmail

First at NWC

Thank you for including the news of my new assignment in the November issue of AIR FORCE Magazine ["Aerospace World"].

I must defer to RADM Fran McKee, USN, and Capt. Anne L. Ducey, USN, for the honor of being the first woman Naval officer to attend the Naval War College located at Newport, R. I. However, I will lay claim to being the first woman Naval officer to attend the National War College, Fort McNair, Washington, D. C., Class of 1974.

In any event, thanks for being included in your fine magazine.

Capt. Pauline M. Hartington, USN
Secretary, Joint Chiefs of Staff
The Pentagon
Washington, D. C.

Air Force's Productivity

It was a pleasure to read Edgar Ulsamer's [October '76] article, "USAF's Crusade to Streamline Industrial Production." It is encouraging to note the Air Force's renewed interest in productivity.

Notice that I say "renewed," for I differ with Mr. Ulsamer's position that military buyers have, in general, stayed clear of the subject. Such a position does not recognize the hard work and contributions of some past Air Force personnel.

Besides the highly successful development of numerical control machine tools, which Mr. Ulsamer acknowledges, specific efforts which the Air Force has sponsored include major improvement of the British optical system for jig alignment, adoption of the German cast-clamp method of jig fabrication (which industry rejected), and the development of high-capacity fabrication presses. These were all part of a keen appreciation by the Air Force of the need for productivity that was a direct result of World War II experience.

Such efforts were relaxed in the 1950s when the Air Force accepted the concept of a "thirty-minute war." Obviously, in that event, wartime production, at least, would be unnecessary. Also, at that time and later, both the DoD and Congress worked hard to end the government provision of plant and equipment to industry that had been necessary to finance the highly successful production effort of the Second World War. This recent policy discouraged capital modernization.

I believe that the significant efforts by the Air Force to spur productivity between the last total war and the advent of long-range missiles is highly creditable and worthy of recognition.

Lt. Col. Charles D. Bright,
USAF (Ret.)
Associate Professor of Business Administration
Southwestern College
Winfield, Kan.

C-130's Important Crew Members

Regarding the article by Captain Lindquist on the C-130 "Herk," a grave injustice has been dealt the crew concept of that aircraft. However important the pilot is on an Adverse Weather Aerial Delivery System (AWADS) equipped aircraft, there is still a hard-working navigator on board.

First, it is this oft-forgotten navigator, and *not* the pilot, as he stated, who updates the computer using the forward-looking radar. It is also the nav who guides the aircraft to the Computed Air Release Point (CARP) through his use of the computer. In fact, it is solely the responsibility of the navigator to program, update, and maintain the inflight accuracy of the computer. The pilot merely follows the heading information supplied to his ADI and HSI by the computer, much like flying an ILS approach.

Second, the AWADS visual display located between the pilot and the copilot is simply a repeater of the much larger and more accurate radarscope at the navigator's position. The pilot cannot update the computer from this scope because it does not have the capability.

The article also leads to the erroneous conclusion that only AWADS aircraft can fly in close IFR formation. A completely separate system called Station-Keeping Equipment (SKE) is provided to nearly all Herky Birds to allow them to know the position of the rest of the aircraft in the formation. This display is projected on the same AWADS visual display that lies between the two pilots.

We here are vitally concerned with the proper recognition of the importance of the navigator on an AWADS aircraft. We had better be . . . for we do it for a living.

The Navigators of the 41st TAS
317th Tactical Airlift Wing
Pope AFB, N. C.

Please pass along my congratulations to Captain Lindquist for an excellent article about the Herky Bird ("The C-130: Talented Tactical Transport," November '76).

I must, however, point out what are some obvious errors and omissions. First, in my experience with AWADS missions, I have never seen the *pilot* "use his forward-looking radar to take a fix on such points as the bend in a river." Normally, this is the job of the *navigator,* who virtually *owns* the AWADS equipment. Secondly, the AWADS visual display, known as the Precision Ground Mapping radar, is located on the navigator's panel, *not* between the pilot and copilot. I believe Captain Lindquist was referring to the Station-Keeping Equipment (SKE) indicator. Thirdly, the author makes no mention of the fact that the primary monitoring of the Flight Command Indicator (FCI) is usually done by the *flight engineer,* nor did he comment on the laborious task the C-130 *loadmaster* has in the back of the airplane during airdrops and LAPES.

Small points? True, but very important, for they all add up to say there are *five* crew members on a C-130, not two.

1st Lt. Peter A. Bechtel
Pope AFB, N. C.

Capt. Pete Lindquist's article was an exceptionally fine review of the capabilities of the C-130. This aircraft is often overlooked when missions of worldwide importance are performed because of its lack of glamour and prestige as compared to the C-141 and C-5.

A group of individuals is also often overlooked when talking about

any mission in peacetime. This is probably because of today's reasonably reliable maintenance of TACANS, VORs, INS, etc., and because their job also lacks glamour and prestige.

These people do deserve recognition when talking about one airlift weapon system—AWADS/SKE.

Come on, Pete. *Let us not forget our navigators!*

1st Lt. James T. Carlet
Lee's Summit, Mo.

OER Turbulence

Reference Ed Gates's "Speaking of People" in your November issue. Mr. Gates exposes the basic fallacy in the Air Force's new OER system without specifically identifying it to his readers. The major problem in the system becomes evident in comparing the Navy rating procedures to those of the Air Force: A Navy officer is rank-ordered by someone who, at least, knows him through an informal working relationship. Air Force officers, on the other hand, are asked to believe that they can be fairly and objectively rank-ordered regarding their potential by someone who may or may not know them, and, most often and more ominously, knows some of the reviewed officers but not others.

Our new system confuses the report itself for the officer. I quote AFR 36-10, paragraph 4-4c: "Even though a reviewer may not have personal knowledge of the ratee, he or she can accomplish an effective review of the report to determine its qualitative adequacy." The statement is true as far as it goes: OERs can be effectively reviewed for content, style, neatness, typing, and perhaps for other objective qualities I have not considered. However, the mark the reviewer makes in Section V does not just rate the *report,* it purports to rate the ". . . officer's potential for increased grade and responsibility. . . ." Like many Air Force officers whose jobs do not permit observation by the reviewer, I cannot accept the blithe assurances of the Regulation that it can be done. My logic and experience tell me it is impossible.

If, to this point, this letter sounds like an exposition of a "personal problem," I can only recommend to your reading the several research studies on the new OER produced by last year's ACSC and AWC classes, now languishing in the Air University library. Of special interest is the ACSC study that surveys more than 1,000 officers, and proves, among other things, that the problem stated here is recognized by the vast majority of the Air Force officer corps. These papers should also be must reading for Air Force leaders who insist we have a ". . . basically sound system."

Mr. Gates is almost certainly correct in predicting continued ". . . turbulence on the OER front." As evidenced by this letter, I am one of those officers who is contributing to that turmoil, and I will continue to do so until the inequities in the new system are effectively addressed. I further agree that criticism is not enough, and, accordingly, I submitted a suggested change to the system in mid-September. My letter to AFMPC has not yet been answered or acknowledged.

Name withheld at
request of writer

Mr. Gates's interesting story on the OER system was quite accurate from the standpoint of a disinterested observer; however, he did mention that even officers on the Air Staff felt that they were being shortchanged by it. The reason for that feeling is probably that an officer is now not being graded against the standard of all officers in the same grade, but against the men with whom he happens to be working at that particular rating period. Even though it is probably true that things will even out in the long run, it is also true the promotions are made on the short run. This is to say that some OERs are considerably more critical to an officer's career than others. Naturally, those written immediately prior to a selection board are those that matter most.

With every system goes considerable effort on the part of the players to make the system work to their advantage. The system now is to stay in a job where the player is receiving good ratings until he meets the board and, if successful, then move. This was partly true in the past, but now timing becomes especially significant. I think the assignments people will attest to the difficulty of getting some officers to move into other jobs where they may be needed, when they are a year or two away from the primary zone. The inevitable result is that many jobs are now being filled by officers who have nothing to lose, in that they expected a three in their current position.

I just finished a tour in the Far East in charge of a MAC Airlift Command Post. When I arrived and for a year thereafter the officers working the desk were extremely talented young men. They had had years of experience flying the MAC line and knew the ins and outs of the business thoroughly. Assignment to an overseas MAC ACP seemed to be a logical step in their career progression, and they would volunteer for it. With the new OER system, however, the size of the control group—usually about fifteen—worked to their disadvantage. Not only were they competing with each other, but with select officers from other areas of concentration. The inevitable result was that the officers selected to fill vacancies created by their departure were men relatively new to the field who barely met the criteria imposed by regulation.

In my case, with a control group of three and competing against some damn fine men, my squadron level three looks the same as a squadron level three back in the States in a control group of thirty. And there is no notation on my OER concerning the size of the control group. Don't know where Mr. Gates got that information.

It is also significant that the head shed seems to find it necessary to send out teams to sell the field on the value of the system. He states that not enough people have been listening—perhaps they are merely unconvinced.

Ten years ago when a man was passed over, if he were deserving, he got a different job and one or two special OERs to help him. Now the tendency seems to be to push him aside and concentrate on other matters. Being once deferred carries a stigma that is very difficult to overcome.

As a mature officer I would like to be assured that I will receive the rating I deserve, and receive the same opportunity as everyone else. In his "spread the word" visit in 1974 Major General McNeill pointed out that a three at the Air Staff level would carry more weight than a three in an Operations and Training job. This is perhaps as it should

Why is this fighter more reliable and efficient?

One reason is this unit.

The fighter is the USAF F-16. The unit is the Garrett Pressure Transducer.

The pressure transducer is utilized in the F-16's pneumatic sensor assembly to provide key redundant inputs to the automatic flight control systems. It has to be reliable and efficient.

Garrett's pressure transducer is inexpensive and proven. Over 1,000 have been manufactured to date. In addition to the F-16, they are used on the B-1 supersonic strategic bomber, the Air Launch Cruise Missile, the YC-14 AMST jet transport, the F-14 fighter, the JA-37, and in the Space Shuttle's central air data computers.

For more information on Garrett's Pressure Transducer, call us at (213) 323-9500, or write to Sales Manager, Electronic Systems Sales, AiResearch Manufacturing Company of California, 2525 W. 190th Street, Torrance, CA 90509.

The Garrett Corporation
One of The Signal Companies

GARRETT PRESSURE TRANSDUCERS

The reliable answer

Airmail

be, but (1) some officers are assigned involuntarily to that operations and training job by assignments people who have holes to fill, and (2) a three is not, repeat *not,* competitive to O-6, regardless of its origin. Finally, once the three is in the folder, the officer's chance for a good follow-on job is considerably reduced.

Lt. Col. Christy D. McKenzie
Altus AFB, Okla.

Brass Alignment

In your publication of October '76, I would like to point out that a discrepancy in uniform appears. The young officer on page 73 has obviously received little training in proper brass alignment and little drive to look up the regulation. What is most distressing is that you, gentlemen, could let such a gross mistake appear in your magazine. If you have questions as to the proper alignment of officer brass on the female uniform, look on page 60 of the same publication.

I would suggest that you, gentlemen, send a letter of apology to the mistaken officer for amplifying the error by allowing the photo to be published.

2d Lt. Patricia M. Fornes
Great Falls, Mont.

I sincerely hope that 2d Lt. Kathleen Ann Rambo ("Bulletin Board") does well at UPT and at Altus. I also hope, however, that she pays a little more attention to her flying than she did to AFM 35–10. Her bars are pinned incorrectly.

Shame on whoever submitted the picture. They should have known better.

1st Lt. Diane Hollingsworth
Sheppard AFB, Tex.

If that's how she wears her bars, how does she plan to wear the wings?

Capt. John E. Young
Lackland AFB, Tex.

Fourteenth Is Still Flying

We read your "Aerospace World" note on the deactivation of the 14th Aerospace Force in the October '76 issue with great interest, but I'm afraid you told only half of the story.

Fourteenth Air Force, of General Chennault's Flying Tigers fame, is still serving the Air Force at Dobbins AFB, Ga., where Fourteenth Air Force (Reserve) was activated October 8 concurrent with Fourteenth Aerospace Force's deactivation. The activation of Fourteenth Air Force (Reserve) was part of a general reorganization of the Air Force Reserve's midmanagement structure that replaced the Reserve's three regional headquarters, Eastern, Central, and Western, with Fourteenth, Tenth, and Fourth Air Forces (Reserve). Each of the new numbered Air Force headquarters is aligned functionally with gaining command numbered Air Force headquarters and manages those Reserve units gained by "sister" active numbered Air Forces upon mobilization.

Christopher J. Scheer
Information Officer
Fourteenth Air Force (Reserve)
Dobbins AFB, Ga.

• *The other half of the story was told in an item, entitled "AFRES Realigned," in the December issue "Bulletin Board" column.*—THE EDITORS

A Note From the General

There is no question about the courage and the skills of people who fought the Vietnam War in old airplanes, or, for that matter, in Huey Cobras or C-130 gunships. Nor is there any argument about their effectiveness in the special environment of South Vietnam and parts of Laos. Perhaps, to make my point in the short space of a column ["Tankers, Task Forces, and Terrorism," December '76 issue], I was too cryptic. At any rate, here is another try at making that point.

Our best chance in that war was the proper, not the artificially restricted and inhibited, use of airpower. The few times we tried—mining of Haiphong, the B-52 bombing of Hanoi—there were signs that it might work. But for most of the war we were bemused with the concept of counterinsurgency. Huge sums were spent for systems of little, or no, use anywhere else we are likely to have to fight. It is easy to forget that almost any kind of airplane would have been useful in South Vietnam. The North, of course, was a different matter.

If you have a sophisticated capability, you can generally do unsophisticated things. The opposite is not true. The point in bringing in the tankers was simply a reminder that today's Air Force can move around the world pretty swiftly with troops, cargo, fighters, or whatever.

Gen. T. R. Milton, USAF (Ret.)
Colorado Springs, Colo.

P-38 History

This is an open letter to all pilots and ground crew personnel who served in P-38, F-4, and F-5 (photo-recon versions of the P-38) organizations of any kind during and before America's participation in World War II. This writer, working diligently toward publication of the most accurate and comprehensive book that is ever likely to be published about the Lockheed "Lightning" fighter-bomber-reconnaissance airplane, has completed and published six parts of an abridged version of the book manuscript. It is now anticipated that the serialization will continue for about twelve parts, appearing at intervals in the companion magazines *Airpower* and *Wings.* Beginning with the March issue of *Airpower* and the April issue of *Wings,* we published the first really accurate story of the XP-38 development.

The purpose of this letter is to invite you to aid in the compilation of the important historical book by searching your long-stored personal effects for old photographs and documents pertaining to our favored subject. The loan of such material and participation in taping recollections of personal experiences would add greatly to the book.

The book will expand greatly on what has been and will be divulged in the magazine articles. Upon publication of the book, special consideration will be given to those who contribute useful material on a loan basis. Please contact me through the publisher at the address shown. Information about the other issues in which the P-38 story is appearing can be obtained from the same source. Write to

The Editor
Sentry Books, Inc.
10718 White Oak Ave.
Granada Hills, Calif. 91344
Attn: Warren M. Bodie
Contributing Editor

Black Thursday Raid

The Second Schweinfurt Memorial Association, a nonprofit, chartered organization composed of those who

Airmail

penetrated enemy airspace to the ball-bearing targets at Schweinfurt, Germany, on October 14, 1943, has formed for the purpose of establishing a memorial to those who participated. This mission, often referred to as the Black Thursday raid, is believed to be one of the great battles of all time.

For a more complete account, and a composite story of this historic battle, I would like to contact anyone who has a knowledge of that day's events. Organizational staffs, ground crewmen, and next-of-kin can be of much help to us.

Please write, or send a tape cartridge of your account, giving your name, organization on that date, and your duty, as well as your home address. Any copies of battle orders, crew lists, letters, or prisoner of war lists will be most welcome.

Lt. Col. Robert O'Hearn, AFRES (Ret.)
Memorial Association Historian
2919 Renegade Ave.
Bakersfield, Calif. 93306

3d Radio Squadron

We have recently discovered a bit of fascinating USAF Security Service history. While moving around an old desk a notebook was discovered. The notes cover staff meetings from the old 3d Radio Squadron (Mobile) from November 1953 through the spring of 1954.

While the 3d has turned into the 6981st Security Squadron, we are nevertheless seeking to develop the history of those old days in Alaska.

Anyone having knowledge of the history of the 3d Radio Squadron or knowing the whereabouts of someone who may, is requested to contact me.

Capt. James C. Maddux
Information Officer
6981st Security Squadron
APO Seattle 98742

Memorabilia Donations

The International Aerospace Hall of Fame seeks donations of the following artifacts and memorabilia to expand its displays honoring the great heroes of aviation and space history:

Medals, insignia, uniforms, and flight gear of all kinds, especially from World War I and through the 1930s; photographs, books, significant papers; old props and instruments; a wall-type twenty-four-hour clock, particularly of the type used in the World War II defense control centers.

Help us preserve such materials for future generations, and let us display to the public, especially the youngsters, so they may see their aerospace heritage.

All gifts are tax-deductible. Duplicates provide materials for exchange with other US and foreign museums. Please write

International Aerospace Hall of Fame
1639 El Prado, Balboa Park
San Diego, Calif. 92101
Phone: (714) 232-8322

Operation Little Vittles

I would like to hear from anyone who took part in Operation Little Vittles, the airdrop of candy using small, homemade parachutes during the Berlin Airlift. Would especially like to hear from then-Lt. Col. Gail Halvorsen, the man who started Little Vittles.

TSgt. Roy F. Cochrun
Box 1398, 6950 SS
APO New York 09193

Muroc Aircraft

Does anyone who passed through Muroc Army Air Field (now Edwards AFB), Calif., for training during World War II know of any aircraft other than the following that were there for crew training or submarine patrol duty (not flight testing): A-29, B-17, B-18, B-24, B-26, P-38, P-39, and P-59?

Thanks in advance for any information.

Ted Bear, Historian
Air Force Flight Test Center/HO
Edwards AFB, Calif. 93523

Mission to Warsaw

I am researching the September 18, 1944, mission to Warsaw, Poland, and would like to contact the members of the 95th, 100th, and 390th Bomb Groups and pilots of the 355th Fighter Group who participated in the mission. Please write to

George Shiller
P. O. Box 502
Alhambra, Calif. 91801

Shot Down Over Holland

Information is needed on the present addresses of the following crew members of a 96th Bomb Group aircraft shot down over Holland on December 11, 1943. There were no casualties.

2d Lts. Emory Richard Chesmore, Arthur James Leedy, John Jacob Chestnut, and John Vincent Matthews; T/Sgt. Vincenzo Vicalvi; S/Sgts. Corney Lett, George Livrus Frosdick, James Francis Simpson, Earl Cornell Fahl, and James E. F. Colling.

Also the following crewmen shot down over Holland, date and first names unknown: Lieutenants Wales and Rogers; Sergeants Martire and Sudbury.

Robert W. Owens
96th BG Memorial Assn.
900 S. Western Ave.
Chicago, Ill. 60612

UNIT REUNIONS

Ranch Hand/Vietnam

A "Ranch-In" will be held at Norton AFB, San Bernardino, Calif., on Saturday, January 15. All ex-Cowboys, FACs, HADES escorts, and 315th SOW welcome. For info and reservations contact

Art McConnell
26000 Ave. Aeropuerto 107
San Juan Capistrano, Calif. 92675

River Rats

Europe II will be held at Ramstein AB, Germany, April 1–3, 1977. All Rats from throughout Europe are invited and urged to attend. For details contact

Maj. Robert N. Connelly
Ramstein CINCRat
Box 954
APO New York 09130

Class 61-Echo

USAF Pilot Training Class 61-E reunion will be held in New Orleans January 25–27, 1977. Contact

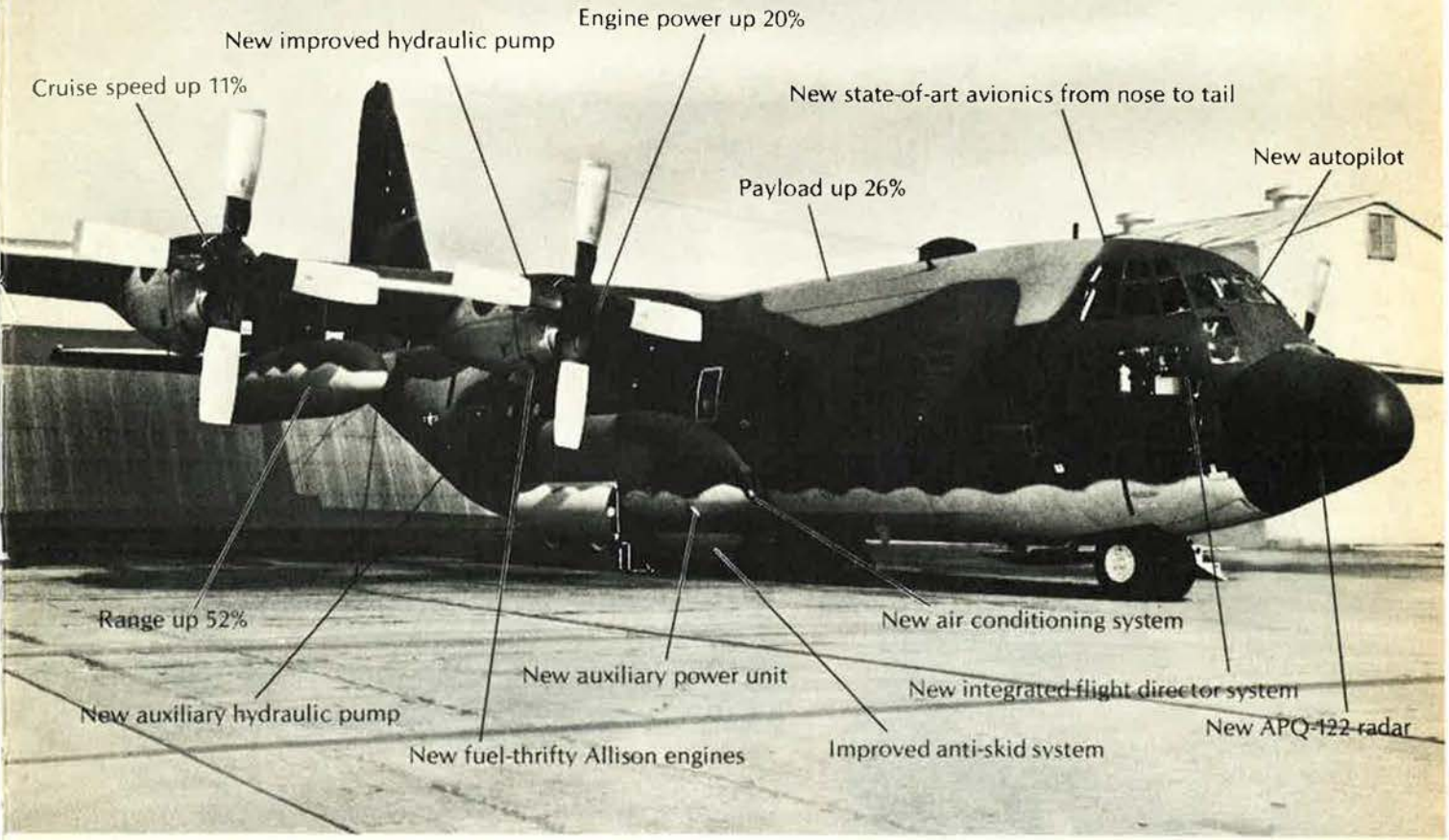
Francis C. Reidinger
3718 Stonewall Circle
Atlanta, Ga. 30339
Phone: (404) 432-1547

316th TC Group

The 316th Troop Carrier Group (Hq., 36th, 37th, 44th, and 45th Squadrons) will hold a reunion March 25–27, 1977, at the Bordeaux Motor Inn Convention Center, Fayetteville, N. C. Need names and addresses of anyone ever in the 316th. Contact

H. B. McCullough
3719 Swift Dr.
Raleigh, N. C. 27606
Phone: (919) 851-0147
or
W. R. Washburn
6510 Arequa Ridge Lane
Colorado Springs, Colo. 80919

The airlifter that keeps getting better and better.



Hercules began its airlift life with a simple, functional design that has become almost timeless—high wings, low cargo deck, huge rear doors for fast loading and unloading. But within that classic airlift shape, Lockheed has improved Hercules from nose to tail.

That's one reason countries and airlines keep buying Hercules. All told, 41 nations have chosen this workhorse of the air.

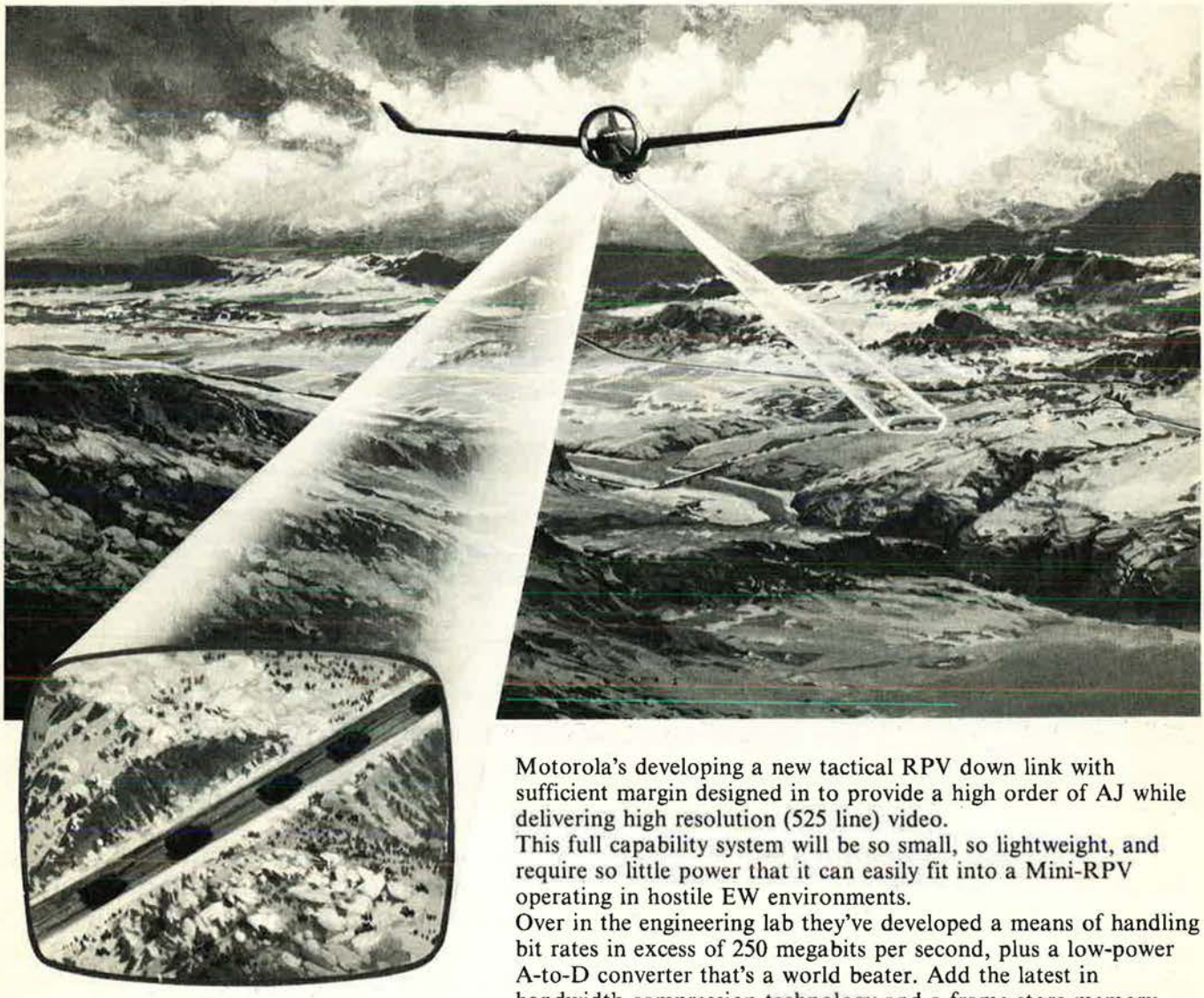
There's another reason they keep choosing Hercules. Its efficient turboprop engines use only about half the fuel of contemplated airlifters with fanjet engines. Fuel economy can save hundreds of thousands of dollars over the life of each Hercules.

Some of the improvements in Herc's performance and systems are shown above. Those and other state-of-the-art advances mean that the Hercs now rolling off Lockheed assembly lines will be airlifting well into the 21st century. Hercules. The world's biggest airlift bargain.

LOCKHEED HERCULES

Lockheed-Georgia Company

A secure RPV down link that delivers high-resolution video.



Motorola's developing a new tactical RPV down link with sufficient margin designed in to provide a high order of AJ while delivering high resolution (525 line) video.

This full capability system will be so small, so lightweight, and require so little power that it can easily fit into a Mini-RPV operating in hostile EW environments.

Over in the engineering lab they've developed a means of handling bit rates in excess of 250 megabits per second, plus a low-power A-to-D converter that's a world beater. Add the latest in bandwidth compression technology and a frame store memory, then you can make additional tradeoffs between frame rates and AJ margin to match your mission requirements.

We think they have thought of everything. . . even EIA standard RS-170 plug-to-plug compatibility in this easily transportable system that's built for quick set-up and knock-down.

For more information about Motorola's secure RPV down link, or about our field-proven uplink systems for over-the-horizon command and control, call Tucker Benz at (602) 949-4441 or write him at Motorola Government Electronics Division, P.O. Box 1417 (MD 3240), Scottsdale, AZ 85252.

MOTOROLA

The mind to imagine . . . the skill to do

Airpower in the News

By Claude Witze, SENIOR EDITOR

The B-1: Still on the Hill

Washington, D. C., Dec. 6

The Air Force's proposed B-1 bomber program is the "most cost-effective alternative for modernizing the strategic bomber force."

Virtually ignored by the press in its coverage of last week's announcement that the airplane will go into production, this statement by USAF Secretary Thomas C. Reed is one disclosure about the project that should not be controversial. Presumably it will be considered by the Carter Administration, one that has declared its intention to seek economy in defense programming. If the B-1 program is discontinued, it will be a signal to Soviet Russia that the US has abandoned the bomber in its planning of future strategic programs.

It was on December 2 that Mr. Reed announced the award of contracts to Rockwell International ($562 million), General Electric ($79.1 million), and the Boeing Co. ($63.8 million). Why was the award made? Mr. Reed gave this reply:

"The Soviet Union has undertaken a broad and deep effort in the expansion of their strategic forces. To the Congressional Budget Office, this buildup raised 'questions concerning the ultimate intentions of the present regime.' To me, there is every indication that the Soviets are driving for strategic superiority by the early 1980s. The B-1 is the strategic initiative that can redress that imbalance by the early '80s. It would be irresponsible not to initiate B-1 production at this time. We are, therefore, doing so."

In support of the decision, Mr. Reed said fifteen years of study, design, development, fabrication, and testing have gone into the B-1. There never has been an airplane, military or commercial, that has undergone so rigorous a test program so early in its life. The go-ahead was approved by Defense Secretary Donald H. Rumsfeld and the Defense Systems Acquisition Review Committee (DSARC).

On top of this, the Air Force had an independent committee headed by Courtland Perkins, a former Assistant Secretary of the Air Force for Research and Development, review the technical aspects of the development program. This group concluded there were no technical problems remaining that should interfere with the production decision. "This is a fine airplane of intrinsic versatility which can be exploited for many varied missions currently unidentified," the report added.

A second review was made by a panel of "outsiders," including Paul Nitze, the former Deputy Secretary of Defense and SALT negotiator. The conclusion in this case:

"Given the size of the Soviet offensive and defensive forces, and, in particular, given the ability of the Soviets to respond to any US deployment decisions, we have come to the conclusion that the B-1 should be procured for inclusion in the force. We have further concluded that the force should include both B-1s and B-52s and that a variety of armaments should be developed for them so as to maintain penetration capability regardless of Soviet decisions as to their air defenses. Among these armaments, long-range cruise missiles . . . and shorter range missiles sufficiently accurate to destroy hard-point targets should be included."

The rate-of-spending limitations imposed by the last Congress—not more than $87 million a month—will be continued by USAF through June 1977. This is four months longer than the time set in the Fiscal 1977 defense appropriations bill. Mr. Reed pointed out that Congress has not rejected the B-1 and did not cut funding for the program.

There were persistent questions at the Pentagon about the choices remaining for Jimmy Carter when he assumes the Presidency on January 20. The answer is that if the program goes ahead, the Strategic Air Command will have an initial B-1 operational capability in 1982. The new Administration can examine this program and make its own evaluation of what the Soviet threat will be in that era. Options will be evident.

Mr. Carter can, with the approval of Congress, restructure the proposed force before January is gone. Or, during the first 100 days of his Administration, he can come up with changes that would be included among his proposed amendments to the Fiscal 1978 budget, sent to Capitol Hill by President Ford. Even later, he can reevaluate again and decide on a B-1 production rate. The Ford Administration proposes a total B-1 force of 244 aircraft. The projected total program cost is $22.9 billion. But final force size does not have to be fixed until 1979, when preparations are made for the Fiscal 1981 budget. By then, inevitably, there will be new studies on the Soviet threat.

There was considerable speculation about the possible attitude of the new Carter Administration.

"The Ford Administration yesterday ordered the B-1 bomber into production despite President-elect Jimmy Carter's expressed opposition to taking the step at this time," proclaimed the Washington *Post* the morning after the announcement. The newspaper was more upset than the President-elect, who said at once he was not displeased by the solution, that he welcomed the time allowed to study the problem, and that he reserved the right to make his own decisions. What had appeared like a February deadline was delayed three or four months, and this did not disturb the former Georgia governor, now headed for the White House.

For proper understanding of the upcoming debate, it is essential to review exactly what Congress did when it enacted the spending limitation. The Library of Congress has reviewed this aspect and indicates the options open to Mr. Carter are

limited, still, by congressional controls on reprogramming, transfers, and impoundments. The curbs in the Fiscal 1977 appropriations bill were put there because of the impending election, and Congress, which is supposed to make the decision, dodged the issue because of the calendar.

Despite this, the language of the law does not exempt the Carter Administration from obtaining congressional consent to any change in the approved program. The law also did not forbid the award of a production contract on December 2. Air Force figures show that delay in the production decision could add $500 million to the total cost. That would be the penalty for shutting down and restarting the industry machine.

The Library of Congress report makes it clear that Congress intended to open the door for a production contract. Said the report:

"The $87 million cumulative per month restriction refers to procurement funds, and these funds cannot be expended except under a procurement contract of some kind." It must be assumed that Mr. Carter knows this, as well as Mr. Ford.

In the House debate last September, Chairman George H. Mahon of the Appropriations Committee made it clear that Congress wanted the B-1 program to continue without obligating the entire sum of $948 million appropriated for the first three production aircraft. To the Library of Congress, there is one interpretation:

"While the B-1 provision of the FY 1977 Department of Defense Appropriation Act and the background to the enactment of that provision seem to imply the granting of discretion to the President in the matter of a final production decision, this is largely an illusion. Congress did not make a final up or down decision on the program, but neither did it grant such power to the President without the requirement of ultimate congressional review."

In short, the power of the President is circumscribed. The options for Mr. Carter, sketched above, will be subject to veto.

If the new President favors a full or partial cancellation of the B-1, he must face two certainties: There will be heavy cancellation costs and Congress may not concur in his decision, having already voted full funding. The new budget law asks for what it calls a "rescission message" to both houses, giving all particulars and justifications. Funds will remain available for obligation unless the House and Senate pass rescission legislation within forty-five days.

If Mr. Carter decides to defer the B-1 production for further study, on top of all the studies already made, this will add to the costs; the figure would be at least $500 million, maybe more. And, again, the proposal would require a special message to the House and Senate. If Congress agrees, it will take no action. If it disagrees, it will pass an impounding resolution, freeing the funds it had voted.

A final possibility is that the new Administration will seek to transfer, or reprogram, the B-1 funds to another purpose. This would require the concurrence of four committees: the Armed Services and Appropriations Committees of the House and Senate. Any one could veto the idea. Also, the law puts a limit of $750 million on transfers.

The Library of Congress study concludes:

"In summary, while the adoption of the B-1 bomber amendment seems clearly to have been made with an eye to a possible change in administration and a fresh look at the question [of the B-1], the Congress neither required a complete halt in the initiation of full-scale production prior to February 1, 1977, nor did [Congress] surrender

The B-1: The subject of an aircraft test program more rigorous than any in aviation history.

its ultimate authority in the matter."

As in the past, it appears that the struggle, if there is one, will be on Capitol Hill. At this writing, there is no reason to believe the 95th Congress will have a position much different than that of the 94th Congress.

So far as USAF is concerned, the B-1 project can boast of surviving under the best management the service ever has produced for a major weapon system. It is a strong runway from which to launch an essential new bomber. ■

The Wayward Press

In 1973, Adm. Thomas H. Moorer, then Chairman of the Joint Chiefs of Staff, made a speech on the dramatic results achieved by airpower in Indochina. United Press International reported this with a lead that said the Admiral saw nothing but failure for airpower in that war. The UPI story was headlined by the Pacific edition of *Stars and Stripes*. The newspaper was forced to print a retraction, in which the Admiral said the article, and resulting headline, were "in gross error and [did] not reflect in any way my assessment of the contributions of our nation's airmen . . ."

Well, the Admiral is still in the trenches.

On the CBS Evening News of November 9, Walter Cronkite made this statement:

"A recently retired chairman of the Joint Chiefs of Staff has warned President-elect Carter that he cannot expect his orders always to be obeyed.

"Retired Adm. Thomas Moorer, speaking to the Commodity Club in Washington, cited the example of the 1971 India-Pakistan war. When the White House desired to tilt US support in favor of Pakistan, it got nowhere with the bureaucracy.

"The Admiral did not say who blocked this, but he did say that Carter will find, 'he's going to give a lot of orders and nothing is going to happen.'

"Moorer's warning evoked memories of President Eisenhower's farewell White House speech more than fifteen years ago: a warning to be alert to the grave implications of a military-industrial complex. And its 'potential for a disastrous rise of misplaced power.' "

Cronkite added:

"In that regard, new questions have been raised in the past few days about the Pentagon's failure to spend all of its $98 billion budget last year. . . . The question is, what happens to the unspent funds?"

While Mr. Cronkite had no trouble quoting President Eisenhower out of context, he appeared to have forgotten that it was Harry Truman who first made the observation about bureaucracies being hard to move. It was when Eisenhower became President that his predecessor said he felt sorry for the former General. The retiring Democrat speculated that after his long military career, Ike would be frustrated when he found, in the White House, that he would give orders and nothing would happen. Admiral Moorer was giving the same counsel to Mr. Carter.

A couple of days after the CBS broadcast by its top news performer, Admiral Moorer responded. Here is what he told Mr. Cronkite:

"As you are no doubt aware, you enjoy a well-deserved reputation for never missing an opportunity to demean, degrade, or distort national security personnel, national security programs, and national security problems.

"Accordingly, I was not surprised during your Tuesday evening broadcast to listen to the manner in which you dealt with my comments concerning the problems every President faces when attempting to take action.

"But I am perplexed.

"How anyone of sound mind can relate the subject about which I spoke with the well-worn and out-of-context remarks from President Eisenhower's White House farewell speech concerning the so-called military-industrial complex boggles the imagination.

"There is simply no connection whatsoever between your comment and the point I was making. Nevertheless, you managed to imply that it is the military that doesn't obey orders rather than those involved in the political world.

"Furthermore, your far-fetched comments which followed concerning the current defense budget are again misleading and damaging to our national security. For your information, the structure of the federal budget is such that there are always unobligated 'no year' funds at the end of a fiscal year, and there always will be."

The Admiral concluded:

"I presume you have some grandchildren.

"As our country faces major security crises in the years ahead, after you are dead and gone, they can rest assured that the ability of the United States to maintain her security was not due to the 'patriotic' efforts of their grandfather."

The truth, of course, it that the military services are, by a wide margin, the most fully complaisant sectors of the federal organization. Now and again someone steps out of line, but is quickly struck down. There was a general named Douglas MacArthur who could vouch for that. The sad history of the war in Vietnam is replete with the groans of military men who did not believe in the policy, but followed the orders of their civilian commander in chief.

So far as CBS and news performer Cronkite are concerned, he is on the record with this statement of policy:

"There are always groups in Washington expressing views of alarm over the state of our defenses. We don't carry those stories. The story is that there are those who want to cut defense spending."

True enough. But according to the polls, they are not supported by most of the American people.

* * *

In the absence of any effort by the press to monitor the ethics of the press, it is interesting that the Society of Professional Journalists, which used to be a newspaperman's fraternity called Sigma Delta Chi, still is nibbling at the issue. Back in 1973, again, the Society of Professional Journalists adopted a code of ethics. The document warned members against the acceptance of gifts, favors, free travel, special treatment, or privileges that can compromise their integrity or that of their employers.

Later, the president of the society, a Chicago editor named Ralph Otwell, said the new code "was not engraved on stone tablets and handed down by Moses as he descended Mt. Sinai. It was simply a code handed down by a committee in Buffalo."

The code, of course, has no teeth and it never will be effective. The Professional Journalists seem to realize this. At their 1976 convention, they passed the ball to their employers. According to *Editor & Publisher*, the organization has adopted a new resolution that encourages "editors and publishers to provide adequate funds for coverage of travel news by travel writers to eliminate the possibility of travel writers becoming indebted to their sources by receiving free travel or other gifts."

That would be a blow to the freeloaders. It was in 1975 that the Associated Press Sports Editors also demanded a pay-your-own-way standard for newspapermen. Nothing ever came of that one, either. Remember the $150,000 bash at the Miami Super Bowl and the $10 million spent to entertain and please the press at the Montreal Olympic games?

Aerospace World News, Views & Comments

By William P. Schlitz, ASSISTANT MANAGING EDITOR

Washington, D. C., Dec. 6

★ USAF plans to beef up its tactical airpower in Europe during 1977.

Seventy-two new F-15s are to be assigned to the 36th Tactical Fighter Wing, Bitburg AB, Germany, with deployment beginning this spring. The F-4s displaced by the Eagles will add Phantom squadrons to the 50th TFW, Hahn AB; the 86th TFW, Ramstein AB; and the 52d TFW, Spangdahlem AB, officials said.

Further, a second wing of eighty-four F-111 tactical fighters will be shifted from CONUS to Great Britain. The F-111s will be reassigned from the 366th TFW, Mountain Home AFB, Idaho, which in turn will be reequipped with F-111As from the 474th TFW, Nellis AFB, Nev. Nellis will receive F-4s returned from the UK.

RAF Upper Heyford has been host base for an F-111 wing since 1970; the new wing will go into RAF Lakenheath.

According to DoD officials, the F-15 will provide NATO with an air defense capability superior to that of the most modern Warsaw Pact aircraft. On the other hand, the arrival of the additional F-111s will strengthen adverse weather and low-level penetration capabilities, including interdiction and close air support. The aircraft transfers underscore the US's firm commitment to improve NATO's defenses as part of an overall effort now under way.

★ The Armament Development and Test Center's Air Force Armament Laboratory, Eglin AFB, Fla., is currently testing frangible bullet designs that can be fired from 20-mm and 30-mm cannon.

Frangible bullets destruct on impact. They were first developed in the 1940s to give aerial gunners realistic practice against "attacking" friendly fighters especially configured for the purpose *(for the full story, see August '76 issue, p. 57).*

Today, their use would lessen ricochet hazards to aircraft at gunnery ranges, as well as reduce the size of range safety areas.

The projectiles are actually stacks of washer-like thin plastic discs bound together with an external plastic skin. Strong along the projectile's axis to withstand firing, when the frangible bullet hits at an angle the skin breaks and the discs fly apart. Their high drag shape confines their ricochet.

The frangibles, if proven feasible, would also save money: the difference between their cost and the cost of live target ammunition.

★ The US Army picked Chrysler Corp. to develop and build a new main battle tank. The new armor will cost about $4.9 billion over the next decade.

The choice, in mid-November, followed two years of competition between the selectee and General Motors Corp. and at one point involved the consideration of a tank to be adopted by both the US and West Germany.

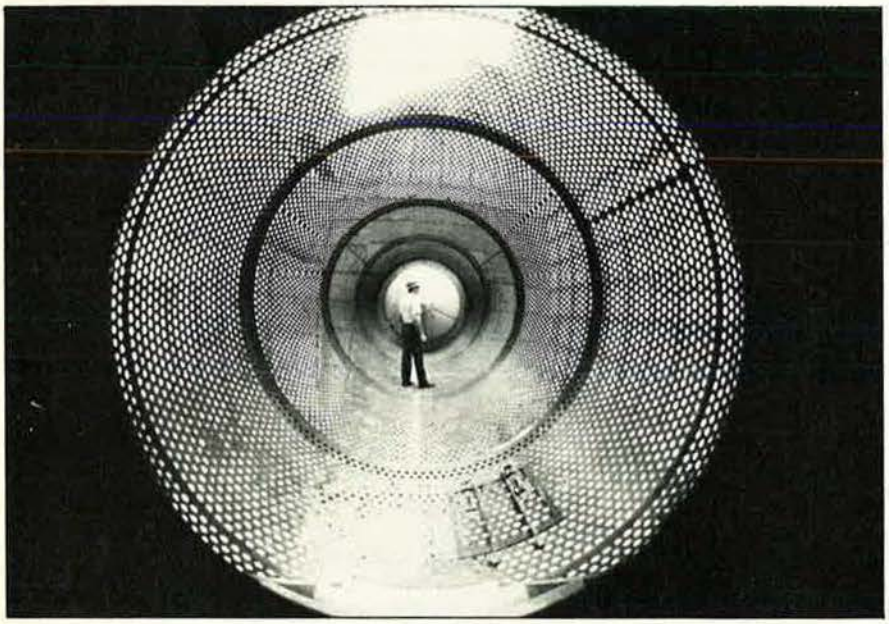
In the end, however, the two allies decided to incorporate as many standardized components as possible into their respective tanks, a move that is still considered as a significant step toward standardization of equipment among NATO members.

Both allies agreed to power their new tanks with gas turbine engines. Avco Corp.'s Lycoming Division, Stratford, Conn., will build engines for the US tank, to be called the Abrams after Gen. Creighton W. Abrams, former Army Chief of Staff and outstanding tank commander of World War II.

The new US tank's turret can be armed with either a 105-mm gun, weapon of the M-60 tanks now in use, or the 120-mm gun that Germany and Great Britain are developing. The new German tank is the Leopard 2, currently under evaluation.

★ The US Army's Aquila unmanned aerial reconnaissance, surveillance, and target location RPV recently completed its first automatic flight at Ft. Huachuca, Ariz.

The RPV, which has a six-foot-



Construction of the Air Force Aero Propulsion Lab's "super muffler" is part of a major effort to minimize the impact of noise created by engines being tested at the Wright-Patterson AFB, Ohio, test facility.

James H. Taylor Joins Magazine Staff

Col. James H. Taylor, who retired from the Air Force in November after thirty-one years' active duty, has joined AIR FORCE Magazine as a senior editor. He began his Air Force career as an enlisted aerial gunner and photographer, rising to the then-highest NCO rank of master sergeant.

Jim Taylor's final assignment was Editor-in-Chief of the European Stars and Stripes*—the highest editorial position in the military services. He also served from 1967 to 1970 as Editor of* Airman *Magazine. He was awarded the Legion of Merit for his achievements in each of these editorial posts. During his incumbency as Editor of* Airman, *that magazine won AFA's Gill Robb Wilson Award for outstanding contributions in the field of arts and letters.*

Most of Jim's Air Force assignments were in the field of public affairs. He served in the Secretary of the Air Force Office of Information as Chief of Community Relations, Deputy Chief for Internal Information, and as Executive to the Director of Information. He also was Chief of the Operations Branch, Public/Legislative Affairs for the Commander in Chief Pacific, and Senior Information Advisor to the Vietnamese Air Force, flying thirty combat missions with the VNAF.

At CINCPAC, Jim was responsible for public affairs planning of Operation Homecoming, later serving as Alternate Chief of the Joint Information Bureau at Clark AB in the Philippines during the return of the Vietnam POWs. The Bureau was awarded a "Silver Anvil" by the Public Relations Society of America.

He holds an MS in Journalism from Boston University and is a life member of the Professional Society of Journalists, Sigma Delta Chi.

long (1.8 m) airframe shaped like a delta wing, is powered by an eleven horsepower engine. The other components of the system are a truck-mounted pneumatic rail launcher, a ground control station, and vertical ribbon barrier retrieval unit.

During its flight, the RPV was guided to waypoints by a computer programmed prior to launch, but its flight plan can be altered while under way by "dialing" new headings, altitude, and speed into the ground station's control console.

The RPV can carry a variety of interchangeable sensors, the video portion of which is displayed in real time on ground monitors as well as recorded for later replay.

★ William Tell '76, the aerial shoot-out held every other year at Tyndall AFB, Fla., determined once again who the top guns are among USAF's fighter-interceptor teams.

Competing in the ADCOM-hosted event for team and individual honors were crews from the Canadian Armed Forces, ANG, USAFE, Alaskan Air Command, and, for the first time, TAC. The winners:

- In the F-106 Delta Dart category, the Montana ANG's 120th Fighter Interceptor Group, Great Falls AP, led by Lt. Col. Buck Juedeman.
- The F-101 Voodoo category, Oregon ANG's 142d FIG, Portland, led by Lt. Col. Marty Bergan.
- The F-4 Phantom category, TAC's 4th TFW, Seymour Johnson AFB, N. C., led by Lt. Col. Jimmie V. Adams.

"Top Gun" awards went to:

- In the F-106 competition, Capt. Rex Tanberg, of Montana ANG's 120th FIG, who was presented the William Tell Trophy.
- In the F-101 competition, Maj. Bradford A. Newell and Lt. Col. Donald R. Tonole, of Oregon ANG's 142d FIG.
- In the F-4 competition, Capt. Roger Locher and Capt. Larry Notario, of Alaskan Air Command's 43d TFS, Elmendorf AFB, Alaska.

Direction and control proficiency won "Top Score" awards for the following controllers and technicians:

- In the F-101 category, Canadian Forces Capts. Joe Comeau and Marsh Swartz with Sgt. Richard Stultz and Master Corporal Robert McLean.
- In the F-106 category, Montana ANG's Capt. Kenneth B. Clark and 1st Lt. Donald Riley with TSgt. Jerry Burgess and MSgt. Willy Lancaster.
- In the F-4 category, 4th TFW's Capt. Phillip Oholendt and 1st Lt. Ray Hathron with MSgt. Donald Sigurdson and SSgt. Quentin Konkel.

★ Three Air Force majors at the Air Command and Staff College, Maxwell AFB, Ala., in 1976 initiated, as a student project, compilation of an updated Air Force dictionary.

The finished product is to be an unofficial record of slang, idioms, and acronyms, and particularly a compilation of the colorful Vietnam-era language that has come into usage since 1966, when the previous dictionary was last revised. "Vulgarities are acceptable," said Maj. Stephen R. Miller, who, along with Majs. C. Brannam and R. Guziec, started the on-going project.

The dictionary will be used by Air University to help allied and sister services understand Air Force terminology, as well as acquaint USAF members with the meanings of terms they hear.

Contributions are solicited and should consist of the word, words, or abbreviation, and as complete a definition as possible. Included also should be where used currently and in the past, as well as contributor's name, rank, and Autovon number where applicable.

Address submissions to: ACSC/EDCM, Attn. Slang Project, Maxwell AFB, Ala. 36112.

★ The US Department of Transportation in mid-November detailed a broad program to reduce jet engine noise of the nation's commercial airliners.

Within eight years, US airlines will have to muffle or replace engines aboard about 1,600 aircraft—or three-quarters of the fleet—at a

TEDS

Tactical Expendable Drone System. Northrop TEDS has successfully completed all validation flights for U.S. Air Force. Provides electronic countermeasures support for strike aircraft. 500 knot speed. 400 nautical mile range.

Based on combat-proven technology. TEDS is low-cost, high-performance modification of Northrop MQM-74C/Chukar II production target drone. More than 76,000 remotely-piloted vehicles have been built by Northrop for U.S. and 20 other nations. All delivered on time, on cost, performance as promised.

Aircraft, Electronics, Communications, Construction, Services. Northrop Corporation, Ventura Division, 1515 Rancho Conejo Blvd., Newbury Park, California 91320, U.S.A.

NORTHROP

Aerospace World

cost that could run as high as $9 billion. (Ford Administration officials believe that the airlines should be able to pick up the tab for the modification program out of revenues derived from reformed regulations on carrier rate-making, an approach that the carriers deny can work.)

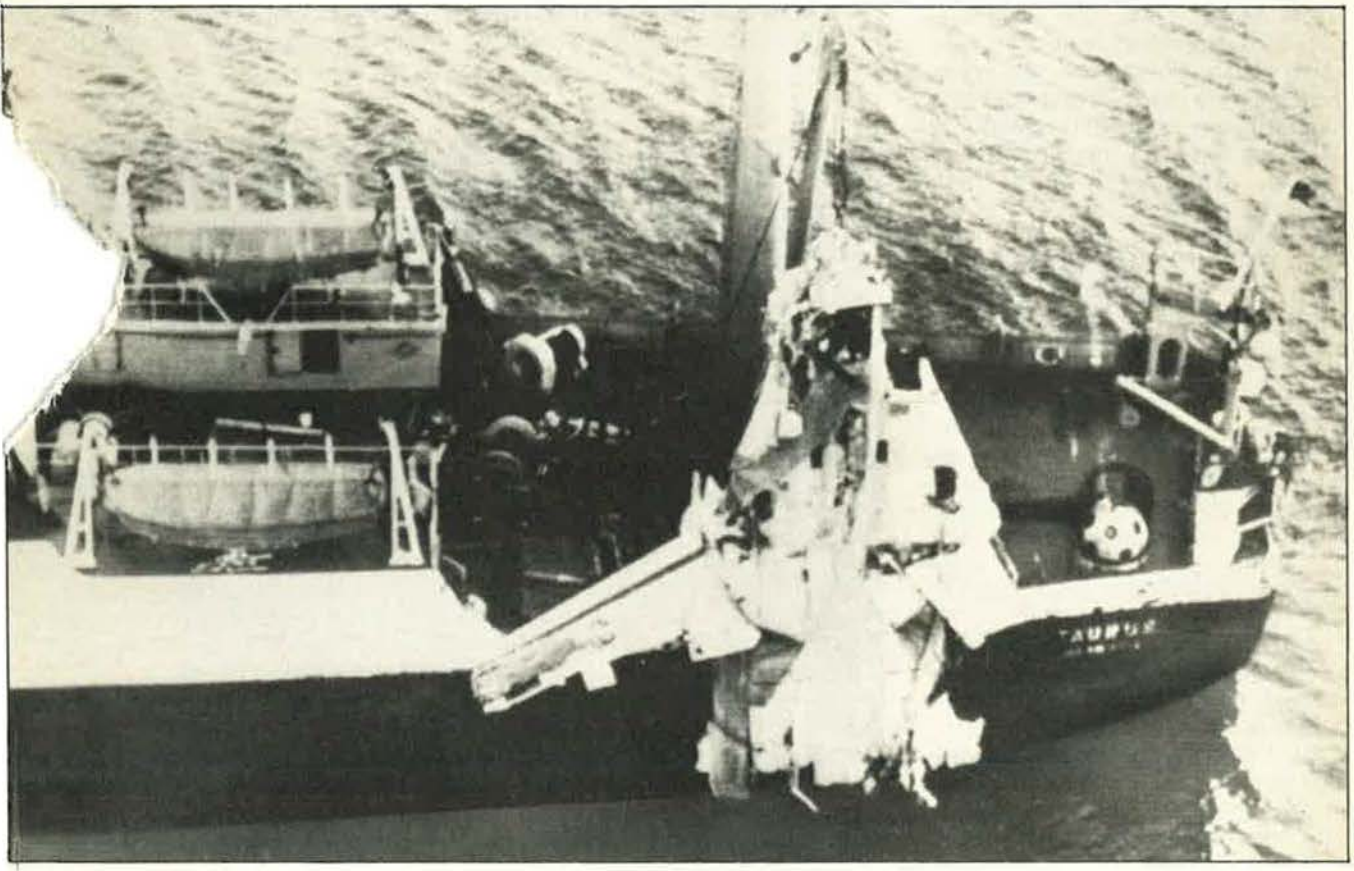
The DOT plan, part of a complex effort to deal with noise pollution in general throughout the country, calls for the development of even quieter engines in the future.

In unveiling the new directives, DOT officials said some 7,000,000 to 8,000,000 Americans are currently adversely affected by "the significant annoyance" of aircraft noise, which has come to be regarded as "an unacceptable intrusion." (Reflecting this have been court judgments in aircraft noise suits totaling more than $25 million in the last five years.)

The 3,000th aircraft in Northrop Corp.'s series of F-5/T-38 fighters and trainers exits from final assembly at Palmdale, Calif. The company is proud of the series' record of on-time deliveries at promised price and guaranteed or exceeded performance.

★ In an effort that required almost two months rather than the initially predicted three days, the Navy retrieved the F-14 Tomcat and top-secret Phoenix air-to-air missile lost overboard in the North Atlantic near Scapa Flow, Scotland, on September 14.

The missile-equipped fighter plunged off the deck of the carrier USS *John F. Kennedy* when one of



—WIDE WORLD PHOTOS

A West German commercial salvage vessel hoists aboard the wreckage of a US Navy F-14 Tomcat fighter that was lost off the USS John F. Kennedy near Scapa Flow, Scotland, in September. Recovery of the aircraft, and the top-secret Phoenix air-to-air missile it was carrying, took two months. See item above.

Aerospace World

the twin jet's engines went out of control just before takeoff.

The incident took place within sight of Soviet vessels monitoring the NATO exercise in which the US ships were engaged and led to speculation—downplayed by US Navy officials—that the Russians might try to salvage the advanced fighter and missile. (That might have evened the score for the intelligence bonanza the US received when a defecting Soviet pilot landed a MiG-25 fighter in Japan. After a thorough going-over by US experts *[see December issue, p. 34, for an assessment of the Foxbat's capabilities],* the MiG was returned by the Japanese to its original owners. Its pilot, Lt. Viktor Belenko, was afforded political sanctuary in the US.)

Off Scapa Flow, the Navy, assisted by a civilian contractor and using such equipment as sonar "fish" and a deep-diving minisub, fought heavy seas and gale-force winds to bring up the aircraft and missile, thereby earning a "well done" for all hands.

In September, in a similar operation, it was reported that Soviet trawlers were successful in salvaging parts of a Tu-95 Bear reconnaissance aircraft that crashed southeast of Newfoundland in August.

★ A National Oceanic and Atmospheric Administration scientist has discovered what may lead to warnings that aircraft are headed into clear air turbulence, a phenomenon that in the past has caused property damage, injury, and even loss of life.

Clear air turbulence is believed to result from atmospheric wave motions that resemble ocean waves breaking on a coastline.

Dr. Peter M. Kuhn had been experimenting with an infrared radiometer aboard a NASA flying laboratory, measuring water vapor by the radiation emitted. He noted that the aircraft encountered turbulence soon after instrument indications of sudden and drastic changes in the amount of water vapor in a particular area.

Continuing his investigation, Dr. Kuhn recorded that in forty-one of forty-five experiences with clear air turbulence, the radiometer provided from four to twelve minutes' warning, with only six false alarms. According to Dr. Kuhn, it may be possible ultimately to predict the severity of such turbulence.

★ According to an Aerospace Industries survey, jobs in the US aerospace industry will stabilize at about 895,000 by June 1977.

Except for minor gains in 1973 and 1974, the projected leveling off in employment would end the major decline that followed 1968's peak of 1,500,000 workers.

The survey indicates that the aircraft manufacturing segment is turning up, based on new orders for airliners by US carriers, domestic and international demand for new and replacement military aircraft, and the on-going strength of general aviation.

Soft spots in the employment picture: helicopter manufacturing and missile and space programs.

An upward trend is anticipated for the "other related products" category: avionics, nonaerospace, and basic research.

★ And within the aerospace industry, two companies—Northrop Corp. and Honeywell, Inc.—have restructured several major management functions.

Northrop, which conducts more than half its $1 billion annual business in aircraft and related services and support, has established an Aircraft Group, comprised of the Northrop Aircraft Division and a new unit, the Northrop Aircraft Services Division.

"Establishment of the Aircraft Group will enable us to give greater attention to aircraft design, development, and production, and concurrently to programs of training, support, and service that help other countries become self-sufficient in the maintenance and operation of aircraft and other systems," said Thomas V. Jones, the company's top official.

Major systems for which the new Group will be responsible include the F-5E and F-5F; Northrop's portion of the Navy's F-18 and the land-based version; main fuselage of the Boeing 747; and training and service programs in the US and

USAF to Build New Engine Test Facility

"Test before flight" has always made good sense in aviation. With aeros system capabilities, complexities, and costs constantly increasing, tha ground rule becomes increasingly important. And realistic testing is a cri tor in ensuring that the US will have the superior airpower—both milit commercial—it must have in the future.

Over the years, ground environmental testing—the simulation of flight c tions—has played a key role in developing aircraft powerplants. Hundreds potential problems have been detected and solved early in engine developmer and acquisition cycles. Many millions of dollars have been saved, and the potential loss of aircraft and lives due to faulty engines has been prevented.

Today, however, jet engine technology—the size, complexity, and performance of new engines—has outdistanced our ability to ground test air-breathing powerplants across the spectrum of conditions they might face in actual flight.

Most of our ground-testing facilities were constructed in the late 1940s and early 1950s. They have been modified and improved over the years in order to cope with new engine technology, but it is no longer economically feasible to expand them to test propulsion systems for aircraft of the 1990s and beyond.

To remedy this, USAF will begin construction, early in 1977, of the new Aeropropulsion Systems Test Facility (ASTF) at the Arnold Engineering Development Center in Tennessee.

ASTF will be able to produce larger regulated airflows to simulate not only cruise but maneuvering flight conditions. ASTF's two large altitude simulation cells, both eighty-five feet (twenty-six m) long and twenty-eight feet (nine m) in diameter, will be capable of testing complete engine systems—the large and more powerful systems of the future.

The need for ASTF is not speculative. European and Soviet aircraft engine developers are already using ground-test facilities with capabilities superior to any in the US. The Soviet Union has a very large facility that has been in operation ten years.

ECM DIVISION

CONFUSION IS OUR BUSINESS

WE CALL IT DEFENSIVE AVIONICS

Lawrence I. Algase
ECM Division Director

As associate contractor to the U.S. Air Force, Cutler-Hammer's AIL Division is developing the B-1's Defensive Avionics System.

Our background in ECM systems is extensive. From the micro (expendable jammers) to the macro (tactical jamming systems) to the exotic (communications jammers) AIL has designed and produced equipment which has successfully jammed and confused hostile systems. We point with particular pride to the AN/ALQ-99, an AIL design, currently installed in the Navy EA-6B, the most advanced integrated jamming system operational today.

The B-1 Defensive Avionics System integrates the latest state-of-the-art receiver, data processing, real-time process control, transmitter and antenna technology to provide effective power managed jamming against hostile radars.

Utilizing modularity, both in hardware and software, the Defensive Avionics System will offer flexibility and low life-cycle costs well into the 21st century.

As in everything else we do at AIL, the entire management and engineering teams devote themselves to solving problems efficiently.

If you want further information on ECM, call Larry Algase 516-595-3191.

SUPPLIER TO THE WORLD OF ADVANCED ELECTRONIC SYSTEMS, TECHNIQUES AND DEVICES.

AIL a division of CUTLER-HAMMER

DEER PARK, LONG ISLAND, NEW YORK 11729

Aerospace World

Dr. Wilhelm Fensterer, president of German newsmen's federation, with USAFE's Maj. Paul F. Heye. See item.

abroad performed by Northrop Worldwide Aircraft Services, Inc. The Aircraft Group is headquartered in Hawthorne, Calif.

For its part, Honeywell has reformed its Aerospace and Defense Group into two new divisions—Defense Systems and Avionics. The two are composed of the former Government and Aeronautical Products Division, Minneapolis, and the Aerospace Division, St. Petersburg, Fla.

Defense Systems will contain combat fire control systems, munitions, torpedoes, and related programs for DoD, the military services, and government agencies. The Avionics Division will include space programs, commercial aviation, navigation and guidance systems, and related operations for DoD, NASA, and other federal agencies.

The group, involved in advanced technology, research, engineering, and production, has designed and/or produced the Navy's Mark 46 torpedo, flight control systems for various aircraft, the computer "brain" for the Viking Mars Lander, and equipment for many space missions, including the upcoming Space Shuttle.

★ Col. John R. Mitchell, USAF (Ret.), offers his literal heartfelt thanks to all those who contributed to the recent blood drive in his behalf.

Last year, Colonel Mitchell, the first Chapter President (then Squadron Commander) in AFA's history and currently a member of California's General Jimmy H. Doolittle Chapter, had open heart surgery that required replacement of twenty-six pints of blood.

At the suggestion of AFA Headquarters, California AFA leaders teamed up with UCLA's Arnold Air Society, Angel Flight, and ROTC unit in an effort that resulted in a contribution of nineteen pints.

Colonel Mitchell is now in good health. He is married to the widow of Gill Robb Wilson, AFA's beloved past National President and Chairman of the Board.

★ **NEWS NOTES—Maj. Gen. John R. Alison,** USAF (Ret.), currently a Northrop Corp. vice president, has been elected **President of the National Aeronautic Association** for the coming year. General Alison, an AFA Life Member and long-time member of the AFA Board of Directors, was a fighter ace in the CBI during World War II.

Maj. Gen. Thomas P. Stafford, Air Force Flight Test Center Commander, Edwards AFB, Calif., and **Cosmonaut Alexi Leonov** each received a Fédération Aéronautique Internationale **Gold Space Medal** for 1975 for leadership during the Apollo/Soyuz mission.

The **first of a class** of twenty-three authorized high-speed, nuclear-powered attack submarines—the USS *Los Angeles*—was commissioned in mid-November. The vessel, 360 feet (110 m) long, thirty-three feet (10 m) wide, and with top speed in excess of twenty knots, has the **most advanced antisub capabilities** of any US ship, Navy officials said.

Hawaii businesswoman **Mrs. Pilani C. Desha** has been appointed Chairman of the Defense Advisory Committee on Women in the Services.

For the first time in its history, the Federation of Rheinland-Pfalz Journalists, the only such organization in Germany, has presented its **Goldene Zeile** (Golden Line) award to a non-German—**Air Force Maj. Paul F. Heye,** USAFE Chief of Public Information.

Two teenage sisters—**Denise and Donna Wiederkehr**—have been chosen as the recipients of the **1976 Kitty Hawk Youth Award,** sponsored by the Los Angeles Area Chamber of Commerce and Northrop Corp. Between them, the St. Paul, Minn., girls hold a number of world records for hot-air ballooning.

In November, the F-15 System Program Office's **Herbert J. Hickey, Jr.,** was presented the annual **Harold Brown Award** in recognition of his contributions as senior F-15 aircraft stability and control engineer.

The **57th Fighter-Interceptor Squadron,** Keflavik, Iceland, won the **1976 Hughes Trophy,** symbol of USAF's outstanding fighter unit with an air defense mission.

Died: Clarence D. Chamberlin, an aviation pioneer who was first to fly with a passenger across the Atlantic (two weeks after the Lindbergh flight), in Connecticut in October. He was eighty-three. ■

Index to Advertisers

Aerospace Historian 83
AIL, Div. Cutler-Hammer, Inc. 21
AiResearch Mfg. Co., Garrett Corp. 8
Bendix Corp., Aerospace/Electronics Group ..... 2 and 3
Collins Radio Group, Rockwell International 23
E-Systems, Inc. ..... Cover III
Grumman Aerospace Corp. ..... Cover II
Hughes Aircraft Co. 5
Lockheed Aircraft Corp. 11
Loral Corp. 24
McDonnell Douglas Corp. ..... Cover IV
Motorola Inc., Government Electronics Div. 12
Northrop Corp. 18
Raytheon Co. ..... 28 and 29

Aerospace Education Foundation 71
AFA Insurance ..... 86 and 87
AIR FORCE Magazine ..... 68 and 84

Transmitter control and receiver.

1-kw transmitter.

Collins introduces the new HF-80 family.

The technology for the 1980s is here, at today's competitive prices.

Collins' new HF-80: It's a family of Collins-quality, design-to-cost products for your high-frequency communications needs of the '80s. And it's competitively priced.

These new products combine state-of-the-art technology, advanced packaging techniques, and the proven design advantages of our successful URG, 718U and 651S lines.

The HF-80 family uses standard racks for simpler and lower cost installation. Modular units are rack-mounted for easy maintainability. High parts commonality lowers cost of ownership. And unit interfaces are simple; there's little need for systems engineering at the site.

In the HF-80 series, you'll find a flexible answer to your communications challenges of the next decade. It can operate as a fully automated station; it also has stand-alone capabilities, remote or manual.

Furthermore, it's CCIR/ITU-compatible.

Collins' new HF-80 family includes:

• Receivers and receiver systems • 1-, 3- and 10-kw transmitters and transmitter systems • 1-, 3- and 10-kw transceivers and transceiver systems, each capable of manual, FSK remote or computer remote control.

For assistance in evaluating your HF needs, or for more information on the HF-80 family, contact HF Marketing, Collins Government Telecommunications Division, Rockwell International, Cedar Rapids, Iowa, U.S.A. 52406. Telephone: 319/395-4014.

Rockwell International

...where science gets down to business

The mission: seek and destroy ground radar threats. The weapon: the advanced F-4G Wild Weasel aircraft.

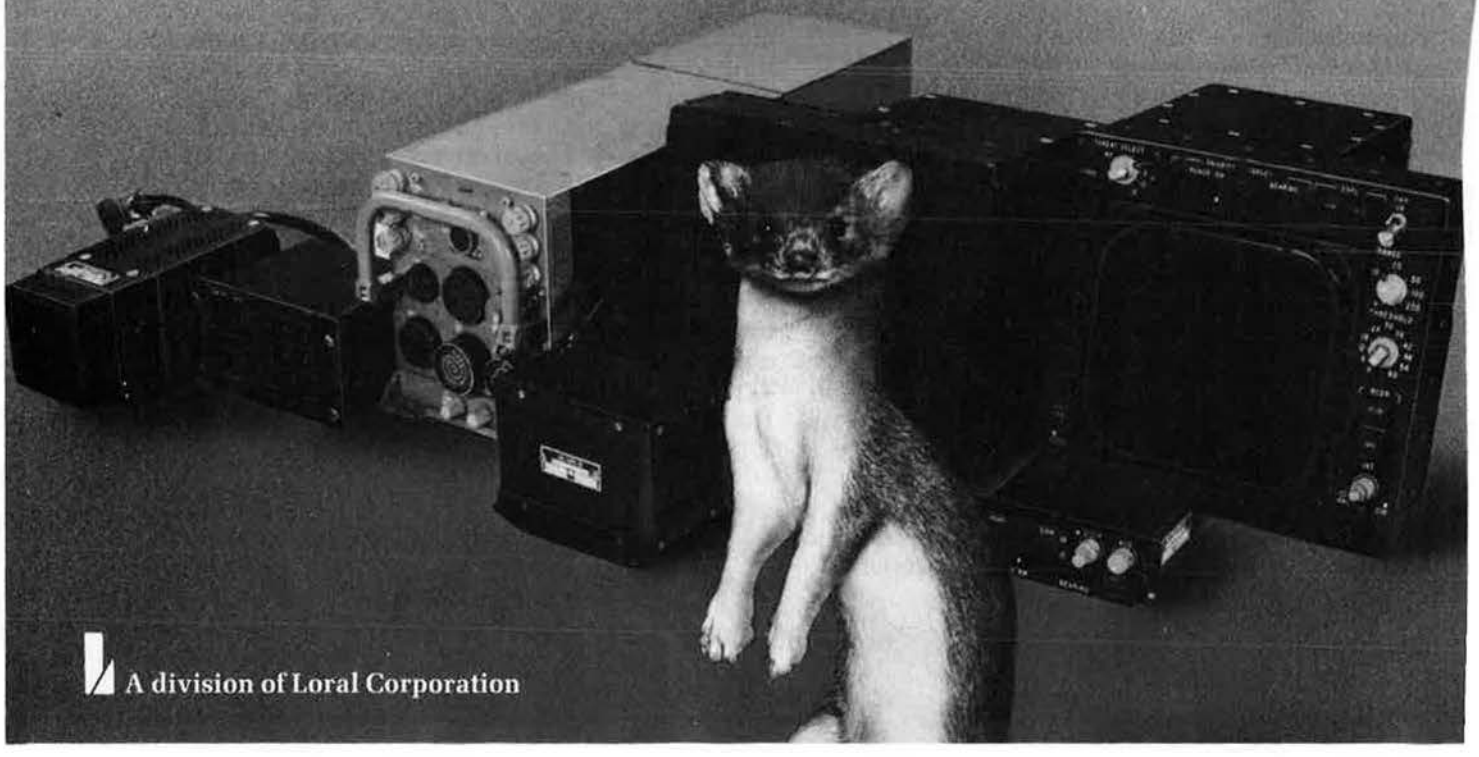
On-board Wild Weasel is Loral's control indicator set. It consists of CRT displays and associated electronics to provide the aircraft commander and the ECM operator with a visual display of radar threats.

The set reduces complex sensor and tactical inputs to manageable presentation for evaluation and decision making. Its readability in bright ambient light, light weight, high-density packaging and low power requirements are at the state of the art.

Today, Loral has established a preeminent position in the high technology of electronic warfare and EW displays. This is a total systems capability... development, integration, production, depot maintenance and update. It will serve to meet the ever-evolving requirements for dealing with the increasing sophistication and diversity of radar-directed threats. Loral Electronic System, 999 Central Park Avenue, Yonkers, New York 10704.

Animal cunning, at the state of the art.

LORAL
ELECTRONIC SYSTEMS



A division of Loral Corporation

What They're Saying...

The Honor Code

Statement by Lt. Gen. James R. Allen, Superintendent, United States Air Force Academy, to the Subcommittee on Manpower and Personnel, Committee on Armed Services, United States Senate, June 22, 1976.

Mr. Chairman, and Members of the Committee, a commissioned officer in the United States Air Force holds a position of public trust. The manner in which our officers discharge their responsibility impacts directly on the national security of the United States. Thus, we believe that a dedication to the highest standards of integrity is an essential quality for an officer and one which should receive special emphasis in the training of those who are preparing themselves for commissioned service. The Honor Code of the United States Air Force Academy was developed to meet that need.

Prior to the entry of the Academy's first class, a study was undertaken under the direction of Lieutenant General Harmon, the first superintendent, to formulate an honor system. This study provided a framework from which the first cadet class built its Code:

> "We will not lie, steal, or cheat, nor tolerate among us anyone who does."

The Code was used on a trial basis for one year, then formally accepted by the Cadet Wing in September of 1956. Since its inception, it has been recognized that the Code belongs to the cadets and is a self-motivated effort by the young men of the Cadet Wing to develop the sense of personal integrity which will be critical to them as career officers.

Lying, cheating, and stealing are viewed universally as unacceptable behavior and require no further explanation. The nontoleration clause, however, is sometimes misunderstood. This provision of the Code at the Air Force Academy requires a cadet to take action should he observe or have other indications of an honor violation. Normally, this action will consist of approaching the suspected individual to inquire about the circumstances surrounding the situation. A misunderstanding or mistake may be easily and quickly cleared up in this manner. If the suspecting cadet is not satisfied by this discussion, he will advise the individual to take up the matter with an honor representative and must follow up to see that this is done. Otherwise, he must personally report the incident to an honor representative.

If the incident is of a particularly serious nature, the suspecting cadet may bring it directly to the attention of an honor representative and allow him to make an investigation. In any event, some positive action must be taken to resolve the situation.

The nontoleration clause has been equated by some with tattling or squealing. Such comments reflect a gross misunderstanding of the Academy and the Honor Code. In actuality, nontoleration is the very backbone of the Code, recognizing that each cadet, like every officer in the Air Force, must place his responsibility to the nation above his loyalty to an individual.

The administration of the Honor Code is conducted by an honor committee composed of two representatives from each of the forty cadet squadrons. Each spring, members of the third class (sophomores) from every squadron elect one of their classmates to the position of honor representative to serve for the remaining two years. The newly elected honor representative's initial year on the honor committee (his junior year) is spent in a form of apprenticeship. The first class, or senior, members of the honor committee are directly charged with the administration of the Code. Although we have a full-time officer advisor whose sole responsibility is to provide guidance and support to the honor committee, the actual decisions affecting the administration and content of the Code are made exclusively by the cadets.

Responsibilities of the honor committee also include providing instruction on the honor system to other members of the wing and to officers involved in cadet training. Each cadet receives sixteen hours of training on all aspects of the honor system during his first summer, before he pledges to live by the Code. Additional instruction is held throughout the cadets' four years. Recent honor cases and other current information items are normally discussed during weekly squadron meetings.

When a breach of the Code is suspected, the squadron honor representative will receive a report from one of the involved parties. The squadron honor representative conducts a preliminary investigation, confronting the suspected violator in the presence of cadet witnesses. Signed statements are collected from all concerned. If the squadron honor representative concludes that no honor violation occurred, then the case is forwarded to the chairman of the honor committee for review and final decision. If, on the basis of the preliminary investigation, the squadron honor representative decides that the matter requires further inquiry, a formal investigation is conducted. The forty cadet squadrons are divided into four groups. The group honor representative normally chairs the team conducting the formal investigation. The team examines the evidence, and questions the cadet accused of the violation and others with a knowledge of the incident. The group honor representative recommends to the chairman of the honor committee whether or not a hearing should be held. Both the preliminary and formal investigations are solely for the purpose of fact-finding. Guilt or innocence is determined through an honor hearing.

The honor hearing is conducted

What They're Saying...

by a board of eight honor representatives and is presided over by the chairman, vice chairman, or deputy chairman of the honor committee. Honor hearings are normally open to members of the Cadet Wing and to individuals who work directly with the wing, such as the staff and faculty. The honor board questions witnesses in the presence of the suspected violator, who, in turn, may also question witnesses through the chairman of the particular board. The suspected violator has the option of giving testimony or remaining silent without prejudice. After deliberation, the board votes by secret ballot. Guilt is to be proven beyond a reasonable doubt. This cadet hearing, likened by some judicial decisions to a grand jury hearing, requires a unanimous vote to find a cadet guilty. If the decision is guilty, the board may consider recommending "discretion." A recommendation to the Commandant for "discretion" requires at least six votes cast for discretion by the eight voting board members. The provision of "discretion" allows the cadet to be retained in the wing in good standing, just as he is if the decision is not guilty.

Discretion is a humanizing and tempering provision of the honor system at the Air Force Academy. It is recommended selectively, after consideration of the following guidelines: To what class does the cadet belong and what is his experience level under the code? Was the case self-reported? Was there unusual pressure on the violator? Has the cadet learned the personal value of honor and resolved to live honorably in the future? This past year, discretion was granted to twenty-six percent of the guilty verdicts.

If a cadet is found guilty of a violation and discretion is not recommended, he then elects whether to submit his resignation. If he resigns, it is for a breach of the cadet Honor Code; however, that fact is not reflected in his academic transcript. Before the cadet makes his decision, he is given an explanation of his legal rights and alternatives by a military lawyer who has had no previous connection with the case. This officer explains the consequences of resigning vs. not resigning and affords the cadet an opportunity to consult confidentially with a military lawyer. Approximately sixty percent of the cadets in these circumstances take advantage of this consultation.

If, after having his rights and options explained to him, a cadet elects not to resign, the Commandant will appoint an officer to conduct a completely independent investigation of the alleged incident. The investigator gathers statements, interviews witnesses, affords the subject an opportunity to make a statement, after consultation with his military lawyer, and collects all relevant documentary evidence. The investigator's conclusions and recommendations are reviewed by the Commandant who recommends appropriate disposition of the case to the Superintendent. . . .

Upon receipt of the report of investigation from the Commandant and after staff review, the Superintendent may direct that the cadet be retained in the wing in good standing, if the evidence is insufficient to warrant further action, or he can direct that an administrative board of officers . . . hear the allegations against the cadet.

If a case is referred to a board of officers, it is a *de novo* hearing. The cadet is represented by a military lawyer and may have his individually requested counsel and/or his own civilian defense counsel present if he so desires. The board normally consists of five officers who are picked at random. A legal advisor is present, and a recorder to provide a verbatim transcript of the proceedings. The issue to be decided by the board is whether the cadet lied, cheated, stole, or tolerated any of these acts, and if so, was that conduct incompatible with the exemplary standards of conduct expected of a cadet. The cadet, through his counsel, confronts and cross-examines all witnesses against him, may testify on his own behalf (but is not required to do so), and may present any relevant evidence and arguments to the board. The board of officers reports its findings of fact which must be supported by a preponderance of evidence to the Air Force Academy Board, a board that consists of the Superintendent, the Dean of Faculty, the Commandant, the Director of Athletics, four permanent professors, and two additional Academy officials.

The Air Force Academy Board, which has a statutory obligation to recommend for discharge cadets who are deficient in conduct or studies (10 U.S.C. 9351), reviews the case and by a majority vote rules that the cadet either remains qualified to continue in cadet status, or that he should be recommended to the Secretary of the Air Force for disenrollment. In the latter event, the case then is sent to a second hearing by the board of officers to determine the character of separation or discharge to be recommended to the Secretary of the Air Force. At such time as the Academy Board rules that the cadet be recommended for disenrollment, he is removed from cadet activities and given the option of returning home in a leave-without-pay status or remaining at the Academy in a casual status.

The Secretary of the Air Force, upon receipt of a case recommending disenrollment, causes the case file to be reviewed for legal sufficiency by the Office of the Judge Advocate General and by members of the Air Force Personnel Council. The Secretary then decides whether the individual should be retained or separated from cadet status. In the latter instance, the Secretary will additionally determine the character of discharge that the cadet shall receive or, in the case of second and first class cadets (juniors and seniors), may direct that the cadet report to active-duty service . . . in an enlisted status for either two or three years, as appropriate.

The Honor Code of the Cadet Wing is critical to the objectives of the United States Air Force Academy. It plays an important role in developing among our graduates the moral character and integrity which are necessary to a career officer in the United States Air Force. In its administration, the Code reflects an important concern for fairness and provides essential safeguards to protect the rights of individual cadets. Equally important, the Honor Code reflects the right of the American people to expect that the future leaders of the Air Force will display an unbending commitment to honesty and integrity. ■

INDUSTRIAL ASSOCIATES OF THE AIR FORCE ASSOCIATION

"Partners in Aerospace Power"

Listed below are the Industrial Associates of the Air Force Association. Through this affiliation, these companies support the objectives of AFA as they relate to the responsible use of aerospace technology for the betterment of society, and the maintenance of adequate aerospace power as a requisite of national security and international amity.

Aerojet ElectroSystems Co.
Aerojet-General Corp.
Aeronca, Inc.
Aeronutronic Ford Corp.
Aerospace Corp.
AIL, Div. of Cutler-Hammer
Allegheny Ludlum Industries, Inc.
American Telephone & Telegraph Co.
AT&T Long Lines Department
Applied Technology, Div. of Itek Corp.
AVCO Corp.
Battelle Memorial Institute
BDM Corp., The
Beech Aircraft Corp.
Bell Aerospace Textron
Bell Helicopter Textron
Bell & Howell Co.
Bendix Corp.
Benham-Blair & Affiliates, Inc.
Boeing Co.
Brunswick Corp., Defense Div.
Brush Wellman, Inc.
Burroughs Corp.
CAI, Div. of Bourns, Inc.
Canadian Marconi Co.
Cessna Aircraft Co.
Chromalloy American Corp.
Cincinnati Electronics Corp.
Collins Division, Rockwell Int'l
Colt Industries, Inc.
Computer Sciences Corp.
Connecticut International Corp.
Conrac Corp.
Control Data Corp.
Day & Zimmermann, Inc.
Dayton T. Brown, Inc.
Decca Navigation Systems, Inc.
Dynalectron Corp.
E-A Industrial Corp.
Eastman Kodak Co.
E. I. Du Pont de Nemours & Co.
Electronic Communications, Inc.
Emerson Electric Co.
Engine & Equipment Products Co.
E-Systems, Inc.
Ex-Cell-O Corp.—Aerospace
Fairchild Industries, Inc.
Federal Electric Corp., ITT
Firestone Tire & Rubber Co.
GAF Corp.
Garrett Corp.
General Dynamics Corp.
General Dynamics, Electronics Div.
General Dynamics, Fort Worth Div.
General Electric Co.
GE Aircraft Engine Group
General Motors Corp.
GMC, Delco Electronics Div.
GMC, Detroit Diesel Allison Div.
GMC, Harrison Radiator Div.
GMC, Packard Electric Div.
General Time Corp.
Goodyear Aerospace Corp.
Gould Inc., Government Systems Group
Grimes Manufacturing Co.
Grumman Corp.
GTE Sylvania, Inc.
Harris Corp.
Hayes International Corp.
Hazeltine Corp.
HI-Shear Corp.
Hoffman Electronics Corp.
Honeywell, Inc.
Howell Instruments, Inc.
Hudson Tool & Die Co., Inc.
Hughes Aircraft Co.
Hughes Helicopters
Hydraulic Research Textron
IBM Corp.
International Harvester Co.
Interstate Electronics Corp.
Israel Aircraft Industries, Ltd.
ITT Aerospace, Electronics, Components & Energy Group
ITT Defense Communications Group
Kelsey-Hayes Co.
Lear Siegler, Inc.
Leigh Instruments Ltd.
Lewis Engineering Co., The
Libbey-Owens-Ford Co.
Litton Industries, Inc.
Litton Industries Guidance & Control Systems Div.
Lockheed Aircraft Corp.
Lockheed Aircraft Service Co.
Lockheed California Co.
Lockheed Electronics Co.
Lockheed Georgia Co.
Lockheed Missiles & Space Co.
Logicon, Inc.
Loral Corp.
Magnavox Government & Industrial Electronics Co.
Martin Marietta Aerospace Co.
Martin Marietta, Denver Div.
Martin Marietta, Orlando Div.
McDonnell Douglas Corp.
Menasco Manufacturing Co.
MITRE Corp.
Moog, Inc.
Northrop Corp.
OEA, Inc.
O. Miller Associates
Pan American World Airways, Inc.
PRC Information Sciences Co.
Products Research & Chemical Corp.
Rand Corp.
Raytheon Co.
RCA
Redifon Flight Simulation Ltd.
Rockwell International
Rockwell Int'l, Electronics Operations
Rockwell Int'l, North American Aerospace Operations
Rosemount Inc.
Sanders Associates, Inc.
Singer Co.
Space Corp.
Sperry Rand Corp.
Sundstrand Corp.
Sverdrup & Parcel & Associates, Inc.
System Development Corp.
Teledyne, Inc.
Teledyne CAE Div.
Teledyne Ryan Aeronautical Div.
Texas Instruments Inc.
Thiokol Corp.
Tracor, Inc.
TRW Systems, Inc.
Union Carbide Corp.
United Technologies Corp.
UTC, Chemical Systems Div.
UTC, Hamilton Standard Div.
UTC, Norden Div.
UTC, Pratt & Whitney Aircraft Div.
UTC, Research Center
UTC, Sikorsky Aircraft Div.
Vought Corp.
Western Gear Corp.
Western Union Telegraph Co. Government Systems Div.
Westinghouse Electric Corp.
World Airways, Inc.
Wyman-Gordon Co.
Xonics, Inc.

Today's and tomorrow's strike aircraft need an advanced ECM escort right beside them—one that's able to handle changing threat situations during the mission.

The U.S. Air Force's new EF-111A will have this capability with an onboard ECM system that jams multiple targets... a system that features improved performance, reliability, and maintainability over current operational systems... a system that benefits from Raytheon's extensive ECM experience.

We're the developer and supplier of the exciter and transmitter that, together, will help provide the increased flexibility and coverage so vital to the EF-111A's escort role, including traditional standoff and close air support ECM tasks. The multiband exciter provides modulated RF signals covering all EF-111A transmitter bands. Each exciter has independently selectable modulation programs that are controlled by a microprocessor. And, the transmitters, mounted internally, feature improved reliability and

It's on the way—an escort ECM system

tended frequency
verage.

Raytheon's contribu-
n to the EF-111A pro-
am is a logical outgrowth
our 25 years of ECM
perience. Experience
at included our work on
e combat-proven ALQ-99
stem and our selection
r competitive develop-
ent of the U.S. Navy's
rface-ship electronic
arfare system.

For details on Raytheon's total ECM capabilities—airborne and seaborne—write Raytheon Company, Government Marketing, 141 Spring Street, Lexington, Massachusetts 02173.

RAYTHEON

hat will go right along with them.

AIR FORCE
JANUARY 1977

JANE'S AEROSPACE Review 1976/77

Once again, as we have since 1972, AIR FORCE Magazine opens a new year with a review of aerospace developments by the leading authority on the world's aircraft. In this article, he assesses the technological balance between East and West, reports on the status and prospects of the aerospace industry with emphasis on Europe, and examines some novel potential solutions to persistent technical and operational problems.

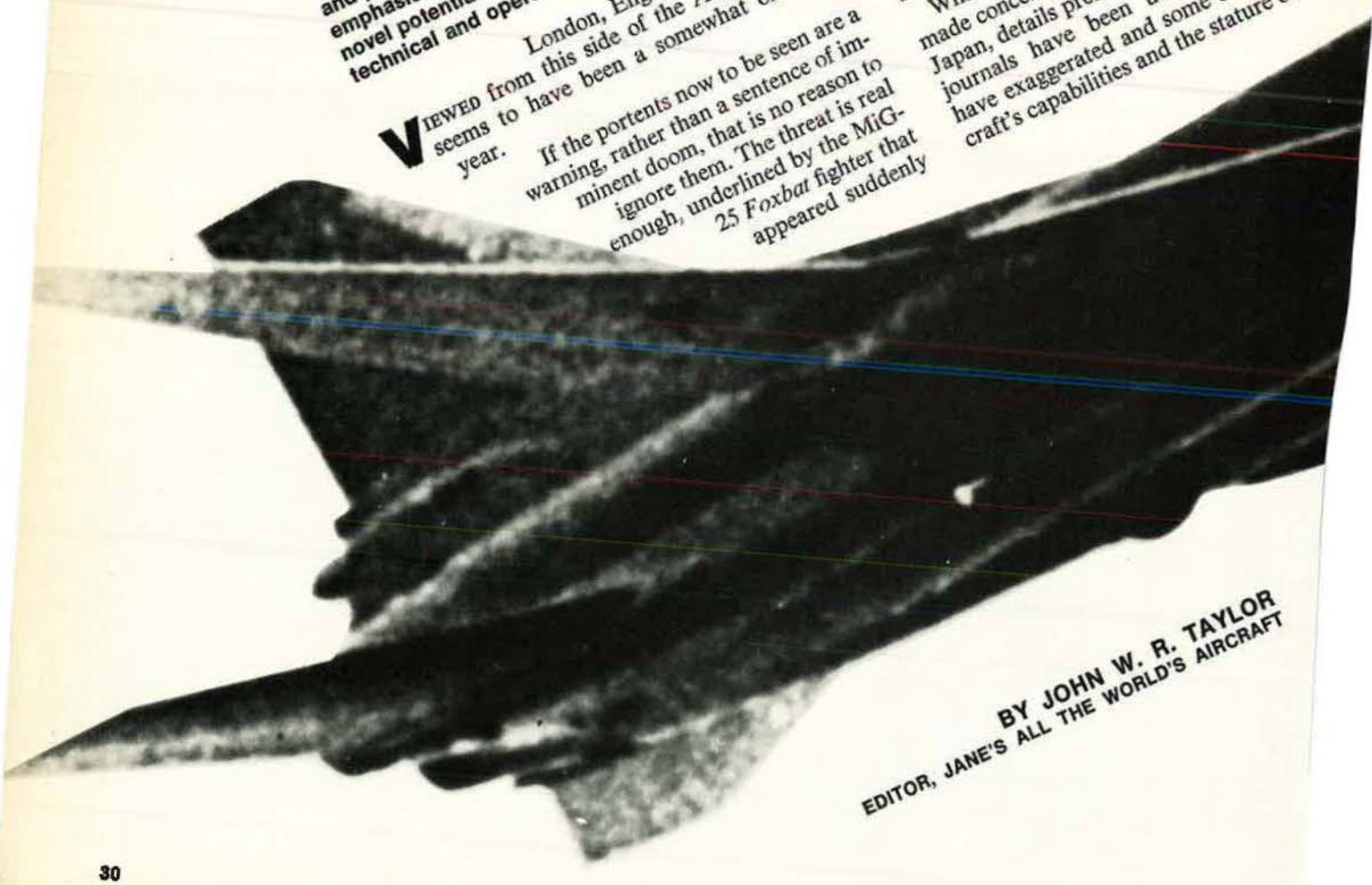
BY JOHN W. R. TAYLOR
EDITOR, JANE'S ALL THE WORLD'S AIRCRAFT

VIEWED from this side of the Atlantic, 1976 seems to have been a somewhat ominous year.

London, England, December 1

If the portents now to be seen are a warning, rather than a sentence of imminent doom, that is no reason to ignore them. The threat is real enough, underlined by the MiG-25 *Foxbat* fighter that appeared suddenly at the end of the runway at Hakodate Airport, Japan, on September 6; by Tupolev *Backfire* supersonic bombers that venture out over the Atlantic as far as the Azores; by so strong a desire for a US-Soviet strategic arms agreement that US negotiators appeared willing to close their eyes to differing interpretations of vital issues; and by unrealistic estimates throughout the West of what it costs to stay alive in an age when a thousand strategic thermonuclear missiles can be launched by a single telephone call and the depression of a thousand firing buttons.

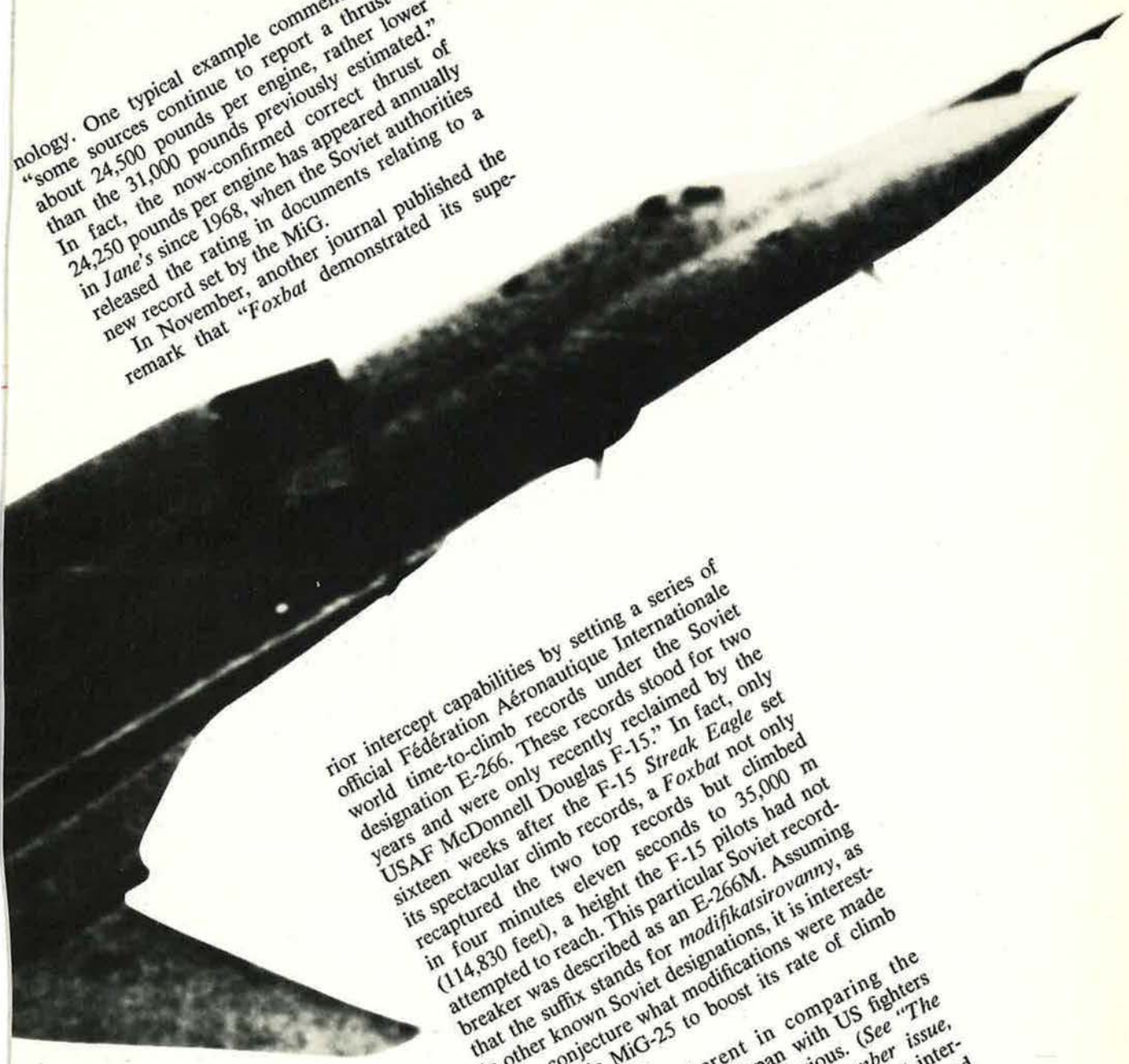
This may seem a gloomy way in which to begin *Jane's* first contribution to AIR FORCE Magazine in this new year, but consider a few facts: Whatever assessment the Pentagon may have made concerning the qualities of that MiG-25 in Japan, details presented by normally responsible journals have been utterly misleading. Some have exaggerated and some depreciated the aircraft's capabilities and the stature of Soviet t



nology. One typical example commented that "some sources continue to report a thrust of about 24,500 pounds per engine, rather lower than the 31,000 pounds previously estimated." In fact, the now-confirmed correct thrust of 24,250 pounds per engine has appeared annually in *Jane's* since 1968, when the Soviet authorities released the rating in documents relating to a new record set by the MiG.

In November, another journal published the remark that "*Foxbat* demonstrated its superior intercept capabilities by setting a series of official Fédération Aéronautique Internationale world time-to-climb records under the Soviet designation E-266. These records stood for two years and were only recently reclaimed by the USAF McDonnell Douglas F-15." In fact, only sixteen weeks after the F-15 *Streak Eagle* set its spectacular climb records, a *Foxbat* not only recaptured the two top records but climbed in four minutes eleven seconds to 35,000 m (114,830 feet), a height the F-15 pilots had not attempted to reach. This particular Soviet record-breaker was described as an E-266M. Assuming that the suffix stands for *modifikatsirovanny*, as in other known Soviet designations, it is interesting to conjecture what modifications were made to the basic MiG-25 to boost its rate of climb to such a degree.

The dangers inherent in comparing the MiG-25 that landed in Japan with US fighters of the mid-1970s should be obvious. (*See "The Real Story Behind Foxbat," December issue, p. 34.*) The Soviet aircraft set its earliest international speed record in the spring of 1965, and must have been designed in the early 1960s. Is it surprising that its radar employs vacuum tubes? Are there none in the early F-4 Phantoms that were contemporary with the MiG? Much has also been made of the fact that the MiG-25 is constructed largely of nickel steel,



This is the first unclassified photo of the Tupolev supersonic variable-geometry bomber known to NATO as Backfire-B.

JANE'S AEROSPACE Review 1976/77

with no more than about three percent titanium in areas such as the wing leading-edges and engine nozzles. Yet there is little wrong with steel, provided the designer is prepared to compensate for the weight penalty. The recent outcry that followed the revelation that key parts of the UK/German/Italian *Tornado* combat aircraft are made from titanium "sponge" purchased from the Soviet Union hardly suggests any shortage of titanium in that country. And if anyone doubts Soviet competence to fashion titanium a decade and a half after *Foxbat* was designed, they should visit the metallurgical displays that highlight Soviet static participation in the Paris air shows.

Nor should it have caused surprise that the MiG's Machmeter was redlined at 2.8. What other combat aircraft exceeds such a speed with four large missiles on pylons under its wings? The air forces of Israel and Iran have ample evidence that the reconnaissance *Foxbat-B*—with the same basic airframe and engines, but no missiles—can and does routinely exceed Mach 3, making it almost impossible to intercept.

Technology and Semantics

In any case, it is potentially suicidal to base one's estimate of the latest Soviet combat aircraft on an early-1960s design. Up to 1967, periodical Aviation Day flypasts over Moscow gave Western observers fleeting opportunities to keep tabs on Soviet progress. Much, no doubt, is learned today from satellite reconnaissance and other intelligence sources. However, the only post-1967 military designs of which the public can have even the scantiest knowledge are the Tupolev *Backfire* bomber, Sukhoi Su-19 *Fencer* fighter-bomber, and Yakovlev Yak-36 *Forger* VTOL carrier-based combat aircraft that put in its first appearance during the cruise of the *Kiev* through the Mediterranean and North Atlantic, en route to Murmansk last summer.

If the Soviet Navy was prepared to show off the Yak-36 so blatantly, one must assume that it is regarded as merely a first step toward something better. (Its capabilities and limitations were detailed in the *Jane's* Supplement to AIR FORCE Magazine last month.) *Backfire* and *Fencer* reflect a totally different attitude. Both have been in squadron service with the Soviet Air Force for about two years, yet the photograph of *Backfire* accompanying this review is one of the first to be published in any unclassified magazine; and no photograph of *Fencer* has ever appeared in the press.

This is normal, for the Soviet intelligence machine operates with immense competence in matters of publicity. To their credit, Soviet official information sources have never lied to *Jane's*, and the correctness of the thrust figure quoted for *Foxbat* underlines the reliability of the engine ratings—and all other data—given in their claims for international aviation records. Whether the extreme secrecy usually adopted can be justified is a matter of opinion. It can be argued that the most effective deterrent is one that can be seen and judged to be capable of doing its job. On the other hand, the unknown may sometimes inspire fear or apprehension in the "other side's" military leadership, while permitting politicians to underrate it publicly as an excuse for defense economies—the perfect "heads I win, tails you lose" situation.

The Kremlin may be sincere in suggesting that the *Kiev* is an antisubmarine cruiser and not an aircraft carrier. How, then, does one define an aircraft carrier if not as a carrier of aircraft? Equally, Soviet delegates to the SALT talks are correct in stating that *Backfire* has clear tactical roles. But is a strategic bomber to be defined solely as an aircraft that can attack the US from the USSR, and vice versa? Does it cease to be strategic if potential targets for its bombs are in less-distant allied nations, such as the UK or West Germany? Or is the test whether or not it will cover the distance between the US and USSR without being flight refueled on either the outward or return flight?

Such play with words and definitions is ludicrous. Last July 20, Air Force Secretary Thomas Reed stated that there is "absolutely no question" as to whether or not *Backfire* is an intercontinental strategic weapon. "With no refueling," he said, "*Backfire* could be launched from Soviet soil against targets in the US and then flown on to Cuba for recovery. With only one refueling, the Soviet bomber could be launched from Russia against all areas of the US, except for some parts of Florida, and return to the Soviet Union." For the record, that projection forward of the nose of the *Backfire-B* in our photograph is a refueling probe.

On such evidence, any SALT agreement that was signed at the cost of accepting *Backfire* as merely a tactical aircraft could only lessen the hope of lasting peace. Whatever the scale of the opposing forces, from extravagant overkill to commonsense basic defense, peace can only be

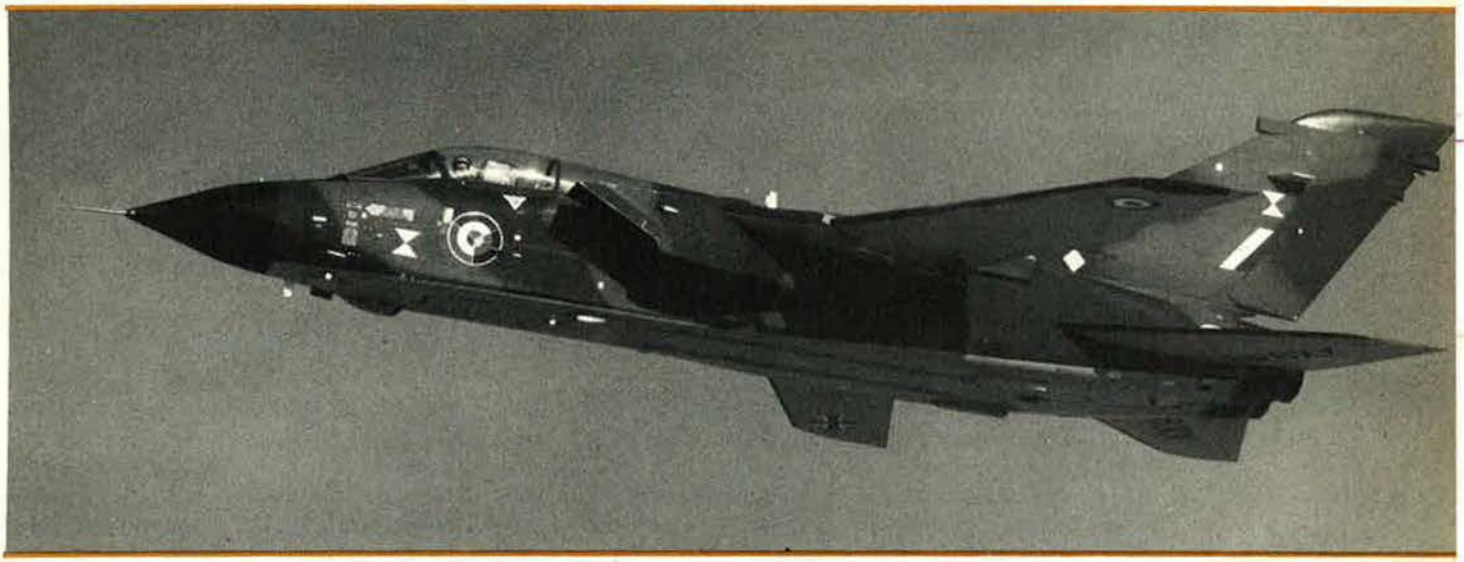
a product of precisely balanced strength. The three immediate essential requirements for the US are to recognize that *Backfire* is a strategic bomber, build the B-1 as its uniquely flexible counterpart, and order as a matter of urgency replacements for ADCOM's time-expired F-106s.

Interceptor Innovations

For an Englishman to make such a comment, knowing he will not have to contribute one cent toward the cost of the B-1s and follow-on interceptors (FOIs) may seem one hulluva nerve. But if NATO is to have any significance, the security of each individual member must be the concern of all. Surely there is something wrong when the US considers an interceptor force of twelve squadrons of 1956-model F-106s (six active, six ANG), one F-4 squadron, and three active Army Nike-Hercules batteries in Alaska to be adequate for home defense *and* to support tactical fighters in overseas air defense missions, while Soviet home defense forces deploy 2,600 piloted interceptors and 10,000 surface-to-air missile launchers.

An attractive replacement for interceptors and SAMs was foreshadowed during 1976, when a high-energy laser mounted on an armored vehicle destroyed two target drones during US Army trials at Redstone Arsenal. Operational capability of such "death-ray" weapons must, however, be years away, putting them in the same category as reconnaissance satellites carrying advanced sensors that will end the viability of deep-diving SLBM submarines by keeping their precise positions pinpointed around the clock.

Until that day comes, it will be dangerous to neglect any aspect of conventional defense. As its new interceptor, the USAF is expected to order a variant of the F-14 *Tomcat,* F-15 *Eagle,* or F-16 Air Combat Fighter. This makes sense. If a cure to recently reported engine problems has been found, the F-14 armed with *Phoenix* missiles must be rated the West's most effective interceptor, with the others not far behind. The high cost of the *Tomcat* is offset by the fact that fewer would be needed, as its AN/AWG-9 weapons control system has the ability to guide six *Phoenix* missiles simultaneously against six targets—a feat no other current interceptor can match.



Above, the three-nation European Tornado *multirole combat aircraft, scheduled to enter service next year. Right, first export Grumman F-14* Tomcat *for Iran, a country that has had to suffer repeated* Foxbat-B *overflights without an effective response.*

Records show that by last September *Tomcats* had fired 108 live *Phoenix* missiles, achieving a kill rate of eighty-five percent. Twelve of the targets destroyed were flying above Mach 1.3 and above 45,000 feet, some of them simulating *Foxbats* near Mach 3 and 80,000 feet. Twenty-one kills involved targets that were between thirty-five and 125 miles from the *Tomcat* at the moment of launch. Twenty-five were made against simulated cruise missiles. Six of the actions achieved two or more simultaneous kills. There was, however, another series of air com-

JANE'S AEROSPACE Review 1976/77

bat trials that produced an even more thought-provoking result.

To evaluate the *Tomcat's* full potential, the US Navy arranged a number of simulated air combats against French Air Force *Mirage* F1s over the Mediterranean. F-14 crews were adjudged winners in seven of the eight encounters involving missile "firings," and in six of the eight close-range dogfights. Similar successes were achieved against Northrop F-5E "aggressor" aircraft flown by US pilots using typical Soviet tactics.

Against US Marine Corps *Harriers* the results were startlingly different. Using to the full the V/STOL aircraft's low-speed maneuverability, and rapid acceleration and deceleration, the Marine pilots outfought F-14s in six of the sixteen engagements, losing only three, with the others indecisive. There could be no better incentive for ensuring successful development of the McDonnell Douglas AV-8B advanced version of the *Harrier*; and the US Navy must be relieved to know that the *Kiev's* Yak-36s do not appear to share the *Harrier's* VIFF (thrust vectoring in forward flight) and STOL takeoff capability.

European Aerospace Industry

There is an important lesson to be learned from this. At a period when most NATO and friendly air forces are flying US fighters, with the F-16 soon to follow in huge quantities, there is growing pressure for Europe's aerospace industries to become primarily subcontractors to US manufacturers. By doing so, it is suggested, they could maintain high levels of employment, technological know-how, and capability without incurring the expense of developing their own designs. The cost of US aircraft to the US services would also be reduced by increased overall production, so benefiting everyone.

A flaw in such proposals is indicated by the mere existence of aircraft like the *Harrier*—still the only operational V/STOL fixed-wing combat aircraft in the world—and the *Concorde*—still the only supersonic airliner in scheduled passenger service. While Europe can pioneer such concepts with brilliant success, it is nonsensical to reject the skill of its designers and engineers.

The same is true of engines and equipment. Without the reliable power of Rolls-Royce turbojets for its MiG-15 fighters and Il-28 bombers in the late 1940s, the Soviet industry could hardly have progressed so rapidly from its primitive first-generation jets, such as the Yak-15 and MiG-9, to the formidable first-line types of today. China is currently evolving a new generation of combat aircraft fitted with Rolls-Royce Spey turbofans, already the well-proven powerplants of RAF *Phantoms*, and A-7 *Corsairs* of the US Navy and USAF. RB.211 turbofans, also from Rolls-Royce, power the Lockheed *TriStar* transport and the latest version of the Boeing 747, which set a new world record a few weeks ago by climbing to 2,000 m (6,562 feet) in six minutes thirty-three seconds at a gross weight of 840,500 pounds. Equally familiar, and highly valued in the US, are the Marconi-Elliott head-up displays installed in the A-7 and F-16, and Martin-Baker ejection seats in the F-14 and the Navy's forthcoming air combat fighter development of the Northrop F-17, designated the F-18.

France, too, continues to make an impact in the US. At the time this review was written, it seemed likely that the contract to supply forty-one new medium-range surveillance aircraft to the US Coast Guard would go to Dassault, which entered a specially equipped version of its Falcon 20G business jet with Garrett AiResearch ATF 3-6 turbofans. This is good news for Garrett, too, being the first production application for the engine.

Of far greater potential importance is Dassault's other joint program with a US manufacturer, McDonnell Douglas, on the Advanced Short/Medium-Range (ASMR) airliner. This began as the "stretched" *Mercure* 200, and is intended to carry about 160 passengers 2,000 miles on the power of two 22,000 lb st General Electric/SNECMA CFM56 turbofans. If the program moves ahead, Dassault will have design leadership and the French government would probably subsidize each of the first 300 production ASMRs by $2 million, to ensure a competitive price.

Britain, Germany, Italy, and Japan are all being wooed by the three major US airliner manufacturers as useful partners in new commercial programs. As a result, there has never been such a profusion of paper aeroplanes, claiming to be quieter, more economical successors to the DC-9, DC-10, Boeing 727 and 737, BAC One-Eleven, and other current transports, whether or not they really need replacing. The average airline executive must be thoroughly confused by designations like 7X7, 7N7, DC-X-200, and X-Eleven, especially as each one might cover a range of "take-your-pick" sizes, configurations, and powerplants. In November 1976, the only one

with any immediate prospect of advancing from project to prototype construction seemed to be the Dassault/McDonnell Douglas ASMR. It is, therefore, the only one of which details can be found in the 1976/77 *Jane's*, which has always done its best to avoid becoming *All the World's Paper Aircraft.*

Growing Export Competition

Surprisingly, perhaps, the French and British governments have already discussed the prospects for a second-generation supersonic transport, with McDonnell Douglas as a potential US partner. Until *Concorde* achieves economic success, this advanced supersonic transport (AST) will amount to little more than three more letters to add to all the "X" projects mentioned earlier. It is, nonetheless, interesting to note how little the basic parameters have changed since 1972, when this writer was told by a Douglas vice president in California that "America's first supersonic airliner will look like *Concorde*, be made of the same materials as *Concorde*, fly at the same speed as *Concorde*, but will be twice as big and will therefore make money."

If any US citizen feels alarmed by the prospect of McDonnell Douglas working in partnership with people in factories thousands of miles away, it may be worthwhile pointing out that fuselage panels of the DC-9 and DC-10 are already being manufactured by Aeritalia in Italy, main fuselage sections of the Lockheed C-130 by Scottish Aviation, and rudders and elevators for the Boeing 727 in far-off Australia. The full list of contracts resulting from shopping around for competitive prices and surplus workshop capacity would fill this issue of AIR FORCE Magazine.

This Boeing 747 (top), powered by four 50,000 lb st Rolls-Royce RB.211-524 turbofans, took off from LeMoore Navy Base, Calif., at a weight of 840,500 pounds—the greatest weight at which any airplane has flown. Below the 747 is an artist's impression of the projected McDonnell Douglas/Dassault-Breguet Advanced Short/Medium-Range (AMSR) transport.

There is no reason why planned nationalization of the major UK aerospace companies should lead to any changes in the overall picture. Success for any organization stems from imaginative and efficient management allied with skilled and conscientious work forces. Whether the money comes from private or public funds is immaterial. What *does* matter is whether public ownership will generate more enthusiastic and consistent government support than the UK industry has received in the past twenty years, and a more responsible attitude from certain trade unions. Until there are improvements in

JANE'S AEROSPACE Review 1976/77

these areas, the industry will continue to fall short of its immense capability.

Britain's aerospace industry desperately needs a new, major commercial transport program to back up a healthy order book for other products. During the first nine months of 1976, its exports totaled more than £672 million ($1,122 million), representing an increase of £96 million ($160 million) compared with the same period of 1975 and confirming its position as the busiest and much the most profitable industry of its kind in Europe. The first foreign order for the new Hawker Siddeley *Hawk* was announced in November—involving up to fifty aircraft for Finland—following intense competition from Germany, France, Sweden, Italy, and Czechoslovakia. With a potential market for 6,000 *Hawk*-type aircraft in the coming decade, this highly advanced ground attack/trainer promises to become a profitable partner for the *Harrier* and its derivatives.

Despite losing this particular contract to Britain, disappointing foreign reaction to the *Concorde,* and initially slow sales of the multination European *Airbus,* France, too, can report growing aerospace exports by its nationalized Aérospatiale group and a handful of private companies headed by Dassault-Breguet. After a brief excursion into sweptwings with the *Mirage* F1, and too-expensive essays at variable geometry, Dassault is reverting to its classic and widely accepted delta formula with the single-engine *Delta Mirage* 2000 fighter for the French Air Force of the 1980s, and twin-engine *Delta Super Mirage* for export.

Few other countries can afford any longer to undertake such programs on their own. Sweden is one of the exceptions, with plans for a new light attack/trainer, known at present as *Attack*

—AIR PORTRAITS

Delivery of the RAF's 175 Hawker Siddeley Hawk *(left) began in November 1976, less than twenty-seven months from first flight. Below, a model of the* Delta Mirage *2000, a Mach. 2.2+ multirole fighter destined for French Air Force service in the early 1980s. Earlier* Mirage *deltas have contributed greatly to French aerospace exports, which totaled approximately $1.4 billion in 1975.*

Aircraft System 85, to replace its current Saab 105s (SK 60s) in the 1980s. With production of the tandem-delta *Viggen* scheduled to continue through that decade, Saab-Scania will keep busy. Already, however, it is beginning to encounter unexpected competition from Israel Aircraft Industries in Austria, long a customer for Sweden's combat aircraft. Israel's *Kfir*-C2 (described in October AIR FORCE Magazine) began as a somewhat refined *Mirage* delta with a General Electric J79 afterburning turbojet of the kind fitted to the F-4 *Phantom*. The addition of delta canards has now reduced takeoff and landing distances, and improved the aircraft's dogfighting maneuverability to such an extent that the *Kfir*-C2 has become one of the most attractive, available, modestly priced, multirole fighters of its time.

Technology Transfer

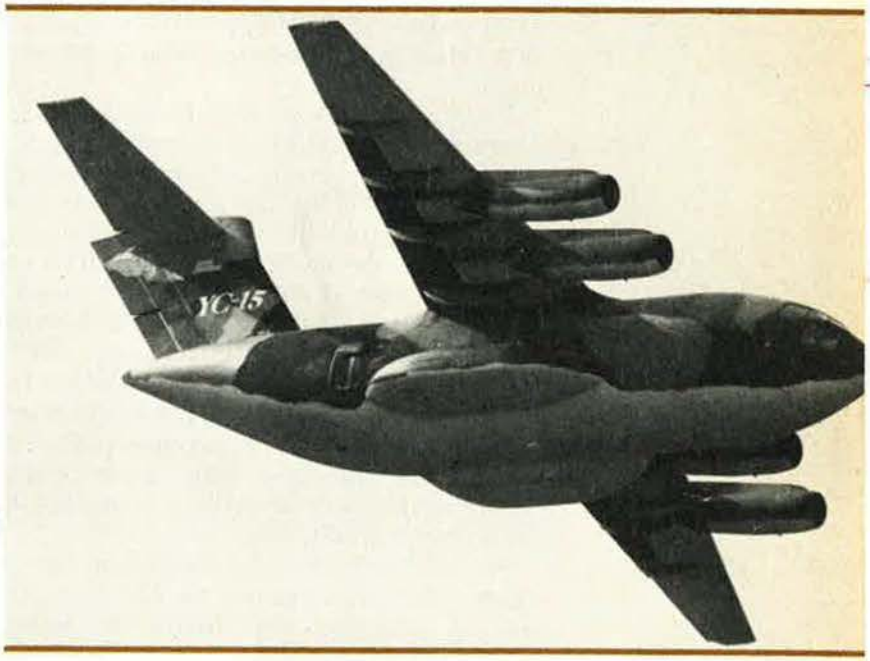
China's F-9, known to NATO as *Fantan*, also owes much to foreign design, in this case the Mikoyan MiG-19, which has itself been in large-scale production at Shenyang (formerly Mukden) since about 1960. All that may be published about the F-9 is that its airframe resembles that of the MiG-19 but is scaled up, with semi-circular lateral air intakes and a pointed nose radome. The design is probably being modified at the moment, so that production *Fantans* will be able to take the Rolls-Royce Spey turbofan engines for which China has acquired license rights. Added to experience gained already in producing aircraft like the Tupolev Tu-16 *Badger* twin-jet strategic bomber and MiG-21 fighter, it is clear that China's industry is making rapid progress toward technological self-sufficiency. MiGs exported to Pakistan and Tanzania have long reflected high manufacturing standards.

The Nationalists on Taiwan are equally progressive. Having cut their teeth on the little Pazmany PL-1 trainer, devised originally for US amateur constructors, they advanced via license manufacture of the Bell UH-1H helicopter to production of Northrop F-5E supersonic tactical fighters. The T-CH-1 turboprop-powered trainer and light attack aircraft represented the first attempt at local design and was strongly influenced by the North American T-28. The T-CH-1 went into production in early 1976. The Aero Industry Development Center at Taichung is now building the prototype of a thirty-eight-passenger twin-turboprop transport designated XC-2.

Despite recessions, political inhibitions, and other hindrances, the number of aircraft-producing nations continues to grow. Turkey, Greece, and Iran have all begun to establish highly professional aviation industries with the help of foreign aid. Romania and Yugoslavia have demonstrated that even states with comparatively small national companies can work together to produce an effective modern combat aeroplane, by developing the IAR-93/*Orao*, a *Jaguar*-like attack fighter intended to make them independent of foreign types that might arrive with strings attached.

New Views of Old Problems

It would be unrealistic to expect such efforts to pioneer important new concepts. There is, however, increasing evidence that the aerospace industries of the major industrial nations are beginning to look beyond the technology plateau on which they have worked in recent years. The new world absolute speed record of 2,189 mph over a 15/25 km course was set by a USAF Lockheed SR-71A reconnaissance aircraft dating back to the mid-1960s; but rollout of the Space Shuttle Orbiter *Enterprise*, at Palmdale, Calif., on September 17 gave the world a first glimpse of a true aerospace craft of tomorrow. Completely independent of fossil fuels, it will use solid boosters and onboard liquid-propellant rocket engines to thrust it to orbital speed, enabling it to supersede expendable launch vehicles as a means of putting satellites in space, and to transport nonastronaut scientists into orbit inside a space laboratory designed and built in Europe.



—AIR PORTRAITS

With wheels and flaps retracted in flight, the clean lines of the capacious McDonnell Douglas YC-15 AMST are apparent. It is competing with the Boeing YC-14.

One of the most disturbing features of the present time is that so little progress is being made toward adapting conventional aircraft and land vehicles to run on fuels like liquid hydrogen, which must eventually take the place of hydrocarbons if the world is to remain brightly lit, warm, mobile, and at work throughout the twenty-first century. It is risky to assume that, having demonstrated its unrivaled expertise by

JANE'S AEROSPACE Review 1976/77

The author, John W. R. Taylor, has been Editor of Jane's All the World's Aircraft since 1959. His "Jane's Supplements" appear regularly in this magazine. In addition to the monumental annual edition of Jane's, Mr. Taylor has published more than 160 books and many articles on aviation subjects. He is a Fellow of the Royal Historical Society and of the Society of Licensed Aircraft Engineers and Technologists, and an Associate Fellow of the Royal Aeronautical Society.

soft-landing two Viking spacecraft on Mars last summer, and using them to photograph and analyze the planet's surface, NASA will be able to solve almost overnight a problem as mundane as a future energy shortage when it becomes urgent.

Reverting to January 1977, recent NASA research aimed at improving the aerodynamic efficiency, and fuel economy, of aircraft is already being embodied in new designs. During the past year, Dr. Richard Whitcomb's supercritical wing has lifted into the air the Boeing and McDonnell Douglas Advanced Medium STOL Transport (AMST) prototypes that will haul 27,000-pound payloads into and out of 2,000-foot strips, pointing the way to an eventual replacement for USAF's C-130s. These strangely configured aircraft, with their wide bodies, uniquely positioned engines, and huge blown flaps, are as revolutionary in their way as anything to be seen in the air at the present time.

Grumman's forthcoming *Gulfstream* III, of which details were released on November 10, goes an interesting stage further, by adding NASA-developed "winglets" to the tips of its supercritical wing, to ensure an even better cruising fuel consumption.

Nor are rotating-wing aircraft being overlooked by research engineers. Twenty years of experiment with every conceivable kind of VTOL technique have failed to better the helicopter in terms of payload/range after vertical takeoff. So, while competing types of utility tactical transport and advanced attack helicopters battle their way toward large US Army production orders, much effort continues to be put into improving the overall capability of such aircraft.

Bell is about to resume its tilt-rotor research with the NASA/Army XV-15; and Sikorsky expects to attain entirely new standards of speed and agility with the Advancing Blade Concept (ABC) contrarotating rotor system fitted to its XH-59A.

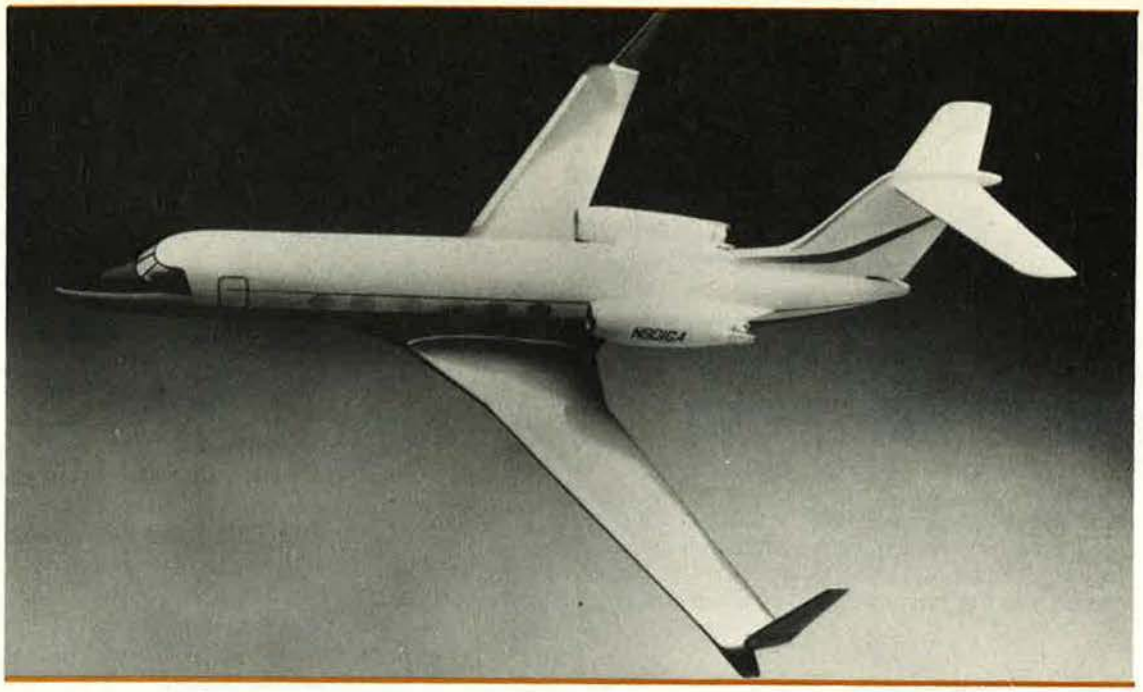
Meanwhile, in Europe, a new technique known by the acronym STOVL could produce an even more versatile follow-on battlefield support aircraft. RAF thought on the subject led to the formulation of Air Staff Target (AST) 403, defining the basic parameters of the kind of aircraft that might replace both the *Jaguar* and the *Harrier* before the end of the 1980s. France needs something similar as a partner to its *Delta Mirage* 2000 high-performance interceptors. Belgium, the Netherlands, and Germany have parallel requirements. So the five nations formed a sub-group of the European Programme Group to develop their project, under the chairmanship of the UK.

AST 403 was aimed at a Mach 1.6 close support/air combat type able to destroy any battlefield target in a single pass and to match the agility of anything encountered in the air. Inevitably, it was greeted with the comment: "What you want is the F-16; and think of the money you'll save with more than 1,000 already ordered for the USAF and the air forces of Belgium, Denmark, Iran, the Netherlands, and Norway." Experience in operating the *Harrier*, and in working with European partners on the *Tornado*, prompted other thoughts.

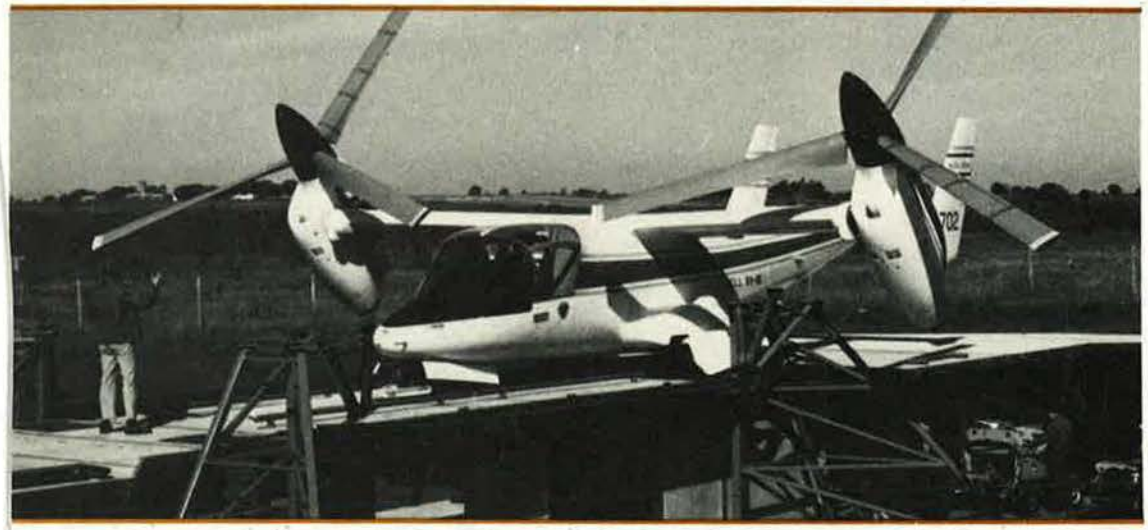
One of the greatest worries confronting any modern air force is how it could stay in business if a preemptive strike by the opposition took out all its runways in the opening minutes of a confrontation. *Harrier* squadrons have no such problems, as they do not need runways or even dirt strips from which to fly. However, the cost of taking off vertically is so high in terms of reduced payload/range that they normally operate in a short takeoff (STO) mode in order to lift a greater weight of fuel and weapons.

On the other hand, all operational experience by the RAF and USMC points to the importance of being able to land vertically. It would be feasible to touch down at around 100 knots into some form of mobile arrester gear; but the risk would be high if circumstances compelled the use of narrow, cambered roads surrounded by natural or structural obstacles, subject to crosswinds, cluttered with ground equipment, vehicles, and other aircraft. Hence STOVL—short takeoff/vertical landing—making the best of both worlds.

STOVL combined with Mach 1.6 speed, equipment for all-weather operation, and the ability to carry a wide range of air-to-ground and air-to-air weapons would seem to meet most anticipated needs for the rest of the present century. Add thrust vectoring in forward flight, and



A supercritical wing, with NASA-developed winglets, coupled with Rolls-Royce Spey turbofans, will give the Gulfstream *III (above) thirty-five percent more range and seventeen percent higher cruise speed than the* Gulfstream *II. Right, the Rhein Flugzeugbau* Fanliner *with cabin design by Luigi Colani, a ducted fan driven by an Audi/NSU Wankel-type rotary engine, and Grumman American wing. Below, Bell's XV-15, built for NASA/US Army testing, represents the end product of a quarter century of tilt-wing development by its manufacturer.*



the resulting aircraft begins to sound expensive; but is anything else practicable to preserve balanced forces in a period when the Soviet Union is producing 1,000 advanced tactical combat aircraft every year?

It is much too early to guess whether or not the Future Tactical Combat Aircraft (FTCA) being discussed by the European five-nation group could ever be reconciled with AST 403, and whether the result would be a STOVL configuration. It might encourage the right answer if the members of the group take a close look at the kind of tactical combat aircraft that is in the mind of USAF technical staff who are also looking ahead to an FTCA for the mid-1980s. ■

RED FLAG

TAC's Realistic Approach to Readiness

A unique training program designed to bolster Tactical Air Command's combat experience level is being conducted in a series of mock wars that give many young TAC aircrews their first taste of "combat." The training is part of TAC's concentrated effort to increase its combat readiness.

BY MAJ. TERRY ARNOLD, USAF, CONTRIBUTING EDITOR

ESPECIALLY since the curtain came down on US participation in the Southeast Asia war, this country's counterweight to the Soviet numerical lead in combat equipment has rested on three primary assets: US superiority in hardware, personnel training, and combat experience. The latter is undoubtedly the most perishable.

Now, four years after Linebacker II spelled the end of USAF's fighting role in SEA, only about a third of Tactical Air Command's primary operational crews have seen combat. There are, of course, other combat-experienced pilots in the command, but they're filling staff, command, and support positions—not F-15, F-4, and A-7 cockpits.

Compounding the gravity of the situation are three closely related facts. First is the major expansion of Soviet tactical capabilities: new and more effective aircraft, expanded

USAF's newest air-superiority fighter, the F-15, taxis out for a Red Flag mission.

ECM and ECCM, additional forward deployments, and enhanced support capabilities. Next is the shift in the strategic balance between the two superpowers. With Russia's achievement of strategic nuclear parity, increasing responsibility for our deterrent posture, especially in Europe, has to be shouldered by US tactical forces. Finally, if the balloon does go up in the NATO area, the outcome may well be decided in the first few days. TAC must be prepared to respond instantaneously. As Gen. Robert J. Dixon, TAC's Commander, puts it: "Readiness will be the key to our success—perhaps our national survival."

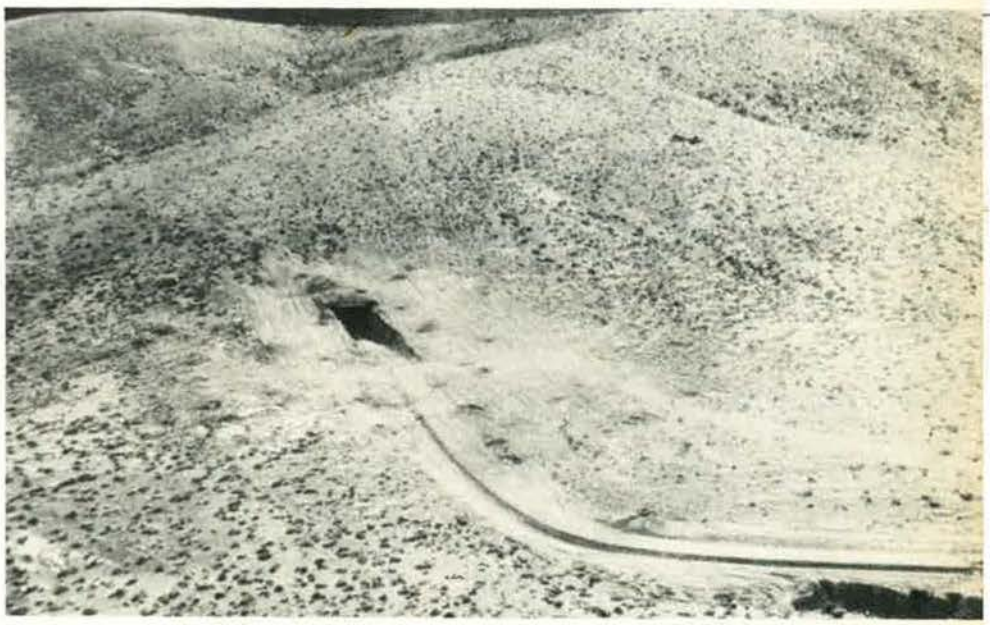
Countering the decline in operational experience, TAC has developed a realistic training program that gives fighter pilots the seasoning they need to increase their survivability in combat. The experience of the last three wars has shown that most combat losses occur during a pilot's first ten missions. TAC is working to see that similar statistics don't surface again. Its pilots are now getting those all-important early "combat missions" under their belts, not through participation in actual combat, but in a series of mock wars so realistic that even SEA veterans say the old "pucker factor" is there.

TAC proudly refers to this continuing training exercise, called Red Flag, as "the most realistic combat training program ever developed." Not only does the training improve the capability of TAC's combat-ready fighter pilots; it also gives other combat and support commands near equal time in developing their own tactics and expanding their operational capabilities.

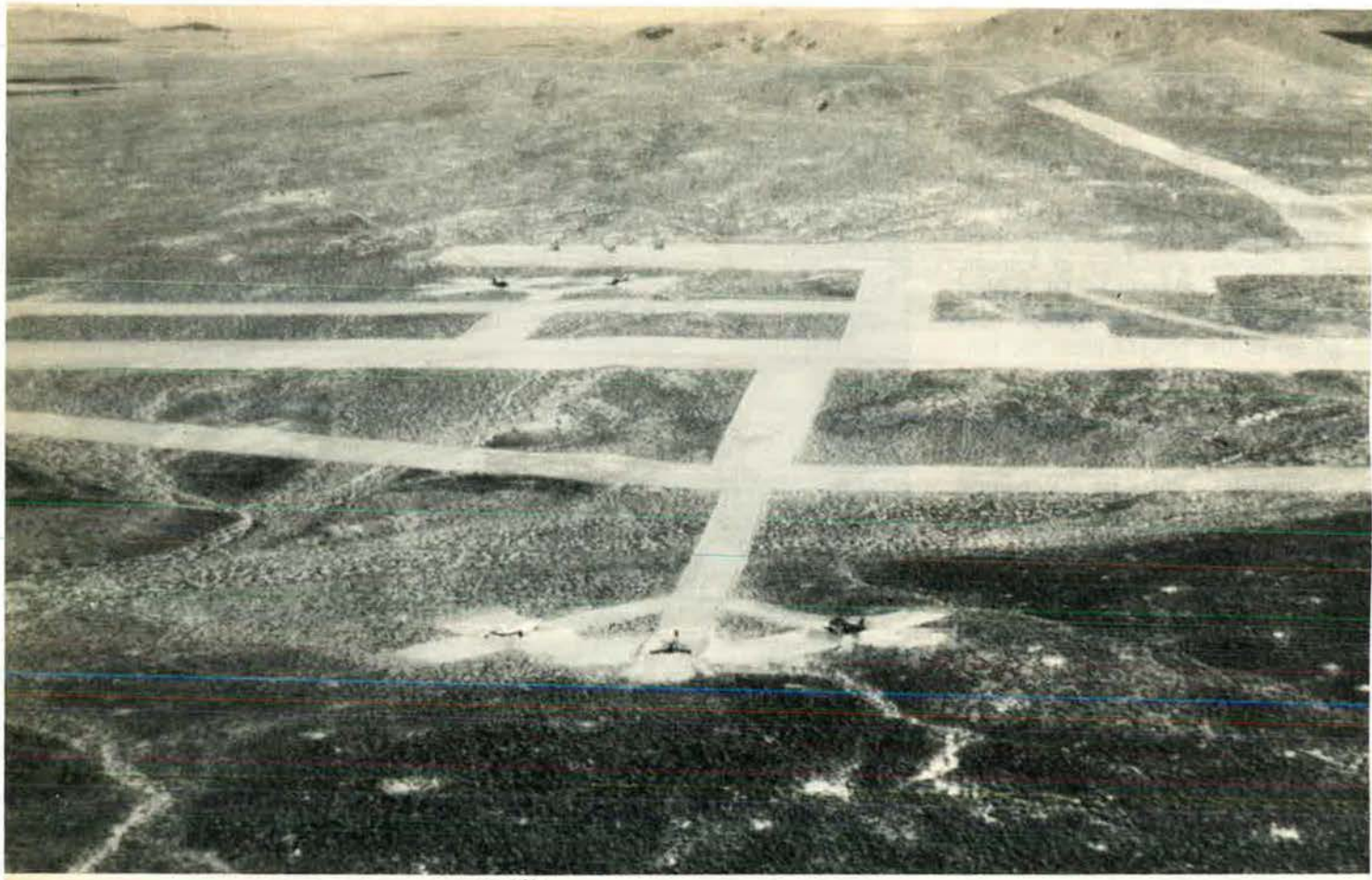
A Unit-Oriented Program

There is a fundamental and important difference between Red Flag and previous TAC training exercises. In fact, Red Flag is not thought of as an exercise in the classic TAC sense. Exercises are largely *command* oriented, dealing with problems of command and control. Red Flag is *unit* as well as command oriented. When a unit is tapped for Red Flag, all available aircrews of that unit—usually squadron-sized—deploy to Nellis AFB, Nev., where sophisticated electronic warfare ranges are able to simulate actual combat conditions. Units deploy to Nellis for thirty days with aircraft and support crews staying the full month. Flight crews are rotated at the midpoint. During this two-week period, the crews are scheduled to fly ten times. By using this method, TAC can get two squadrons' worth of crew training for the cost of only one squadron's deployment.

As in all training programs, a key to success is striking a balance between lessons of the past and requirements of the future. "We are not trying to relearn all of the Southeast Asia lessons. We are trying to do some good realistic training for the next war," said one TAC staff officer. "But Southeast Asia was a real war where the enemy shot real



Top: A simulated SAM site is one of the many targets used to add realism to the Red Flag mock wars. Bottom: Another realistic target is a railroad tunnel carved from the Nevada desert.



Above: This "airfield" looks much like the real thing from the air, even down to the parked aircraft. Expertly simulated targets include tanks, marshaling yards, industrial complexes, and truck convoys. Left: Various radar systems sited throughout the range are used for control and data gathering.

bullets and missiles. Nobody should deny or ignore those valuable lessons," he continued. Many of the scenarios used in Red Flag are set in the almost totally different European environment where massive Soviet and Warsaw Pact military buildups have increased alarmingly in recent years.

Since Red Flag training began in late 1975, more than 600 primary tactical aircrews have gone through the grinder. Another 1,200 combat and support crews from other USAF combat commands have also participated. Air National Guard and Air Force Reserve units under TAC's operational control have been fully integrated into the training program. Individuals from as far away as Pacific Air Forces (PACAF) and United States Air Forces in Europe (USAFE) have flown with TAC units during earlier Red Flag operations. TAC would like to see overseas tactical units participate, but presently lacks adequate funding.

Red Flag has also been used as a testbed to develop tactics for the new fighter aircraft now entering the active Air Force inventory or soon to do so. F-15 Eagles were flown in early Red Flag scenarios to assist the Air Force Test and Evaluation Center (AFTEC) in its follow-on testing of the Eagle's military utility, operational effectiveness, and suitability of production items. AFTEC could not have chosen a better place for such tests. Subsequently, TAC's first operational F-15 unit, the 1st Tactical Fighter Wing at Langley AFB, Va., has sent a squadron to take part in the air-to-air scenarios of the Red Flag program. The new A-10 close air support fighter has also received similar testing in its primary air-to-surface role.

Threats, Targets, and Data Collection

Nellis' vast desert ranges are perfect for realistic training. Good flying weather, large, unencumbered airspace relatively free from commercial air travel, and an ever-increasing simulated high threat capability managed by TAC's Tactical Fighter Weapons Center (TFWC) are all-important factors in the base's selection as the home of Red Flag. By far the most important factor is the range itself with its accurately simulated enemy AAA, surface-to-air missiles (SAMs), and communications jamming equipment. Aggressor aircraft fighter squadrons flying T-38 and F-5 jets possessing flight characteristics similar to MiG-21s are

also stationed at Nellis. *(See "Teaching Tactics in TAC's 'MiGs' " in the March '74 issue of AIR FORCE Magazine for more on TAC's Aggressor squadrons.)*

The range also provides hundreds of other realistic targets, many laid out to scale of actual targets found behind the Iron Curtain. The old days of pilots getting their gunnery training by firing at cloth target panels are gone. Today's targets include either real, or expertly simulated, enemy tanks, aircraft, industrial complexes, railroads, marshaling yards, and just about any other likely target imaginable. The TFWC Range Group also provides twenty-two electronic threat simulators. The range improvement plan calls for an additional 100 threat simulators by 1983. Up to 200 styrofoam Soviet T-62 "tanks" arranged in Soviet tactical array should be on the range by the first of this year.

The sheer size of the warfare range, about 3,900 square miles, makes it possible to reproduce targets that were beyond the scope of smaller ranges. Simulated truck convoys can be produced with normal dispersal distance between the trucks. In one convoy, the trucks are separated up to 1.3 kilometers (0.8 miles), with the total convoy length approaching seventeen miles.

Live ordnance delivery also enhances the realism of Red Flag. Aircrews deliver these munitions just as they would in combat. In past training, a pilot delivered an electro-optical weapon on his fourth or fifth pass on the target, and then only after he had figured the shadows and all other factors. It's something else to deliver the same weapon on the first pass, while simultaneously being harassed by AAA, SAMs, and simulated Aggressor MiGs.

The Range Group also collects data for later analysis. Nerve center for this service is the Range Control Center. Here, inputs from three Federal Aviation Agency radars are sent by microwave to a computer, with the results visually displayed on a giant television screen where analysts can see battle progress in near real time. Each aircraft is equipped with an Identification Friend or Foe (IFF) squawk and a corresponding identifying number. These numbers are displayed on the screen, giving the aircraft's flight path and, if required, its altitude.

These flight paths are superimposed over a scaled range map. White dots represent the locations of the AAA/SAM sites, and the location of targets can be selectively displayed. Either SAM or aircraft tracking is depicted as a white strobe terminating on the aircraft position; resulting missile launches are displayed as chevrons next to the position of the SAM site. As the simulated MiG aircraft engage and launch on the "good guys," or vice versa, this information is indicated by an ident "squawk" and displayed on the large screen by a reversal of the IFF characters from green to black on green.

Later, analysts can review the mission in detail through the use of videotapes made during the engagement and determine what targets were destroyed and what aircraft were "lost."

Videotape is also used in other data collection. One simulated AAA site records what is seen through its gunsight, either while in its radar-controlled or its manual mode. Aircrews view the replays the following day for a first-hand look at how well they jinked or otherwise avoided a "lock-on." These instant replays are real eye-openers.

Range officials are quick to point out that their efforts are still in an embryonic stage. Eventually, they hope to be able to tell pilots, immediately after they land, exactly what happened to each of them and how a pilot's actions affected the overall mission.

No "Flying Around the Flag Pole" Here

Planning for a unit's trip to Red Flag begins about six weeks before arrival at the range area. Red Flag staff members and unit operations specialists sit down and discuss the various scenarios available that fit the unit's primary, and in some cases secondary, missions. Scenarios are geared to both air-to-surface and air-to-air roles. Unit commanders can request specific scenarios best suited for the types of training most needed.

Deployment follows established wartime procedures. The first mission flown is for orientation since most of the pilots are unfamiliar with the EW ranges. This orientation introduces the combat crews to the existing threats and gives them a chance to see what happens when engaged. The orientation ride also allows the pilots to check their own equipment in preparation for their first real "combat" mission.

Actual missions usually begin with fairly simple scenarios. For units with an air-to-surface primary mission, the first sorties are flown in close air support of ground forces, either real or simulated. US Army forces on maneuvers at nearby Fort Irwin, Calif., have been used extensively during this part of the training.

During any of the almost infinite number of scenarios available, range technicians can bring in various combinations of threats. According to Col. Philip J. White, overall Red Flag Commander at Nellis, there are as many different scenarios as there are types of aircraft, roles, and missions in tactical air forces, and combinations of threats. "All elements that participate in tactical warfare have or will participate in Red Flag," Colonel White said. TAC plans call for each of its aircrews to fly "combat" in Red Flag at least every eighteen months. Officials would like to see this rate increased but, at present, funding limitations and facilities at Nellis prevent it.

When AIR FORCE Magazine visited Nellis for a first-hand look at Red Flag, A-7D aircraft from the 354th Tactical Fighter Wing at Myrtle Beach AFB, S. C., were deeply involved in the realistic training. The A-7s flew just about every type of mission called for in their primary mission statement. One of the more interesting was flak suppression for a flight of Military Airlift Command (MAC) C-130 transports. The C-130s were tasked to deliver supplies to a unit located in an extremely high threat zone. While the A-7s engaged any SAM or AAA threat that came up to challenge the C-130s, F-15s from the 1st TFW provided air cover to head off attacking "MiGs." All had to be aware of the ground threats as well as the possibility of attack from above. Other scenarios call for F-4s to escort MAC C-141s, and F-15s to cover Strategic Air Command (SAC) B-52 bombers through similar high-

threat areas. By developing new and innovative tactics for these and similar missions, aircrews—whether MAC, SAC, or TAC—learn the unique aspects of each other's operations.

Not all Red Flag training deals with target destruction or threat evasion. Search and rescue (SAR) is also treated during most phases. Red Flag technicians take some of the pilots who were presumed to have been "lost" during the previous day's engagements to a safe area in the desert where they are left to fend for themselves, using only those items found in their survival gear. Air Training Command (ATC) survival experts accompany the "downed" airmen, not to assist, but to monitor their actions. Extra SAR realism is gained through the introduction of simulated injuries, mostly broken bones or injured backs. TAC officials feel the SAR missions are valuable learning experiences for both the downed airman and the forces sent in to rescue him.

What TAC Has Learned

Perhaps the most persistent questions asked both TAC and Red Flag staffs are, "What has the Air Force learned from a year's Red Flag training?" and, "Are our fighter pilots any better for it?" To answer the latter question first, one TAC officer said, "I've got fourteen years in this business, two combat tours, and 3,000 hours of sweptwing fighter time, and there's no doubt in my 'aerospace' mind that the crews are indeed better." The realistic Red Flag training can't help but make pilots more proficient and professional in carrying out their difficult job. A measurement system developed by TAC is being used to determine the degree of improvement in combat capability of each participating primary unit.

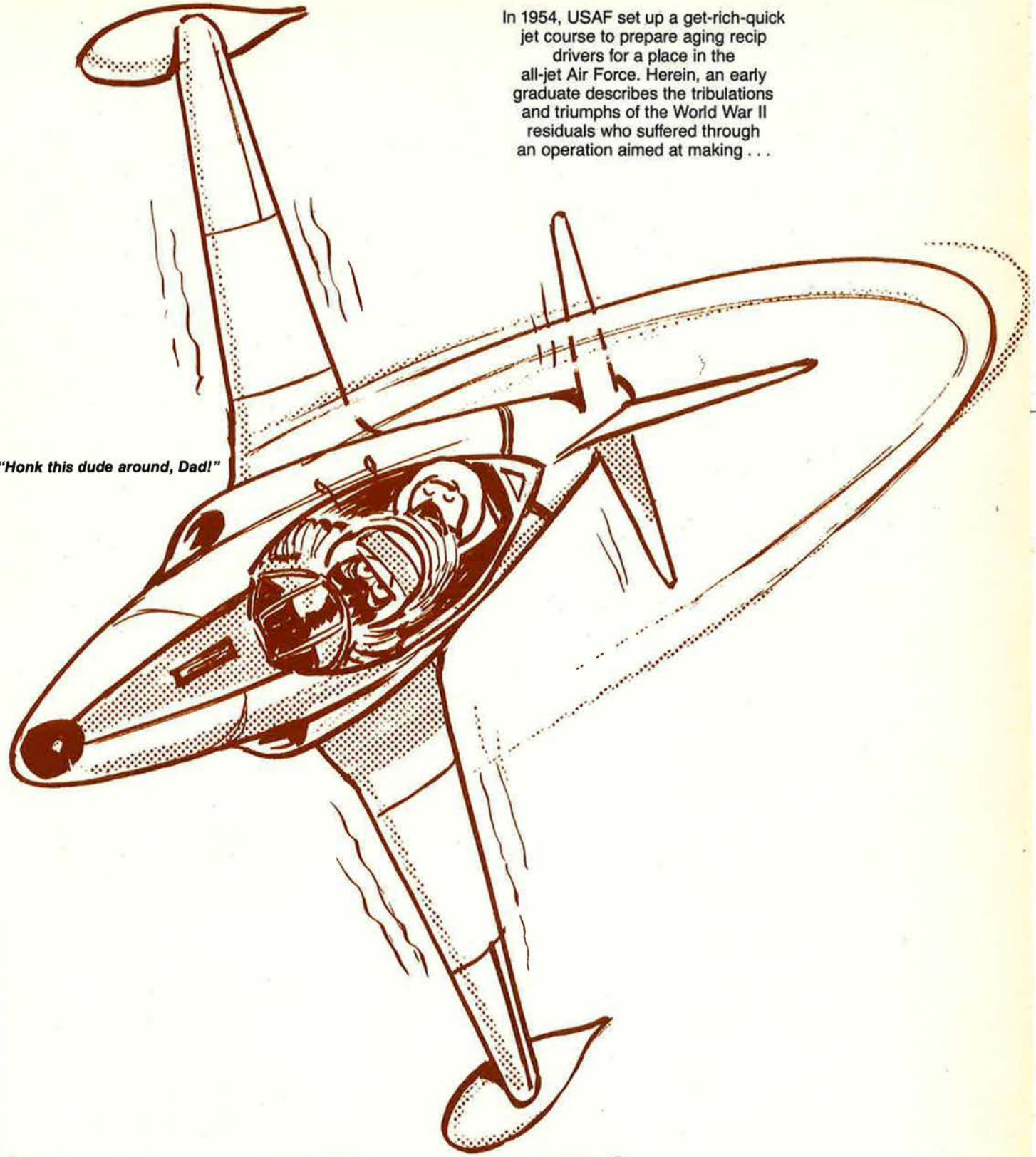
The Air Force has learned a lot about developing tactics for high-threat environments. As is natural in any training situation, real learning comes from uncovering previously unrecognized or unremedied shortcomings. One such shortcoming is the severe lack of visibility from the cockpit during certain combat situations, making it difficult to quickly acquire attacking aircraft. Newly developed aircraft with their full-range visibility cockpits should do much to eliminate this shortcoming. TAC says it also has learned a lot about dealing with jammed communications and has been able to develop new tactics that permit continuing a combat mission without open communications.

Possibly the most positive aspect of Red Flag training is the daily mass debriefing. This "show-and-tell" session allows aircrews to discuss and analyze their day's activity, both the good and bad aspects. Pilots are frank about their own performance and that of their fellow crewmen. Opposing forces are able to compare notes face-to-face. Where else can a pilot go into "battle," engage the "enemy," and be able to come home and talk about it with the guy he was flying against. That, according to TAC, is where the learning experience comes into sharp focus.

There is only one arena where the lessons learned through participation in the Red Flag series can be fully evaluated. This is actual aerial combat. Red Flag's purpose is not to put our aircrews to that ultimate test, however. To the contrary, it is designed to prevent such an event from ever occurring. Red Flag is based on the premise that a strong general-purpose force, combat trained and ready and willing to act, is one important pillar of our overall deterrent posture. ■

Daily debriefings are held, allowing Red Flag aircrews the chance to analyze both the good and bad aspects of their combat training missions. Only in Red Flag can a pilot meet his "enemy" face-to-face after the battle.

In 1954, USAF set up a get-rich-quick jet course to prepare aging recip drivers for a place in the all-jet Air Force. Herein, an early graduate describes the tribulations and triumphs of the World War II residuals who suffered through an operation aimed at making . . .



"Honk this dude around, Dad!"

Every Man a Tiger

BY LT. COL. JIM BEAVERS, USAF (RET.)
CARTOONS BY BOB STEVENS

"HONK *this dude around, Dad!*" Word for word, those were my instructions from the adolescent in the rear cockpit who was trying to lead me into the jet age. To make his meaning crystal clear, he took over the controls of the T-33 and slammed the stick to the left. The bird instantly stood on one wing. Then in rapid-fire sequence, he reefer in on the stick, the RPM dropped below sixty percent, the dive brakes popped open, the gear was coming down, and the kid was shoving me through my seatpack in a shuddering, high-G turn that stripped knots off the airspeed as if we had run aground. We were momentarily upright on the downwind as the flaps came down, and then we were making a roundhouse turn to final. We touched down like a canary in tennis shoes.

I sat there, confusion mixed with grudging admiration, and the staccato sequence started anew. "Speed boards up/flaps to 15°/trim tab neutral/100 percent RPM/*You got it!*" Away we went, with old Dad only slightly behind the airplane—about a generation behind.

The year was 1954, and the Air Force had started a program to upgrade its airplane drivers as jet pilots. World War II was less than a decade into history, and the preponderance of equipment and pilots were residuals of that affair. Jet flying was uncommon. Civil airlines were still using reciprocating engines, and even the venerable DC-3 was very much in evidence on feeder routes. In the Air Force, jets were in limited operational use. SAC's mainstay was the B-29, augmented by the B-50 and B-36—all either pulled or pushed solely by propellers at the time. But a whole new series of aircraft was in prototype or on the drawing boards, and they were all jet-powered. Tomorrow's great objective was an all-jet Air Force, and upgrading us old folks was a necessary step along the way.

The program was a compromise. It was neither practical nor necessary to send every pilot through flying school again. The Air Training Command undertook to provide the most basic, preliminary qualification to pilots on a ten-day TDY basis, and the pilot's home base was left the task of carrying him through complete checkout. After that, he would presumably maintain his proficiency in jet aircraft and have the basic skills required for further upgrading into operational jets as the need arose. Craig AFB at Selma, Ala., was stuck with the Training Command's job.

The course was heavy on ground school and limited to an average of ten flying hours. Classroom curriculum consisted of the basic T-33 tech order and two others on jet navigation and jet instrument flying. A cutaway J33 engine proved to be very useful. And in the classroom as elsewhere—on the flight line, in the club, even in the snack bar—was a framed poster depicting a stalking, yellow-eyed jungle cat. The inscription said, "Every Man A Tiger."

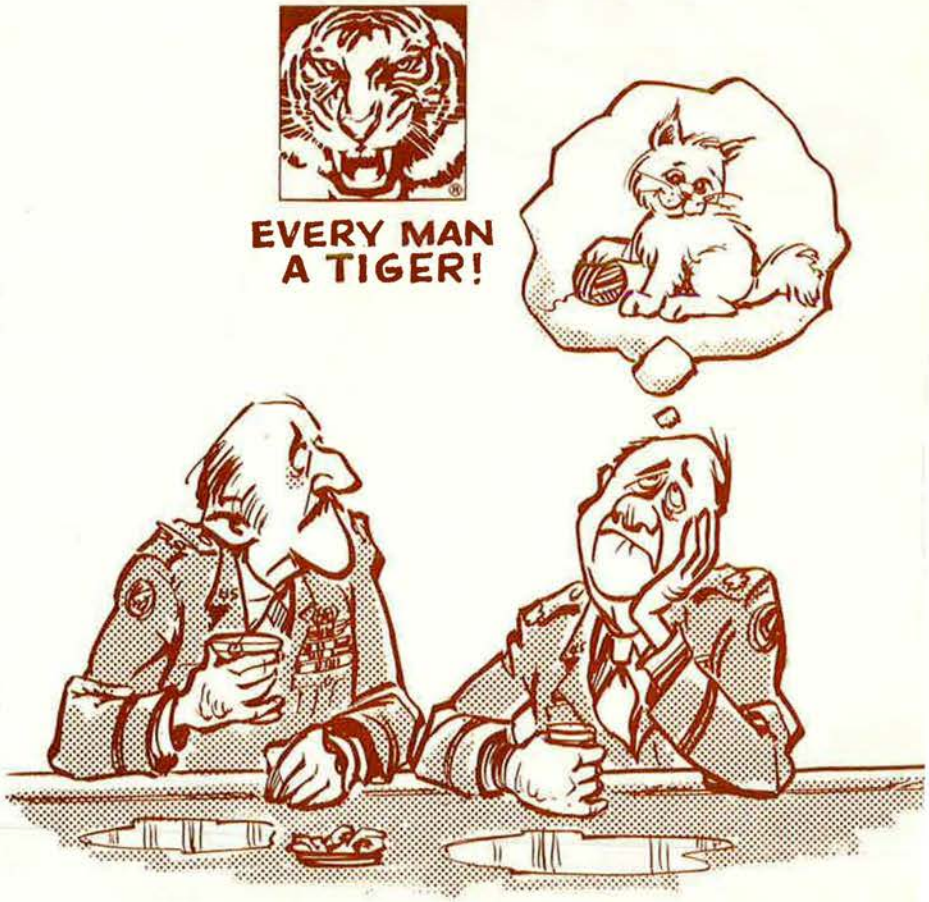
The picture drew little response, other than an occasional raised eyebrow, from any of us.

Assignment to the course was by quota. I was in the Pentagon at the time, and our allotment was filled by a senior colonel who in time would get his first star, one lieutenant colonel, and several drones—including me—who were intermediate majors. We were not exactly freshly minted cadets, likely to respond to the suggestion that we emulate the tiger. The poster struck us as a little childish, but maybe we were just out of touch.

Jet-Speak, 101

The course introduced us to the new generation, and to the aged (I was thirty-one), it was a humbling experience. The Air Force had turned out a new model pilot when I wasn't looking. It had a crew cut under a flight cap bearing a single silver bar. It walked around in a clean flying suit and shined shoes (eventually replaced by boots). The suit had a leather patch on the left breast containing the silver imprint of unstarred wings and the man's name, and another patch on each shoulder with one silver stripe. The new model pilot was well educated, articulate, often witty, and had not detectably begun shaving. There were a lot of them at Craig.

It has been said that the British walk as if they own the sidewalks



"We sat at the bar commiserating. . . ."

underfoot, and that Americans walk as if they don't give a damn *who* owns them. In 1954, close observers drew the same distinction between conventional and jet pilots, but that crew of nifty instructors was in a class by itself. Their loose-jointed saunter made it clear that they did own the sidewalks, didn't give a damn who knew it, and anyone who didn't like it could do any of several unprintable things. They were tigers, and they were only slightly subsonic just standing on the ramp.

The first day was deceptively easy. We drew tech orders, went through the altitude chamber, and were issued personal equipment that included an individually fitted helmet, oxygen mask, and gloves.

The tough part started on the second day. It was half classroom, half flight line. Ground school was pretty much a matter of learning the tech orders, but it was also a matter of surmounting a language barrier. The operating principles were so different from prop-driven aircraft that the jet world had its own supplemental vocabulary. The crisp young lieutenant teaching the course seemed to enjoy hanging an unintelligible phrase on us, scanning the rows of bewildered expressions, and then translating for us. It was annoying at first, then interesting, and finally amusing.

At the flight line, the communication problem persisted. An elaborate chalk-talk ticked off an unrememberable number of key velocities in the takeoff roll and local pattern—weight off the nose wheel, flyoff, gear up, flaps up, initial climb, pattern entry, initial point, pitch-out, speed brakes, gear down, flaps down, approach as a function of fuel load, touchdown, nose down, brakes. The only solution was to get in the airplane and try it.

My first flight instructor was an obvious truant from Selma Elementary School. I decided that to be the legitimate first lieutenant he purportedly was, he had to have been commissioned in the delivery room. As we did the walkaround inspection, however, he matured considerably.

"You'll notice," he said, "that the ailpipe appears to be loose." He attled it to make his point. "This, of ourse, is to allow for thermal expansion when it's ducting. Has a pretty high coefficient, and if it were a cold fit, you can imagine the shear loads that the mounting hardware would get at the temperature increment it sees between ambient conditions and stabilized full flow."

"Right," I said. "Mercy, yes."

We went through the rest of the preflight, and it was meticulous. Finally, I was tamped into the cockpit by the IP and the crew chief, a process akin to inserting a nickel in a dime slot. Junior climbed into the rear cockpit and we were ready to fire up.

The IP signaled for power from the APU, and the gauges came alive. Unfortunately, so did the interphone, and the situation deteriorated rapidly thereafter. The young blabbermouth in the back seat was never off my back, verbally, for more than ten seconds at a time during the next hour and a half.

Humble Pie in the Sky

A number of dead giveaways identified the novice T-birder. The first was pulling up on the taxiway short of the active runway and at a forty-five-degree angle to it. There was nothing basically wrong with that. It was largely a holdover from checking the mags in conventional aircraft without blowing away somebody behind you. The second betrayal often evolved from the first. It was possible, in turning and stopping quickly, to cock the nose wheel to the extent that you had to do a complete 360-degree turn or more to allow it to straighten itself. That was particularly embarrassing if another T-bird behind you had to move out of your way while you pirouetted on the taxiway. The emergency drill for that situation was to make sure your oxygen mask was on and your visor pulled down in order to be completely unrecognizable.

Probably the most familiar giveway was "waving goodbye" to your friends on the ground just after becoming airborne. Unused to boosted controls, the tyro invariably overdid it on the ailerons and went wigwagging down the runway and gratefully out of sight past the overrun.

I did them all on that first flight.

We climbed to 18,000 feet and the monotony of airwork began. Stalls with gear and flaps down. Stalls with gear, flaps, and speed brakes down. Stalls with gear down and no flaps. Stalls with flaps down and no gear. Stalls straight ahead. Stalls while turning. The only things we didn't compare were stalls with the canopy open and closed and stalls with the radio on and off.

He convinced me. The T-bird sure enough wouldn't fly, regardless of configuration, with insufficient airspeed. But it wanted to. It stalled reluctantly, with nothing more violent than a little tremble and a slight buzz of the stick that stopped immediately when pressure on the controls was relaxed. I began to think kind thoughts about the T-bird.

Finally, we dropped to pattern altitude and came whistling in on the initial. Over the numbers, I eased the throttle back and began a dignified turn that would have put us on downwind somewhere along the Mississippi state line. It was then that the IP took over, with instructions to "honk this dude around." The crusher was when he added,"—Dad."

That night in the club I ran into the senior full colonel from the Pentagon. My morale was pretty low, and he was having the same reaction. We sat at the bar commiserating about our advancing years and arguing that all that hotdogging in the T-bird wasn't really necessary or desirable. You have to understand that we were of the school that embraced as virtuous such things as motherhood, the single-needle-width turn, country, fifteen degrees of bank, the Almighty, and superextra smoothness on the controls—not necessarily in that order. And many of those good things were being called into question. Our basic values were under assault.

The truth is that we were suffering from badly bruised egos.

The tempo picked up the next day, and grew faster the next. We did a lot of aerobatics, and I was amazed at the agility of the airplane. I made a number of touch-and-go landings, but as soon as I was beginning to believe I had those mastered, the little terror in the back seat was hitting me with spur-of-the-moment simulated flameout landings.

"You've *got* to get it on the run-

"I was inverted, and came down the other side that way."

way! You don't have any other place to go! Spike it on! Spike it on!"

Another language barrier. I'd have been happy to do as he said if I'd known what spiking was.

The colonel and I reconvened our seminar nightly. While we still found little cause for enthusiasm, at least our deep depression seemed to be abating. To the extent that it's possible after three martinis, our conversation was sober rather than somber.

The day came when I soloed, and I wasn't expecting it. We were in the pattern, and I'd had it up to here with my personal petty tyrant. I pitched out from the initial with a vengeance. Rotating the nose on the horizon in a vertical turn, I dropped the speed brakes and did my best to salvo him through the bottom of the airplane. The airspeed indicator unwound rapidly as I buffeted through the turn, and I lowered the gear handle as the needle passed through 200 knots. I think the gear would have shot out from sheer centrifugal force if I'd had no hydraulic pressure.

Instead of complaints, what I got from the rear cockpit was, "Atta boy, Tiger!"

As I filed a new local clearance for my first solo flight, the IP gave me one last bit of counsel. "Fly that bird," he said. "Don't let it fly you."

Transition to Tigerdom

Just being alone and unhassled in the airplane allowed a few things to fall into perspective. For one thing, my initial climb speed was 275 knots. It occurred to me that, at the going exchange rate, that was better than 310 miles an hour. With few exceptions, that was faster than I had flown in a dive, in prop-driven aircraft. My rate of climb was better than 6,000 feet per minute, and to an ex-bomber type, that was mind-boggling.

Perhaps there was a basis, after all, for having a tigerish attitude while flying jets. Certainly you needed *something* out of the ordinary to stimulate thinking ahead of the airplane. At cruise altitude, the T-bird's true airspeed was substantially better than 400 knots, and any kind of tailwind could push its ground speed over 500 mph easily. While that sounds like peanuts today, in 1954 it was a certifiable Big Deal, and it all seemed to justify a new approach to flying. But every man a tiger?

For no good reason, I did an aileron roll.

At 15,000 feet, I was above the haze and scattered cumulus. To the east stood a muscular, isolated cumulonimbus, turning pink and lavender in the late afternoon sun. I gravitated toward it and at 25,000 feet flew all around it, getting a nearly-forgotten charge out of racing up one cloud valley, rolling over gently at the pass, and barreling down another.

In a real sense, you had to have been a conventional pilot to fully appreciate the T-bird. You pointed the nose up, and up it went. You put the stick over and the wings followed effortlessly, around and around, as many times as you wanted to roll. None of this business of diving for ten minutes to build up enough airspeed so you could manually heave a great big engine through a sloppy circle on the horizon, dishing out at the bottom with fla cigarette butts and telephone numbers on chewing gum wrappers floating around the cockpit.

You could stand the bird on its tail, use up big chunks of knots and roll off to the nearest horizon just before the yaw string though about telescoping itself. If you ha flown bomber or cargo aircraft, th T-33 was a whole new concept in whole new world. The key word wa performance. In comparison to wha you had flown before, the T-bir could do almost anything.

Twin peaks of cloud appeare

Author Jim Beavers, who retired from the Air Force in 1963, spent most of his post-World War II career in R&D activities as a nuclear weapons specialist. Last April, we published his humorous account of combat in "AAF's Flying Artillery—The 75-mm Baker Two-Five." That one has been reprinted by three other publications and set something of a record here for friendly letters-to-the-editors. Colonel Beavers now lives in Winter Park, Fla., where he divides his time between managing his own business and writing.

---

before me, I sliced between them with the wings vertical. A small blue hole appeared above me in the main trunk of the thunderhead, and I shot up through it. There were sheep-like formations on the other side, and I strafed them. It occurred to me that I was acting like a twelve-year-old kid.

Regaining my composure, I moseyed on up as high as the bird would go. At 42,500 feet, it didn't want to climb anymore, so I just sat there momentarily to savor the sensation of being higher than I'd ever been in my life. The sky was a brilliant, clean blue from horizon to horizon.

That was enough. The tip and leading edge tanks were dry and I was well into the mains. Turning back to Craig, I eased the throttle back and opened the dive brakes. The altimeter began cashing in. The cumulonimbus was between me and home, and I squelched the impulse to go pester it some more, grittily determined to act my age and just go around it.

In one last reversion to adolescence, however, I brought up the dive brakes, ran the throttle up to ninety-six percent, and pulled the airplane up into a maneuver that put me above a lateral outgrowth of the cloud. I was inverted, and came down the other side that way. Whatever it was, today nobody would dignify it with a name, even if the Thunderbirds did it in formation, but it got something off my chest.

Bearing down on the traffic pattern, I was humming a tune and tapping my toes on the rudder pedals when a major discovery dawned on me: after a dozen years of it, flying was suddenly fun again.

When I started to pitch out to the downwind leg, I made the standard report to the tower, but to myself I said, "Honk this dude around, Dad." Flaps down and turning. Over the fence. Just put these little bitty wheels right—on—those—great—big—*numbers! Hot dog!*

I walked away from my first jet solo flight feeling as if I had sprouted antennas from both ears. I can't honestly say that I was developing orange and black stripes, but one of my antennas may have had a foxtail on it.

An hour later, I joined the colonel at the bar. He was grinning from ear to ear and looking ten years younger.

"You soloed today," I said. "It shows."

"Right," he replied. "So did you, and it does show, Tiger."

Realistically, the label didn't fit for long if it fitted at all. I flew the T-bird for some years to follow, and during those years jet flying became commonplace. As it became commonplace, it became more regulated. Air route congestion eventually made it necessary that all jet flights be conducted under instrument flight rules, and that put us under controls from takeoff to destination. As it became more regulated, all of the old virtues reasserted themselves. Fifteen degrees of bank had grown to a standard thirty, but motherhood, the single-needle-width turn, country, the Almighty, and superextra smoothness on the controls reclaimed their rightful places in the natural order of things.

It was only when VFR conditions existed at the destination and I could cancel my IFR clearance for a 360-degree overhead approach that some of the old charge returned. Arriving over the numbers invariably brought my instructor's early mandate to mind. No pitch-out went unhonked. And while it was surely only tailpipe rumble, there were times when I heard what sounded oddly like the muted growl of a tiger. ■

". . . but one of my antennas may have had a foxtail on it."

A multitude of decisions by a multitude of people in the services, the Defense Department, the Office of Management and Budget, the White House, and the Congress mold DoD's budget. How this intricate gestation led to the FY '78 defense budget request that is about to be presented to the Congress, and what is likely to happen from here on in, is detailed in . . .

THE ANNUAL BATTLE OF THE BUDGET

On or about January 17, the outgoing Ford Administration will submit to Congress the Fiscal Year 1978 Federal Budget, and thus open bidding in the largest, longest, and most intricate "auction" in the land. If past experience can serve as a guide, the budget's national defense segment, once again, is likely to get the bulk of the headlines and absorb the lion's share of congressional budget hearing time.

At this writing, the precise dimensions of the FY '78 Defense Department budget request are not known. Outgoing Defense Secretary Donald Rumsfeld has intimated that it probably will exceed last year's forecast of $120.6 billion. It is not likely that the excess will be more than a few percentage points, and it would seem almost certain that defense again will make up about one-fourth of the federal budget. The mechanics and rhythm of the budget process are spelled out by the Congressional Budget and Impoundment Control Act of 1974, but there is some latitude in how the new Congress may deal with its provisions.

The FY '78 defense budget request will be accompanied by the FY '79 "authorization," the Administration's "guess at the margin" as to what defense might need in the first "out-year" for major procurement, construction, RDT&E, and manpower. The authorization figures, according to John R. Quetsch, DoD's Principal Deputy Assistant Secretary-Comptroller, are not binding on either the Administration or Congress. Appended to the budget request also are rough estimates of annual defense costs for the three fiscal years following the year covered by the authorization—FY '80 through FY '82 in the case of the present budget cycle. These figures are known as the "top-line" forecast and are taken from the Defense Department's Five-Year Defense Plan (FYDP), prepared by the Comptroller, based on service inputs reflecting all Secretary of Defense decisions.

The budget and the authorization estimate also are the responsibility of the DoD Comptroller. The "top-line" figures include all foreseeable military assistance funding requirements as well as those of DoD and the individual services. Individual major Defense Department programs require more frequent and stringent reporting and review by Congress in the form of the Congressional Data Sheets (submitted annually) and the Selected Acquisition Reports (submitted quarterly). Both reports provide cost and schedule projections over a five-year period, or, in the case of the latter, the cost to complete a program.

Another instrument that helps shape future Defense budgets is the Extended Planning Annex, defined by OSD's Director of Planning and Evaluation, E. C. Aldridge, as an informal projection of "what the services need over the next fifteen years, tempered by what we think they can afford within their procurement accounts." These Annexes, he told Air Force Magazine, are arrived at on the basis of estimates by the services themselves, as well as by forecasts of the intelligence community. Other factors affecting this planning document are the trends of the Five-Year Defense Plan that is being extended and the fiscal guidance by the Secretary of Defense underlying the FYDP (especially with regard to potential arms-limitation accords). The Annex arbitrarily presupposes retention of the existing force structure, meaning that only the cost of replacing weapon systems within their predictable life-cycle is calculated; no allowance is made for expansion of forces that increasing threats might require. Because of the uncertainties attendant to such long-term planning, the Extended Planning Annex is treated as only a tentative guide for use within the Defense Department.

Confidence in the Extended Planning Annex is not uniform and depends largely on the subjective judgment of whether or not the intelligence community is capable of projecting threat assessments fifteen years into the future. While opinions vary here, past performance supports a belief that the R&D/acquisition cycle permits fairly reliable forecasts about weapon systems likely to make up the bulk of the Soviet operational inventory over the next fifteen years. Soviet military hardware now entering the inventory or undergoing full-scale testing probably will be around for another decade or two. The

BY EDGAR ULSAMER, SENIOR EDITOR

intelligence community's ability to predict technological innovation and changes in basic intent is far less certain. In spite of its tentative nature, the Annex is important to the Defense Department's Planning/Programming/Budgeting System (PPBS) because its information feeds into and affects the Five-Year Defense Plan.

Internal Forces Shaping the Budget

At the apex of the Pentagon's planning and budgeting process is the "Fiscal Guidance" memorandum issued annually by the Secretary of Defense. Covering a five-year period, this document defines "the total financial limits within which the DoD force structure will be developed and reviewed. The fiscal guidance [is] by major mission and support category for each Military Department and Defense Agency . . ." such as strategic offensive and defensive forces, ground forces, tactical air forces, R&D, and training. Two steps are involved in the process. An *initial* version is issued for comment by the Joint Chiefs of Staff, the Military Departments, and the Defense Agencies.

Following review of the Joint Strategic Objectives Plan (JSOP), another annual planning document that provides "the advice of the Joint Chiefs of Staff to the President and the Secretary of Defense on the military strategy and force objectives for attaining the national security objective of the United States," and review of the related Joint Research and Development Objective Document (JRDOD), together with the comments received on both, OSD issues a *revised* Fiscal Guidance Memorandum. This revised memorandum makes allowance for a range of economic factors, including inflationary trends and GNP estimates, and is being developed in concert with the Secretaries of the Military Departments. Subsequent planning, programming, and budgeting by the Military Departments and Defense Agencies take place within the framework provided by the Fiscal Guidance Memorandum. In their own planning, the services and Defense Agencies are instructed to treat the overall totals assigned them for each program year as firm; with some exceptions, they have leeway to reallocate funds among major mission and support categories. None of the figures generated by this process is final or binding.

The Budgeting Process

In a formal sense, the budgeting cycle begins in late summer, when the Secretary of Defense signs the Amended Program Decision Memoranda (APDMs), OSD's initial judgment of the services' total resource requirements. The APDMs, in turn, are the product of three distinct programming activities: the services' own Program Objectives Memorandum (POM), Issue Papers, and Joint Forces Memoranda. The POMs are the services' estimates of their total needs and draw on OSD's Fiscal Guidance and the Joint Strategic Objectives Plan. The APDMs are formulated by OSD in concert with the services through reclamas, and incorporate the latest pricing and inflation information of the OSD Comptroller. Guidance on future inflation, outside of major weapon systems and other "best estimate" programs, is added to the APDMs to come up with budget guidance in dollars. The services then build their overall program around this planning figure and, usually within about a month, submit to OSD their detailed budget requests for the fiscal year that starts on October 1 of the following year.

The next phase of the annual cycle is the Department's Fall Budget Review that involves the direct continuous participation of the Office of Management and Budget (OMB). This continuous participation is unique to the Department of Defense. All other government Departments and Agencies work up their budget requests and submit them to OMB, which then conducts its own review and presents its recommendations to the President.

Throughout the internal planning, programming, and budgeting process and the subsequent Congressional Budget Actions, the services are given "plenty of opportunity to be heard and to present their views. There are provisions for written appeals and reclamas at all stages of this iterative and interactive process," Mr.

Quetsch told AIR FORCE Magazine. This condition applies especially to the Fall Budget Review, which includes, usually in December, a so-called Major Budget Issues Meeting to enable the service Secretaries to personally present dissenting views on important matters to the Secretary of Defense.

Following resolution of contested items, the various budget estimates, now called Program/Budget Decisions, are consolidated and in December or early in January the President and the Secretary of Defense decide on the precise size of the budget request to be submitted to Congress. Under certain circumstances in the past, the President, in his role as Commander in Chief, also has met with the Joint Chiefs of Staff to resolve contested budget matters in "an all-military environment," according to Mr. Quetsch.

The budget request that emerges from this protracted filtering process is, of necessity, a compromise between perceptions of defense needs and what the national leadership is willing to make available. Many of the decisive considerations on that side of the ledger are outside the Department's ken and involve such fundamental issues of public policy as the tax base and the willingness to accept an unbalanced federal budget. The Defense Budget Request, therefore, is an aggregation of the calculated risks by which requirements are reconciled with available resources. "The military are trained to take risks and to take them in areas and ways that minimize the potential for damage and with the best prospect for recovery. In a way, the budget . . . is the culmination of . . . risk taking," according to Mr. Quetsch.

The Congressional Gauntlet

The Defense Budget Request submitted to Congress in January is a long way from being money in the bank. The first decisive milestone is the initial Joint Budget Resolution scheduled for May. This resolution is the product of lengthy, high-level review by both houses, involving the Budget, Armed Services, Appropriations, and Ways and Means Committees. The focus of these hearings is on the broad outline of national defense requirements and major DoD programs. (Major actions taken last year by the Congress prior to passage of the First Budget Resolution included restoration of funds for commissaries and a cut of funds for shipbuilding.)

Upon completion of these hearings, each house passes its own Budget Resolution. A joint conference committee reconciles differences and merges the two documents into the Joint Budget Resolution. This resolution nails down the size of the Defense Department Budget in broad terms. Its importance, therefore, is hard to overstate. Two factors—in addition to the vagaries of the parliamentary process—make it difficult to forecast the outcome of this year's contest. Last year's defense budget experience can't be treated as typical. Because of the procedural changes, Congress and its committees did not have time for detailed probes or, to put it more pejoratively, nit-picking. This year, Congress will not only have the time to do so, but it also has built up staff capabilities in the Congressional Budget Office and the committees for probing various defense disciplines, while the services and OSD had to reduce the manpower available for coping with the points raised by Congress's own analysts. There is apprehension in the Pentagon that this year "we may well find ourselves outgunned in terms of manpower" by Congress.

Another prospect viewed with trepidation by OSD analysts is active congressional "scrubbing" of the FY '79 authorization, which could lead to yet another tide of inquiries and challenges for the Pentagon's analysts as well as requiring a more detailed preparation of the out-year authorization. Last year, Congress did little more than take cognizance of the out-year figures while concentrating its efforts on the budget year.

On the plus side for FY '78 and beyond is last year's instruction by the joint conference committee to the President to submit all future budgets with full allowance for the effects of inflation, on not only the procurement but also the Operations and Maintenance (O&M) accounts. The Office of Management and Budget is charged with providing the mechanism for these adjustments. This little-noted development can be expected to significantly benefit materiel and force readiness. Heretofore, the only means for offsetting increased contractors' labor costs was to cut back maintenance. This condition applied especially to ship overhauls, usually carried out on a four-year cycle.

The Second Budget Resolution

Once the first Joint Budget Resolution is in, the con gressional committees start on a line-item review o the defense budget in order to determine which DoI requirements and programs can, or should be, accom modated within the proposed totals. The Resolution' top-line figure is not treated as final by Congress or th Administration. Discrepancies are dealt with in congres sional debates preceding the Second Budget Resolution These debates take place in August and September an lead to the Second Joint Budget Resolution, which i turn provides the "hard figure" within which Congres passes its defense budget authorization bill. (Last yea the second round of budget debates reduced the Depar ment's budget by about $400 million, from $112.5 t $112.1 billion.)

The federal budget is expressed in two ways: outlays and total obligational authority (TOA). The latter provides a better view of the costs of DoD programs by including reimbursements as well as balances left over from previous years, and by treating as assets Foreign Military Sales funds that are not needed in a given budget year. Balancing the federal budget and the federal treasury's borrowing are based on outlays.

Even after Congress has passed and the President has signed the Defense Department Budget, changes in appropriations and allocation of funds within and among various accounts can take place. Unforeseen requirements and the exploitation of technological breakthroughs are often the reasons for change within a budget year. The three tools for bringing about such changes are internal reallocation, reprogramming requests to Congress, and Presidential supplemental funding requests. In addition, there is a modest contingency fund appropriated to and controlled by the Secretary of Defense.

Reallocation within a service's budget is held to relatively small sums and certain "thresholds." New programs, for instance, cannot be started without congressional approval if the funds required exceed given ceilings, generally in the range of $5 million. Whenever Congress expresses specific interest in given programs, funding changes can be made only upon express approval. DoD seeks such approval in the form of a reprogramming request. In instances where the required funds can't be covered through reprogramming, and where it is not possible to wait for the next budget year, the Secretary of Defense can ask the President to seek a budget amendment, if the budget has not yet passed Congress, or a supplemental appropriation, if it has. (Last year, the Air Force requested and was granted a $317 million amendment to acquire an additional sixty Minuteman III ICBMs and MK 12A reentry vehicles.)

A fundamental, paramount aspect of DoD's budget process, according to Mr. Quetsch, is its "closed-loop nature." Today's performance by military and civilian program managers determines Congress's confidence in the Department's management capability and its willingness to meet tomorrow's funding requests. "What concerns us deeply is that the system is being strained by increasingly severe restrictions on our ability to manage —extending from environmental impact constraints to contract management—and because we had to reduce our management structure. The danger lies in the fact that fewer and fewer people in DoD must make more and more decisions of increasing gravity." ■

NO SWEAT!

It was 0300 hours on an August morning in 1969. Landing Zone Karen, about fifty miles southwest of Da Nang, Vietnam, was being overrun by a company of Viet Cong, and my Army "Dustoff" medical evacuation helicopter was circling the firefight at 2,000 feet, waiting for the ground troops to get their wounded together. Five hundred feet below me, a team of Cobra helicopter gunships was ready to escort me in. Five hundred feet above was an Air Force AC-47 "Spooky" gunship, doing his best to clear the mountainside of rocks, trees, and other miscellaneous hazards.

My Cobras asked Spooky if they could be of assistance. A raspy, southern twang filtered through the radio:

"Naw, ya'all jus' gonna get in my way. Give me 'nother minute and then get Dusty in."

We finally entered and exited the LZ safely with no hits, as Spooky circled above putting out a steady stream of fire. Before changing frequencies on the way to our aid station, I keyed my mike:

"Spooky...Dusty here. Thanks, buddy. We got all of our patients. Sorry you had to come out this time of night."

There was a brief pause. "Yeah, well... no sweat! TV was off...O Club was closed . . . was jus' layin' 'round sleepin', anyway."

As we left the area, I mimicked his drawl: "Ya'all take care now, ya' hear?"

Back through the clear night air came a heavy chuckle, followed by, "Now ya'all sound like a real aviator."

—Contributed by Capt. Robert B. Robeson, US Army

(AIR FORCE Magazine will pay $20 for each anecdote accepted for publication.)

New Look At the Air War College

The Air War College, USAF's top professional school, is in the midst of a major—some would say long overdue—curriculum overhaul. Its previous emphasis on high-level policy making is being replaced by concentration on "the Air Force's real business," the employment of aerospace power.

USAF's TOP professional military school, the Air War College, is "returning to airpower," the same primary target that AWC's initial curriculum zeroed in on thirty-one years ago.

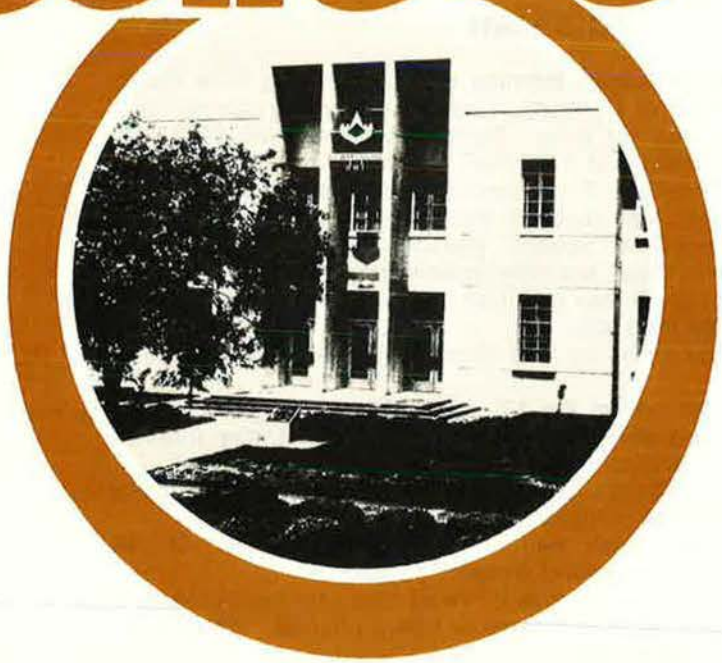
Preparing officers of great promise for duty with large units by instilling sound concepts of strategic and tactical air warfare and by giving them a broader outlook on USAF's role as an instrument of national policy was the foundation on which the first AWC curriculum was built. That was in March 1946, when the Air University schools were established at Maxwell AFB, Montgomery, Ala.

Since then, 5,706 officer students, mostly USAF colonels and lieutenant colonels, have graduated from the resident school. As of early last year, 621, or 10.9 percent of them, had won star rank.

Flexibility in approach and philosophy has been characteristic of the War College over the years. Just prior to the current overhaul, for example, the curriculum, including seminars and many of the prominent guest speakers, concentrated heavily on the formulation of national security policy. Students found themselves being prepared mainly for eventual high-level policy-making posts.

But the 1976–77 class, now halfway through the ten-month course, has changed directions. The heavy thrust is now on the employment of airpower or, as the Air University Commander, Lt. Gen. Raymond B. Furlong, likes to put it, "on the Air Force's real business."

AWC Commandant Maj. Gen. Stanley M. Umstead, Jr., meanwhile is monitoring the progress of his students and faculty closely as they reinstate the airpower thesis in eleven new Theater Air Warfare Studies



Anderson Hall, home of AWC, is named for its first commandant.

These projects, all focusing on current USAF missions and the capability to accomplish them, particularly in NATO, deal with the following elements: counterair, close air support, interdiction, electronic warfare, surveillance and reconnaissance, air base defense, airlift, targeting and weaponry, logistics, command control and communications, and defense suppression. To accommodate the curriculum changes, AWC has sharply increased the number of academic days devoted to airpower.

General Furlong, who has an MBA degree from Harvard Business School and is a National War College graduate, is promoting higher levels of excellence among both the AWC faculty and student officers. "Substance, quality, efficiency" are the key words he is delivering to the AWC people, as well as to AU's new Leadership and Management Development Center and other major activities of the command.

The teaching staff is likely to be slightly younger in the future. A Senior Service College faculty screening board has just been set up at the Military Personnel Center, Randolph AFB, Tex. This panel, which first met last month, weighs likely lieutenant colonels and LC-elects for all USAF senior schools. But its main business is to assure a top-notch AWC faculty. One goal is to erase any lingering image of an Air War College staff or faculty assignment as the last stop before retirement. If the erstwhile label "Maxwell Golf and Country Club" ever was appropriate, it is no more.

It is also part of Air University's master plan to "enhance in-house capability and reduce the traditionally heavy reliance on outside speakers." Some 250 military and civilian experts, mostly from outside the Air University, lectured to last year's class.

The current Air War College class is composed of 198 USAF Regular officers, twelve USAF Reserves and Air Guardsmen, eleven government civilians, nine allied officers, twelve from the sea services, and twenty-two Army officers. The large Army delegation permits assignment of one soldier to each student seminar, the school's basic study group.

The class, which graduates next May 24, averages forty-one years of age and eighteen years in service. Half the members are pilots, nineteen percent navigators, and thirty-one percent nonrated. This profile is likely to continue with little change in succeeding classes.

Falling sharply, however, is the number of student officers taking advanced degrees through off-duty education programs; only forty-four are doing so now, compared with ninety last year and ninety-eight two years ago. But there are reasons.

When George Washington University established a Maxwell branch in 1961, War College students and other AU personnel rushed to sign up. Many won advanced degrees with only a few weeks study beyond the normal length of their AU courses.

These added credentials improved the academic image—after all, the Air University is an educational institution which, by civilian standards, was sorely deficient in graduate degrees sixteen years ago. That's all changed now; master's degrees and doctorates are commonplace among both AWC faculty and students.

Another reason few AWC officers pursue the master's degree program today (now provided by Auburn and Troy State) is that they are not encouraged to. "AWC comes first—degree programs must be considered as truly off-duty and distinctly second in priority," General Furlong said. "Get your degrees as early as possible in your careers" is his message to young officers plotting the major milestones of their military service. It makes sense at the War College, for its expanded program is demanding. There is hardly time to do justice to it and graduate studies too.

The New Look

AWC's revised curriculum, totaling 1,600 academic hours plus considerable additional study and research, is divided into four basic areas. Previously, Area I spotlighted factors affecting national security and policy. No longer; under the shift from policy-making to airpower, the new Area I is called Leadership and Management, all fifty-two days of it.

That change is not surprising in view of the heavy emphasis USAF is placing on this overall topic. The Area I alteration also meshes with the recent establishment of AU's new Leadership and Management Development Center. The LMDC's traveling teams are working on solutions to personnel problems and improving life in many ways throughout the service (*see last month's "Speaking of People"*).

The old, but now reduced, national security topic comprises the new Area II. Subjects include domestic economic and social problems, political and economic factors of the Soviet Union and Red China, and crisis management.

This leads to a new, beefed-up Area III, titled Military Strategy and Capabilities, with increased emphasis on evolutionary development of current air doctrine and strategy. It examines the threat of the major Communist powers, including North Korea, plus the capabilities of all US strategic forces.

All this paves the way for the big change which is Area IV, Military Capabilities and Employment. Some eighty-nine academic hours have been added to this block of instruction. It's beamed at enhancing students' knowledge of airpower capabilities, readiness, and development of solutions to real airpower problems.

Why the heavy focus on airpower? Officials explain that AWC's basic aim is to educate truly professional officers who, as advisors and decision-makers, will play a big role in developing and defining policy. They are expected to be the genuine experts in the conduct of Air Force combat operations.

Thus, General Furlong says, the revamped AWC curriculum now gives "emphasis to those objectives which relate to areas within which the military is expected to make decisions."

The eleven aforementioned The-

BY ED GATES, CONTRIBUTING EDITOR

Lt. Gen. Raymond B. Furlong, AU Commander, is a graduate of the Army Command and General Staff College and the National War College.

ater Air Warfare Studies represent large-scale problems that faculty-led research teams, of eight to ten students each, began developing last fall. School authorities describe these as in-depth examinations of the "essential elements required to conduct aerial warfare in a high-intensity conflict . . ." in Western Europe.

General Umstead and his associates believe several of the theater reports, once they are dissected by the AWC student body this spring, will gain high-level recognition and help contribute to major Air Force objectives.

Much of the material in the eleven projects, they feel, will be woven into the AWC curriculum via presentations to the student body in their auditorium or closed-circuit TV, lectures, panel discussions, and seminars. Distinguished visitors may also participate.

The official objective is to "increase the professional knowledge of the entire student body with regard to planning, organization, and employment of air forces in the theater war . . ."—specifically Europe.

A "Real World" Resource

Consider the theater study of targets and weaponry, headed by faculty advisor Col. William B. Hill. Titled "The Right Weapon for the Right Target," it has turned into a detailed assessment of USAF use of air-to-ground weapons in a central European war between 1976 and 1985. The Hill group is examining the most likely targets and weighing their relative priorities. It examines both US weapons now in the inventory and those planned by 1985, and determines their effectiveness against anticipated targets. Another phase of the probe is pinpointing deficiencies and shortfalls, followed by recommendations for steps to overcome them.

In the target-assessment phase alone, this study group has dug into the whole spectrum of criteria for determining defeat or victory. They've included the geography, combatants, weather, buildup, attack phase, pre-breakthrough, breakthrough, and post-breakthrough, the main thrust, air superiority, logistics, mobility, target identification, and target priority.

And in the weapons-assessment phase, the Hill group is weighing the available number of weapons, their lethality, delivery platforms, range, speed, dive angle, mapping, charting, etc. A large part of the study deals with weapon deficiencies and what to do about them.

Maj. Gen. Stanley M. Umstead, Jr., Commandant of AWC, attended the Naval Command and Staff College and the Industrial College of the Armed Forces.

The members of each theater study were selected to assure appropriate backgrounds and expertis Student officers assigned to the bas defense study group, for example, are experienced in air defense, base security, base engineering, and related fields.

But Air University authorities have more in mind for these reports than merely weaving them into the AWC curriculum. They see them receiving wide distribution throughou the military establishment—to majo commands, the Air Staff and Chie of Staff, the JCS, and possibly eve higher levels for input into top na tional security planning. "The repor will be used," they say.

General Umstead, for instanc said that much of the soon-to-emerg air base defense study could provid the basis for a new USAF manu containing "specific guidance to ba and area commanders on this vit topic. . . . The outcome of all the studies will probably differ som what," he added, "but we expe them to provide new guidance at t

Enrollments Rising

Enrollments are rising in both sections of the Air War College's Associate Programs—correspondence and seminar. So are the number of graduates.

Statistics for FY '76 show that 2,451 active-duty and Reserve officers were enrolled in the AWC correspondence course, while 1,931 participated in seminars. The latter are conducted at eighty-nine bases, including fifteen overseas. Graduates during the year included 713 from the correspondence course and 358 from the seminars. Both are one-year programs.

During the previous five years, AWC Associate Program enrollments averaged about 3,500 and graduates about 500 per year.

operating level, even possibly show up in revised Air Force doctrine. They should provide important data for major commanders and new ideas for Air Staff study and decision, as well as launching points for further studies among AWC students."

The studies could also lead to more exposure for the Air University, something numerous quarters feel is overdue. Actually, government-industry use of AU thinking picked up a couple of years ago when the War College expanded distribution of its better student papers.

The 288 members of last year's class, for instance, each produced an ambitious research report, a major requirement for graduation. While the Air University library remains the main repository for AWC papers, distribution included 225 copies to the Air Staff, 164 to the Air Force Academy, 149 to major commands, seventy-one to the Secretary of Defense, 220 to the Defense Documentation Center, 232 to the Army's professional schools, and eight to the JCS.

So the AWC product is reaching more potential users, and this could accelerate.

Putting It All Together

Another new AWC project this year is an Air Force Symposium, scheduled for March 29–31. Some 200 of the nation's top military leaders and civilian experts are expected to participate. The theme of the conclave is "The Impact of Technology on Air Warfare." Authorities expect the exchange of ideas will increase the value of AWC education as well as enhance the overall knowledge of airpower. The symposium, authorities believe, will become a permanent fixture of the War College program.

Winding up the academic year—this too is a new wrinkle—will be a large-scale, computer-assisted Theater Warfare Exercise, slated for May 9–12. Faculty members and twelve students have been shaping it since late last summer. The war game simulates air operations deci-

With the AU library in the center of Chennault Circle, Anderson Hall is at the upper right. At lower left is Squadron Officer School and, at lower right, the Command and Staff College.

Joins AWC Faculty

Brig. Gen. Noel F. Parrish, USAF (Ret.), a distinguished educator-writer while in uniform, recently joined the Air War College faculty as advisor to the Commandant and Professor of Military History. A 1948 graduate of the Air War College, he held several key AU posts during his military career. After his retirement in 1964, General Parrish earned a doctorate in history at Rice University. Until recently, he has taught military history at Trinity University, San Antonio, Tex.

Ninety-five Air Force general officers—twenty-five percent of the star force—were Air War College graduates as of early 1976. About the same number were alumni of the National War College and the Industrial College of the Armed Forces (ICAF). The table below spells out the senior service college (SSC) record, or lack of one, for the 380 USAF generals then on active duty. Air University records also show that of the 5,706 AWC graduates since the school was established in 1946, some 621, or 10.9 percent, have become general officers. Among active-duty Army graduates of the AWC, seventeen rose to star rank.

USAF General Officer Graduates of SSCs

(As of January 15, 1976)

Grade	Air	Army	Navy	Nat'l	ICAF	Other	None	Totals
O-10	3	—	—	7	—	—	3	13
O-9	10	1	1	14	10	—	8	44
O-8	36	9	5	35	37	—	21	143
O-7	46	10	6	36	56	3	35	192
Total	95	20	12	92	103	3	67	392*

* Twelve USAF general officers were graduates of more than one senior service college.

sion-making at the tactical air force level—an allied tactical air force in West Germany—and addresses the employment of Warsaw Pact air forces and NATO and Pact ground forces. The exercise is intended to top off the theater studies' spotlighting of airpower in a European theater warfare scenario.

The school's annual National Security Forum will be held May 16–20. As usual, seventy-five prominent civilians—business executives, community leaders, educators, editors, etc.—will attend. They'll trade ideas with the AWC faculty and students. USAF's reward comes with the increased understanding of airpower and security issues that these VIPs take home and spread around their communities.

Graduation follows on May 24, and in early August another AWC class will convene.

Generals Furlong and Umstead, meanwhile, are optimistic that the revised program will turn more of USAF's best officer talent in the direction of the Maxwell school—where they can "really learn about airpower."

Many won't make it, of course; the resident AWC course can accommodate only fifteen percent of the eligibles, and enrollment won't be increased. But General Furlong isn't pushing for that, nor is he trying to attract "a lot of people." He's concerned about getting "the right people." ■

ALLOTMENT BLUES

Gen. Hap Arnold, flat on his back in a hospital bed in Coral Gables, Fla., tried to run his office in early 1945 while recovering from a serious heart attack. His staff would fly down summaries of problems on which "Yes" or "No" decisions had to be made. Edna "Suzie" Adkins, his secretary, was appalled by it all and wondered whether the recuperation might only speed the General to his grave.

She tried to lighten the daily dispatches with occasional bits of humor. Among the items in this category were the following excerpts from letters received by the Allotment Division, Army Air Forces, written by sometimes desperate dependents:

"Please send me my elopement, as I have a four-month-old baby and he is my only support. I need all I can get to buy food and keep him in close."

"Both sides of my parents is poor and I can't expect nothing from them as my mother has been in bed with the same doctor for one year and won't change."

"Please send me a letter and tell me if my husband has made application for a wife and baby."

"I have already wrote to the President, and if I don't hear from you I will write to Uncle Sam and tell him about both."

"I have already had no clothing for a year and have been regularly visited by the clergy."

"I am forwarding my marriage certificate and two children. One is a mistake as you can see."

"Please find out for certain if my husband is dead as the man I am living with won't eat or do anything else until he knows for sure."

"I am told my husband sets in the YMCA every night with the piano playing in his uniform. I think you will find him there."

"In accordance with your instructions, I have given birth to twins in the enclosed envelope."

"I want my money as quick as you can send it. I have been in bed with the doctor for two weeks and he doesnt seem to be doing me any good. If things don't improve, I will have to send for another doctor."

—Contributed by Dr. Murray Green

(AIR FORCE *Magazine will pay $20 for each anecdote accepted for publication.)*

Self-interest is a legitimate basis for any nation's foreign and defense policy. But the often narrow and emotional advocacy of US special interest groups clouds our perspective on . . .

The Question of National Interest

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

WITH the inaugural, and—since Presidents latterly have been former naval officers—the changing of the watch, we can recall that more than three-quarters of a century ago there was another Naval Academy graduate who had enormous influence, although he did not become President, or even admit to that aspiration. He was, of course, Capt. Alfred Thayer Mahan, USN, author, lecturer, and great naval theorist. His views on seapower were instrumental in moving the United States out of its isolationism and into the world at large where, for better or worse, we find ourselves today.

Mahan saw that world in clear focus. When he stated a problem, he was prepared to offer a solution. Admittedly, Mahan's was a far simpler world than the one Jimmy Carter faces, but the fact remains that Mahan viewed it clearly and with detachment. "Self-interest," he wrote, "is not only a legitimate, but a fundamental, cause for national policy: one which needs no cloak of hypocrisy."

In today's political climate that would not be a popular thing to say. Any public figure who put national policy in such blunt terms would probably find himself under the same kind of assault as did Secretary of Defense Charles Wilson when, years ago and with the best intentions in the world, he equated the nation's good with that of General Motors, and vice versa. It was the vice versa that got him into trouble. And it is the vice versa these days that excites various special interest groups—mostly legitimate within our unique pattern of democracy—and makes it so difficult to see in clear perspective our own national interest in the Mideast, in Africa, in Turkey, and elsewhere.

Take Turkey, for example. If the best interests of the United States were the only, or even the main, issue, we would never have used the arms embargo as a means of applying pressure in the Cyprus affair. Our behavior toward Turkey has worsened our military position in the Eastern Mediterranean, and hence that of NATO, for a long time to come, perhaps irrevocably. And since there was only some well-orchestrated emotion—always a poor substitute for logic—behind the embargo, no national interest was served. We did not even better our position in Greece.

Or take Africa. Supertankers en route to Europe and our East Coast go around the Cape of Good Hope. Military common sense would suggest the wisdom of some kind of basing arrangements in South Africa. However, that wisdom takes into account only the security of the oil route and thus our own, and NATO's, vital interests. For other reasons, having nothing to do with our own national interests, this idea cannot even be seriously entertained.

It is one of the ironies of these confused times that the United States, while ever more reluctant to put its own interests forward in the traditional manner of a great power, spends like a great power on its military forces, and, hence, presumably, on military preparedness. The question is, preparedness for what? If it is to meet the Soviets on equal terms then, aside from a strategic weapons exchange, it is not enough. There are not enough US soldiers or ships or airplanes to match the Soviets in a conventional war, where numbers count. Our strategy in Europe, where we have allies, really depends, as it has for twenty-five years, on the deterrent value of our strategic forces. The chances are good for that strategy to continue to work, but what of the rest of the world?

Our NATO allies are obligated only in the event of an attack against NATO. Events that may take place elsewhere, even events that threaten our vital interests, and thus those of our dependent allies, are of only peripheral concern to NATO, something to be discussed and worried about but outside the area of responsibility of the Alliance. Thus NATO, notwithstanding its importance, can be a way of burying our head in the sand if we become too bemused with that commitment.

The Kissinger era of diplomacy has presumably come to an end. It has been an era largely devoted to keeping the lid on and from that standpoint it has been a success. Nevertheless, nothing has really been solved, things have only been put off, and the Soviet drive for world power appears undiminished. We are increasingly dependent on oil from an uncertain part of the world over an ever more vulnerable route. Meanwhile, Europe shows some distressing signs of both political and economic decay. These are danger signals. The question is what to do about them.

In the long ago days of World War II there was a red light on the instrument panel of B-17s. It flashed when you were low on fuel, usually over enemy territory. The solution was to unscrew the bulb. Considering the alternatives, it was a good solution.

We are not in that fix. And without trying to become something we are not, a belligerent nation, we can still back up our vital interests with some muscle. No nation understands the use of airpower, and seapower, as we do. No one has our technology and, so far as we can tell, no one has better professional forces. If we are willing to identify our national interests, instead of just talking about national defense, we can set about defending them. If we lack the capability to defend them, we can create that capability.

First, however, we must agree that Captain Mahan was right when he said self-interest was fundamental to national policy. ■

Flying the Early Birds

THE P-26A

BY BRIG. GEN. ROSS G. HOYT, USAF (RET.)

WHEN I reported to the Commanding General, 3d Composite Wing of the General Headquarters (GHQ) Air Force, Barksdale Field, La., in September 1937, I was assigned to command the 20th Fighter Group, which with the 3d Attack Group comprised the 3d Wing. Parenthetically, the recently organized GHQ Air Force, still a part of the Army, was the first small step toward a separate Department of the Air Force.

The 20th Fighter Group, which I commanded for four years, was equipped with P-26As, designed and built by the Boeing Aircraft Co., Seattle, Wash. We flew the P-26As for a year and a half, until they were replaced by the P-36As.

The P-26 was born into the Air Corps family after one of the longest gestation periods in history: fifteen years of prenatal neglect of fighter development due to War Department fiscal policy and the fiscal, development, and operational policies of the Air Corps. The introduction of the P-26 marked the transition from wood and metal airframed, fabric-covered biplanes to the all-metal, low-winged, monoplane fighter.

The Boeing Co. produced 136 P-26s in two contracts: 111 P-26As with Pratt & Whitney R-1340-27, 500-hp radial engines and twenty-five with the P&W R-1340-33 engine. Of the latter twenty-five, two with fuel injection were designated P-26B, and the remaining twenty-three without fuel injection but with minor changes were P-26Cs. All of the Cs were later converted to Bs.

Delivery of the P-26s was completed by January 1935. They were assigned to fighter units at home, in Hawaii, Panama, and the Philippines. Some were still in service with the 3d Pursuit Squadron in the Philippines when the Japanese struck there in December 1941. The P-26 was no match for the Japanese Zero. Most were destroyed on the ground or in the limited air combat that took place. This sounded the death knell of the P-26.

The adoption of the all-metal, low-winged, monoplane fighter was a step in the right direction, but due to Air Corps preoccupation with development of the bomber, the P-26 retained many of the deficiencies of its predecessors: fixed landing gear and open cockpit (the last fighter to be so equipped), inadequate speed, climb, service ceiling, range, and firepower (two .30-caliber fixed machine guns initially and later one .30- and one .50-caliber gun, firing through the propeller disc, thus reducing the rate of fire about fifty percent). The fighter fraternity called it the "Peashooter."

Its fuel capacity was 104 gallons, contained in a main fuel tank of fifty-two gallons in the fuselage and two twenty-six-gallon tanks, one in each wing (probably the first fighter with wing tanks). This provided enough fuel for a range of 360 statute miles with a twenty percent reserve. Obviously, its range was not sufficient to escort long-range bombers, a deficiency continued in successive US fighters into the early part of the strategic bomber offensive against targets in the German homeland.

The P-26's speed and climb were inadequate for a purely defensive role unless enough warning were received from a ground and aerial intelligence net such as that employed in the 1933 Antiaircraft-Air Corps Exercise [*see General Hoyt's article "Metamorphosis of the Fighter" in October '75 issue*] to enable the fighters to attain altitude and strike the aerial attacking force head-on before it reached its objective. Radar had not yet been perfected.

The P-26 was short coupled and equipped with swiveling tail wheel and toe brakes, making it very maneuverable on the ground. This was an asset in individual operations, but was especially advantageous in positioning formations for takeoff, and clearing the area after landing. Hand operated flaps reduced the landing speed to seventy three mph.

The horizontal stabilizer was adjustable only on the ground. Trim tabs on the trailing edge of the elevators were controlled from the cockpit, but the aileron and rudder tabs had to be set by bending while on the ground.

The wings were braced with streamlined wires between the top of the wings and the fuselage and between the bottom of the wings and the landing gear struts. There were cross-braced, streamlined wires between the struts. These wires and the fixed landing gear, although faired, created parasitic drag that materially reduced airspeed.

The engine was fitted with a ring cowl. It was started by a hand-energized, inertia starter cranked by a mechanic standing on the left wing. The aircraft had a two-bladed, fixed-pitch propeller.

The guns were aimed with an open sight mounted in front of the windshield and fired by a pistol grip on the control stick. A bomb rack could be mounted on the bottom of the fuselage, but was rarely used for bombs. More often it carried magnesium flares for emergency night landings.

Communication was provided by the SCR 183 radio with seven watts' output on phone, MCW, and CW. Morse Code, which had greater range and penetrated interference better than voice, could be transmitted with a press button used as a key. Pilots had to maintain proficiency in sending and receiving code. I used it in the 20th Fighter Group on occasion.

The instrument panel had all the necessary instruments for monitoring the operation and condition of the engine and the status of fuel and ammunition, as well as flight instruments. Instrument flying training was conducted by adding an improvised cockpit hood. Another plane went along, its pilot giving instructions and warning of any dangerous situation by radio.

Because of the sensitivity of the landing gear hydraulic shocks, a wing would go down on abrupt taxiing turns, or if the throttle were advanced too rapidly the engine and propeller torque might compress the left shock until the left stabilizer struck the ground, causing an abrupt turn. That could be avoided by opening the throttle slowly on takeoff, especially in formation. This peculiar characteristic gained the P-26 the nickname "Limber Legs."

The P-26 was stable, handled well in the air, responded readily to the controls, and could perform all aerobatic maneuvers. If pulled up into a stall it would slide back down tail first and fall into a dive with little tendency to spin. Visibility was good in all directions except down, where it was obscured over a wide angle by the wings. It had no tendency to ground loop and, therefore, was suitable for training inexperienced pilots, and for landing in formation.

The ease of maintenance of the P-26 airframe and engine is best illustrated by my leading forty-eight P-26As of the 20th Fighter Group from Barksdale Field, La., to Roosevelt Field, Long Island, N. Y., participating in the Air Corps Exercise of 1938, and returning to home station with only routine maintenance by the crew chiefs and four radio technicians.

The combat record of the P-26 in our service was brief and tragic. However, Col. (later Maj. Gen.) Claire Chennault, commanding officer of the American Volunteer Group when I visited the Group at Toungoo, Burma, as AAF Representative on the US Military Mission to China in October of 1941, told me the Chinese Air Force squadron of P-26s was effective in combat with Japanese fighters in 1937—before the Zero.

Except for its open cockpit, the P-26 was a pleasant airplane to fly, and in spite of its deficiencies its performance, in most respects, exceeded that of its predecessors; not much, but some.

The fighter pilot's concept of a fighter airplane was one of greater firepower, later provided by free-firing guns of larger caliber mounted in the wings; a closed cockpit for the comfort and combat efficiency of the pilot; engines of greater horsepower, and aircraft with retractable landing gear to give the speed and climb needed for purely defensive missions; and, last but far from least, enough range to support the long-range bombardment missions and long-range fighter sweeps that were so effective in destroying German industry and fighter forces in World War II. The P-26 fell far short of those requirements.

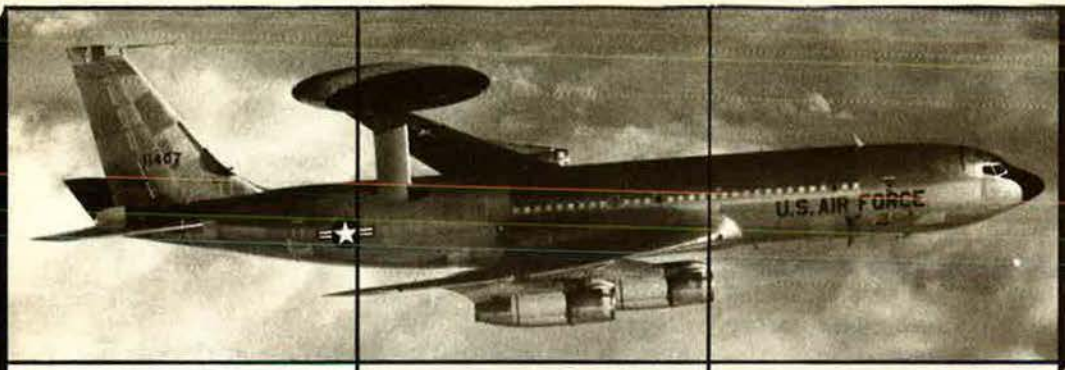
Our hopes were finally fulfilled in the early 1940s by the P-38, P-47, and P-51, but not soon enough to prevent the tragic losses of B-17s, pilots, and crews, in the unescorted long-range bombardment missions at the start of the bomber offensive in 1943. That offensive was interrupted until enough fighters with enough range became available. Its resumption marked the beginning of the end for Nazi Germany. ■

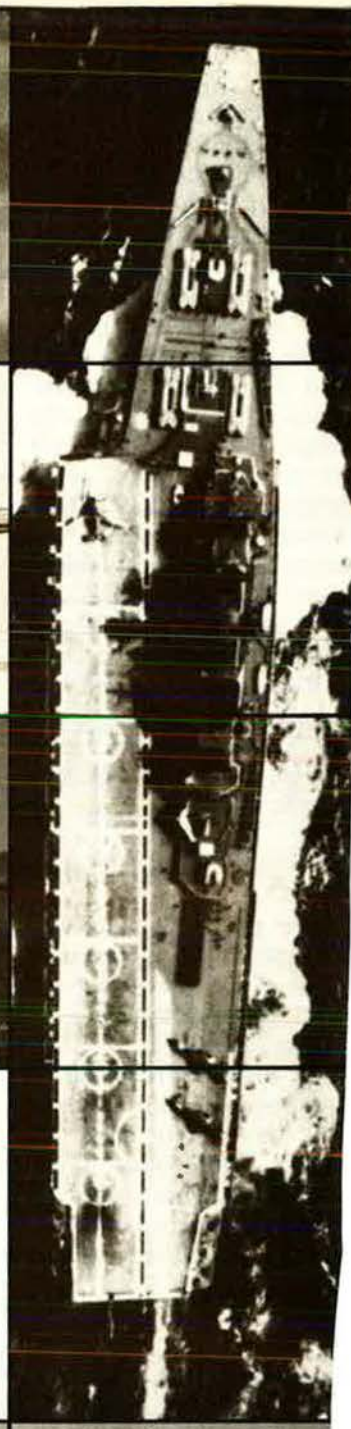
General Hoyt was active in military aviation from 1918 until his retirement at the end of World War II. His reports on the SE-5 and the Curtiss Hawks appeared in recent issues as part of a series on aircraft of that era.

The P-26A at a Glance

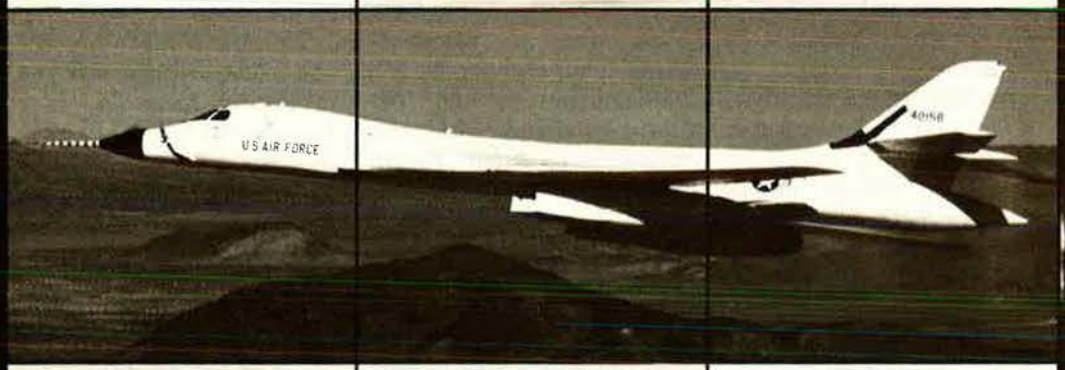
Type	Single-seat fighter.
Powerplant	One 500-hp Pratt & Whitney R-1340-27 engine.
Span	27 ft., 11½ in.
Length	23 ft., 10 in.
Height	10 ft., 5 in.
Wing Area	149.5 sq. ft.
Weights	2,197 lbs. empty; 2,955 lbs. gross.
Performance	Max speed 234 mph at 7,500 ft. Cruising speed 199 mph. Initial climb 2,360 ft/min. Service ceiling 27,400 ft. Range, 360 statute miles.
Armament	Two fixed, forward-firing .30-cal. guns or one .30-cal. and one .50-cal. gun synchronized. External bomb rack, 112 lbs. of bombs.

NOTE: The above performance was obtained under ideal, controlled conditions, not fully attained in tactical units.





Important weapon systems highlighted at the two-day AFA meeting included (above) the E-3A AWACS; (far right) the Soviet Union's new Kiov *carrier armed with SS-M-12 supersonic cruise missiles; and (adjacent) the McDonnell Douglas YC-15 AMST prototype.*



Other weapon systems discussed by DoD and Air Force speakers included the B-1 (above); Boeing's YC-14 AMST prototype (left); the Trident SLBM-launching submarine (far left, below); and the F-16 (below).

The direction and needs of national defense in the coming year and beyond were examined and discussed in an illuminating Air Force Association symposium that involved ranking DoD and Air Force leaders. In the first of a two-installment report on this important meeting, AIR FORCE Magazine presents a preview of . . .

THE NEW FIVE-YEAR DEFENSE PLAN

BY EDGAR ULSAMER, SENIOR EDITOR

"For airpower and space power, we cannot tolerate a posture of equivalence; we must maintain always a position of clear superiority; we must always seize the initiative." This keynote opened the Air Force Association's Symposium on "The Imperatives of National Readiness," held October 22–23, 1976, in Los Angeles, Calif. The keynoter, Dr. Malcolm R. Currie, Director of Defense Research and Engineering, also emphasized this imperative: ". . . Most importantly, we must nurture the human dimension of readiness: national will to compete and win, tough and enlightened leadership, individual excellence, a willingness to reach out and explore and take risks."

Defining readiness as "the demonstrable capability to meet instantly a growing military threat whose magnitude and momentum have been underestimated consistently in recent years," Dr. Currie warned that the Soviets are "bidding for nuclear supremacy [and] are explicitly developing a powerful counterforce capability designed to minimize our own residual retaliatory strike force [far in excess of] any requirements consistent with our own view of mutual deterrence but . . . in consonance with Soviet doctrine and Soviet ambitions." Multiple strategic asymmetries, Dr. Currie said, "are incipiently forming. Aggressive Soviet research and development of ballistic missile defense, an already enormous air defense network, and large investments in protection of industry and civilian population could lead to significant damage-limiting asymmetries that would add to an offensive asymmetry and, in time, could change significantly the texture of the strategic balance."

Dr. Malcolm R. Currie keynoted the Symposium.

A new strategic threat, and therefore an area of emphasis in this nation's new Five-Year Defense Plan, he said, is the fact that "the Soviets have developed and tested a potential war-fighting antisatellite capability. They have thereby seized the initiative in an area which we hoped would be left alone. They have opened the specter of space as a new dimension of warfare, with all that this implies. I would warn them that they have started down a dangerous road. Restraint on their part will be matched by our restraint, but we should not permit them to develop an asymmetry in space."

Other Soviet military capabilities showing rapid growth and momentum, he told the AFA symposium, include impressive global surveillance, command control communications (C^3), and the ability to project and apply military power worldwide with conventional forces. He cited a "new kind of navy with powerful strike capability and far-ranging ability to interdict the sea-lanes on which the Western world depends for oil and supply" and called special attention to the Soviets' early, "visceral" appreciation and development of the cruise missile to revolutionize naval warfare. What makes the new *Kiev* carrier of the Soviet Union such a formidable weapon system is not its use of V/STOL aircraft but "rather that it is so heavily armed [with] SS-M-12s, a supersonic Mach 2.5 cruise missile that can come in [at various] angles and . . . from a naval point of view—not a strategic nuclear point of view—is next to impossible to defend against," Dr. Currie pointed out to the some 500 industry representatives, USAF personnel, and AFA leaders attending the meeting.

Equally ominous are the expansion of Soviet tactical air capabili-

ties to include offensive operations based on long-range and large payloads as well as a vast Soviet land combat army with "unprecedented firepower" and mobility that "has sophisticated electronic warfare and command and control [capabilities]; that has provision for chemical as well as nuclear warfare; and that has staggering numbers of increasingly sophisticated air defense, armored vehicles, and weapons."

To counter the accelerating Soviet military momentum, the new Five-Year Defense Plan (FYDP), as outlined by Dr. Currie, provides on the strategic side for production of the B-1; Trident's entry into the operational inventory; increased funding of the M-X program and associated new survivable basing modes; continuation and extension of the cruise missile program; and "extensive improvements" in worldwide C^3 systems.

In light of the higher premium placed on deterring of conventional warfare because of strategic parity, the new FYDP envisages comprehensive conventional force modernization including:

- Creation of more "heavy divisions" for the Army, with special emphasis on air defense, antitank capabilities, electronic warfare, and the type of "intense area denial weapons that can negate massed armor and artillery";
- Stepping up the shipbuilding pace, coupled with improved antisubmarine warfare and ship defense capabilities;
- Rapid achievement of a full twenty-six-wing force structure for the Air Force, linked to emphasis on increased airlift capabilities as well as on precision and area weapons for suppression and antiarmor missions;
- Complete elimination by 1982 of the backlog of overhauls and maintenance of aircraft and ships that mar force readiness at present;
- One hundred percent funding of all required war reserve materials and ammunition;
- Consistent real growth of R&D, especially of the technology base, including a "much-strengthened relationship with universities." R&D growth, according to Dr. Currie, is the "most important investment" the FYDP calls for; and
- Major emphasis on the development of space defense capabilities.

The Air Force of the Future

Turning to the technical challenges and opportunities likely to shape the Air Force of the future, Dr. Currie predicted that new guidance and terminal-homing technology will make possible zero-CEP cruise missiles "that will be highly invulnerable and that can strike land and sea targets at any distance." Similarly, extremely accurate strategic weapons will become a reality, in the view of the Pentagon's technology chief.

"The real-time integration of surveillance, target acquisition, and command and control," according to Dr. Currie, will more than double the future force effectiveness of the Air Force. These new capabilities will build on such concepts as AWACS, the NAVSTAR Global Positioning System, and new satellite and communications technologies.

On USAF's horizon also are multipurpose aircraft, in the multimillion-pound class and with long range and endurance, that are being made possible through new technologies in materials, propulsion, and aerodynamics, he said.

Tactical airpower, according to Dr. Currie, "will be changed drastically with aircraft that are invisible to most sensors; with prolific use of RPVs; with new aerodynamics and a major turn toward V/STOL; with night and all-weather precision weapon delivery capability; and with adaptive electronic warfare of unprecedented density and sophistication."

The US lead in military electronics that is of paramount importance to USAF must be "widened with the pervasive application of electronics working close to the molecular level [for yet higher capacity and speed] and, with it, minimicrocomputers and widespread machine intelligence [for rudimentary decision making]." At the same time, new electronic systems "must and will" achieve greater reliability. Dr. Currie termed it "incredible that we went to the moon and back before we built an airborne radar with more than fifty hours MTBF [mean time between failure]."

In space, the future of the Air Force, according to Dr. Currie, will be affected by the enormous new opportunities created by the Space Shuttle, as well as:

- Radar satellites and multimission IR (infrared) surveillance for a variety of targets;
- Satellite systems that provid targeting and missile guidance;
- Large structures in space satellite refurbishment in space, an routine manned military operation in space;
- Development of high-energ laser space weapons; and
- Increasing physical and electronic vulnerability of military spa systems and the potential requir ment to be able to conduct warfa in space.

Needed: "Intense area denial weapons that can negate massed armor and artillery."

Likely to affect the future of the Air Force across the board, in Dr. Currie's view, must be "automated manufacturing technologies [to raise] productivity and quality to still higher levels. An Air Force program has been initiated to work toward this goal, [emphasizing] our primary concern with cost and affordability. This general area is in many ways the most important of all for our future."

Two decisive challenges of the future Air Force, Dr. Currie suggested, lie well beyond narrow borders of technology. In reaching out for a promising future, "it is supremely important that we consciously transcend the barriers to innovation which too often exist. We must be willing always to challenge the *status quo,* which is difficult in military services built on tradition, on solidarity of thought and doctrine, and on specified roles and missions as projected from experience of the past; and it is difficult in bureaucracies with their inertia and their frequent substitution of detailed management for innovative leadership."

Referring to Dr. Theodore von Kármán's historic study, *Toward New Horizons,* undertaken thirty years ago at Gen. H. H. Arnold's request, Dr. Currie cited its impetus 'for the broad professional training of Air Force officers in wide-anging fields of science and engi-neering so that the products of tech-nology could be understood, nur-tured, and effectively assimilated. . . . This emphasis on people—their election, their training, their excel-ence—has been directly responsible or the remarkable accomplishments f the Air Force and for its pos-ure of superior capability today. nd nothing is more important for the future than to adhere to and strengthen the visionary course set by von Kármán. The liberal policies of education and training should be strengthened . . . and I believe that university training should be emphasized, rather than a movement toward 'in-house' training which might achieve paper economies but, in the long run, would miss the breadth of intellectual perspective and exposure critical to a future of vision."

Deficiencies in Industrial Preparedness

"In a very real sense, our industrial capacity, and its responsiveness now and in the future, are key elements of our deterrence," Assistant Secretary of Defense for Installations and Logistics Frank A. Shrontz told the AFA symposium. Industrial readiness, he said, is based on two distinct elements: the nation's ability to mobilize and centrally control industrial resources in wartime, and the capacity to "surge" during crises when the nation maintains a "guns and butter" economy, as was the case during the Southeast Asian war.

On both counts, industrial preparedness is affected by the nation's ever-increasing dependence on foreign sources of raw materials and energy as well as by erosion of the so-called subcontractor or vendor structure. "We are concerned about imbalance of industrial base resources. The contractor structure is adequate to meet the threat as we perceive it; the subcontractor/vendor tier has serious weaknesses, especially so far as its willingness to do business with the Defense Department and maintaining needed capacities are concerned," Secretary Shrontz said. He named low profits and high risks as key reasons for subcontractor disenchantment.

No panacea for curing this problem is in sight, but a number of measures should bring some relief in the near future. A major DoD objective is greater recognition by the prime contractors of the fact that subcontractors and vendors are as susceptible to the cyclic nature of defense contracting and high inflation as they themselves are. This recognition must lead to passing on to them some of the relief that the Department provides to ameliorate these conditions, Secretary Schrontz told the AFA meeting.

Reduced requirements for costly and tedious paperwork, better management of the contractor/subcontractor interface, and quick ways to "flag" incipient supply shortfalls are other means for coping with the eroding subcontractor structure.

Industrial Readiness and Foreign Military Sales

DoD's top logistician expressed long-range concern about creeping obsolescence of both prime contractors' and subcontractors' facilities and equipment that, if permitted to continue, "can't help but spell disaster so far as a viable industrial base is concerned." Industry's capital investment in commercial business is about two and a half times that of its investment in defense, Secretary Shrontz said. DoD is attempting to stimulate increased industry investments through proportionate profit increases and by treating interest paid on facilities capital as an allowable cost item. If this new policy proves successful, the Defense Department can look forward to reduced production costs and improvement of industrial readiness, he suggested.

Foreign military sales (FMS) by the US sustain a work force of about 350,000 people, represent a favorable balance of payment influence of about $7.5 billion, and boost the Gross National Product by about $20 billion. Perhaps paramount from the Defense point of view, FMS also "mitigates fluctuations in defense business to keep the industrial base warmer than it otherwise would be and, thereby, aids in our surge capability; FMS reduces our own R&D share; it reduces unit cost at a time when increasing sophistication of our systems leads to smaller and smaller production runs; and FMS helps our allies defend themselves better and thereby enhances our own security posture," Secretary Shrontz told the AFA symposium.

FMS and concomitant multinational coproduction stimulate standardization of equipment of US and allied forces, a requirement of increasing importance. "Lack of standardization in the past exacted a price not only in dollars but in reduced force effectiveness," according to Secretary Shrontz. Increasing weapons costs make standardization compelling "by enhancing force effectiveness and interoperability while reducing the cost of logistics and acquisition and fostering common training and compatible doctrines and tactics."

Military Readiness

"Normal service basic and intermediate training can't supplant joint training, for in the real world our services don't act independently. If there is to be an efficient team of land, naval, and air forces, we must operate together on a regular basis." For this reason, Lt. Gen. Ray B. Sitton, Director, Joint Staff, JCS, explained to the AFA meeting, "the Joint Chiefs of Staff are concerned that in recent years both the number and size of joint training exercises have decreased and are currently under severe congressional pressure to be reduced even further. One of the major budget issues this year was funds for annual NATO support exercises called Reforger and Crested Cap. These exercises are vital to our readiness effort and involve the deployment of major US-based Army and Air Force units to Europe."

Cancellation of military field exercises, deferral of maintenance, and reduction of supply levels represent stresses on US combat readiness that, if permitted to continue, could jeopardize the credibility of the US defense posture. ". . . When the exact danger point in combat readiness posture will occur is impossible to forecast, but the point is that the stresses on our smaller defense assets are building," General Sitton warned.

Constraints on the O&M portion of the defense budget also strain combat readiness, especially when "this O&M pocket gets picked" because of prolonged contingency operations. Training, supplies, spare parts, and maintenance get shortchanged in the process, he told the AFA meeting. While the funds needed to maintain readiness are decreasing, their importance to the nation is increasing: "Our national military strategy is based on a forward posture. Therefore, our forces must be spearheaded by ready forward-deployed forces, and the first battle could well be the decisive one in any future conflict. . . . There are several persuasive reasons to believe that we might not have either the time or the national security assets . . . to recover from an inferior military posture in a future war," General Sitton warned.

"Trained, dedicated, and motivated people" remain the most essential ingredient of military readiness, he said. "We have first-rate people in our military force today, and must continue to attract the best if we are to avoid a loss of capability and readiness."

The Joint Chiefs, General Sitton said, don't favor adoption of a common readiness standard for all services because of the wide difference in missions. Even within the services, the combat readiness of the individual units is difficult to measure because the real question invariably is "ready to do what? We can measure a unit's ability to do a specific job accurately but if the question involves broad combat readiness, the answer is harder to come by. In Vietnam, for instance, some of the crack units reported low readiness scores simply because they lacked certain equipment that they should have had but didn't need at the time."

Asked whether the US maintains special military teams similar to the Israeli commandos that so dramatically rescued the passengers of a hijacked commercial jetliner last summer in Uganda, General Sitton replied: "We do have rescue forces for that kind of thing in the military of the US all over the world."

Energy and Readiness

The effect of cost and availability of energy resources on military readiness, especially that of USAF, was discussed by Dr. Michael I. Yarymovych, Assistant Administrator for Field Operations of the Energy R

earch and Development Administration (ERDA), who predicted that natural or synthetic hydrocarbon will remain the only practical aviation fuel, "at least into the early decades of the twenty-first century."

With the world's petroleum (natural hydrocarbon) reserves likely to be depleted in about thirty-five years, if present production rates continue, and with the US with six percent of the world's population consuming about thirty-five percent of global oil production, the potential for "energy wars will multiply," according to the ERDA official. For some time to come, the combat readiness of the armed forces in peacetime is not likely to be affected by petroleum shortages, since their consumption amounts to only about 3.5 percent of the total national consumption. For the long term, however, the requirement for US energy self-sufficiency will "impinge heavily on the future of American airpower," Dr. Yarymovych, a former Chief Scientist of USAF, suggested.

One fundamental feature of the National Energy Plan, created by ERDA, is the conservation of petroleum, a dwindling US resource, through increased use of coal and shale oil, including the development of synthetic hydrocarbon fuels. At present, coal provides only about twenty percent of US energy needs, compared to seventy-five percent thirty years ago, Dr. Yarymovych told the AFA symposium. Yet US coal reserves represent about thirty-four percent of the world total, or enough to meet the nation's energy needs for at least 200 years. By contrast, US oil reserves account for only about 7.6 percent of the world total. "Our domestic production of oil and gas is declining and not likely ever again to match our demand for them, even taking into account the exploitation of new discoveries in Alaska and on the outer continental shelves," the ERDA official reported.

As a result, he warned that "the day is fast approaching when petroleum will be so scarce that it will be priced beyond aviation's reach." A first, promising step toward "synfuels" for military use was taken last year on behalf of the three services by ERDA and the Navy. Seven kinds of military fuels were produced from shale oil, including JP-4 aviation fuel that was first tested by the former Commander of AFSC's Aeronautical Systems Division, Lt. Gen. James T. Stewart, on a T-39 flight from Wright-Patterson AFB, Ohio, to Carswell AFB, Tex., in June last year.

Other "synfuel" tests involved a Navy destroyer, naval aircraft, and Army vehicles. Prototype production of synthetic military-specification fuels from shale oil is being stepped up and will include an 80,000-barrel batch, Dr. Yarymovych disclosed. ERDA also is working with Curtiss-Wright, the Institute of Gas Technology in Chicago, Exxon, and other companies "on the conversion of coal to liquid fuels, some for eventual use in electric utilities [and] some for refining into gasoline and aircraft fuels," he said.

New Energy Sources

Nuclear fission reactors produce about nine percent of the nation's electricity at present, but can be expected to shoot up to twenty-four percent by 1985 and perhaps to fifty percent by the year 2000. In turn, electricity generation annually consumes more than twenty-eight percent of the nation's oil and coal supplies, Dr. Yarymovych said.

Solar energy for heating and cooling buildings "should be coming into its own in the next two decades. The Air Force is playing an important part in its evaluation. A shopping center at Randolph AFB and a retail store at Kirtland AFB in Albuquerque are being designed for solar heating and cooling. The solar systems are to supply over ninety-five percent of the heating and over sixty percent of the cooling for the new facilities," Dr. Yarymovych said.

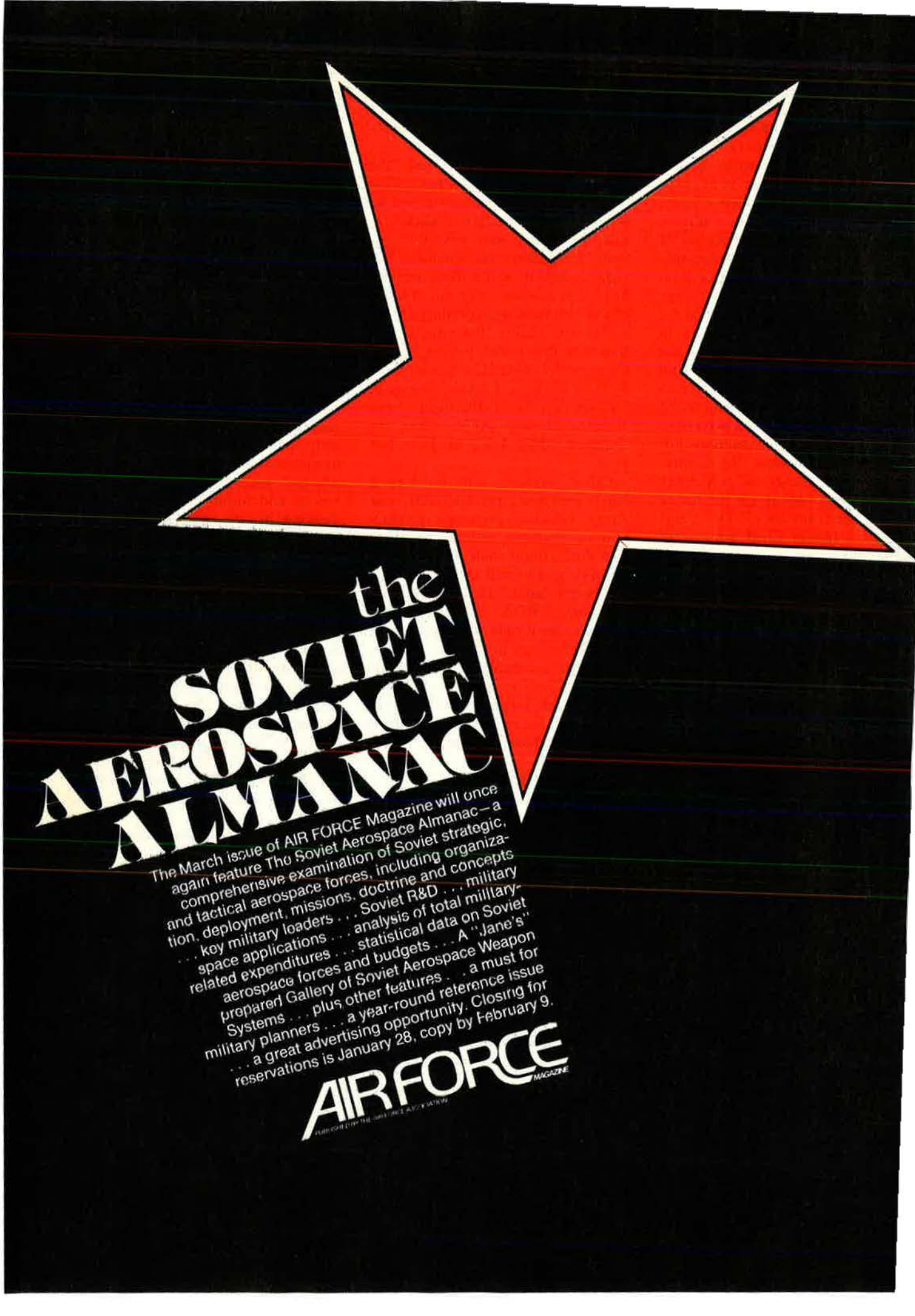
By the 1990s, he explained, "we should have a significant output from the first of the three virtually inexhaustible sources: the breeder reactor. . . . Once this technology is perfected, our uranium can provide sixty times as much energy as that available from domestic sources of oil and gas." Solar electric technology and fusion power, the latter drawing its raw material from sea water, are expected to become the energy "workhorses" of the twenty-first century, he added.

Dr. Yarymovych cautioned against overly optimistic assessments about the commercial availability of fusion power, stressing that "it will take something like twenty years of hard work to get it developed for economically viable use." The Soviet Union, he conceded, is ahead of the US in work on fusion power generation so far as engineering developments are concerned. "We are about even so far as R&D is concerned," he added.

Research in advanced battery design at Argonne National Laboratory and elsewhere is making great strides, "but it will take ten to fifteen years, we think, before we will have adequate electric cars." ■

"The day is fast approaching when petroleum will be so scarce that it will be priced beyond aviation's reach."

(The second part of the AFA symposium, dealing with Air Force readiness, will be covered in the February issue.)


the
SOVIET
AEROSPACE
ALMANAC
The March issue of AIR FORCE Magazine will once again feature The Soviet Aerospace Almanac—a comprehensive examination of Soviet strategic, and tactical aerospace forces, including organization, deployment, missions, doctrine and concepts . . . key military leaders . . . Soviet R&D . . . military space applications . . . analysis of total military-related expenditures . . . statistical data on Soviet aerospace forces and budgets . . . A "Jane's" prepared Gallery of Soviet Aerospace Weapon Systems . . . plus other features . . . a must for military planners . . . a year-round reference issue . . . a great advertising opportunity. Closing for reservations is January 28, copy by February 9.
AIR FORCE
MAGAZINE

The Bulletin Board

By James A. McDonnell, Jr., MILITARY RELATIONS EDITOR

Retirement Overhaul Coming Up?

Plans to revamp the military retirement system are piling up.

There's Defense's own plan, the nearly five-year-old Retirement Modernization Act that Congress heretofore has ignored. But Capitol Hill sources say RMA is definitely slated to receive a thorough review by the House Armed Services Committee this year, and legislation could result.

Other sweeping retirement changes have been advanced by:

• **The Defense Manpower Commission.** Among other things, this one would base retirement on a complex point system. Many members would have to serve thirty years to receive full pensions. Others, in combat jobs, could qualify for full annuities with twenty years.

• **Rep. Les Aspin (D-Wis.).** The main thrust of his revolutionary plan would delay payment of pensions; those with less than thirty years of service wouldn't collect until reaching age sixty, those with thirty years would start receiving retired pay at age fifty-five. Representative Aspin holds that the present military retirement system is far too generous in that annuitants start drawing pensions years before the average civilian retiree. The military retiree now receives seven times more during his retirement years than the average retiree in the private sector, he claims. Mr. Aspin has also drafted a plan to replace the military pay structure with a salary system.

• Meantime, the **Quadrennial Review of Military Compensation** supposedly will come up with retirement recommendations of its own. However, its inability to produce a report after more than eighteen months of study has reduced its credibility. Whatever plan it may advance appears unlikely to go anywhere.

In the interim, the cost of military retirement is rising. The FY '77 price tag is put at $8.5 billion. If the current system remains unchanged, the annual tab will hit $34 billion by the year 2000, one projection holds. This cost factor alone will continue to keep the retirement issue on the front burner in many government shops. Pressures to reduce the estimated cost increases could stiffen within the Carter Administration.

The Retirement Modernization Act, or something like it, is given the best chance, if indeed major retirement legislation develops. RMA does contain such controversial provisions as a fifty percent Social Security offset against retired pay at age sixty-five, plus a reduced retired pay multiplier that military people don't like. But RMA also contains a vesting system, severance payments for enlisteds, and other features.

Over several years, RMA, as a replacement for the present system, would trim present cost projections. But it would not invoke contributory payments, delayed annuities, or other harsh alterations that appeal to numerous critics of the present system.

Military retirement hearings in the House are a few months away. The Armed Services Committee is expected to first tackle the annual military authorization bill. DOPMA, the big officer management measure and a companion piece to RMA. is slated for reasonably early attention. RMA should follow, a Committee source said.

The Pentagon, which first launched RMA in late 1972, is preparing to resubmit the measure to Congress, probably with a few minor changes.

AFRES, ANG in Tough Recruiting Drive

USAF's two Reserve Forces, both understrength, have launched their biggest annual recruiting drives ever as they try to overcome procurement shortfalls of the recent past and hurdle new obstacles to their manpower goals.

The overall recruiting picture is bleak. And the components' first-term reenlistment rates need prompt improvement, authorities say.

The Air Force Reserve has an FY '77 recruiting quota of 15,000 persons, its largest ever. It compares with the FY '76 goal of 14,600, when only 10,474 were actually recruited. During the FY '76 transition quarter (July–September) AFRES enlisted 2,744 persons against a three-month goal of 3,082. That would work out to an annual rate well below the new fiscal year's target. Still, the Air Reserve Headquarters, Robins AFB, Ga., vows that the 15,000 goal will be met.

The Air National Guard faces the seemingly even tougher task of signing up a whopping 25,000 new enlistees this fiscal year (which ends September 30). That figure compares with its FY '76 target of 18,522, which the Air Guard missed by 2,400. During the transition quarter, the ANG did top its 4,192-recruit goal by 230. The ANG, an official said, is increasing its recruiters from 210 to 340 and "this is helping."

Securing enough nonprior service people is a particular problem with both components.

As for retention, more than eighty percent of the careerists are reenlisting. But first-termers in both components are signing over at a mere twenty-five percent rate. "Our first-term losses are much too high," one authority said.

AFRES began FY '77 about 3,000 members short of its 52,000-member authorization, while the Air Guard, with 91,100 members, was about 3,500 understrength. The other Reserve Forces are considerably more understrength; the Army National Guard, for instance, recently was 35,000 below its manpower target.

While AFRES and ANG are determined to meet their tough new recruiting goals, they're fully aware of the problems they face. Authorities ticked off these obstacles:

• Active-duty force cuts for nine

The Bulletin Board

straight years have reduced the prospects from this source. Only about 65,000 enlisteds a year are leaving the active Air Force now. compared to 100,000 a few years ago.

- Vietnam-era enlistees are completing their six-year obligations in the components and not reenlisting. The once huge draft-motivated pool is disappearing.
- The number of new eighteen-year-olds each year is declining.
- Genuine incentives to induce youths into the Reserves are missing. Authorities see this as the greatest drawback, claiming they need "something we can sell"—like tuition aid, bonuses, etc. New incentives, outlined in the October 1976 "Bulletin Board," continue under study, but with a new Administration and Congress emerging, no early improvements are held likely.

The Pentagon does have a large study of Reserve compensation under way. Among other things, it is looking at the present pay structure to see how it might be revamped to help attract and keep good people. But its report isn't even due until September, and anything it might recommend probably wouldn't be laid on for many more months, if at all.

Village Full, Waiting List Long

Only twelve persons moved into the handsome Air Force Village when it opened in November 1970, and for more than five years many units weren't occupied. Now, officials of the retirement facility at San Antonio, Tex., told AIR FORCE Magazine, the Village is 100 percent occupied and has a waiting list of 500.

And, "due to the satisfaction of the present residents, increased numbers of inquiries are being received," the officials said. The message is clear: Persons genuinely interested in some day moving into the Village should step forward promptly and establish their "priority number." This is done by sending in a preliminary application along with a $500 deposit ($750 for an eligible couple); it gets them on the rapidly growing waiting list.

Interestingly, the Village reports, of the 272 residents, only seventy-one are widows. The largest group is the eighty-two retired couples. There are also a dozen single men and twenty-five single women other than widows. Average age of the residents is seventy (compared to eighty for the Army Distaff Home in Washington, D. C., and seventy-seven for the Navy's Vinson Hall in McLean, Va.).

Other current data about the Village and its residents:

- Seventy percent of the occupants are Air Force-affiliated, twenty-three percent are Army, and the rest Navy. Sponsorship percentages by grade are: general, thirteen; colonel, thirty-eight; lieutenant colonel, twenty-nine; major, ten; and company grade and warrant officer, ten.
- Value of the facility is now put at $7.3 million. The operating budget is $1.2 million. The mortgage, once $3.2 million, has been reduced to under $2.6 million by monthly payments of $11,600.
- Admission fees and monthly charges have risen in recent years but, compared to comparable facilities throughout the country, the costs are considered extremely moderate. Entry fees now range from $11,000 for the smallest single-only apartment, to $26,500 for the largest. The monthly maintenance fee ranges from $203.70 to $386.40, but it includes all utilities (except telephone), maintenance, repair and painting of apartment, security, notary public service, once-a-week maid service, and scheduled transportation to the commissary, the Lackland AFB hospital, etc.
- There are ten different apartment plans. The most popular is a single-only configuration—fifty-one persons have these, for which they pay $13,500 for the admission fee and $236 a month. However, several widows who lack the means are subsidized by the Village foundation. Officials said that altogether $2,380 is forgiven each month.
- Officers wives clubs continue as the main supporters of the Village, having contributed more than $2 million from 1964 through 1976. The largest OWC contribution, for 1965, exceeded $309,000. The 1976 contribution was $152,422.

A brand-new "Question and Answer" booklet about the Village ha just been published. Interested pe sons should contact the Air Forc Village, 4917 Ravenswood Dr., Sa Antonio, Tex. 78227.

Four-Star Hikes Opening

Air Force didn't lose a singl four-star officer to retirement las fiscal year, an oddity that shut th promotion door for all forty-two o its lieutenant generals. But a sligh thaw is near; the service is projec ing five mandatory full general re tirements this year, which woul open five advancements to the to grade.

The retirements will come fro the following list of eleven fou stars shown in their order of rela tive rank: Russell E. Dougherty Paul K. Carlton, Richard H. Ellis Robert J. Dixon, Louis J. Wilson Louis T. Seith, William V. McBride Daniel James, Jr., William J. Evans F. Michael Rogers, and Robert E Huyser. (USAF's two other full gen erals, JCS Chairman George Brow and Chief of Staff David C. Jones serve at the pleasure of the Pres dent.)

One- and two-star selectio boards were held in November an December, so promotions to thos grades should commence soon. H USAF said forty-four temporary pro motions to brigadier general an thirty-four to major general a planned during FY '77.

USAF had 373 generals on boa in late November but will drop 369 by September 30, end of FY '7 Actual star "requirements," ho ever, are put at 534, and they w drop to 525. Many wing comman ers are colonels who would win star if all the requirements becar authorized spaces, Headquarte officials told AIR FORCE Magazi But that's not in the cards.

Air Guard E-9 Hikes Resume

In October 1973, promotions E-9 in the Air National Gu were frozen—units were way ov strength. The problem didn't ea and a year ago ANG authorit were considering demotions a solution. AFA and other groups p tested such action and it avoided, but it wasn't until this p October that promotions were sumed, by a token seventy-o spread throughout the states. new E-9s are a veteran group, a

AEROSPACE EDUCATION
FOUNDATION

Senator Goldwater Reelected Chairman

Board of Trustees

John R. Alison
John G. Brosky
Dan Callahan, M.D.
Daniel F. Callahan
Milton Caniff
Vito J. Castellano
Edward M. Crane
Dr. Cleveland L. Dennard
James H. Doolittle
George M. Douglas
Robert J. Dunn
Dr. Mary Ellis
Herbert O. Fisher
Joe Foss
Jack B. Gross
John H. Haire
Orval Hansen
Martin H. Harris
Gerald V. Hasler
Roy A. Haug
John P. Henebry
Joe Higgins
Jack R. Hunt
Arthur J. Kates
Sam E. Keith, Jr.
Thomas E. Lamb
Jess Larson
Robert S. Lawson
Dr. Leon M. Lessinger
Carl J. Long
Dr. Robert F. Mager
Howard T. Markey
Albert V. Mayrhofer
Nathan H. Mazer
Herman T. Meinersmann
J. B. Montgomery
Edward Myerson
J. Gilbert Nettleton, Jr.
Dr. Gabriel D. Ofiesh
Martin M. Ostrow
Dr. John S. Patton
H. Charles Riker
Kenneth A. Rowe
John D. Ryan
Peter J. Schenk
Dr. Thomas D. Sheldon
Joe L. Shosid
Jack Sorenson
William W. Spruance
Hugh W. Stewart
Dr. Lindley J. Stiles
Dr. Mervin K. Strickler, Jr.
Dr. Edward Teller
James M. Trail
William F. Ward
George L. Washington
A. A. West
Herbert M. West, Jr.
Jack Withers
W. S. Zeigler

Senator Barry M. Goldwater was reelected Chairman of the Board of Trustees, Aerospace Education Foundation, at the September 21, 1976, annual meeting of the Board of Trustees. Other officers also reelected were: the President, Dr. William L. Ramsey, President, Milwaukee Area Technical College and the Secretary, Dr. Charles H. Boehm, former Pennsylvania State Superintendent of Schools. The newly elected Treasurer is Mr. George D. Hardy, former AFA National President and Chairman of the Foundation's Board.

On September 29, 1976, Senator Goldwater entered into the *Congressional Record* the Executive Director's report to the Board of Trustees at their annual meeting. For copies of this report, contact the Managing Director, Aerospace Education Foundation, 1750 Pennsylvania Avenue, N.W., Washington, D. C. 20006.

Dr. William L. Ramsey
President

Dr. Charles H. Boehm
Secretary

Mr. George D. Hardy
Treasurer

The Bulletin Board

aging 25.4 years of service, 7.5 years in grade, and 45.5 years of age. The next E-9 advancements? Authorities aren't sure but hope to return to a normal unit vacancy program later this year.

Helping make that possible, they indicated, is a new program that will screen all Air Guard NCOs with more than twenty "good years" for retirement or selective retention. Some will be eased out.

Success Keys: Degrees, PME, Grades

New officer selection lists reemphasize that advanced degrees, professional military education, and high marks are almost indispensable stepping-stones to success in the Air Force. Officers without them damage their advancement chances.

Take the new temporary lieutenant colonel list—a toughie as only 2,294 of 6,959 eligible majors made it. Nearly four of every five first-time line eligibles in the primary zone who owned doctorates and MA degrees were chosen. But just slightly more than half the bachelor degree holders in this group made it. And those without a degree? Only twenty-one percent.

Similarly with PME, seventy-three percent who had completed a senior service school were selected, as were sixty-six percent with an intermediate PME behind them. But only twenty-eight percent with just Squadron Officers School to show made the LC list. Only seven percent without any PME made the grade.

Another example involves 874 collegians who recently won AFROTC scholarships. The competition among the thousands competing was so tough that the typical selectee presented a 3.32 grade-point average—that's almost to the 3.5 Phi Beta Kappa level. The winners also averaged a scintillating 1,117 out of a possible 1,600 points on the scholastic aptitude test.

Female Navigator Hopefuls Named

Another milestone in the march of military women to assume heretofore exclusively men's jobs will be marked March 10 when six USAF women line officers will enter undergraduate navigator training at Mather AFB, Calif. Twenty women officers were recently selected for undergraduate pilot training.

The six selectees, ages twenty-three to twenty-seven, were chosen from thirty-one applicants who met eligibility criteria. The course lasts thirty-three weeks, so if they complete it, they'll receive their wings in FY '78 when total new USAF navigator production is being slashed to just 375 persons.

The selectees are 2d Lt. Florence E. Fowler, Bergstrom AFB, Tex.; 1st Lts. Mary K. Higgins, Grissom AFB Ind.; Elizabeth A. Koch, MacDill AFB, Fla.; Bettye J. Payne, Tinker AFB, Okla.; Ramona L. Roybal Castle AFB, Calif.; and Capt. Margaret M. Stanck, Bolling AFB, Washington, D. C.

Chief Master Sergeant of the Air Force Thomas N. Barnes, left, talks shop with Rep. F. Edward Hébert (D-La.) at a Capitol Hill reception honoring the veteran lawmaker who retires from Congress this month after thirty-six years in the legislature. The reception was sponsored by AFA in cooperation with other military-oriented groups.

Carswell Units Cop SAC Honors

The 7th Bomb Wing, Carswell AFB, Tex., recently won the SAC-wide munitions-loading competition and followed up by winning four of the eight awards in the command's annual bombing-navigation competition. The events were held separately.

The munitions loading event, called Giant Sword, was held at Ellsworth AFB, S. D. The Carswell wing, which edged out the 509th Bomb Wing, Pease AFB, N. H., was led by the 7th Munitions Maintenance Sqdn., which was the highest-scoring munitions team. Carswell won the Barrentine Memorial Munitions Loading Trophy, which will be awarded annually to the best overall SAC unit in the competition. Also honored were:

- The 97th Security Police Sqdn. Blytheville AFB, Ark., named the best security police unit.
- SSgt. Ted H. Scoggins, Jr from Wurtsmith AFB, Mich., named the best aircraft crew chief.

In the bombing-navigator competition, which began in July and ended in October, the 7th Bomb Wing won awards for the best bomber unit, best high-altitude bombing, and the top bombing crew. And one of its crews was named the best B-52 crew.

The Fairchild Trophy, awarded the best combined bomber and tanker unit in SAC, went to the 380th Bomb Wing, Plattsburgh AFB N. Y. The wing flies FB-111s and KC-135s. It marked the second year in a row it had won the trophy.

Pilot Inventory Down, Still Excessive

Air Force's pilot inventory, though down to about 27,000 at the end the transition quarter (September 30), remains well above requ

ments. Further UPT production cuts planned for the next three years should drop the pilot force to the 22,000–23,000-member level, and by 1980, match actual needs, Maj. Gen. Charles G. Cleveland told AIR FORCE Magazine recently. The Hq. USAF Director of Personnel Programs also noted that to help trim the overage, the service will produce only 1,225 new USAF pilots this fiscal year and 1,000 in each of the following two years.

However, the current long-range plan is to return to a 1,225 production total in FY '80 and '81. But General Cleveland and other high officials want to get those goals raised; they fear that if the whistle blew following several years of sharply curtailed production, the service might be in a dangerous posture. Such sustained severe UPT cuts would also play havoc with career progression and reduce the pilot experience level unduly.

With the current projected light UPT production schedule, USAF does not need seven flying training bases. It wants to cut them to five, though trying to close any installation these days is extremely difficult.

USAF navigator requirements, meanwhile, are down to about 11,000, compared with some 13,000 navigators on board. Accordingly, UNT production is being slashed to 50 this year and 375 each in FY '78 and FY '79.

General Cleveland forecast an increase in technical training in 1978–79, if the government permits USAF personnel strength to hold at the 570,000-member level approved in the FY '77 budget.

Veterans' Corner

Larger numbers of women are entering the armed forces, but they aren't yet a conspicuous minority in the country's veteran population. Of the 29,600,000 veterans, only 1,000, or 1.9 percent, are women, according to the Veterans Administration. More than half—298,000 served during World War II, while 000 remain from World War I. VA lists 87,000 women veterans of Air Force service since USAF became a separate branch; its World War II female contingent is lumped in with Army's WW II group. VA said that only 447,000 of the 000 lady vets are married but 55,000 are heads of households. In other VA announcements the agency said:

- More veterans are becoming eligible for waiver of NSLI premiums because of physical disabilities. As World War II vets become older, more are becoming totally disabled—24,000 did in the year

At the first anniversary ceremonies of the Enlisted Men's Widows Home Foundation, Fort Walton Beach, Fla., Foundation Directors pose with Nita Ashcraft, Ass't AF Secretary for Manpower and Reserve Affairs. From left: Thomas W. Anthony, Vice Chairman of the Foundation and President of AFA's Andrews Area Chapter; D. N. Masone, Foundation Executive Director and an Andrews Area Chapter Council member; Thomas B. Mahoney, Board Chairman; CMSgt. James H. Towler; and Keith Prebel. During the ceremony, the Air Force Sergeants Association presented an interest-free $100,000 loan to the Foundation.

Support the Enlisted Men's Widows Home Foundation

The Air Force Enlisted Men's Widows Home Foundation, Inc., was founded by a group of active-duty and retired Air Force NCOs in June 1967, to provide a residence for widows and widowers of Air Force Enlisted retirees.

In June 1975, the Foundation's initial facility, Teresa Village, opened its doors and now has forty-two residents—thirty widows and six retired couples. By the end of this calendar year, it is expected that the 100-unit apartment complex near Fort Walton Beach, Fla., will be filled to capacity.

AFA has carried a resolution supporting the Foundation continuously since 1973. Since January 1, 1976, AFA units have contributed more than $11,000 to the Foundation, and many AFA members have contributed on a personal basis. But, with a large monthly mortgage payment, assistance to residents whose incomes are very small, and plans for future expansion, the Foundation desperately needs additional support NOW.

We urge AFA units to conduct fund-raising functions to benefit the Foundation. To help in such efforts, a 12-minute audio-visual slide briefing on the purpose and operation of the Home is available on loan by writing to the Foundation at the address listed below.

AFA members can participate on a personal basis by joining the Foundation's "Buck-a-Month Club." Contributions are tax-deductible, and contributors receive the Foundation's quarterly newsletter and a wallet-size "benefactor" card.

Demonstrate AFA's support of the Foundation by sending your contribution TODAY!

To: Enlisted Men's Widows Home Foundation, Inc.
354 Woodrow Street
Fort Walton Beach, Florida 32548

Enclosed is my check for $_____ to help with your good work.

( ) I intend to participate in your "Buck-a-Month Club."

Name _____

Address _____

City _____ State _____ Zip _____

( ) I am an AFA member at large.

( ) I am a member of AFA's _____ Chapter.

The Bulletin Board

When CMSgt. Boyce A. Flynn, one of a growing number of NCO supergraders to assume policy-making posts at Hq. USAF and the commands, recently reenlisted, he received congratulations from his boss, Brig. Gen. Chris C. Mann. She's USAF's Human Resources Development Director at Hq. Flynn's job: improve the effectiveness of USAF first sergeants.

ending last November. When this happens, persons with this coverage should apply for the premium waiver through the nearest VA office of the VA center that handles their insurance. Some 157,000 veterans currently are exempt from paying NSLI premiums for this reason, the agency said.

• Broader VA medical benefits are now available to various groups. For instance, vets with service-connected disabilities rated fifty percent or more are now entitled to VA outpatient care for any disability. Recently passed legislation also establishes priorities for medical service to veterans, first priority going to those with service-connected disabilities.

Short Bursts

The commander of the Air Force Commissary Service, Maj. Gen. Daniel L. Burkett, say **commissary shoppers** currently are enjoying a twenty-two to twenty-four percent savings. But USAF people apparently aren't aware of it; according to a recent survey they underestimate their savings by about twelve to fourteen percent.

Air Force plans to raise $1.4 million during its 1977 **Assistance Fund Campaign,** which kicks off February 28; that's about double the take last year. The new goal "is reasonable and attainable if each command implements the plan properly, and vigorously pursues completion of each milestone," the Hq. USAF DCS/Personnel, Lt. Gen. Kennet L. Tallman, told major comman chiefs recently.

A reviewing team of civilian edu cators and Air Force officials con nected with the **Community Colleg of the Air Force** huddled in Novem ber over plans for the CCAF t award degrees. Hearings on th team's report were scheduled fo last month to be followed by othe spade work between the Pentago and the US Commissioner of Edu cation. Air Force officials wer

Ed Gates . . . Speaking of People

Second Careers in Civil Service

Nearly 50,000 retired USAF members are embarked on second careers with the federal government, many with the Air Force and smaller numbers with nearly all the other agencies. Within the entire retired military community, 141,817 members—about one of every ten drawing retired pay—worked for Uncle Sam last year as civilians. That's the word from the Civil Service Commission, which recently turned loose a new report on the controversial subject.

CSC's latest count of people who draw two regular government paychecks is almost twice the number counted in a similar study about five years ago. That tally omitted many military retirees then working for various federal agencies.

The new figures, though still omitting a few retiree-federal employees, represent just five percent of the 2,809,541 employees of the federal Civil Service. And of the 141,817 retirees among them, 111,793 are enlisted members, many of whom hold wage board jobs or are in the lower or medium general service positions. More than 30,000 of the retired enlisteds work for the Postal Service.

Another look at the people in question reveals that only 117 of them reached star rank, while 2,460 others retired as O-6s. The report also notes that less than one percent of the retirees earn better than $36,000 annually in their federal posts.

These and other areas of the CSC report make it clear that career military personnel aren't exactly taking ove executive agencies. Still, within the Defense establis sizable numbers are employed, and the new report make some waves. If nothing else, it won't improv chances for near-retirees to latch onto good federa when their active-duty days end.

The report, prepared for the House Manpower an Service subcommittee, could become a key factor hiring picture if the Carter Administration should fro "double-dipping" activity.

The report should also give the federal unions new nition in their long-standing opposition to the prese military retirees on federal payrolls. The unions and nu individual civilian career workers, of course, charg military "buddy systems" give retired service peop hiring and advancement preference.

Among the military retirees involved, according report, are 49,688 from the Air Force retirees, 44,85 36,510 Navy, 7,143 Marines, and 1,163 Coast Gua rest are from such other uniformed services as the Health Service or couldn't be identified by branch of

Most work for the service from which they retired, there were no specific figures on this. Disclosed, t was the total retired military employment by ager example, the Air Force has 257,291 civilian emplo

hopeful the Commissioner's approval would be forthcoming early this year so that the degree-granting program can get rolling.

Airmen and civilians looking for Air Force commissions might try the **Air Force Medical Service Corps.** It has some coming up for administrators. Applicants need business administration degrees. For more information contact AFMPC/SGCP, Randolph AFB, Tex. 78148. The selection board is slated to convene March 3–4.

Senior Staff Changes

PROMOTIONS: To be **Major General:** James H. **Ahmann;** Melvin G. **Bowling;** Kelly H. **Burke;** Edgar A. **Chavarrie;** Thomas E. **Clifford;** Gerald E. **Cooke;** Edwin A. **Coy;** James B. **Currie;** Garth B. **Dettinger;** Charles L. **Donnelly,** Jr.; Hans H. **Driessnack;** Philip C. **Gast;** William D. **Gilbert;** David L. **Gray;** Fred A. **Haeffner;** Gerald K. **Hendricks;** John W. **Hepfer;** James R. **Hildreth;** John H. **Jacobsmeyer,** Jr.; Charles F. G. **Kuyk,** Jr.; Doyle E. **Larson;** George D. **Miller;** Billy M. **Minter;** Warren C. **Moore;** Edward J. **Nash;** William L. **Nicholson** III; Jerome F. **O'Malley;** Earl G. **Peck;** Bobby W. **Presley;** Len C. **Russell;** Robert **Scurlock;** James W. **Stansberry;** LeRoy W. **Svendsen,** Jr.; Robert C. **Taylor.**

RETIREMENTS: M/G Ralph J. **Maglione,** Jr.; M/G James E. **Paschall.**

CHANGES: M/G Earl J. Archer, Jr., from Asst. DCS/Pers., Hq. USAF, Washington, D. C., to Dir., Secretary of the Air Force Pers. Council, Hq. USAF, Washington, D. C. . . . **M/G Charles C. Blanton,** from Dir. of Budget, AF Compt., Hq. USAF, Washington, D. C., to Dir., Legislative Liaison, OSAF, Washington, D. C., replacing retiring M/G Ralph J. Maglione, Jr. . . . **B/G Thomas P. Conlin,** from Cmdr., 19th AD, SAC, Carswell AFB, Tex., to Dir., Systems Planning, DIA, Washington, D. C. . . . **B/G Hans H. Driessnack,** from DCS/Proc. & Manufacturing, Hq. AFSC, Andrews AFB, Md., to Dir. of Budget, AF Compt., Hq. USAF, Washington, D. C., replacing M/G Charles C. Blanton.

B/G Philip C. Gast, from V/C, San Antonio ALC, AFLC, Kelly AFB, Tex., to Asst. for International Logistics, Hq. AFLC, Wright-Patterson AFB, Ohio . . . **M/G William H. Ginn, Jr.,** from Cmdr., TUSLOG, USAFE, Ankara, Turkey, to DCS/Plans, Hq. USAFE, Ramstein AB, Germany . . . **B/G Warren C. Moore,** from Cmdr., Lowry TTC, ATC, Lowry AFB, Colo., to Cmdr., TUSLOG, USAFE, Ankara, Turkey, replacing M/G William H. Ginn, Jr. . . . **M/G John R. Spalding, Jr.,** from DCS/Log., J-4, Hq. NORAD, and DCS/Log., Hq. ADCOM, Ent AFB, Colo., to Vice CINC, Hq. ADCOM, Ent AFB, Colo., replacing retiring M/G James E. Paschall.

SENIOR ENLISTED ADVISOR CHANGES: CMSgt. Richard P. E. Cook, from 1st Sergeant, 571st Sqdn., Alaskan Air Command, King Salmon AP, Alaska, to Senior Enlisted Advisor, Hq. Alaskan Air Command, Elmendorf AFB, Alaska, replacing CMSgt. Wesley Skinner . . . **CMSgt. Philip C. Salley,** Superintendent of Manpower and Engineering, Hq. Air Force Data Automation Agency, Gunter AFS, Ala., to additional duties as Senior Enlisted Advisor, a newly created post . . . **CMSgt. Wesley Skinner,** from Senior Enlisted Advisor, Hq. Alaskan Air Command, Elmendorf, AFB, Alaska, to Senior Enlisted Advisor, Hq. 8th Air Force, Barksdale AFB, La. ■

ether, of whom 20,597, or eight percent, are military rees. Nine percent of the Navy's civilian force are in the e category, while a whopping eleven and one-half percent he Marine Corps's civilian work force retired early from of the services.

all cases, retired enlisted members far outnumber ers. In USAF's civilian force, for instance, of the 20,597 ary retireds, 3,947 are officers, 16,434 enlisteds, and 216 d as "unspecified."

e largest percentage of retirees to total civilian em-ees is in the Defense Intelligence Agency. DIA, the report s, has 2,347 civilian workers, of whom 280, or 11.93 ent, are retired military. That's pretty high, though it is to fault considering that military people are well quali-y experience to perform with that agency.

the same with the armed services—military retirees the skills, discipline, and contacts that make them al contenders for many government civilian posts. Hiring ry in many instances is good for the particular agency or the taxpayers.

t opponents score the practice, claiming that use of ry retirees, particularly at middle and high management s, discriminates against career civil servants. Many law-rs agree. It will be interesting to see how the Carter nistration views the situation.

at about the "dual compensation" laws that require retired Regular officers working for Uncle Sam to nder half of their pensions above the first $3,860? The statistics show clearly that these statutes discourage from seeking federal employment. Of the 27,682 retired y officers working for the government, only 5,164, or nder nineteen percent, are Regulars. Thus, under the nder formula, a Regular officer entitled to $15,000 in l pay winds up drawing only $9,430 if he takes a federal post. He does keep his full Civil Service pay, of course.

But while the dual compensation statutes discriminate against retired Regulars, authorities see little chance that the rules will be corrected to give them a better shake. Indeed, if anything is done, some experts contend, it will be in the direction of new federal job curbs for future retired enlisted members and non-Regular officers.

The military establishment employs about fifty-five percent of the service retirees now in the federal government. The other big agency employers of the same group are the Postal Service with about 35,000, the Veterans Administration with 7,300, and the Treasury Department with nearly 3,000.

NASA employs 404 retired officers and 302 retired enlisted people. The Panama Canal Company has thirty-seven of the former and 136 of the latter.

And the FBI? Surprisingly, this agency, which has nearly 20,000 persons on the payroll, employs only twelve—repeat twelve—retired military officers and no retired enlisteds, according to the CSC report. Yet, the Justice Department (of which the FBI is a part) employs 1,817 retired service people.

Most of the 141,817 military retiree civil servants received $10,000 to $18,000 last year. Other findings: 2,030 officers and 104 enlisted members were in the $29,000 to $36,000 salary bracket, while 784 officers and five enlisted men topped $36,000. This was in addition to their retired pay (except where dual compensation rules applied).

Finally, the CSC discovered that 11,604 of the retired service members work for Uncle Sam in the Washington, D. C., area. The second largest contingent is not in the popular retirement city of San Antonio, but rather San Diego, where nearly 7,000 of them work for the government. Third is another "Navy town"—Norfolk, Va.—where more than 4,200 retired service members are federal employees. ■

Much of AFA's work is done through the volunteers who serve on the Association's Committees and Councils, or who serve as Advisers to AFA's President. This month we introduce the members of five standing Committees and one standing Council. Members of the remaining Councils will be introduced next month along with eight AFA Advisers.

AFA's 1976-77 Standing Committees and Councils

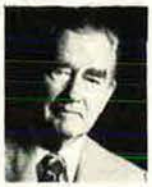
Executive Committee


Douglas


Hasler


Price


Gross


Callahan


Dean


Markey


Shosid


Stowart


Straubel

The Executive Committee acts on behalf of the Board of Directors between Board meetings. It is chaired by AFA's President and includes the Chairman of the Board, Secretary, Treasurer, five members appointed by the President, and the Executive Director, a nonvoting ex officio member. Executive Committee members are: George M. Douglas, Denver, Colo., Chairman; Gerald V. Hasler, Endwell, N. Y.; Jack C. Price, Clearfield, Utah; Jack B. Gross, Hershey, Pa.: Daniel F. Callahan, Nashville, Tenn.; Hoadley Dean, Rapid City, S. D.; Hon. Howard T. Markey, Washington D. C.; Joe L. Shosid, Fort Worth, Tex.; Hugh W. Stewart, Tucson, Ariz.; and James H. Straubel, Fairfax Station, Va. (ex officio, nonvoting).

Finance Committee

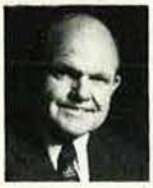

Gross

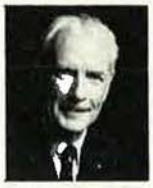

Assaf


Callahan


Clark


Harris


Keith


Nettleton


Ostrow


Hardy

The Association's Treasurer is Chairman of the Finance Committee, which is responsible for recommending fiscal policy to the President. Seven other members are appointed by the President, and the Treasurer of the Aerospace Education Foundation, an AFA affiliate, is an ex officio, nonvoting member. Finance Committee members are: Jack B. Gross, Hershey, Pa., Chairman; Joseph E. Assaf, Hyde Park, Mass.; Dr. Dan Callahan, Warner Robins, Ga.; Earl D. Clark, Jr., Kansas City, Kan.; Alexander E. Harris, Little Rock, Ark.; Sam E. Keith, Jr., Fort Worth, Tex.; J. Gilbert Nettleton, Jr., Washington, D. C.; Martin M. Ostrow, Beverly Hills, Calif.; and George D. Hardy, Hyattsville, Md. (ex officio, nonvoting).

Constitution Committee


Harris


Brosky


Nedder

This Committee is responsible for a continuing review of the Association's National Constitution and By-Laws. Members, appointed by the President, are: Martin H. Harris, Winter Park, Fla., Chairman; Hon. John G. Brosky, Pittsburgh, Pa.; and Edward T. Nedder, Hyde Park, Mass.

Convention Site Committee


Douglas


Gross


Hasler

This Committee recommends suitable sites for National Conventions. Members are: George M. Douglas, Denver, Colo., Chairman; Jack B. Gross, Hershey, Pa.; and Gerald V. Hasler, Endwell, N. Y.

Resolutions Committee


Price


Clay


Douglas


Gross


Harris


Haug


Schroeder

AFA's Resolutions Committee recommends to the Board of Directors and to Convention delegates positions it believes the Association should support. It is comprised of the President and six others appointed by the President. Members are: Jack C. Price, Clearfield, Utah, Chairman; Lucius D. Clay, Jr., Alexandria, Va.; George M. Douglas, Denver, Colo.; Jack B. Gross, Hershey, Pa.; Martin H. Harris, Winter Park, Fla.; Roy A. Haug, Colorado Springs, Colo.; and Darrol G. Schroeder, Davenport, N. D.

Membership Committee


Clay


Campbell


Brendle


Carr


Holm


Hunt


Lawson


Masone


Rhodarmer

This group advises AFA's President on ways and means of promoting membership. Members, appointed by the President, are: Lucius D. Clay, Jr., Alexandria, Va., Chairman: Stanley L. Campbell, San Antonio, Tex., Vice Chairman; Cecil G. Brendle, Montgomery, Ala.; Robert L. Carr, Pittsburgh, Pa.; Jeanne M. Holm, Alexandria, Va.; Marjorie O. Hunt, Mount Clemens, Mich.; Robert S. Lawson, Los Angeles, Calif.; D. N. Masone, Ft. Walton Beach, Fla.; and Roger K. Rhodarmer, Columbia, S. C.

Organizational Advisory Council


Haug


Anthony


Chalif


Enyart


Fisher


Kregel


McEnerney


Taylor


West

This Council, comprised of distinguished AFA field leaders, advises the President on matters pertaining to state and chapter programming, membership solicitation, reporting procedures for field units, and similar matters. Members, appointed by the President, are: Roy A. Haug, Colorado Springs, Colo., Chairman; Thomas W. Anthony, Temple Hills, Md.; Amos L. Chalif, Chatham, N. J.; Hugh L. Enyart, O'Fallon, Ill.; Herbert O. Fisher, Kinnelon, N. J.; Vic R. Kregel, Dallas, Tex.; Margaret E. McEnerney, Stratford, Conn.; L. T. "Zack" Taylor, Lompoc, Calif.; and Herbert M. West, Jr., Tallahasee, Fla.

The formal portion of the Ball opened with the presentation of the colors by the Air Force Color Detail from the Space and Missile Systems Organization (AFSC), and the singing of the National Anthem by Gordon MacRae, shown here at the microphone.

Entering the ballroom as part of the grand march are actor Jimmy Stewart and Mrs. Stewart. Mr. Stewart, one of AFA's founders and a retired Air Force brigadier general, was Honorary Chairman of this year's Ball.

Chairman of the Ball was the Hon. Richard J. Borda, Senior Vice President of the Wells Fargo Bank and a former Assistant Secretary of the Air Force. The entertainment was provided by the USAF's Singing Sergeants. Music for listening and dancing was furnished by the Fifteenth Air Force Band, conducted by Lt. Dan Schmidt, and Steve Paletta's orchestra.

Among the many AFA leaders who attended were, from left, AFA National Directors L. T. "Zack" Taylor and Edward A. Stearn and Mrs. Stearn; AFA National President George M. Douglas and Mrs. Douglas. Attending, but not shown, were AFA's first National President Jimmy Doolittle; AFA Board Chairman Gerald V. Hasler; AFA National Directors Sam E. Keith, Jr., Robert S. Lawson, and J. Gilbert Nettleton, Jr.; Vic Kregel and Sherman Wilkins, Vice Presidents for AFA's Southwest and Northwest Regions, respectively; AFA Executive Director James H. Straubel; California State AFA President Dwight Ewing; and CMSgt. David Noerr, former Chairman of AFA's Enlisted Advisory Council.

An article by Camilla Snyder, Los Angeles *Herald-Examiner* staff writer stated, "Once in a blue moon a socia event breaks through the bounds o protocol, propriety, and advance hoopla and becomes more than a posh way o spending an evening dining, dancing talking, and drinking." Such was the case with the . . .

'Magical Air Force Ball'

More than 700 VIP guests at tended the Air Force Association' Fifth Annual Air Force Ball on Oc tober 23, 1976, in the beautifull decorated Grand Ballroom of th Beverly Wilshire Hotel in Beverl Hills, Calif.

Net proceeds from the annu \$115-a-plate, fund-raising functic go to Scholarships for Childre of American Military Personn (SCAMP) to assist deserving chi dren of US servicemen from all th military services who were killed action, missing in action, or priso ers of war in the Southeast Asia conflict; and to the Aerospace Edu cation Foundation, AFA's educatic affiliate, to be used in its program adapting and making available high schools and community co leges throughout the country occ pational education courses dev oped by the USAF. The five annu functions have raised more th $200,000 for these two worthy org nizations.

The accompanying pictures the story of this year's Ball. T 1977 Air Force Ball will be held Beverly Hills on Friday, Octol 28.

—By Don Ste

Shown during the reception are, from left, Mrs. Morgan; Lt. Gen. Thomas W. Morgan, Commander, SAMSO, and one of the Military Hosts; Mrs. Douglas; Gen. David C. Jones, USAF Chief of Staff, and Mrs. Jones. Other ranking Air Force guests included: Gen. Robert J. Dixon, Commander, Tactical Air Command; and Gen. F. Michael Rogers, Commander, Air Force Logistics Command. Lt. Gen. Gerhardt Limberg, Chief of the German Air Force, from Bonn, Germany, was a special guest.

tor Cliff Robertson was the master of remonies. During the evening, the four 1976 CAMP scholarship winners had the pleasure visiting with Cliff, who won an Oscar in 1968 his role in the film "Charly." From left, trick S. Duffy, Colorado Springs, Colo.; Sheila rie Cavanaugh, Fairfax, Va.; Thomas W. llivan, Austin, Tex.; Mr. Robertson; and Maura zabeth Walsh, Minneapolis, Minn.

During the reception, CMSgt. Walter Scott, 60th MAW, Travis AFB, Calif., and Mrs. Scott visited with Lt. Gen. Bryan M. Shotts, Commander, Fifteenth Air Force (SAC), and Mrs. Shotts. General Shotts was one of the Military Hosts for the Ball. Sergeant and Mrs. Scott, together with twelve other enlisted couples, were guests of the California State AFA, several California AFA Chapters, and the Security Pacific National Bank.

The Hon. Thomas C. Reed, Secretary of the Air Force, and SCAMP President Martin M. Ostrow, a former AFA National President and Board Chairman, visited with the four SCAMP scholarship winners. Shown are, from left, Patrick Duffy, Mr. Ostrow, Sheila Cavanaugh, Secretary Reed, Maura Walsh, and Thomas Sullivan. Other guests from the Pentagon included Dr. Malcolm R. Currie, Director of Defense Research and Engineering; Lt. Gen. Ray B. Sitton, USAF, Director of the Joint Staff; the Hon. John J. Martin, Assistant Secretary of the Air Force (Research and Development); the Hon. J. Gordon Knapp, Assistant Secretary of the Air Force (Installations and Logistics); and Jack L. Stempler, General Counsel of the Air Force.

AFA News

By Don Steele, AFA AFFAIRS EDITOR

Units of the Month

THE NORTH GEORGIA CHAPTER, GA., AND THE SPOKANE CHAPTER, WASH., cited for effective programming in support of AFA's mission, most recently exemplified in their sponsorship of programs supporting youth activities.

The Spokane Chapter, Wash., and the 3636th Combat Crew Training Wing at Fairchild AFB recently cosponsored a program designed to afford underprivileged children an opportunity for basic training in survival. The initial program involved twenty young boys from Spokane's Morning Star Boys Ranch. The training consisted of a day in the classroom and museum, and twelve hours in the field, supervised by Air Force survival instructors. The youths were provided transportation, and billeting and messing facilities at Fairchild AFB's Survival School. Plans are being formulated to repeat the program for a Big Brothers group. The three adults shown with the group are, from left, Chapter President Wellman Clark; Chapter Publicity Chairwoman Elizabeth L. Humphreys; and Chapter Council Member Dave Levitch.

The Hon. Thomas C. Reed, Secretary of the Air Force, recently toured Elmendorf AFB, Alaska, where several Alaska AFA leaders visited with him. Shown are, from left, Alaska State AFA President Edward J. Monaghan; Anchorage Chapter President Adam D. Johnston, Jr.; Secretary Reed; and Lt. Gen. M. L. Boswell, Commander, Alaskan Air Command.

The Nation's Capital Chapter recently sponsored a reception in the Caucus Room of the Cannon House Office Building honoring the Hon. F. Edward Hébert as he approaches retirement from a long and distinguished career in the US Congress, and also recognizing Reps. William J. Randall and Floyd V. Hicks for their long and dedicated service on the House Committee on Armed Services. Other guests included members of the House Committee on Armed Services, ranking Air Force leaders, and AFA leaders. Shown at the podium during the brief ceremonies are, from left, Chapter President James McGarry, Representative Hébert, and Representative Bob Wilson, the master of ceremonies.

AFA's Spokane Chapter, Wash., recently sponsored its Fourth Annual AFJROTC Orientation Flight Program at the Spokane International Airport. During the day, fifty AFJROTC cadets were given orientation flights in private aircraft. Discussing the program are, from left, retired Air Force Col. Fred G. Ginther, Aerospace Education Instructor at Medical Lake High School; Clyde Stricker, a Past President of both the Washington State AFA and the Chapter, the coordinator of the program; Jack Berg, chairman of the program; Chapter President Wellman Clark; and Elizabeth L. Humphreys, Publicity Chairwoman for the Chapter.

chapter and state photo gallery

elping to celebrate the Fifteenth Anniversary
AFA's Iron Gate Chapter at its recent
ounders Day Luncheon in New York City's "21"
lub are four of the original members, from
ft, John T. McCoy, J. B. McCarley II, Joel
. Weiss, and Maj. Gen. Gil Herman, AFRES.
f the original thirty-five charter members, three
e deceased and sixteen still retain membership
the Chapter.

Gen. F. Michael Rogers, Commander, Air Force Logistics Command, at the podium, was the guest speaker at the Iron Gate Chapter's recent Founders Day Luncheon in New York City's "21" Club. Seated at the table are, from left facing the camera, Lt. Col. Alan Shoemaker, Chief, NY Office, SAFOI; retired Air Force Col. Milton Seaman, a member of the Chapter's Executive Council; Mrs. Doris Renninger, Manager of the Wings Club; AFA National Director Herbert O. Fisher, a Past Chapter President; and, at the right, AFA National Treasurer Jack B. Gross.

8th Annual AFA Benefit Golf Tournament, sponsored by AFA's Charleston Chapter, S. C.,
held at the Charleston AFB Golf Course, raised $8,200 for youth activities in the Charleston
a. Presentation of checks in the amounts indicated below was made to representatives of
youth groups at a recent Chapter meeting. Shown during the presentation ceremonies are,
n left, Chapter President Vernon B. Strickland; Brig. Gen. Tedd Bishop, Commander, 437th
tary Airlift Wing, $1,000 for the Charleston AFB Youth Center; Mrs. Nancy Shows, President,
County Council of Girl Scouts, $2,200; retired Air Force Brig. Gen. Thomas B. Kennedy,
sident, Coastal Carolina Council of Boy Scouts, $5,000; and retired Air Force Maj. Gen. C. T.
and, the Tournament Chairman.

AFA's North Georgia Chapter and the AFRES 94th TAW, Dobbins AFB, in cooperation with the Northwest Georgia Girl Scout Council, recently conducted a Girl Scout Aviation Workshop. Groups of girls were rotated to five workshops: aerodynamics, parachute packing, weather and navigation, aviation history, and federal aviation regulations and flight procedures. More than 100 are on a waiting list for the next workshop. The organizers—from left, AFRES CMSgt. E. J. "Buzz" Sawyer, Chapter President William Copeland, and AFRES CMSgt. John Downey—distribute model airplane kits to girls completing the morning session. In addition, each receives an AFA completion certificate and the opportunity to quality for the Girl Scout Aviation Merit Badge.

AFA News

AFA's Andrews Area Chapter, Md., hosted a "Day at the AFA Convention" for several members of the Andrews AFB Junior Officers and Enlisted Advisory Councils. The group attended the Aerospace Development Briefings and Displays in the Exhibit Hall, then attended—as guests of the Chapter—the luncheon honoring the Air Force Chief of Staff. Shown following the Chief's Luncheon are, from left, MSgt. Scheidman, SSgt. Schwartz, Chapter President Tony Anthony, and Captain Galan.

During the Lawrence D. Bell Chapter's recent awards meeting, AFA National Director Gerald V. Hasler, left (now AFA's Board Chairman), presented the New York State AFA's "Industry of the Year Award" to Bell Aerospace Textron. The award was accepted by the company's president, Mr. William Gisel, center, who also was the founder and first President of the Chapter. AFA National President George M. Douglas, right, was the featured speaker.

AFA National President George M. Douglas was the guest speaker at the graduation dining-out of Class 77-01 of the USAF Officer Training School at Lackland AFB, Tex. During the evening, Mr. Douglas, right, presented the first honor graduate trophy to Officer Trainee Jeremiah J. Needham, left.

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

—USAF PHOTO

AFA's Wright Memorial Chapter, Ohio, recently sponsored the Second Annual Air Force Logistics Command Awards Banquet at the Wright-Patterson AFB Officers' Club. The banquet, at which AFA President George M. Douglas was the guest speaker, honored twelve AFLC employees for their outstanding accomplishments. Shown during the reception are, from left, Chapter Vice President Dale Ross, Mr. Douglas, Chapter President Dutch Heilman, and retired Air Force Gen. Jack Merrell, a former AFLC Commander.

AFA National President George M. Douglas and William Rapp, now the Vi President for AFA's Northeast Region, shared the rostrum as guest speakers at the Lawrence D. Bell Chapter, N. Y., recent awards meeting. During the program, Niagara Falls Mayor Michael C. O'Laughlin presented the New York State AFA's "Chapter of the Year Award" to the Chapter. Shown during the presentation of the award are, from left, Mayor O'Laughlin; Chapter President Thomas Connett; Mr. Rapp; Past Chapter President Robert S. Kelso, who accepted on behalf of the Chapte and Mr. Douglas.

photo gallery

capacity audience of more than 1,200 persons attended a concert by the USAF Band and its Singing Sergeants in the Cedar High School auditorium, Harrisburg, Pa. The concert was osponsored by AFA's Olmsted Chapter, the West Shore School District, and the Harrisburg Patriot-News. Shown reviewing the concert program are, from left, Tobias Schindler, a Past Chapter President; Dr. Jacob Wentzel, Superintendent, West Shore Schools; Col. Arnald D. Gabriel, USAF Band Commander and Conductor; Dr. Nathan Chesler, Cedar Cliff Principal; and William . Lunsford, a Past President of both the Pennsylvania State AFA and the Chapter, who served s chairman of the event.

e USAF's Strolling Strings provided the entertainment and the civilian community provided the nors at a banquet sponsored by AFA's Pope Chapter, N. C., to honor three enlisted men from pe AFB. Shown are, from left, Pope Chapter President Wilson Yarborough, Jr.; Sgt. Michael Posley, ew Chief of the Quarter; MSgt. Frederick L. Peters, Senior NCO of the Quarter; Mr. Al Cox, Jr., airman, Pope Civilian Advisory Committee; SSgt. Thomas R. Segura, NCO of the Quarter; and ig. Gen. Robert F. Coverdale, Commander, US Airlift Center and 317th Tactical Airlift Wing, Pope B. Each honoree received a certificate of recognition and a savings bond from the Pope Civilian visory Committee.

rd recipients at the Wright Memorial Chapter's annual dinner dance observing the anniversary he Air Force included, from left, Col. James R. Krause; CMSgt. John Dalton; Mrs. Lucille losser; Col. T. C. Hall; Amn. Darrell Pace (the Olympic gold medalist in archery); Lt. Gen. rge Rhodes, Vice Commander, Air Force Logistics Command, the Chapter's "Military Man of the r"; Col. Tom Hosch; and Maj. Gen. Abner Martin, Aeronautical Systems Division program director the B-1, who received the Chapter's "Aerospace Power Award." In addition to the six winners he Chapter's "Presidential Citation" shown here, the award also went to Messrs. Dudley Kircher Jack Jones.

MOVING?

Let us know your *new* address 6 weeks in advance, so you don't miss any copies of AIR FORCE.

Your Name _____ (PLEASE PRINT)

New Address _____

(CITY) _____ (STATE) _____ (ZIP) _____

Mail To:
Air Force Association
Attn: Change of Address
1750 Pennsylvania Ave., N.W.
Washington, D. C. 20006
Please include mailing label.

ALMOST EVERYONE reads

AEROSPACE HISTORIAN

Send for your free sample copy to:
AEROSPACE HISTORIAN (AFA)
Eisenhower Hall
Manhattan, KS 66506, U.S.A.

HIGHLIGHTS 1977

March AIR FORCE Magazine

Soviet Aerospace Almanac Issue—A comprehensive examination of Soviet aerospace forces, including organization, mission and concepts. . .key personnel. . .Soviet R&D. . .military space applications. . .statistical data on Soviet aerospace forces and budgets. A "Jane's" prepared Gallery of Soviet Weapon Systems, plus many other exclusive articles and features. . .a must for military planners. . .a year-round reference issue.

May AIR FORCE Magazine

Annual Air Force Almanac Issue—Exclusive articles by the Secretary and Chief of Staff, USAF. . .reports and organization charts from all major Commands and agencies. . . statistical data on budgets, forces and personnel. . .complete Gallery of USAF Weapon Systems. Must reading . . . important reference issues throughout the year.

July AIR FORCE Magazine

"The Electronic Air Force"—Special editorial coverage on what is happening now and plans for the future. Must reading throughout the Air Force, particularly in AFSC, ASD, ESD and the Labs as well as all user Commands.

September AIR FORCE Magazine

Annual Convention, Aerospace Briefings and Displays Issue—Bonus distribution at event, including all military and civilian executives attending by special invitation for briefings. Marketing plus. . .inclusion of advertisement in "Industry Salutes the Air Force" display at show. Also, Annual Directory of key civilian and military Air Force leaders.

November AIR FORCE Magazine

Convention Briefings and Displays Report Issue—Widely read for its comprehensive reports on seminars, industry briefings on latest technical developments, and addresses by key USAF leaders.

December AIR FORCE Magazine

"The Military Balance"—Exclusive US presentation of the annual report from the International Institute for Strategic Studies, London, England which documents, country-by-country, the world's military force and equipment. A desk-top reference sought after and referred to by military decision-makers in the US Air Force, DOD, NASA, the Congress and other military services.

AIR FORCE MAGAZINE

PUBLISHED BY THE AIR FORCE ASSOCIATION

This Is AFA

The Air Force Association is an independent, nonprofit, airpower organization with no personal, political, or commercial axes to grind; established January 26, 1946; incorporated February 4, 1946.

OBJECTIVES

The Association provides an organization through which free men may unite to fulfill the responsibilities imposed by the impact of aerospace technology on modern society; to support armed strength adequate to maintain the security and peace of the United States and the free world; to educate themselves and the public at large in the development of adequate aerospace power for the betterment of all mankind; and to help develop friendly relations among free nations, based on respect for the principle of freedom and equal rights to all mankind.

PRESIDENT
George M. Douglas
Denver, Colo.

BOARD CHAIRMAN
Gerald V. Hasler
Johnson City, N.Y.

SECRETARY
Jack C. Price
Clearfield, Utah

TREASURER
Jack B. Gross
Hershey, Pa.

NATIONAL DIRECTORS

John R. Alison
Arlington, Va.

Joseph E. Assaf
Hyde Park, Mass.

William R. Berkeley
Redlands, Calif.

John G. Brosky
Pittsburgh, Pa.

Daniel F. Callahan
Nashville, Tenn.

Stanley L. Campbell
San Antonio, Tex.

Robert L. Carr
Pittsburgh, Pa.

Earl D. Clark, Jr.
Kansas City, Kan.

Edward P. Curtis
Rochester, N.Y.

James H. Doolittle
Los Angeles, Calif.

Herbert O. Fisher
Kinnelon, N.J.

Joe Foss
Scottsdale, Ariz.

James P. Grazioso
West New York, N.J.

John H. Haire
Huntsville, Ala.

George D. Hardy
Hyattsville, Md.

Martin H. Harris
Winter Park, Fla.

Roy A. Haug
Colorado Springs, Colo.

John P. Henebry
Chicago, Ill.

Joseph L. Hodges
South Boston, Va.

Robert S. Johnson
Woodbury, N.Y.

Sam E. Keith, Jr.
Fort Worth, Tex.

Arthur F. Kelly
Los Angeles, Calif.

George C. Kenney
Bay Harbor Islands, Fla.

Thomas G. Lanphier, Jr.
La Jolla, Calif.

Jess Larson
Washington, D.C.

Robert S. Lawson
Los Angeles, Calif.

Curtis E. LeMay
Newport Beach, Calif.

Carl J. Long
Pittsburgh, Pa.

Howard T. Markey
Washington, D.C.

Nathan H. Mazer
Roy, Utah

J. P. McConnell
Washington, D.C.

J. B. Montgomery
Newport Beach, Calif.

Edward T. Nedder
Hyde Park, Mass.

J. Gilbert Nettleton, Jr.
Washington, D.C.

Martin M. Ostrow
Beverly Hills, Calif.

Julian B. Rosenthal
Atlanta, Ga.

John D. Ryan
San Antonio, Tex.

Peter J. Schenk
Vienna, Va.

Joe L. Shosid
Fort Worth, Tex.

C. R. Smith
Washington, D.C.

William W. Spruance
Wilmington, Del.

Thos. F. Stack
San Mateo, Calif.

Edward A. Stearn
San Bernardino, Calif.

Hugh W. Stewart
Tucson, Ariz.

Arthur C. Storz
Omaha, Neb.

Harold C. Stuart
Tulsa, Okla.

Liston T. Taylor
Lompoc, Calif.

James M. Trail
Boise, Idaho

Nathan F. Twining
Hilton Head Island, S.C.

A. A. West
Newport News, Va.

Herbert M. West, Jr.
Tallahassee, Fla.

Philip E. Adams
(ex officio)
National Commander
Arnold Air Society
Ruston, La.

VICE PRESIDENTS

Information regarding AFA activity within a particular state may be obtained from the Vice President of the Region in which his state is located.

Toulmin H. Brown
6931 E. Ridge Dr.
Shreveport, La. 71106
(318) 424-0373
South Central Region
Tennessee, Arkansas, Louisiana, Mississippi, Alabama

Dan Callahan
134 Hospital Dr.
Warner Robins, Ga. 31093
(912) 923-4288
Southeast Region
North Carolina, South Carolina, Georgia, Florida, Puerto Rico

William P. Chandler
1025 W. San Miguel Cir.
Tucson, Ariz. 85704
(602) 327-5995
Far West Region
California, Nevada, Arizona, Hawaii

Hoadley Dean
Box 8210
Rapid City, S.D. 57701
(605) 348-1660
North Central Region
Minnesota, North Dakota, South Dakota

R. L. Devoucoux
270 McKinley Rd.
Portsmouth, N.H. 03801
(603) 669-7500
New England Region
Maine, New Hampshire, Massachusetts, Vermont, Connecticut, Rhode Island

Richard Emrich
6416 Noble Dr.
McLean, Va. 22101
(202) 426-8256
Central East Region
Maryland, Delaware, District of Columbia, Virginia, West Virginia, Kentucky

James C. Hall
11678 E. Florida Ave.
Aurora, Colo. 80012
(303) 755-3563
Rocky Mountain Region
Colorado, Wyoming, Utah

Vic R. Kregel
P. O. Box 5907
Dallas, Tex. 75222
(214) 266-2242
Southwest Region
Oklahoma, Texas, New Mexico

William C. Rapp
1 M & T Plaza; Rm. 1603
Buffalo, N.Y. 14203
(716) 857-6720
Northeast Region
New York, New Jersey, Pennsylvania

Lyle O. Remde
4911 S. 25th St.
Omaha, Neb. 68107
(402) 731-4747
Midwest Region
Nebraska, Iowa, Missouri, Kansas

Sherman W. Wilkins
4545 132d Ave., SE
Bellevue, Wash. 98006
(206) 342-0619
Northwest Region
Montana, Idaho, Washington, Oregon, Alaska

Jack Withers
1000 Cox Plaza, Suite 111
Dayton, Ohio 45439
(513) 294-7373
Great Lakes Region
Michigan, Wisconsin, Illinois, Ohio, Indiana

NOW! Thousands of $$$ More Protectio

AIR FORCE ASSOCIATIO

Bigger Benefits in Personal and Family Coverage . . . Same Low Co
These Figures Tell the Story!

Choose either the Standard or High-Option Plan

The AFA Standard Plan

Insured's Age	New Benefit	Old Benefit	Extra Accidental Death Benefit*	Monthly Cost Individual Plan
20-24	$75,000	$66,000	$12,500	$10.00
25-29	70,000	60,000	12,500	10.00
30-34	65,000	50,000	12,500	10.00
35-39	50,000	40,000	12,500	10.00
40-44	35,000	25,000	12,500	10.00
45-49	20,000	15,000	12,500	10.00
50-54	12,500	10,000	12,500	10.00
55-59	10,000	10,000	12,500	10.00
60-64	7,500	7,500	12,500	10.00
65-69	4,000	4,000	12,500	10.00
70-75	2,500	2,500	12,500	10.00

The AFA High-Option Plan

20-24	$112,500	$100,000	$12,500	$15.00
25-29	105,000	90,000	12,500	15.00
30-34	97,500	75,000	12,500	15.00
35-39	75,000	60,000	12,500	15.00
40-44	52,500	37,500	12,500	15.00
45-49	30,000	22,500	12,500	15.00
50-54	18,750	15,000	12,500	15.00
55-59	15,000	15,000	12,500	15.00
60-64	11,250	11,250	12,500	15.00
65-69	6,000	6,000	12,500	15.00
70-75	3,750	3,750	12,500	15.00

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	$6,000	$2,000	$2.50
25-29	10,000	6,000	2,000	2.50
30-34	10,000	6,000	2,000	2.50
35-39	10,000	6,000	2,000	2.50
40-44	7,500	5,250	2,000	2.50
45-49	5,000	4,050	2,000	2.50
50-54	4,000	3,000	2,000	2.50
55-59	3,000	3,000	2,000	2.50
60-64	2,500	2,250	2,000	2.50
65-69	1,500	1,200	2,000	2.50
70-75	750	750	2,000	2.50

*In the event of an accidental death occuring 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.

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.

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 o the last day of the month in which your application for coverage is approved. AF Military Group Life Insurance is written in conformity with the insurance regulations the State of Minnesota. The insurance will be provided under the group insuranc policy issued by United of Omaha to the First National Bank of Minnesota as truste 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 sel inflicted while sane or insane shall not be effective until your coverage has been force for 12 months.

The Accidental Death Benefit and Aviation Death Benefit shall not be effective death results: (1) From injuries intentionally self-inflicted while sane or insane, or (From injuries sustained while committing a felony, or (3) Either directly or indirect from bodily or mental infirmity, poisoning or asphyxiation from carbon monoxide, (4) During any period a member's coverage is being continued under the waiver premium provision, or (5) From an aviation accident, either military or civilian, which the insured was acting as pilot or crew member of the aircraft involved, exce as provided under AVIATION DEATH BENEFIT.

PLEASE RETAIN THIS MEDICAL INFORMATION BUREAU PRENOTIFICATION FOR YOUR RECOR

Information regarding your insurability will be treated as confidential. United Benefit Life Insura Company may, however, make a brief report thereon to the Medical Information Bureau, a nonpr membership organization of life insurance companies, which operates an information exchange behalf of its members. If you apply to another Bureau member company for life or health insura coverage, or a claim for benefits is submitted to such a company, the Bureau, upon request, 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 have in your file. (Medical information will be disclosed only to your attending physician.) If question the accuracy of information in the Bureau's file, you may contact the Bureau and se correction in accordance with the procedures set forth in the federal Fair Credit Reporting Act. address of the Bureau's information office is P.O. Box 105, Essex Station, Boston, Mass. 02 Phone (617) 426-3660.

United Benefit Life Insurance Company may also release information in its file to other life insur companies to whom you may apply for life or health insurance, or to whom a claim for benefits be submitted.

Increase in Premium
ILITARY GROUP LIFE INSURANCE

APPLICATION FOR AFA MILITARY GROUP LIFE INSURANCE

United of Omaha

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

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 primary beneficiary

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	Mode of Payment	Members Only	Members and Dependents
☐ $ 15.00	☐ $ 17.50	**Monthly** government allotment. I enclose 2 months' premium to cover the period necessary for my allotment to be established.	☐ $ 10.00	☐ $ 12.50
☐ $ 45.00	☐ $ 52.50	**Quarterly.** I enclose amount checked.	☐ $ 30.00	☐ $ 37.50
☐ $ 90.00	☐ $105.00	**Semiannually.** I enclose amount checked.	☐ $ 60.00	☐ $ 75.00
☐ $180.00	☐ $210.00	**Annually.** I enclose amount checked.	☐ $120.00	☐ $150.00

Names of Dependents To Be Insured	Relationship to Member	Dates of Birth Mo. Day Yr.	Height Weight

Have your 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

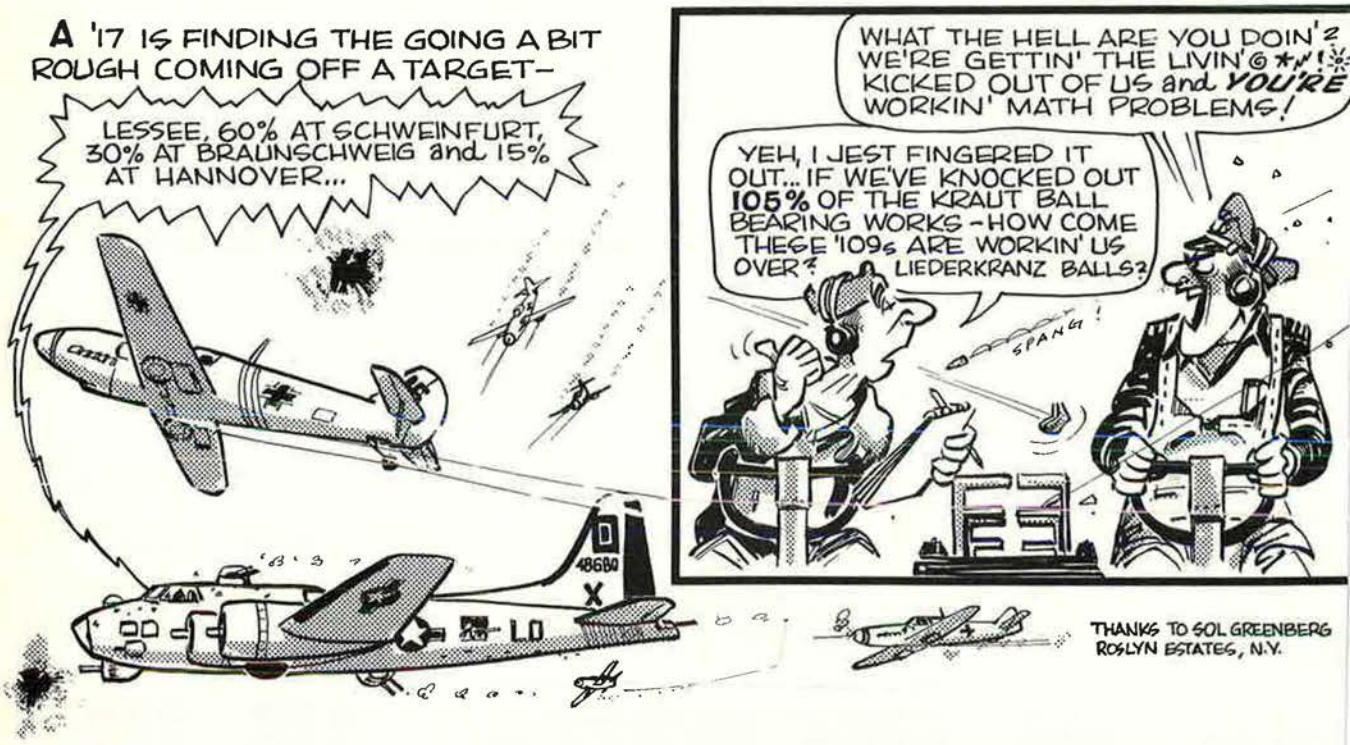
1/77
Form 3676GL App

Application must be accompanied by check or money order. Send remittance to: Insurance Division, AFA, 1750 Pennsylvania Avenue, NW, Washington, D.C. 20006

Bob Stevens'

"There I was..."

"THERE ARE NO ATHEISTS IN FOX-HOLES" GOES AN OLD EXPRESSION. IT APPLIED EQUALLY TO MEN IN AIR COMBAT. AS A MATTER OF FACT, I DOUBT THAT YOU'D MEET AN ATHEIST ON THE FAR SIDE OF THE BOMB LINE IN ***ANY*** WAR.



Who makes mini-RPV's that do everything in a big way?

Everybody knows the concept behind remotely-piloted vehicles: To avoid the loss of pilots and multi-million dollar aircraft.

But the trick is to make an RPV that can do the job consistently.

E-Systems has done it. And with a *mini*-RPV, no less. They don't look very fancy, but they fly very effectively. And our guidance systems are the next best thing to a pilot.

These RPV's have proven themselves with a high mission success rate. And they have a lot of flexibility with reconnaissance, jamming, deception, targeting or destructive punch.

And best of all, they're expendable.

For the systems answer to your problems, write:
E-Systems, Inc., P.O. Box 6030, Dallas, Texas 75222.

E-Systems is the answer.

E-SYSTEMS

What can outfox a Foxbat? An Eagle with Sparrows.

F-15. The world-record-setting time-to-climb fighter that brings true all-weather air superiority into the inventory.

Combining advanced IFF with long-range look-down, shoot-down radar and improved AIM-7F Sparrow missiles, the F-15 can identify and attack hostile aircraft far beyond visual range. Tests have demonstrated the lethal accuracy of the F-15/Sparrow combination against high Mach targets at extremely high altitudes.

For close-range attacks, the F-15 combines high-G maneuverability with AIM-9 Sidewinders and an M-61 20mm Gatling gun.

The F-15. The air superiority fighter that lives up to its name.

F-15 Eagle

MCDONNELL DOUGLAS