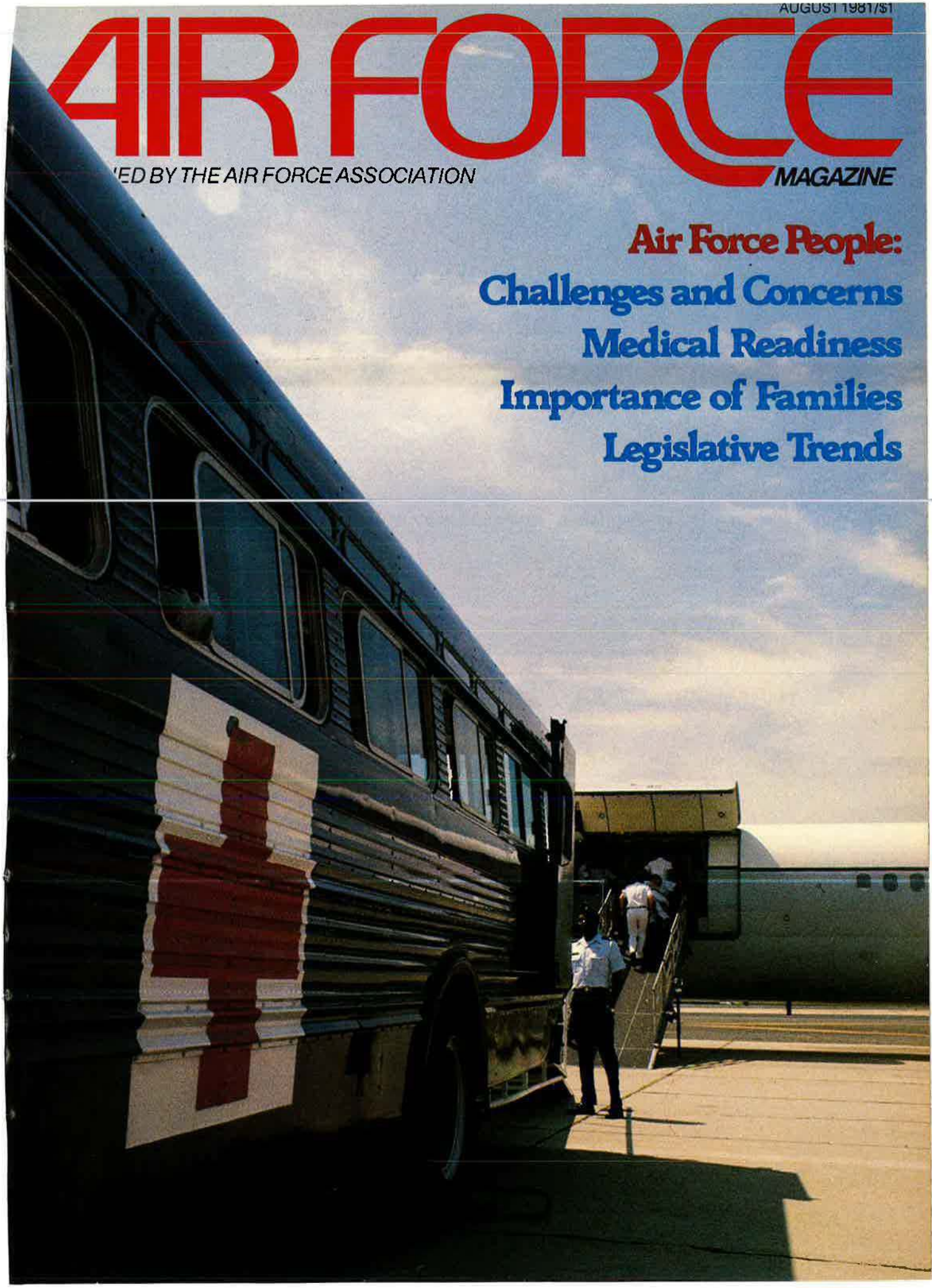
AUGUST 1981/$1

AIR FORCE MAGAZINE

'ED BY THE AIR FORCE ASSOCIATION

Air Force People:
Challenges and Concerns
Medical Readiness
Importance of Families
Legislative Trends



Air Force Power

TF34-POWERED A-10 CLOSE AIR SUPPORT AIRCRAFT

CFM56-POWERED KC-135 TANKER AIRCRAFT

CF6-50-POWERED KC-10A ADVANCED TANKER/CARGO AIRCRAFT

GE engines: The superior performance and reliability needed, whatever the mission

General Electric high bypass turbofans are continuing to prove their performance capabilities in key USAF missions.

Twin TF34 engines help provide Fairchild's A-10 with the short-field performance, maneuverability and extended loiter time needed for its close air support mission.

For the McDonnell Douglas KC-10A Advanced Tanker/Cargo Aircraft, three CF6-50 engines help provide excellent mission range and payload capabilities. And for re-engined Boeing KC-135 Tankers, four CFM56 engines offer significantly higher aircraft productivity and lower fuel consumption for tomorrow's varied air-fueling missions.

GENERAL ELECTRIC

AIR FORCE MAGAZINE

PUBLISHED BY THE AIR FORCE ASSOCIATION

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This Month

AUGUST 1981 • VOLUME 64, NUMBER 8

ABOUT THE COVER

The cover shows medical evacuees from Europe being taken aboard a MAC C-9A Nightingale after a restover stop at Andrews AFB, Md., for dispersal to hospitals and other facilities throughout the CONUS. "People of the Air Force" begins on p. 34 of this issue. (Cover photo by Art Director William A. Ford)

Departments

Add a couple of you may not need the

Needless to say, the purchase of different aircraft to meet different mission requirements is, to some extent, inevitable.

A jet fighter will never double as a cargo plane.

But the number of aircraft types you need to buy in order to perform such missions as priority personnel transport, cargo transport, air ambulance service, flight inspection/calibration, pilot and systems training, remote surveillance, search and rescue and reconnaissance and mapping can, in fact, be reduced dramatically.

To one.

For example, a Canadair Challenger outfitted for cargo transport can quickly be converted into a 28-passenger people-hauler. Or a 14-passenger people-hauler with a large cargo area.

A Canadair Challenger outfitted for priority transport of V.I.P. personnel can, with the addition of two partitioned operators' consoles, easily double as a surveillance or flight inspection/calibration aircraft.

A Challenger outfitted for remote sensing and surveillance can quickly be refitted for reconnaissance and mapping.

A Challenger outfitted as an air ambulance or MED/EVAC aircraft can, with relative ease, switch to a flight inspection/calibration interior. Or an advanced pilot and systems trainer interior. Or a maritime surveillance/search and rescue interior.

All told, the variations of equipment you can move into and out of a Challenger are far too numerous to mention.

What's just as important, the Challenger gives you more AC power to run it on than any other aircraft in its class.

In fact, it's the only all-AC electrical system you'll find on any jet short of the latest commercial airliner. Unlike DC systems, AC gives you the benefits of extreme light weight in relation to power produced and far less chance of electrical failure due to low current, constant frequency and the obvious fact that there's no need for cumbersome inverters.

As for those of you who just want to get from point A to point B, you'll find the Challenger will fly you more economically and in greater comfort than any comparable jet in the world.

Overall, the Canadair Challenger averages a 22% lower rate of fuel consumption per mile than a Gulfstream III, virtually the same rate of fuel consumption per mile as the far smaller Falcon 50 and, hard as it may be to believe, a 24% lower rate of fuel consumption per mile than the small, short-range T-39.

Yet the Challenger is actually bigger than all of them in the one dimension crucial to passenger comfort and a realistic working environment: width.

Measured at the floor line, both the Canadair Challenger and the bigger, even longer-range Canadair Challenger E are roughly 30% wider than the Gulfstream III, and 48% wider than the Falcon 50.

And speaking of range.

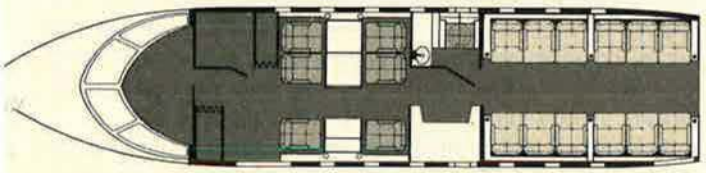
With the Challenger's big fuel tanks and extremely low rate of fuel burn, you can cross the Pacific with one stop, fly from New York to the Middle East with one stop or fly from Washington to London non-stop.

Or, getting back to multiple missions, fly a thousand miles out for, say, remote surveillance and still remain on station for four to five hours before flying back.

To find out more about the aircraft that can perform the roles of two or three or four aircraft, just call Mr. James B. Taylor, President of Canadair Inc., at 203-226-1581. Or write Canadair Inc., 274 Riverside Avenue, Westport, CT 06880.

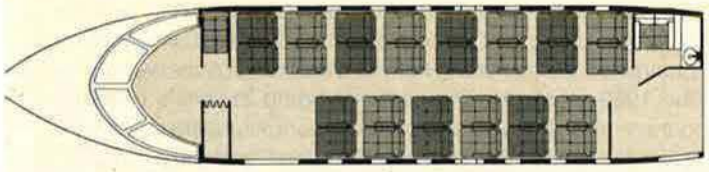
canadair challenger

these to your fleet and fleet.

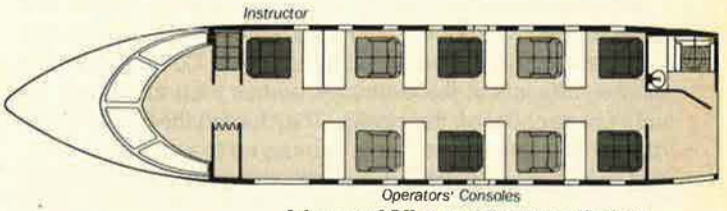


VIP Interior

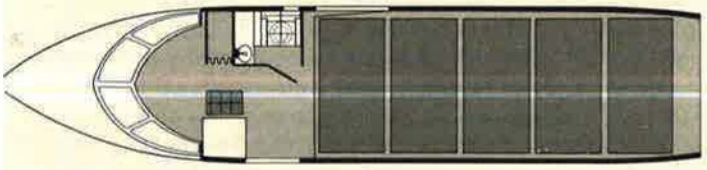
Flight Inspection/Calibration



28-Passenger Interior

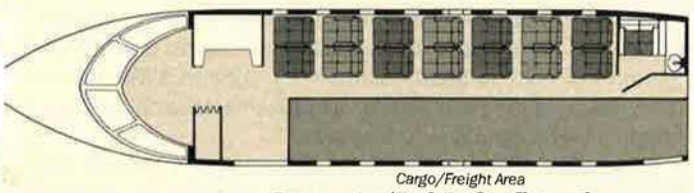


Advanced Pilot and Systems Trainer

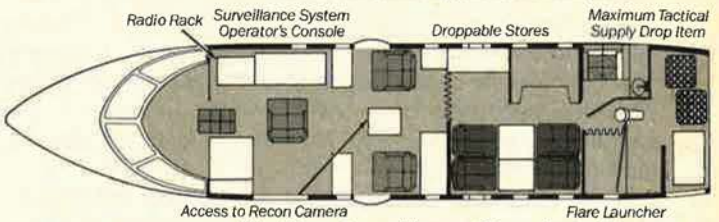


Cargo Configuration

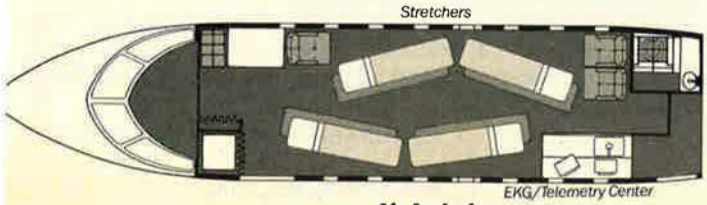
Remote Sensing and Surveillance



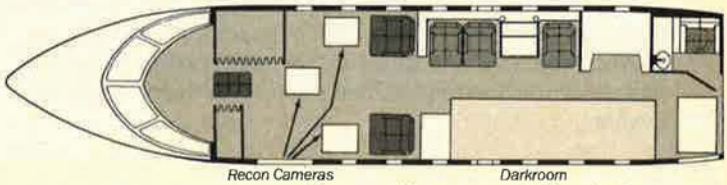
Passenger/Freight Configuration



Maritime Surveillance/Search and Rescue



Air Ambulance



Reconnaissance and Mapping

AN EDITORIAL

A Message of Hope

A VERY wise first sergeant (the only kind) once told his unit commander, "Captain, the President can be fooled. So can the Secretary and his assistant secretaries and their deputies. The generals and colonels can be fooled, too. But you can never fool the troops."

When asked why, he put it this way: In his view, the senior people from the President on through the system are captives of information gathered by someone else. That is, a system of records and reports purports to tell them what is happening. Even when (or especially when) top-level visitors descend on a base to "see what the troops are really doing," they miss reality. Why? Because the visits are planned affairs and everyone bucks up for them. How many times have money and labor been spent to shine, paint, or whitewash an area for a VIP visit while at the same time the troops are exhorted to practice resource conservation because mission-essential parts are in short supply?

Whitewashing the area for a VIP may fool the guest, but certainly not the troops. Yet just that sort of self-delusion was prevalent in recent years as successive Congresses and elected officials of the executive branch tried to bargain for national security on the cheap. They fooled themselves, but did not deceive the men and women on the line, who knew that the illusions spouted from Washington were just that. These mirages seemed real to the politicians, but evaporated on the flight line when a special screw was not available from the parts stock and an airplane could not fly. The result of those years of false economies: thousands of Air Force people saw reality and made a choice. They left.

Now the tide seems to be flowing in the opposite—and right—direction in two critical areas, personnel and logistics. Air Force leaders knew the delusions and false economies were hurting, saw the effects, and identified the causes long before the rest of government or the public caught on. They saw Air Force people vote with their feet and leave—12,000 pilots and 5,000 navigators in the past four years. They saw retention rates for career people skid. They knew, just as the flight-line mechanics knew, that spares for the modern new aircraft were in short supply. The litany is long, but there is reason to hope.

In the personnel arena, Lt. Gen. A. P. Iosue tells AIR FORCE Magazine in an interview beginning on p. 34 why he believes the adverse stimuli that drive men and women out of the Air Force are being overcome. He cites encouraging trends: improved recruiting results, both in quantity and quality; improved retention; and gains in pay and compensation that help to redress inequities that have hurt retention and motivation.

But General Iosue also notes that formidable challenges face the Air Force in the immediate future. Among them are a declining propensity among young people toward military service; the absence of an equitable, indexed, easily understood pay and compensation system; pay compression (particularly in the NCO grades); the pay cap on senior officers and civilians; and the "experience gap" (especially in sortie-generating skills).

Remedies for these challenges are being worked. Meanwhile, General Iosue and other senior leaders believe that many Air Force men and women are waiting to see whether promised improvements actually materialize. They are "sitting on the fence." Their decision to stay or leave depends on results, not promises, during the next year or so.

In logistics and engineering, an attitude of cautious hope is also justified at last. After years of underfunding of spares, munitions, fuels, and support items, the Air Force convinced Congress and the White House of the gravity of the situation. The result has been substantial provision of funds in those vital areas. (A point to be made here: the Air Force leaders committed themselves to fight for these corrections well before the 1980 elections. They are not riding anyone's coattails, but are taking advantage of the opportunities created by the changes in the White House, Congress, and the public.)

The problem is that results will not be seen in the depot shops and squadron parts bins for at least two more years. Production and supply pipelines are still functioning at the pinch-penny Carter underfunding rates of Fiscal Years '79, '80, and '81. Corrections began to be made by additional funds in the FY '82 budget. They were expanded in the FY '81 supplemental and FY '82 amendments now finishing the authorization and appropriation process. The result is more than $3 billion in the spares account and for depot-level repairs, more than double previous levels. For FY '83, the Air Force plans to request about $2.8 billion in the same accounts to maintain the momentum now building. Similar increases are at hand in vehicle acquisitions (from $158 million in FY '81 to $354 million in FY '82 and $380 million in FY '83), and in "quality-of-life" improvements to dormitories, hospitals, and community facilities.

In sum, the Air Force has achieved a balance of remedies for personnel and logistics problems that had wounded it severely. Thus, there is reason to hope for improvement. But Congress and the White House should remember this: the troops are skeptical and can't be fooled. It is time to stop studying and promising, and begin to deliver as USAF leaders have requested.

—F. CLIFTON BERRY, JR., EDITOR IN CHIEF

The New Collins AN/ARC-190/728U airborne HF. A strong defense against high costs.

You're looking at the next generation in airborne HF, the new Collins AN/ARC-190/728U. Selected by the U.S. Air Force for its HF modernization program, AN/ARC-190 follows in the tradition of such outstanding radios as the AN/ART-13, AN/ARC-58 and AN/ARC-94/102 (618T).

It is highly cost-effective for several reasons: Latest state-of-the-art technology. 100% solid-state, including antenna coupler. An MTBF of better than 1200 hrs. And built-in self-test and fault isolation to the Line Replaceable Unit level.

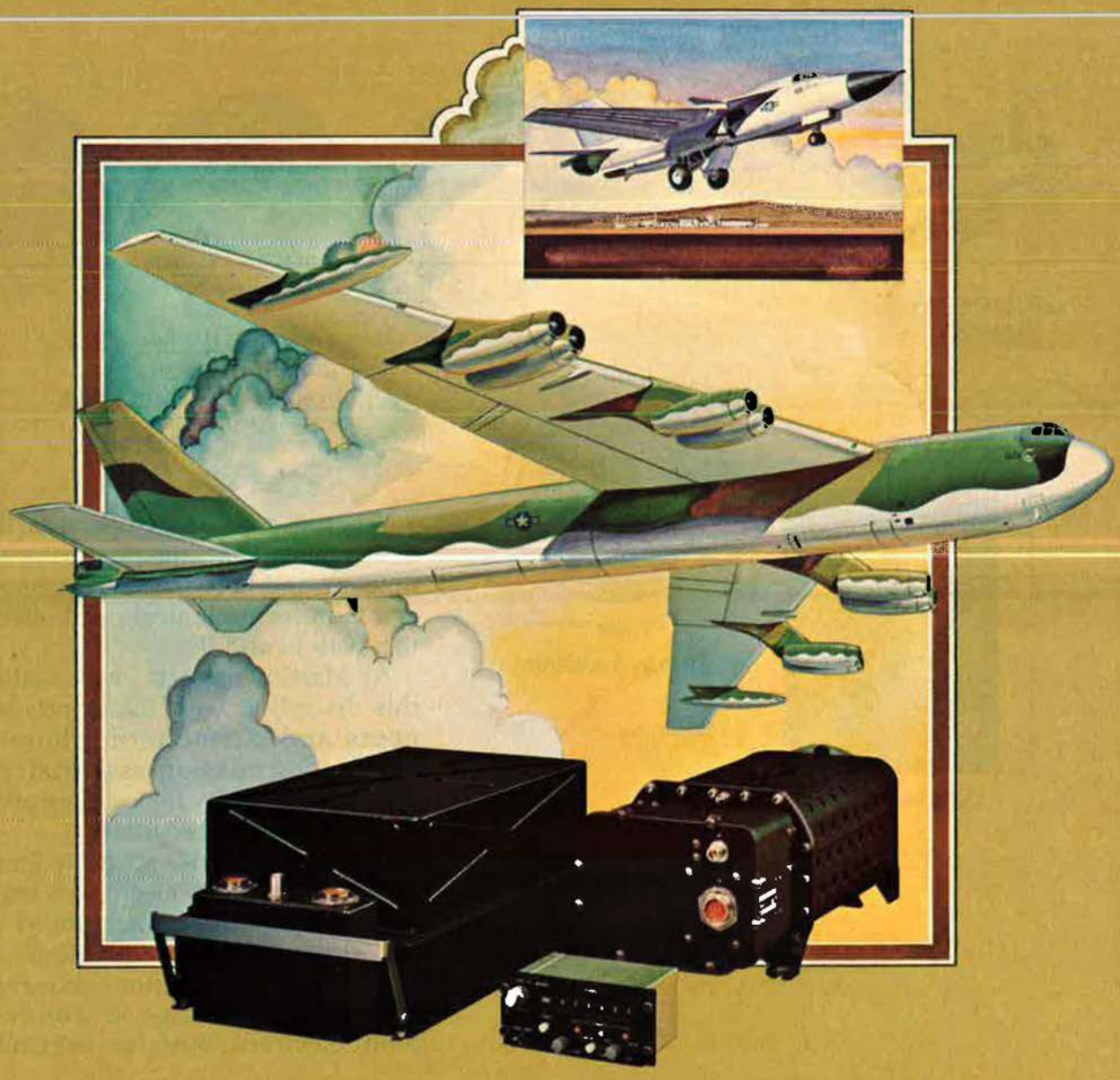
The system offers a digitally tuned antenna coupler, and fully automatic tuning in one second or less. Peak envelope and average power output is 400 watts.

The hardware is flexible, too. Built-in microprocessors provide all the control, speed and flexibility you need for operation with functions like selective call scanning (SEL/SCAN) and remote frequency management.

After years of faithful service, many of today's airborne HF radio systems are due for retirement. Parts are scarce. Maintenance costs are spiraling. The solution? An/ARC-190/728U, the strongest defense yet against high costs. For details, contact Collins Telecommunications Products Division, Rockwell International, Cedar Rapids, Iowa 52406. Phone 319/395-3553 or 2909. TELEX 464-435.

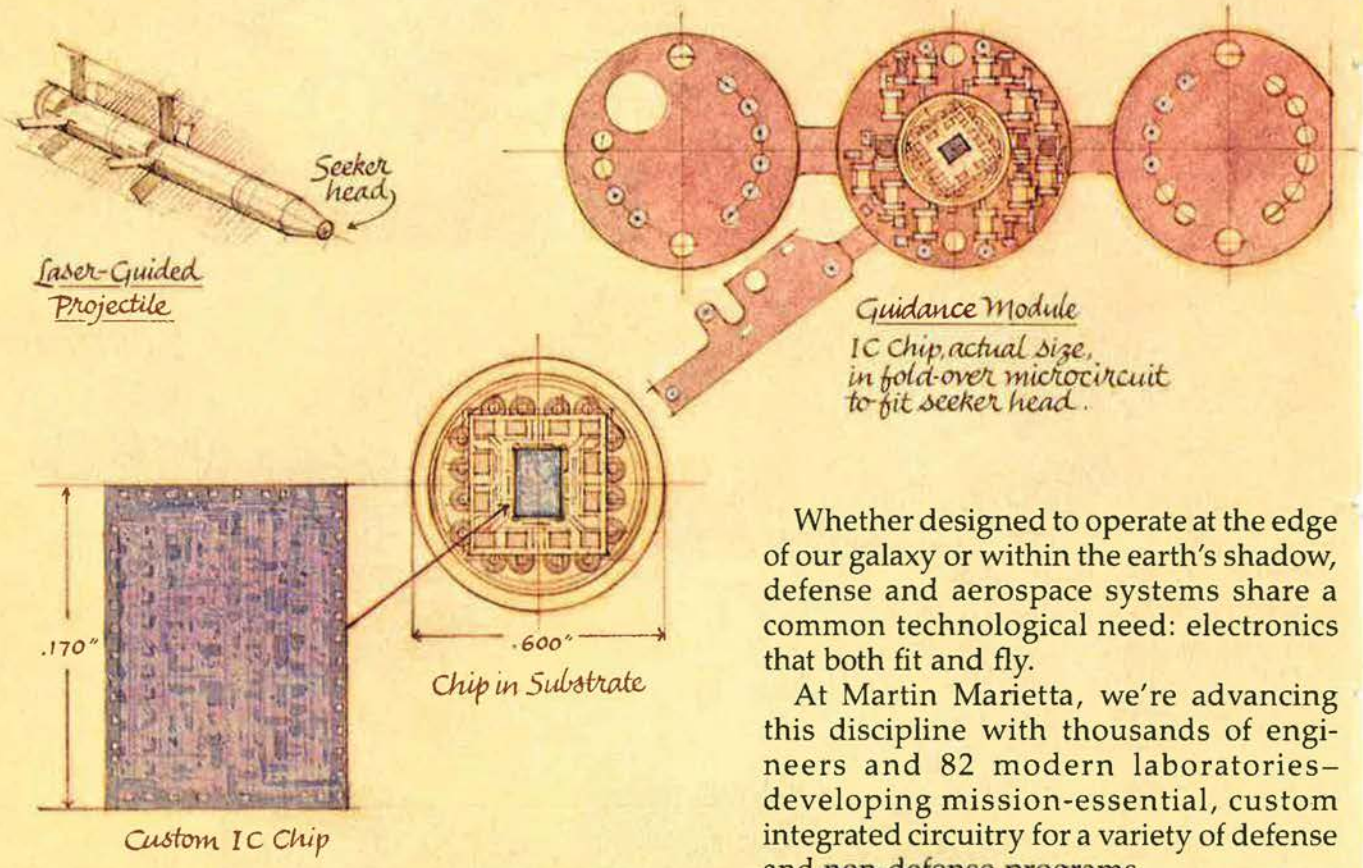
Rockwell International

...where science gets down to business



What does it take to make fit and fly electronics?

Dedication.



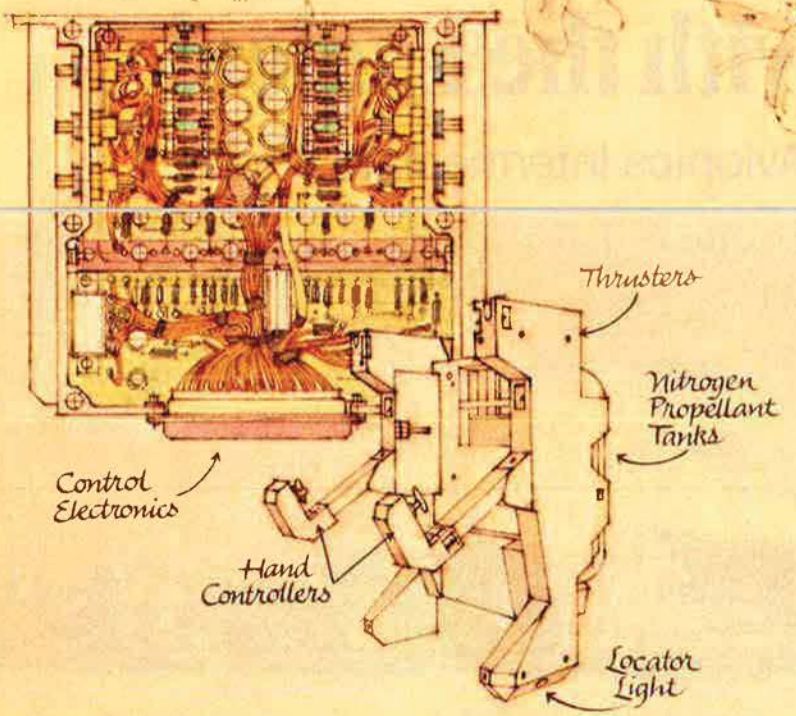
Whether designed to operate at the edge of our galaxy or within the earth's shadow, defense and aerospace systems share a common technological need: electronics that both fit and fly.

At Martin Marietta, we're advancing this discipline with thousands of engineers and 82 modern laboratories–developing mission-essential, custom integrated circuitry for a variety of defense and non-defense programs.

Miniaturized to meet severe limitations in size and weight, electronics are nevertheless expanding in their ability to control, compute and communicate. For example, one of our instruments is equipped with a circuits package so sensitive it can count electrons. Another controlled the

Manned Maneuvering Unit (MMU)

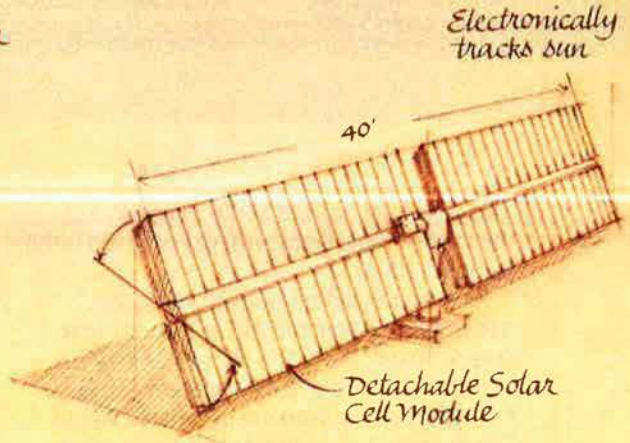
Provides free flight capability for extra vehicular activity.



Voyager spacecraft and pointed the cameras that took history making photos of Jupiter and Saturn.

Equally important is the hardening of microelectronics to survive extreme environments, such as guidance modules for gun-launched projectiles that withstand acceleration loads of 10,000 G and shock loads up to 25,000 G.

From sophisticated detectors to deep space antennas, tiny microprocessors to solar energy generators, experienced people using dedicated facilities make fit and fly electronics the heart of every Martin Marietta system.



Photovoltaic Concentrator Array

160 arrays generate 350 kw of electricity for two Saudi Arabian villages.

MARTIN MARIETTA

Martin Marietta Aerospace
6801 Rockledge Drive, Bethesda, Maryland 20034 U.S.A.

We travel with the Eagles!

The Bendix F-15 Avionics Intermediate Shop

The F-15 Eagle is one of the mainstays of the USAF Rapid Deployment Force. So is the Bendix F-15 AIS.

The Test Systems Division of Bendix designed and built the AIS to test all of the "black boxes"... the line replaceable units that make up the avionics system of the F-15. But, to be a working part of the Rapid Deployment Force, the AIS has to be able to go where it's needed. That means rugged construction, mobility, ease of setting up... in addition to highly precise test capabilities.

In operations Red Flag and Coronet Eagle, it has been established that the F-15 AIS will be where it is needed to maintain the Eagles... and can be set up, checked out, and operated by Air Force personnel.

The F-15 AIS is an outstanding illustration of the Bendix approach to creating test systems. More than testing expertise and experience, Bendix brings innovative thinking to every challenge.

We do it every time... we can do it for you. The Bendix Corporation, Test Systems Division, Teterboro, New Jersey 07608, 201-288-2000, Ext. 1266.

We speak total testing

Bendix

AIRMAIL

Salary System Faulted

I was very disappointed to read an article in the May '81 issue of AIR FORCE Magazine ("A Salary System for Service Members?" p. 197) that left the impression that conversion to a salary system as recommended by the GAO [General Accounting Office] would benefit military people. This is simply not true.

The GAO's proposal received an in-depth examination by the services and DoD several years ago as part of the Third Quadrennial Review of Military Compensation. It was studied again by the President's Commission on Military Compensation. The proposal was firmly rejected when it was determined that it would raise the DoD budget by billions of dollars and actually provide less take-home pay for most military people.

The main reasons for the budget increase would be the requirement to fund the tax advantage now entailed in the tax-free quarters, food, and allowances, plus the increased Social Security contributions DoD would have to pay on the fully taxable salaries. Such a tremendous increase in the personnel budget, without any associated increase in readiness, would be an easy target for critics who wrongly think we're already spending too much on people.

From the member's perspective there would be even more problems, with a corresponding adverse impact on retention. The dual quarters allowance system would have to be terminated, and the most likely solution would be computation of an average single/married allowance to be incorporated into the salary. This would substantially reduce pay for all members with dependents. Further, the only tax advantage that would be funded under the salary concept would be the federal income tax advantage. With conversion to a fully taxable salary system, members incurring state and local income taxes on their military pay, plus any with income from "moonlight" jobs or spouse's employment would experience a substantial net increase in their income tax liabilities. The obligation to pay Social Security taxes on the entire salary would magnify their net income loss. Conservative estimates indicate that implementation of a salary system would impose a financial penalty on more than a million military people.

These are only the most obvious problems associated with conversion to a salary system. Still, they serve to illustrate that such a change would substantially increase the budget, hurt our people, and make it even more difficult to retain the numbers of quality people we need.

These are not new arguments, but have been provided in the past to both the GAO and Congress.

Maj. Gen. William R. Usher, USAF
Director, Personnel Plans
Washington, D. C.

Shedding Light on the P-51

Author Jeffrey Ethell's story "The Foaling of the Mustang" (June '81 issue, p. 82) sheds new light on the derivation of the P-51 Mustang.

Why, for forty years we aviation buffs have been led to believe a handful of aircraft designers took credit for designing a brand-new bird in the record time of 120 days; and Paul Balfour put the prototype into a farmer's field on its maiden hop! Why did we never give Mr. Donovan R. Berlin, designer of the P-40 and XP-46, credit for his homework/contribution to the P-51 effort?

Curtiss-Wright's selling data to NAA for $56,000 was interesting. Additionally, I should have guessed that an experienced test pilot like Vance Breese would have flown those initial test hops!

Now I will buy author Ethell's new book, *Mustang: A Documentary History of the P-51,* wherein he supposedly "tells it as it really was."

Charles Q. Middlebrook
Dahlgren, Va.

The article by Jeffrey Ethell on the P-51 was very interesting. However, with all the details mentioned there was one interesting note missing. The Army Air Forces code name for the P-51 was "Apache," while the English used the code name "Mustang." (I just verified this by looking at my 1942 Army spotter's guide book, which gives both assigned code names.)

The "Apache" name did not last long and soon it was dropped in favor of "Mustang." I just thought that this might be interesting to the purist.

Roy P. Gibbens
Asheville, N. C.

True American Military Heroism

This past month of May has seen a tragic military event occur.

On May 9, Capt. [David] Hauck of the Thunderbirds aerial demonstration team was killed in a crash during an air show at Hill AFB, Utah.

We should all think twice about this [fatality].

Captain Hauck's death happened because he wanted to save the lives of possibly hundreds of people. His T-38 developed engine trouble. He knew the plane would crash. He went on to exemplify a person of true military courage by going down with his plane.

Thus, one truly admirable and heroic person was killed instead of possibly hundreds of spectators at the air show.

This will stand out in my mind as true American military heroism.

Andy Biscoe
Concord, Mass.

Mystery RB-66B

From a variety of sources we at the USAF Museum have been attempting to ascertain the historical background on one of our many aircraft, RB-66B S/N 53-475. Prior to its flight delivery to the Museum in 1970, we were advised that it had flown classified missions in SEA, but we were not provided with any further details. Attempts to determine through Hq. TAC and other official sources just what our aircraft did have proven fruitless.

We do know that in early 1966 it was flying with the 460th Tactical Recon Wing out of Tan Son Nhut, RVN. It was returned to the Shaw AFB, S. C., in May 1966 and then went to the Douglas Aircraft Co. facility in Tulsa for

maintenance. September of 1966 saw its reassignment to the 363d Tactical Recon Wing for combat duty, but six months later records indicate its assignment code was changed to active training, its status until transferred here in 1970.

Possibly readers who were associated with RB-66 operations in SEA may know a little of -475's background and can contact us. Until then, it will remain something of a mystery aircraft as far as we are concerned.

Charles G. Worman
Chief, Research Division
Air Force Museum
Wright-Patterson AFB,
Ohio 45433

Jump Stories

I am collecting jump stories for a nonfiction book on all aspects of parachuting. If you have had one or more exciting experiences while participating in training, recreational, competition, demonstration, emergency, test, paratroop, HALO, pararescue, and/or smoke jumping, please send a factual description to me at the address below.

Those responding whose stories are selected for the book will receive free copies upon publication.

Paul W. Herrick
5705 Holly Lane
Jupiter, Fla. 33458

398th Bomb Group Memorial

Our bomb group, the 398th (Squadrons 600–603), based during World War II at Nuthampstead, England, as part of the Eighth Air Force, is engaged in fund-raising to build a memorial at our old English airfield. Our plans are to construct the empennage of the B-17 dorsal tail design in stone and concrete. The dedication of this memorial is scheduled for September 1982.

I am Memorial Chairman for this project and, currently, our roster lists 462 members. Are there more ex-398th people around who would like to participate in this project?

Herman L. Hager
4201 Troy St.
Metairie, La. 70001

Abandoned German Aircraft

I am doing research on German aircraft of the Second World War that were abandoned in France by the Luftwaffe at the end of the war.

These aircraft were generally in wrecked condition, but some of them were undamaged and a few were captured by US troops and after the war were evaluated by USAF.

Many of these aircraft were photographed by US soldiers and airmen in our country.

Could readers please send any information or photos of such German aircraft abandoned in France to assist in my research?

Alain Fleuret
25, rue des Redous
Iteuil
86240 Ligugé
France

AIRMAIL

P-39 Airacobra

I am writing a book on the Bell P-39 Airacobra. I would like to hear from any pilots who flew it out of Iceland with the 342d Composite Group, and out of Wideawake Field on Ascension Island with the 1st Composite Squadron.

Any help on this will be greatly appreciated.

E. F. Furler, Jr.
2831 Jarrard
Houston, Tex. 77005

Gift Subscriptions?

Suggestion: Why not provide a way for AFA members to purchase gift subscriptions for parents, relatives, and nonmilitary associates?

For every military member on active, Reserve, or Guard status, there are probably two or more relatives or business acquaintances who, by virtue of their relationship, have a vested interest in the status of our national security and the forces that keep it strong.

The editorial content and articles in AIR FORCE Magazine are nourishment for those of us who are familiar with the problems we face in this period, but would we not benefit by broadening the audience to include those whose letters from home and tax dollars we so dearly cherish? Increased circulation of AIR FORCE Magazine would greatly enhance public awareness of the mission, programs, and people that make up the Air Force.

If nothing else, a gift subscription for the folks back home might even stop dear old Dad from bragging about his son or daughter "in the Army."

1st Lt. Jeffrey B. Hare, USAF
James Park, N. B.
Canada

Hydraulics Branch Instructors

For quite some time I've tried to locate personnel who were assigned to the B-24 Airplane Mechanics School at Keesler Field, Biloxi, Miss., as Hydraulics Branch Instructors during WW II.

Since I don't have the home addresses of either civilian or GI instructors, this has proved to be a very slow process.

I would like to hear from any former Keesler Field Hydraulics Branch personnel who served during WW II. Please contact either address below for a reunion, date and place to be determined.

John B. Borelli
201 3d St., Box 40
Nashwauk, Minn. 55769
or
Stanley M. Hewitt
180 Rhoda Ave.
Youngstown, Ohio 44509

322d Bomb Group

I need the following information: A list of combat missions I flew on, dates, targets, and any other information pertaining to these missions. It would help to know who else was on the same missions, and the debriefing comments of our crews.

I kept a partial diary and had most all of this information; however, it was destroyed in a fire. Any help would prompt my memory, so that I can leave a record of my wartime activities.

I am a bit older and many details have grown dim. That may be an advantage as I was one of the original crew members of the 322d Bomb Group, 452d Bomb Squadron—the first B-26 group in England.

A great deal has been published about us in *Flak Bait, B-26s at War,* and others. However, so few of the men are mentioned and so few of the incidents recorded that I feel more can be said from a first-hand account from one who flew many rough missions through twenty-one months with the 322d Bomb Group.

Pictures of the men and planes and missions would help compile a record that could or could not be published (hopefully it could). There would then be available a first-hand account of one who was not in command or of high rank.

Leo E. Friend
P. O. Box 94
McHenry, Md. 21541

438th Troop Carrier Group

A recent reunion of the 87th Troop Carrier Squadron included other members of the 438th Troop Carrier Group (WW II)—Hq. Squadron, and the 88th, 89th, and 90th Squadrons. All members of the 438th present at

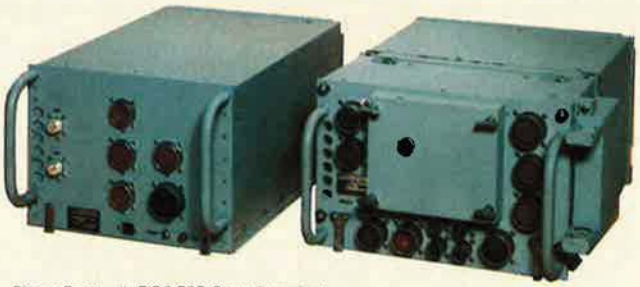
The USAF's JTIDS Class 2 terminals are about to take off at Singer.

The U.S. Air Force has awarded the Singer Kearfott Division and its project partner, Collins Government Avionics Division of Rockwell International, the full-scale development contract for 20 TDMA JTIDS Class 2 terminals.

Singer previously furnished 16 advanced development models of JTIDS Class 2 terminals to the U.S. Air Force and U.S. Navy, and to the United Kingdom Royal Air Force Establishment.

Singer's JTIDS terminals have undergone strenuous flight testing at Eglin Air Force Base and simulation tests by the U.S. Navy and by the RAE, Farnborough.

In addition, Singer is under contract to the U.S. Navy to examine the design concepts for a Distributed Time Division Multiple Access Terminal (DTDMA).



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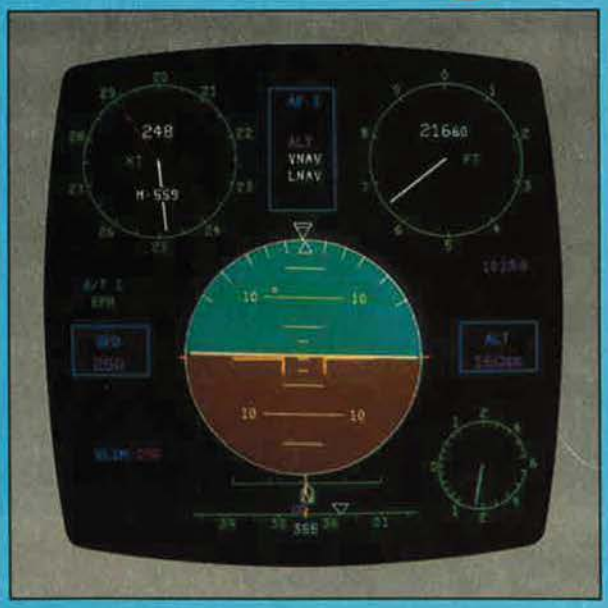

These rugged, multi-color, high resolution shadow mask displays are backed by 20 years' electronic display systems experience.

Manufactured to ARINC 725 requirements, the displays employ new optical filtering techniques which provide maximum brightness and color contrast with outstanding definition and resolution.

All flight, navigation, weather radar, systems and warning data can be displayed using stroke or hybrid techniques. Information may be switched from one display head to another in high integrity aircraft systems and hardware commonality minimises spares holding and cost of ownership.

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Designed to ARINC 600 standards as required by ARINC 725 characteristics. The generator is housed in a 6 MCU package and contains display processors, symbol generators for stroke/hybrid displays, ARINC 429 digital interfaces and display unit interfaces.

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Smiths Industries Inc., St. Petersburg/Clearwater Airport, P.O. Box 5389, Clearwater, FLORIDA 33518 Telephone No. (813) 5317781

AIRMAIL

that reunion want to hold a complete 438th TCG reunion in Kansas City, Mo., on June 4–6, 1982.

This reunion will commemorate the thirty-eighth anniversary of D-Day in Europe, which was spearheaded by the 438th. I need names and addresses of former members. Please write me at the address below.

Sid Harwell
3131 S. Kentucky Ave.
Sedalia, Mo. 65301

67th Tac Recon Wing

I am preparing a book on the Douglas B-26 Invader and would like to include details of the aircraft and operations of the 67th Tactical Reconnaissance Wing.

I would like to hear from any former "Owls and Blackbirds" who can assist with any information and/or photographs. Let's lift the veil of mystery off the 67th and tell why it was "Alone! Unarmed! Unafraid?"

John Horne
15/20-22 Speed St.
Liverpool
N.S.W. 2170
Australia

AFROTC Det. 905

AFROTC Det. 905 at Washington State University is celebrating its thirty-fifth anniversary this year. We are hoping to make a press release on alumni to the Idaho, Oregon, and Washington areas. We need information about corps history and outstanding cadets over the thirty-five-year history of Det. 905. Our only source for corps history is old WSU yearbooks. Old photographs and stories about the detachment are needed very much. We are also looking for the background and achievements of our former cadets, both in the service and in civilian life.

All alumni are encouraged to write us. We need your help to collect the history of our detachment.

Cadet External Public Affairs Officer
AFROTC Det. 905
Thompson Hall, Room 6
Washington State University
Pullman, Wash. 99163

AFROTC Det. 055

AFROTC Det. 055, UCLA, is currently attempting to contact all Bruin alumni. If you are a former UCLA commissionee, no matter what status (active, separated, retired, or reserve), please drop us a note with your name, rank, current status, and date of graduation, and we'll get in touch with you.

There are no strings attached, and we won't be hitting anybody up for money; we just want to locate as many UCLA alums as possible.

A revived alumni association should serve as a liaison between the Air Force officer corps and the cadet corps. It should also serve as a vehicle for contact between alumni and cadets. We also hope to compile enough information for former classmates to contact each other.

We know there are more than 1,000 of you out there, so please drop us a line. Send all correspondence to the address below.

55th AFROTC Cadet Group
251 Dodd Hall, UCLA
Los Angeles, Calif. 90024
Attn: Tom DiSilverio

AAS Gill Robb Wilson Squadron

The Gill Robb Wilson Squadron of the Arnold Air Society is creating an alumni newsletter. We would like to hear from all former members who were commissioned. Please let us know what you are doing and send us

your current address. Your information is needed if the project is to get off the ground.

Brian J. Duddy
Arnold Air Society
Gill Robb Wilson Sqdn.
AFROTC Det. 157
Embry-Riddle Aeronautical University
Daytona Beach, Fla. 32015

Plane Belt Buckles

As my collection of military aircraft belt buckles now exceeds fifty, photographs of the following planes would be greatly appreciated in order to complete it: F4F, F8F, AT-6, P-61, F-82, B-58, A-1, PBY, and Dauntless. Eight-inch-by-ten-inch or larger photographs, with clear detail, will help.

All photographs will be returned, and those used for a design will be returned with a complimentary belt buckle showing the plane.

Kent Krings
26 N. Clark
St. Louis, Mo. 63135

Thunderbirds Fan

I am a fan of the USAF Thunderbirds aerobatic team and a collector of Thunderbirds memorabilia.

I would greatly appreciate from readers any pictures, books, magazines, patches, models, information, or yearbooks (before 1977)—anything and everything that has the Thunderbirds on or in it.

I am also looking for somebody in the Confederate Air Force through whom I can purchase a CAF patch and wings to add to my collection. I will answer all letters.

Mike Bounds
1319 Corbett Lane
Orlando, Fla. 32806

Mess Dress Outfit

I am looking for the mess dress outfit (white), forty to forty-two jacket, and thirty-four waist trousers.

Anyone having these items and who wants to get rid of them reason-

UNIT REUNIONS

AF Plant Reps, Boeing Co.
Former military and civilian members of the Air Force Plant Representative Office of the Boeing Co. will celebrate their sixtieth anniversary on August 11, 1981, in the Boeing Red Barn. **Contact:** Maj. John A. Whiteley, AFPRO, The Boeing Co., P. O. Box 3707, Seattle, Wash. 98124. Phone: (206) 655-5500.

Air Weather Service
The Northern California retired officers of the AWS will meet for their annual banquet on October 10, 1981, at the Marines' Memorial Club in San Francisco, Calif. **Contact:** Milt Sipple, 2589 Dumbarton Ave., San Jose, Calif. 95124. Phone: (408) 267-2555.

American Fighter Aces Association
Convention/reunion for the American Fighter Aces will be held October 8–11, 1981, at the Stouffers Hotel, 2399 S. Jefferson Davis Highway, Arlington, Va. **Contact:** John S. Stewart, Vice President, Public Relations, 19025 Brun Leaf Way, Monument, Colo. 80132.

BAD 2/Warton
Warton Air Depot will hold its fifth reunion on September 4–7, 1981, in Dayton, Ohio. **Contact:** David G. Mayor, 811 E. 16th Ave., New Smyrna Beach, Fla. 32069.

Combat Pilots Ass'n
The Combat Pilots Association will hold its 1981 International Reunion on September 18–20, 1981, in Reno, Nev., in conjunction with the National Air Races. **Contact:** Stan Nichols, P. O. Box 6360, Anaheim, Calif. 92806. Phone: (714) 632-3398.

Ranch Hand
Ranch Hand Vietnam Association's reunion will be held October 9–11, 1981, in Fort Walton Beach, Fla. **Contact:** Jack Spey, 850 Tarpon Dr., Fort Walton Beach, Fla. 32548. Phone: (904) 243-5696.

2d AD Ass'n, 8th AF
Members of the 2d Air Division will hold their reunion in San Antonio, Tex., on October 1–4, 1981. **Contact:** Clinton Wallace, 2501 Westwood Dr., #1107, San Antonio, Tex. 78227.

10th Combat Cargo Sqdn.
The third reunion of the 10th Combat Cargo Squadron, 3d Combat Cargo Group, will be held September 8–9, 1981, in Fayetteville, N. C., at the Bordeaux Motor Inn. **Contact:** Thornton Rose, 2614 Mirror Lake Dr., Fayetteville, N. C. 28303.

20th Fighter Group
The 20th Fighter Group Association will hold its second annual reunion in conjunction with the 8th Air Force Historical Society, in St. Paul, Minn., October 15–18, 1981. **Contact:** John E. Hudgens, 409 University Ave., Apt. 108-S, Lubbock, Tex. 79401. Phone: (806) 763-5576.

34th Bomb Group (H)
Search for all former members. Unit rendezvous with the 8th AF reunion, October 15–18, 1981, in St. Paul, Minn. **Contact:** Ray L. Summa, 2910 Bittersweet Lane, Anderson, Ind. 46011. Phone: (317) 644-6027.

PLANNING A REUNION?

Readers making submissions to "Unit Reunions" should bear in mind that AIR FORCE Magazine must receive the notice approximately three months before the time of the reunion. Readers are also cautioned that we are neither mindreaders nor handwriting experts. A reunion notice has a much greater chance of being published if the material furnished is clear and understandable and contains all the essential information. A submission should include unit designation (and time frame if appropriate), place and time of the reunion, and the name and address of a person to be contacted for further information.

36th Fighter Group
Members of the 36th Fighter Group will hold their reunion October 9–11, 1981. **Contact:** Bob Shumaker, 2318 Brandon Rd., Columbus, Ohio 43221. Phone: (614) 486-9028.

Class 41-H
The Luke Field Flying Class 41-H plans to hold its reunion in late October 1981. **Contact:** L. M. McDonald, 7170 Dawn Dr., Anchorage, Alaska. 99502. Phone: (907) 243-0987.

51st Troop Carrier Sqdn.
The 51st Troop Carrier Squadron and 62d Group are planning a reunion in New Orleans, La., this coming Labor Day weekend. **Contact:** Bob Galloway, 604 Gary Dr., Roswell, N. M. 88201. Phone: (550) 622-7822. Milton Wilks, 300 Lakeside Dr., Oakland, Calif. 94612. Phone: (415) 451-1861.

Class 61-Delta
All class members (graduates or not) are invited and expected to attend the reunion for the USAF Pilot Training Class to be held October 1–4, 1981, Hotel Canterbury, San Francisco, Calif. **Contact:** David L. Roberts, 1055 N. Shore Dr., Roswell, Ga. 30076. Phone: (404) 992-9516; AUTOVON 925-2418.

79th Troop Carrier Sqdn.
A reunion for the 79th Troop Carrier Squadron will be held on October 15–17, 1981, at the Holiday Inn, Fairborn, Ohio. **Contact:** Roger L. Airgood, 1635 N. 12th St., Lafayette, Ind. 47904. Phone: (317) 742-0357.

92d Bomb Group
Members of the 92d Bomb Group and 1st/11th Combat Crew Replacement Center will meet in conjunction with the 8th AFHS, in St. Paul, Minn., on October 15–18, 1981. **Contact:** S. R. Sorenson, Rte. 1, Box 62, Toronto, S. D. 57268.

ably, please contact:

Maj. Ralph White, CAP
14347 S. Ashland Ave.
Harvey, Ill. 60426

Future Air Force Pilot

I graduated from high school this year and plan to attend college and participate in Air Force ROTC starting this fall.

I have been an active Civil Air Patrol member the last few years and have had the opportunity to fly on both KC-135 and EC-135 missions from Ellsworth AFB, S. D. It is my life dream to become an Air Force pilot, and these flights impressed me considerably and reinforced that dream.

AIRMAIL

I would like to request from readers any further information on these aircraft, including photos, slides, posters, and squadron or wing patches. Any information would be greatly appreciated.

Mike Morgan
1014 E. Tallent St.
Rapid City, S. D. 57701
Phone: (605) 348-2569

Collector's Corner

I am an avid Air Force aviation enthusiast and, thus, I am looking for any patches, pictures, etc., to augment my rather limited collection. Unfortunately, my ability to purchase any items is extremely limited, and I would greatly appreciate any donations to my collection.

I hope to be a fighter pilot someday, and I would be extremely grateful for any information concerning the newer fighter aircraft of today. If you can help me, please contact me at the address below.

Dan Ebert
4707 Alexis Ave.
Dayton, Ohio 45431

93d Troop Carrier Sqdn., 439th Troop Carrier Gp.
A reunion will be held October 15–17, 1981, at Cocoa Beach, Fla. **Contact:** Tom Morris, 456 St. George Ct., Satellite Beach, Fla. 32937. Phone: (305) 773-6960.

94th Bomb Group
The 94th Bomb Group will hold its reunion on October 9–11, 1981, at the Denver Hilton. **Contact:** Frank Halm, 433 N. W. 33d St., Corvallis, Ore. 97330. Phone: (503) 752-1845.

96th Bomb Group
The 96th Bomb Group (WW II) will hold a unit reunion in conjunction with the 8th Air Force Historical Society, in St. Paul, Minn., October 15–18, 1981. **Contact:** Robert Owens, 2323 S. Leavitt St., Chicago, Ill. 60608.

123d Tactical Recon Wing (ANG)
The 123d Tactical Reconnaissance Wing (KyANG) open house will be held on September 27, 1981, at Standiford Field, Louisville, Ky. **Contact:** Lt. Col. Richard H. Jett, KyANG, Boone Center, Frankfort, Ky. 40601.

303d Bomb Group (H)
The 303d Bomb Group and attached units will hold its fourth reunion on August 20–23, 1981, in San Diego, Calif. **Contact:** Joseph Vieira, 6400 Park St., Hollywood, Fla. 33024.

306th Bomb Group
Reunion will be held for the 306th Bomb Group on October 15–18, 1981, in St. Paul, Minn. **Contact:** W. M. Collins, Jr., 2973 Heatherbrae Dr., Poland, Ohio 44514. Phone: (216) 757-3463.

313th Fighter Sqdn., 50th Fighter Gp.
The second reunion of the 313th will be held October 15–17, 1981, in Colorado Springs, Colo. **Contact:** Tom Personett, P. O. Box G, Monument, Colo. 80132. Phone: (303) 481-2122.

339th Fighter Group
A mini-reunion and unit rendezvous for the 339th Fighter Group will be held on October 15–18, 1981, in St. Paul, Minn. **Contact:** C. Malarz, 2405 Kings Point Dr., Atlanta, Ga. 30338. J. R. Starnes, Box 251, Lutz, Fla. 33549.

353d Fighter Group
Members of the 353d Fighter Group, comprising the 350th, 351st, and 352d Fighter Squadrons, will hold a mini-reunion in conjunction with the 8th AFHS in St. Paul, Minn., October 15–18, 1981. **Contact:** Charles Graham, Army and Navy Club, 1627 Eye St., N. W., Washington, D. C. 20006.

367th Fighter Group, 9th AF
A reunion for the 367th Fighter Group will be held October 8–11, 1981, at the Ramada Inn, Windsor Locks, Conn. **Contact:** W. W. Bridgeman, 147 Slice Dr., Stamford, Conn. 06907. Phone: (203) 322-7527.

380th Bomb Group
Members of the 380th Bomb Group, including the 528th, 529th, 530th, and 531st Squadrons, and Headquarters, will hold their reunion September 10–13, 1981, in Colorado Springs, Colo. **Contact:** Clarence A. Goetz, Rte. 22, Box 22, Springfield, Mo. 65803. Phone: (417) 833-1398.

381st Bomb Group (H)
The 381st Bomb Group will hold its reunion on October 16–18, 1981, at the Howard Johnson's Motor Lodge, in Lake Buena Vista, Fla. **Contact:** T. Paxton Sherwood, 515 Woodland View Dr., York, Pa. 17402. Phone: (717) 848-4680.

392d Bomb Group, 8th AF
A reunion is planned in conjunction with the 8th Air Force Historical Society for the 392d Bomb Group, on October 15–18, 1981, in St. Paul, Minn. **Contact:** Gilbert R. Bambauer, 2032 E. La Madera Dr., Tucson, Ariz. 85719. Phone: (602) 326-6010.

394th Bomb Group/585th Bomb Sqdn.
Members of the 394th and 585th will hold their reunion on September 18–19, 1981, at the Howard Johnson's Hawaiian Village Motor Lodge, in Cincinnati, Ohio. For more information, **contact:** Thomas J. O'Brien, Old Colony Rd., Norton, Mass. 02766. Phone: (616) 222-7839 (home); or (617) 222-9861 (office).

397th Bomb Group
Reunion for the 397th Bomb Group Association will be held September 24–27, 1981, at the St. Louis, Mo., Airport Hilton Inn. **Contact:** Al Kalil, 5301 Arsenal St., St. Louis, Mo. 63134. Nevin Price, P. O. Box 1786, Rockville, Md. 20850.

AFROTC Det. 415
The University of Minnesota's Air Force ROTC (Detachment 415) will celebrate its thirty-fifth anniversary in September 1981. **Contact:** Capt. Lloyd Cagle, AFROTC Det. 415, University of Minnesota, Minneapolis, Minn. 55455.

434th "Hoosier Wing"
The 434th Tactical Fighter Wing will hold its reunion on September 25–27, 1981, at the Holiday Inn, in Columbus, Ind. **Contact:** Lt. Col. Warren "Baldy" Baldridge, USAFR (Ret.), 4835 N. Parkway, Kokomo, Ind. 46901. Phone: (317) 689-2472.

493d Bomb Group
A unit rendezvous on October 15–18, 1981, in St. Paul, Minn., in conjunction with the 8th AFHS. **Contact:** Paul F. Sink, 4015 W. 137th St., #114, Hawthorne, Calif. 90250.

500th Bomb Sqdn./345th Bomb Group
A reunion for the 500th Bomb Squadron (345th Bomb Group) will be held on September 20–24, 1981, in Las Vegas, Nev. **Contact:** Col. William J. Cavoli, USAF (Ret.), 4314 Planters Ct., Annandale, Va. 22003. Phone: (703) 827-9100 (office); or (703) 978-3830 (home).

671st Bomb Sqdn. (L)
A reunion for the 671st Bomb Squadron will be held on September 18–20, 1981. **Reservations:** Mary Schaffer, 12031 Lackland-Westport, St. Louis, Mo. 63141. **Contact:** John Maruffi, 501 Hopewell Rd., South Glastonbury, Conn. 06073. Phone: (203) 633-2281.

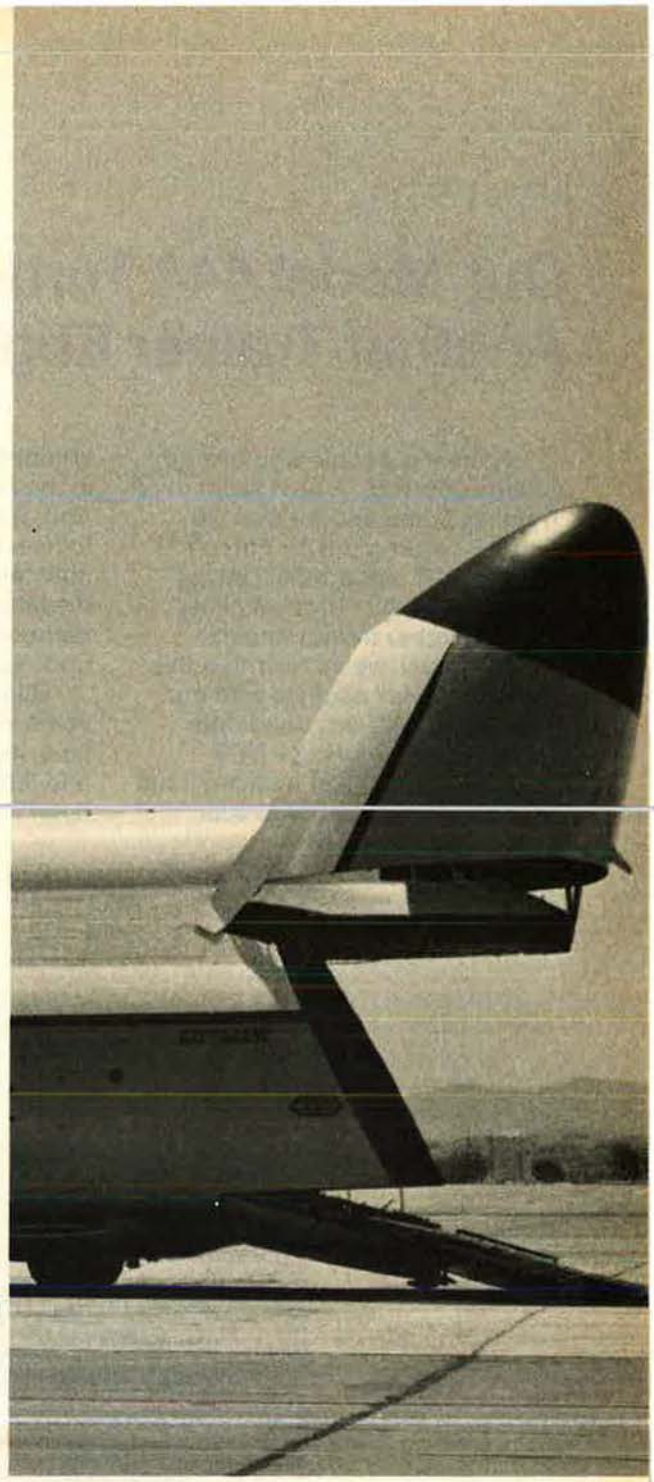
801st Bomb Group/492d Bomb Group
The 801st and 492d Bomb Groups will hold their reunion with the 8th AFHS in St. Paul, Minn., on October 15–18, 1981. **Contact:** Sebastian H. Corriere, 4939 N. 89th St., Milwaukee, Wis. 53225.

The demanding world of airlifters able to handle outsized equipment begins with the cargo compartment. It must be big enough to handle enormous amounts of cargo. It must be low enough to the ground to provide fast, easy loading and, above all, unloading in remote areas where sophisticated ground handling equipment does not exist. And because there are times when time itself is as precious as the cargo, a strategic airlifter needs straight-through cargo handling—an aft opening, a nose opening. Drive-on, drive-off.

This is no longer theory. Events—actual operations—have proved the case for drive-on, drive-off, straight-through cargo compartments.

But fast loading and unloading alone does not make a great strategic airlifter. The cargo compartment must be large enough to handle bulky, outsized cargo—lots

The ins and outs of military airlifters.



It's an open-ended subject.

of it. Lockheed tests have shown that 19 feet is the ideal width for a cargo compartment. In 19 feet, you can load two 5-ton trucks or two M113 personnel carriers side by side with room to spare. And, of course, the cargo openings must be high enough to handle outsized cargo such as bridge launchers—13.5 feet.

The validity of those dimensions has also been proven in actual operations.

When it comes to airlifters, Lockheed knows how. The engineers and skilled workers at Lockheed-Georgia have more experience, by far, in airlifters than anyone else in the world.

Lockheed-Georgia

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And now, we've rewritten the book on trainer engines with our new Model 444. Our candidate engine for the Air Force NGT program. It's not just a commercial sequel. The 444 turbofan was engineered specifically for durability in the rugged military environment. And, we've kept the design simple for low cost and ease of maintenance in the field. It utilizes the latest turbine engine technology, including fuel efficiency undreamed of in the 1950's.

Our Model 444 has been 9 years in the planning. During that time, its component development and technology demonstration have been thoroughly coordinated with the Air Force propulsion community. Although we've changed our name since 1956, many of our key personnel have remained the same. As you can see, our successful background is more than a short story. Our unmatched trainer engine experience will lead to best sellers for years to come.

If you're interested in obtaining an advance review of our Model 444, call us at Teledyne CAE. We're in the book.

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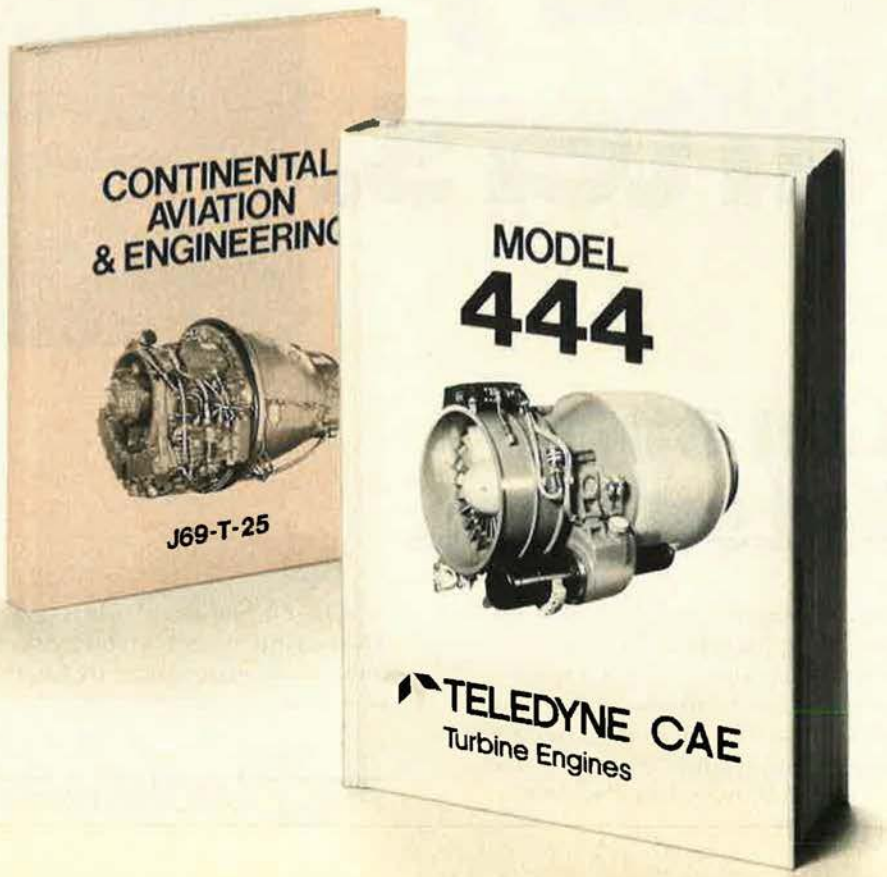
TOLEDO, OHIO 43612



IN FOCUS...

By Edgar Ulsamer, SENIOR EDITOR (POLICY & TECHNOLOGY)

Washington, D. C., July 1

"The Need for a Reagan Strategic Nuclear Policy"

The American Heritage Foundation, a Washington-based public policy think tank, recently released under the above heading a detailed critique of the new Administration's strategic policies to date. The most noteworthy aspect of the somewhat scathing criticism of the Administration is that the Foundation was a major contributor to the Reagan team's original policy formulations, both in terms of ideas and people. Several of the latter now hold senior positions in the new Administration.

The Foundation's analysts singled out for detailed criticism the Administration's alleged tardiness in deciding on and implementing programs to ensure the survivability of the nation's ICBM and bomber forces by conducting yet more studies of "the array of already overstudied remedies."

The American Heritage Foundation summarized its findings with this conclusion:

"A fact as disturbing as the new Defense Department's failure to move rapidly in acquiring systems that will remove US strategic forces from their current state of extreme vulnerability is its failure to develop its thinking on what the utility of these forces is. . . . Almost all of the defense spending increase devoted to acquisition of new programs has gone to conventional arms, and not for the purchase or accelerated development of strategic systems. Thus far, the new Administration has given few signs that it understands the urgency of correcting the vulnerabilities in US strategic forces or has a clear vision of how these forces should be employed after their survivability has been assured."

Resurrection of the B-1V

The defense community remains on tenterhooks over when and how the Administration will play the biggest doubleheader in sight: the MX/MPS and the Multirole Bomber decisions. In spite of a congressional mandate that the Administration settle and commit to production both programs by March of this year—and subsequent avowals by the Defense Department to resolve these two issues by mid-June—they remain in a state of limbo, without good clues about when a denouement can be expected.

An analysis of the available information, nevertheless, makes possible some educated guesses. In the case of the multirole bomber, it appears almost certain that the FB-111B/C, an interim solution championed by Gen. Richard Ellis, the outgoing Commander in Chief of the Strategic Air Command, has been dropped from further consideration.

In a recent meeting with ranking members of the Senate Armed Services Committee, Defense Secretary Caspar Weinberger gave no hints about whether he favored building both a B-1V—a modernized variant of the original B-1 design—and, later on, probably with an Initial Operational Capability (IOC) in 1991, the ATB (or Advanced Technology Bomber, popularly known as Stealth), or only the latter.

The Air Force some time ago recommended to the Defense Department that about 100 B-1Vs be built initially—with the option to acquire additional aircraft of this type as necessary—while at the same time developing the Advanced Technology Bomber at an expeditious rate.

In briefings for senior members of Congress on ATB, often involving Secretary Weinberger personally, the impression is left that this technology is the most cost-effective solution to the strategic bomber requirement. Also, cost and schedule factors are presented in a way that suggests that there is little to be gained by also building the B-1V.

It is noteworthy that for the time being the Office of the Secretary of Defense (OSD) is enforcing a gag rule that prohibits the Air Force from presenting to Congress its views on ATB, especially so far as cost and schedule information are concerned. This circumstance is ironic because several of OSD's principal weapons experts are known to share basically USAF's view that technological and cost uncertainties attending ATB remain major and that, therefore, the B-1V should be deployed first. Industrial contractors who play key roles in the ATB program, on the other hand, appear to have been encouraged by OSD to "lobby" Congress, thus cementing the Administration's optimistic assumptions about the proposed Stealth bomber's imperviousness to Soviet countermeasures, as well as its relatively early operational availability at a predictable, affordable price.

Building about 100 B-1Vs is pegged at $19.7 billion, while about 120 Stealth bombers (deemed the minimum essential number of aircraft) is thought to cost about $30 billion. It can be argued, of course, that the latter figure is much "softer" than the B-1V's price tag. No Stealth bomber has ever been built, not even as a scaled-down prototype. (While a limited number of small, fighter-size Stealth aircraft exist and are undergoing testing, they don't use the aerodynamic configuration proposed for the ATB.) Further, chances of controlling the cost of the latter probably would be significantly better if the ATB is not "the only game in town" and must, in effect, compete against the alternative of B-1V follow-on buys.

One of the major factors separating the Air Force, along with a majority of congressional experts (especially on the House side), from OSD and General Ellis is the latter group's disinclination to interpret the underlying requirement as encompassing the force projection and cruise missile launcher roles. Rather, OSD seems to treat the SIOP (single integrated operational plan) mission, meaning the aircraft's penetration of enemy airspace to the target during nuclear war, as the overriding if not the only task of a new bomber.

Assuming that ATB will perform as advertised, there is little cause for questioning its suitability for carrying out the SIOP job well. While its payload probably will be markedly lower than that of the B-1V, it will be

more than adequate to accommodate a sizable quantity of nuclear weapons. It is obvious also that ATB's ability to penetrate and attack at medium and moderately high altitudes represents a major plus compared to the B-1V, which is confined to low-altitude operation in the target area.

Military experts acknowledge that an aircraft penetrating on the deck will be hard-pressed to conduct target assessment and mop-up operations since its crew can neither see as much nor react nearly as fast as a high-flying advanced technology bomber. It is possible, however, to suggest a counterargument that some experts believe would slightly favor the B-1V. Because of the peculiar technologies that make possible Stealth qualities, some ATB designs probably won't be as maneuverable as a B-1V and thus can't take full advantage of terrain-following flight to reduce the risk of detection by ground-based radars.

Also, other operationally significant constraints may affect Stealth bombers. One of them stems from ATB's inability to carry external stores, such as ALCMs, without losing its "invisibility." Secondly, ATBs probably will be tied to night operations so far as training is concerned, thereby perhaps curbing their flexibility. Lastly, even minute blemishes in its radar-absorbing protective cover pose grave risks to ATB. Hence, there appears to be a requirement for frequent and stringent refurbishing. At best, ATBs will be quite dependent on complex and peculiar logistics support. This circumstance might affect how and where ATBs can—and can't—be based.

A mission beyond the SIOP task that ATBs and other aircraft incorporating Stealth technologies appear eminently qualified for is antishipping. With virtually all shipboard defenses dependent on radar fire-control, Stealth aircraft presumably would turn heavily armed and well-defended combatants into "sitting ducks." Not surprisingly, naval experts are apprehensive about ATBs and have begun looking into the feasibility of developing "Stealth ships."

While many Air Force and congressional experts are distraught over the prospect of an ATB-only approach to the Multirole Bomber requirement because of operational considerations, so are other elements of the legislative and executive branches of government—but for political reasons. Many staunch Republicans, on and off Capitol Hill, wince at the prospect of scuttling the B-1 technology in favor of ATB. Such a step could be seen as confirming the wisdom of President Carter's decision to cancel that aircraft program in 1977 and of his headline-begetting embrace of ATB in August of last year. Similarly, the Reagan Administration's commitment to letting the services decide how best to spend the funds allotted them probably would ring hollow if the President and his National Security Council overruled the Air Force on the Multirole Bomber and perhaps also on the MX/MPS program.

It would seem foreordained also that influential elements of Congress on both sides of the aisle who remain loyal supporters of the B-1—especially in light of USAF's continuing commitment to this "proven" technology—will resist an ATB-only solution. Politically, the result would be divisiveness and the possibility that funding for ATB in the outyears might be jeopardized. Thoughtful supporters of the "B-1V first and ATB later" approach, of course, are aware of the budgetary crunch and overlapping funding "bow waves" that result if several strategic programs are carried forward concurrently, such as MX/MPS, B-1V, ATB, and perhaps the new SLBM, known variously as Trident II and D-5.

The answer, these experts believe, is to slip ATB'S IOC by two years, to 1993, a date that many feel is more realistic than the very ambitious 1991 target. In that case, all four programs can be fitted into an orderly budgetary progression, without inducing unacceptable funding "spikes" in a given year.

Congressional concern over the schism and risk that would be impelled by a decision to only build ATBs was heightened by a letter sent by Gen. B. L. Davis, SAC's next Commander in Chief, to House Armed Services Committee Chairman Melvin Price. Taking a position diametrically opposed to that of his predecessor, General Ellis, the new head of the Strategic Air Command asserted that "my conclusion is the same one that most of the senior Air Force leadership has reached—that the B-1 is the logical choice to satisfy the near-term requirement."

Adding that he was encouraged by the progress of Stealth technology, he warned, however, that there is "still enough development risk that I would not want to rely totally on our aging B-52s until an Advanced Technology Bomber . . . is operational. I am convinced that the low technological risk associated with the B-1, and its proven capabilities, make it the best choice to meet our needs in the late 1980s and 1990s."

SAC's new CINC expressed his support of the House Armed Services Committee's proviso that procurement of the B-1 is to get under way in FY '82, concurrent with research and development on the ATB: "I believe this approach will provide a complementary mix of aircraft to meet the required strategic deterrent posture of our nation for the foreseeable future."

In the meantime, several prominent lawmakers from both political parties also expressed their concern over the prospect of abandoning the B-1V program. Rep. Jack Kemp (R-N. Y.), one of the most influential members of the House, for instance, reminded Secretary Weinberger in a letter that during last year's election campaign, "President Reagan sharply criticized the Carter Administration for canceling the B-1 in light of the . . . urgent need to modernize our bomber force." And the New York Congressman added pointedly, "the President also took exception to Carter's reliance upon the Advanced Technology Bomber, charging that ATB was a 1990s solution to a 1980s problem."

Reciting details of this nation's twenty-year-long and to date futile quest for a new bomber, Mr. Kemp bluntly asserted "the real and perceived impact of having a force of modern bombers in the mid-1980s vs. the wishful capabilities of theoretical airplanes is truly significant, whatever the future holds for bomber design."

The B-1V can remain effective even against sophisticated air defenses "well into the 1990s" by the incremental incorporation of various Stealth features, Representative Kemp suggested. By the mid-1990s, he added, the B-1V could be assigned functions other than SIOP penetration, patterned after the B-52's multirole experience. Overall, he predicted a useful life of at least thirty years for the B-1V.

Buying the B-1V now and a Stealth bomber later would result in several advantages, Mr. Kemp suggested, making these points: "(1) We do not accelerate the Stealth technology imprudently in an attempt to remedy a worrisome near-term defense posture. Such an effort may well result in

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SCIENCE/SCOPE

The "Missionized" F-15E Eagle's radar can be used to designate fixed and moving targets at long range. In a typical battlefield interdiction mission, the radar would create a map when the aircraft is at high altitude far from the battlefield. The operator would freeze the map on his display to have enough time to locate a target and place a cursor over it. At the same time he could designate an offset aim point, like a bridge, which could be reacquired at low altitude en route for use in updating the target's position. The "Missionized" Eagle's AN/APG-63 radar, enhanced with synthetic aperture radar capability, was developed by Hughes under contract to McDonnell Douglas Corp., builder of the F-15.

Pilots soon may get navigational information from a TV display instead of paper maps. Hughes, under a U.S. Air Force contract, is developing a system that will use a computer to electronically generate and display realistic pictures of terrain and man-made features. The new map will be coupled to an aircraft's navigation system to help the pilot fly at high speeds and low altitudes despite bad weather, darkness, and radar jamming. Ultimately, production models of the map could be tailored to meet different mission requirements. One mission, for example, may require roads and highways as navigational checkpoints, whereas another would require navigation with reference to terrain features. The prototype system will store 250,000 square miles and use more than 1,500 bits of data to encode each square mile. It is scheduled to be delivered in August 1982.

The F/A-18 Hornet has passed an important series of tests proving the compatibility of its AN/APG-65 radar with the radar-guided AIM-7F Sparrow missile. The strike fighter performed flawlessly during contractor demonstration firings at the Naval Air Test Station at Patuxent River, Maryland. The lone miss was due to a missile malfunction. Hughes builds the radar under contract to McDonnell Douglas Corp. for the U.S. Navy and Marine Corps F/A-18 and the Canadian CF-18.

By producing a coldness almost to where molecular motion freezes, a refrigeration unit cools the detector "eyes" of a U.S. Navy infrared sensor so they are sensitive enough to see infrared radiation emitted by warm objects. The cryogenic dewar base is built by Hughes for the A-6E TRAM/DRS (Target Recognition and Attack Multisensor Detecting and Ranging Set). The TRAM/DRS, also built by Hughes, is a combination laser and infrared device that lets crewmen of the A-6E Intruder aircraft locate and attack ground targets day or night.

The TOW antitank guided missile is being improved under a new U.S. Army program. The first step will increase the missile's armor-penetrating capability with a redesigned five-inch-diameter warhead. The second step, called TOW 2, will include a heavier six-inch warhead and a microprocessor-based digital guidance set for increased accuracy and greater flexibility in guidance programming. The TOW 2's flight motor will be reloaded with an improved propellant for a higher impulse to compensate for the added weight of the warhead and other modifications. Hughes has produced more than 275,000 TOW (Tube-launched, Optically tracked, Wire-guided) missiles for the Army, U.S. Marine Corps, and 32 nations.

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severe compromises in aircraft design for the sake of program pace.

"(2) We reduce the risk in our commitment. Otherwise, if we rely solely on a Stealth airplane for the 1980s and find that we encounter significant problems, or we find that the Soviets have concurrently developed an effective defense against it, we would have only a B-52 force that would be over forty years old before another new bomber could be developed. Such a course would lead to an intolerably feeble US bomber force.

"(3) On the other hand, the B-1 facilitates an orderly transition through this century regardless of Stealth developments. If the Stealth does become a viable bomber, the B-1 can assume the B-52's conventional mission and cruise missile carriage roles. Only the B-1 provides for the orderly and expeditious retirement of the B-52s.

"(4) In order to accommodate both aircraft within existing budget constraints, the IOC of the Stealth bomber could be put off two or three years. The B-1 would be capable of performing the penetrating bomber mission until the ATB was operational, and a delay in the advanced bomber's IOC would incur the advantages of a carefully paced development of the new Stealth technology."

Sen. John Glenn (D-Ohio) also came out firmly in support of the B-1V in a letter to President Reagan. The former Marine Corps test pilot and program manager contrasted the availability of the B-1V by 1987 and its utility for global force projection in conventional war as well as a cruise missile carrier and strategic nuclear delivery system in nuclear war with the risks entailed by a unilateral commitment to ATB. "I doubt," he wrote, "that various 'advanced technology bombers' or 'Stealth' aircraft can be made ready for operational use in the near- or mid-term future. There are serious technical problems, the sensitivity of which prevents discussion in this letter."

He also questioned the suitability of ATBs for the conventional war and cruise missile carrier roles.

On the latter point, it would seem clear that ATBs, like other aircraft, can be tailored to various, including multirole, missions. Equally evident is the fact that if a Stealth bomber has to perform missions other than that of the SIOP penetrator, this will require substantially greater payload capacity than otherwise needed. The greater the payload requirement the larger the size of the Stealth bomber; and the larger the aircraft the more difficult is the designer's task of providing it with "invisibility."

There are some indications that mounting congressional resistance to an ATB-only solution may cause the Administration to reconsider its apparent inclination "to bet Stealth technology on the come."

IN FOCUS...

MX About to be Settled?

Current best guess by congressional experts is that the Administration will announce a decision on MX/MPS (multiple protective shelter basing) by August 1. There is reason to believe that there will be an initial commitment to deploy this weapon system in 2,300 shelters. This solution would differ from the Air Force's proposal, which provided for two complexes of 2,300 shelters each. There is no clearcut indication of how many missiles the Administration plans to deploy in the 2,300 shelters, with estimates ranging from a truncated deployment of 100 missiles to a full complement of 200.

Backing up this deployment mode would be the tentative development of an advanced airmobile system, the nature of which can't be disclosed at this writing. There are indications that the MX missile itself will be upgraded from the originally proposed ten MIRVed warheads to twelve or perhaps even more.

The MX decision, according to congressional experts, reflects the majority opinion of a special blue-ribbon panel convened by the Defense Department to review various basing and missile options and to make recommendations concerning the most efficacious approach.

Congress's Office of Technology Assessment (OTA), meanwhile, released an analysis of eleven MX missile basing schemes that narrowed the field down to five "possible" deployment modes. OTA's five options are the Air Force's MX/MPS; MPS combined with antiballistic missile defense; launch under attack; basing on small submarines; and basing on large aircraft.

Concerning the latter, the OTA analysis suggested that "an airmobile MX—carried on wide-body aircraft and launched in midair—would be survivable provided that the aircraft received timely warning and took off immediately." The dependence of such a system on prompt response to timely warning of SLBM attacks, according to OTA, could lead to a "failure mode" similar to that of bombers on the ground. Airborne alert, the analysis acknowledged, could overcome this deficiency, but it would be expensive.

On the other hand, OTA's study pointed out, an airmobile force "could not be threatened by the Soviet ICBM force unless the Soviets deployed many more ICBM missiles than they now possess and used them to barrage the entire central United States. The outcome of such an attack would be insensitive to Soviet improvement in the fractionation and accuracy of their ICBMs. An airmobile MX force could not endure long after an attack if the Soviets attacked every airfield on which such planes could land to refuel. In this case, the National Command Authorities would have to 'use or lose' the MX missiles within five to six hours of a Soviet attack."

Washington Observations

★ The Defense Department and the National Security Council are emphasizing the importance of long-range force planning. The services have been instructed to pay greater attention to what is known as the Extended Planning Annex, which covers a fifteen-year period, compared to the Five-Year Defense Plan.

★ There is evidence of increasing interest in Congress and the Defense Department in reviewing and changing current arrangements concerning military activities in space. At stake is the roles and mission question over whether or not the Air Force should be the operator of *all* systems functioning in that medium. The preponderant notion seems to be that ballistic missile defense is a "space activity" and that therefore it should be assigned to the Air Force rather than the Army.

★ Secretary of the Army John Marsh recently disclosed that he and Secretary of the Air Force Verne Orr were "regrouping" on the CX airlifter program by reexamining the requirements for airlift modernization and the alternatives available for such a modernization and enhancement of existing capabilities. This reexamination, he told this reporter, would be completed "fairly soon." While he declined to disclose any specifics concerning alternatives to the CX under study, he reconfirmed the Army's need for intratheater as well as intertheater airlift capability. ■

AEROSPACE WORLD
News, Views & Comments

By William P. Schlitz, SENIOR EDITOR

Above, the Gulfstream Peregrine following its first flight this past May. The aircraft, designed by Gulfstream American Corp. of Bethany, Okla., is "a highly fuel efficient, high-performance military trainer" whose production version is projected to have a maximum speed of 383 knots at 30,000 feet and to be able to climb to 40,000 feet in under seventeen minutes. Below, mockup of Fairchild Republic Co.'s entry in the Next Generation Trainer competition. Estimated value of the program is $2.3 billion. Design concept guidance is to be sought from USAF instructor pilots and crew chiefs during a tour of Air Training Command bases.

Washington, D. C., July 2

★ In June, fourteen B-52H Stratofortresses, elements of the Strategic Projection Force (SPF) participated in a "bare-base" exercise at Biggs Army Air Field, near El Paso, Tex.

The SPF B-52s from SAC's 319th Bomb Wing at Grand Forks AFB, N. D., and a number of other deploying aircraft assigned to SAC bases are the command's contribution to the Rapid Deployment Joint Task Force.

During the no-notice mobility exercise, dubbed Busy Prairie II, some 1,650 people were involved at Biggs, housed in a tent city. Fourteen other SPF B-52Hs of the 5th Bomb Wing simulated bare-base operations at their home station at Minot AFB, N. D.

According to SAC, the ten days of activities at Biggs were part of a bigger exercise called Giant Iron designed to test SAC's ability to support contingency operations with conventional forces.

Both SPF units went on to perform conventional missions over ranges in central Nevada and Utah, while B-52D units also flew range missions as part of Giant Iron.

Busy Prairie II is the second such SAC exercise since the establishment of the SPF last year.

★ A team of seven F-16 Fighting Falcons from the 388th Tactical Fighter Wing at Hill AFB, Utah, recently won the British Royal Air Force Tactical Bombing Competition at RAF Lossiemouth, Scotland.

The win marks the first appearance of the F-16 in international bombing competition.

During the four-day event, the F-16 team competed against Royal Air Force Jaguars from RAF Coltishall, UK, and RAF Bruggen, Germany; Royal Air Force Buccaneers from RAF Honington, UK; and USAF F-111s from RAF Lakenheath, UK.

The F-16 team scored 7,831 points of a possible 8,000, to finish 1,074 points ahead of the second-place Jaguar team from Bruggen.

Points were awarded for bombing accuracy, survivability against the air-to-air and ground-to-air threats, and maintenance effectiveness. RAF F-4s and Lightnings provided the air-to-air threat, while Rapier missile systems provided the ground-to-air threat.

During the sixteen competition sorties, the F-16 team scored a total of eighty-six "kills" against interceptor aircraft with no "losses." The other four teams only managed one "kill" between them and lost forty-two.

The 388th's Capt. Roger Riggs received the highest individual honor for bombing accuracy, the Sir John Moggs Bombing Trophy. Capt. Wayne Edwards, another Fighting Falcon pilot, was the runner-up. *(Captain Edwards wrote "The F-16: Not*

Like Any Other," AIR FORCE *Magazine, August 1980, p. 34.)*

The eighty-five maintenance and support people who deployed along with the aircraft captured second place in the maintenance effectiveness competition.

★ The first USAF F-16 Fighting Falcon fighters to be based overseas arrived at Kunsan AB, Korea, on June 26, joining the 8th Tactical Fighter Wing. They arrived as the "Wolf Pack" wing was celebrating its fiftieth anniversary.

The F-16s will replace F-4 Phantom aircraft at Kunsan. Later this year, the F-16 is scheduled to join the 50th Tactical Fighter Wing at Hahn AB, Germany.

★ In nine days of flying during a combat exercise dubbed Team Spirit '81, F-15s Eagles tallied a perfect maintenance score at Kwangju AB in Korea.

Not a single sortie of the 347 flown by the twenty-four aircraft of the 18th Tactical Fighter Wing from Kadena AB, Okinawa, Japan, was canceled because of maintenance problems, officials said.

Furthermore, the Eagles' availability averaged ninety-one percent during the exercise, which saw them pitted against F-86s, T-33s, F-5s, and other dissimilar aircraft.

The unit's high sortie rate was achieved because its maintenance crews (which had been airlifted from Kadena in C-141s) were able to hot-pit refuel three F-15s simultaneously in eight and a half minutes. Hot-pit refueling requires extra caution because an engine is kept running aboard each aircraft to save time.

A highlight following the exercise was that one Eagle flew to Osan AB in Korea to demonstrate the feasibility of using a highway to land, service, and launch fighters. Again, maintenance crews serviced and turned the aircraft around in record time, officials said.

★ Air Force recruiters are currently seeking the largest number of applicants for pilot and navigator training since the beginning of the All-Volunteer Force in 1973.

More than 1,500 pilot and 800 navigator candidates will be selected for officer training in FY '82, Recruiting Service officials said.

Selectees will attend a twelve-week Officer Training School at Lackland AFB, near San Antonio, Tex. Upon graduation, pilot candidates will be assigned to one of seven undergraduate pilot training sites in Alabama, Arizona, Texas, Mississippi, or Oklahoma for an extensive flight training program of up to thirty-five weeks. Navigator selectees attend twenty-nine weeks of school at Mather AFB, near Sacramento, Calif.

For further information, contact local Air Force recruiters or call toll-free (1-800) 523-5000 or, in Pennsylvania, (1-800) 492-2029.

★ A special team has been assembled at Davis-Monthan AFB, Ariz., to develop a training program for those who eventually will maintain and operate the ground-launched cruise missile, officials said.

The Air Force plans to use the GLCM as a mobile weapon system. Each flight-size unit will be equipped to launch sixteen independently targeted missiles and will consist of four transporter-erector launchers and two launch control centers.

Crew training is to be in three phases. Because GLCM is ground mobile, the first phase will include USAF's basic survival course that emphasizes field living conditions and escape and evasion techniques.

Phase two will consist of a twelve-week initial qualification program for launch crews conducted at Davis-Monthan to include both normal launch and emergency action procedures.

The final phase is to be conducted by overseas operational units and will consist of mission qualification and additional training.

Maintenance training will begin at

Recent launch of an Air Force/Navy Advanced Medium-Range Air-to-Air Missile (AMRAAM) from an F-16 at the White Sands Missile Range in New Mexico. The launch not only demonstrated smooth flight characteristics but also verified the aircraft/launcher interface. The launch of the Hughes Aircraft Co. candidate in the validation phase of the AMRAAM development program followed two earlier launches from F-15s, both successful.

ATC technical schools and then at Davis-Monthan for field work.

The GLCM training program is to commence next January.

★ This year, in conjunction with the Eighth Air Force's annual reunion to be conducted in St. Paul, Minn., October 15–18, will be a symposium exploring the Eighth's role in World War II.

The event should be of interest to air war historians.

The symposium, on October 15, will feature the Luftwaffe's General Adolf Galland; Philip Ardery, former Commander of the 564th Bomb Squadron; Cass Hough, former chief of the Eighth's Technical Operations Section; and Francis S. Gabreski, the Eighth's highest-scoring ace. Roger Freeman, air war historian and author of *The Mighty Eighth,* will moderate. Sponsored by the 8th Air Force Memorial Museum Foundation, the symposium will consist of morning and afternoon sessions dealing with the Eighth vs. the Luftwaffe in 1942–43 and 1944–45, respectively. Questions from the floor will be accepted during both sessions.

For details, write the 8th AFMMF Symposium, P. O. Box 4738, Hollywood, Fla. 33083.

AEROSPACE WORLD

Some 1,500 former members of the Eighth are expected to attend the reunion.

In a related matter, the foundation has commissioned Russell A. Strong of Kalamazoo, Mich., to prepare a biographical directory of the Eighth's fighter and bomber unit commanders and staff officers, lieutenant colonel and above.

Mr. Strong, director of alumni relations at Western Michigan University, is currently completing a history of the Eighth's 306th Bombardment Group, in which he served as a navigator in 1944. He also edits a quarterly newsletter mailed to former 306th members.

For inclusion in the directory, contact Mr. Strong at 2041 Hillsdale, Kalamazoo, Mich. 49007, and include name, rank, unit, and job assignment.

★ The Air Force is bracing for an increase in its telephone bill: about $25 million a year.

It's because American Telephone and Telegraph has ceased giving a special low rate known as TELPAK to major customers leasing long-haul circuits. For the Air Force these are used in many command and control systems, as well as AUTOVON and AUTODIN.

Similar increases are also to affect DoD and other federal agencies.

TELPAK rates were often challenged in the courts since initiation in 1961, with small customers arguing that the discounts actually raised rates for the smaller users.

In litigation coming from the other direction, meaning suits brought by big users like DoD aimed at maintaining the lower rates, the courts upheld AT&T's decision to discontinue the TELPAK rates.

Besides dropping TELPAK, AT&T was allowed a sixteen percent increase on all interstate private line services (including most Air Force circuits) in May, and at this writing the FCC was considering another sixteen percent across-the-board increase on top of that.

USAF is conferring with the Defense Communications Agency to seek ways of reducing the impact of the increases.

★ Northrop Corp. is betting it has another winner in its F-5G Tigershark tactical air defense fighter, an operational mockup of which was first publicly unveiled at the Paris Air Show in June.

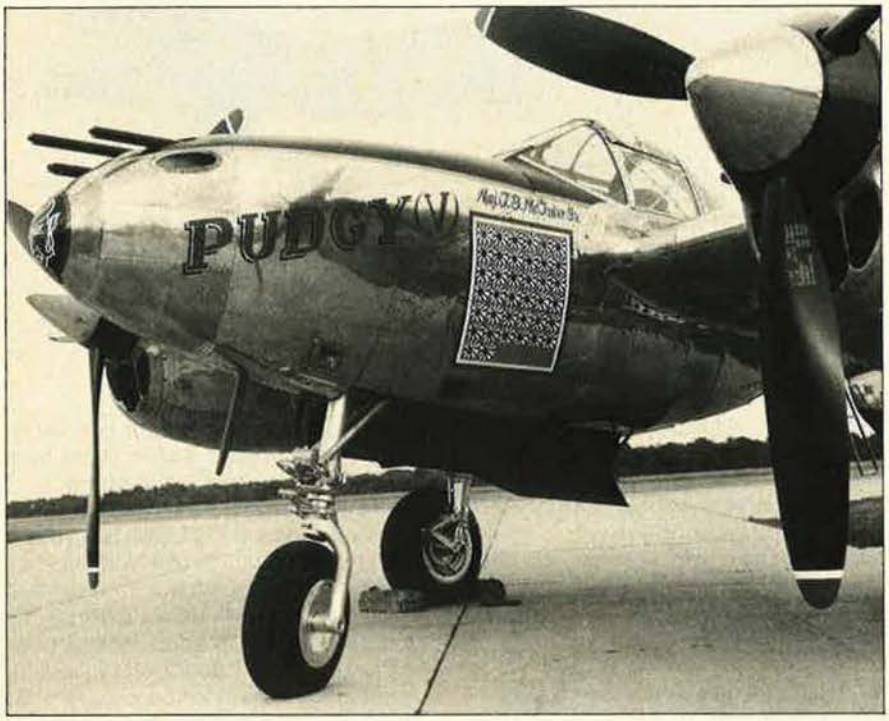
The F-5G is now in production at the company's Hawthorne, Calif., facility.

General Electric Aerospace Electronics Systems Department, Utica, N. Y., has been awarded a Northrop contract for more than $200 million for application and testing of an advanced multimode radar system destined for the F-5G, with options for quantity production. Likewise a contract to Honeywell, Inc., of Minneapolis, Minn., for more than $50 million to develop and produce an inertial navigation unit. Both items are to have increased reliability and maintainability, the company said.

According to Northrop, the F-5 "is the most widely used American-built supersonic fighter in the world," with some twenty-eight nations having purchased or ordered 2,300 in its various versions.

★ In June, the Army began operational testing of its new YAH-64 Advanced Attack Helicopter.

During the three-month program, all elements of the aircraft's weapon system are to be tested under simu-



Restored by the Air Force Museum, Wright-Patterson AFB, Ohio, this P-38L is on exhibit at McGuire AFB, N. J., where it is on permanent loan. The aircraft carries the markings of Maj. Thomas B. McGuire, Jr., a World War II ace with thirty-eight victories who was killed in action in the Philippines in January 1945, and is a memorial to him. Under the direction of project officer Lt. Col. Ed Leete and project maintenance officer Lt. Patricia Hatem, 3,000 hours went into the restoration. The artwork and markings on the aircraft, which were obtained from RMP Aviation and Gary Larkin of Colfax, Calif., are by patron AFA member Don Spering of Aircraft in Review. *He also supplied this photo.*

UK A-10 Wing Exceeds Exercise Sortie Goal

This past spring, the 81st Tactical Fighter Wing, RAF Bentwaters, UK, conducted an in-house surge exercise dubbed "Porker 500." The goal: 500 sorties in one day.

The final tally in a period from 7:00 a.m. to 9:00 p.m., which saw wing A-10s flying against targets in the UK and in Germany, was actually 533. (It may well have been more because the pilots flying from German Forward Operating Locations (FOLs) were restricted to four sorties each by USAFE regulation. Weather in the UK was also a factor, with most of the afternoon sorties being flown under instrument flight rules.)

Although the sorties were kept short to maximize their number, all were scheduled for normal graduated combat capability training. (GCC allows newer A-10 pilots to work up to full proficiency in their aircraft.)

In the UK, 11,016 30-mm rounds were expended on strafe targets and moving "splash" targets towed by the Royal Navy. Bombing sorties emphasized first-run, pop-up deliveries. In place on one range were eight British Army FACs with simulated laser markers and inflatable tank targets for close air support missions. In addition, the wing's A-10s logged a total of ninety day and twenty-four night aerial refuelings.

In Germany, the emphasis was on close air support. While the majority of aircraft hit their primary targets, the rest attacked their alternates or targets of opportunity. These operations were hampered by early morning fog or lack of FAC contact, although seventy-nine percent of all missions flown were controlled by air or ground FACs from the 601st Tactical Control Wing.

The 81st TFW credits the hard work of its maintenance people for the day's outstanding sortie rate. At the outset, the wing had eighty-nine fully mission capable A-10s and at day's end had eighty-two (eighty-five by early hours the next day). In addition, 495 sorties were flown without aircraft malfunction and only twenty-eight aircraft required maintenance before the next mission. There were only three ground aborts and no air aborts.

While not a demonstration of combat capability—in wartime the A-10s would remain airborne and on target for longer periods—the wing's intent was to set a record for the most sorties ever flown by a single wing in one day, and it did.

lated battlefield conditions. Among these elements are the Hellfire laser-guided antitank missile, the Hughes Helicopter-developed Chain Gun automatic cannon, 2.75-inch air-to-ground rockets, the Target Acquisition Designation Sight (TADS), Pilots Night Vision Sensor (PNVS), fire control system, and the Integrated Helmet and Display Sighting System (IHADSS).

In addition to testing and firing, all ground support equipment and technical manuals are to be evaluated.

Troops of the 7th Infantry Division, Fort Ord, Calif., the first unit scheduled to be equipped with the Hughes-developed YAH-64, are to make up the friendly and threat forces engaged in simulated battle.

Ground-school curriculum for 7th Division pilots and copilot/gunners consisted of classroom work, instruction on a computer-generated cockpit procedures simulator, and ground training in a YAH-64 prototype. Called the Aircrew Part Task Trainer (APTT), the cockpit simulator provided conditions from preflight to landing and shutdown and include such emergency procedures as engine and hydraulic failure. Ground instruction also stressed night flying aboard the YAH-64 prototype.

Hughes has also conducted extensive maintenance training of 7th Divi-

ONE EWI PROGRAM: BILLETING MANAGEMENT TRAINING

Beds made, rooms cleaned, security checks, desk clerking, and switchboard operations. These jobs probably wouldn't appeal to many USAF members. However, how well they're performed affects the well-being of scores of Air Force members and their families each year. So these jobs do interest USAF Services officer Capt. Barbara G. Lauen. She understands their impact on USAF's transient lodging operations around the world.

Captain Lauen recently completed an assignment with a major hotel chain in Washington, D. C., under the Air Force's Education With Industry (EWI) program. She spent ten months learning how an industry leader in hotel management operates. It's knowledge she now shares with USAF in her new job at the Air Force Engineering and Services Center, Tyndall AFB, Fla. Her work should help in developing better customer services through improved procedures in billeting management.

For almost half her EWI stint, Captain Lauen participated in two of the Marriott Corp.'s management training programs. Called Individual Development Training, one covered housekeeping and the other front-desk operations. She learned how a major chain manages its operations while actually making beds, cleaning rooms, and performing the many jobs associated with running a hotel. During the past year, she came to appreciate the corporation's slogan, "representing the Marriott way," and would like to see the meaning behind this message adapted for use within her own career field.

Captain Lauen noted that variations among USAF transient quarters are influenced by many factors—from the professionalism of the billeting staffs to the sophistication of the available services and facilities. Routine procedures, such as operating a cash drawer on one base vs. a cash register at another, can differ and can sometimes require learning entirely new systems of management when transferring between billeting assignments. Experiences with billeting and dormitory management since 1971 have shown her where improvements can be made. Her EWI experience has suggested directions such changes might take.

One problem is in retaining and motivating maids and janitors. Captain Lauen explained: "Some Air Force billeting officers are hard pressed just to maintain sufficient staff. New people are put straight to work and learn, often incompletely, from others on the shift." Her EWI experiences suggest that formal training and orientation programs are needed for these employees. About other operations, the Captain believes, "We [billeting officers] have to introduce the idea that we are providing services to paying customers and develop better service-oriented attitudes."

Development of an automated reservation system, something the Air Force is already studying, interests Captain Lauen. She also wants to work out ways to control occupancy of transient lodging to accommodate low- and peak-use periods. She believes this "sell-the-room" concept offers many advantages to USAF and to military travelers and their families who might not otherwise know when and where these reasonably-priced accommodations exist.

At Tyndall, Captain Lauen is a services staff officer involved in forming policy and writing guidelines for USAF billeting operations, a logical follow-on to her EWI assignment. Active-duty officers will find EWI options in twenty Air Force career fields. Information and application procedures can be found in the USAF Formal Schools Catalog, AFM 50-5. Interested officers can call toll-free (800) 543-3577 for the EWI Program Manager.

—T. L. S.

sion personnel in ten MOS categories.

★ The Army, in the wake of last September's manning study, is moving toward a system of unit rotation rather than replacing individual soldiers in units overseas.

Already COHORT (for cohesion, operational readiness, and training) companies are being formed at Fort Knox, Ky., Fort Sill, Okla., and Fort Benning, Ga. These soldiers will take basic, advanced, and unit training together and form the nucleus of the first units to rotate abroad beginning in October 1982.

"A part of the architecture for a new manning system is an American regimental system that will enable affiliated units to train, deploy, and return to 'home' posts together," said Army Chief of Staff Gen. E. C. Meyer.

The move is "a conscious Army effort" to allow soldiers to select a planned series of assignments within their regiment that will help immeasurably with family stability and future planning, officials said.

"Many concurrent actions in force development, manpower, and personnel management will occur and selected company-sized infantry, armor, and cannon field artillery units will be realigned for future rotation," General Meyer said.

★ A ninety-one member Base Engineering Emergency Forces Team (known as Prime BEEF) from Andrews AFB, Md., recently completed a five-day deployment exercise at Eglin AFB, Fla.

The team, comprised of members of the 1776th Civil Engineering Squadron and the 1185th Civil Engineering Group, traveled to Eglin for training in the Prime BEEF wartime mission of rapid runway repair and facilities construction.

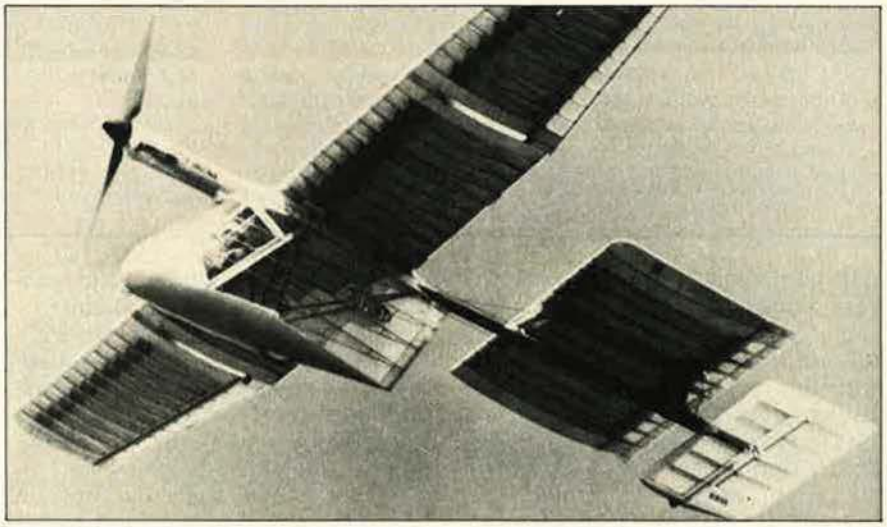
Instructors and evaluators from the Air Force Engineering and Services Center at Tyndall AFB, Fla., were on hand to train the Andrews team, evaluate their performance, and ensure a realistic wartime environment.

To simulate the effect of 750-pound bombs on a runway, the instructors blasted two fifteen-foot craters into an unused section of runway. The team's job was to fill the craters, build aluminum patches, and place the patches over the craters—making the runway usable again.

The instructors simulated a wartime environment complete with unexploded and delayed-fuze munitions, chemical attacks, and an extra party transmitting on the team's radio frequency.

Despite the delays from simulated attacks, the hot Florida sun, and the added burden of wearing gas masks, the Andrews team earned an excellent comment from the instructors.

★ **NEWS NOTES** —"We don't know why," said an AFSC spokesman **of the failure of the first test of a laser** aboard an aircraft **to destroy a missile in flight.** The unsuccessful test took place in early June at the China Lake weapons test center in California. Once the problem is analyzed,



In July, aviation history was made with the first flight of a solar-powered aircraft across the English Channel when Solar Challenger *touched down at RAF Manston in the UK following a five-and-a-half hour flight from Cormeilles in France. The aircraft, flown by Stephen Ptacek and designed by a team headed by Dr. Paul MacCready of human-powered flight fame, flew 185 miles in the momentous flight. (Wide World Photos)*

INDEX TO ADVERTISERS

Capt. Phil Lacombe Joins Magazine Staff as EWI Trainee

Capt. Phil Lacombe has joined AIR FORCE Magazine under the Air Force Institute of Technology's Education With Industry (EWI) program. An eight-year veteran of Air Force public affairs, Phil replaces Maj. Tom Sack, who will join the international public affairs staff of Allied Forces Central Europe (AFCENT) at Brunssum, the Netherlands. Phil has a master's degree in journalism from the University of North Carolina and recently returned from a three-year tour as a public affairs officer with USAFE headquarters at Ramstein AB, Germany. He has also served as an Air Division and NORAD Region public affairs officer at Fort Lee AFS, Va., and was the base Information Officer at Kingsley Field, Ore.

EWI trainee Capt. Phil Lacombe at AFA Headquarters.

the spokesman said, the laser weapon will take another crack at it.

USAF has accepted the **2,000th ACES II advanced-concept ejection seat** from manufacturer Douglas Aircraft Co., Long Beach, Calif. The seats **equip F-15s, F-16s, and A-10s** and are designed to allow ejections at altitudes as high as 50,000 feet and speeds up to 600 mph. The seat has been used in eighteen successful ejections thus far.

DoD's Secretary Caspar W. Weinberger and Transportation Secretary Andrew Lewis signed a new **Memorandum of Understanding on the Civil Reserve Air Fleet** (CRAF); the original was signed in 1963. "Recent government-wide readiness exercises have identified the need for improved procedures as well as the need for closer liaison between the DoD and DoT in the activation of civil airlift assets needed to meet emergency defense requirements," officials said. ■

New capabilities for

There are times when less can mean more as in the case of King Radio Corporation's U-21 avionics update/retrofit program for the U.S. Army. While saving 268 pounds, the panel on the right clearly illustrates King's understanding of pilot workload and King's ability to plan, engineer, install and flight test complete avionics systems.

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AFA/USAF Recruiting Team of the Year

By James A. McDonnell, Jr., MILITARY RELATIONS EDITOR
USAF photos by Fred Hinshaw

THEY came from all around the country—one from each of the Air Force's five recruiting regions plus a recruiting salesperson each from the Air National Guard and the Air Force Reserve. They were the seven top Air Force recruiters of 1980 and, in March, they got their just reward—designation as the AFA/USAF Recruiting Team of the Year. Along with this designation went a unique AFA-sponsored trip.

The Air Force brought in the recruiters—AFA arranged for transportation of the spouses. The group spent three days in Washington, D. C., and then traveled to New York City, where they were the honored guests of AFA's Iron Gate Chapter at the prestigious Iron Gate Salute (*see coverage on p. 102, July '81* AIR FORCE *Magazine*).

Competition for selection as a top recruiter was tough. Selection, by the Air Force, was based on professionalism, the number of people recruited, and the percentage of high school graduates recruited. Additionally, consideration was given to the recruiter's involvement in the community. While not listed as a specific criterion by the Air Force, it was evident, as AIR FORCE Magazine talked with these outstanding salespeople, that spouse support also played a big part in their success.

One recruiter put it directly: "No way I could've made it here without my wife," he said. "She worked about as hard as I did."

And it *was* hard work that got them here. All told, these recruiters signed up 834 people in 1980. Quite an impressive record. Interestingly enough, two members of the Team, MSgt. Ruth L. Webb-Fuchs (Air Force Reserve) and SMSgt. Klaus D. Siebert (Air National Guard) had won the honor for the second time in a row (*see box for the names of all winners*).

This awards program, which Secretary of the Air Force Verne Orr has told AFA is the "premier program for rewarding our recruiters," began just over two years ago. At that time, it became apparent that the Air Force, for the first time in an All-Volunteer Force environment, was in danger of not meeting its recruiting goals.

The Air Force, of course, immediately began to take internal steps to meet the challenge. At the same time, AFA was asked to help. Subsequent meetings among AFA representatives, the Air Staff, and Recruiting leaders led to AFA's Recruiting Team of the Year recognition program, as one element of a many-faceted fix. It's rewarding to note that, in 1980, the Air Force "met or exceeded their recruiting goals in all areas."

The Team spent a busy time in Washington, D. C. Their first full day, accompanied by AFA President and Mrs. Vic Kregel, they paid a special visit to the White House, and visited other sites in Washington. Chief Master Sergeant of the Air Force James M. McCoy hosted a Pentagon luncheon for them, at which Air Force plaques were presented.

That evening, AFA's Nation's

Left: At the Iron Gate Salute, recruiters meet with Air Force leaders and the Salute honoree, Milton Caniff (center). Left to right are: SSgt. John E. Hoime, SSgt. Emmanuel J. Vaughn, MSgt. Michael W. Twaroski, MSgt. George H. Schaefer, Air Force Chief of Staff Gen. Lew Allen, Jr., Mr. Caniff, Chairman of the Joint Chiefs of Staff Gen. David C. Jones, Secretary of the Air Force Verne Orr, MSgt. Ruth L. Webb-Fuchs, MSgt. Maxie W. Williams III, and SMSgt. Klaus D. Siebert.

During the Iron Gate Salute, Sen. Barry M. Goldwater (R-Ariz.) congratulated top Air National Guard recruiter SMSgt. Klaus D. Siebert, right.

Capital Chapter hosted the Team and spouses for a dinner-theater evening on the town. The next day included meetings with the Air Force Chief of Staff, Secretary of the Air Force (who hosted a lunch in the Pentagon), and visits to Congress. The evening was free for sightseeing.

Saturday, the group joined other AFAers and military guests for a chartered flight to New York City where, that evening, the group was honored at the Iron Gate Salute.

Lt. Gen. Andrew P. Iosue, Deputy Chief of Staff for Manpower and Personnel, center, presents an Air Force recognition to MSgt. Maxie W. Williams III and his wife, Mary. Sergeant Williams has also been selected as one of the Twelve Outstanding Airmen of the Year, representing Air Training Command.

AFA President Vic Kregel and his wife, Marie, joined the top recruiters for Washington sightseeing. They're shown here about to enter the White House.

After Sunday brunch in New York, the Team returned to their homes. As one of the recruiters told President Kregel, "This was an occasion we'll never forget. It made all those long, hard hours worthwhile."

Brig. Gen. Thomas C. Richards, Recruiting Service Commander, summed it up, "The program developed and presented to the recruiters was second to none." He noted that this program "played a major role in the motivation of the recruiting force and contributed directly to the successful achievement of the Recruiting Service mission." And that's what the program is all about. ■

AFA/USAF RECRUITING TEAM OF THE YEAR

Name	Representing	Spouse
SSgt. John E. Hoime	3504th USAF Recruiting Gp., Lackland AFB, Tex.	Marsha
MSgt. George H. Schaefer	3506th USAF Recruiting Gp., Mather AFB, Calif.	Donna
SMSgt. Klaus D. Siebert	Air National Guard	Wanda
MSgt. Michael W. Twaroski	3501st USAF Recruiting Gp., Hanscom AFB, Mass.	Diana
SSgt. Emmanuel J. Vaughn	3505th USAF Recruiting Gp., Chanute AFB, Ill.	Michelle
MSgt. Ruth L. Webb-Fuchs	Air Force Reserve	Robert
MSgt. Maxie W. Williams III	3503d USAF Recruiting Gp., Robins AFB, Ga.	Mary

NOTE: AFA gratefully acknowledges the cooperation of American Airlines, Eastern Air Lines, Pan American World Airways, and Trans World Airlines in assisting with transportation for the spouses of the Recruiting Team of the Year.

GENERAL IOSUE: I'd like to discuss some concerns I have and outline some challenges that we face as we progress into the 1980s. At the outset I would like to say that as soon as I mention "concerns and challenges," some readers may think the Air Force personnel-wise is in bad shape. We really are not. In fact, we are in good shape. I think that we have quite a few things going for us. Recruiting this year probably is a banner year in comparison to the past few years. Both in numbers and quality, we're doing extremely well.

We have built up a delayed enlistment program that is the largest in the history of the Air Force. The percentage of high school graduates is as high as in the last four or five years. So recruiting is going extremely well. As for retention, we are beginning to see some positive indications reversing some of the adverse trends we faced in the last four or five years. First-term enlistment, careerists, rated, nonrated, and line officer retention trends are all moving in the right direction.

We've made some sizable gains in pay and compensation—we had a good pay raise last October and added a variable housing allowance. We've made gains in temporary duty travel and permanent change of station allowances. Pay gains, long overdue, have done much to correct many of the inequities and shortcomings that we've had in the pay and compensation area for a number of years.

I think the programs that we see forthcoming indicate that we'll get increased funding for flying hours, spares, munitions, and O&M, so I guess on balance I can say that manpower and personnel programs in the Air Force are generally in good shape. However, there are some concerns and challenges that we face. As we build—and, by the way, this is the first time in about fifteen years that the Air Force is going to increase its overall strength—we will see a sizable increase. Our uniformed force will increase by some 50,000. Why? Well, the possibility of a new bomber, the ground-launched cruise missile, space operations, special operations, the Rapid Deployment Force—all of these cost us manpower. But that's good; it means increased capability and readiness.

Lt. Gen. Andrew P. Iosue, the Air Force's Deputy Chief of Staff for Manpower and Personnel, at his Pentagon office.

But it also brings a concern—being able to man the Air Force with an All-Volunteer Force. There will be demands on our recruiting capability. It comes at the same time the other services are also building up. It comes at a time when demographics forecast that the percentage of the eighteen-year-old male population will decrease in the next five years—something like a fifteen percent decrease. Also, we find there is less propensity to join the military service now than there has been in the past.

AIR FORCE MAGAZINE: Are there any recent surveys on that diminishing propensity?

GENERAL IOSUE: Yes, DoD conducts surveys from time to time—it's done through a researcher who through questionnaires asks young people what their life goals are, what they intend to do when they leave high school. We found that when you measure the level today vs. where it was four or five years ago, there is a thirty-five percent decrease in the propensity to enlist. That is significant. I don't know if it has bottomed out or if it is going to improve. We did see a little increase with the return of the hostages; then it quickly went down to where it was before. I think that perhaps it is permanent, at least for the foreseeable future.

AFM: Would you say this is a separate thing from a more general support of the military among the population?

GENERAL IOSUE: Yes. We're not talking about those who *support* the military. We're talking about those who intend to *serve* in the military. We're talking about a population that's young—eighteen, nineteen, or twenty years old.

So, one of the major challenges we face—and it's formidable—is manning the Air Force in light of the strength increases programmed for the next four or five years.

Another concern is retention. It's been characterized as a disaster—*almost* a "mass exodus" from the Air Force, and perhaps all of DoD. In the last four years we lost something like 12,000 pilots and some 5,000 navigators. We've seen the bottom fall out of retention rates for second-term enlisted personnel, as well as careerists, NCOs—who have ten or twelve years and who normally stay on until retirement. We've seen alarming decreases in the percentages of those who have elected to stay on board. We've gone through a very difficult period. Now, however, as I mentioned, the trends are in the right direction. We see some positive indications that perhaps it's turned around. I must hasten to add that this could be just a short-term improvement.

AFM: What if the promised pay and compensation improvements don't materialize?

GENERAL IOSUE: There are a number of pay bills and a number of compensation issues being debated in Congress right now. What if they don't materialize? I sincerely believe that many Air Force people are waiting on the fence with expectations. And if those expectations don't materialize, we could have a problem. Another concern is the commercial airline hiring rate. The airlines recently were hiring at a rate of about 3,000 to 4,000 pilots per year. This past year they hired fewer than 1,000 pilots. That's a plus for us, since about seventy-five percent of the pilots they take on board do have military experience. The airlines project to return, not quite to the level they hired in 1978 and 1979, but they do project to go back to the 2,000-pilots-per-year level. If that happens, certainly we're going to see an impact on the Air Force.

What if the economy improves? Our retention is inversely proportional to the economy. If the economy is up, retention is down. If the economy is down, retention is up. Right now with the economy somewhat down, our retention is up. Unlike the other services, for the most part Air Force people have salable skills. They're directly transferable to the outside to the civilian economy. Industry looks for people from the Air Force to fill some of their vacancies. For example, it's been projected that commercial aviation will need something like 50,000 mechanics in the next five years, and there aren't

AIR FORCE | AUGUST 1981

After a period of serious losses and a time of continuing shortages in essential skill areas, the Air Force personnel trends seem to be turning up. Significant challenges and concerns remain, and they are covered in this interview with USAF's Deputy Chief of Staff for Manpower and Personnel.

PERSONNEL OUTLOOK IMPROVING, IF...

AN INTERVIEW WITH LT. GEN. ANDREW P. IOSUE, USAF

enough schools to train those mechanics. They're certainly going to be knocking at our door looking for experienced flight line superintendents, crew chiefs, and technicians, which include our master sergeants, senior master sergeants, and chiefs, to fill their vacancies. And we cannot compete with their salary scales.

So, these factors weigh on our minds. *Retention* is going to be of concern to us in the next three or four years. Though things are going well for us now, we need to worry about what's going to happen in the next few years. Earlier, I mentioned briefly pay and compensation and the gains that have been made. Pay and compensation are very emotional subjects. Not one day passes that you don't have somebody studying pay. Everybody you ask has a theory that makes them an instant expert in what we should pay people, how much we should pay, and what kind of salary system or pay system we should have. I think that pay and compensation are going to continue to be issues. The reason I say that is because I don't think we've settled on what is adequate pay. It's a very difficult question to answer—what is adequate pay? Harold Brown, on leaving his office as Secretary of Defense, was asked, "What would you have done differently that you did in the past?" He said, "I would have paid more attention to pay and compensation before we had the losses that we experienced in the last couple of years."

I think when we look at pay we first need to come up with a system of indexing pay. Pay today is a political football, and that's why you have so many pay proposals. Everybody wants to get his name on some form of pay or some piece of legislation with a feature in it that's tailored to correct some of the ills we have. But I think that we need to have something that's simple, inviolate, and easily understood so that our people can say, "On the first of October I'm going to get a six percent or ten percent pay raise" and *know* that they're going to get it. Not as at present when we go down to the wire, not knowing exactly what the pay raise will be, if any. We have linkage, but it's been violated since 1975. We talk about comparability and that sort of thing, but comparability is just a shallow term. We don't really have comparability, and haven't had it for the last six years. So I think we need some kind of benchmark, some kind of index, some kind of system so that the sergeant out there sees and understands and knows that it's inviolate and knows that no one's going to play around with his pay.

AFM: We don't have it.

GENERAL IOSUE: We certainly don't. Second, I think we have problems with compression. Just a few years ago, the difference in the pay between a chief master sergeant and a recruit was something like seven to one. Today it's three to one. We don't have that delta, that tier, that differential that motivates people to go from first to second to third term. We don't have it. There's something like a twenty dollar difference in pay between a sergeant (E-4) and a staff sergeant. Twenty dollars difference in pay scale. That's ridiculous! Why? Because when we switched to the AVF mode, there was a focus on raising first-term pay to adequate levels, and the need for more career incentives in the pay table took a back seat. That pay compression has been with us ever since, and the pay caps have only aggravated it.

AFM: Yes.

GENERAL IOSUE: So we've got to remove the compression and get a bigger delta, a bigger differential, particularly at those phase points when people make the decision to reenlist.

AFM: Isn't the bonus supposed to help that?

GENERAL IOSUE: Well, bonuses do. But that's wrong. That's not what a bonus is designed to do. That in itself tells you there's something wrong, because what we've done is replace pay with bonuses to satisfy some of the problems we have with inadequate pay. And when you've got a bigger and bigger share of your people getting bonuses every year, you know something's wrong.

That's not the intent of the bonuses. Bonuses are supposed to be targeted to a very small population, perhaps people who have critical skills where you can't recruit or retain them. It isn't supposed to offset depressed pay, but that's exactly what the bonuses are doing. We've become "bonus-happy" over the last few years. It's kind of a "Band-Aid approach."

Finally the pay cap—a very emotional subject. It's ludicrous to have seven tiers of management for those in uniform and Senior Executive Service Levels capped or all at the same level. On October 1, we'll have nine tiers of management capped. As a result there's no incentive to stay, to remain on board, and it's working against us. I think it's becoming a very, very serious problem.

These pay issues are not going to be solved overnight, or on October 1. Many of them will not be solved by the numerous pay bills now working through the House or Senate. Many of these things are going to take a long time to resolve. So I see the challenges of pay and compensation problems continuing as we work our way into the '80s.

Earlier I mentioned the problem of retention. A concern associated with retention, as well as increasing the size of our force, is what I refer to as an "experience gap." By that I mean we've lost so many experienced NCOs, pilots, navigators, engineers—the only way to replace those people, if you can't infuse the force laterally, is by replacing them from the bottom. So you get inexperienced individuals, whether it be enlisted or officer, and you build that experience. But it takes time.

So as a result of our increasing accessions and past heavy loss rates, we find that we're going to have, probably, the lowest experience level in many, many years. Example: We find that our career force has been decreasing. From FY '76 to FY '78 it averaged about 250,000 enlisted. It will decrease to 230,000. Consider the flight line sortie-generating skills, the people who maintain, sustain, and keep our aircraft flying. A few years ago we looked at the avionics, munitions, and maintenance people who launch the aircraft, and we found that the average years of service was 11.7, and now it is 10.8. Viewed from another perspective, we lost eight percent in total manpowers of experience, or the equivalent of 4,000 E-5s or 2,400 E-6s.

In rated personnel we have had about a twenty per-

cent decrease in man-year experience over the last four years. Also, we've lost valuable combat experience. Today if you look at a squadron, perhaps a little less than half of the aircrews have Vietnam combat experience. Three or four years from now you'll have only one or two pilots per squadron with combat experience.

AFM: Does this tie in with your officer force being forty percent lieutenants?

GENERAL IOSUE: Not on the rated side. But in the nonrated line officers, you're absolutely right. We are about forty percent manned by lieutenants. Let me give you another startling statistic. If we consider engineers—we have a requirement for more than 9,000 engineers in the United States Air Force—by 1984 more than fifty percent of them will be lieutenants.

Now, don't get me wrong. Lieutenants are great. But a lieutenant doesn't have the experience of a captain. The new officers, the accessions coming out of OTS, the Academy, and ROTC get up to speed fast. They pick up responsibility quickly. But it still takes time to gain the experience of that individual who left as a captain with seven to nine years.

And, finally, just a brief comment about an area we need to concentrate on. That's our image. We need to revitalize the image of the Air Force and, for that matter, perhaps revitalize the image of the entire armed forces. Now is the time. We see renewed interest in and a renewed appreciation of defense needs. We saw a new Administration and the return of the hostages from Iran—so I think the mood of the Congress and the mood of the people has changed. It's time to capitalize on that, and keep that mood growing and rebuild our image, rebuild the prestige, and rebuild the institutional aspect of military life. I think the time for that is now. We can build a sense of commitment and a sense of belonging, build a desire for people to want to join and stay in an outfit such as the United States Air Force. That will do more than billions of dollars in compensation. I think we need to work on that.

AFM: Will success in meeting the challenges you listed earlier contribute to that?

GENERAL IOSUE: I think so. You can't build commitment, you can't build dedication, you can't build loyalty, you can't build institutional appeal unless you are adequately paid. You need a reasonable standard of living before you're happy and content. You need to take care of your family, you need to take care of these tangibles. If the service can't do that, you will not have much commitment from its people.

AFM: What are specific ways the Air Force Association can work to help meet some of the challenges you have mentioned?

GENERAL IOSUE: First, communicating the nature of the Air Force, the great way of life, the equal opportunity for a young person to get ahead, to gain responsibility, to do something for the country, maybe a small part but, nevertheless, something for their country. Also, building prestige through making known what goes on in the Air Force. Too often we exaggerate and sensationalize some of the bad things that go on. We ought to try to concentrate on some of the good things as well. I think that would help our recruiting effort.

"There's something like a twenty dollar difference in pay between a sergeant (E-4) and a staff sergeant. . . . That's ridiculous!"

AIR FORCE *Magazine's James A. McDonnell, Jr., left, and F. Clifton Berry, Jr., with General Iosue. (Photo by Capt. Sherry Stetson-Mannix, USAF)*

There are shortcomings in the pay and compensation area that should be highlighted. There have been a number of articles about the plight of the junior enlisted member, the costs of travel from Point A to Point B, the problems supporting the family; making those things known certainly will help gain support on the Hill for legislation to correct those shortcomings.

Again, I point out that it's not all gloom and doom. We are in pretty good shape, although we've had some difficult times. But now, all of the lines of the chart seem to be heading in the right direction.

AFM: For the short term, the significant point seems to be whether or not the expectations of people will be met?

GENERAL IOSUE: Absolutely right. They watch very closely. They pay attention. There was a promise of a 5.3 percent raise, and they watched that and saw it go by the boards. Now, the next promise that they're waiting to see materialize or not is the anticipated raise in October and the anticipated pay compensation improvements that have been publicized. They're on the fence.

AFM: When you run your surveys, do you crank a question on that into the survey about expectations being frustrated?

GENERAL IOSUE: When you query people about their intentions to reenlist, and their career intentions, generally you get answers indicating that they're undecided. We have had a significant increase in short-term extensions. They are an indication of people who are waiting to see what happens and don't want to make a long-term commitment to reenlist for four years or six years. But they will extend for a one-year period. We allow that. They have critical skills, we need them, it would be foolish not to do so. So we extend their date of separation.

AFM: Is the rise in extensions pretty sharp?

GENERAL IOSUE: Yes. I think part of the reason is waiting to see what happens.

AFM: The extensions seem a useful solution for both the Air Force and the airman; you retain that skill, and the person doesn't have to make an immediate decision?

GENERAL IOSUE: Yes, because once they walk out the gate, you've lost them. If you keep them for another year, there's always the chance that they'll sign for another four years, and, as you know, as you progress toward the ten- or twelve-year point, the chances increase that they will remain for a career.

AFM: We've seen accounts of your program to encourage the return of rated officers who have left. How is that going?

GENERAL IOSUE: That's a great program. In fact, the Manpower and Personnel Center received the Silver Anvil Award for innovations in advertising. When the expansion of the airlines came to an abrupt standstill about two years ago, many of the pilots were furloughed. We looked at those numbers, then about 1,000;

"Last year we recalled about 200 [pilots]. That's the equivalent of two wings of pilots. . . . This year we anticipate we'll get about 400."

General Iosue responds to a question during the interview. (Photo by Capt. Sherry Stetson-Mannix, USAF)

today it's up to some 3,500. The thought occurred to us, what are all those pilots doing? They have families to support. They can't collect unemployment forever. So we went to the major airline centers such as Denver, Los Angeles, New York, Dallas, Boston. With the help of local recruiters and local newspapers and radio stations, we advertised the fact we were in town and that we were hiring. The response we got was absolutely amazing. Last year we recalled about 200. That's the equivalent of two wings of pilots.

AFM: Those are experienced people?

GENERAL IOSUE: Yes, very experienced people. At an average training cost of a half a million dollars per pilot, that is $100 million in cost avoidance. This year we anticipate we'll get about 400. They come back in, sign for a four-year commitment. In most cases, they go to the weapon system they flew before they left. They represent an experienced resource. Another thing, look at the additive gain. Here you have an individual who now becomes a testimonial that the grass is not always that green on the other side.

AFM: Right in your squadron.

GENERAL IOSUE: Right there. You hear so much about the ten days a month of work, the $40,000 to $80,000 to $100,000 salaries that airline pilots drag down. You don't hear the other things. Now you get a balanced view from one who has been there and can tell you both sides. That serves us well, and the program is doing extremely well. And I think these people will stay with us for a full career. Why? Because, first, I don't think the airlines will take them back after the four years; they will be past the age where the airlines will rehire them. Second, they see both sides and have decided to reestablish themselves in the Air Force.

AFM: For the long term, do you see changes in the retirement system?

GENERAL IOSUE: There have been, I guess, seven or eight proposals for changes to our retirement system, and I think you will continue to see proposals for change. Why? Because it's expensive. For all of DoD now, it runs about $12 billion. One of the more recent proposals had a vesting feature, for example, and was tailored to encourage people to stay longer because it reduced the annuity at twenty years. For the moment, I don't foresee formal changes to the system. I do expect that we will see changes in the cost-of-living adjustments for retirees. There will probably be changes in the offsets, such as the dual compensation provisions.

AFM: What do you think are the chances of the amendments that would reduce a retiree's Civil Service pay by the entire amount of his annuity?

GENERAL IOSUE: With that, who would go to work for the Civil Service? I think there are about 20,000 in that category working in Air Force Civil Service positions right now. I don't think many would want to stay under those provisions. That would force the services to forgo a valuable resource that they can ill afford to lose. Those are very experienced people who can come in, pick up the work immediately with very little training, and become effective. You risk losing that; you just will not find many people who are willing to forfeit their retirement pay.

AFM: Shifting away from the uniformed side for a moment, what trends are occurring with the Air Force civilian force?

GENERAL IOSUE: There will be a buildup in the civilian work force associated with the new weapon systems and the increased work load, particularly in the logistics areas. If that buildup materializes, the civilian work force should increase by about 16,000 to 18,000.

Of course, there has been a push to prevent an increase in the number of civilians in DoD, Air Force included, and to level the current strength. It doesn't make sense, because the work has to be done, and there is an increase in work load associated with new systems. But there is still a lot of pressure to reduce strength. I don't think we will see the entire increase, but neither will we see the force frozen at an arbitrary ceiling. Of course, one way usually offered to hold down civilian strength is to contract out. But that has limitations. We use a very sophisticated system to determine whether a given task can be contracted out and be efficient and cost-effective. Once you begin to contract out by arbitrary numbers, you destroy the whole process. It's no longer valid.

AFM: Are you having any problems recruiting civilians?

GENERAL IOSUE: The problem is at the higher levels. Why? The pay ceiling, of course. For example, DoD-wide right now there are about 200 senior executive level vacancies; in the Air Force alone fifty senior executive level slots are vacant, most of them in Systems Command. I see that increasing, unless the ceiling is lifted. With the current ceiling, a significant number of our GS-15s (those at Step 5 and above) as well as our civilians in the senior executive service are held at $50,112.50. So the motivation is removed. There is no motivation to come on board, and no motivation to stay. You might be promoted to a higher level, but the pay is the same.

* * *

Editor's Note: Lt. Gen. Andrew P. Iosue is the Air Force's Deputy Chief of Staff, Manpower and Personnel. He is an AFROTC graduate of the University of Massachusetts. His flying assignments have included fighters, forward air control, and tactical airlift in Europe and during the war in Vietnam. In January 1973, he flew the first US aircraft to land in nineteen years at Gia Lam airport in Hanoi, in support of the release of American prisoners of war. He has commanded the Air Force Recruiting Service and the Air Force Military Training Center, among other personnel-related assignments. He assumed his present position in April 1979. General Iosue was interviewed by James A. McDonnell, Jr., Military Relations Editor, and F. Clifton Berry, Jr., Editor in Chief.

Legislative Prospects for People Programs

This year, legislation affecting military people is moving well. The major difference is that everyone seems to be pulling in the same direction, for a change. The result will probably be useful legislation meeting valid needs, if early trends continue.

BY BENJAMIN S. CATLIN, AFA SPECIAL ASSISTANT/DEFENSE PERSONNEL MATTERS

THE outlook for legislation in the Ninety-seventh Congress for "people programs" is, in one word, "good." It won't be perfect, but it will be much better than in the recent past.

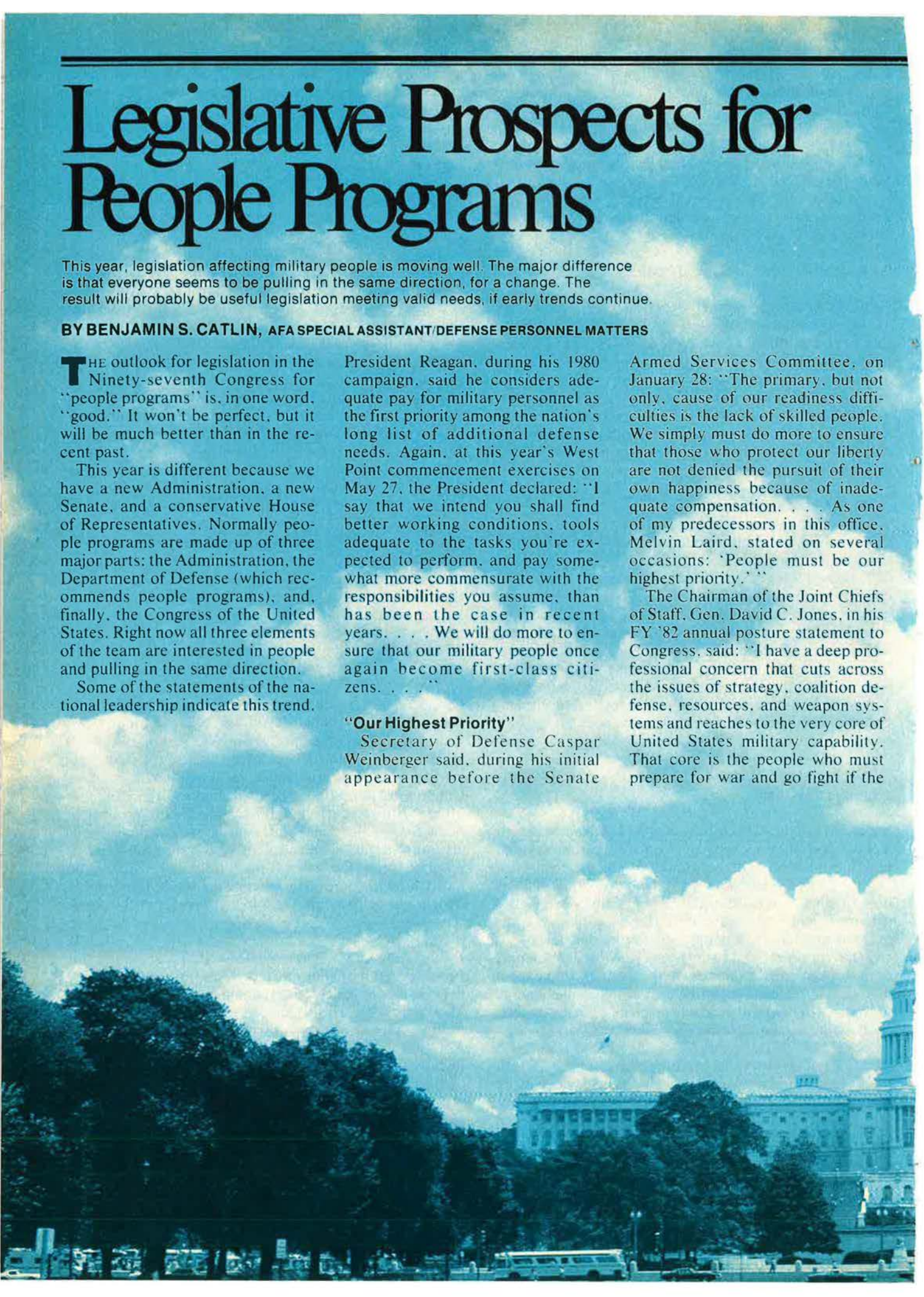
This year is different because we have a new Administration, a new Senate, and a conservative House of Representatives. Normally people programs are made up of three major parts: the Administration, the Department of Defense (which recommends people programs), and, finally, the Congress of the United States. Right now all three elements of the team are interested in people and pulling in the same direction.

Some of the statements of the national leadership indicate this trend. President Reagan, during his 1980 campaign, said he considers adequate pay for military personnel as the first priority among the nation's long list of additional defense needs. Again, at this year's West Point commencement exercises on May 27, the President declared: "I say that we intend you shall find better working conditions, tools adequate to the tasks you're expected to perform, and pay somewhat more commensurate with the responsibilities you assume, than has been the case in recent years. . . . We will do more to ensure that our military people once again become first-class citizens. . . ."

"Our Highest Priority"

Secretary of Defense Caspar Weinberger said, during his initial appearance before the Senate Armed Services Committee, on January 28: "The primary, but not only, cause of our readiness difficulties is the lack of skilled people. We simply must do more to ensure that those who protect our liberty are not denied the pursuit of their own happiness because of inadequate compensation. . . . As one of my predecessors in this office, Melvin Laird, stated on several occasions: 'People must be our highest priority.' "

The Chairman of the Joint Chiefs of Staff, Gen. David C. Jones, in his FY '82 annual posture statement to Congress, said: "I have a deep professional concern that cuts across the issues of strategy, coalition defense, resources, and weapon systems and reaches to the very core of United States military capability. That core is the people who must prepare for war and go fight if the



At left is Sen. Roger Jepsen, Chairman of the Senate Armed Services Personnel Subcommittee, and at right his House counterpart, Rep. Bill Nichols.

country's security requires it. . . .

"Second, the men and women in uniform at all levels have had to make disproportionate sacrifices because their living standards —from both their pay and their unique military benefits—have been allowed to lag sharply behind that of the society they serve. The expected savings from holding down equitable increases in compensation can now be seen as illusory; we are now paying far higher costs (in dollars for recruiting, replacement and, more important, in lost capability) as experienced professionals take their skills into more rewarding civilian employment. . . . There is much that can be done to provide the incentives necessary to attract a cross section of America."

The Secretary of the Air Force, the Hon. Verne Orr, in his appearance before the Senate Appropriations Committee, stated: "In order to recruit and retain the personnel required to man our forces, we must continue to improve the compensation and the quality of life for our people. . . . Correcting deficiencies in spares and weapon systems will not, in itself, ensure a strong, ready Air Force. Equally important—and perhaps paramount in this decade—is the need to attract and retain the qualified people to operate our increasingly complex systems. We are working hard to ensure that sufficient numbers of qualified people are attracted to the Air Force in the 1980s—not just for a few years, but for careers."

Gen. Lew Allen, Jr., USAF Chief of Staff, in an article in AIR FORCE Magazine in May '81, wrote: "The Air Force established a clear set of priorities regarding what must be done to ensure strong, ready forces in the difficult years ahead. First, we place primary emphasis on people programs. Our policies and actions must continue to be oriented toward attracting and retaining quality people. Dedicated and committed professionals are the essential foundation of a strong and ready combat force."

Sen. Roger Jepsen (R-Iowa), Chairman of the Senate Armed Services Personnel Subcommittee, stated in introducing the Uniformed Services Pay and Benefits Act of 1981: ". . . Let us never forget, as it is so easy to do in peacetime, the great sacrifices that were made by the men and women in uniform. We must also remember that sacrifices are not only made during war but also in peace. Without these sacrifices, we cannot maintain the level of defense necessary to secure the peace. . . ."

Rep. Bill Nichols (D-Ala.), Chairman of the House Armed Services Subcommittee on Military Personnel and Compensation, said in May: "I anticipate that there will be a number of bills that will seek additional compensation for the military. Based on the President's campaign and some statements attributed to Defense Secretary Weinberger and others, I anticipate that the Reagan budget will reflect some further increases in military pay."

The Legislative Process

With these statements as a background, you can begin to discern the trends for "people programs." Most of them begin in the authorization bill, submitted by the Department of Defense every year, right after the President submits his budget. The authorization bill establishes the levels for manpower

—Photo by William A. Ford

strengths, procurement, research and development, operations and maintenance, and new initiatives. It is sent to both the House and the Senate. There it is referred to the Armed Services Committees.

The House Armed Services Committee is headed by Rep. Mel Price (D-Ill.), and the Senate Armed Services Committee is headed by Sen. John Tower (R-Tex.). The portions of the bill that will affect manpower and personnel (that's Pentagonese for "people") are sent to the Personnel Subcommittees. In the House the subcommittee is headed by Rep. Bill Nichols (D-Ala.), an eight-term congressman and a Bronze Star and Purple Heart winner in World War II. The Senate Subcommittee is chaired by Senator Jepsen, a first-term Senator who served as a captain in the 82d Airborne Division. The House Armed Services Subcommittee on Personnel has an excellent professional staff headed by Kim Wincup, an Air Force veteran, while Toni Principi, a Navy veteran, heads the Senate Subcommittee's staff.

These subcommittees hold hearings where DoD, the military service witnesses, and such outside witnesses as associations present their positions pro or con on the subject being considered. Sometimes GAO or Congressional Budget Office personnel testify, too. These subcommittees make recommendations to the full Armed Services Committee, which in turn votes on the bill and then puts out a report. The bill then is sent to the Rules Committee, which determines when it can come to the floor for consideration by the entire House of Representatives or the Senate. When it passes in both Houses, there is usually a joint conference to iron out any differences between the two bills. If all goes well, the conferees produce a new bill, which is again voted on by the two Houses and sent to the President for signature. At this point the bill becomes a Public Law, such as 97-100: the "97" indicated the Ninety-seventh Congress, and the "100" shows that it is the one-hundredth law passed by both Houses in the current Congress.

Now the bill is sent to DoD as the authorization bill for a specific year. This bill just authorizes, it does not appropriate or fund. While all this has been happening in the Armed Services Committees, the House and Senate Appropriations Subcommittees on Defense have been working on their hearings and studies. These committees decide how much money is to be appropriated to fund the items authorized in the authorization bill. They can fund all the authorization bill asks for, fund part of it, or not fund items at all.

Budget Resolutions

In addition to these procedures, there are Congressional Budget Resolutions. Budget Resolutions do not become law. They are agreements that project the government income and the government expenses and allocate ceilings in each major category. However, when finally passed, these resolutions are binding on the committees and Congress. The budget resolution procedure follows almost the same path as the authorization and appropriation bills.

These budget resolutions are developed by the House and Senate Budget Committees, with the aid of the Congressional Budget Office. After the budget resolutions are developed, they, too, are reported to the floor where they are amended, debated, and passed. Differences are resolved in conference.

The budget for each year usually passes through three stages. The First Concurrent Budget Resolution sets the initial spending targets, based on projected income. Appropriations bills are not reported out until after the First Concurrent Budget Resolution is adopted. The Second Concurrent Budget Resolution is the final budget resolution for the year. It sets absolute spending ceilings and floors for the upcoming year.

Reconciliation is the difficult process that, in effect, changes the agreement nature of the budget resolution and makes it into a binding agreement. The idea behind the reconciliation is to make the actual spending fall into line with the targets and ceilings already set in the budget resolution. The mechanics of the process are dynamic, but essentially consist of instructions to committees to restructure their programs to agree with the latest budget resolution.

There are some firm dates that influence this process. These dates were established by the Congressional Budget and Impoundment Act of 1974. Two dates were set forth in the act: May 15, as the deadline for Congress to adopt the First Concurrent Budget Resolution, and September 15, as the date by which Congress would have completed all actions on the authorization and appropriation bills. These dates are more often than not missed.

Baffled by trying to follow legislation through Congress? Don't feel bad; experienced lobbyists, professional staffers, and correspondents are also baffled. It is easy to be stumped by the complicated procedures just trying to follow legislation and even worse to predict or identify trends.

Now for the trends in people legislation and specific issues:

Manpower

The Air Force manpower program for the future reflects a modest growth, primarily for force modernization. Requested overall strength is up about 8,500 spaces, to 804,934. Military strength is up to 586,800; and civilian end strength increases by 9,000, to 247,353. Air Force strength had been declining steadily for more than a decade and, even with the small growth in 1982, it will be lower than before the Korean conflict. The trend is for continued growth.

Pay

It is generally agreed that the alarming exodus of experienced mid-career officers and enlisted members from all the services that has occurred in the past few years can be traced directly to the loss of purchasing power by the military, which occurred from the early 1970s on. The pay and entitlements in the Nunn-Warner amendment and the Fair Benefits Package last year represented the most significant pay improvements in the last ten years. While these improvements helped, a single year's initiatives aren't sufficient to solve all of the military pay inadequacies.

There is a very good possibility—even better, a probability—that military personnel will get a substantial boost in pay and benefits starting in October 1981. Both the

Legislative Trends for People Programs

Manpower authorization	+	Up slightly
Pay	+	Up how much?
Health care	+	Better physician retention
CHAMPUS improvements	+	House passed
Dental CHAMPUS	–	Died last year in Senate
Increased PCS compensation	+	Up how much?
Temporary Lodging Expenses	+	Looks good
Twice-a-year COLA	–	Too much money
Basic GI Bill	+	DoD still wants to test
Transferability	–	Too much money
Retention	+	Increase in pay
Recruiting	+	Air Force doing well
Back to draft	–	Not this year

House and the Senate Armed Services Committees have approved pay bills that include major raises. There is some difference between the two bills on the size of the raise. The House bill, H.R.3380, provided an across-the-board raise of 14.3 percent, while the Senate version, S.1181, tended to target the pay raise to the middle enlisted grades and younger officers. However, everyone would receive at least a seven percent raise. The 5.3 percent pay raise, which was pushed as an unusual mid-fiscal year raise on July 1, fell through the cracks. *Trends:* The House Armed Services Committee and the Senate Armed Services Committee have both passed pay raises. The House Appropriations Committee has funded part of the raise; a one-time raise in October seems probable.

Retention

As most of us are aware, 1979 was the worst year in recent history for the retention of key skilled people in the Air Force. Retention rates improved in 1980; however, these improved rates have not been tested. In any event, the Air Force experienced losses that will continue to cause problems for years to come. Moreover, the retention rates aren't enough to maintain the force of experienced professionals needed by the Air Force to perform its mission. Much still needs to be done, and with congressional help the trends are good.

Although the Air Force is doing well in its enlistment program, there is a declining number of eligible young people, and their propensity to enlist is still below 1975 levels. The Air Force needs will grow to more than 10,000 more per year in the future and will need incentives to overcome these obstacles. In 1980 the junior officer retention rate improved, but this improvement was due to several factors that may be transitory, such as reduction in civilian job opportunities, compensation improvements by the last Congress, a sense of national need, and the prospect or anticipation that the current Congress will continue to improve benefits. Critical shortages still existed at the end of 1980, especially pilots (1,100 short), navigators (300 short), engineers (1,100 short), and physicians (100 short). Clearly, more must be done to retain highly skilled people. *Trends:* With increased pay and bonuses recommended by the House and Senate Armed Services Committees, retention should improve.

House Armed Services Committee

Subcommittee on Personnel and Compensation

Democrats	Republicans
Bill Nichols (Ala.), Chairman	Donald J. Mitchell (N. Y.)
G. V. (Sonny) Montgomery (Miss.)	Marjorie Holt (Md.)
Les Aspin (Wis.)	Elwood Hillis (Ind.)
Antonio Won Pat (Guam)	Larry J. Hopkins (Ky.)
Beverly B. Byron (Md.)	Duncan L. Hunter (Calif.)
Ike Skelton (Mo.)	Thomas F. Hartnett (Pa.)
Charles E. Bennett (Fla.)	
Richard C. White (Tex.)	

Senate Armed Services Committee

Subcommittee on Manpower & Personnel

Republicans	Democrats
Roger W. Jepsen (Iowa), Chairman	J. James Exon (Neb.)
William S. Cohen (Me.)	Harry F. Byrd, Jr. (I-Va.)
Dan Quayle (Ind.)	Sam Nunn (Ga.)
Jeremiah Denton (Ala.)	

CHAMPUS

The House Armed Services Committee recommended that there be a change in the procedure to determine doctors' fees and to keep these fees current. *Trend:* With the congressionally supported increase in pay for physicians, there has been an increased retention of active-duty doctors and improved medical care in military hospitals. This development may result in some loss of interest in other CHAMPUS improvements.

Health Care—Active-Duty Military Dependent Dental Care

Inclusion of full-range dental care for military dependents is needed to provide a medical benefits package on a par with the civilian sector. A proposal to do this passed the House of Representatives last year, but was not enacted. The Senate Armed Services Committee (Subcommittee on Manpower and Personnel) did not report it out of committee. *Trends:* Not good—hearings haven't been scheduled.

Increased Permanent Change of Station (PCS) Payments

In 1979, a study made by the Office of the Secretary of Defense documented that military members incurred more than $1 billion annually in out-of-pocket costs in conjunction with government-directed moves. (The Air Force portion was $280 million.) Despite some improvements in the Military Personnel and Compensation Amendment Act of 1980, military members actually lost ground in comparison with federal civilian

workers. For example, a civilian could receive some $13,000 in travel benefits for a move from Washington, D. C., to San Francisco, Calif., while an equivalent military member would receive less than $1,400 for the same cross-country move. These comparisons indicate the need for action to correct the deficiency. *Trend:* The DoD FY '81 Supplemental Budget included increased per diem and mileage rates for PCS moves. Further improvements are anticipated.

Overseas Dependents

The Air Force was extremely concerned with the congressionally imposed ceiling on the number of dependents who can accompany their military sponsors to Europe. Programmed increases in Air Force strength overseas will require action to change the ceiling or cause additional family separations and encourage members to select shorter unaccompanied tours. The net effect would be a reduction of readiness due to reduced time on station and increased training demands. It could also hurt retention. *Trends:* The House has agreed to lift the ceiling.

GI Bill

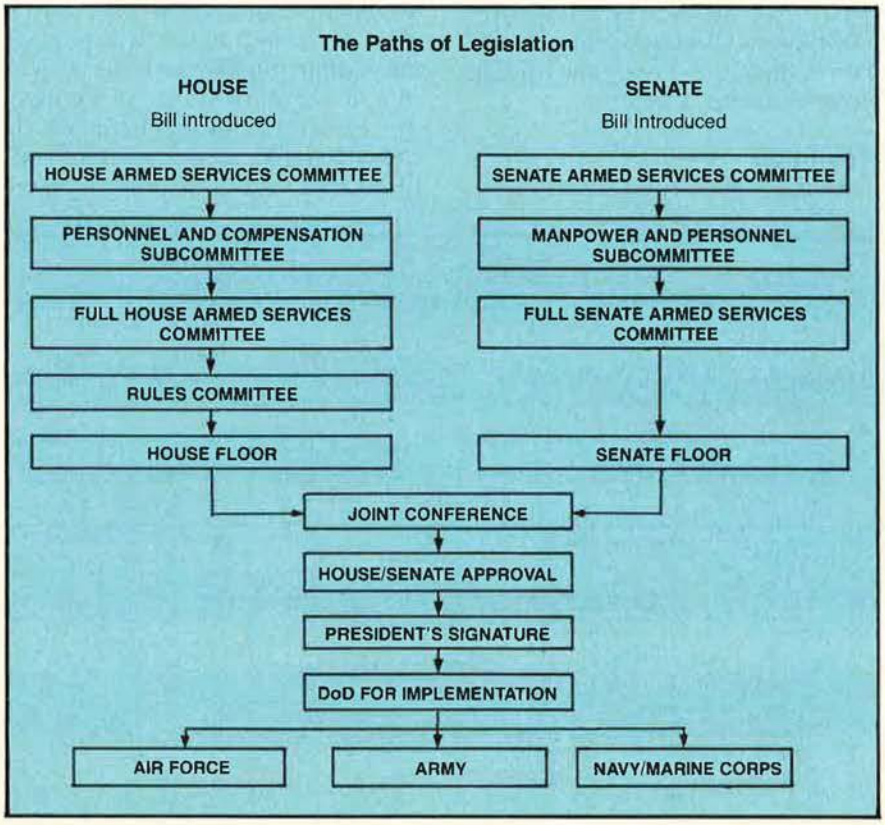
Education and training opportunities have traditionally been major attractions for young people to enter military service. The decision to replace the Vietnam-era GI Bill for persons entering the service after 1976 with the contributory Veterans Educational Assistance Program (VEAP) significantly reduced the attractiveness of active duty for many high-quality people who had college or vocational aspirations. While the old GI Bill did have a significant disadvantage in that it encouraged some people to leave the service to take advantage of the educational entitlement, the new proposals will include tiered or increased benefits for longer service, in-service use, and provide for the "transferability" of benefits to family members. Properly designed, a new GI Bill will open doors to new recruiting markets; and by focusing on retention with increased benefits for longer service, transferability-oriented people will be encouraged to opt for an Air Force career.

Congressional Schedule for DoD Legislation

15 days after Congress convenes	President submits his budget
February–March	Armed Services Committees begin hearings
March–April	Appropriations Committees begin hearings
May–August	Committees submit reports
	Floor action to pass
Week after Labor Day	Congress is supposed to complete action on DoD Authorization and Appropriations bills
Last week in September	Congress submits a continuing resolution to the President if those bills are not passed
October 1	New fiscal year begins

H.R.1400, the "new GI Bill," provides for a two-tiered program of educational benefits, $300 per month (maximum of thirty-six months) after three years of active duty and an additional $300 per month after six years of active duty. Service members with ten years of active duty could transfer unused benefits to one or more of their dependents, but must then continue on active duty to be retired after twenty years when a dependent has utilized the educational benefits. A service member could be authorized educational leave for up to two years to make use of the benefits. The bill has been referred to the House Armed Services Committee before referral to the House floor for action. The Senate Veterans Affairs Committee held hearings in late July.

There is some concern about the cost of the transferability feature, as a much higher percentage of participation is expected. DoD has written to the Armed Services Com-



mittee, asking that the GI Bill be delayed at least one year while DoD conducts studies of several educational assistance programs already in progress. *Trends:* In view of the budget restraints and DoD's opposition, it is doubtful whether the GI Bill can make it through the legislative maze this year.

Bonuses for Engineering and Scientific Officers

The nation faces a growing shortage of engineers. Recent reports indicate that US engineering schools have produced 17,000 fewer engineers than the country currently needs. This shortage, coupled with the increased demand for engineers in the private sector, has caused starting salaries to range from $19,000 to $24,000. Thus, it is not surprising that the Air Force is experiencing difficulty in attracting and retaining officers with engineering and scientific disciplines.

The House Armed Services Committee would solve this problem by authorizing an accession bonus of up to $15,000 for a four-year obligation and a continuation bonus of up to $3,000 for each year an engineer or scientific officer agrees to remain on active duty. However, the Senate Committee feels the services should explore the use of more ROTC scholarships and the possibility of producing more engineers from the service academies. *Trend:* This is touch and go.

Emergency Leave—Travel

Presently, military members are authorized government travel from overseas for emergency leave. However, dependents are not. The House Armed Services Committee recommends emergency leave travel for dependents also. The Senate has not included it in their bill. *Trend:* With both committees working on the problem, the outlook is excellent.

Environmental and Morale Leave

Currently, military personnel and their dependents serving at isolated locations may only use space-available travel on military aircraft when on leave. However, State Department personnel at many of these same locations receive free reserved commercial air transportation for their mid-tour leaves. Both the House and the Senate Armed Services Committees felt this was inequitable and recommended space-required trips for military personnel. One trip would be authorized for a two-year tour and two trips would be authorized for a three-year tour. *Trend:* With both the House and the Senate Committees recommending this change, the outlook is excellent.

Reimbursement for Temporary Lodging Expenses (TLE)

Military personnel already receive pay for travel when actually in a travel status. However, immediately before departing from their duty station and upon arriving at their new base, there are extra expenses for lodging, meals, and the ever-present incidental expenses. Currently, there is no reimbursement for these expenses, even though they are directly associated with the change of station. The House Armed Forces Pay Act of 1981 and the Senate Uniform Pay Act both have provisions that provide for pay for these expenses. The House bill would limit the amount of money to the maximum per diem rate for the base location, and the Senate would limit the amount to $110 a day. Both bills provide for up to four days of coverage, which could be split between the base of departure and the new location. *Trend:* With both the House and Senate Committees including this provision, the outlook is excellent for some sort of reimbursement.

Increased Flying Pay

There are two parts to this subject: The first is a bonus for pilots and perhaps other crew members. The Air Force, Army, and Navy were unable to agree on which crew members should get the bonus, and the subject was sent to DoD to decide. However, $55 million was included in the FY '81 supplemental budget request to cover the decision.

The second portion is the proposed increase in Aviation Career Incentive Pay (ACIP) (flying pay) of twenty-five percent to thirty-five percent for personnel on flying status. The general feeling is that the increase in flying pay would provide a long-term solution, while the bonus program would be a short-term fix. However, right now, the increase in flying pay is only in the Senate Uniformed Services Pay and Benefits Act. An effort is also being made to provide flight pay to officers with more than twenty-five years of service and for an increase in enlisted flight pay. *Trend:* Uncertain at this time. The competition among the services could delay this. ■

People Legislative Score Card
(As of July 14, 1981)

Legislation	House	Senate	Conference	President
FY '82 DoD Authorization Act H.R.3519	Passed HASC Passed Rules			
S.815		Passed full Senate		
Armed Forces Pay Act H.R.3380	Passed HASC HAC reported			
Uniformed Services Pay and Benefits Act S.1181		Passed SASC		
FY '82 DoD Appropriations Act H.R.	Hearings in progress by HAC			
S.		Hearings in progress by SAC		

HASC = House Armed Services Committee
SASC = Senate Armed Services Committee
HAC = House Appropriations Committee
SAC = Senate Appropriations Committee

Air Force Action Plan for the 1980s

Economics

PAY COMPARABILITY. Restore and maintain pay comparability. *Status:* Proposals supported by the Air Force to restore military pay to the relative level of comparability that existed in 1972 are pending congressional action.

UTILITY DEPOSIT. Work with utility companies to reduce or eliminate utility deposits (electric, water, garbage, telephone) for families moving into a new community. *Status:* The Air Force is exploring various options to accomplish this objective.

PCS

MOVING REIMBURSEMENT. Increase travel and per diem reimbursements to offset moving and relocation expenses. *Status:* Proposals to provide funding for a four-day CONUS Temporary Lodging Entitlement for member and family have been approved by the House and Senate Armed Services Committees and are pending final congressional action. An increase in the Monetary Allowance in Lieu of Transportation (MALT) and per diem have been approved by Congress effective July 1, 1981. The Air Force is seeking an additional increase in FY '82.

MORE TLFs. Improve existing and construct more temporary lodging facilities (TLFs). *Status:* The Air Force has implemented a construction/renovation program to remodel TLFs where appropriate and construct new TLFs where needed.

HHG MOVES. Upgrade quality of Household Goods (HHG) moves by increasing weight allowance, deleting weight limitations on overseas moves, increasing government and contractor liability limits, and, most important, improving contractor performance. *Status:* Services are working hard to obtain HHG weight increases. DoD has approved major changes to the DoD Carrier Evaluation and Reporting System (CERS), which will result in more accurate evaluation of carrier service during moves. The Air Force has supported raising loss reimbursement to $25,000 for all moves.

INTRO PROGRAM. Improve INTRO (Individualized Newcomer Treatment and Orientation). This program will provide information on new assignments and facilitate transition to a new base. The program should place more emphasis on family needs. *Status:* The Air Force Manpower and Personnel Center has taken action to improve information available on each base about all other Air Force bases.

Community

FAMILY CENTER. Develop and test a base-level Family Support Center to act as a focal point in addressing family needs.

Health

MEDICAL ENTITLEMENT. Provide dependent medical and dental care as an entitlement or an equivalent CHAMPUS medical and dental program as an alternative. *Status:* The Air Force Surgeon General has made the need for legislation to allow the Air Force to size and staff medical facilities based on the total served population his primary objective. The 1981 medical legislative agenda includes provisions which, if enacted, would increase CHAMPUS reimbursement levels and, for the first time, add a CHAMPUS dental benefit. The CHAMPUS dental proposal is expected to exceed $200 million and would be limited to active duty dependents only.

FAMILY PRACTICE. Establish Family Practice concept at all USAF hospitals and clinics. *Status:* This concept has been approved and is being implemented Air Force-wide. Planned program completion date is FY '86.

PREVENTIVE CARE. Establish and emphasize family preventive health-care programs. *Status:* The Air Force Health Education Center was moved to Brooks AFB, Tex., in February 1981. A regulation is now being developed to implement preventive health-care programs.

Child Care

CHILD/YOUTH PROGRAMS. Expand current child development programs and develop a youth development program. *Status:* Implementation gameplan to expand child-care and youth development programs has been developed by the Air Force Manpower and Personnel Center (AFMPC). Plan includes hiring additional staff, improving training, and implementing new program modules. A model child-care center is being developed to serve as an ideal for Air Force child-care programs.

Communication

FAMILY INFORMATION. Provide families with information about family needs, concerns, programs, and trends through existing internal information media. *Status:* Features are being run in various media. Additional ways to provide information to families through existing internal information channels are being reviewed; however, any new products are on a hold status due to a publications moratorium.

EMPLOYMENT INFORMATION. Develop spouse/family employment information for each Air Force base. *Status:* This program has been incorporated into the base-level Family Support Center concept.

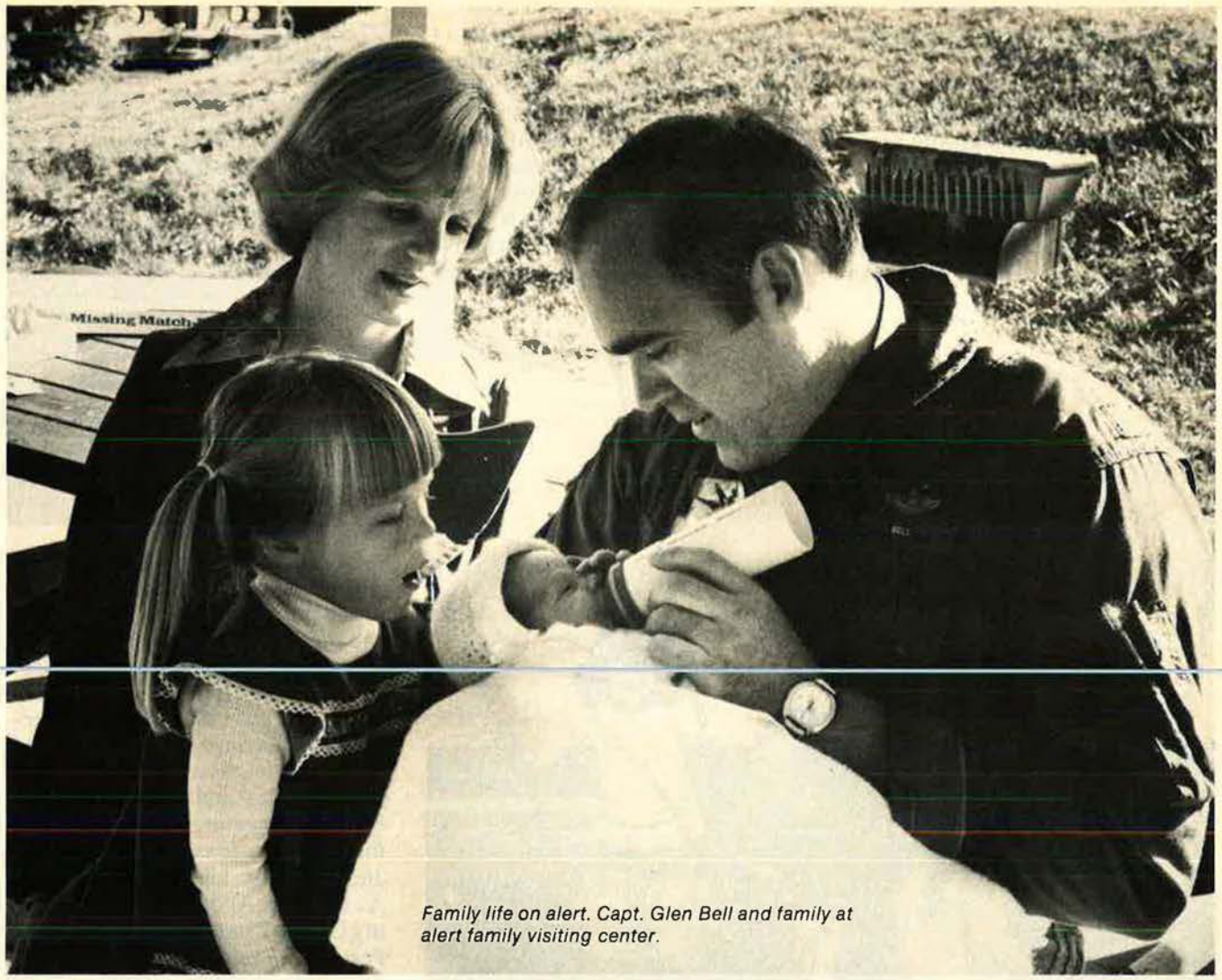
Education

EMPLOYMENT EDUCATION. Provide spouse and family employment education programs. *Status:* This program has been incorporated into the base-level Family Support Center concept.

VA FAMILY BENEFITS. Permit transfer of Veterans Administration (VA) education benefits to member's spouse and children. *Status:* The Air Force supports transfer of unused VA benefits from the member to the spouse and children. Congress is considering legislative proposals that would permit transferring VA education benefits.

Research

FAMILY SURVEY. Develop a recurring survey to capture family demographics and family attitudes and perceptions about the Air Force mission and way of life. *Status:* Family information has been added to the recurring (every-other-year) Air Force Quality of Life survey. The Leadership and Management Development Center, in consultation with the Air Force Academy, has developed a family survey that will be used in conjunction with the Management Consultant Traveling Team's visits to USAF bases. AFFAM will use the results of these surveys to validate Air Force family programs and to serve as the basis for new program proposals.



Family life on alert. Capt. Glen Bell and family at alert family visiting center.

As Air Force families changed during the past two decades, so did their effect on USAF missions and readiness. Acknowledgment of the "family factor" has led to top-level commitment to . . .

Improving Family Programs

BY MAJ. JAMES E. COCHRAN, USAF

THE decade of the 1970s was a period of significant change for Air Force families. Air Force families in 1981 are frequently not the stereotypical family, consisting of a male Air Force member, nonworking wife, and one or more children. In fact, the "traditional" family now constitutes less than a third of today's Air Force families.

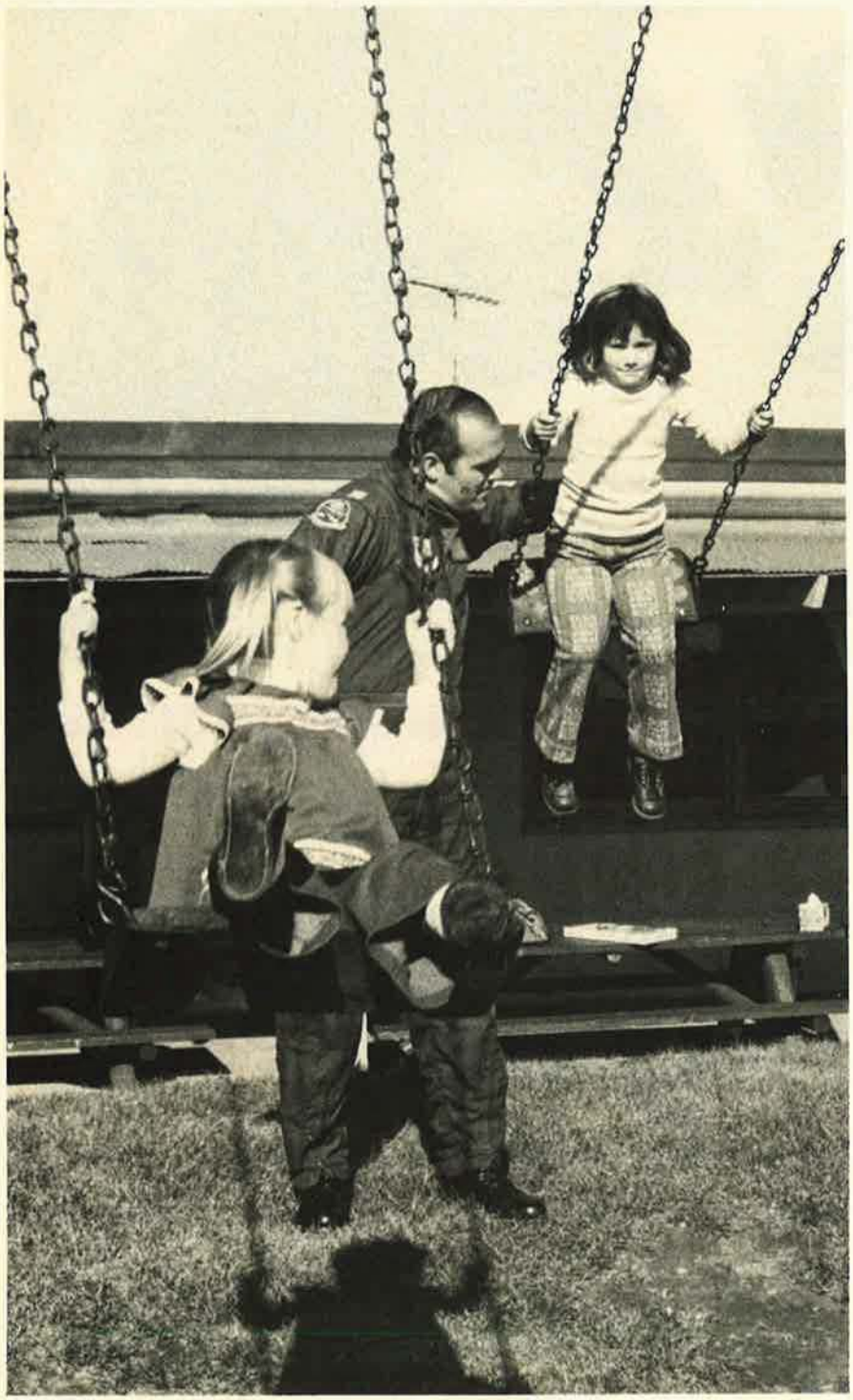
Who, then, are today's families? Let's answer that question by examining some family demographics. Today, two out of three Air Force members have families. The majority of families are members with civilian spouses. Military men with civilian wives account for fifty-nine percent of all Air Force personnel. Female military members with civilian husbands represent less than one percent of the total force but account for thirty-five percent of married female officers and twenty-three percent of married enlisted women.

Despite the fact that most Air Force families are military males married to civilian wives, the majority of these families are nontraditional in the sense that the wife is employed outside the home or there are no children. In fact, fifty-two percent of all wives married to Air Force members are employed either part-time or full-time. This is especially significant since a sizable proportion of families live in overseas or rural CONUS areas where employment opportunities are limited and some wives who want to work can't find jobs. This means

that where wives can be employed, the vast majority are.

Today's families are different in other ways as well. Marriages in which *both* husband and wife are in the Air Force now represent a sizable part of the Air Force family population. There are about 21,000 military couples representing approximately six percent of all Air Force families.

Single parents are another part of the total Air Force family. Although accession policy prohibits single parents from entering the service without a special waiver, Air Force policy permits single members with children to remain on active duty. Consequently, more than 6,500 single member parents are on active duty, constituting two percent of all families.



At Griffiss AFB, N. Y., SAC alert facility's family visiting center, Captain Bell, a B-52 pilot, and crew members' children enjoy the playground.

Family Focus—Phase II

The Air Force Association will join the Air Force Sergeants Association in supporting the 1981 Air Force family conference, "Family Focus—Phase II," at Bolling AFB, D. C., on September 17–18, 1981. The theme of this conference, which is the follow-on to the September 1980 Conference on Families, is "The Air Force Family *Matters*." Air Force family members from around the world have been invited to join USAF leaders and family program managers to discuss and validate on-going family efforts and to propose new programs. Conference highlights will be reported in AIR FORCE Magazine.

Declining retention trends in the late 1970s, when the correlation between the member's career decision and the family's attitude toward the Air Force became apparent, resulted in a new focus on families. By the summer of 1980, Air Force leaders had become more concerned about the increased complexity of family issues and realized the necessity of meeting family needs for the Air Force to continue attracting and retaining high-quality people. As Lt. Gen. Andrew P. Iosue, Deputy Chief of Staff for Manpower and Personnel, said, "Air Force families play an important support role in accomplishing our mission—national defense. For this reason the Air Force should, and can, strengthen its efforts to enrich the quality of Air Force family life."

On July 16, 1980, Gen. Lew Allen, Jr., Chief of Staff, approved the appointment of an Assistant for Family Matters and establishment of the Air Force Family Matters (AFFAM) Office at Hq. USAF. AFFAM was formed to define family needs better, set priorities, and coordinate Air Force family support programs for the 1980s.

It is important to note that the Air Force defines "family" to mean the total Air Force family, including singles. Family programs benefit all Air Force people in the many groups that make up the "Air Force family."

The instrument used by AFFAM to accomplish the objective was an Air Force-wide "Conference on Families" held September 24–26, 1980. Representatives of all the

Maj. James E. Cochran is the Deputy Assistant for Air Force Family Matters at Hq. USAF. He is a Distinguished Graduate of Air Command and Staff College and completed the Air Staff Training (ASTRA) program. A 1968 Air Force Academy graduate, he served two tours in Southeast Asia as an OV-10 and F-4 pilot. Major Cochran was recently selected for promotion to lieutenant colonel.

different functional areas and commands met to discuss family issues and propose new family programs. After detailed discussions, briefings, and consideration, the Conference concluded that:

- Air Force families are strong, healthy, and growing.
- Many families, however, are working hard to cope with family, social, and economic stresses.
- The Air Force way of life exacerbates many family problems, as well as providing sources of strength.
- Many Air Force family programs are effective in helping families; still, some efforts need to be strengthened and more can be done. Air Force commanders and supervisors should be, and are, the focal point for working individual family issues.
- Air Force members value their families as an institution above all others, including the Air Force. Because of this, Air Force programs and policies must take into account the potential impact on families.

The conferees also concluded that there are common areas of family needs and concerns. Those are:

- *Economic*. Despite recent gains, family finances are still the major concern for most Air Force families. Continuing emphasis must be placed on regaining and maintaining pay comparability.
- *PCS*. Permanent changes of station (PCSs) result in several causes of family concern. First, Air Force families continue to experience financial setbacks as a result of PCS moves. This aggravates other financial worries. Moving also causes severe family stress due to spouse employment problems, leaving friends behind, new schools, new communities, and a new job environment for the member. PCS moves often require temporary periods of family separation—another major family concern.
- *Community*. Many Air Force families feel isolated; they do not have a sense of community belonging. Strengthened community programs are essential.
- *Health*. Families are concerned with the quality and availability of dependent medical services. Air Force health-care programs have not kept pace with those now common in the private sector. Family dental care is a must.
- *Child and Youth Care*. Air Force child and youth care services are essential for many Air Force families with working spouses or for single parents and geographically separated families. Traditional families need child-care programs as well. Many child-care facilities are not large enough to handle the demand, and youth programs are inadequate. These programs should be strengthened and supported by appropriated funds. Care should be exercised, however, not to give the impression that the Air Force should become a surrogate parent. Responsibility for dependent care rests with the parents.
- *Communication*. Channels of communication between the Air Force and families and within the Air Force about family issues are inadequate or nonexistent. Programs must be developed to provide "two-way" communication in these areas.
- *Education*. Family education is a major concern for many Air Force families. Programs for spouse education, job training, financial assistance, and education about family problems are required.
- *Research*. Research to define family concerns and link families with retention and productivity is required.

These eight areas of family concerns were the basis for building the Air Force Family Action Plan for the 1980s. The status of sixteen critical initiatives implementing the plan are highlighted in the Action Plan report on p. 46.

Where does the Air Force go from here? Air Force leaders are committed to continued improvement of Air Force family programs. In General Allen's words, "The strength and vitality of the family is a key part of the strength of the Air Force." Base-level Family Support Centers, a monthly family newsletter, and the other programs being worked by the Air Force will help increase that strength and vitality.■

Family Support Centers

One initiative proposed by the 1980 Air Force Conference on Families was the fielding of a centralized, professionally staffed, fully funded, base-level office to serve as an advocate and focal point for the "Air Force family," including singles. AFFAM has developed a program and implementation plan that will result in four prototype Family Support Centers being opened later this fall. These Centers, which will be located at Kadena AB, Japan; Bitburg AB, Germany; Moody AFB, Ga.; and Travis AFB, Calif., will enhance existing family programs and provide new services that may be needed. Center responsibilities will include:

- Providing information, referral, and coordination of family services and resources;
- Relocation aid during moves;
- Employment consultation and job information;
- Referral and aid for people during crises;
- Support during family separation (temporary duties, remotes, mobility);
- Financial management education;
- Programs for people with special needs; and
- Family development education.

Each Center's civilian staff will include a director, three or four professional and technical support members, and three administrative personnel. An Air Force senior noncommissioned officer will also be assigned to each Center. The director will work for the base commander. Volunteers will be an integral part of the Center's staff.

A comprehensive evaluation system, integral to the prototype program, will provide quantitative data for future development and expansion decisions. AFFAM's goal, if the prototype program is successful, is to open a Family Support Center on every major Air Force installation.

To give structure and widespread training in casualty handling to the broadest number of USAF health-care professionals, the Surgeon General's office began the Medical Red Flag program. The result will be . . .

IMPROVED COMBAT CASUALTY MEDICINE

BY MAJ. THOMAS L. SACK, USAF
CONTRIBUTING EDITOR

IT ISN'T the kind of information doctors routinely pick up as students in medical school: that a fractured jaw can wait ten days before definitive care is required. That eye injuries and surgical wounds (with enough antibiotics) can be delayed in treatment up to twenty-four hours. It is the kind of information being stressed to Air Force physicians as they participate in a round of exercises titled Medical Red Flag (MRF). It's knowledge that will enable them to do the most good for the largest number of people, with limited time and equipment, in a mass casualty situation—the kind of situation anticipated by the United States during a major conflict in, for example, Central Europe or Korea.

Historically in war, Air Force people have worked out of areas of relative safety away from the conflict. This may not necessarily be so the next time, reasons USAF. Men and women working on the air bases, and not just those who fly, may be subject to injury from

SrA. Ilene S. LeFew, Medical Technician of the 37th Aeromedical Evacuation Group (Res.), cares for patients at medical staging facility, San Luis Obispo County Airport, during Exercise Wounded Warrior I. (USAF photo by SSgt. Robert S. Thompson)

conventional, chemical, or biological weapons, and even nuclear attack. In a location like Europe, if dependents aren't evacuated before the start of hostilities the problem of mass casualties will compound itself. The priority is to sustain the fighting force.

In 1979, supporting that priority, Lt. Gen. Paul W. Myers, USAF Surgeon General, began a program that has come to be known as Medical Red Flag. It furnishes one week of training in combat casualty medicine to Air Force health-care providers. Twenty-five hours of classroom lectures carry such titles as Wound and Shock Management, Biological and Chemical Wound Management, Aeromedical Evacuation, Infectious Diseases, and Maxillofacial Injuries. The ten hours of practical exercises that accompany the lectures include working while wearing protective chemical suits and masks, bandaging and splinting, and triage. While all health-care providers participate in MRF, the training focuses on the roles of the surgeons and other physicians.

Dr. (Lt. Col.) George Crawford, who specializes in both internal medicine and infectious diseases at Wilford Hall USAF Medical Center, Lackland AFB, Tex., is one of more than a thousand Red Flag-trained health-care providers. He also helped run the exercise when it was conducted at this Texas medical center. "Initially, feelings were negative" among those participating, he said.

First of all, he explained, most people don't like to think about war. Another factor was the inconvenience, since MRF participation was an additional duty for the doctors who at the same time remained responsible for most of their normal patient loads. "At the end, realizing they were getting good information, most were extolling and were all, at the very least, reasonably enthusiastic about what they learned," Dr. Crawford commented.

Above right, during the large medical exercise Wounded Warrior I, a simulated patient waits to be inserted into the evacuation system. Right, Air Force Reserve Nurse Richard Hardecker checks a "patient's" records while TSgt. Barbara Stevenson reads his identification tag. (USAF photo by SSgt. Robert S. Thompson)

The idea is to give structure to casualty management. Dr. Crawford made it clear in describing the applied portions of an MRF that even physicians have a lot to learn, from setting priorities for the care of the injured during the two triage modules to the hands-on experience gained in the splinting and bandaging module. One of the best-kept secrets in medicine, he said, is that doctors aren't expert in the immediate stabilization of injuries requiring splints and bandages.

By 1982, USAF health-care providers in Germany, Korea, and at every USAF medical center in the United States will have seen a Medical Red Flag exercise. The Surgeon General wants future ones to be broader in scope, more sophisticated, and to expand the roles of other health-care providers. Nurses and physician assistants, for instance, will be introduced to accessory triaging and initiating life-support systems. Colonel Crawford, who anticipates a staggering number of casualties and possibly an inadequate number of doctors in a future conflict, calls this expanded training a critical need. He believes USAF's other health-care providers must be trained to care as much as possible for the injured so the limited number of physicians can concentrate on those most seriously hurt. Medical Red Flag will also be used to introduce training in the use of such things as lighter-weight field operating room equipment, better lighting, and more compact lab instrumentation.

Echelons of Care

Medical Red Flag is the start of many readiness initiatives being incorporated into USAF's medical programs. Significantly, all Air Force people may find themselves playing a part.

When alerted that an attack is imminent, most of the medical staff on an overseas base will move away to a safer location to avoid any chance of destruction or possible contamination of the medical environment. Doctors assigned to operational units will remain with those units; but, for the most part, those left to defend the base will have to rely on themselves for immediate medical care, known as self-aid and buddy care.

Maj. Thomas L. Sack, USAF, was Contributing Editor during his one-year tour with AIR FORCE *Magazine, June 1980–June 1981 under the Education With Industry (EWI) program. He is now on public affairs duties at Hq., Allied Forces Central Europe (AFCENT), Brunssum, the Netherlands.*

A new DoD directive requires all Air Force members to train in "life- and limb-saving procedures." Lt. Col. Tom Forister, a medical readiness planner, is working now with Air Force personnel officials to implement a mandatory training program which for Air Force people will constitute their first echelon of treatment in time of war. Colonel Forister has also served as the Surgeon General's Medical Red Flag project officer since that program's inception.

Of the three remaining echelons, the next is an aid station. As the wounded are removed from the area of conflict, they will be taken to the closest aid station. These will be minimum treatment facilities staffed by the medical people who left the base earlier. If all has gone correctly, they will have relocated just a few kilometers from the base to provide enough care to return to duty those who can recover in several hours and send those who can't to the third echelon of care, the Field Surgical Facility.

Here, for the first time, patients will find themselves in a hospital of 250 to 500 beds staffed with most medical specialties. Surgery will be performed, and those who can recuperate to return to duty in several weeks will remain. The more seriously wounded move again, this time to the last in-theater level of care, the general hospital, located as far to the rear of the theater as possible.

Europe for Example

At the outset of a major conflict in Central Europe, there will very likely be dramatically more USAF casualties than experienced in any previous conflict. Airmen will be treating themselves and others at the scene. Those suffering such minor injuries as mild burns, chemical distress, or lacerations may be treated on the spot or, after visiting an aid station, returned to duty. Many will suffer more seriously, including severe multiple injuries requiring advanced life-support and trauma-support systems. The seriously wounded who can be helped must be identified, rushed to aid stations to be stabilized, and moved quickly from there to field surgical facilities.

Medical planners estimate that several aid stations will feed one field surgical facility. USAF is currently negotiating with the German government to use a former hospital near Zweibrücken as one such third-echelon facility. Both there and at general hospitals, located in the United Kingdom if supporting Central Europe, the question becomes one of who goes into the operating room first.

Medical Red Flag teaches that patients can die from shock, hemorrhage, or asphyxia before other injuries. These people get first priority. The key is determining the seriousness of the injuries and knowing in each case how long surgery can safely be delayed to accommodate the volume of casualties.

Exactly which facilities may be second, third, or fourth echelon depends on where the conflict focuses. In Korea, for instance, Clark AB in the Philippines will provide fourth-echelon care. For the Middle East, hospitals in Germany may be tapped for those services. In all cases, the goal is to return as many people to duty as quickly as possible. Those who can't will be aeromedically evacuated to the United States.

More Training Expected

Different factors influence how much and what types of training USAF must provide to ensure well-trained medical people for combat. New members, compensating for the normal turnover of people, require training. All medical people are routinely required to undergo refresher training anyway. And then, different specialties call for different training requirements. All of this has led USAF to develop three levels of training for its medical officers.

One program gives in-house training to physicians, dentists,

nurses, Medical Service Corps officers, and Biomedical Sciences Corps officers. Since surgeons represent a critically undermanned career field that will be vital in war, this program, called Corps Training, teaches the other officers specific skills, in addition to what they normally do, to support the surgeon in the war-zone operating room. The subject matter is extracted from the Medical Red Flag topics and is presented mostly on videotape. To gain practical experience, dentists, for instance, are working half a day per month as surgical assistants in their hospital operating rooms. By virtue of their education and what they learn in Corps Training, dentists will become qualified to give anesthesia and to augment surgical capability.

The other two levels of training are courses that have been designed for the physicians, dentists, nurses, and veterinarians. The first one is described as the Tri-Service Combat Casualty Care program mostly for interns, residents, and new accessions. Combat Casualty Care is a direct outgrowth of Red Flag. It's broader in scope and is open to all three services, taking a student through Fort Sam Houston, Camp Bullis, and Brooks AFB, all in Texas. In contrast to MRF, students concentrate on further development of their combat medical skills. For example, an M-16 round damages tissue extensively and can cause gangrene if the wound is not properly cleaned. So students learn to debride wounds created by high-velocity weapons.

Aboard a C-130 evacuation aircraft, Sgt. Peter Burch, medical technician of the 37th AEG, looks after a simulated patient during medical field exercise Wounded Warrior I. (USAF photo by SSgt. Robert S. Thompson)

Other aspects of the program include tent living to get the flavor of wartime conditions. And practical exercises include caring for three patients aboard a helicopter in flight and learning how to escape from or evade an enemy. Combat Casualty Care is oriented to the doctors working in the battalion aid stations and second echelons. Being phased in now, by 1982 it will be offered ten times yearly. USAF dentists are increasing participation in this program.

The training that General Myers says puts the "polish" on the medical-readiness effort began in February and is conducted four times a year at Brooks AFB. The five-day program, called Battlefield Medicine, is for USAF physicians who are not surgeons. The half lecture, half practical experience course is geared to supporting the second echelon. It differs from Combat Casualty Care primarily in the types of injuries or wounds studied. Students learn about the ones USAF believes most likely will afflict its people on an air base that has come under attack, injuries such as those caused by bombing and collateral damage, and from chemical and biological agents.

Stateside Medical Support

A critical link between the overseas and Stateside medical facilities will be Military Airlift Command's aeromedical evacuation system. So it can surge to the maximum extent possible, only the minimum number of people will comprise each medical crew, making more crews available for more flights. For at least the first thirty days, no comfort pallets

will be carried. This will also help increase the use rates of the aircraft. And USAF has increased by seven the number of strategic aeromedical staging facilities and by eight the tactical ones, all to be centralized under MAC control during a conflict.

As patients are returned to the US, they will be taken to the medical facility that can best administer to their needs. Each USAF medical facility is picking up a specific wartime mission. In conjunction with DoD, USAF is also coordinating agreements with large civilian hospitals to use portions of their facilities.

In August 1980, USAF, through its Scott AFB, Ill., hospital, signed agreements with thirty-four area hospitals. Each pledged a minimum of fifty beds for DoD to use if needed. It was the first such agreement in DoD's quest to line up a minimum of 50,000 beds for use in a large-scale emergency. All eight Air Force medical centers should be administering agreements reached in their parts of the United States by 1982.

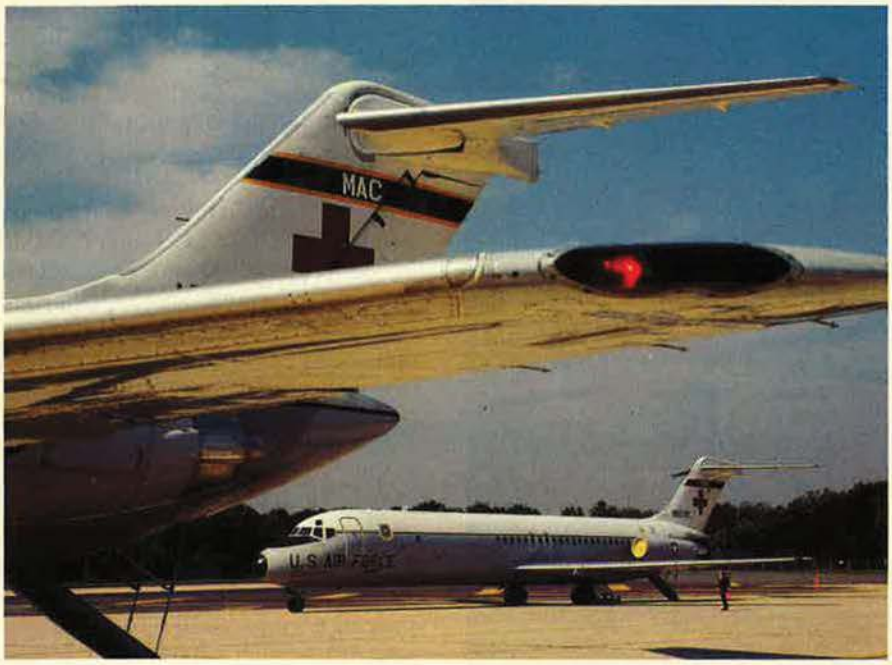
USAF hospitals are being identified for expansion and for the types of specialty care each is able to provide to returning casualties. Regional hospitals, as casualty receiving centers, will handle patients requiring acute care. The Sheppard AFB hospital, for instance, is a psychiatric center now, so it will most likely expand in that role. The Air Force is also looking at bases that will have lots of dormitory space available; that is, bases that will have deployed their operational units overseas. These will be turned into minimum care and convalescent care facilities.

General Myers intends that his entire medical readiness program will be ready to go by 1986. While the actions described above cover its major ingredients, other less noticeable efforts are also contributing to its success. Negotiations continue to establish host country agreements for enough off-base medical facilities dedicated to US personnel and for the prepositioning of medical supplies.

Considering that Europeans see any future conflict as taking place in their front yard, "It's very difficult," General Myers explained, "to tell us, 'You can have that hospital over there,' when they're going to fill it up with their own. And who knows how many civilian casualties they'll suffer?

"I think the European countries are working this problem the best they can under some very realistic limitations. They have a deep appreciation for our requirements that have to be balanced with their own very real needs," General Myers emphasized.

Research and construction proposals have also been made to support medical readiness. In such high-threat areas as Germany, the United Kingdom, and Korea, efforts are being made to acquire hardened on-base medical facilities. The School of Aerospace Medicine at Brooks is designing a way to maintain a clean environment in USAF's air-transportable hospitals for use in areas subjected to chemical or biological attack. The key, always, will be to sustain the fighting force in combat. ■



Top: C-9A Nightingale aeromedical airlift transports on the ramp at Andrews AFB, Md., symbolize USAF medical readiness. Above: MSgt. Ronald E. Martin (foreground) and A1C William T. Wheaton (background) carry a litter patient aboard a MAC C-9A for flight to a designated hospital. (Photos by William A. Ford)

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LT. COLONEL DON GASAWAY,
U.S.A.F., B.S.C. Retired, military hearing conservationist.

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When it made its debut in scientific laboratories in the 1950s, the laser was derided as a "solution in search of a problem." Today the value of the "miracle light beam" is firmly established. By the year 2000 technology may be ready to take . . .

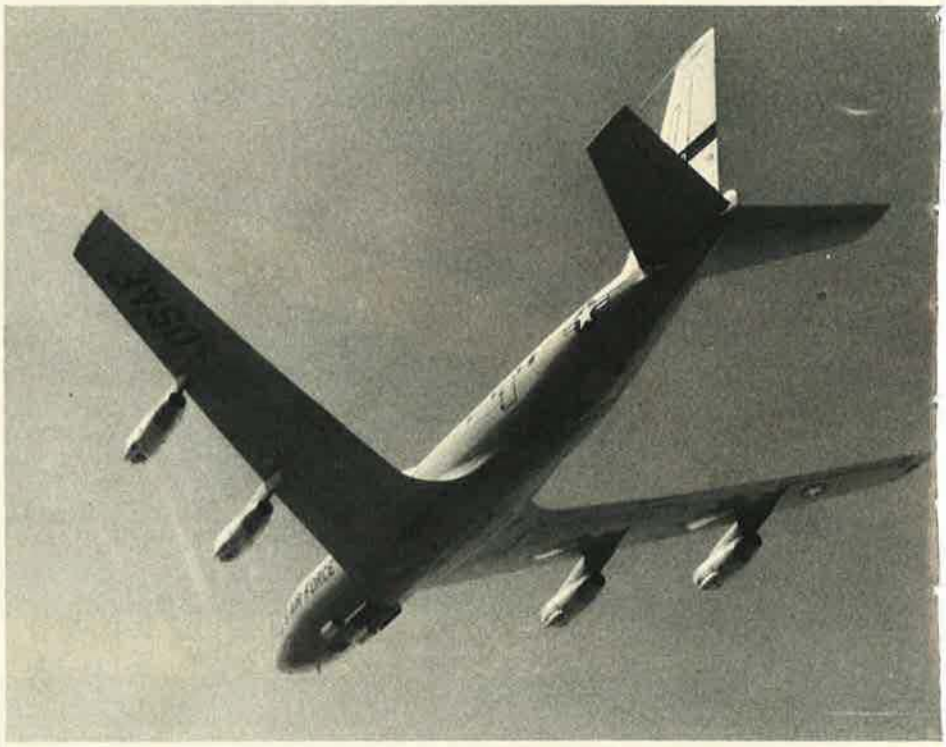
THE LONG LEAP TOWARD SPACE LASER WEAPONS

BY EDGAR ULSAMER
SENIOR EDITOR (POLICY & TECHNOLOGY)

A MODIFIED NKC-135, or ALL (for Airborne Laser Laboratory), is about to demonstrate that an airborne high-energy laser device can engage an air-to-air missile over a distance of about one kilometer. Even though ALL failed to bring down the target in its first two tries, the eventual success of this experiment—which has been more than ten years in the making—will be of historical importance. In the view of some experts, shooting down a missile with an airborne laser weapon could rival in military significance Billy Mitchell's sinking of the battleship *Ostfriesland* by aerial bombardment sixty years ago. In the view of others, it would represent a major milestone on the road to a technological revolution that they predict will make obsolete many of today's tactical and strategic weapons.

Historically, technological zealotry has been the stuff that major military advances are made of. Yet in a pragmatic context, radical advances were a long time coming and, at least initially, tended to augment rather than make totally obsolete the existing technologies and weapons. History thus seems to counsel against unbridled zealotry, especially as practiced by nonscientists unencumbered by responsibility for translating theoretical feasibility into engineering hardware.

This is doubly true because some advocates of directed energy (DE, comprising laser and particle-beam) weapons are campaigning already against major weapon systems in the technological pipeline on grounds that they are being made obsolete by the new technologies. To treat as operationally available and omnipotent technologies that after a quarter of a century of intensive research and development by the US, the Soviets, and other countries are still not ready for "weaponization" is probably just as unrealistic as disregarding the obvious long-term potential of laser and other beam weapons that can deliver destructive thermal energy over vast distances at or near the speed of light.



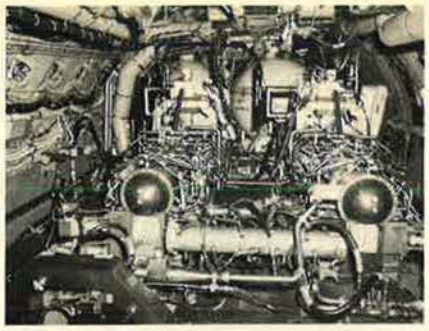
The Airborne Laser Laboratory (ALL) aircraft uses special diffuser doors (shown in opened position) to allow exhausts from laser firings to exit.

The Coherent Light Beam

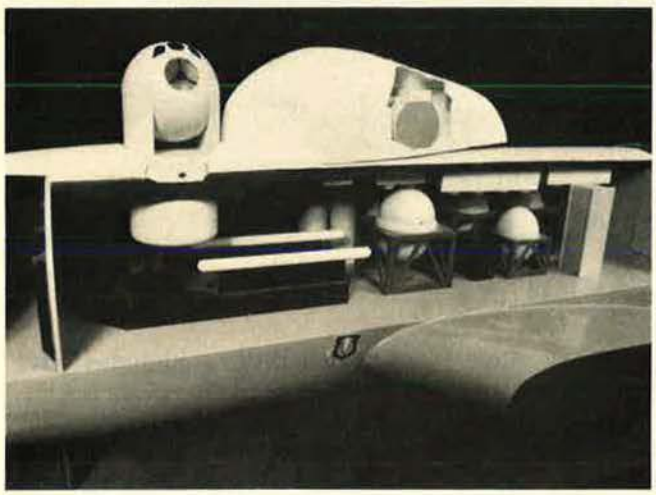
The term laser stands for Light Amplification by Stimulated Emission of Radiation and actually is a misnomer since technically the system functions as an oscillator rather than an amplifier. The correct acronym would obviously have an unfortunate connotation, however. There is no getting around the fact that the laser is rooted in complex principles of atomic physics, spelled out in part by the quantum physics theories pioneered by the celebrated German physicist Max Planck and Albert Einstein's Special Theory of Relativity.

Oversimplified, the laser capitalizes on and links fundamental qualities of light and matter through a fortuitous marriage of optics and electronics. Light, according to Planck's theory, consists of small units, or "bullets" of radiation, just as matter is made up of individual units, or atoms. He called this "bullet" of radiation a quantum and concluded that the amount of energy each quantum contained depended on the wavelength of the radiation—the shorter the wavelength, the greater the quantum's energy.

Building on this theory, Einstein and other scientists reasoned that matter has individual and distinct energy levels that can change, up or down, only in increments equal to a quantum, or, as Einstein called it, a "photon." In that sense, laser action begins when a photon is induced to strike a molecule that—by chemical or electrical means, usually referred to as "pumping"—has been "excited" into a high-energy level. When this happens, the photon that strikes the excited molecule knocks off another (and identical) photon. Both photons



or "coherent," that can transmit vast amounts of thermal energy over vast distances with relatively little loss of energy. The techniques and hardware for pumping vast amounts of energy into high-energy laser test-beds and for extracting sufficient laser energy to be of military interest are as complex as the theoretical principles behind these futuristic technologies.



Top photo shows ALL's interior, with laser device installed in the foreground and fuel tanks in the rear. Center picture shows ALL at laser fuels station. Bottom picture shows cutaway of a proposed wide-body ALL.

leave the molecule at the same time and travel in the same direction. (The molecule, robbed of one photon, drops down to a low-energy, or stable, level.) Each photon travels on until it strikes another excited molecule and the process thus creates still more photons in the manner of a chain reaction.

The result is an avalanche of photons, all of the same size and traveling in the same direction. The final product is a light beam consisting of light waves of the same wavelength and in step with each other,

The High-Energy Laser

Low and moderate energy lasers have become commonplace in a host of applications, including medicine, science, cartography, communications, rangefinding, and target designation. *(See "LaserCom: The Green Dragon Awakens," July '81 issue, p. 49.)* Potential applications for high-energy lasers involve not only weapons but also laser radar, "igniting" nuclear fusion by imploding atomic matter, welding, and laser isotope separation. The Pentagon defines a high-energy laser as a system that has an average power output of at least twenty kilowatts (equivalent to twenty-seven horsepower) or a single pulse energy of at least thirty kilojoules.

To date, the Defense Department has invested close to $2 billion in high-energy laser work. The reason for this largesse is that laser weapons appear to offer unique advantages, primarily by transmission of focused energy at the speed of light. This eliminates the requirement to "lead" the target. It takes 1/186,282 of a second for laser energy to travel one mile; in that time a supersonic target, be it either a missile or an airplane, flying at twice the speed of sound, will cover only a little more than one-eighth of an inch.

First space laser deployments will have a powerful psychological effect, but are likely to have less revolutionary military effect for some years to come.

Further, future laser weapons probably will be able to handle large numbers of targets even if the targets are coming from all directions. For each "shot" the laser fires, relatively small amounts of fuel are used to generate the beam. Hence, there is the potential for getting off a large number of "shots" rapidly. Lastly, since mirrors are used to steer the laser beam, a laser weapon should be able to move rapidly from target to target over a wide field of view. But as the snail's pace and frequent setbacks encountered in the development of laser weapons amply prove, a host of factors conspires to undo much of their promise. ALL, for instance, was scheduled to shoot down its first target in 1974; now, seven years later, it may be on the verge of actually doing so.

For a laser weapon to get off a telling "shot," its beam must burn through the target's surface and destroy a vital component such as

the guidance system, detonate its warhead, or ignite its fuel. The laser weapon delivers its energy instantaneously. Nevertheless, the weapon must dwell on the target long enough to destroy or damage it. Any jitter of the beam—which is difficult to suppress while vast amounts of energy are being generated—will smear its energy over a wide area and thus increase the time required to damage the target. A highly accurate beam control system is needed, therefore, to hold the beam steady on one spot on the target.

Fire control for laser weapons is especially crucial. Since lasers must be pointed with great accuracy, the fire control subsystem must be extremely accurate in telling the beam control subsystem where to point. In addition, to realize the firepower potential of a laser weapon the fire control must be quick to recognize that the target being engaged can no longer perform its mission so that the laser spends as little time dwelling on the target as possible.

The atmosphere also affects laser weapons. Depending on the wavelength of the laser energy, the atmosphere absorbs varying amounts of the laser's energy, and causes the beam to "bloom" or defocus. The atmosphere also adds jitter to the beam. Interactions between the high-power beam and the atmosphere increase the spot size on the target—thus lowering the peak intensity and increasing the required dwell-time.

The net effect of atmospheric absorption is that, for a given range, there is a critical power level beyond which the amount of energy focused on the target decreases as laser power increases. This effect is most pronounced when the line of sight to the target is fixed (as in the case where the attacker is headed directly at the laser) and the wind velocity is low. In bad weather or in the presence of clouds or aerosols such as smoke, more of the energy in the laser beam is absorbed, to limit further the range of the laser weapon.

A major step toward efficient and scalable laser weapons was taken in 1967 with the invention of the carbon dioxide (CO_2) gas dynamic laser, or CO_2 GDL for short. The energy required to operate the CO_2 GDL is generated by combustion of carbon monoxide with an oxidizing agent such as nitrous oxide. This combustion produces energetic molecules of CO_2 capable of releasing photons. This energetic state is maintained by dynamic expansion of the hot gases through a bank of supersonic nozzles, which also provides the conditions of flow necessary to extract the photons with good beam quality.

The optical energy is extracted from the energetic CO_2 molecule with mirrors looking across the flow field just after the flow leaves the nozzles. The photons extracted move across the flow field picking up other photons as they go. Since one of the mirrors is smaller than the other, most of the photons leave the laser cavity as an intense beam of energy at a wavelength dictated by the type of molecule giving up the energy—in this case 10.6 micrometers, since the molecule is CO_2.

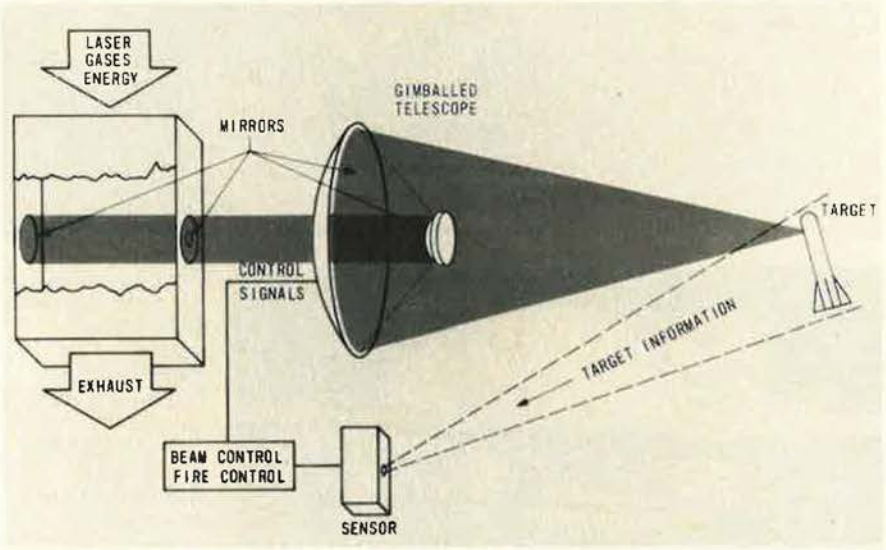
This type of laser device is being used by ALL.

In recent years, other high-power laser concepts have been developed involving this basic principle, including the electric discharge and chemical laser. Using these concepts, US laser projects succeeded in generating high energies at several wavelengths in continuous wave (CW) or repetitively pulsed beams.

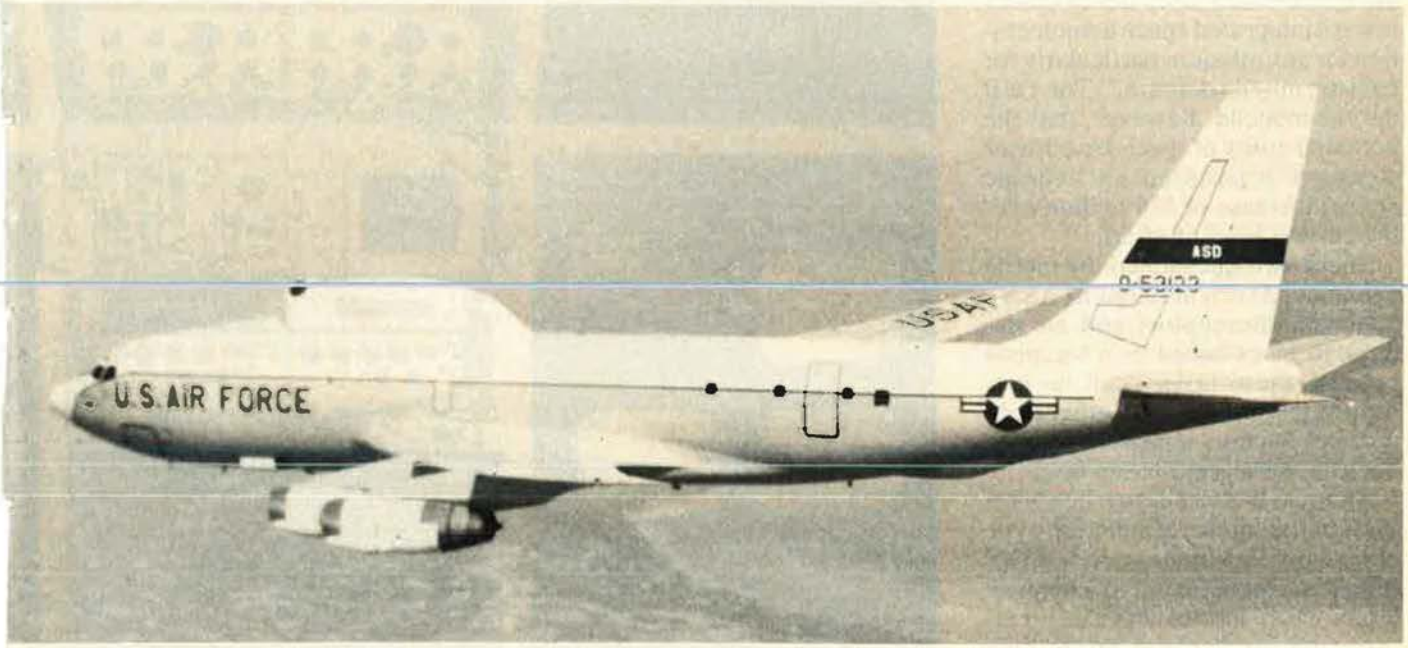
A number of new types of lasers—beyond the current crop of laboratory devices—are beginning to take shape, including the so-called excimer and free-electron systems. The latter represents a marriage of laser and nuclear accelerator technology. Although potentially attractive because the system—if feasible—might be tuneable, meaning its wavelength can be adjusted to ease the problem of beam propagation in the atmosphere, its bulkiness would confine the free-electron laser to use on the ground.

The excimer laser concept, which also is a candidate for the blue-green laser communications system

At right: Close-up view of ALL's laser-pointing telescope prior to its installation on top of the aircraft. Below: A schematic of the principal components of a laser weapon.



meant to reach down to deeply submerged submarines *(see p. 100, June '81 issue)*, is thought to offer significant increases in laser efficiencies. The current generation of high-energy lasers suffers from a fundamental drawback: they deliver on the target only a fraction of the energy that is needed to drive the systems, typically about two or three percent. The excimer laser can probably cram about fifteen percent of the energy feeding it into its beam. Other advanced concepts—although somewhat further along—are the Alpha and Sigma cylindrical chemical lasers, which show promise for both space-borne and airborne applications. The Sigma device might be developed for test on a follow-on to ALL, the ALL-2, a large, wide-body aircraft that could accommodate a larger and heavier laser system.



ALL, an extensively modified NKC-135 aircraft, in flight near Kirtland AFB, N. M., its "home base" and site of the Air Force Weapons Laboratory.

To date, nobody has figured out how to set off a powerful nuclear blast without obliterating the X-ray laser. . . .

Past Laser Weapons Test

In the course of development efforts to date, test-beds using technology developed in the HEL (high-energy laser) program have scored "firsts" for the US in engaging flying objects. The first such success was in 1973 when the Air Force used a high-energy gas dynamic laser and an Air Force-developed field test telescope to shoot down a winged drone on the Sandia Optical Range at Kirtland AFB, N. M. In 1976, the Army, using a high-energy electric laser in its Mobile Test Unit destroyed winged and helicopter drones at Redstone Arsenal, Ala. Except for ALL, the most recent tests were in March 1978 when the Navy, using a chemical laser it developed jointly with the Defense Advanced Research Projects Agency (DARPA) and using a Navy-developed pointer/tracker, engaged and destroyed, in flight, a TOW antitank missile. These tests were part of the Unified Navy Field Test Program conducted at San Juan Capistrano, Calif., at a site near Camp Pendleton, Calif.

The major objective of these experiments was to obtain experience and insight into the problems of integrating a laser of relatively high power with a pointing and tracking device and maintaining the laser beam on the selected aimpoint. While dramatic proof of successful attainment of these technology goals, the actual shootdowns were a secondary objective.

Space-Based Laser Weapons Concepts

In May of this year, the Senate passed an amendment (at this writing there has been no corresponding action on the part of the House) to the FY '82 authorization bill that allocates $30 million to the Air Force and $20 million to DARPA for research on space-based lasers. The amendment instructs the Secretary of the Air Force to set up a special Program Management Office for weapons of this type and to conduct a "detailed system definition of the space-based laser weapons program, which shall include costs, schedule, and identification of risks." The Air Force was instructed to report to the Armed Services Committees of the Senate and the House on the results of this study.

In the course of the hearings by the Senate Armed Services Committee that preceded passage of the amendment, Sen. John W. Warner (R-Va.) presented an assessment by Dr. John Foster, a former Director of Defense Research and Engineering—on behalf of the Defense Science Board—about the feasibility of using space-based lasers for ballistic missile defense (BMD) that con-

cluded that "in the twenty-first century directed energy weapons such as space-based lasers are almost inevitable, but achievement of an effective space-based ballistic missile defense system is far more expensive and difficult than the most extreme enthusiasts admit."

Citing a host of as yet "unresolved" difficulties and many scientific and engineering "uncertainties," the Defense Science Board (DSB) concluded unanimously that "it is too soon to attempt to accelerate space-based laser development toward integrated space demonstration for any mission, particularly for ballistic missile defense." The DSB did recommend, however, that the potential utility of space-based laser weapons warranted an average annual increase of $50 million over the current level of effort.

The Board questioned the merits of assigning such missions as ASAT (satellite interceptor) and air defense to space-based laser weapons because these tasks "can be performed more cheaply by other technologies such as miniature homing devices and ground-based lasers."

The DSB found further that "commitment to Manhattan-type projects or maximum acceleration requires commitment to chemical lasers when shorter wavelength lasers such as excimer lasers may offer far more cost-effective approaches only a few years later.

"Once technical problems for space-based BMD lasers are resolved, tremendous systems and operational considerations remain. For example, space laser sensors and weapons are vulnerable to the measure/countermeasure syndrome.

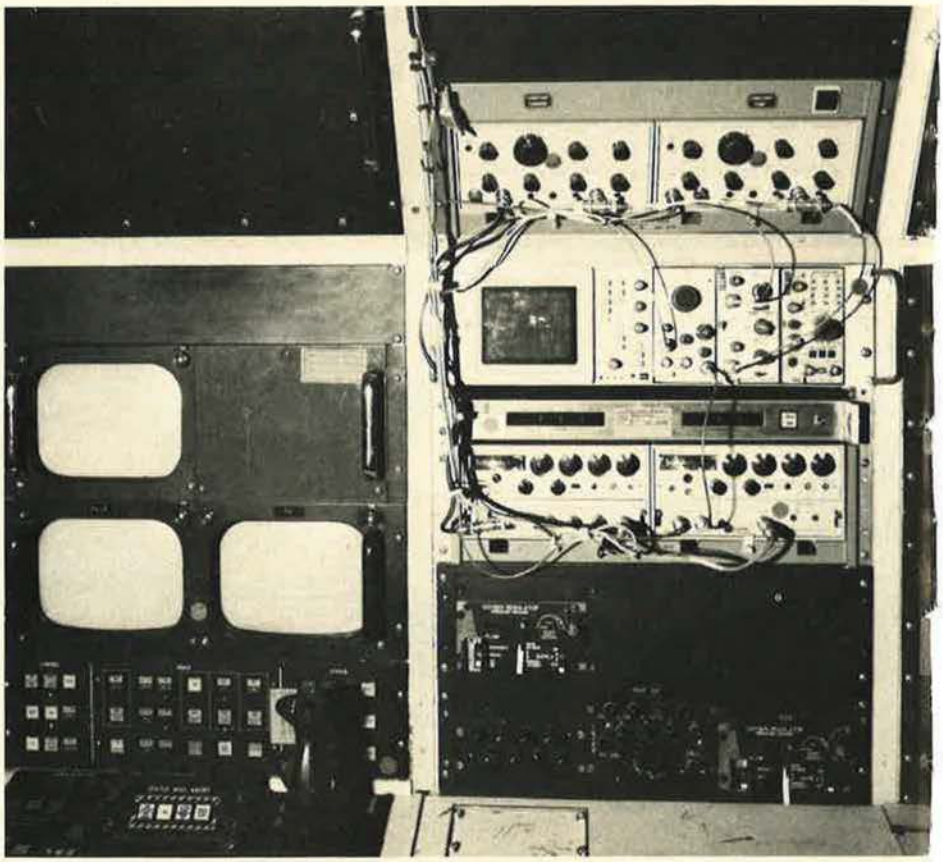
"Some advocates have suggested that space lasers will make offensive weapons obsolete, thus providing a new arms-control regime. In fact, offensive and defensive weapons always work together and in this case adversaries, unwilling to live without an offensive capability, would undoubtedly plan to attack space lasers with ASAT systems, including other space lasers so as to free their offensive forces.

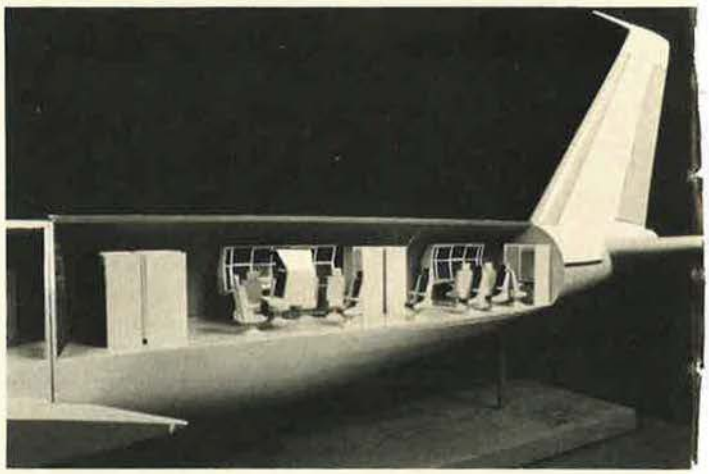
"First space laser deployments will have a powerful psychological effect, but are likely to have less revolutionary military effect for some years to come. However, it should be recognized that the other technologies for space warfare will arrive long before space lasers are deployed."

Unanswered Questions

The convergence of several political and "public-relations" considerations—rather than the realities of science and engineering—seems to have led to the current popularity of space-based laser BMD and fostered the illusion that the associated technologies are in hand. The media appeal of an orbiting weapon system that "zaps" an enemy's ballistic missiles with lethal rays and thus confines strategic war to the voids of the universe is, of course, obvious. Also obvious is the political attractiveness of banishing the horrors of nuclear war from US territory and the airspace above.

Unfortunately, as the Defense Science Board and the majority of all scientific and military experts point out, the laws of physics and the historical verity of measure begetting countermeasures militate against the near-term feasibility of such a system.





Above: ALL's console that serves to control its laser. At right: A cutaway of the control system in a proposed ALL-2.

Those who shrug off the vast technological and engineering problems associated with an SBL-BMD (space-based laser/ballistic missile defense) system still confront a monumental obstacle: The *excessive* vulnerability of such a space battle station combines with the *excessive* incentive for the other side to attack it preemptively. The make or break element of laser weapons is variously known as the brightness factor or radiant intensity, meaning the light energy that is being focused on the target. While there are other variables, three factors are the principal determinants of radiant intensity: the power that is being generated by the laser weapon, the distance between the weapon and the target, and the size of the spot that is being "illuminated" by the beam.

For the time being, there is no evidence that major breakthroughs

Control console used by ALL's test director to monitor laser operations during the system's test flights.

in power source effectiveness are around the corner. The same is true for laser systems that might be significantly more "lethal" than the family of high-energy prototype devices in existence or on the drawing boards.

(Over the long term, it is possible to hypothesize that X-ray lasers whose beam can penetrate matter would exceed the lethality of lasers operating in the visible light and infrared region. X-rays can be generated in vast quantities by nuclear detonations where they represent the major component of the so-called EMP, for electromagnetic pulse. Again, engineering reality turns out to be the spoilsport: To date, nobody has figured out how to set off a powerful nuclear blast without obliterating the X-ray laser that is to focus the blast's energy on a distant target.)

The only two variables, then, that system designers can influence are beam divergence and distance. The latter is crucial and controlled by a law of physics expressed as r^2, meaning that laser power has to go up at a "squared rate" to keep up with linear distance increases. Applied to present realities the consequence of r^2 is sobering.

The best performance to date involved the destruction of a specially prepared TOW missile by a ground-based laser developed by the Navy and DARPA, using a Hughes point/tracker system, over a distance of one kilometer. The stark realities of SBL-BMD are that these systems probably will have to function over distances of up to 10,000 kilometers, requiring a 100,000,000-fold increase in laser power delivered on the target. Even if lasers of such enormous capacity can be built, there still remains the problem of delivering that energy in a precisely focused manner on the target. The first step here is a large mirror to focus the energy. The second is to prevent jitter of the system while vast amounts of energy are being generated. ALL failed to destroy its first two targets because of unanticipated jitter, even though the distance from the laser device to the target was relatively short.

There are unresolved questions about the size of the mirror required for an SBL-BMD. Some of them involve basic uncertainties about what a constellation of laser battle stations should look like. Others hinge on the amount of radiant intensity that needs to be "fired" on the target. It is probably unrealistic to assume that the Soviets would not harden their ICBMs once the US signaled its intention to develop space-based laser battle stations. The current generation of liquid-fueled Soviet ICBMs, once caught by a high-powered laser beam, could be destroyed relatively easily. In order to save weight and boost performance, these missiles rely on thin-walled construction in their fuel section. Once that wall is breached, the laser's thermal energy, of course, would ignite the fuel, thus destroying the missile.

There is little room to doubt that the Soviet Union, as well as the US, knows how to provide relatively low-weight thermal protection, ranging from a multitude of materials and techniques used on reentry vehicles of ballistic missiles to the special tiles on the Space Shuttle. The difference in power and dwell-time required to destroy an "easy mark," such as an unshielded liquid missile, compared to what it takes to evaporate a target that incorporates passive countermeasures, is vast. Military planners in this country, of course, believe that any US SBL-BMD system must be based on the presumption that its targets, the Soviet ballistic missile forces, eventually will incorporate laser countermeasures. The size of the mirror of the weapon, its orbital altitude (and thus the approximate distance from the target), and the number of space battle stations required to provide around-the-clock coverage of the Soviet launch sites are all affected by whether or not the system has the ability to destroy thermally protected targets.

This factor, along with other, equally weighty considerations, would seem to preclude deployment of SBL-BMD systems at geostationary altitude (about 36,000 kilometers). At such an altitude, the system would be overhead at a specific point of the globe at all times and have an extremely wide range of view. In turn, this condition would reduce the number of systems required to provide constant coverage of Soviet ICBM fields.

Conversely, deployment of such a system at low orbital altitude requires a constellation of laser battle stations—probably eighteen as a minimum but possibly a far greater number—to provide around-the-clock coverage of the Soviet ICBM launch sites. Further, since the battle stations circle the globe approximately once every ninety minutes, only two or three, depending on their altitude, can provide coverage of Soviet territory at a given time. A Soviet preemptive attack, therefore, can be confined to the few

SBL-BMD systems providing coverage of the launch sites during the period of a planned Soviet ICBM launch.

The rotational factor introduces a welter of other complications. Assuming that about 1,400 Soviet ICBM silos—the current inventory—must be covered at all times, each one of the two or three battle stations positioned above them at a given moment has to be able to destroy several hundred individual missiles within a period of less than twenty minutes. The length of this "window" is determined by the need to destroy the ICBMs *before* they can release their MIRVed warheads and, of course, before the individual laser weapons have moved too far away from their targets.

The command and control problem that results is colossal. Presumably, the individual battle stations will have to be preprogrammed to monitor several hundred known Soviet ICBM silos, and, upon detection of launches, to attack the missiles in flight. Almost certainly, the target list stored in the battle station's computer will have to be updated several times over the lifespan of a particular weapon. Also, targets will have to be "handed over" from one SBL-BMD system to another as these weapons move in and out of the "battle zone."

Whether or not future administrations will be willing to entrust such life-and-death decisions as attacking Soviet ballistic missiles to "robots" in space remains to be seen. The requirement for a manned command post in space, on the other hand, would stress further the technological and engineering challenges associated with SBL-BMD and vastly increase costs. Further, mobile ICBMs and IRBMs (intermediate-range ballistic missiles, such as the Soviet SS-20s) almost certainly are beyond the ken of SBL-BMD, even though by the year 2000 and beyond when laser weapons of this type might become feasible, mobility of one kind or another almost certainly will have been added to all ballistic missiles.

The Deck Is Stacked in Favor of the Offense

The small segment of a constellation of SBL-BMD satellites that matters during the decisive phase of a laser vs. ICBM battle is subject to a wide range of antisatellite measures. They run the gamut from nuclear and conventional interceptor attacks, "space mines," and decoy missiles, to countermeasures that disable the command and control or pointing elements of the laser weapons as well as attack by ground-based lasers.

Most HEL experts believe that SBL-BMD satellites can be put out of commission without need to resort to exotic technologies; current ASAT approaches—especially the US combination of high-flying aircraft and solid-propellant boosters that strew shrapnel-like matter into the path of targets—seems more than adequate.

The US ASAT that is being developed by the Air Force will use F-15 Eagle aircraft to release modified SRAMs (short-range attack missiles) at high altitude. The SRAM booster, in turn, uses a miniature homing device to release a cloud of "buckshot" into a counterorbit that causes collision with the target at extremely high velocities.

There are many advantages that accrue to this approach to the ASAT mission, not the least of which are relatively low cost, operational flexibility, and easy proliferation. SBL-BMD satellites are considered to be ideal targets for this type of ASAT. Not only are the laser battle stations bulky and in a fixed orbit but they include an extremely fragile and large mirror. The diameter of the latter probably will be in the thirty-meter range, thus making it an easy prey for the ASAT's buckshot. At the same time, the SBL-BMD weapon probably will be ineffective against the shrapnel cloud—which radiates no energy and thus is hard to detect—in terms of self-defense, assuming that the system can be provided with such an ancillary capability in the first place.

The system's vulnerability to ASAT attacks, incidentally, would not be ameliorated even if one resorts to such "far-out concepts" as using huge ground-based lasers that beam their energy at space-based mirror systems that in turn focus the energy on the target.

It can be argued also that a SBL-BMD satellite overflying the Soviet Union eventually will be extremely vulnerable to attack by ground-based Soviet lasers. While the space laser has only a second or so to disable a given Soviet ICBM, the Soviet ground-based laser has several minutes to find, track, and attack the US SBL-BMD.

Lastly, detonation of a high-yield nuclear device even at considerable distance from a laser battle station is likely to put the latter out of commission.

Political and Economic Ramifications

A US commitment at this time to a massive SBL-BMD development program might provide an emotional "high" for the national psyche and cause discomfiture for the Soviet Union. But, in the view of many Air Force and other Pentagon analysts, its transient, mainly propagandistic advantages would not compensate for the ensuing disadvantages. Primary here is the fact that it would take about $10 billion in R&D money to develop and "fly" a single prototype. Premature investments of this magnitude in a technology that most experts consider not yet ready for full-scale exploitation might sound the death knell for the development of such weapon systems at a later time when their underlying technologies have reached maturity.

In addition, siphoning off funds from research and development in the strategic sector obviously would slow down work on unrelated weapon programs that are ready for full-scale development.

On the other hand, there can't be any doubt about public reaction in this country if the Soviets were to give evidence of moving toward SBL-BMD. While such an eventuality is not very likely as long as the Soviets don't have an operational Space Shuttle, even a Soviet gesture in this direction would build strong political pressures for the US to start developing such a system at once.

Some defense scientists with a cynical bent suggest that the proper response would be to provide Shuttle astronauts with a small laser and have them "zap" a nearby token target to propitiate public opinion without having to launch a program that isn't ready for launching. ■

JANE'S

ALL THE WORLD'S AIRCRAFT SUPPLEMENT

AUGUST 1981

Model of the new Boeing 737-300 short-range transport in the insignia of USAir, the first launch customer

BOEING

BOEING COMMERCIAL AIRPLANE COMPANY: Head Office: PO Box 3707, Seattle, Washington 98124, USA

BOEING MODEL 737-300

Work on this new short-range transport was started in early 1980. Its airframe is about 80% common with that of the Advanced 737-200. Lengthening of the fuselage, to accommodate additional passengers and underfloor freight, and the installation of new-generation turbofan engines, offers much reduced fuel consumption per seat and lower noise levels compared with the earlier model. Over a 500 nm (927 km; 576 mile) range, the 737-300 is expected to carry 20 more passengers than the Advanced 737-200, with a 16% lower fuel consumption.

On March 5 and 18, 1981, respectively, USAir and Southwest Airlines each placed an order for 10 737-300s, with options on 10 more; Southwest stated that it intended to negotiate an increase of its option to 30 aircraft. On this basis, Boeing announced on March 26 that the 737-300 had been committed to full development and production.

The manufacturing plan, announced at the time of production committal, schedules the completion of a Class II mockup, and initiation of tool design, in 1982; the beginning of major assembly in mid-1983; and rollout, first flight, certification, and initial deliveries during 1984. Boeing does not regard the 737-300 as a replacement for the 737-200, but as a complement to the existing Boeing range of aircraft.

The description of the 737-200 in the 1980–81 *Jane's* applies also to the 737-300 except as follows:

WINGS: Generally similar to 737-200 except: modified aerofoil section for leading-edge slats outboard of engine nacelles; revised trailing-edge flap sections and flap track fairings aft of engines; wing structure strengthened; and each wingtip extended by 0.28 m (11 in), with wingtip flutter boom.

FUSELAGE: As for 737-200, but lengthened by a total of 2.64 m (8 ft 8 in), by insertion of a 1.12 m (3 ft 8 in) fuselage plug forward of the wing, and a 1.52 m (5 ft 0 in) plug aft of the wing carry-through structure. In addition to providing increased passenger capacity, this 'stretch' gives a lower freight hold volume which is greater by 5.47 m^3 (193 cu ft) than that of the standard 737-200.

TAIL UNIT: As for 737-200, except dorsal fin area and tailplane span increased.

LANDING GEAR: Generally as for 737-200, but nose unit repositioned and modified to ensure adequate ground clearance for larger engine nacelles. Twin nosewheels have tyres size 29 × 7.7. Main units have heavy-duty wheels, H40 × 14.5-19 heavy-duty tyres, and Bendix 4-rotor or Goodrich 5-rotor heavy-duty wheel brakes as standard. Main-wheel tyre pressure 11.7–12.2 bars (170–177 lb/sq in).

Wind tunnel testing a model of the Boeing 737-300. The repositioned, larger nacelles are clearly evident

POWER PLANT: Two 89 kN (20,000 lb st) CFM International CFM56-3 turbofan engines, pylon mounted one on each wing. Rolls-Royce/Japan Aero Engines RJ500 turbofans of similar thrust rating optional. Nacelles are forward of wings, and higher than those of 737-200; each is fitted with two aerodynamic fences. Standard fuel capacity up to 20,290 litres (5,360 US gallons), with integral fuel cells in wing centre-section and integral wing tanks. Single-point pressure refuelling through leading-edge of starboard wing.

ACCOMMODATION: Crew of two side by side on flight deck (unchanged from 737-200). Alternative cabin layouts seat from 121 to 149 passengers. Typical arrangements offer eight first class seats four-abreast at 96.5 cm (38 in) seat pitch and 114 or 120 tourist class seats six-abreast at 86 cm (34 in) or 81 cm (32 in) respectively in mixed class; and 132, 140, or 148 all-tourist class at seat pitches of 86 cm (34 in), 81 cm (32 in), or 76 cm (30 in) respectively. One plug-type door at each corner of cabin, with passenger doors on port side and service doors on starboard side. Airstair for forward cabin door standard. Overwing emergency exit on each side. One galley and one lavatory forward, and one or two galleys and lavatories aft, depending on configuration. 'New look' large-volume interior or reduced-volume 'carry all' interior optional: former has overhead baggage stowage capacity of 3.20 m^3 (113 cu ft), latter 6.43 m^3 (227 cu ft). Underfloor freight holds, forward and aft of wing, with access doors on starboard side.

Blade antennae on the top of the rear fuselage identify another new version of the Boeing 737, equipped with Motorola side-looking airborne multi-mission radar (SLAMMR). First order, for 1982–83 delivery, was placed by the Indonesian Air Force, which will use three SLAMMR 737-200s for government transport and maritime surveillance duties

SYSTEMS: Generally as for 737-200.

AVIONICS AND EQUIPMENT: Equipped to FAA Category II low weather minimum criteria as standard. AFCS includes digital Category II autopilot, 12.7 cm (5 in) electro-mechanical flight displays, 10 cm (4 in) electrical air data displays, dual digital air data computer, and full-range digital autothrottle. Other items include a performance data computer, dual nav/com, VHF nav, colour digital radar, and digital autobrake. Optional equipment confers Category IIIA capability for the AFCS, a VLF/Omega nav system, and dual INS. A performance navigation computer system, with an associated dual electronic control display unit, is under study and, if satisfactory, will be available as an option.

DIMENSIONS, EXTERNAL:

Wing span	28.91 m (94 ft 10 in)
Wing chord at root	4.71 m (15 ft 5.6 in)
Length overall	33.40 m (109 ft 7 in)
Height overall	11.13 m (36 ft 6 in)
Tailplane span	12.80 m (42 ft 0 in)
Wheel track	5.23 m (17 ft 2 in)
Wheelbase	12.45 m (40 ft 10 in)
Main passenger door (port, fwd):	
Height	1.83 m (6 ft 0 in)
Width	0.86 m (2 ft 10 in)
Passenger door (port, aft):	
Height	1.83 m (6 ft 0 in)
Width	0.76 m (2 ft 6 in)
Emergency exit (overwing, port and stbd):	
Height	0.97 m (3 ft 2 in)
Width	0.51 m (1 ft 8 in)
Service doors (stbd, fore and aft):	
Height	1.65 m (5 ft 5 in)
Width	0.76 m (2 ft 6 in)
Freight hold door (stbd, fwd):	
Height	1.22 m (4 ft 0 in)
Width	1.30 m (4 ft 3 in)
Freight hold door (stbd, aft):	
Height	1.22 m (4 ft 0 in)
Width	1.22 m (4 ft 0 in)

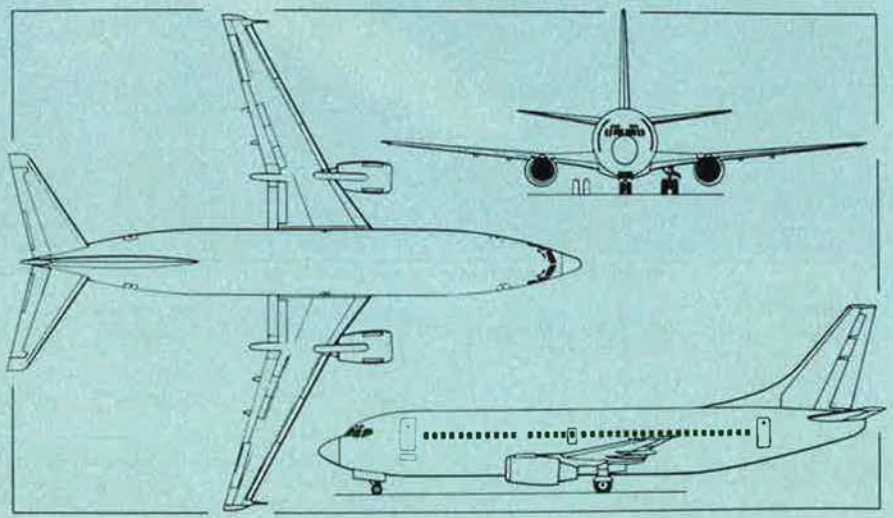
DIMENSIONS, INTERNAL:

Cabin, incl galley and toilet:	
Length	23.52 m (77 ft 2 in)
Max width	3.45 m (11 ft 4 in)
Max height	2.11 m (6 ft 11 in)
Freight hold (fwd) volume	12.03 m^3 (425 cu ft)
Freight hold (aft) volume	18.21 m^3 (643 cu ft)

WEIGHTS (estimated):

Operating weight empty	32,500 kg (71,650 lb)
Max T-O weight:	
standard	56,472 kg (124,500 lb)
optional	58,967 kg (130,000 lb)
Max ramp weight:	
standard	56,700 kg (125,000 lb)
optional	59,195 kg (130,500 lb)
Max zero-fuel weight	47,625 kg (105,000 lb)
Max landing weight	51,710 kg (114,000 lb)

PERFORMANCE (estimated, A: at brake release



Boeing Model 737-300 (two CFM International CFM56-3 turbofan engines) *(Pilot Press)*

weight of 56,472 kg; 124,500 lb. B: at optional BRW of 58,967 kg; 130,000 lb):

T-O field length, S/L, at 29°C (84°F):

A	2,173 m (7,130 ft)
B	2,384 m (7,820 ft)

Wet landing field length, 40° flaps, at typical landing weight 1,549 m (5,083 ft)

Still-air range, T-O at S/L:

A	1,387 nm (2,570 km; 1,597 miles)
B	1,810 nm (3,354 km; 2,084 miles)

ZLIN

MORAVAN NARODNÍ PODNIK (Zlin Aircraft Moravan National Corporation): Address: Otrokovice 76581, Czechoslovakia

By the beginning of 1981 Zlin had produced more than 235 examples (all versions) of the Z 42 two-seat light aircraft. An improved version, the Zlin 142, is now in production.

ZLIN 142

The Zlin 142 is intended for basic and advanced flying training, aerobatic flying, the training of aerobatic pilots, glider towing, and (when equipped with appropriate instrumentation) for night and IFR flying training. It is a progressive development of the Zlin 42 M (see 1980–81 *Jane's*), from which it differs mainly in having a more powerful engine, improved cockpit design, increased useful load, and higher max T-O weights. Design began in the Winter of 1977–78, and the prototype (OK-078) flew for the first time on December 29, 1978. In 1980 the aircraft received FAR Pt 23 certification in the Aerobatic, Utility, and Normal categories, and production began during that year. A total of 30 had been completed by early 1981.

TYPE: Two-seat fully-aerobatic (A), light training (U), and touring (N) aircraft.

WINGS: Cantilever low-wing monoplane. Wing section NACA 63₃416.5. Dihedral 6° from roots. Sweepforward 4° 20' at quarter-chord. All-metal structure with single main spar and auxiliary spar; skins (fluted on control surfaces) of aluminium-plated duralumin sheet. All-metal slotted ailerons and flaps all have same dimensions. Mass-balanced flaps and ailerons, operated mechanically by control rods. Ground-adjustable tab on each aileron.

FUSELAGE: Engine cowlings of sheet metal. Centre-fuselage of welded steel tube truss construction, covered with laminated glassfibre panels. Rear fuselage is all-metal semi-monocoque structure.

TAIL UNIT: Cantilever all-metal structure with skins (fluted on control surfaces) of duralumin sheet. Control surfaces have partial mass and aerodynamic balance. Trim tabs on elevator and rudder. Rudder actuated by control cables, elevator by control rods.

LANDING GEAR: Non-retractable tricycle type, with nosewheel offset to port. Oleo-pneumatic nosewheel shock-absorber. Main wheels carried on flat spring steel legs. Nosewheel steering by means of rudder pedals. Main wheels and Barum tyres size 420 × 150, pressure 1.90 bars (27.6 lb/sq in); nosewheel and Barum tyre size 350 × 135, pressure 2.50 bars (36.3 lb/sq in). Hydraulic disc brakes on main wheels can be operated from either seat. Parking brake standard.

POWER PLANT: One 156.5 kW (210 hp) Avia M 337 AK inverted six-cylinder aircooled in-line engine, with compressor and low-pressure injection pump, driving a two-blade Avia V 500 A constant-speed metal propeller. Fuel tank in each wing leading-edge, with combined capacity of 120 litres (26.5 Imp gallons). Normal category version has auxiliary 50 litre (11 Imp gallon) tank at each wingtip, increasing total fuel capacity to 220 litres (48.5 Imp gallons). Fuel and oil systems permit inverted flying for up to 3 min. Oil capacity 12 litres (2.6 Imp gallons).

ACCOMMODATION: Individual side-by-side seats for two persons, the main pilot's seat being to port. Both seats are adjustable and permit the use of back-type parachutes. Baggage space aft of seats. Cabin and windscreen heating and ventilation standard. Forward-sliding cockpit canopy. Dual controls standard.

SYSTEMS: Electrical system includes a 600W 27V engine-driven generator and 25Ah Teledyne battery. External power source can be used for starting the engine.

AVIONICS AND EQUIPMENT: VHF radio with IC (Mesit LUN 3524.20) and IFR instrumentation optional. Standard equipment includes cockpit, instrument, and cabin lights; navigation lights; landing and taxying lights; and anti-collision light. Towing gear, for gliders of up to 500 kg (1,102 lb) weight, optional.

DIMENSIONS, EXTERNAL:

Wing span	9.16 m (30 ft 0½ in)
Wing chord (constant over most of span)	1.42 m (4 ft 8 in)
Length overall	7.30 m (23 ft 11½ in)
Height overall	2.75 m (9 ft 0¼ in)
Elevator span	2.904 m (9 ft 6⅛ in)
Wheel track	2.33 m (7 ft 7¾ in)
Wheelbase	1.66 m (5 ft 5¼ in)
Propeller diameter	2.00 m (6 ft 6¼ in)
Propeller ground clearance	0.40 m (1 ft 3¼ in)

DIMENSIONS, INTERNAL:

Cabin: Length	1.80 m (5 ft 10¼ in)
Max width	1.12 m (3 ft 8 in)
Max height	1.20 m (3 ft 11¼ in)
Baggage space	0.2 m³ (7.1 cu ft)

AREAS:

Wings, gross	13.15 m² (141.5 sq ft)
Ailerons (total)	1.408 m² (15.16 sq ft)
Trailing-edge flaps (total)	1.408 m² (15.16 sq ft)
Fin	0.54 m² (5.81 sq ft)
Rudder, incl tab	0.81 m² (8.72 sq ft)
Tailplane	1.23 m² (13.24 sq ft)
Elevator, incl tabs	1.36 m² (14.64 sq ft)

WEIGHTS AND LOADINGS (A: Aerobatic; U: Utility; N: Normal category):

Basic weight empty (all versions)	730 kg (1,609 lb)
Max T-O weight: A	970 kg (2,138 lb)
U	1,020 kg (2,248 lb)
N	1,090 kg (2,403 lb)
Max landing weight: A	970 kg (2,138 lb)
U	1,020 kg (2,248 lb)
N	1,050 kg (2,315 lb)
Max wing loading:	
A	73.76 kg/m² (15.11 lb/sq ft)
U	77.57 kg/m² (15.89 lb/sq ft)
N	82.89 kg/m² (16.98 lb/sq ft)
Max power loading: A	6.19 kg/kW (10.17 lb/hp)
U	6.51 kg/kW (10.69 lb/hp)
N	6.96 kg/kW (11.43 lb/hp)

PERFORMANCE (at max T-O weight):

Never-exceed speed (all versions)	179 knots (333 km/h; 206 mph) IAS
Max level speed at 500 m (1,640 ft):	
A, U	125 knots (231 km/h; 143 mph)
N	122 knots (227 km/h; 141 mph)
Max cruising speed at 500 m (1,640 ft):	
A, U	108 knots (200 km/h; 124 mph)
N	102 knots (190 km/h; 118 mph)
Econ cruising speed at 500 m (1,640 ft):	
A	97 knots (180 km/h; 112 mph)
Stalling speed, flaps up:	
A	56 knots (103 km/h; 64 mph) IAS
U	58 knots (107 km/h; 67 mph) IAS
N	60 knots (110 km/h; 69 mph) IAS
Stalling speed, T-O flap setting:	
A	54 knots (99 km/h; 62 mph) IAS
U	55.5 knots (102 km/h; 63.5 mph) IAS
N	57 knots (105 km/h; 66 mph) IAS
Stalling speed, flaps down:	
A	48 knots (88 km/h; 55 mph) IAS
U	49.5 knots (91 km/h; 57 mph) IAS
N	51.5 knots (95 km/h; 59.5 mph) IAS
Max rate of climb at S/L, ISA:	
A	330 m (1,082 ft)/min
U	306 m (1,004 ft)/min
N	264 m (866 ft)/min
Service ceiling: A	5,000 m (16,400 ft)
U	4,700 m (15,425 ft)
N	4,300 m (14,100 ft)
T-O run: A	220 m (722 ft)
T-O to 15 m (50 ft): A	440 m (1,444 ft)
U	475 m (1,560 ft)
N	540 m (1,772 ft)
Landing from 15 m (50 ft): A	400 m (1,313 ft)
U	425 m (1,395 ft)
N	460 m (1,510 ft)
Landing run: A	190 m (624 ft)
Range at max cruising speed:	
A, U	283 nm (525 km; 326 miles)
N	513 nm (950 km; 590 miles)
Max range: N	566 nm (1,050 km; 652 miles)
g limits: A	+ 6.0; − 3.5
U	+ 5.0; − 3.0
N	+ 3.8; − 1.5

Zlin 142 two-seat lightplane for training, touring, and aerobatic flying

AÉROSPATIALE

SOCIÉTÉ NATIONALE INDUSTRIELLE AÉROSPATIALE: DIVISION HÉLICOPTÈRES: 2-20 avenue Marcel Cachin, 93126 La Courneuve Cédex, France

The original SA 365C version of the Aérospatiale Dauphin 2 helicopter was developed as a twin-engined version of the single-turboshaft SA 360C Dauphin, with minimal airframe changes. While progressing towards certification of the SA 365C, Aérospatiale's Helicopter Division began studies of a new version with more refined external lines, a fully-retractable tricycle landing gear, uprated engines, and a considerably increased range. The prototype of this new AS 365N was exhibited in public for the first time at the 1979 Paris Air Show, and was claimed to be particularly suitable for offshore commercial and naval applications because of its

new features. It is now in production in three forms, as follows:

AÉROSPATIALE AS 365N DAUPHIN 2

Although the AS 365N resembles closely the earlier SA 365C, about 90% of its components are different. Only 25% of the airframe is of conventional construction. Composites such as glassfibre-Nomex, glassfibre-Kevlar, and glassfibre-Rohacell are used for 20% of the structure. Carbonfibre is used for the spars, skins and tapered tips of each main rotor blade, in the main rotor hub, and for the horizontal stabiliser. Some 35% of the fuselage is made of light alloy-Nomex sandwich.

The prototype AS 365N (F-WZJD) flew for the first time on March 31, 1979, and was exhibited at the Paris Air Show in June of that year. A second prototype followed a few months later. The first production model (F-WZJJ) introduced further changes to the rotor mast fairings, engine cowlings, crew doors, transmission and main rotor blades, as well as larger tail surfaces. On February 6, 1980, it established a record for the round trip between Issy-les-Moulineaux, Paris, and Battersea Heliport, London, at an average speed of 158.89 knots (294.26 km/h; 182.84 mph). Its T-O weight of 3,800 kg (8,377 lb) included ten occupants and 30 min fuel reserves. The Paris-London leg was covered in 1 h 7 min 48 s, the return journey in 1 h 11 min 8 s. No landing at Battersea was necessary, as the total distance of 367 nm (680 km; 422 miles) was within the aircraft's range with full normal payload.

Two days later, the same aircraft, carrying six persons, set new records between Issy and Battersea, with a landing in London. Time for the Paris–London flight was 1 h 3 min 30 s, at an average speed of 173.82 knots (321.91 km/h; 200.03 mph); the return flight took 1 h 12 min 9 s, at an average speed of 151.75 knots (281.05 km/h; 174.64 mph).

French civil certification for VFR operation by day and night was received in early 1981, at which time further testing for single/two-pilot IFR operation was under way. The basic AS 365N will be built in China, as well as France, following signature on July 2, 1980, of a licence agreement covering a first batch of 50 aircraft. Orders total more than 300 helicopters for civil and military use, including AS 366Gs for the US Coast Guard and AS 365F/AS 15TTs with special equipment for attacking surface ships. These two variants are described separately.

Under development in the Spring of 1981 was a special aeromedical version of the AS 365N. This will carry a flight crew of two and will be available in two forms. An 'intensive care' layout will be arranged to carry two patients, one on each side of the cabin on a standard NATO stretcher, with space between for the doctor's seat and medical equipment. One of the stretchers can be replaced by seats for two patients, if required. The alternative 'ambulance' configuration provides space for four stretchers, in pairs one above the other on each side of the cabin, plus room for the doctor; or a single pair of stretchers, with room for four seated persons on the other side, and a doctor. Stretchers will be loaded through nose doors, with 180° opening, on both models. Those in the ambulance layout will be fixed to the sides of the cabin, and the patients will be carried to them on special mattresses.

The following structural description refers to the standard AS 365N, but is generally applicable to all versions:

TYPE: Twin-turbine military and commercial general-purpose helicopter.

ROTOR SYSTEM: Four-blade main rotor. Blades attached by quick-disconnect pins to Starflex glassfibre/carbonfibre hub, in which the three conventional hinges for each blade are replaced by a single balljoint of rubber/steel sandwich construction, requiring no maintenance. Blades of new OA 2 section, developed in collaboration with Onera; varying from OA 212 (12%) at root to OA 207 (7%) at tip, with 10° negative twist from root to tip. Each blade comprises two Z-section carbonfibre spars and carbonfibre skin, a solid glassfibre-resin leading-edge covered with a stainless steel sheath, and Nomex honeycomb filling. Leading-edge of carbonfibre tip is swept back at 45°. Ground-adjustable tab on trailing-edge of each blade towards tip. Blade chord extended outboard of tab to align with tab trailing-edge. Rotor brake standard. Thirteen-blade 'fenestron' type of metal ducted-fan anti-torque tail rotor.

ROTOR DRIVE: Mechanical shaft and gear drive. Transmission shaft from each engine extends forward, through freewheel, to helical and epicyclic reduction stages of main gearbox. Shaft to 'fenestron' driven off bottom of main rotor shaft. Main rotor rpm 349. 'Fenestron' rpm 4,706.

FUSELAGE: Semi-monocoque structure. Bottom structure and framework of front fuselage: primary machined frames fore and aft of the main gearbox platform and at the rear of the centre-fuselage; floors under main gearbox and engines; cabin doors; 'fenestron' structure and fin of light alloy (AU4G). Nose and power plant fairings and fin tip of glassfibre-Nomex sandwich. Centre and rear fuselage assemblies: flight deck floor; roof, walls, and bottom skins of fuel tanks of light alloy-Nomex sandwich.

TAIL UNIT: Horizontal stabiliser mid-set on rear fuselage, forward of 'fenestron'; swept endplate fins offset 10° to port. Construction of carbonfibre and Nomex-Rohacell sandwich.

Aérospatiale AS 365N Dauphin 2 *(Howard Levy)*

LANDING GEAR: Hydraulically-retractable tricycle type. Twin-wheel steerable and self-centering nose unit retracts rearward. Single wheel on each rearward-retracting main unit, fully enclosed by doors of Kevlar-Nomex sandwich when retracted. All three units embody oleo-pneumatic shock-absorber. Tyre pressure 7 bars (101 lb/sq in) for main wheels, 4 bars (58 lb/sq in) for nose-wheels. Hydraulic disc brakes.

POWER PLANT: Two Turboméca Arriel 1C free-turbine turboshaft engines, each rated at 530 kW (710 shp), mounted side by side aft of main rotor drive-shaft, with stainless steel firewall between them. Standard fuel in four tanks under cabin floor and a fifth tank in the bottom of the centre-fuselage; total capacity 1,140 litres (250 Imp gallons). Provision for auxiliary tank in baggage compartment, with capacity of 180 litres (39.5 Imp gallons); or ferry tank in place of rear seats in cabin, capacity 475 litres (104.5 Imp gallons). Refuelling point above landing gear door on port side. Oil capacity 14 litres (3 Imp gallons).

ACCOMMODATION: Standard accommodation for pilot and co-pilot or passenger in front, and two rows of four seats to rear. High-density seating for one pilot and 13 passengers. VIP configurations for four to six persons in addition to pilot. Three forward-opening doors on each side. Freight hold aft of cabin rear bulkhead, with door on starboard side. Cabin heated and ventilated.

SYSTEMS: SEMCA air-conditioning system optional. Duplicated hydraulic system. Electrical system includes two 4.5kW starter/generators, one 17Ah 24V battery, and two 250VA 115V 400Hz inverters. Provision for de-icing system.

AVIONICS AND EQUIPMENT: Optional avionics include VHF and HF com/nav, VOR, ILS, ADF, transponder, DME, radar, and self-contained nav system. Optional equipment includes a SFIM 85 duplex autopilot, a 1,700 kg (3,750 lb) capacity cargo sling, and 275 kg (605 lb) capacity hoist with 80 m (260 ft) cable length.

DIMENSIONS, EXTERNAL:

Diameter of main rotor	11.93 m (39 ft 1¾ in)
Diameter of 'fenestron'	0.90 m (2 ft 11⅞ in)
Blade chord, main rotor, basic	0.385 m (1 ft 3¼ in)
Blade chord, main rotor, outboard of tab	0.405 m (1 ft 4 in)
Length overall	13.34 m (43 ft 9 in)
Length of fuselage	11.41 m (37 ft 5¼ in)
Width, rotor blades folded	3.21 m (10 ft 6½ in)
Height to top of rotor hub	3.47 m (11 ft 4¾ in)
Height overall (tip of fin)	4.00 m (13 ft 1½ in)
Wheel track	1.90 m (6 ft 2¾ in)
Wheelbase	3.61 m (11 ft 10¼ in)
Main cabin door (fwd, each side):	
Height	1.16 m (3 ft 9½ in)
Width	1.14 m (3 ft 9 in)
Main cabin door (rear, each side):	
Height	1.16 m (3 ft 9½ in)
Width	0.87 m (2 ft 10¼ in)
Baggage compartment door (stbd):	
Height	0.51 m (1 ft 8 in)
Width	0.73 m (2 ft 4¾ in)

DIMENSIONS, INTERNAL:

Cabin: Length	2.30 m (7 ft 6½ in)
Max width	2.03 m (6 ft 8 in)
Max height	1.40 m (4 ft 7 in)
Floor area	4.20 m² (45.20 sq ft)
Volume	5.00 m³ (176 cu ft)
Baggage compartment volume	2.20 m³ (77.7 cu ft)

WEIGHTS:

Weight empty, equipped	1,945 kg (4,288 lb)
Max T-O weight	3,850 kg (8,488 lb)

PERFORMANCE (at max T-O weight):

Never-exceed speed at S/L	164 knots (305 km/h; 189 mph)
Max cruising speed at S/L	151 knots (280 km/h; 174 mph)
Econ cruising speed at S/L	135 knots (250 km/h; 155 mph)
Max rate of climb at S/L	390 m (1,280 ft)/min
Max range with standard fuel	475 nm (880 km; 546 miles)

AÉROSPATIALE AS 365F/AS 15TT DAUPHIN 2

On October 13, 1980, the government of Saudi Arabia placed in France orders for military equipment valued at 14,400 million francs. Known as the Sawari contract, it included the supply of 24 AS 365F Dauphin 2 helicopters. The first four of these will be equipped with an Omera ORB 32 radar for

Full-scale mockup of AS 365F/AS 15TT anti-ship helicopter

First HH-65A Dolphin Short Range Recovery helicopter for US Coast Guard

search and rescue duties. The remaining 20 will be anti-ship helicopters, equipped with Thomson-CSF Agrion 15 radar and Aérospatiale AS 15TT all-weather air-to-surface missiles, for operation from both shore bases and frigates. Deliveries are scheduled to begin in 1983, and will include 200 AS 15TT missiles.

A full-scale mockup of the anti-ship AS 365F/AS 15TT was displayed for the first time at the 7th Naval Equipment Exhibition at Le Bourget at the end of October 1980. Generally similar to the AS 365N, it carries the Agrion 15 radar on a roll-stabilised pivot-mounting under its nose, to ensure a 360° field of sweep, and a total of four AS 15TT missiles, in pairs on an outrigger on each side of the fuselage. Agrion 15 is derived from the Iguane radar fitted to the Atlantic NG maritime patrol aircraft, and possesses a track-while-scan capability that enables it to detect threats over long ranges while tracking ten targets simultaneously. In addition to locating and attacking hostile warships, the AS 365F/AS 15TT can be utilised for coastal surveillance and ship escort duties, and to provide over-the-horizon target designation for long-range anti-ship missiles launched from ship or shore.

Powered, like the AS 365N, by two Turboméca Arriel IC turboshaft engines, it carries a normal crew of two and has a max T-O weight of 3,850 kg (8,488 lb). Endurance is 2 h 45 min when armed with four missiles, equivalent to a radius of action of nearly 125 nm (230 km; 143 miles). Alternatively, with two missiles, endurance can be increased to 3 h 45 min and radius of action to 165 nm (305 km; 190 miles). Range of the AS 15TT missile is greater than 8 nm (15 km; 9.3 miles).

Addition of the radar and missiles makes the following changes to the overall dimensions of the helicopter:

DIMENSIONS, EXTERNAL:

Length overall	12.15 m (39 ft 10½ in)
Width over missiles	4.20 m (13 ft 9½ in)

Aérospatiale Helicopter Corporation in Texas for installation of avionics, and flight testing for FAA certification. Deliveries to the Coast Guard are to extend from the late Spring of 1982 to 1986.

A civil counterpart, the **AS 366N**, is planned for the North American market.

WEIGHTS:

Weight empty, incl mission equipment	2,530 kg (5,577 lb)
Max T-O weight	3,900 kg (8,600 lb)

PERFORMANCE (at max T-O weight):

Never-exceed speed	175 knots (324 km/h; 201 mph)
Max cruising speed	145 knots (268 km/h; 167 mph)
Econ cruising speed	128 knots (237 km/h; 147 mph)
Hovering ceiling IGE	2,290 m (7,510 ft)
Hovering ceiling OGE	1,627 m (5,340 ft)
SRR range	166 nm (307 km; 191 miles)
Range with max passenger load	216 nm (400 km; 248 miles)
Max range, one engine out	327 nm (605 km; 376 miles)
Range with max fuel	420 nm (778 km; 483 miles)
Endurance with max fuel	4 h 11 min

DORNIER

DORNIER GmbH: Head Office: Postfach 1420, 7990 Friedrichshafen/Bodensee, German Federal Republic

DORNIER 228

Under the above general designation, Dornier is developing two larger-capacity utility and commuter versions of the Do 28 family. Major changes include the introduction of the company's advanced technology (TNT) wing, a lengthened fuselage, retractable tricycle landing gear, and wing-mounted turboprop engines. Despite these changes, the Dornier 228 retains a likeness to the Do 28/128 Skyservants: the fuselage configuration is generally similar, retains the same cross-section, and carries a tail unit that differs only by having a dorsal fin of greater area. The fuselage structure retains also the passenger/cargo double door that is a standard feature of the Skyservant. Designed to satisfy US FAR 23 and SFAR 41 requirements, it is to be certificated initially in Germany, followed as soon as possible by certification in Australia, France, the UK, and USA. The two versions comprise:

Dornier 228-100. Basic version, with accommodation for 15 passengers in standard airline-type seats at 76 cm (30 in) pitch. Suitable for a wide range of other duties, including freight or mixed cargo/passenger transport, executive travel, air taxi service, maritime surveillance (with undernose search radar), airways calibration, training, ambulance or search and rescue operations, and paramilitary missions. The prototype (D-IFNS) was rolled out on March 23, 1981, and flew for the first time on March 28, 1981.

Dornier 228-200. Version with lengthened fuselage, providing accommodation for 19 passengers, but otherwise generally similar to the 228-100. The prototype (D-ICDO) first flew on May 9, 1981.

Orders and options were reported to total 15 and 40 respectively in mid-April 1981, at which time the first production example was scheduled for delivery to a Norwegian operator in late 1981. All available details follow:

TYPE: Twin-turboprop light transport.

WINGS: Cantilever high-wing monoplane, comprising rectangular centre-section and two tapered outer panels. Dornier Do A-5 supercritical wing section. Wing leading-edge and raked wingtips of glassfibre/Kevlar composites. Fowler-type single-slotted trailing-edge flaps and ailerons of carbonfibre composites. Ailerons can be drooped

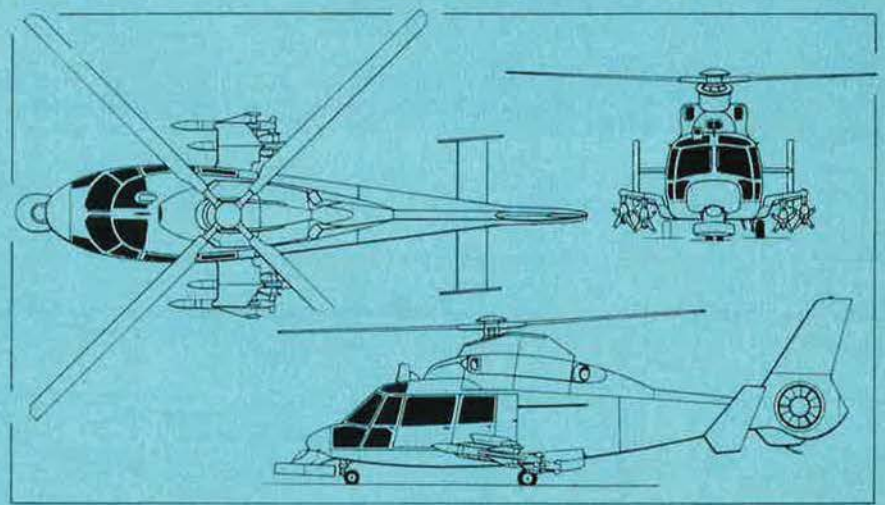
AÉROSPATIALE AS 366 DAUPHIN 2

US Coast Guard designation:
HH-65A Dolphin

At the 1979 Paris Air Show, Aérospatiale announced that it had won with this aircraft the competition for a helicopter to perform SRR (Short Range Recovery) duties from 18 shore bases of the US Coast Guard. The initial requirement is for 90 **AS 366Gs**, basically similar to the AS 365N but with engines and equipment of US manufacture accounting for about 60% of the total cost of each aircraft. The first order, for 23, was received in 1979.

The AS 366G is powered by two Avco Lycoming LTS 101-750A-1 turboshafts, each rated at 507 kW (680 shp), and will normally carry a crew of three (pilot, co-pilot, and aircrewman/hoist operator). Rockwell Collins is prime contractor for the advanced communications, navigation, and all-weather search equipment. Under development is a nose-mounted Northrop See Hawk forward-looking infra-red sensor to aid rescue operations in bad weather, darkness, or high seas.

The first AS 366G flew for the first time at Marignane on July 23, 1980. It was later shipped to



Aérospatiale AS 365F/AS 15TT (two Turboméca Arriel IC turboshaft engines) *(Pilot Press)*

Prototype Dornier 228-100, a 15-passenger utility and commuter transport

The 19-passenger Dornier 228-200, first flown on May 9 this year

symmetrically to augment trailing-edge flaps, and are operated differentially to serve as conventional ailerons. Remainder of wing of light alloy construction.

FUSELAGE: Conventional stressed-skin structure of light alloy.

TAIL UNIT: Cantilever structure largely of light alloy, but incorporating some carbonfibre/glass-fibre/Kevlar composites. Rudder and horizontal surfaces partly Eonnex-covered. All-moving tailplane, with combined anti-balance and trim tab. Trim tab in rudder.

LANDING GEAR: Retractable tricycle type, with single wheel on each unit. Main units retract forward and inward into fairings built on to the lower fuselage. Nosewheel retracts forward. Low-pressure tyres optional.

POWER PLANT: Two 533 kW (715 shp) Garrett TPE331-5 turboprop engines, each driving a Hartzell four-blade constant-speed reversible-pitch metal propeller. Engine mounting structure designed to accept with minimum modification alternative engines which may become available at a later date. These include the Garrett TPE331-10, and Pratt & Whitney Aircraft of Canada PT6A-41 and PT6A-135.

ACCOMMODATION: Crew of two, and 15 or 19 passengers as described under model listings. Individual seats down each side of the cabin with a central aisle. Combined two-section passenger and freight door, with integral steps, on port side of cabin at rear. Baggage compartment at rear of cabin, accessible from cabin. Additional baggage space in fuselage nose. Modular units for rapid changes of role.

DIMENSIONS, EXTERNAL:

Wing span	16.97 m (55 ft 8 in)
Length overall: 228-100	15.02 m (49 ft 3¼ in)
228-200	16.55 m (54 ft 3½ in)
Height overall	4.86 m (15 ft 11½ in)
Wheel track	3.30 m (10 ft 10 in)
Wheelbase: 228-100	5.50 m (18 ft 0½ in)
228-200	6.30 m (20 ft 8 in)
Passenger door (port, rear):	
Height	1.34 m (4 ft 4¼ in)
Width	0.65 m (2 ft 1½ in)
Height to sill	0.60 m (1 ft 11½ in)
Freight door (port, rear):	
Height	1.34 m (4 ft 4¼ in)
Width, incl passenger door	1.28 m (4 ft 2½ in)

DIMENSIONS, INTERNAL:

Cabin: Length: 228-100	6.33 m (20 ft 9 in)
228-200	7.80 m (25 ft 7 in)
Max width	1.35 m (4 ft 5¼ in)
Max height	1.55 m (5 ft 1 in)
Floor area: 228-100	8.50 m² (91.49 sq ft)
228-200	10.55 m² (113.56 sq ft)
Volume: 228-100	11.60 m³ (409.6 cu ft)
228-200	13.60 m³ (480.3 cu ft)
Baggage volume: 228-100	1.97 m³ (69.6 cu ft)
228-200	3.17 m³ (111.95 cu ft)

AREA:

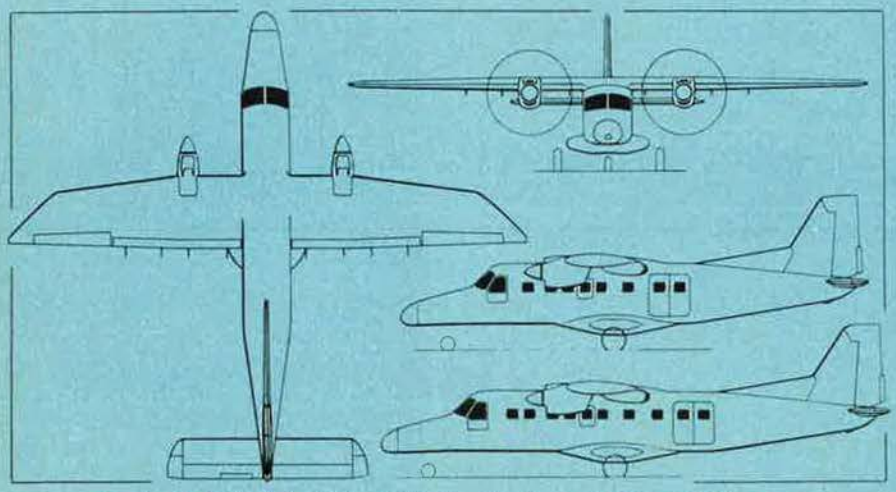
Wings, gross	32.00 m² (344.4 sq ft)

WEIGHTS:

Weight empty: 228-100	2,798 kg (6,168 lb)
228-200	2,908 kg (6,411 lb)
Max payload: 228-100	2,207 kg (4,865 lb)
228-200	2,057 kg (4,535 lb)
Max T-O weight (both)	5,700 kg (12,566 lb)

PERFORMANCE (estimated at max T-O weight):

Max level speed at 3,050 m (10,000 ft)	233 knots (432 km/h; 268 mph)
Econ cruising speed at 3,050 m (10,000 ft)	179 knots (332 km/h; 206 mph)
Max rate of climb at S/L	624 m (2,050 ft)/min
Rate of climb at S/L, one engine out	162 m (531 ft)/min
Service ceiling	9,020 m (29,600 ft)
T-O run	415 m (1,362 ft)
T-O to 15 m (50 ft)	526 m (1,725 ft)
Range at max cruising speed:	
228-100	933 nm (1,730 km; 1,075 miles)
228-200	555 nm (1,030 km; 640 miles)
Range with max fuel:	
228-100	1,063 nm (1,970 km; 1,224 miles)
228-200	621 nm (1,150 km; 715 miles)



Dornier 228-100, with additional side elevation (bottom) of 228-200 *(Pilot Press)*

APL

APPLIED PHYSICS LABORATORY, THE JOHNS HOPKINS UNIVERSITY: Aeronautics Division: Johns Hopkins Road, Laurel, Maryland 20810, USA

APL was responsible for developing the RPD2 miniature target drone, a description of which can be found in the 1980–81 *Jane's*. These vehicles are now in storage, and are unlikely to be flown again as targets, although they may be used for further research and development testing.

A more recent programme is that for an unmanned meteorological research vehicle, all available details of which are given hereafter.

APL MAP/UV 8001

Design of the MAP/UV 8001 (Maneuverable Atmospheric Probe, Unmanned Vehicle) began in August 1978, and prototype construction started in June of the following year. By early 1981 four prototypes had been completed, the first of which made its initial flight in August 1979.

The RPV was designed to be low in cost, operable in hazardous regions, and capable of slow flight and tight manoeuvres, to provide a means of gathering data in more confined locations than would be possible with a manned aircraft. It is used to investigate meteorological and electrical characteristics of the lower atmosphere near a laser test facility at the White Sands Missile Range, in co-operation with the US Army Atmospheric Sciences Laboratory, the Army Research Office, and the University of Texas at El Paso (UTEP).

The method of vertical stabilisation employed (see following 'Guidance and Control' paragraph) has been used in several delta-planform mini-RPVs developed previously at APL, and test programmes have also been conducted using an instrumented full-size aircraft.

The main objective of the MAP/UV 8001 programme is to measure atmospheric processes and characteristics that might affect the performance of electro-optical devices in battlefield environments, such as observation by smoke, dust, and aerosol particles; and diffraction caused by turbulence or other forms of temperature and density gradients. Another objective is to investigate meteorological factors that affect the electrical field (which does not remain vertical in the presence of some forms of adverse weather), and to define types of weather or other phenomena that may impair or prevent the operation of vehicles stabilised by the type of lightweight vertical reference system fitted to the MAP/UV vehicle.

Typical tests carried out to date have included attempts to define the rate of dispersal of dust clouds formed above exploding projectiles, at altitudes as low as 9 m (30 ft). In another series of tests, in July 1980, the RPV was flown close to the face of a cliff and at 2,440 m (8,000 ft) near the peak of a mountain, controlled during take-off and landing by a 'valley' pilot in the foothills and in mid-flight by a 'mountain' pilot at the peak of the mountain. The latter was able to operate the vehicle safely to within 91–182 m (300–600 ft) of the cliff face, by using visual inputs to control the flight path.

TYPE: Meteorological research mini-RPV; g limits ±15.

AIRFRAME: High-wing monoplane configuration. Wing section NACA 2417 (modified). Dihedral 4° from roots. Wing and tail surfaces of composite construction, consisting of a glassfibre/epoxy skin laid over polystyrene expanded foam. Fuselage consists of moulded glassfibre/epoxy shells. Non-retractable tricycle landing gear. Underwing or wingtip sensor pods.

POWER PLANT: One 8.2 kW (11 hp) Herbrandson Dyad 180 two-cylinder two-stroke engine, driving a two-blade APL propeller. Single fuselage fuel tank, capacity 5.7 litres (1.25 Imp gallons; 1.5 US gallons).

LAUNCH AND RECOVERY: Conventional runway-type take-off and landing.

GUIDANCE AND CONTROL: Radio command guidance and telemetry system. Two independently operable vertical stabilisation systems, both developed by APL. One of these, based on fluidic angular rate sensors, provides wing levelling and pitch stabilisation in all weather. The other is an advanced version of an electrostatic autopilot, previously invented at APL, which senses the attitude of the aircraft in relation to an electrical field in the atmosphere. In fair weather, and in certain types of bad weather, the electrical field is usually vertical, but in some adverse conditions (*e.g.*, thunderstorms) the device is not adequate to derive a vertical reference. One of the goals of the MAP/UV programme has been to investigate meteorological conditions that disturb the atmospheric electrical field, and to measure and record atmospheric characteristics that influence laser propagation in the lower atmosphere. Aerodynamic control of the RPV is by conventional ailerons, wing flaps, rudder, and elevators.

EQUIPMENT: Sensors developed at APL include airspeed, engine tachometer, heading, altitude, three components of the electrical field, and yaw and pitch gust probes. The telemetry system and sensors for temperature, humidity, ozone concentration, and high frequency turbulence were developed at UTEP. Devices for gathering aerosol samples and dust particles are carried in pods slung underneath the wing (or, optionally, located at the wingtips). A radar transponder assists in accurate tracking of the flight path.

DIMENSIONS, EXTERNAL:

Wing span	3.05 m (10 ft 0 in)
Wing span over wingtip instrument pods	3.35 m (11 ft 0 in)
Wing chord: at root	0.53 m (1 ft 9 in)
at tip	0.41 m (1 ft 4 in)
Wing area, gross	1.44 m² (15.48 sq ft)
Wing aspect ratio	6.46
Length overall	2.41 m (7 ft 11 in)
Fuselage: Max diameter	0.23 m (9 in)
Height overall	0.81 m (2 ft 8 in)
Tailplane span	1.02 m (3 ft 4 in)
Propeller diameter	0.56 m (1 ft 10 in)
Sensor pod diameter	0.15 m (6 in)

WEIGHTS (as flown up to early 1981):

Weight empty, equipped	21.8 kg (48 lb)
Sensor load	11.3 kg (25 lb)
Fuel load	4.8 kg (10.5 lb)
T-O weight at 1,770 m (5,800 ft)	37.9 kg (83.5 lb)
T-O weight at S/L	43.5 kg (96 lb)

PERFORMANCE (at T-O weight of 37.9 kg; 83.5 lb):

Max level speed at S/L	91 knots (169 km/h; 105 mph)
Econ cruising speed at S/L	54 knots (100 km/h; 62 mph)
Stalling speed, flaps down	27 knots (50 km/h; 31 mph)
Max rate of climb at S/L	579 m (1,900 ft)/min
Service ceiling (calculated)	7,620 m (25,000 ft)
T-O run	46 m (150 ft)

Applied Physics Laboratory MAP/UV 8001 mini-RPV for meteorological research

LAS

LOCKHEED AIRCRAFT SERVICE COMPANY (Division of Lockheed Corporation); Head Office and Works: Ontario International Airport, Ontario, California 91761, USA

LOCKHEED EC-130 ARE

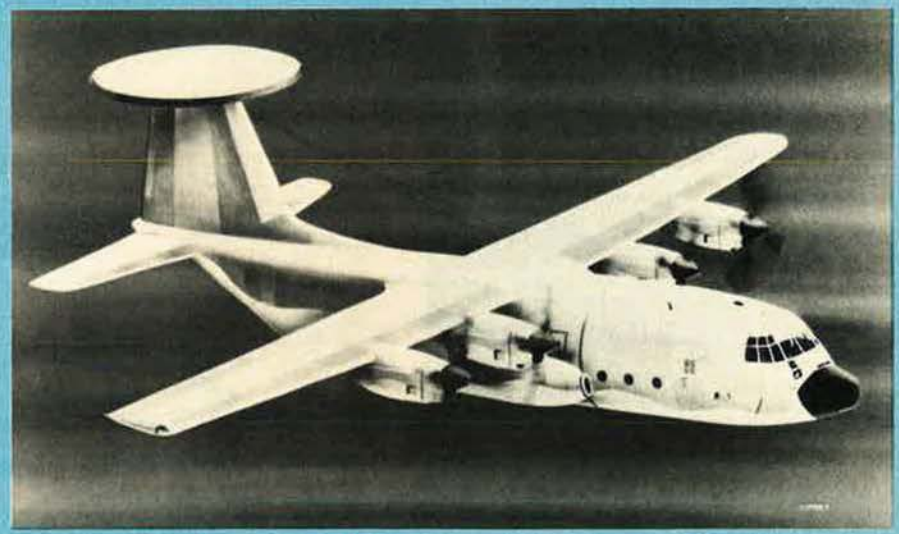
The Airborne Radar Extension (ARE) was conceived by Lockheed Aircraft Service Company as a combination of an existing airframe and already-operational radar that would provide early detection of approaching airborne threats at lower cost than current highly-specialised AWACS aircraft. After studying various candidate aircraft and avionics systems, LAS decided that a Lockheed C-130 Hercules platform for an updated version of the General Electric AN/APS-125 UHF wavelength Doppler radar used on the E-2C Hawkeye would offer the most cost-effective solution.

Choice of a Lockheed airframe was not merely partisan. The Hercules offers a large-volume fuselage for installation of the avionic equipment, providing easy access for maintenance. Mounting the 7.32 m (24 ft) diameter rotodome on a shortened fin offers an almost unhindered field of view (360° in azimuth, 21° in elevation). The fact that 51 countries already operate C-130s means that they already have experience of the airframe and engines, and trained air and ground crews, and would need only to provide for operation and maintenance of the new avionics systems. The AN/APS-125 radar offers not only proven reliability and capacity for overland detection, but is less complex than other systems, requiring a minimum of maintenance, logistics support, and personnel training.

The complete Lockheed EC-130 ARE system is already licensed by the US State Department, Office of Munitions Control, for sale to overseas customers. It will expand greatly the limited geographic coverage of ground radar sites by providing airborne detection, tracking, and identification functions in the surveillance role, and command control communications assistance for air defence intercept missions. The radar can detect and track intruding aircraft to nominal ranges of 200 nm (370 km; 230 miles) over land and water. Additionally, it can be used to detect surface shipping encroaching upon coastal waters.

As well as the radar, the ARE system includes IFF and other passive subsystems. Information gathered by these onboard sensors is fed through a data processing system to complete the track and identification information. This is used by the mission operators for situation monitoring, and to integrate the national defence functions for additional area coverage. The ARE system provides a radar/IFF capacity for 300 tracks; the passive subsystem capacity is 256 threats. A complete communications system, independent of that used by the flight crew, provides data link and secure communications for ARE co-ordination, and a voice relay for ground controlled intercept functions. This allows for ARE deployment either beyond line-of-sight, or within line-of-sight, of an air defence centre (ADC) on the ground.

To meet training and logistics requirements, Lockheed can offer a two-phase programme. The first represents an interim stage, with the aircraft used to relay the tactical plot, as generated by the radar/IFF/passive system sensors, to a ground ADC site for display on a three-man console station. A two-man station on board the EC-130 monitors the radar and passive system to ensure that adequate data is being relayed to the ADC, and that the equipment is performing within its specified limits. The second phase integrates three-man consoles (similar to those at the ADC site) within the aircraft, so that the functions of mission director,



Lockheed's EC-130 ARE proposal for a low-cost AWACS

passive system co-ordinator, and interceptor controller can be performed as part of the aircraft mission. Tactical data plots would also be relayed to the ADC for use by ground station controllers, to complement and extend the capability of the ARE platform.

Lockheed estimates that, with preliminary engineering substantially completed, ARE aircraft could be delivered within 18 to 24 months of contract finalisation.

SLINGSBY

SLINGSBY ENGINEERING LTD (Aircraft Division), Head Office and Works: Ings Lane, Kirkbymoorside, North Yorkshire YO6 6EZ, UK

SLINGSBY T.67

The designation **T.67A** applies to the Fournier RF6B-120 light aircraft, to be built under licence by Slingsby, French production by Fournier, which totalled 45 RF6B-100s and one RF6B-120, has ended. The latter version flew for the first time on August 14, 1980, and received FAR Pt 23 certification on November 7, 1980.

Slingsby also plans to manufacture an all-GRP version of the aircraft as the **T.67B.** This will be virtually identical externally to the T.67A, with the same power plant, but is intended for certification at the slightly higher gross weight of 816 kg (1,800 lb), in both the Utility and Aerobatic categories. The empty weight will be 530 kg (1,169 lb). First flight is planned for early 1982.

The following description applies to the T.67A:

TYPE: Two-seat aerobatic, training, and sporting aircraft.

WINGS: Cantilever low-wing monoplane. Wing section NACA 23015 at root, NACA 23013 at tip. Dihedral 3° 30'. Incidence 3°. All-wood single-spar structure with plywood and Dacron covering. Frise-type ailerons of wooden construction, Dacron covered. No tabs. Plain trailing-edge flaps of wooden construction with Dacron covering.

FUSELAGE: All-wood oval structure, plywood covered.

TAIL UNIT: Cantilever structure of wood with Dacron covering. Fixed-incidence tailplane. Trim tab in port elevator.

LANDING GEAR: Non-retractable tricycle type. Oleo-pneumatic shock-absorber in each unit. Steerable nosewheel. Main-wheel tyres size 380 × 150, pressure 1.4 bars (20 lb/sq in). Nosewheel tyre size 300 × 100, pressure 2.5 bars (37 lb/sq in). Hydraulic disc brakes. GRP main-wheel fairings optional.

POWER PLANT: One 88 kW (118 hp) Avco Lycoming O-235-L2A flat-four engine, driving a Hoffmann two-blade fixed-pitch composite propeller with spinner. Fuselage fuel tank, immediately aft of firewall, capacity 80 litres (17.6 Imp gallons). Refuelling point on fuselage upper surface, forward of windscreen. Oil capacity 4 litres (0.9 Imp gallons).

ACCOMMODATION: Two adjustable seats side by side under transparent canopy, which swings upward and aft for access to cockpit. Dual controls standard. Cockpit heated and ventilated. Baggage space aft of seats.

SYSTEMS: Hydraulic system for brakes only. Vacuum system optional, for blind-flying instrumentation when fitted. Electrical power supplied by 14V 40A engine-driven alternator and 14V battery.

AVIONICS AND EQUIPMENT: Range of Narco avionics available to customer's requirements, up to full airline standard. Blind-flying instrumentation optional.

DIMENSIONS, EXTERNAL:

Wing span	10.50 m (34 ft 5½ in)
Wing chord at root	1.53 m (5 ft 0¼ in)
Wing chord at tip	0.83 m (2 ft 8¾ in)
Wing aspect ratio	8.5
Length overall	7.37 m (24 ft 2¼ in)
Height overall	2.37 m (7 ft 9¾ in)
Tailplane span	3.40 m (11 ft 1¾ in)
Wheel track	2.44 m (8 ft 0 in)
Wheelbase	1.495 m (4 ft 10¾ in)
Propeller diameter	1.78 m (5 ft 10 in)

AREAS:

Wings, gross	13.00 m² (139.9 sq ft)
Ailerons (total)	1.24 m² (13.35 sq ft)
Trailing-edge flaps (total)	1.74 m² (18.73 sq ft)
Fin	0.80 m² (8.61 sq ft)
Rudder	0.81 m² (8.72 sq ft)
Tailplane	1.65 m² (17.76 sq ft)
Elevators (incl tab)	0.99 m² (10.66 sq ft)

WEIGHTS AND LOADINGS:

Weight empty (basic)	510 kg (1,125 lb)
Max fuel	57.5 kg (126 lb)
Max baggage	30 kg (66 lb)
Max T-O weight: Aerobatic	720 kg (1,587 lb)
Utility	750 kg (1,653 lb)
Max wing loading	57.7 kg/m² (11.8 lb/sq ft)
Max power loading	8.52 kg/kW (14.0 lb/hp)

PERFORMANCE (at max T-O weight):

Never-exceed speed	138 knots (256 km/h; 159 mph)
Max level speed at 90 m (300 ft)	108 knots (200 km/h; 124 mph)
Econ cruising speed (65% power) at 2,440 m (8,000 ft)	108 knots (200 km/h; 124 mph)
Max rate of climb at S/L	247 m (810 ft)/min
Service ceiling	4,000 m (13,125 ft)
T-O run	200 m (656 ft)
T-O to 15 m (50 ft)	340 m (1,115 ft)
Landing from 15 m (50 ft)	450 m (1,477 ft)
Landing run	280 m (919 ft)
Max range, allowances for T-O and climb, standard reserves	307 nm (568 km; 353 miles)

Prototype of the Slingsby T.67A, the British license-built version of the Fournier RF6B-120

GENERAL DYNAMICS

GENERAL DYNAMICS CORPORATION, FORT WORTH DIVISION: PO Box 748, Fort Worth, Texas 76101, USA

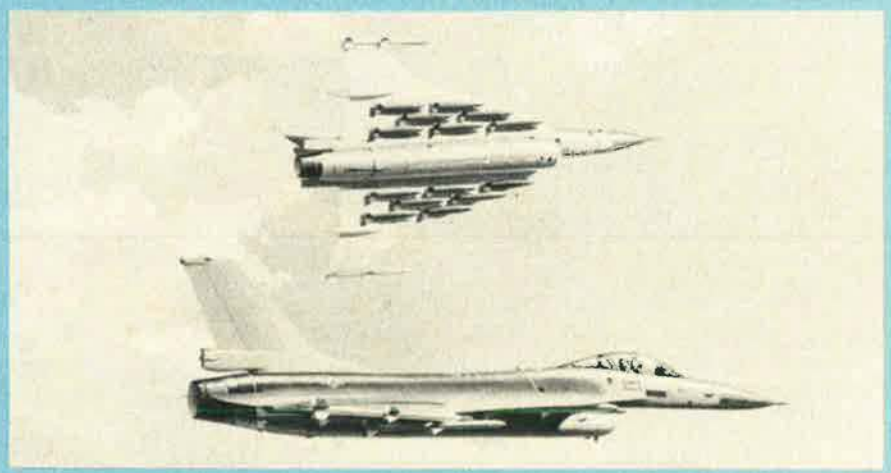
GENERAL DYNAMICS F-16XL

Under the above designation, General Dynamics has begun the company-funded development of an advanced version of the F-16 that will incorporate new aerodynamic and systems technologies. In March 1981, a design team began the preparation of engineering drawings, design analyses, and manufacturing planning that will lead to the construction of two flight demonstration aircraft, one of single-seat and the other of two-seat configuration. In this programme the company is receiving support from the US Air Force, which is supplying the two single-seat full-scale development F-16 airframes for conversion to the new configuration, their Pratt & Whitney F100 turbofan engines, funding for one new two-seat cockpit, and the provision of flight test support facilities at Edwards AFB, Calif.

As can be seen in the accompanying illustration, the F-16XL will have a new highly-swept cranked-arrow wing. This has been developed during some years of close collaboration between the company's Fort Worth Division and NASA. It will have an area of 60.01 m² (646 sq ft), more than double that of the standard F-16, and will incorporate graphite polyimide composite wing skins to provide the strength and rigidity essential for maximum wing performance. This wing is being combined with an F-16 fuselage that is lengthened by 1.42 m (4 ft 8 in), the additional volume being used to increase the internal fuel capacity by 82%, and to provide an extra 1.13 m³ (40 cu ft) of storage space for future avionics and sensor growth.

Preparatory work on this advanced version of the F-16 Fighting Falcon has been in progress at Fort Worth for a considerable time, and the F-16XL will capitalise on the extensive experience gained by the company since 1972 in the design and development of an air combat fighter that is currently the subject of a major international production programme. Its modular construction and electronic fly-by-wire control system will simplify the F-16XL modification process. Wind tunnel and computer analyses have shown that the new configuration will extend the F-16's capabilities. By comparison, it will take off and land in only two-thirds of the distance, carry double the weapons load, and have a 45% greater combat radius for both air-to-air and air-to-ground missions.

The first of the US Air Force's full-scale development aircraft was delivered to Fort Worth at the beginning of March 1981, and structural modification is already in progress; the second aircraft was scheduled to be received during the Summer. No statement has yet been made by the company regarding provisional rollout and first-flight dates.



Artist's impression of the General Dynamics F-16XL advanced version of the Fighting Falcon combat aircraft

CAPITOL HILL

By Kathleen G. McAuliffe, AFA DIRECTOR OF LEGISLATIVE RESEARCH

Washington, D. C., June 26

MX Funds Stalled

Funding for the MX missile system's multiple protective shelter (MPS) basing mode is being deferred in the House and Senate as a result of the Reagan Administration's indecision on whether to proceed with MPS as planned.

The House passed an amendment to the FY '82 Military Construction Authorization prohibiting the $357 million for MX basing construction from being obligated or expended until the President decides on a basing mode and sixty days elapse in which both Houses of Congress do not adopt resolutions of disapproval. The Senate adopted similar language in its corresponding bill. Further, the Senate included these same provisions in its FY '82 DoD procurement authorization, putting $2.4 billion in MX R&D money on hold.

The Air Force views these amendments in a positive light. One USAF spokesman said the "sixty-day window" is actually supportive of MPS and won't negatively affect MX. Congress wants that time to evaluate any basing decision other than MPS.

The Air Force is not so upbeat about the FY '81 Supplemental Appropriation bill that was passed by both Houses. That measure deferred $92 million in previously appropriated MX planning and design funds until after the President's decision, and it deleted $26.5 million in newly requested money.

USAF views these actions as having a potentially major impact on beginning construction on schedule; a delay of up to five months could result.

Budget Reconciliation

The Armed Services Committees reported their provisions for attaining savings of $966 million in FY '82 as required by the First Budget Resolution.

The House version of the Omnibus Reconciliation bill proposes the $966 million be achieved through sales of excess materials from the strategic stockpile, *e.g.*, silver, iodine, mercury; replacement of the current semiannual cost-of-living adjustment (COLA) for military retirees with an annual COLA contingent on a similar change in the Civil Service system; and an open enrollment period for the Survivor Benefit Plan to permit nonparticipating military retirees to elect survivor protection.

The Senate bill contains the Administration's recommendation that $572 million be saved through the sale of 139.5 million troy ounces of silver from the national stockpile and the remainder be achieved through an annual COLA for retirees.

ADP Controversy

The House Government Operations Committee believes that DoD should remain lumped together with all other federal agencies under a government-wide system of procurement. Thus, Committee Chairman Rep. Jack Brooks (D-Tex.) intends to offer an amendment to the FY '82 Defense Authorization Bill requiring that all automatic data processing (ADP) acquisition by or for DoD be carried out by the General Services Administration (GSA).

The Brooks Committee looked at this issue because the Senate version of the Authorization includes a provision exempting some DoD computer purchases from the government-wide system. The Senate Armed Services Committee recognized that in order to have effective strategic and tactical warning systems, command control communications and intelligence systems (C^3I), as well as other critical national security systems, decisions on ADP procurement must be made by the services where "knowledge and understanding of the operational requirements reside."

The Senate change in procurement policy was triggered by a report by Sens. Barry Goldwater (R-Ariz.) and Gary Hart (D-Colo.) on false alerts in the nation's strategic warning system. The study concluded that "delays and technical obsolescence are guaranteed in updating and modernization of the system" because of government procurement procedures. The report recommended exemption of DoD's ADP procurement from GSA responsibility.

Defense Secretary Caspar Weinberger appealed to the House Armed Services Committee to beat back adoption of the Brooks amendment, saying DoD is in a better position to assess defense's special needs and determine requirements.

MX Alternative Proposed

Sens. Jake Garn (R-Utah) and Paul Laxalt (R-Nev.), who have a high stake in the plan to base MX/MPS in their states, said the Air Force proposal "is not the optimal answer" and proposed an alternative program of revitalized air, land, and sea forces and ballistic missile defense (BMD).

The proposal closely resembles that of Sens. Harrison Schmitt (R-N. M.) and William Roth (R-Del.), who also offered a strategic mix as a viable alternative to MX/MPS.

Recommendations include placing MX in Minuteman silos; some form of BMD; R&D on a new, smaller, truly mobile missile; upgrade of our command control and communications (C^3) network; accelerating deployment of cruise missiles; and improvements in the Minuteman force.

Multiyear Contracting

DoD officials are working overtime in the House to save provisions in the FY '82 Authorization that allow for increased multiyear contracting. The Armed Services Committee made two changes needed for its implementation by raising the cancellation ceiling from $5 million to $100 million and allowing multiyear contracts within CONUS to be funded with annual operations and maintenance appropriations.

Here, too, Representative Brooks plans to offer an amendment for the Government Operations Committee deleting these provisions, since it feels DoD should not have a separate procurement policy and multiyear contracting should not be given broad sanction. The amendment proposes that multiyear contracting be "tested on a selective basis" beginning in FY '83. ■

The Increasing Importance of Spain and Portugal

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

Important because of their geographic position, their heritage, and their potential for the Atlantic alliance, Spain and Portugal are crucial to the realization of US national security goals. Their importance stretches in all directions from their borders, including the waters of the Atlantic and Mediterranean as well as the airspace and territory of Southern Europe and Africa.

SPAIN, more than any other European country, is a study in contrasts. Contrasts in geography, in the ethnic makeup of its people, and in the very nature of Spanish culture. The language of Castile, a heritage from the Roman army's long stay in Hispania, is the official tongue of Spain.

But even though Castilian was literally forced on the populations of Catalonia and the Basque region during the early days of Francoism when the teaching of Catalan and Basque was forbidden in schools, those two ancient languages persisted. Now that they are once again legal, both Basque and Catalan seem to be firmly entrenched as regional tongues and, in the troubled Basque region of northern Spain, even as a symbol of defiance toward the Madrid government.

The origin of the Basque language itself is hidden in antiquity, not traceable to any of the various tribes that have invaded Spain through the centuries. Still another separate language is spoken in Galicia, a province in northwest Spain. Forty percent of Spain's inhabitants thus speak a native language other than Spanish, have their own cultures, and view themselves as Basque, Catalan, or Galician ahead of any Spanish identity. It is not a situation that lends itself to national harmony.

Seven hundred years of Arab occupation did not pass without leaving its mark. The last Moors were driven out of Granada in 1492, the year Columbus's expedition discovered the New World. Moorish souvenirs still abound in Spain—in architecture, place names, and in the look, here and there, of the people themselves. One more souvenir of this long Arab occupation survives in modern Spain's strong ties with the Arab world. They are ties that complicate our own Spanish relationship, a relationship that is up for reexamination again this summer.

Our presence on the Spanish bases of Zaragoza, Torrejon, Moron, and Rota will once more be the subjects of negotiation, as they have been periodically since the early 1950s. While these facilities, with the exception of Rota, were originally conceived as forward SAC bomber bases, they now serve a variety of purposes. Zaragoza became a major air-to-ground training location for United States Air Forces in Europe when Libya's strongman, Colonel Muammar El-Qaddafi, canceled our lease in Tripoli.

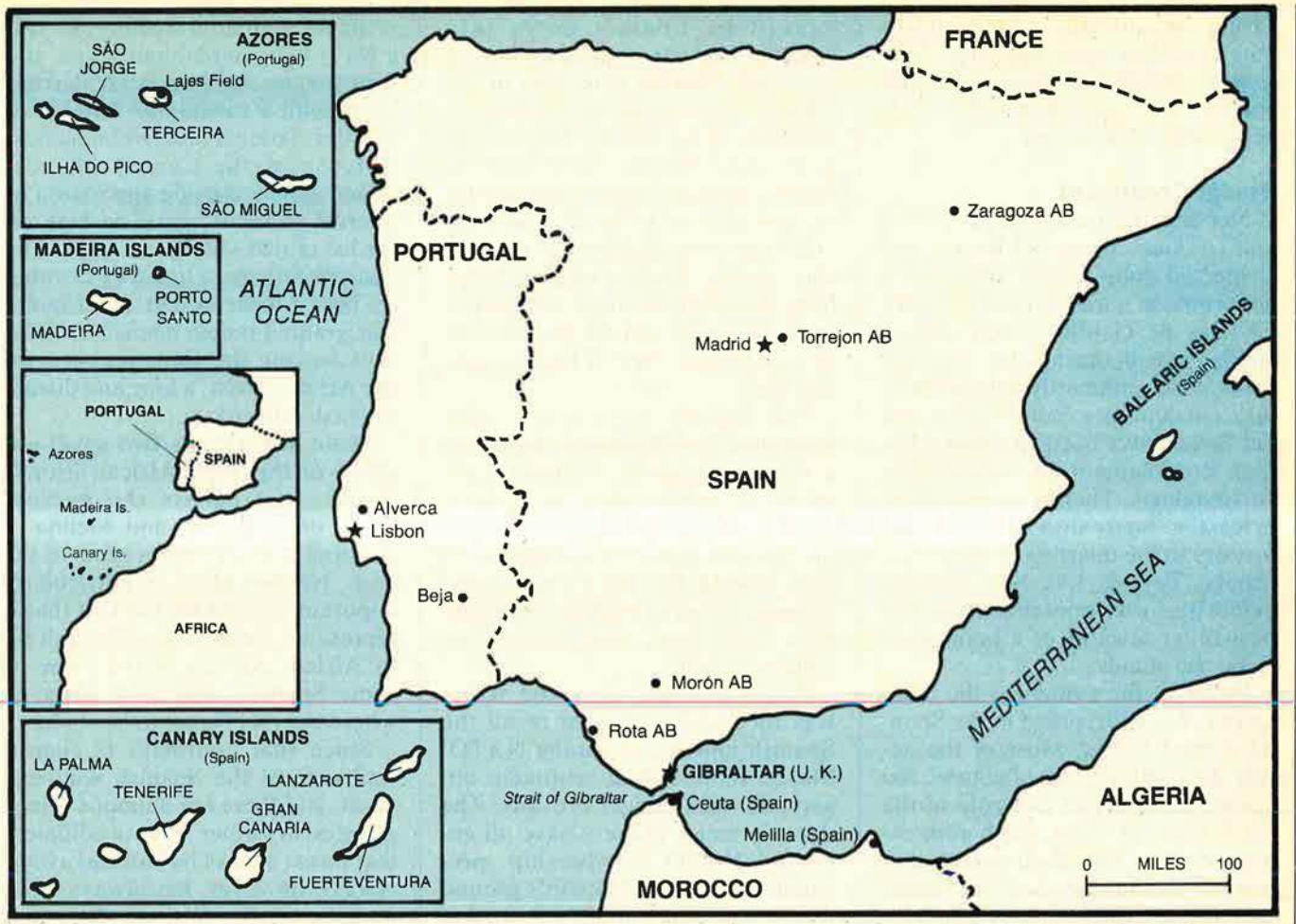
Torrejon is the home of the 401st Tactical Fighter Wing, an F-4 unit, and headquarters of the Sixteenth Air Force. This big base near Madrid is also a principal airlift stop. When Torrejon was finished twenty-five years or so ago, it was one of the showplaces of the Air Force, and the family housing in nearby Royal Oaks was a positive advertisement for the good military life overseas. Well, the years and stingy outlays of maintenance funds have begun to show. Torrejon is still a nice base, and Royal Oaks is not all that bad, but nowadays it would be better to soft-pedal the joys of life in Spain.

Moron is still largely inactive, simply a standby base with some communications, and Rota lost one of its principal missions when the Poseidon submarines left for Scotland under the terms of the last base agreement. Nonetheless, Rota has important communications, air, and naval facilities, and remains perhaps the single most important US facility in Spain.

The Question of Gibraltar

A few miles west of Rota sits Gibraltar, the famous old Rock held by the British since the Wars of the Spanish Succession in the early eighteenth century. Gibraltar has long been a source of contention between Spain and the United Kingdom. General Franco locked the gates to the road leading from Spain to Gibraltar in 1969, and they remain locked to this day. In order to reach the strangely isolated British

Chief of Staff of the Spanish Air Force Lt. Gen. Emiliano ALFARO Arregui. His air force's requirement for a new fighter could be met by the F-16, F-18, or Mirage 2000.



outpost clearly visible from the tourist havens of the Costa del Sol, a traveler must go to North Africa and then double back.

The Rock still has some military importance, though no longer as a fortress, but rather as a lookout point for shipping, and submarines, entering or leaving the Med through the narrow strait. So long as Spain remains out of NATO, it has been in the interest of the Alliance for the British to retain control of Gibraltar with its still useful naval facilities. Now, with Spain's prospective entry into NATO, the Gibraltar question may be resolved. Gibraltar natives have voted decisively to remain wards of the UK. If the Spanish decide to enter NATO this year, Gibraltar citizens could be sold down the river in the interest of allied harmony.

The matter of Spain's membership in the Atlantic Alliance has surfaced periodically for twenty-five years, always on the initiative of the US. While General Franco was alive, there was no question about the response: It was invariably negative, with Holland, Belgium, Denmark, Norway, and the UK united against Spain's entry. The death of Franco and Spain's transition to a constitutional monarchy have removed any real opposition, although the Netherlands, a nation evidently determined to be Europe's conscience, has advanced a few tentative stipulations. But if nothing dramatic happens to Spain's still-infant democratic government, NATO might well see a Spanish member at the table by the end of this year.

The danger to this membership, as well as the danger inside Spain, lies in the newly adopted democratic way of life itself. The newfound freedom of diverse political groups, including those which encourage Spanish terrorism, whether from the Basque nationalists, the right-wing reactionaries, or the lingering anarchic movement in Catalonia, makes terrorism a daily threat to Spanish democracy.

ETA (Euzkadi Ta Azkatazuna), the Basque group, has clearly decided to target the military. As is generally the case when terrorists make military men their assassination victims, the objective may be to create a military reaction and takeover. Once a military government is in place, the revolution would have a rallying cause. If that is its purpose, ETA came perilously close to succeeding when Lt. Col. Antonio Tejero and his Civil Guards seized the Spanish Parliament, the Cortes, last winter.

There is little doubt that this initial act was part of a coordinated military coup. In any case, it was a severe test of Spanish democracy's ability to survive. The fact that the troops stayed in their barracks is a tribute to the King, Juan Carlos, whose prompt intervention over the command communications circuits—a network, incidentally, installed by the US in accordance with the base agreement—kept the lid on and the forces loyal.

Nonetheless, this prompt suppression of a coup does not mean the trouble is over. On an evening stroll through downtown Madrid this spring, I saw some impressive

formations of riot police sitting quietly in their vans, and street barricades artfully designed to channel traffic into strong points. All, apparently, just in case.

Benign Treatment

Nor has the treatment of Tejero and Lt. Gen. Jaime del Bosch, the suspected coup leader, reflected a government sure of itself. Where Charles de Gaulle, faced with a similar revolt during the Algerian crisis, dealt summarily with his military recalcitrants, both Tejero and del Bosch have been enjoying a benign confinement in comfortable surroundings. There was, last April at least, a steady stream of admiring visitors to the quarters of these two rebels. Tejero, like any modern celebrity, was contemplating the best-seller rewards of a book soon to hit the stands.

From all the evidence, the coup spirit is not widespread in the Spanish armed forces. Most of the active-duty officers are, of course, too young to have had any role in the Civil War, or even much remembrance of it. The deep resentment toward democracy and the belief that all the trouble comes from giving people too much freedom are apparently centered in an older group. Still, the resentment is there, and continued murder of Spanish officers might well spread the feeling that something must be done.

Meanwhile, the move toward joining NATO is steady, although threatened by Spain's internal turmoil and the subsequent risk of a military takeover. Any assumption of power by the generals, no matter how great the provocation, would almost certainly doom Spain's NATO candidacy. Even the moderate regime of the Turkish Army—a regime welcomed by the Turkish citizenry at large who have seen enough of terrorism and anarchy—has stirred up northern Europe's left-leaning politicians. Better murder and disorder, apparently, than any sort of military control, however sensible and restrained. And so, from a practical if perhaps cynical standpoint, the Spanish generals should put any ideas of a military clampdown out of their heads until after the NATO business is attended to.

All of Western Europe would benefit by Spain's entry into NATO. The advantages of having the whole Iberian peninsula in the Alliance are almost too obvious to mention. The Soviet Union has expressed strong opposition to Spain's joining—reason enough for the rest of us to be for it. There are other and more substantial reasons why ending Spain's long isolation from the rest of Europe would be a great shot in the arm for NATO, and at a time when NATO badly needs that shot.

The Spanish Army is big, with more than 250,000 troops, including a Foreign Legion of three regiments. Traditionally, or at least since the Civil War, and not unlike the Turkish Army, it has tended to look inward for the threat. Considering Spain's current problems with terrorism, this attitude is understandable.

Thus, in years past, the Army was the least interested of all the Spanish military in joining NATO. Maybe some of that sentiment lingers, but it no longer prevails. The Army's senior officers have all endorsed NATO membership, presumably aware that Spain's ground forces will find themselves behind the times in equipment and just general modernization in comparison with its new allies.

The 1976 Treaty of Friendship and Cooperation, otherwise known as the Spanish bases treaty, between Spain and the US provided for, among other things, modernization of Spain's forces. As we all remember, 1976 was not a good year for the US military, and so our modernization efforts for Spain have been inhibited by our own depleted inventories, a situation by no means unique to the Spanish program.

A Distant Outpost

The entrance of Spain into NATO may bring with it a few intriguing organizational and command problems, nothing new to that democratic and sometimes quarrelsome group of allies. Most of us have come to think of Spain simply in terms of the Iberian peninsula, a Mediterranean nation like Italy and Greece. It is not that uncomplicated. Spain has very definite interests in the Atlantic. Spain's Navy, for instance, is not likely to settle for a Mediterranean role. It is a Navy with amphibious ships, sixteen frigates, and an ASW carrier, along with a substantial number of smaller vessels and submarines. Defense of the Canary Islands, either against outside aggression or internal troubles, must be high on the list of tasks for those ships. The Spanish Sahara, a territory coveted by both Morocco and Mauritania, was granted independence in 1976, thus leaving the Canaries, just off the African coast, a lone and distant Spanish outpost.

Spain also retains two small enclaves on the North African littoral: Ceuta, just across the narrow Strait of Gibraltar, and Melilla, a hundred and fifty miles or so to the east. Neither place is particularly important except for the fact that it represents a continuing Spanish tie to Africa. Africa, in the view of some Spanish military leaders, is where the real threat to Spain lies.

Since that continent is clearly visible from the Spanish southern coast, and there are ominous things going on in former African colonies, that threat cannot be laughed away. NATO, however, has always fixed its gaze on the Warsaw Pact and nothing else. Africa does not, officially at least, interest the allies, a fact that may frustrate Spanish NATO representatives.

Nevertheless, Spain's entry into NATO, if it happens, is something to anticipate with pleasure. The minor problems such entry might bring along are just that—minor, whereas the benefits to both NATO and Spain would be major. As noted earlier, there would be an obvious need for some modernization, especially in the Spanish Army.

The Navy is well suited to join the other NATO navies in the Med and, if it wants a larger Atlantic role, there should be no objection from the Supreme Allied Commander, Atlantic. The British Royal Navy is apparently about to take some very severe cuts in order to pay for Trident. Spain's Navy would compensate nicely, in numbers at least, for the loss to NATO's Atlantic forces.

The Spanish Air Force has, in its three combat wings, Mirage IIIs and F-4Cs, and forty-eight Mirage F-1s are on order. Since the F-4C came off the line a good while ago, the Air Force would like to replace

it. Our first try at giving Spain something better, in accordance with the 1976 base agreement, did not turn out well. Spain wanted F-4Es in exchange for the F-4Cs, and the US took them out of the active Air Force inventory, the only source available. Unfortunately, the F-4Es had been through hard use in Vietnam and were, at least to Spanish eyes, very definitely used rather than pre-owned. Spain decided to keep its F-4Cs, meanwhile giving our side a few baleful looks. Now it is time to try again for a replacement.

Replacement Candidates

As is the case everywhere these days, there are three candidates: F-16, F-18, and Mirage 2000. Since the Spanish have had previous dealings with Dassault, France presumably has a good chance for this contract, unless France's new President, François Mitterrand, means what he has said about cutting back on Giscard d'Estaing's aggressive arms-sales program. Both the F-16 and F-18 are strong candidates as well as Northrop's land-based version of the F-18, earlier proscribed for foreign sale by the Carter Administration's curious rules. The airplane drummers are beating a path to Madrid this year.

One positive achievement of the 1970 and 1976 base agreements has been the installation of a Spanish air defense and communications network. Combat Grande, as the system is called, now covers Spain with seven radars, a semiautomated aircraft control and warning system, a combat operations center, and the other adjuncts of modern air defense. There is also a backup joint military/civilian control center, a facility that played a key role in suppressing the abortive coup last winter. Combat Grande is designed to tie in with NATO's air defense system, an immediate bonus to SACEUR if the Spanish NATO deal goes through.

Now, once again, the base agreement is up for renegotiation. From the Spanish side, a few of the main issues will probably be prices of military equipment, delivery time, and loan provisions, along with the implications for Spain of Presidential Directive 13. [Editor's Note: PD-13 was the restrictive Carter Administration arms-transfer policy, now undergoing reversal by the Reagan Administration.]

On our side, two of the principal topics will concern the stationing of aerial tankers in Spain, a matter about which the Spanish have become increasingly restrictive, and the use we may make of Spanish bases in support of non-NATO countries. Here again, Spain has been sensitive in the past about the use of Spanish bases in any Mideast involvement.

The chances are this new agreement will simply be a tentative one, to be reviewed when, and if, Spain joins NATO. If the democratic government does not come unstuck, that NATO membership seems likely by fall, and a new era in Spain will surely have begun.

Portugal—Remarkable Transition

The other nation on the Iberian peninsula has already gone through the traumatic passage from dictatorship to democracy. It should be some comfort to Spain, and all of Western Europe, to reflect on Portugal's remarkable transition from forty-eight years of the Mussolini-like rule of Premier Antonio de Oliveira Salazar and his successor, Marcello Caetano, to its present popularly and honestly elected government.

Gen. José Lemos Ferreira, Chief of Staff of the Portuguese Air Force, presides over the rebuilding of a counterinsurgency-oriented air force to one with broader missions.

That is not to say the Portuguese regime is universally approved in Portugal, for it is easy to find conservatives who detest its left-of-center policies, but the same holds true in any democracy. Besides, the Portuguese Communists, who alone among all Communist parties in the world were thrown out of power by the ballot, equally detest the democratic process presently ruling Portugal.

The fact that the peasants denounced the Communist revolution was a particularly heavy blow to the Portuguese Communist Party, an organization that had plotted clandestinely for a Marxist revolution throughout the Salazar-Caetano period.

All this took place in the space of three confused years, between April 24, 1974, and the elections of 1976 when the general aversion to communism finally was made clear. Elections in April of 1975 had given the Communists a decisive defeat, but the Marxist revolution went on nonetheless. The original revolution, a bloodless affair in April 1974, had as its nominal leader Gen. Antonio Spinola, hero of the African wars, who had written a book on the futility of any further colonial military action. Spinola was too naïve to recognize the duplicity of his revolutionary companions or the fact that they had Lenin's principles in mind.

Nationalization of banks and industry began in short order, and the shaky economy of Portugal started to come apart, even to include the tourist industry and the sunny golf resorts in the Algarve. When the Communist takeover was halted in the spring of 1976 following the installation of a popularly elected government, a great deal of damage had been done. Portugal was on the ropes, a situation complicated by the flood of refugees returning from Portugal's abandoned African colonies to a country unable to provide employment for its native population. More than 1,000,000 Portuguese had gone to Belgium, France, Luxembourg, and West Germany seeking work—any kind of work.

Now, in 1981, Portugal is returning to an even keel, however unsteadily. Some remnants of the 1974 revolution, which, being bloodless, left fewer scars than would other-

wise have been the case, survive. The Revolutionary Council, for instance, still exists and numbers a few Communists among its twenty members, but the government of President Antonio dos Santos Ramalho Eanes is committed to phasing out this anomalous body.

A more permanent souvenir remains in the celebration, on April 25, of the national holiday, Revolution Day, Portugal's version of our Fourth of July. If this past April 25 was typical, Portuguese accept the day off happily enough, but without much visible revolutionary emotion. Although the government went to considerable trouble to whip up the crowd, as evidenced by banners, posters, and military ceremonies, a good many Portuguese simply cranked up their $10,000 subcompacts, filled them with $3.50 a gallon gasoline, and headed for the countryside. How people strapped for money to buy everyday necessities can afford the terribly expensive luxury of automobiles is a mystery someone else will have to explain. Whatever the explanation, last April 25 saw heavy traffic on the road to Estoril.

Needed: A New Mission

Indeed, there has been a great deal crowded into the past seven years: revolution, loss of the African colonies, hordes of refugees, and then rejection of communism. In all of this, the Portuguese armed forces have played a key role. Now, with Portugal's overseas colonies reduced simply to the Azores archipelago, the islands of Madeira, and token ownership, at Chinese sufferance, of Macao, Portugal's forces must have a new mission to justify their expensive existence. That mission lies, obviously, in NATO.

During the fourteen years Portugal was fighting African insurrection in the colonies of Mozambique, Angola, and Guinea-Bissau, there was literally nothing left over for NATO. The World War II base at Lajes, on the Azores island of Terceira, was Portugal's principal contribution, along with the provision of a site for the NATO naval headquarters, IBERLANT, outside Lisbon. Otherwise, the military was fully engaged in Africa. Portugal's representatives in Brussels were essentially just observers, a fact that made the Portuguese Communist period a little easier for the allies to take. Today, with Africa behind them and the government back in civilian hands, Portugal's forces are turning their attention to European defense.

Of the three services, the Portuguese Air Force appears to be the dominant one these days. This is in good measure attributable to some remarkable leaders such as General José Lemos Ferreira, the Chief of Staff. Because of its leadership, presumably, the Air Force is the best disciplined and the least Communist-permeated of the three, according to a senior, not too long retired, Portuguese admiral.

It is a small Air Force, making what amounts to a new start after the years of counterinsurgency: a minor airlift capability—five C-130Hs, twenty-two Spanish Aviocars—a fighter squadron with short-legged G-91s, and various helicopters and training aircraft. On order are twenty A-7Ps, a number the Portuguese Air Force Chief would like to see doubled on the reasonable ground that twenty is too small a number to justify the logistic overhead. General Lemos Ferreira is a persuasive man who will doubtless make that pitch to more influential listeners than I, but as things now stand, twenty is the number. The A-7 will add a significant new dimension to Portugal's maritime role. The G-91 is a nice little airplane, but not good for much beyond clear weather close support.

What catches a visitor's eye, however, is not the hardware but the discipline and esprit on the flight line. Airplanes are clean, the squadron buildings reflect pride and a well-managed training program, and the pilots appear able to serve in anyone's air force.

The most surprising thing about this small outfit is the depot and maintenance operation at Alverca, about an hour's drive from Lisbon, a truly first-class setup organized by some intelligent and capable people. The supply side is converting to a system similar to that in USAF, complete with computers and automated stock chasing.

Across the runway, which, incidentally, has taken a C-5, the maintenance and overhaul facility is expanding into a plant that will be able to do sophisticated work, even the manufacture of small aircraft. There are about 1,200,000 square feet of industrial floor space with all the shops found in any similar plant.

Last spring, German technicians from Lufthansa were busy installing instruments and equipment in a new $3 million jet-engine facility. Both turbojets and turboprops will be overhauled and tested there. All they need is some business beyond the small amount the PAF itself can generate. It goes without saying they have their eye on USAFE and the US Sixth Fleet. This aeronautical overhaul and repair facility is an ambitious effort, impressive both for its capability and for the optimistic courage the investment represents. The Portuguese Air Force clearly intends to put Africa behind it and press on.

Part of Mobile Force

As for the Army and the Navy, they too are adjusting to a NATO role. The Army, with help from the Federal Republic of Germany, now contributes to NATO's Allied Command Europe (ACE) Mobile Force. The role, like the Mobile Force itself, is more symbolic than militarily important, but it is a start. The Navy will continue as it has in the past, its NATO mission tied in with IBERLANT. Spain's prospective entry into NATO may raise some interesting command and control questions having to do with the two Iberian navies, but settling—or rather debating—that kind of problem is the very lifeblood of NATO headquarters, the sort of thing that makes going to meetings fun.

Gen. T. R. Milton's column is a monthly feature of AIR FORCE *Magazine. His frequent feature articles also shed insight and understanding seldom matched in today's coverage of aerospace security matters. A 1940 graduate of the US Military Academy, General Milton commanded bombing units in the air war in Europe during World War II. For this first-person evaluation of the situation on the Iberian peninsula, he made an extended visit to Portugal and Spain, interviewing a wide range of government and military officials of both countries.*

Left, Fiat G-91 fighters of the Portuguese Air Force in a hangar at Alverca, a major depot and maintenance activity.

The future bilateral US-Portugal relationship is, considering the likelihood of Mideast trouble, both more interesting and more complicated than is the relationship of Portugal with NATO. Lajes Field in the Azores will continue to be a most desirable Atlantic way station en route to the Mideast, quite apart from its wartime antisubmarine role. During the 1973 Yom Kippur War, several Portuguese governments ago, we were fairly presumptuous in the way we assumed Lajes was ours to use, or at least the Portuguese presently in charge think we were. They expect more consultations, if there should be a next time.

Back on the mainland, the PAF has six major air bases. Of these, Beja, in southern Portugal, about forty miles from the Spanish border, has some interesting possibilities for the US, keeping in mind the base negotiations in Spain. Beja is a splendid facility, thanks to a substantial German program in past years. The Luftwaffe still makes use of the base for air-ground training, but Beja is not a busy place. It is almost ideally situated for, say, a squadron of tankers, but that would have to be a matter for official discussions. Doubtless the Portuguese, in that case, would think of something they would like to have. Some more A-7s, perhaps. But remembering the Spanish reluctance to accept more than a few tankers, and those only at Zaragoza, Beja does have a powerful attraction.

All this presupposes a comfortable political arrangement between the US and Portugal, something that is reasonable enough to hope for, although by no means certain. The elections this past April were shadowed by the death on December 4, 1980, in an airplane accident, of Francisco Sa Carneiro. Whether or not he would have won is questionable. His very existence, however, as a charismatic politician of the center was an inspiration to Portugal's moderates. With his death, the left appears to be in charge. How far left the government actually is remains a matter of conjecture.

Obviously, the Soviets were pleased with the prospect of President Eanes and his leftist premier, Francisco Pinto Balsemão, for they increased oil shipments to Portugal as a way of expressing that pleasure. They had cut them under the interim government of Sa Carneiro. Still, it is too early to tell. President Eanes, while a colorless politician, did win by a substantial majority in an election where the Communists polled only about fifteen percent. He thus owes little to that faction, and he may well be, as many believe, a political pragmatist who will act simply in Portugal's best interests.

The armed forces, meanwhile, are down to a third of their former size and, as we noted earlier, in search of a new role. Three hundred and fifty years in Africa have not been left behind without a certain nostalgia, along with some bitterness at the way things turned out. During Portugal's colonial wars, a period that covered more than half of NATO's existence, the subject of support to a beleaguered ally often came up. It came up, but never with any show of even sympathy, let alone support, from Portugal's NATO comrades. The African colonies were Portugal's concern. The northern allies made certain NATO's southern boundary lay north of that embarrassment.

The Fate of Former Colonies

Today, the Portuguese will tell you, their former colonies are in far worse shape than ever before. Africans, according to this Portuguese view—one voiced, incidentally, by a very senior official—feel betrayed, for nothing has turned out right. An American oil company, Gulf, exploiting the offshore Angolan deposits, pays for the Cubans in Angola. The East Germans do the technical jobs in that former colonial jewel, while the Soviets, the true beneficiaries of Portuguese expulsion, sit in the managerial chairs. Tanzania was once Tanganyika, or German East Africa. Is it to become, under the aegis of the Soviets and the German Democratic Republic, German East Africa again? These are indications of a certain disillusion in Portugal's military, a feeling that is not helped by the general apathy of the country toward its armed forces.

Portugal shares, with Spain, the experience of a new and still uncertain democracy after years of dictatorship. Both countries have lost colonies in Africa, though the Spanish Sahara did not compete in importance with Portugal's holdings, particularly Angola. Spain has a problem with dissident ethnic groups, especially the Basques, that does not trouble Portugal, although the Portuguese do have to assimilate a million returning colonists—ten percent of the total population—who are, to some extent, aliens.

Like Spain, Portugal's government has an Arab bias in Middle East affairs. It is a bias that stems, like that in Spain, both from history and the more immediate concern about oil. What effect this will have on any future Mideast projects we may become involved in remains to be seen. We need Portugal, however, and it needs us. Under those circumstances, deals are usually possible. ■

Paris Air Show 1981:
No Surprises, Heavy Competion

With more than 800 exhibitors, scores of aircraft, and hordes of people, the Thirty-fourth Paris Air Show once again earned its reputation as the premier aerospace marketplace and trade fair. US manufacturers and government officials concluded that foreign competition is tougher in 1981 than ever before, and will require concerted efforts to match.

BY F. CLIFTON BERRY, JR.
EDITOR IN CHIEF

THE airplane most talked about at the Paris Air Show was the one that did not appear—the USAF/Rockwell B-1 bomber. American industry and military people talked about the "what might have been's." For example, if President Carter had not decided against its production in 1977, the bomber would now be near squadron service for SAC. If that were so, then Secretary of Defense Caspar Weinberger would not be making the "strategic decision of the century," choosing the course of bomber development in 1981, when the "window of vulnerability" is sliding open. Finally, if President Reagan could have been convinced to authorize a B-1 flyby or display at Paris 1981, then that would have gotten everyone's attention, especially the Russians'.

But the B-1 did not make the trip, although it would have been feasible and a clear demonstration of US power and resolve at this crucial period. Instead, the major USAF aircraft on hand at the Thirty-fourth Paris Air Show at Le Bourget was the KC-10 Extender. It dominated a remote rear corner of the static display area. The KC-10 had demonstrated its capabilities en route to the show, refueling fighters and SAC B-52s along the way. Also on static display was USAF's A-10, this one from the 81st Tactical Fighter Wing at RAF Bentwaters/Woodbridge, England.

Air Force planes that flew during the daily display (with corporate test pilots at the controls) included the McDonnell Douglas F-15 and General Dynamics F-16. Also flying daily were the Navy/Marine Corps

Landing gear of the Mi-26 heavy lift helicopter shows the new tires typical of all the Russian aircraft displayed at Paris, contrary to earlier years, when worn tires were the norm.

F/A-18 and the NASA/Bell XV-15 tilt-rotor aircraft. The latter aircraft was a daily hit for the air display audience, executing a vertical takeoff, then flying sideways and backward in front of the crowd before a smooth transition to level flight.

Two other US aircraft that did not fly were common topics of conversation (and presumably serious business talks as well). They were the fighters produced for export markets with corporate funding—the General Dynamics F-16/79 and the Northrop F-5G. Northrop's Chairman, Thomas V. Jones, unveiled a full-scale mockup version of the F-5G for the aerospace press corps, explaining how the aircraft, powered by a single General Electric F404 engine, meets the requirements of foreign air forces, in particular the more than two score who now operate versions of the F-5 series of aircraft. First flight of the F-5G is planned for late 1982, according to Mr. Jones. General Dynamics's F-16/79, powered by a single Pratt & Whitney J79 engine, was not at the show; it continues in flight demonstrations at General Dynamics, being flown by evaluation pilots from potential customer air forces.

The Ultralights

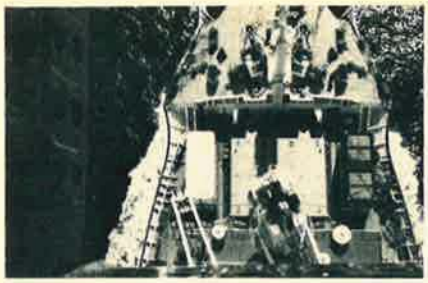
The ultralight aircraft of several manufacturers, US and foreign, made their debut at this year's show. They captivated audience interest in the flying display, flitting and soaring over the flight demonstration area in maneuvers more reminiscent of gulls than powered aircraft. Among them were the Eipper Quicksilver, weighing 130 pounds and powered by a thirteen-hp engine; the Hummer Ultra Light, weighing 180 pounds, with a twenty-two-hp snowmobile engine; and the Weedhopper Ultra Light, weighing 165 pounds and powered by a twenty-five-hp engine.

Although most observers appreciated the ultralights for their novelty and grace, some commented on their potential for military applications. In fact, one ultralight flyer standing by his aircraft was engaged in conversation by an engineer from one of the major aerospace companies, who asked a series of very technical questions on the materials, dimensions, and other data. The flyer asked the engineer why he wanted to know all that information; was he planning to buy one of the machines? The engineer replied, "No; my assignment is to figure out ways of detecting them on the battlefield."

In all, the show's organizers, GIFAS (for Groupement des Industries Françaises Aéronautiques et Spatiales) reported a total of fifty-six US aircraft present—thirty-four on static display, and twenty-two flying at one time or another. That was the most aircraft from a single country, followed closely by the host nation, with fifty-four aircraft shown—twenty-two on static display and thirty-two flying.

The spotlight each day seemed reserved for the two prima donnas

Above, the USAF/McDonnell Douglas KC-10 Extender dominated its portion of the static display area. This aircraft refueled USAF fighters and bombers en route to the Paris Air Show. Left, Northrop Chairman Thomas V. Jones unveils his company's F-5G export fighter, powered by a General Electric F404 engine. Below left, the NASA/Bell XV-15 tilt-rotor aircraft stole the flying display each day with its vertical, sideways, and backward flight before transitioning to high-speed, straight-and-level passes. Below, the Dassault Mirage 2000 fighter perches on the ramp during one of the several rainy days during the show. Its parking place was right in front of the British Aerospace chalet, another manifestation of the intense international rivalry ever present at Paris.



Closeup photos taken through the open hatch of the Dassault Mystère "Guardian" sea-surveillance jet over the English Channel. The target ship, Soufflot *of Le Havre, after detection at 15,000 feet, was then overflown for these photos, taken by the author at an airspeed of 125 knots and altitude of 100 feet.*

of the French stable, the Dassault Mirage 2000 and Mirage 4000. They are impressive in show maneuvers and in technological achievement; however, one was reminded time after time that the French have been unsuccessful in landing foreign sales for them.

Italy's aircraft industry showed eleven aircraft on static display and eight flying, for third place in most aircraft displayed. They were followed by Great Britain (fourteen total), Germany (nine), international programs (seven), and the USSR with six.

The Russian aircraft all had new tires for this Paris Air Show. This reversed the pattern of earlier years, when they all seemed to have worn or threadbare tires. The huge Russian Mi-26 heavy lift helicopter dominated its area on the static display park, hulking next to the new Mi-17 helicopter and the An-72, Il-86, and Yak-42 transports.

Other Aircraft

None of the USAF aircraft at Paris was really new. All had been shown there in one form or another at earlier salons (the KC-10 as DC-10, for instance). The "new" aircraft on display were from other countries, and most numerous were the trainer aircraft aimed at several markets, including the US Air Force and US Navy requirements. See box, p. 83, for a partial list.

Among the international programs that have resulted in flying aircraft so far, the following were seen at Paris: the Anglo-French Concorde appeared in the static display park; flying each day were the Alpha Jet trainer/strike aircraft (French/German), the Transall first- and second-generation transports (French/German), the Jaguar strike aircraft (British/French), and the Panavia Tornado strike/interceptor (British/German/Italian).

President's Representative

Sen. Barry M. Goldwater (R-Ariz.) represented President Reagan at this Paris Air Show, the fourth in which Mr. Goldwater has served in that capacity. He spent up to eight hours a day for six days visiting every American company that exhibited at Paris and the foreign competition as well. His report to President Reagan squares with the perceptions of most Americans who observed or participated in the show.

Senator Goldwater told the President, "When I first started attending these shows, it was impossible to find any evidence of real progress among other countries, particularly the Europeans." That is no longer true. Senator Goldwater related how a European aerospace friend told him when the US canceled its supersonic transport project, "We are going to catch you."

They have done so, and that was the substance of Senator Goldwater's report.

He told the President, "In every field, starting from the completed aircraft on down to the smallest part, they are showing strong evidence of not only catching us but, in some cases, having passed us. Avionics [is a field] in which they are in some cases ahead of us, in many cases equal to us, and in other cases showing every evidence of being able to match us instrument to instrument."

Senator Goldwater noted that foreign forgings, castings, and other metallurgical products "compare with anything we make." Then he touched on the fact that foreign governments subsidize their aerospace industries, anywhere from forty-five percent up to 100 percent for flag carrier airlines. Senator Goldwater does not advocate gov-

The Space Shuttle Columbia *crew, John Young (left) and Bob Crippen (second left), chat with Sen. Barry Goldwater (R-Ariz.) and French President François Mitterrand (far right). Senator Goldwater was President Reagan's personal representative at Paris.*

ernment subsidies or nationalization for the US in order for its aerospace industry to regain the lead. Instead, he says, "There has to be incentive . . . real tax breaks and incentives for existing manufacturers and new people . . . to acquire more money and invest it" in the aerospace industry.

Senator Goldwater then touched on the lamentable record of the United States in recent years in producing engineers and its dwindling market share in the international civil aircraft market. Then he cited the remarkable performance of the Bell XV-15 tilt-rotor aircraft, and pointed out its obvious utility for commuter purposes and military applications. He cited his flights in the Alpha Jet (during the show) and Hawk trainer (forthcoming), noting their competition for US Navy business in the VTX trainer program. He said, "There are others being built exclusively by US manufacturers but, believe me, the European firms have made great progress. It's a sad comment on the US state of affairs when we have to go abroad for training aircraft, and I would like to see that change."

Senator Goldwater summarized: "Unless we can create a way to give American manufacturers incentive, unless we can find a way to get American labor to increase its productivity and the quality of their products, unless we can overcome the big metal shortage that is looking us right in the face, I'm afraid this country is going to see a continued slide in the whole field of aeronautics if we don't get moving." This opinion was widely shared among Americans and foreigners alike, as Senator Goldwater discovered.

What to do? Senator Goldwater urged the President to "get together with the aircraft industry, the avionics industry, etc., to determine what specifically he and our government might do to help create the real meaning of this word 'incentive.'" He also recommended formation of a committee from industry and other parties to explore the possibility of the United States putting on its own air show.

Uncertainties

Aircraft and other hardware aside, two major uncertainties prevailed in conversations during the Paris Air Show: what the new Socialist government of France under President François Mitterrand will do to that country's aerospace industry and its export policies, and what the Reagan Administration will do to encourage US aerospace exports, particularly of military items. No definitive answers were forthcoming on the Mitterrand government's policies, because their formulation and success awaited a clear mandate from the French voters in the upcoming parliamentary elections, a mandate the Socialists received later in June. Certainly the French aerospace industry relies on exports for a sound economic base and, if they were curtailed, would be hard-pressed to survive on French forces' business alone.

As for the US government arms transfer policy, the Under Secretary of State for Security Assistance, Mr. James Buckley, revealed its leanings back in May. The Reagan Administration, in essence, will reverse the restrictive Carter policies and make arms transfers an integral part of the total US export effort. Secretary Buckley, in fact, made an unheralded visit to the air show for one afternoon en route to Pakistan to conclude a $3 billion economic and military assistance agreement there. ■

Public entrance to the US Pavilion at the Paris Air Show was one of the most popular attractions on the grounds at Le Bourget Airport. Success of the Space Shuttle Columbia *contributed to the popular appeal of the US Pavilion at this year's show.*

SOME OF THE TRAINER AIRCRAFT SHOWN AT PARIS

COMPANY	AIRCRAFT	NATION
Aermacchi	MB-339	Italy
Siai-Marchetti	S-211	Italy
Siai-Marchetti	ST-260TP	Italy
Caproni	C22J/R	Italy
Pilatus	PC-7	Switzerland
MBB/Vought	Fantrainer	Germany/US
Dornier/Dassault	Alpha Jet	Germany/France
Embraer	EMB-312	Brazil
C.A.S.A.	C-101 Aviojet	Spain
Valmet Oy	L-70 Vinka	Finland
British Aerospace	Hawk	Great Britain

On May 11, the Air Force teamed up with the Air Force Association (and AFA'

Centennial Tribute to Dr.

By James A. McDonnell, Jr., MILITARY RELATIONS EDITOR
USAF photos by Gwilym Hughes

ON May 11, the one hundredth anniversary of his birth, the Air Force and the Air Force Association jointly honored the memory of Dr. Theodore von Kármán. It was a commemoration that one observer noted would have "pleased that grand old man—and he would have felt right at home."

Von Kármán is well known for his scientific contributions—both theoretical and applied—to the modern Air Force *(see "Von Kármán's Singular Contributions to US Aerospace Power,"* AIR FORCE *Magazine, May '81)*. AFA and von Kármán also have a shared history. AFA's highest award in the field of science and engineering is the Theodore von Kármán Award, which annually recognizes a leader in this area. Von Kármán himself won it in 1950 (it was then called the AFA Airpower Award for Science) and, upon his death in 1963 it was renamed in his honor. In 1964, AFA's educational arm, the Aerospace Education Foundation, sponsored the institution of a Theodore von Kármán memorial collection at the USAF Academy Library. So, on this May day, the Air Force and AFA (along with the Foundation) came together to honor this pioneer who was so important to both.

The Air Force, through the office of the Air Force Chief Scientist, Dr. Edwin B. Stear, sponsored a von

Dr. Hans Mark, new Deputy Administrator of the National Aeronautics and Space Administration and immediate past Secretary of the Air Force, evoked the spirit of von Kármán for the Symposium audience.

Aerospace Education Foundation) to pay a unique . . .

Theodore von Kármán

Two aerospace pioneers meet at the Luncheon. Dr. T. F. Walkowicz (left), President of National Aviation and Technology Corporation, was a student in Dr. von Kármán's first jet propulsion course at Caltech. He's shown here with Lt. Gen. Jimmy Doolittle, USAF (Ret.). General Doolittle, a premier scientist-engineer, received a standing ovation from the luncheon audience.

Kármán Centennial Symposium in Washington, D. C. This full-day event, entitled "Technological Leadership . . . the von Kármán Legacy," brought together a sparkling array of speakers and panelists, some of whom had been Dr. von Kármán's students or early associates *(see box on p. 86 for symposium agenda).*

AFA (and the Aerospace Education Foundation) sponsored a luncheon for the 300 symposium attendees who comprised a broad cross section of government, academic, and industry scientific and technological leaders. At the luncheon, other industrial and Air Force leaders were on hand.

The AFA and Foundation Executive Director, Russ Dougherty, serving as luncheon master of ceremonies, struck the luncheon theme by noting that the "marriage of Gen. Hap Arnold, tomorrow's general, and Dr. von Kármán, tomorrow's scientist, was the most fortunate marriage possible for the aerospace technology of our nation and for the capability of the Air Force." He pointed out that Dr. von Kármán "bridged the fields of science, engineering, and aerospace."

Retired Air Force Gen. B. A. (Bennie) Schriever served as luncheon toastmaster. Early in his military career, he had begun a long-time professional association with von Kármán. He noted that it is the job of the toastmaster "to tell a lot of stories"—and he did. He stressed that while he regarded von Kármán as "certainly the outstanding aeronautical scientist and engineer of this century," his anecdotes would be aimed at "highlighting the human side of this great man."

One of the several he related concerned Schriever's role in charge of the early ballistic missile program. Failures, including a blow-up on the pad, were interspersed with the early successes. Finally, at one point, Schriever went on, "we had a string of successful Thor launches, Atlas launches, and Titan as well. I received a wire from von Kármán—in essence, he said, 'I see that all your test launches in recent months have been successful. I am concerned about this because obviously you are not taking enough risk.'

"Now, just as obviously," General Schriever concluded, "von Kármán had tongue in cheek. Yet,

Contributions in von Kármán's Memory

In honor of Dr. von Kármán on this centennial celebration, Secretary of the Air Force Verne Orr and Air Force Chief of Staff Gen. Lew Allen, Jr., arranged for contributions from Pentagon staffers for AFA's Aerospace Education Foundation. Lt. Gen. Kelly H. Burke, DCS/RD&A, made the presentation of the resulting $1,500 to AEF Treasurer George Hardy. Shown here also are AFA Board Chairman Dan Callahan (second from left), and AFA President Vic Kregel.

General Burke noted that the Pentagon officials felt that this tribute to the memory of von Kármán was most appropriate since the "Aerospace Education Foundation represents two institutions—aerospace and education—that Dr. von Kármán revered most." AFA's Aerospace Education Foundation will share a portion of this donation with the AEF-sponsored von Kármán Collection at the USAFA Library.

Technological Leadership . . . the von Kármán Legacy

FIRST SESSION: von Kármán's contributions to the aeronautical and space sciences and to the education of today's leaders in aeronautics and rocketry.

Speaker: Prof. William R. Sears
Panelists: Dr. Joseph V. Charyk
Prof. Hans W. Liepmann
Prof. C. C. Lin
Dr. Frank J. Malina
Dr. Allen E. Puckett
Prof. Homer J. Stewart

SECOND SESSION: USAF's Scientific Advisory Board—a creation of Dr. von Kármán and Gen. H. H. Arnold.

Speaker: Dr. Ivan A. Getting
Panelists: Lt. Gen. Kelly H. Burke, USAF
Dr. John L. McLucas
Dr. H. Guyford Stever
Dr. T. F. Walkowicz

THIRD SESSION: von Kármán's role in the founding of the Advisory Group for Aerospace Research and Development (AGARD) of the North Atlantic Treaty Organization (NATO) and other international scientific bodies.

Speaker: Frank F. Thurston
Panelists: Dr. Alexander H. Flax
Dr. Robert H. Korkegi
Prof. Courtland D. Perkins

in philosophy, he meant just what he said. And," he went on, "we should heed his words today. We have been trending more and more as a nation toward being risk-free. This can, in the end, be fatally serious when applying science and technology to our national security needs."

The featured speaker for the luncheon program was Dr. Hans Mark, who, while serving as Secretary of the Air Force, had been the guiding force behind the centennial.

His presentation centered on, and drew heavily from, von Kármán's autobiography, *The Wind and Beyond*. Dr. Mark noted that von Kármán wrote this in his eightieth year. The former Secretary found it extremely characteristic of the noted scientist that he asked, in the book, "What's ahead, where are we going?" This, Dr. Mark felt, completely typified von Kármán's energy, inquiring mind, and optimistic outlook on life.

He alluded to von Kármán's stated modesty—and yet uncanny precision—when it came to predicting the aerospace future. To illustrate, one of his predictions was that "flight at extreme altitudes will become very common. Planes may be expected to take off . . . go into orbit around the earth . . . reenter the atmosphere, and choose a place of landing like that of a conventional plane. . . ." This almost parallels the flight pattern of the Space Shuttle—more than twenty years before the Shuttle.

Dr. Mark brought out that von Kármán, in his autobiography, stressed that if one does predict, one should not be conservative. As an example of how not to do it, von Kármán was fond of referring to the predictions of Prof. Simon Newcomb, a distinguished astronomer. This worthy, prior to the Wright brothers' flight, averred that "flying without gas bags was impossible." After the Wright flight, Newcomb weighed in with the thought that "the writer cannot see how anyone can avoid the conclusion that the era when we shall take the flyer as we now take the train belongs to dreamland."

Certainly von Kármán was not conservative in *his* predictions. And all of us who today are involved with aerospace are grateful that he was not. The study group he headed as Chairman of the first Scientific Advisory Group brought forth the famous *Toward New Horizons* study, and presented it to Gen. H. H. Arnold in 1945. AIR FORCE Magazine called it "a remarkable blueprint for future airpower development."

In referring to the same study, Dr. Mark summed up the significance of von Kármán—and indeed of the centennial celebration honoring him—quite succinctly: "That study," he said, "created the modern Air Force." ■

AFA National President Victor R. Kregel, left, congratulates Gen. Bennie Schriever, USAF (Ret.), on his toastmastership at the luncheon.

The Israeli strike against the Osirak reactor in Iraq focused new attention on the modernization of air forces throughout the Middle East. Whether reactions flowing from the strike lead to intensified conflict or to searches for solutions is still an open question. One interesting possibility is sketched in the following . . .

Reflections on the Osirak Strike

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

THE Israeli raid on Osirak, Iraq's nuclear reactor, an ingenious approach to nuclear nonproliferation, has left a good many of us with mixed feelings. The attack was superbly executed, but then so was Pearl Harbor. Preemption is unarguably a most efficient way to deal with threatening situations, whether against a Wild Bill Hickok pondering his aces and eights in a Deadwood saloon or by an experienced brawler weighing the moment for the sucker punch. We ourselves had a certain amount of serious conversation in the sixties about a preemptive attack on China's nuclear facility. Our concern about Soviet preemption is what the MX is all about.

Israel has reason enough to worry about Iraq, with whom it has technically been at war since 1948. President Saddam Hussein's Iraqi regime is both violent and unpredictable save in its unvarying hatred of Israel. Nonetheless, geography and Iraq's preoccupation with Iran have made the Iraqi threat a minor one in recent years. The very ineptitude of Hussein's own preemptive attack on Iran—an attack that was presumbly the safest of bets considering Iran's state of chaos—should have been reassuring to Menachem Begin.

Clearly it was not, and the strike came off, a great victory for the Israeli Air Force and an object lesson for our budgeteers. Israel's pilots fly thirty hours or so a month, and their F-15s and F-16s are well supported with spares despite Israel's parlous economic situation. Our own tactical pilots have been struggling along on twelve hours, more or less, with short rations of spare parts, ammunition, and fuel. Whether our pilots, given their lack of training, could have pulled off the Osirak attack with the same precision is at least questionable. Happily, the new people in the Pentagon are promising better times but, if operating money ever becomes scarce again, a reminder to the budgeteers about Osirak might be in order.

That being said, the remaining question is the big one: Where does this leave us, the United States, in our pursuit of a Southwest Asian defense policy? Egypt's President Sadat was plainly embarrassed by this Israeli air strike, an action that will isolate him even more thoroughly from his Arab neighbors in a case of guilt by association. And all at a time when Egypt is herself beset with troubles: an almost geometric birth rate, agricultural stagnation, and a restive youth educated beyond the available job opportunities. It is no time to put more pressure on Sadat. Yet, that is what the Israelis have done.

The Israeli strike was probably bad news for us as well in our struggle to gain influence and a military foothold in the Middle East. The United States is viewed as unalterably tied to Israel, that embattled little land's only real supporter in an otherwise hostile or indifferent world, and so, fair or not, we will be widely suspected as silent partners in the Baghdad raid.

Meanwhile, the specter of a Soviet threat we have been trying to get all Mideast nations to see is replaced, for the moment at least, by the very real presence of an aggressive Israel. All of which may make the mission of the Rapid Deployment Force a little hard to sell. At best, the Israelis have simply bought some time, for there can be no permanent forestalling of the day when Arab nations have nuclear weapons just as Israel probably now has. As Iraq has shown, it is an easy deal to trade oil for nuclear technology. One of these days the threat of nuclear warfare is going to be a fact of life in the Middle East. What then?

Well, whatever comes, there are some military lessons here for the United States to digest as we set about rebuilding our defenses. The first one we have already touched on: sophisticated weapons like F-16s need highly trained people to exploit them. Misgivings about the wisdom of their Iraqi raid aside, we have the Israelis to thank for proof that we are building great airplanes. Now we must put the same effort into training and readiness that they have done.

The second lesson we can absorb from this Israeli adventure is that airpower will be the dominant factor in Southwest Asia. That once-backward part of the world is now becoming a showcase for modern weaponry—Soviet, American, French, and British. The emphasis in all these countries is on acquiring an air force, whether with MiG-23s, Mirage F-1s, Mirage 2000s, or F-15s and F-16s. Deserts and distances will no longer serve to keep enemies apart: The Middle East is becoming, in the purest sense, an air warfare theater.

As time goes on, it will be steadily more difficult for Israel to maintain its edge. Given the plain fact that Saudi airspace was violated on the run-in to Baghdad, it will now be difficult to argue persuasively against Saudi Arabia's purchase of AWACS. Viewed, then, simply as an area of confrontation between Arabs and Jews, the Mideast situation grows ever gloomier.

The only hope for making sense out of that situation, it would seem to me, lies in redirecting all this animus toward the real threat to the area. At the moment, the Israeli nuclear reactor bombing is too recent a memory for that idea. But if, in time, the United States could harness some, or most, of this considerable air weapons arsenal in a loose confederation designed for mutual warning and defense against Soviet penetration of the Gulf, these newly acquired modern air forces could serve a useful purpose, and the United States role in the Middle East would become decidedly more understandable. ■

VANDENBERG: Rebuilding the "Shoestring Air Force"

BY BRIG. GEN. NOEL F. PARRISH, USAF (RET.)

Gen. Hoyt S. Vandenberg had to rebuild an Air Force weakened by postwar demobilization and beset by interservice rivalries into a fighting machine that could fight in Korea and simultaneously provide the strategic nuclear deterrent to keep the burgeoning cold war from erupting into a new conflagration.

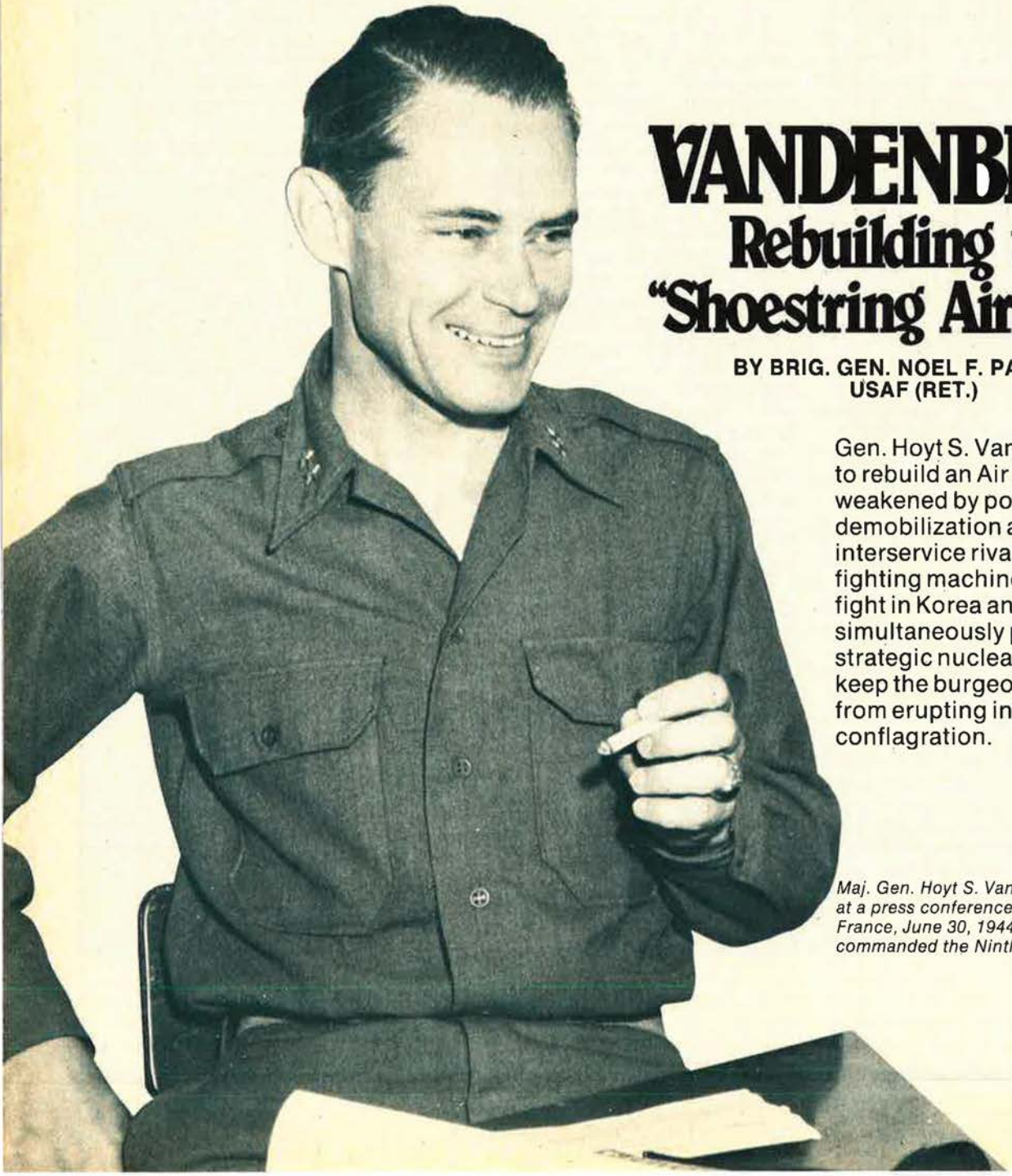
WHEN Hoyt Sanford Vandenberg, Sr., became the first full-term Chief of Staff of the Air Force he understood very well that he was not a founder. Instead, the building blocks of the newly created Air Force had been placed in his hands. Though he was neither pioneer nor founder, he had matured in the company of such men and in experience and age was not far behind.

Because of his appearance and vigor, Vandenberg was considered a young man when named the top commander. At nearly fifty years of age and six feet tall, he weighed in at a muscular 165 pounds and was described as "combining the energy of an athlete with mature judgment."

His task was to put it all together as the newly independent Air Force assembled, organized, and functioned in the frustrating atmosphere of the Korean War, in which the Department of State played a dominant role. In just five turbulent years he was to establish new organizations, regulations, principles, and even traditions—a process that had preoccupied Army, Navy, and Marine commanders periodically for a century and a half.

Directing a fledgling Air Force in its effort to catch up with the other services was a challenging task, but Vandenberg was well prepared for it. His varied talents had developed through World War I volunteer training, military prep school, and West Point. While not an outstanding student at the Military Academy, he attained his chief goal: assignment to the Air Service.

Much later, on becoming Chief of Staff, Vandenberg made the new Air University at Maxwell AFB, Ala., his favorite platform, especially before graduating classes. Obviously at ease, he spoke informally and frankly, never defensively. He hoped to inspire young officers as they observed that the Chief was, after all, just a man very interested in his responsibility, but not overly im-



Maj. Gen. Hoyt S. Vandenberg at a press conference in France, June 30, 1944, when he commanded the Ninth Air Force.

pressed with his own importance. This was the kind of chief he hoped would guide the Air Force of the future. As it has turned out, this hope has been generally realized.

Much more difficult, and almost impossible to compromise on, was the establishment of a legal organization charter for the Air Force after it had been operating without one for many months. Vandenberg wanted to follow the plan of Generals Spaatz, Arnold, and others to avoid separate corps within the Air Force and thus escape the internal frictions that had plagued the Army and Navy. This was not to be, however.

Most of the senior officers in the Air Force had spent years in the Army; Vandenberg himself had served thirty. It was inevitable that Air Force organization, procedures, and even traditions would resemble those of the Army. The Chief was careful, however, to resist easy imitation. The new blue uniform, which he supervised to the last detail, was something like the Army's, but more like that of the Royal Air Force.

In many respects, though, the Air Force requirement for weaponry of ever-increasing speeds and ranges was similar to that of the Navy. The application of World War II research to aircraft and weapon design brought forth jet engines, rockets, missiles, electronic guidance, and nuclear devices and led to constant change. Even more than the Navy, the Air Force found itself dependent on civilian scientists and industry for the creation and improvement of its weapons and their means of delivery.

Voluminous Correspondence

With an Air Force background and viewpoint similar to Vandenberg's, it became my duty and privilege to prepare most of the Chief's numerous public statements from 1948 until his retirement in 1953. While he was capable of handling his own writing chores, it was a full-time job. Instead, the Chief chose to arrive at decisions rather than to justify or explain them. My assignment, then, came to include wide correspondence with the upper tier of US leadership and even press relations.

Despite the variety of Vandenberg's views and decisions for nearly five years as Chief, there was never the retraction of a single statement. Such a record was made possible by Vandenberg's unwavering simplicity of purpose and his unmistakable sincerity. His first and only admonition on writing for him was perfectly clear: "Never let me say anything that is not completely factual or will not stand up under close examination. Never stretch the facts, or beg a question, or exaggerate one bit." The truth was on our side, and would not be compromised.

As friendly as he was toward his busy staff and carefully chosen commanders, Vandenberg did not hesitate to remove people who failed to focus on the prescribed goals. The postwar Air Force was so crippled by wholesale demobilization and budget cuts that only the small Strategic Air Command was manned and equipped for combat. But when he learned that its crews were concentrating on flying time rather than combat skills, he relieved the commander and replaced him with Gen. Curtis LeMay, a forceful and seasoned veteran.

Vandenberg, a long-time student of the power of the press, added columnist Walter Lippmann, journalists Joe and Stewart Alsop, and editors C. J. V. Murphy and James Shepley of *Time-Life* to his list of friendly newsmen. A number of legislators—despite the scarcity of Air Force veterans on Capitol Hill—became personal friends of the Air Force Chief. James H. Straubel and John F. Loosbrock and their cohorts of the Air Force Association and AIR FORCE Magazine were considered indispensable to the fledgling Air Force.

Vandenberg's candor and pleasant honesty attracted friends in a manner most fortunate for the Air Force and the country, for he was repeatedly under attack by past and present members of the other services. The first organized controversy came in his second year as Chief in what came to be called the "Revolt of the Admirals." This was triggered by Secretary of Defense Louis Johnson's cancellation of plans for the Navy's first supercarrier.

Led by Admiral Arthur W. Radford, a group of recalcitrant naval officers testified in congressional hearings that the Air Force's new intercontinental B-36 bomber was worthless, that nuclear weapons were immoral under any circumstances, and that the US's most dangerous enemy would soon be China rather than the USSR, among other things.

Chief Justice Fred M. Vinson swears in Gen. Hoyt S. Vandenberg as Air Force Chief of Staff on April 30, 1948. The others present (from left) were Secretary of Defense James V. Forrestal, Air Force Chief of Staff Gen. Carl A. Spaatz, and Air Force Secretary W. Stuart Symington.

The upshot, however, was that Air Force Secretary Stuart Symington, backed by JCS chairman Gen. Omar Bradley, successfully defended the Air Force policies under criticism. Chief of Naval Operations Adm. Louis E. Denfeld, who had endeavored to check the "mutineers" and then joined them, resigned and ran for Senator from Massachusetts, unsuccessfully. He was replaced by the more intellectual Adm. Forrest P. Sherman, who became one of Vandenberg's closest friends.

Working With Politicians

Neither awed nor frightened by political leaders, Vandenberg respected all who deserved it, and worked well with them. His uncle had long been a leader in the Senate. Arthur Vandenberg was known as "the Republican architect of bipartisan foreign policy," and his nephew had observed in wartime the value of political-military cooperation. The Air Force Chief was especially proud

of convincing his normally isolationist uncle to lend crucial support to the Marshall Plan and US membership in NATO. Airpower, the Chief had argued, would soon make the globe too small for isolation. A bipartisan military policy as well as a bipartisan foreign policy were the cornerstones of Vandenberg's plan.

Air Force Secretary (and later Democratic Senator) Symington became the Chief's staunch partner and personal friend. It was Symington who absorbed much of President Truman's wrath when the Air Force's transpolar and global nonstop flights were branded by the Army and Navy as stunts designed to usurp publicity and funds. In another instance, a widely quoted speech by Symington suggested what one B-36 might do to Stalingrad as compared to an invading army. This resulted in a protest by General Bradley to the President and additional heat.

With the lapse in the draft and the burden of occupation forces in Germany and Japan, the Army had more than its share of troubles. President Truman, who depended on the advice of Generals Marshall and Bradley, approved a ruling that leaders of a military service must not speak critically of another service. (True to form, the President later appeared before a Marine Corps veterans convention to apologize for his joke that a Marine squad contained seven riflemen and a press agent.)

Repeated warning of an impending Communist attack and recognition of the US's declining ability to respond had irritated members of the Administration. But Vandenberg's influence was increasing, though he contradicted the Army's military spokesmen and the entire orchestrated chorus of political appointees.

And while Congress voted funds to curtail the military decline, the President's economic advisor testified that a balanced budget was more important than military defense. The added appropriations were not spent. Secretary Symington was prepared to refute this new theory, but was silenced.

Vandenberg during this trying period practiced restraint. He did not enter the economics debate, refrained from criticizing the policies of colleagues and superiors, and did not emphasize that the Defense Department was surprised by the early explosion of the first Soviet atomic weapon following rejection of an accurate prediction by Air Force intelligence.

Presidential Respect

These and other circumstances in the political atmosphere that prevailed help explain why President Truman did not even threaten to dismiss Vandenberg, and why he extended his appointment to record length. Instead, at the outset of the Korean War, he dismissed bombastic Defense Secretary Louis Johnson who had boasted that in case of war the US would win victory in an hour. (Contrary to most fashionable historians, the "massive-retaliation" threat was not invented by President Eisenhower and John Foster Dulles.)

Once the Korean War began, Vandenberg wasted no time in "I told you so's," but set to work wholeheartedly in the common effort. The war's early reverses were followed by the victorious landing in Inchon and then a major setback—China's entry into the conflict.

The Joint Chiefs had been unable to communicate

At Tokyo, Japan, July 14, 1950—General of the Army Douglas MacArthur (left), Commander in Chief, Far East Command, bids farewell to Gen. Hoyt S. Vandenberg, Chief of Staff, USAF, before the latter's departure for the US after conferring with General MacArthur on the situation in Korea.

effectively with Gen. Douglas MacArthur, Commander of UN forces in Korea, so Army Chief of Staff "Lightning Joe" Collins and Vandenberg were sent to discuss what to do next after the Chinese intervention. After their return, Vandenberg revealed in confidence, while preparing for a Senate investigation, that General MacArthur had been found in a dramatically tragic mood. He demanded that he be ordered to abandon the Korean peninsula or "stand-and-die" on the ground he still held in South Korea. Instead, the two visitors agreed with MacArthur's new field commander, Gen. Matthew Ridgway, that it would be possible to stand without the destruction of our forces there. Most of our retreat had been completely motorized. General Ridgway was confident that the Chinese, pursuing on foot, could not catch up in winter before he regrouped his forces, replenished his supplies, and prepared to meet them.

Personal Reconnaissance

As he had done often at great risk during World War II, Vandenberg determined to see for himself the situation behind enemy lines. In a small plane at low altitude he flew over much of the area occupied by Chinese forces. There was little evidence they were present, despite their numbers. Their ability to disperse and hide with their equipment, even in the rough terrain, was surprising. They managed even to camouflage tracks in the snow.

To the south, our own forces were exposed, necessarily, in open areas. Our few ports and supply routes were crowded with vehicles, supplies, fuel, and ammunition. They were highly visible and vulnerable to air attack at any level, and because our troops and materiel had to be funneled in from overseas, there was

no solution other than avoidance of a bombing contest. Chinese forces equipped with Soviet-built bombers were widely deployed across Manchuria. They offered no easy and vital targets, such as ours in close and narrow channels. In this circumstance Vandenberg could justifiably support the Administration's policy of restraint.

Also, Vandenberg joined the other Chiefs in supporting President Truman and General Bradley in the awkward but necessary order that brought General MacArthur home. The frustrated UN Commander had not defied the President as most historians declare. He had resisted, and sometimes ignored, the newly organized Joint Chiefs in the first exercise of their authority in war, and this created problems.

The President had obliged the Chiefs by dismissing the arrogant Secretary of Defense Johnson and replacing him with sensible and trusted Gen. George C. Marshall, who alone had sufficient prestige and style to stand against MacArthur's opinions during the congressional hearing that followed the eloquent oration of the "old soldier" who would "just fade away" because the war would not be fought his way.

Vandenberg was next in importance in his testimony, for he faced a serious dilemma. MacArthur had argued that more aggressive use of airpower could have been decisive, and this had been a possibility.

Only five of us were present during the discussion of how Vandenberg should answer the penetrating questions that would be asked. Distinguished law professor Bart Leach of Harvard was a principal counsel to Vandenberg. "What is your attitude toward MacArthur?" Leach asked. Vandenberg explained that he admired the brilliant strategist and commander, but thought he had been seriously in the wrong because he refused to consider the problem of defending Europe. Leach admonished Vandenberg to keep perfectly cool in testimony, never reveal the slightest irritation at MacArthur's attitude, and speak clearly for the record.

General Bradley had taught him, said Vandenberg, to speak deliberately and never hurry an answer. "The record," said Bradley, "will not show how much time you took to answer, but it will record permanently everything you say."

As usual, Vandenberg's replies at the hearing were direct, simple, and accurate, down to the carefully chosen phrase that became historic. He testified that MacArthur's demand for a bombing campaign against China would be dangerously impractical even with the most effective weapons, since our "shoestring Air Force" would be unable to contend with both China and potential enemy Russia at the same time. This was an unpopular truth, but inescapable because the Strategic Air Command had just entered the process of building.

Gen. Hoyt S. Vandenberg (center) visits ROK Capital Division in Korea, November 1952. On left is Gen. James A. Van Fleet, Commanding General, Eighth US Army. They are with senior officers of the Cap ROK Division at a firing range near its headquarters.

During the fifteen years prior to his retirement in 1964, Brig. Gen. Noel F. Parrish served as Deputy Secretary of the Air Staff; Special Assistant to the Vice Chief of Staff, USAF; Air Deputy of the NATO Defense College; Assistant for Coordination, DCS/Plans and Programs, Hq., USAF; and Director of the Air University's Aerospace Studies Institute. After completion of a Ph.D. in history at Rice University, General Parrish taught military history for ten years at Trinity University, San Antonio, Tex., including two years as visiting professor at the Air War College. Now retired and living near the Pentagon, he continues contact with the development and application of military and aerospace history.

Vandenberg's testimony, though attacked by the opponents of airpower, was well supported by classified information revealed to the investigating congressional committee.

Intelligence-Gathering Experience

His experience in intelligence gathering gave Vandenberg an understanding of the necessity of secrecy. He did not reveal that we often penetrated China for photograph reconnaissance, or that the Chinese were frantically digging shelters in their large cities in the face of the possibility of bombing. But at a news conference he admitted that Russian had been spoken by MiG pilots, thus thwarting the State Department's effort to cover up Soviet participation in the war. We were heavily outnumbered by enemy interceptors, and our bomber crews were absorbing losses.

It was claimed, especially by participants and students of the successful Normandy interdiction of World War II, that a similar effort in Korea could render the Chinese ground forces helpless from lack of supplies, and thus end the war. The Chief knew better, from extensive experience: "We used to bomb and close the Brenner Pass every day, and the Germans opened it every night." Furthermore, he was aware that the success of interdiction depended on heavy ground attacks to force the enemy to consume his supplies faster than they could be delivered. Such attacks were not pressed by our forces once the stalemate began in late 1951.

Despite the numerous restrictions on bombing in North Korea, the interdiction of supply routes was undertaken and North Korean air bases were repeatedly attacked. Losses to ground fire and MiGs continued to be serious. Vandenberg ordered USAF heavy bombers to conduct "tactical" raids at night and raised the level of pull-outs for dive bombers to reduce losses. At last, electronic gunsights for the F-86 Sabres were provided, and the Chief himself talked reluctant pilots into changing their methods. With a shortage of F-86s, the only aircraft capable of challenging the MiGs, every effort was made to keep them in action.

Air Force sorties over North Korea rose from fewer than a hundred per day, in our poorly equipped condition early in the war, to nearly 1,000 daily two years later. The Chief was finally in charge of an effective force, though it was scarcely comparable to the largest air force ever assembled, the Ninth Air Force he had commanded in Europe during World War II.

At the beginning of the Korean War, Vandenberg had only one ready combat unit in the Air Force, and it consisted of a few B-29s equipped to carry atomic bombs. Frantic demobilization after World War II, followed by drastic budget cuts, had made our national defense dependent almost entirely on the employment of nuclear weapons.

Vandenberg's concern with the Truman Administration policy of basing national defense on our monopoly of the atomic bomb had arisen before the first Soviet nuclear explosion. The 1949 surprise for all but Air Force intelligence caused him to anticipate action by the now-confident Communist community, especially after the subsequent Mao-Stalin conference. But Defense Secretary Johnson had ordered US military leaders to say nothing other than to boast with him that the Soviet breakthrough was no surprise and steps had already been taken to counter its consequences. This was preposterous, and Vandenberg would not echo it, so he remained silent on the subject.

Developing Forces

It became possible to develop a short-range conventional air force, together with a long-range nuclear and conventional air arm, during the inescapable reality of the Korean War. After the war, dependence on nuclear capability again became dominant because budget reductions limited the development of a significant conventional force. Despite this, Air Force tactical specialist Gen. O. P. Weyland managed, with Vandenberg's support, to reserve at least ten percent of USAF research funds for development of short-range aircraft and conventional weapons.

At the time of President Eisenhower's inauguration, the nation generally agreed there would be "no more Koreas," meaning that resistance to Communist aggression would hitherto be provided principally by long-range weaponry. This was something of a gamble, but Vandenberg hoped that our resolve to maintain an unmistakably superior long-range force and a respectable short-range delaying force together with our allies would provide at least minimum security. Funds and designs for this force were prepared during the Korean War, but the postwar euphoria led to a cutback.

Newly appointed Secretary of Defense Charles Wilson declared publicly that Vandenberg had agreed that drastic cuts in Air Force strength would not seriously weaken its power. Since he had made no such statement, Vandenberg corrected the record.

Secretary Wilson insisted that his cuts would only eliminate Air Force "fat." In the congressional investigation that followed, Vandenberg's performance was outstanding, while Secretary Wilson's was so awkward that he won occasional sympathy. Privately, Vandenberg remarked that he had learned to think twice before answering, once for the answer and the second to estimate the next question. His poise and convincing sincerity carried the day. We learned from a friendly member of Wilson's staff that the Secretary was being coached to respond to questions in a manner hopefully similar to Vandenberg's.

Vandenberg's conduct was even more remarkable. His strength was now ebbing rapidly because of advanced terminal cancer. His last public appearance was before the committee, followed by a few brief statements on the serious consequences of further weaken-

ing our forces in the face of rapid Russian advances.

His old friends Senator Symington and James Shepley of *Time-Life* and other advisors urged him to continue the struggle in the interests of national defense until his impending retirement.

Weak, exhausted, and in constant pain, he responded, "It is not as easy as you think. I have always been a team man and not a troublemaker, but here I am disturbing a President I admire." The advisors insisted it was too late to withdraw from the debate, and declared he was doing the President a favor by calling attention to the mistakes of his Secretary of Defense.

In drafting a final statement, Vandenberg's instructions to me were: "Don't try to agree with what you have been hearing. I leave it all up to you. Just write it the way *you* think it ought to be." There was to be no criticism of the President or of Secretary Wilson. They would be complimented as sincere and dedicated men who had been misinformed by inexperienced assistants. But they had seriously miscalculated the effect of extensive deletions from the Air Force program, General Vandenberg said, and he cited precisely what the effects would be.

Painful Death

After his retirement in mid-1953 Vandenberg lived through a few more weeks of drugged pain. President Eisenhower and Secretary Wilson visited the dying man and left with tears in their eyes. Vandenberg's funeral at the National Cathedral was attended by almost everybody of importance in Washington. As one of many ushers, I noticed a dignified and solitary man standing near a pillar. When addressed as "Mr. Acheson" he was startled, since no one else had spoken to him. The man whom many blamed for the Korean War would later declare in his autobiography that reductions in military strength during the 1950s and after led the US into a dangerous dependence on an ever-weakening "deterrence" strategy based on a threat of mutual destruction. This was the possibility Vandenberg abhorred, and had sacrificed the last months of his life to help the US avoid.

For all who worked with him, Vandenberg's indomitable spirit has remained alive and influential through our nation's efforts to remain the world's best hope for the future. Vandenberg's successors, Gens. Nathan F. Twining, Thomas D. White, and Curtis E. LeMay continued to build on his principle of honest recognition for even the most unpleasant truth. Thus, Vandenberg and his successors created and nurtured a tradition of readiness to sacrifice rather than endanger the survival of freedom-loving nations. ■

Gen. Hoyt S. Vandenberg, USAF Chief of Staff, rests briefly during a hearing of a Senate Appropriations subcommittee, June 3, 1953, shortly before his retirement and the Korean War truce.

AIRMAN'S BOOKSHELF

The Chinese Connection

Ding Hao: America's Air War in China, 1937–1945, by Wanda Cornelius and Thayne Short. Pelican Publishing Co., Gretna, La., 1980. 502 pages with index, maps, and many photographs. $19.95.

Claire Chennault's "Flying Tigers" and their shark-emblazoned P-40s of the American Volunteer Group (AVG) formed one of the most renowned American flying units of World War II. Organized following the Japanese destruction of China's air force, the AVG was largely composed of former US Army and Navy pilots who signed up to fight in the Far East before US entry into the war. During more than six months of flying and fifty air battles, the AVG claimed almost 300 Japanese planes, with nearly 150 more probables, while sustaining only seventy-three air and ground losses.

The saga of the AVG was only a small slice of American action in Asia, however, since Chennault first entered China in 1937 to work with Generalissimo Chiang Kai-shek's ineptly Italian-trained air force as the Japanese threat loomed on the horizon. A former Air Corps pursuit pilot himself, Chennault flew successfully against such new Japanese fighters as the Nate and Zero.

But despite his demonstrated abilities as a fighter pilot, Chennault's greatest gain from his China experiences was the opportunity to test ideas developed during his pursuit pilot and Air Corps Tactical School instructor days. His training of Chinese pilots and the AVG reflected lessons he had learned in the air over China, as did the air warning net he had previously advocated and tested with the Air Corps in the early '30s.

Following the AVG's deactivation on July 4, 1942, the American 23d Fighter Group was formed with Chennault as its commander to carry on the air war against Japan. It is at this point in *Ding Hao* that the subtitle—"America's Air War in China"—loses clarity, as the reader is left feeling that the 23d virtually fought the remaining air war singlehandedly. The reason for that bias is apparent, as coauthor Short admits his lifetime admiration of Chennault and a recent acquaintance with China pilot Charlie Olsen. It is around these two main characters that the book is woven.

After covering Chennault's early years in China and the AVG's exploits, the authors intersperse chapters on the 23d Group with three much narrower chapters on Olsen and Lt. Henry Wood. The first two provide excellent coverage of Olsen's experiences in pilot training, flying the P-40 and P-39 in Panama, and the trip to combat duty in China. Wood became a prisoner of the Japanese and was thought dead until his appearance at a squadron reunion in 1978. His chapter relates the details of his captivity.

The American air war over China involved more than fighter pilots, but *Ding Hao* is short on detail about the activities of bomber units and those who flew the Hump.

The book is augmented with recent interviews with participants, but the overall impact is marred by a lack of quality editing. The book opens with a detailed fifteen-page discussion of the Burma Road's construction that never gets tied into the story, and extraneous "war stories" and other minor trivia throughout detract from the book's major thrust.

The scope of this book is on a tactical level below that of the major friction among Chennault, Stilwell, Chiang Kai-shek, and others. While the effect on American operations is mentioned, that discussion is left to other volumes already in print.

Despite the renown of Chennault and his Tigers, the air war in China is probably the least appreciated of any theater of the war. *Ding Hao* is a welcome addition to the literature about that arena and should receive wide reading by those interested in World War II airpower and past American involvement in China.

—Reviewed by Capt. Don Rightmyer, USAF, Office of Air Force History.

Cloak and Dagger—Israeli Style

The Spymasters of Israel, by Stewart Steven. Macmillan Publishing Co., Inc., New York, N. Y., 1981. 329 pages with bibliography and index. $13.95.

The foreign agent "was actually transmitting when the head of the . . . intelligence and counterespionage service and his men burst into the apartment." Another overdramatic scene from a new spy thriller? No, a true report of the people of the intelligence services of Israel conducting a rather typical, for them, clandestine operation.

Spymasters is a book intended to present the history, development, and operations of the political and military intelligence agencies of Israel. The author, London *Daily Mail* associate editor Stewart Steven, writes not as an historian but as the journalist he is. The book comes across as enjoyable entertainment rather than scholarly research. This is not a failing. Because of the nature of the subject, and the author's style, the reader must remind himself that the stories are, in fact, true events and not fiction.

The author wastes little time introducing the reader to the mettle of Israeli agents in the first pages of the book in a brief but thorough introduction sprinkled with anecdotes.

Intelligence, particularly the clandestine kind, is first and foremost people, and *Spymasters* is generous with people and names. Especially noteworthy is the author's description of Isser Harel, the legendary chief of Mossad during the intelligence agency's formative years. In contrast, more details on such other personalities as Wolfgang Lotz, the "Champagne Spy," and Eli Cohen, considered by some the greatest spy in history, would have been welcome. Generally, though, Steven does humanize the episodes he relates.

Accounts of several operations are presented in sufficient detail to satisfy the reader's quest for "stranger-than-fiction" spy stories. Tales of op-

erations in Egypt, Syria, France, and Argentina are just some among many. In its short life, the Mossad has accomplished much. This is understandable in light of the fact that Israel's very existence depended on an effective intelligence service.

Any account of a nation's intelligence capabilities must include its failures. For Israel, the most obvious was the failure to predict the Yom Kippur War of 1973. Steven appears to present a fair and accurate report. The key factor in any warning intelligence cycle is the acceptance, and subsequent action, by key decisionmakers following a warning. The failure of Israeli leaders to do this is presented, albeit in a cursory fashion.

On the negative side, the bibliography has a few obvious omissions. For example, there is no excuse for not citing Eitan Haber's *Entebbe Rescue*, which Steven mentions in his preface as "the best and most authoritative account of the raid" yet does not provide a reference. Although these, and there are others, pose a distraction, the reader may overlook them as superficial and concentrate on the substance of the stories that make the book enjoyable.

The author clearly admires the "spymasters," but does not appear to allow this respect to prejudice his honest reporting of their exploits, a factor that lends credibility to the book. The topic is not the easiest to do justice to because of its inherent secrecy; and, while neither a complete nor definitive work, *Spymasters* is fun to read and deserves a place on the bookshelf. The book will expand a reader's knowledge of the real "spook" world by one of the best practitioners—Israel.

—Reviewed by Maj. Timothy M. Laur, USAF, Defense Intelligence School.

New Books in Brief

The Battle of Hamburg, by Martin Middlebrook. About one hour after midnight on July 28, 1943, RAF bombers began bombing the city of Hamburg, resulting in the destruction of large parts of the city by fire and the deaths of perhaps as many as 40,000 civilians. The firestorm that night effectively ended the month-long "Battle of Hamburg," as most of the remaining citizens fled with the blessing of city officials. Noted British military historian Middlebrook has produced a fascinating and detailed account of the events leading up to the early morning hours of that July 28, from a description of the origins of strategic bombing, to the role of the Americans, to why the German defenses could not cope with the onslaught. The many personal accounts by participants in the "Battle" contribute to an understanding of the terror and the complexity of total war. With illustrations, appendices, bibliography, and index. Charles Scribner's Sons, New York, N. Y., 1981. 424 pages. $17.95.

The Cavalry of World War II, by Janusz Piekalkiewicz. Though it may come as a surprise to Americans, mounted soldiers played a substantial part in the battles of World War II, particularly on the vast plains of the Eastern Front. Almost every combatant nation in the war fielded cavalry units, with the Red Army alone using almost 3,000,000 horses. Author Piekalkiewicz traces the history and strategic and tactical use of mounted forces in battle, and provides a vivid picture of what it was like to fight a war on horseback against mechanized troops armed with automatic weapons. With many photos, appendix, bibliography, and index. Stein and Day, Briarcliff Manor, N. Y., 1980. 256 pages. $25.

Debacle: The American Failure in Iran, by Michael Ledeen and William Lewis. The fall of Iran, the authors feel, was the result of a catastrophic "failure of American policymaking," and detail this failure through interviews with key American and Iranian participants in the events leading to and just following the ouster of the Shah. Describing an Administration with no clear policy and one step behind the events of the emerging Iranian revolution, Ledeen and Lewis show a State Department emphasizing human rights at the expense of American interests, and a weakened intelligence community unable to predict the coming crisis and misjudging the essential nature of the crisis once it was at hand. The authors conclude that American misperceptions and the absence of any coherent goals in handling the crisis resulted in the debacle, and call for a reemphasis in American foreign policy on national security interests. With notes and index. Alfred A. Knopf, New York, N. Y., 1981. 256 pages. $14.95.

Jane's Aerospace Dictionary, by Bill Gunston. If you have ever wondered about the meanings of such words as *blisk, zenographic,* or *nutation,* then this latest offering from the people at *Jane's* is for you. With more than 15,000 entries, encompassing the simplest aerospace term to the most esoteric word from practically every field contributing to aerospace technology, *Jane's Aerospace Dictionary* is probably the most comprehensive work of its kind in existence. In addition to the alphabetical listing of aerospace terminology are acronyms, codes, basic equations, and much more. Many entries are cross-referenced, and sources for definitions are provided where needed. This book should be an extremely valuable tool for the aerospace professional or the interested amateur. Jane's Publishing Inc., 730 Fifth Ave., New York, N. Y. 10019, 1980. 493 pages. $34.95.

Lingering Contrails of the Big Square A, by Harry E. Slater. This book is a history of the 94th Bomb Group (H), 1942–45, compiled by the author, a former B-17 pilot with the 94th, and with the assistance and at the urging of the 94th Bomb Group Memorial Association. Activated in 1942, the 94th flew 325 combat missions and dropped almost 19,000 tons of bombs before the end of the war. But this account is no dry history of missions flown and targets hit. The author states that his intent was to tell the story of the 94th "from the hearts of the men," and *Contrails* is testimony to his success. With many photos and charts. Order from Harry E. Slater, 1007 Sunset Ave., Murfreesboro, Tenn. 37130. Published 1980. 378 pages. $30 postpaid.

Rommel's War in Africa, by Wolf Heckmann. This book is almost two books in one: an account of the war in North Africa, and an absorbing study of Rommel—the man behind the legend. Heckmann, a veteran of the Wehrmacht, interviewed more than 1,500 veterans of the campaign from both sides of the battle and delved into little-known or previously inaccessible sources to produce this often critical biography of Rommel and his campaigns in North Africa. With a foreword by General Sir John Hackett. Photos, bibliography, and index. Doubleday & Co., New York, N. Y., 1981. 384 pages. $14.95.

USAAF at War in the Pacific, by David Mondey and Lewis Nalls. This book is a fine overview of the history of the Army Air Forces in the Pacific theater. Its large format contains an abundance of photographs, yet is no mere picture book; the text is comprehensive without excessive details. Part of the Scribner's "At War" series. Charles Scribner's Sons, New York, N. Y., 1981. 160 pages. $22.50.

—Reviewed by Hugh Winkler, Associate Editor.

AFA NOMINEES 1981-1982

THE Air Force Association Nominating Committee, consisting of the National Officers and Directors and the President or designee of each AFA State Organization, at a meeting on May 24 in Colorado Springs, Colo., selected a slate of candidates for four national officer positions and for the eighteen elective positions on the Board of Directors. The slate will be presented to delegates at the National Convention in Washington, D. C., on September 15.

For National President, members of the Nominating Committee nominated **John G. Brosky** of Pittsburgh, Pa. He is a Judge serving on the Superior Court of Pennsylvania and is a former Judge of the Allegheny County, Pa., Common Pleas Court. He retired from the Air Force as a brigadier general, and he is a retired major general of the Pennsylvania Air National Guard. During World War II, he served in the South Pacific as an artillery captain. After the war, he joined the Pennsylvania Air National Guard and was assigned to the 171st Military Airlift Wing in Pittsburgh, eventually serving as Assistant Adjutant General for Air, an office he held on his retirement. He is a graduate of the University of Pittsburgh and its law school and is an Outstanding Letterman of Distinction at the university. A former aviation writer, he has also been active in many national and local civic organizations.

Judge Brosky presently serves AFA as a member of the Board of Directors and as a member of the Executive Committee. He is a former National Vice President (Northeast Region), State President, and Chapter President, Vice President, and Secretary. He is a member of the Aerospace Education Foundation Board of Trustees and is a Jimmy Doolittle Fellow. Judge Brosky is the founder of AFA's Air Force Mothers Chapter of Pittsburgh, Pa., and was Pennsylvania State AFA Man of the Year for 1972. He is Past President of the Pennsylvania National Guard Association, Past President of the Pennsylvania Disabled American Veterans, guest lecturer at the Air Force Air Command and Staff School, and Scholarship Chairman for the National Football Hall of Fame. He has served as Parliamentarian for the AFA Board of Directors and for the Aerospace Education Foundation. He is married and has three children. Judge Brosky is a Life Member of AFA.

Victor R. Kregel was nominated for the office of Chairman of the Board of Directors. A resident of Dallas, Tex., he is an industry executive. He entered the Air Force in 1942 and received a commission and pilot's wings in 1943. He completed Navy flight training in 1944 and received the gold wings of a Naval aviator. He flew 500 combat hours in the Southwest Pacific and later served as an exchange officer with Fighter Command, Royal Air Force. A graduate of several service schools and the University of Maryland, he was a member of the Air University faculty and served as Business Manager of Athletics at the United States Air Force Academy in Colorado Springs.

Mr. Kregel presently serves AFA as National President and as Chairman of the Executive and Convention Site Committees. He has served as an elected National Director, as a National Vice President (Southwest Region), as a member of the Organizational Advisory Council, and as a State and Chapter President. A member of the Aerospace Education Foundation Board of Trustees, he is an AFA Life Member.

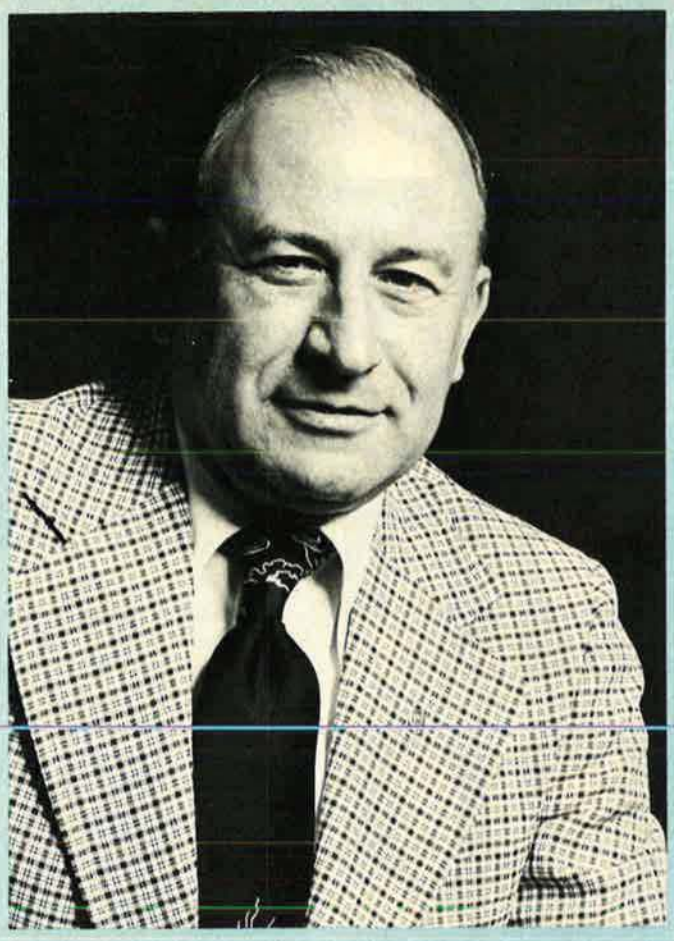
Earl D. Clark, Jr., of Kansas City, Kan., was nominated for his third one-year term as National Secretary. Mr. Clark is President of the Collins Construction Co. and of the Earl D. Clark Architectural Firm. He is an Air Force colonel in the retired reserve. He has served AFA as a National Director, as a member of the Organization Advisory Council, as a National Vice President (Midwest Region), and as a State and Chapter President. He is Chairman of the Resolutions Committee and a member of the Executive Committee. He is a Life Member of AFA.

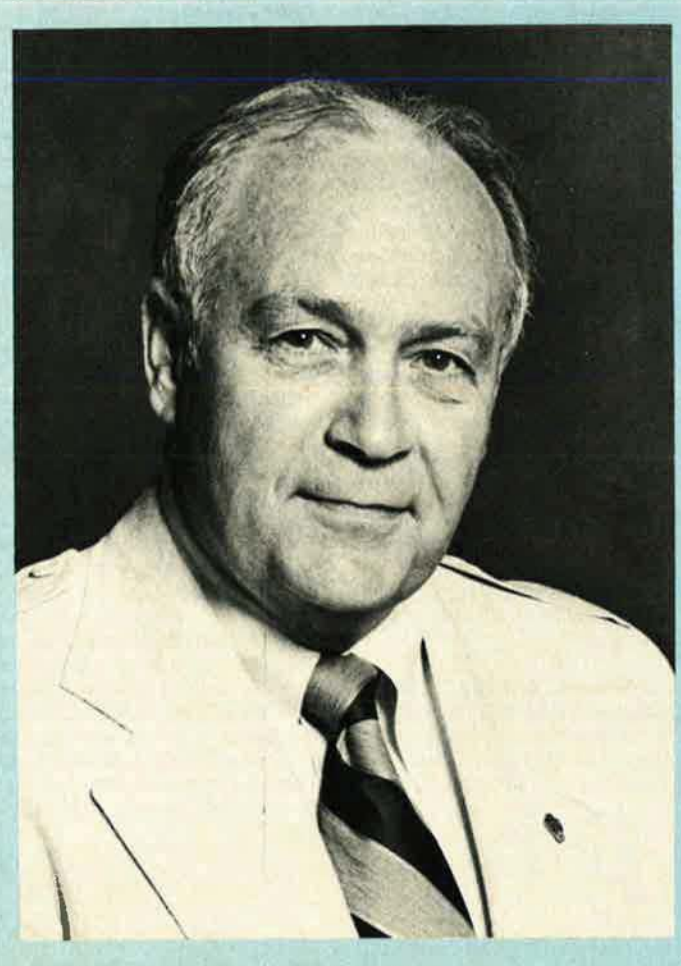
George H. Chabbott, of Dover, Del., was nominated for the office of National Treasurer. He is a management consultant and real estate counselor. President of Commercial Consulting Ltd., and Vice President of Emerson Commercial Industrial Real Estate Division. He served in the Air Force for twenty-three years, retiring as a colonel. He participated in 150 combat missions flying B-26s in Korea, and served as a forward air controller in the Vietnam War. Mr. Chabbott is a graduate of Utah State University, and attended two senior-level finance courses sponsored by the American Bankers Association at the Columbia School of Bank Administration and Management, and of the National Commercial Lending School at the University of Oklahoma. He presently serves AFA as a National Director and as a member of the Finance Committee. He has served as a National Vice President (Central East Region) and as President of Delaware State AFA. He is a Life Member of AFA.

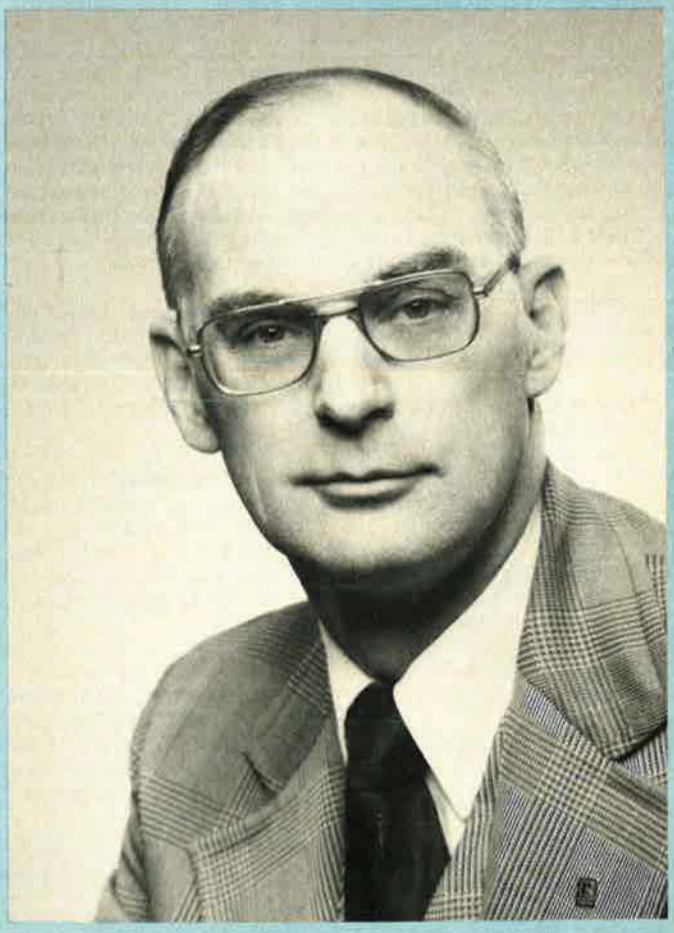
The following are permanent members of the AFA Board of Directors under provision of Article IX of AFA's National Constitution: John R. Alison, Joseph E. Assaf, William R. Berkeley, John G. Brosky, Daniel F. Callahan, Edward P. Curtis, James H. Doolittle, George M. Douglas, Joe Foss, Jack B. Gross, George D. Hardy, Martin H. Harris, Gerald V. Hasler, John P. Henebry, Robert S. Johnson, Sam E. Keith, Jr., Arthur F. Kelly, Victor R. Kregel, Thomas G. Lanphier, Jr., Jess Larson, Curtis E. LeMay, Carl J. Long, Nathan H. Mazer, John P. McConnell, J. B. Montgomery, Edward T. Nedder, Martin M. Ostrow, Jack C. Price, Julian B. Rosenthal, John D. Ryan, Peter J. Schenk, Joe L. Shosid, C. R. Smith, William W. Spruance, Thos. F. Stack, James H. Straubel, Harold C. Stuart, James M. Trail, Nathan F. Twining, and A. A. West.

The twenty-one people whose photographs appear on p. 98 are nominees for the eighteen elected Directorships for the coming year. Names marked with an asterisk are incumbent National Directors.

The nominees for the four national officer positions are (clockwise, from upper left): John G. Brosky, President; Victor R. Kregel, Chairman of the Board of Directors; George H. Chabbott, Treasurer; and Earl D. Clark, Jr., Secretary.







NOMINEES FOR AFA BOARD OF DIRECTORS

Incumbent National Directors indicated with an asterisk (*)


Bigger


Blankenship


Carr


Chandler


Dean


Devoucoux


Donnelly


Faust

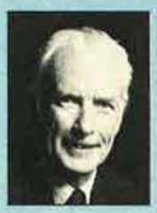

Field


Harris


Jones


Littman


McBride


Nettleton


Rapp

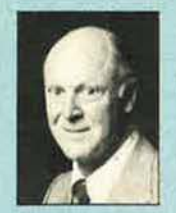

Reed


Ritchie


Stearn


Stewart


West


Wilkins

Thomas O. Bigger, Tullahoma, Tenn.—industrial engineer. Former Chapter Secretary, President, State President. Current Vice President (South Central Region), and National Committee member.

***David L. Blankenship,** Tulsa, Okla.—industry executive. Former Chapter, State President; National Council member. Current National Committee Chairman. Life Member.

***Robert L. Carr,** Pittsburgh, Pa.—real estate broker. Former Chapter, State President, and Vice President (Northeast Region). Current National Committee member.

***William P. Chandler,** Tucson, Ariz.—insurance broker. Former Chapter, State President, National Council member. Vice President (Far West Region). Life Member.

***Hoadley Dean,** Rapid City, S. D.—ranching, mining, and racetrack executive. Former Chapter Secretary and Vice President (North Central Region). Current National Committee member and Aerospace Education Foundation Board of Trustees member. Life Member.

***R. L. Devoucoux,** Portsmouth, N. H.—stock broker. Former Chapter, State President, and Vice President (New England Region). Current National Committee chairman.

Jon R. Donnelly, Richmond, Va.—journalist. Former Chapter and State President and Under-40 National Director. Current Vice President (Central East Region), and National Committee member. Life Member.

***E. F. Faust,** San Antonio, Tex.—bank executive. Former Chapter Officer, State President, Vice President (Southwest Region), and National Trustee, Arnold Air Society. Life Member.

***Alexander C. Field, Jr.,** Chicago, Ill.—retired broadcasting company executive. Former Chapter, State President, and Vice President (Great Lakes Region). AFA Man of the Year for 1979. Current National Committee Chairman and Aerospace Education Foundation Board of Trustees member. Life Member.

***Alexander E. Harris,** Little Rock, Ark.—property management executive. Former Chapter, State President, Vice President (South Central Region). Life Member.

Francis L. Jones, Wichita Falls, Tex.—property manager. Former Chapter President, current National Committee member, and Vice President (Southwest Region).

***Arthur L. Littman,** Vacaville, Calif.—retired. Former Chapter Vice President and President, State Vice President. Current National Committee member.

***William V. McBride,** San Antonio, Tex.—retired Air Force general officer. Former Vice Chief of Staff, United States Air Force. Current National Committee member, and Aerospace Education Foundation Board of Trustees member. Life Member.

***J. Gilbert Nettleton, Jr.,** Washington, D. C.—industry executive. Former Chapter Treasurer, Vice President, and President. Current National Committee member. Life Member.

***William C. Rapp,** Buffalo, N. Y.—telephone company executive. Former Chapter President and State President, National Council member, and Vice President (Northeast Region). National Committee member. Life Member.

***Margaret A. Reed,** Seattle, Wash.—industry executive. Former State President, State Secretary, State Treasurer, and Vice President (Northwest Region). Life Member.

***R. Steve Ritchie,** Golden, Colo.—industry executive. Former Under-40 National Director. Current National Committee member.

***Edward A. Stearn,** Redlands, Calif.—aerospace industry executive. Former Chapter President, National Council member, National Advisor. AFA Man of the Year for 1977 and State President. Current Aerospace Education Foundation Board of Trustees member, and National Committee member. Life Member.

Hugh W. Stewart, Tucson, Ariz.—attorney. Former Chapter, State President, and National Director. Current National Committee member. Life Member.

***Herbert M. West, Jr.,** Tallahassee, Fla.—environmental consultant. Former Chapter, State President. Vice President (Southeast Region), and National Council member. Current Aerospace Education Foundation Board of Trustees member and National Committee member.

***Sherman W. Wilkins,** Bellevue, Wash.—aerospace executive. Former Chapter President and Vice President (Northwest Region). Current Aerospace Education Foundation Board of Trustees member and National Committee member. Life Member.

THE BULLETIN BOARD

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

New CMSAF Takes Office

In Pentagon ceremonies the first part of this month, CMSgt. Arthur L. "Bud" Andrews moved into the top Air Force enlisted slot.

Chief Andrews, replacing the retiring CMSAF James M. McCoy *(see related item in July "Bulletin Board")*, thus became the seventh holder of this one-of-a-kind job. He was serving as the Senior Enlisted Advisor for Air Force Systems Command at Andrews AFB, Md., a post he has held since May 1978.

The new CMSAF, originally from Boston, Mass., first entered the Air Force in January 1953. He started out as a security policeman, becoming a first sergeant in 1965, a role he filled until June 1977. At that time he was named SEA for the Electronics Systems Division, at Hanscom AFB, Mass. As the CMSAF he will advise Secretary of the Air Force Verne Orr and Air Force Chief of Staff Gen. Lew Allen, Jr., on matters affecting the duties, health, morale, and welfare of Air Force enlisted people.

He told AIR FORCE Magazine, "Needless to say, I am very honored to be appointed. I'm following some great people. This job is the best way I know of to promote people programs, and that's very important to me. A quotation—and I don't know where I heard it, but it's always stuck with me—that I like to use is, 'If you take care of the people, they will take care of the mission.' I believe that with all my heart and soul. I feel that this assignment will give me a chance to do just that."

CMSgt. Arthur L. Andrews has succeeded CMSAF James M. McCoy. (USAF photo by A1C Felicia Montgomery)

Along with the myriad of new duties awaiting Chief Andrews, he looks forward to filling the traditional roles of toastmaster for the Outstanding Airmen Dinner program and chairman of the Fifth Annual Senior Enlisted Advisors Conference, both events of the upcoming AFA annual National Convention next month.

Air Force Strengthens Family Programs

The Air Force is giving more time and attention to the problems experienced by military families *(see related articles elsewhere in this issue)*. Improved quality of family life has been identified as directly related to mission accomplishment through enhanced retention, motivation, and productivity. Lt. Gen. Andrew P. Iosue, Air Force DCS/M&P, when asked by "Bulletin Board" if family programs were here to stay, replied, "No question about it. They're a fact of life. Families are important."

In support of this concept, four prototype Family Support Centers are scheduled to open at four Air Force bases next month, in a test mode. The centers will be at Kadena Air Base, Japan; Bitburg Air Base, West Germany; Travis AFB, Calif.; and Moody AFB, Ga.

The centers will bring together information on existing base and community resources, and will not duplicate services already in existence. They are geared towards providing support to all Air Force people, including singles. Services such as crisis management, family financial advice, support and aid during PCS and TDY separations, mobility and remote assignments support, spouse employment information, support for families with special needs, and other information collection and referral guidance for family problems will be available at the centers.

While all centers will provide services common to most Air Force families, each will also set up programs to meet specific local requirements. Plans for Fiscal Year '82 aim at establishing an FSC in each major command.

In a related move, Headquarters has set up week-long regional workshops to train people to help implement a new concept called Family Assistance and Support Teams, or FAST. A FAST will be composed of a chaplain, physician or mental health professional, and a social actions drug/alcohol specialist.

The aim is to improve and coordinate the assistance provided families in which an alcohol or other drug-abuse problem exists. This should result in faster and more permanent resolutions of such problems.

Bases selecting workshop participants, who will then return to set up local FASTs, have been asked to pick those who already have some expertise in these areas. It is anticipated that all regional workshops will be completed and local FASTs set up at all bases by December.

Meanwhile, on the family front, in what could be viewed as a step backward, but is actually a recognition of reality, Air Force Military Personnel Center officials have announced that although the Air Force plans to continue efforts to keep military couples assigned together, it's going to get a lot tougher to do so.

The Center points out that while the success rate in assigning couples to the same location has risen to a high of ninety-five percent over the past two years, the number of Air Force couples has doubled to more than 20,000. A Center spokesman noted that "trying to assign more than 40,000 people in pairs is becoming increasingly more difficult."

The Air Force will not slacken its efforts to keep members married to other blue-suiters together. But, the spokesman pointed out, the needs of the Air Force must come first. "It's important," he said, "that couples rec-

ognize the increasing potential for family separation when making career and family decisions."

ISEF Winners Honored

At a mid-June Pentagon luncheon hosted by Air Force Secretary Verne Orr and Air Force Chief of Staff Gen. Lew Allen, Jr., AFA joined in a salute to the eleven winners of Air Force first-place awards at the 32d International Science and Engineering Fair (ISEF).

The annual ISEF (held this year in Milwaukee, Wis.) is the culmination of more than 220 regional and state-level fairs held for competing high school students around the country. The program is sponsored by Science Service, a Washington, D. C.-based nonprofit organization. The Air Force is a special awards contributor, presenting Air Force recognition to winners selected at local, regional, and national competition by supporting Air Force elements, including active-duty personnel, reserve forces, recruiting squadrons, AFROTC detachments, and USAFA liaison officers. All in all, more than 2,400 students received some level of Air Force recognition, from among whom the final eleven national winners were selected.

The eleven first-place Air Force winners, in addition to the visit to Washington, receive a congratulatory letter from the Secretary, a citation, and a one-week tour of Air Force research and development facilities hosted by Air Force Systems Command. Second-place winners, in addition to written recognition, are alternates for the AFSC trip.

The Air Force Association, as a supporter of the Air Force in this effort, presents first-place winners a briefcase with an AFA logo embossed on it *(see photo).* Additionally, both first- and second-place winners receive a congratulatory letter from AFA President Kregel and a one-year subscription to AIR FORCE Magazine. Many local and state AFA organizations support the Science Fair in their area.

The national Air Force winners were: Christopher P. Cherney, Bloomfield Hills, Mich.; Daniel S. Cap, Chicago, Ill.; Iris S. Terashima, Haleiwa, Hawaii; Thomas L. Mears, Melbourne Beach, Fla.; Russell G. Wilson, Ogden, Utah; Tracy L. Peters, Casper, Wyo.; Bruce D. Kleinman, Boca Raton, Fla.; Martin S. Zand, Ann Arbor, Mich.; Kevin L. Urie, Denver, Colo.; Roger Williams, New Orleans, La.; and Andrea Pelle, Cape Coral, Fla.

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Veterans Administration

The VA and the Justice Department have teamed up in a nationwide effort to collect debts owed by GI Bill school attendees. VA will work on collecting debts under $1,200. The Justice Department will tackle those over that amount. As a general rule, the Justice Department will demand immediate repayment and will be prepared to take defaulters to court.

Also, both the House and Senate have unanimously passed legislation giving Agent Orange-connected Vietnam veterans federally paid health care based on hard evidence that their illness is tied to Agent Orange exposure *(see item, July "Bulletin Board").* At press time, the President had not yet signed the legislation into law.

CHAMPUS Moves on Several Fronts

Some 2,000 CHAMPUS-eligible families in the Portland, Ore., area are beginning a test this summer to examine the potential role of Health Maintenance Organizations (HMOs) in the military health benefits program. Lawmakers directed the test to determine if suitable health care, coupled with savings, would be possible by use of the prepaid health benefits plans.

Under the prepaid plans, the government pays a substantial part of the cost of the plan and the beneficiary pays a set premium. This premium, plus a possible nominal charge per medical visit, will be the only health-care cost incurred by those participating.

All Portland-area eligibles have been offered a chance to take part in this first test. If more than 2,000 families show an interest in enrolling, a lottery system will probably have to be used to determine selectees. As the Portland program unfolds, CHAMPUS plans to select a few other areas for testing. The total test period will cover five years, allowing one year for phase-in, followed by three full years under the HMO plan, and a final year for compilation of results.

In other CHAMPUS contract action, the American Psychiatric Association and the American Psychological Association have been asked to do peer reviews on current treatments of this nature to ensure that it is, in fact, required. The purpose of the review is "to ensure quality psychiatric/psychological care to beneficiaries, avoid the need for arbitrary limits on mental health benefits, and control costs."

This action has been triggered by a Defense Audit Service report finding that the average CHAMPUS in-patient psychiatric care stay is 105 days. This contrasts with average lengths at community mental health centers of

Tracy Lee Peters, a student at Kelly Walsh High School, Casper, Wyo. (second from left), was first-place winner at the recent 32d International Science and Engineering Fair in Milwaukee, Wis., for his project "The Dynamics and Combustion in Ramjet and Scramjet Combustors." Peters is flanked by (from left): Col. Marvin C. Meyer, Vice Commander of the 440th Tactical Airlift Wing (AFRES), Gen. Billy Mitchell Field, Milwaukee, Wis.; Lt. Col. Carl S. Schwerman, Air Force Judge Coordinator, Milwaukee, Wis.; and Dr. Jelle DeBoer of the Air Force Weapons Laboratory, Kirtland AFB, N. M. (USAF photo by Brian J. Miller)

sixteen days and at state and county mental health hospitals of twenty-six days. A DoD message notes that "the implication of these comparisons is that psychiatric care under CHAMPUS may be exceeding defensible limits" and running up excessive costs.

Congress has indicated that it might lay on a thirty-day annual limit for such treatment unless the services take substantial steps themselves. The peer review is one of these steps. Additionally, the Air Force, in a follow-on message, has urged members to seek advice from local health benefits advisors before contracting for this type of care.

Personnel Notes From the Other Services

In a move that predictably has drawn the ire of women's groups, the Army recently announced plans to freeze temporarily the number of women in Army green. It cited a need to reassess the impact of an increased number of women soldiers on Army readiness.

The Army announcement noted that field commanders had reported increasing problems stemming from the inability of women to handle strength and stamina requirements for some jobs. Thus, it plans to stabilize the number of women at 65,000 through Fiscal Year '87, even though that could lead to a cumulative recruiting shortfall of some 22,500.

Queried about Air Force plans in this regard, a spokesman told AIR FORCE Magazine that the Air Force has no present intention of following suit. "We have jobs to fill and we'll fill them with the best-qualified people," he said. "I see our numbers [of women] growing."

The Navy, meanwhile, facing accelerating declining retention rates for pilots—down to thirty-one percent in 1979 vs. sixty-two percent in 1977, for example—has enrolled forty-four enlisted people in flight school. This program, the first such in years, is aimed at enlistees in pay grades E-5 through E-7 with at least two years of college or equivalent. Applicants must be under age thirty as of July 1 of the year they apply.

The first class, now under way, has forty-three men and one woman. Eventually, a Navy spokesman told AIR FORCE Magazine, it hopes to garner twenty-five graduates a year.

Meanwhile, on the Marine Corps recruiting front, Sen. William Proxmire (D-Wis.), perhaps with tongue in cheek, recently took the Marines to task for sending recruiting literature to a constituent of his—seven years old. When the Marines told him that more extensive screening of mailing lists might add to recruiting costs, he acknowledged the truth in this. However, he noted in the *Congressional Record* that "the military services should tighten up their recruiting lists to the point of at least having reasonable assurance that the list contains individuals of the right age group."

US Air Force Band Turns Forty

Next month the USAF Band will observe its fortieth birthday. Although it did not assume its current official title until the creation of a separate Air Force in 1947, the group traces its roots to September 24, 1941, when Gen. H. H. Arnold directed formation of a musical counterpart to the other services' aggregations. The initial complement of musicians was drawn from the nation's symphony orchestras, concert bands, and noted dance bands of the era. In celebration of this, the Band will perform a musical extravaganza on September 20 in the Washington, D. C., Constitution Hall. Notables from the entertainment world such as actor William Conrad and the "Tonight" Show's bandleader "Doc" Severinson are expected to be on hand.

The USAF Band, with 198 enlisted members and six officers, is headquartered at Bolling AFB, D. C., and, while organizationally under the Military Airlift Command structure, is operationally controlled by the Air Force Director of Public Affairs. It conducts tours annually and has made several international goodwill tours, entertaining some 35,000,000 people.

Not generally recognized is that the "USAF Band" actually serves as an umbrella organization for other musical units, many of whom are well known in their own right. These include the concert band, symphony orchestra, string orchestra, ceremonial band, Singing Sergeants, Strolling Strings, Airmen of Note, and the Mach One rock band.

The USAF Band has had only four conductors over the years. The incumbent, Col. Arnald Gabriel, has been on board since 1964. He is well respected in his field, as evidenced by his current service as elected President of the American Bandmaster's Association, a prestigious civilian group.

Earlier this year, AFA Executive Director Russ Dougherty presented Colonel Gabriel an Aerospace Education Foundation Jimmy Doolittle Fellow for the USAF Band at the annual American Bandmasters Association

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Convention. The Fellow, which represents a $1,000 donation to the AEF, was paid for by small contributions from "all Air Force and AFA people who have enjoyed the Band's diversified talents over the years."

The citation on the Fellow reads "To the United States Air Force Band. With appreciation for the unique contribution you have made to the quality of life for all of us in the Air Force and the Air Force Association." Not a bad way to kick off your fortieth birthday.

DoD Offers Substantial Voter Information Program

It wasn't too many years ago that military members and their families were considered apathetic voters. Much of this could be attributed to the long tradition that the military should be apolitical—it is said that President Eisenhower voted for the first time when he himself was running for President. However, much of this disinterest was undoubtedly caused by lack of information, exacerbated by frequent military moves and military duty requirements.

In recent years, this has slowly turned around. A general recognition by all citizens that voting is the key to their interests has helped. More to the point of the military voter, however, has been a steady flow of information provided by the Federal Voting Assistance Program (FVAP) of the Secretary of Defense. This office is responsible for providing voting information to the military, military families, and all US citizens overseas.

It has recently made available a special fact sheet (DoD publication FA-12A) that does a workmanlike job of listing all state governors, US senators and congressmen, along with their political party affiliation, term of office, and when they're up for reelection. The fifty states, District of Columbia, Puerto Rico, Guam, and the Virgin Islands are covered.

Voting Assistance Officers at all bases have copies. Overseas citizens can obtain theirs from voting assistance counselors at all US State Department embassies and consulates. Copies by mail are also available from Director, Federal Voting Assistance Program, OSD, Room 1B-457, The Pentagon, Washington, D. C. 20301.

Other voting information from this office comes out in a steady flow. If DoD people aren't voting in numbers today, it's not due to lack of information.

Also, although the 1982 General Election is more than a year away, the FVAP is drumming up interest in its 1982 Voting Slogan Contest. A recent announcement invites all service members and families of US citizens overseas to come up with a slogan to motivate US citizens to participate in the electoral process. The selected slogan, the announcement says, "will appear on voting information materials to be distributed throughout US government and private industry worldwide." The winner will also receive a Certificate of Recognition from DoD.

In 1980, the contest brought out more than 1,200 entries. The winner was "You're a Voter Only if You Vote. . . . Be a Voter." If you feel that you can do better than that, get your entry in by September 11 of this year to the address mentioned above. Artwork, although not essential, will also be accepted.

Special Assignments for Enlisted Force Open

The Thunderbirds—more formally known as the USAF Air Demonstration Squadron—are looking for five "highly qualified airmen" to fill current openings. The two-year controlled tour positions now available are for sergeant through technical sergeant maintenance people in the fields (one each) of tactical aircraft maintenance specialist, aircrew egress systems mechanics, aircraft pneudralic systems, corrosion control specialist, and aerospace ground equipment. Volunteers will be told if they're accepted by December. The squadron is based at Nellis AFB, Nev., but, of course, racks up substantial travel.

Also, enlisted volunteers are being sought for duty with the 89th Military Airlift Wing, based at Andrews AFB, Md., best known as the keeper of Air Force One. Additionally, as a Headquarters message points out, this "elite group" assists in providing "support of aircraft involved in transportation needs of the Vice President of the United States, foreign heads of state, and high-ranking military officials (foreign and domestic)." They're looking, obviously, for people with "outstanding records and a high degree of professionalism." Those eligible in accordance with Chapter 8, AFR 39-11, may apply regardless of career field and should get a quick answer, as "vacancies currently exist."

Local personnel people have details on these assignments.

Short Bursts

Sen. William Proxmire (D-Wis.) has introduced legislation that would raise the ceiling—to $35,000—on **military life insurance.** Passage this year looks good. Unlike most other benefits, this one doesn't cost the taxpayer one red cent. As Senator Proxmire pointed out, "This is an optional insurance program financed by the military member alone [and] will have no budgetary impact." Affected are SGLI and VGLI policies, currently limited to a $20,000 maximum. Earlier attempts to raise the ceiling have foundered on procedural grounds.

Once again, the Air Force has captured the Men's Interservice **Volleyball Championship.** This is the eleventh consecutive time. In wrapping this up, the Air Force team did not lose a single match. Meanwhile, the Air Force Women's Team finished second to the Navy.

That college scholarship fund for the seventeen youngsters of the eight military (three Air Force) men killed in the **aborted Iran hostage rescue attempt** needs a shot in the arm. The goal is $750,000, and the fund is now nowhere near that figure. AFAers who would like to contribute may mail tax-deductible donations to the Simons Memorial Fund, Box 8, Dallas, Tex. 75221. The fund is being administered by the Dallas Community Chest Trust Fund on a no-cost basis.

The 1982 **brigadier general promotion eligibility criteria** call for consideration of all regular and career Reserve active-duty colonels with a date of rank of December 31, 1979, or earlier. Colonels who are due to exit this year are not eligible.

Trying to keep up with military pay and benefits is tricky. A good reference work is essential. One of the better ones is out again in a new edition. **The Uniformed Services Almanacs** (there are editions for Active-Duty, Reserve Forces, National Guard, and Retirees) contain specially prepared material for each category of people. Also covered are collateral topics such as Social Security, restrictions on retirees, etc.

Also available from the same publisher is the **Federal Personnel Guide,** which includes up-to-date pay and allied information for the civilian federal employee.

The books are available at most base exchanges, or may be ordered direct from the publisher, Uniformed Services Almanac, Inc., P. O. Box 76, Washington, D. C. 20004 for $3.

New York State has passed legislation **exempting up to $20,000** of private or federal pensions from state income tax. If you're a New York resident, check with your local authorities for details. If you're a retiree living in another state, you might want to bring this to the attention of your state legislator.

Cheers for Eglin Air Force Base! They've now won the USAF **Hennessy Trophy**—recognizing excellence in food management, preparation, and service—for the fourth time in the past eleven years, twice in the last two years. They've also garnered two runner-up spots in that time. They have been given a bye for the next two years in order to allow other competitors a chance. This year's Hennessy Awards were presented at the National Restaurant Association convention in Chicago. The name honors the late John L. Hennessy, a hotel and restaurant executive who helped the Air Force develop several aspects of its food service program. ■

SENIOR STAFF CHANGES

PROMOTIONS: To be **General:** James P. **Mullins;** Thomas M. **Ryan,** Jr.

To be **Lieutenant General:** Robert W. **Bazley;** Robert F. **Coverdale;** John J. **Murphy.**

To be **Major General:** Marvin C. **Patton.**

To be **Brigadier General:** Wilson C. **Cooney;** Donald J. **Stukel.**

To be **AFRES Major General:** S. T. **Ayers.**

To be **AFRES Brigadier General:** J. D. **Moore.**

RETIREMENTS: L/G Ranald T. **Adams,** Jr.; L/G Benjamin N. **Bellis;** L/G William H. **Ginn,** Jr.; B/G John J. **Halki;** L/G Edgar S. **Harris,** Jr.; B/G Gerald E. **McIlmoyle;** B/G Alfred M. **Miller,** Jr.; Gen. Bryce **Poe** II; M/G Thoralf T. **Thielen;** L/G Eugene F. **Tighe,** Jr.

CHANGES: M/G (L/G selectee) Robert W. Bazley, from Cmdr., 3d AF, USAFE, RAF Mildenhall, UK, to Vice CINC, Hq. USAFE, Ramstein AB, Germany, replacing retired L/G Benjamin N. Bellis . . . **Col. (B/G selectee) Wilson C. Cooney,** from Cmdr., 12th Flying Training Wing, Hq. ATC, Randolph AFB, Tex., to Dep. Cmdr., 5th ATAF, Vicenza, Italy . . . **M/G (L/G selectee) Robert F. Coverdale,** from Cmdr., 22d AF, MAC, Travis AFB, Calif., to Vice CINC, Hq. MAC, Scott AFB, Ill., replacing L/G (Gen. selectee) Thomas M. Ryan, Jr. . . . **B/G Delbert H. Jacobs,** from DCS/Plans & Prgms., Hq. AFSC, Andrews AFB, Md., to Dep. for General Purpose Forces, DCS/RD&A, Hq. USAF, Washington, D. C., replacing B/G (M/G selectee) Click D. Smith, Jr.

B/G Melbourne Kimsey, from Chief, Tac. Systems, Dir. of Research & Engineering, NSA, Fort Meade, Md., to Command Dir., NORAD Combat Ops. Ctr., J-3, NORAD/ADCOM, Cheyenne Mountain Complex, Colo. . . . **L/G (Gen. selectee) James P. Mullins,** from Cmdr., 15th AF, March AFB, Calif., to Cmdr., Hq. AFLC, Wright-Patterson AFB, Ohio, replacing retired Gen. Bryce Poe II . . . **M/G (L/G selectee) John J. Murphy,** from Cmdr., Ogden Air Logistics Ctr., Utah, to Cmdr., 15th AF, March AFB, Calif., replacing L/G James P. Mullins . . . **B/G David L. Nichols,** from Dep. Dir. for Regional Plans & Policy, DCS/Ops. & Plans, Hq. USAF, Washington, D. C., to DCS, Hq. USAFE, Ramstein AB, Germany . . . **B/G Gerald W. Parker,** from Dir., Med. Plans & Resources, Office of the Surgeon General, Bolling AFB, D. C., to Dir. of Medical Inspection, Hq. AFISC, Norton AFB, Calif., replacing retired B/G John J. Halki.

B/G John A. Paterson, from MA to Cmdr., Hq. AFOSI, Bolling AFB, D. C., to MA to Cmdr., Hq. AFOSP, Kirtland AFB, N. M. . . . **B/G (M/G selectee) Marvin C. Patton,** from Exec. Dir., Supply Ops., DLA, Alexandria, Va., to Dir. of Budget, USAF Comptroller Office, Hq. USAF, Washington, D. C., replacing M/G (L/G selectee) George M. Browning, Jr. . . . **L/G John S. Pustay,** from Ass't to Chmn., OJCS, Washington, D. C., to President, Nat'l Defense University, Fort McNair, Washington, D. C. . . . **L/G (Gen. selectee) Thomas M. Ryan, Jr.,** from Vice CINC, Hq. MAC, Scott AFB, Ill., to Cmdr., Hq. ATC, Randolph AFB, Tex., replacing Gen. Bennie L. Davis.

Col. (B/G selectee) Donald J. Stukel, from Cmdr., RADC, AFSC, Griffiss AFB, N. Y., to DCS/Plans & Prgms., Hq. AFSC, Andrews AFB, Md., replacing B/G Delbert H. Jacobs . . . **B/G Thomas G. Tobin,** from Cmdr., 380th Bombardment Wing, SAC, Plattsburgh AFB, N. Y., to Dep. Dir., Nat'l Mil. Command Ctr. (#1), J-3, OJCS, Washington, D. C. . . . **M/G Daryle E. Tripp,** from DCS/Plans, Hq. USAFE, Ramstein AB, Germany, to Vice Dir., J-5, OJCS, Washington, D. C. . . . **B/G Donald B. Wagner,** from Chief, Medical Service Corps, and Dir., Health Care Support, Hq. AFMSC, Brooks AFB, Tex., to Cmdr., Hq. AFMSC, and Dep. Surgeon General for Ops., Brooks AFB, Tex., replacing retired B/G James F. Culver.

SENIOR ENLISTED ADVISOR CHANGES: CMSgt. Arthur L. Andrews, from SEA, Hq. AFSC, Andrews AFB, Md., to CMSAF, Hq. USAF, Washington, D. C., replacing retired CMSAF James M. McCoy. ■

AFA STATE CONTACTS

Following each state name, in parentheses, are the names of the localities in which AFA Chapters are located. Information regarding these Chapters, or any place of AFA's activities within the state, may be obtained from the state contact.

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ALASKA (Anchorage, Fairbanks): **Frank X. Chapados,** 1426 Well St., Fairbanks, Alaska 99701 (phone 907-452-1286).

ARIZONA (Phoenix, Sun City, Tucson): **John P. Byrne,** 9318 Country Club Dr., Sun City, Ariz. 85373 (phone 602-974-1349).

ARKANSAS (Blytheville, Fayetteville, Fort Smith, Little Rock): **Arthur R. Brannen,** 605 N. Hospital Dr., Jacksonville, Ark. 72076 (phone 501-982-2585).

CALIFORNIA (Apple Valley, Edwards, Fairfield, Fresno, Hawthorne, Hermosa Beach, Long Beach, Los Angeles, Merced, Monterey, Novato, Orange County, Palo Alto, Pasadena, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, San Mateo, Santa Barbara, Santa Monica, Yuba City, Vandenberg AFB): **Richard C. Doom,** P. O. Box 2027, Canyon Country, Calif. 91351 (phone 213-887-2923).

COLORADO (Aurora, Boulder, Colorado Springs, Denver, Fort Collins, Grand Junction, Greeley, Littleton, Pueblo, Waterton): **Jack E. Ingles,** 1131 S. Nome St., Aurora, Colo. 80012 (phone 303-370-7575).

CONNECTICUT (East Hartford, North Haven, Storrs, Stratford, Westport, Windsor Locks): **Frank J. Wallace,** 935 Poquonock Ave., Windsor, Conn. 06095 (phone 203-688-3090).

DELAWARE (Dover, Wilmington): **John E. Strickland,** 8 Holly Cove Lane, Dover, Del. 19901 (phone 302-678-6070).

DISTRICT OF COLUMBIA (Washington, D. C.): **Bob Givens,** 1750 Pa. Ave., N. W., Suite 400, Washington, D. C. 20006 (phone 202-637-3346).

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MAINE (Limestone, N. Berwick): **Arley McQueen, Jr.,** 153 Jelliegn Dr., Wells, Me. 04090 (phone 207-646-2718).

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MISSISSIPPI (Biloxi, Columbus, Jackson): **Don Wylie,** P. O. Box 70, Biloxi, Miss. 39533 (phone 601-374-3611).

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NEBRASKA (Lincoln, Omaha): **Lyle O. Remde,** 4911 S. 25th St., Omaha, Neb. 68107 (phone 402-731-4747).

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NEW HAMPSHIRE (Manchester, Pease AFB): **Charles J. Sattan,** 53 Gale Ave., Laconia, N. H. 03246 (phone 603-524-5407).

NEW JERSEY (Andover, Atlantic City, Belleville, Camden, Chatham, Cherry Hill, E. Rutherford, Forked River, Fort Monmouth, Jersey City, McGuire AFB, Middlesex County, Newark, Trenton, Wallington, West Orange): **John P. Kruse,** 1022 Chelten Pkwy., Cherry Hill, N. J. 08034 (phone 609-428-3036).

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SOUTH CAROLINA (Charleston, Columbia, Myrtle Beach, Sumter): **Worth T. Allen,** 1020 Butler St., #6, Columbia, S. C. 29205 (phone 803-776-5121, ext. 204).

SOUTH DAKOTA (Rapid City, Sioux Falls): **Charles P. Benson, Jr.,** Box 90, Rapid City, S. D. 57709 (phone 605-394-2026).

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WISCONSIN (Madison, Milwaukee): **Kenneth Kuenn,** 3239 N. 81st St., Milwaukee, Wis. 53222 (phone 414-747-5300).

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AFA's 1981 National Convention and Aerospace Development Briefings and Displays

September 13–17 • Washington, D.C.

Plan now to attend: AFA's 1981 National Convention and Aerospace Development Briefings and Displays, at the new Sheraton Washington Hotel. Additional rooms available at the nearby Connecticut Inn and the Normandy Inn, both served by Metrobus, at substantially lower rates than the Sheraton Washington.

Hotel reservation requests: for the Sheraton Washington, send to: Sheraton Washington Hotel, 2660 Woodley Road, N.W., Washington, D.C. 20008; for the Connecticut Inn and Normandy Inn, send to: Connecticut Inn, 4400 Connecticut Avenue, N.W., Washington, D.C. 20008; or Normandy Inn, 2118 Wyoming Avenue, N.W., Washington, D.C. 20008. Make your reservations as soon as possible. All three hotels have a **cutoff date of August 21.** To assure acceptance of your reservation requests, please refer to the AFA National Convention. Arrivals after 6:00 p.m. require a one-night deposit or major credit card number guarantee. Guaranteed reservations must be canceled by 4:00 p.m. on the date of arrival to avoid being charged for that night.

One of the business sessions at the 1980 AFA Convention

Convention activities include: Opening Ceremonies, Business Sessions, Symposia, luncheons honoring the Secretary of the Air Force and the Air Force Chief of Staff, Aerospace Education Foundation Awards Luncheon, the Annual Reception, and the black-tie Air Force Anniversary Reception and Dinner Dance.

ADVANCE REGISTRATION FORM*

Air Force Association National Convention and Aerospace Development Briefings & Displays

September 13–17, 1981 • Sheraton Washington Hotel • Washington, D.C.

Type or Print

Name _____

Title _____

Affiliation _____

Address _____

City, State, Zip _____

Note: Advance registration and/or ticket purchases must be accompanied by check made payable to AFA. Mail to AFA, 1750 Pennsylvania Ave., N.W. Washington, D.C. 20006

Reserve the following for me:

___ Advance Registrations @ $75 per person (includes credentials and tickets to the following Convention functions: AF Chief of Staff Luncheon, Annual Reception, AF Secretary's Luncheon, and Symposia). $_____

Tickets may also be purchased separately for the following:

___ Aerospace Ed. Foundation Luncheon @ $28 $_____

___ AF Chief of Staff Luncheon @ $28 $_____

___ Annual Reception @ $28 $_____

___ AF Secretary's Luncheon @ $28 $_____

___ AF Anniversary Reception and Dinner Dance @ $60 $_____

Total for separate tickets $_____

Total amount enclosed $_____

Advance Registration Fee before September 4 — $75 (After September 4 — $85)

*NOTE: Official convention delegates, directors, regional vice-presidents, and national committee members meeting at convention should not use this form. Your registration information has been mailed separately to you and you are eligible to register for the "Red," "White," "Blue," or "Flag" convention packages.

AFA NEWS

Chapter and State Photo Gallery

By Dave C. Noerr, AFA AFFAIRS EDITOR

The State of Tennessee held its annual convention on May 8 and 9 at the Arnold Engineering Development Center. Dignitaries attending the convention dinner included, from left: Dan Callahan, AFA's National Board Chairman; Brig. Gen. Michael H. Alexander, AEDC, and keynote luncheon speaker at the convention; Maj. Gen. Gerald J. Carey, Commander, USAF Tactical Air Warfare Center, and keynote speaker at the convention dinner; and Lee V. Gossick, President of H. H. Arnold Memorial Chapter, host for the convention. Cohosts included local Lions, Rotary, Kiwanis, and Jaycee organizations. The convention theme was "YOU CAN MAKE A DIFFERENCE."

In ceremonies held earlier this year, the Lake Superior Northland Chapter of Marquette, Mich., honored the 410th Bombardment Wing for superior performance. During 1980, the wing won the General George Kenney Trophy (left), the Omaha Trophy for Best Wing in SAC (right), and (not pictured) the General Kalberer Airmanship Trophy, the General Bruce K. Holloway Humanitarian Award, and the prestigious MacKay Trophy. Pictured above, left to right, are: Brig. Gen. Robert Beckel, Commandant of the Air Force Academy and guest speaker for the event; "Mr. Sam" Cohodas; Col. Lionel Roberts, Wing Commander; and Tom Peters, Lake Superior Northland Chapter President.

The Scott Memorial Chapter of AFA scheduled a series of events during the week of June 7–14, 1981, in celebration of "Air Force Appreciation" week. In the left-hand picture above, Illinois Gov. James R. Thompson presents the state proclamation designating June 7–14 as "Air Force Appreciation" week. From left are Hugh L. Enyart, Scott Memorial Chapter President; A1C Mary Jamison, 375th Aeromedical Airlift Wing, Scott AFB; Governor Thompson; Maj. James W. Pfefferkorn, Commander, 3545th USAF Recruiting Sqdn., St. Louis, Mo.; and Illinois State Rep. Ralph Dunn; State Sen. Kenneth H. Hall, sponsor of the proclamation in the Senate; and State Rep. Celeste Stiehl, sponsor in the House. In the picture at right, organizing one of the week's many events—"Air Force Appreciation" night at the ball park—are, left to right: Col. Brad Johnson, Deputy Base Commander, Scott AFB; "Fred Bird," mascot for the St. Louis Cardinals; SSgt. Dee Creek, 3545th Recruiting Sqdn.; Jack Buck, sports announcer for St. Louis radio station KMOX; Kay Arnold, ball girl for the Cardinals; and Hugh L. Enyart. (Photos by Rod Huckeba)

CALENDAR OF EVENTS

August 7–8, **Utah State AFA Convention,** Park City . . . August 13–16, **California State AFA Convention,** Vandenberg AFB . . . August 14–16, **Missouri State AFA Convention,** Springfield . . . August 21–24, **Colorado State AFA Convention,** Colorado Springs . . . September 14–17, **AFA National Convention,** Washington, D. C. . . . October 2–4, **Arkansas State AFA Convention,** Fayetteville

Forty-eight outstanding service members were honored on April 8 at the 1981 Annual Alamo Chapter AFA Blue Suit Awards Banquet, held at the Airmen's Club, Lackland AFB, San Antonio, Tex. Pictured above are five of the awardees with Alamo Chapter President Jim Shutt. In front, left to right: SMSgt. Paul H. Hurd, Senior NCO of the Year; 1st Lt. Dale Hess, Junior Officer of the Year; SSgt. Lillie Franks, NCO of the Year; SrA. Karen D. Ong, Airman of the Year; and Capt. Linda J. Meade, Mobilization Augmentee of the Year.

At its annual award banquet in April, AFA's Sacramento Chapter, Calif., presented AFA Meritorious Service Awards to fourteen local military and civilian honorees. The well-attended affair included (left to right): Col. Norman B. Kamhoot, Commander, 41st Rescue and Weather Reconnaissance Wing (MAC); Sgt. Jose M. Rios, who received his award for heroism displayed during the rescue of ninety-three people from the icy waters off Alaska; Van Parker, Sacramento Chapter President; and Ms. Linda D. Clark, California Air National Guard, who received her award for her hundreds of volunteer hours working to raise funds for several community organizations, including muscular dystrophy and the March of Dimes.

AFA's Eglin Chapter, Fla., recently cosponsored, in association with the Armament Division at Eglin AFB, a Technical Awards Program. Six annual awards were presented to recognize the significant achievement of civilian and military personnel who were assigned primary functions relating to the development and acquisition of weapon systems during calendar year 1980. Shown receiving one of the awards is Capt. Buddy D. Woods (right). Presenting the award is Maj. Gen. Robert M. Bond, Commander, Armament Division.

AFA's Anchorage Chapter recently held its annual awards banquet at the Officers' Club at Elmendorf AFB, Alaska. Two organizations and seven individuals were honored. Among those receiving awards was the family of CMSgt. Jimmie Price, honored for their outstanding contribution to the Air Force community. In the picture above, from left to right, are: Russell E. Dougherty, Executive Director of AFA, who presented the awards; Cas Bierman (in front), Anchorage Chapter President; Mary Price, wife of Chief Price; daughter Lisa; and Chief Price. (USAF photo by TSgt. Walt Ohsteen)

AFA NEWS PHOTO GALLERY

On Saturday, May 30, AFA's Admiral Charles E. Rosendahl Chapter, N. J., sponsored a Memorial Service and tree planting in honor of all airmen who have given their lives for our country. In the left foreground is Cadet Eric Ervine of Admiral Farragut Academy, who played assembly and taps. Other dignitaries participating in the ceremonies were, left to right: Frank Fay, American Legion Chaplain and Chapter member; Frank Kula, Thomas B. McGuire, Jr., Chapter President; Elmer Jensen, Vice President, New Jersey State AFA; Fred Hallowell, master of ceremonies and Vice President of the Admiral Charles E. Rosendahl Chapter; Leonard Connors, Freeholder, World War II Air Force crewman and newest Chapter member; and Maj. Gen. James E. Young, retired Deputy Chief of Staff, New Jersey Air National Guard.

Kicking off the membership drive at the Ballistic Missile Office, Norton AFB, Calif., Nat Trembath (left), Vice President and General Manager at TRW Ballistic Missile Division and President-elect of the San Bernardino Area Chapter, looks on as Frances Stearn, BMO civilian employee, presents her check for new membership to Col. LeRoy Green (second from right), BMO Deputy for Logistics and AFA Membership Project Officer for BMO. Maj. Gen. Forrest McCartney, BMO Commander (right), presents his transfer to the San Bernardino Area Chapter.

At recent ceremonies, R. Steve Ritchie (center), AFA National Director, presented an award to Dean H. Anholt (second from left), President of the Ozark Chapter, in recognition of the Chapter's achieving 100 percent of its membership goal. Others in attendance at the event included, left to right: Col. Mike Compton, USAF (Ret.), presiding judge of Greene County, Ark.; Mr. Anholt; Mr. Ritchie; Lt. Col. Dave Hunt, USAF (Ret.); and Col. (Dr.) Ivan Calton, USAF (Ret.).

At its semiannual awards banquet, held at Grand Forks AFB NCO Open Mess, AFA's Red River, N. D., Chapter presented its Man of the Year Award to Lt. Col. Norris Olson of the 319th Bombardment Wing. Colonel Olson, left, accepts the prestigious award from Ernest J. Collette, center, AFA's National Vice President for the North Central Region, and Maury Rothkopf, Red River Chapter President.

Vic Sloman, right, was guest speaker at a recent gathering of New Jersey's Union-Morris Chapter. Mr. Sloman described the aviation aspects of post-World War II atomic testing in the Pacific. Others in the picture, left to right, are: Bob Stiastny, Union-Morris Chapter President; and Chapter members A. Raymond Brooks, World War I ace; and Robert A. Lewis, copilot of the B-29 Enola Gay, the aircraft used to drop the atomic bomb on Hiroshima, Japan, in August 1945.

In ceremonies during the spring quarterly meeting of AFA's Middle Georgia Chapter, Maj. Gen. John R. Paulk, Commander, Warner Robins Air Logistics Center (right), received the State of Georgia AFA Exceptional Service Award. Presenting the award was AFA's National President, Victor R. Kregel. (USAF Photo by Mike Phillips)

Aviation Day at Bloomingdale's in Garden City, N. Y., featured a salute to the "Cradle of Aviation Museum." Pictured during opening ceremonies of the salute and accompanying displays are (left to right): Norbert Koenig, Nassau-Mitchell Chapter President; Bob Johnson, World War II P-47 ace; Daniel DeStefano, Assistant to the Nassau County Executive; Bob Holland, New York State AFA Vice President; and William K. Kaiser, Curator of the Cradle of Aviation Museum.

AFA CHAMPLUS ... New, Strong Protect

When a Single Accident or Illness Could Cost *You* Thousands of Dollars, You Need AFA CHAMPLUS . . . for *Strong* Protection against Costs CHAMPUS Doesn't Cover!

For military retirees and their dependents . . . and dependents of active duty personnel . . . more and more medical care is being provided through the government CHAMPUS program.

And, of course CHAMPUS pays 75% of allowable charges.

But today's soaring hospital costs—*up to $500 a day* in some major metropolitan medical centers—can run up a $20,000 bill for even a moderately serious accident or illness.

Your 25% of $20,000 is no joke!

AFA CHAMPLUS protects you against that kind of financial catastrophe *and* covers most of your share of routine medical expenses as well.

HOW AFA CHAMPLUS WORKS FOR YOU!

WHO IS ELIGIBLE?

1) All AFA members under 65 years of age who are currently receiving military retired pay and are eligible for benefits under Public Law 89-614 (CHAMPUS), their spouses under age 65 and their unmarried dependent children under age 21 (or age 23 if in college).
2) All eligible dependents of AFA members on active duty. Eligible dependents are spouses under age 65 and unmarried dependent children under age 21 (or age 23 if in college).

EXCEPTIONAL BENEFIT PLAN

(See chart at right)

FOUR YEAR BASIC BENEFIT. Benefits for most injuries or illnesses may be paid for up to a four-year period.

PLUS THESE SPECIAL BENEFITS . . .

1) Up to 45 consecutive days of in-hospital care for mental, nervous, or emotional disorders. Outpatient care may include up to 20 visits of a physician or $500 per insured person each year.
2) Up to 30 days care per insured per year in a Skilled Nursing Facility.
3) Up to 30 days care per insured per year and up to 60 days lifetime in a CHAMPUS-approved Residential Treatment Center.
4) Up to 30 days care per insured per year and up to 60 days lifetime in a CHAMPUS-approved Special Treatment Facility.
5) Up to 5 visits per insured per year to Marriage and Family Counselors under conditions defined by CHAMPUS.

YOUR INSURANCE IS NON-CANCELLABLE

As long as you are a member of the Air Force Association, pay your premiums on time, and the master contract remains in force, your insurance cannot be cancelled.

ADMINISTERED BY YOUR ASSOCIATION . . . UNDERWRITTEN BY MUTUAL OF OMAHA

AFA CHAMPLUS insurance is administered by trained insurance professionals on your Association staff. You get prompt, reliable, courteous service from people who know your needs and know every detail of your coverage. Your insurance is underwritten by Mutual of Omaha, the largest individual and family health insurance company in the world.

AFA OFFERS YOU HOSPITAL BENEFITS AFTER AGE 65

Once you reach Age 65 and are covered under Medicare, AFA offers you protection against hospital expenses not covered by Medicare through the *Senior Age Benefit Plan* of AFA Hospital Indemnity Insurance. Members enrolled in AFA CHAMPLUS will automatically receive full information about AFA's Medicare supplement program upon attainment of Age 65 so there will be no lapse in coverage.

AFA CHAMPLUS BENEFIT SCHEDULE

Care	*CHAMPUS Pays*	*AFA CHAMPLUS Pays*
	For Military Retirees Under Age 65 and Their Dependents	
Inpatient civilian hospital care	CHAMPUS pays 75% of allowable charges	CHAMPLUS pays the 25% of allowable charges not covered by CHAMPUS.
Inpatient military hospital care	The only charge normally made is a $5.00 per day subsistence fee, not covered by CHAMPUS.	CHAMPLUS pays the $5.00 per day subsistence fee.
Outpatient care	CHAMPUS COVERS 75% of outpatient care fees after an annual deductible of $50 per person ($100 maximum per family) is satisfied	CHAMPLUS pays the 25% of allowable charges not covered by CHAMPUS after the deductible has been satisfied.
	For Dependents of Active Duty Military Personnel	
Inpatient civilian hospital care	CHAMPUS pays all covered services and supplies furnished by a hospital less $25 or $5.00 per day, whichever is greater,	CHAMPLUS pays the greater of $5 per day or $25 of the reasonable hospital charges not covered by CHAMPUS.
Inpatient military hospital care	The only charge normally made is a $5.00 per day fee, not covered by CHAMPUS.	CHAMPLUS pays the $5.00 per day subsistence fee.
Outpatient care	CHAMPUS covers 80% of outpatient care fees after an annual deductible of $50 per person ($100 maximum per family) is satisfied.	CHAMPLUS pays the 20% of allowable charges not covered by CHAMPUS after the deductible has been satisfied.

NOTE: Outpatient benefits cover emergency room treatment, doctor bills, pharmaceuticals, and other professional services.

There are some reasonable limitations and exclusions for both inpatient and outpatient coverage. Please note these elsewhere in the plan description.

Against Costs CHAMPUS Doesn't Cover

APPLY TODAY!

JUST FOLLOW THESE STEPS

Choose either AFA CHAMPLUS In-patient coverage or combined In-patient and Out-patient coverage for yourself. Determine the coverage you want for dependent members of your family. Complete the enclosed application form in full. Total the premium for the coverage you select from the premium tables on this page. Mail the application with your check or money order for your initial premium payment, payable to AFA.

Get AFA's new

CHAMPLUS

LIMITATIONS

Coverage will not be provided for conditions for which treatment has been received during the 12-month period prior to the effective date of insurance until the expiration of 12 consecutive months of insurance coverage without further treatment. *After coverage has been in force for 24 consecutive months, pre-existing* conditions will be covered regardless of prior treatment.

EXCLUSIONS

This plan does not cover and no payment shall be made for:

a) routine physical examinations or immunizations

b) domiciliary or custodial care

c) dental care (except as required as a necessary adjunct to medical or surgical treatment)

d) routine care of the newborn or well-baby care

e) injuries or sickness resulting from declared or undeclared war or any act thereof

f) injuries or sickness due to acts of intentional self-destruction or attempted suicide, while sane or insane

g) treatment for prevention or cure of alcoholism or drug addiction

h) eye refraction examinations

i) Prosthetic devices (other than artificial limbs and artificial eyes), hearing aids, orthopedic footwear, eyeglasses and contact lenses

j) expenses for which benefits are or may be payable under Public Law 89-614 (CHAMPUS)

QUARTERLY PREMIUM SCHEDULE

Plan 1—For military retirees and dependents

In-Patient Benefits

Member's Attained Age	*Member*	*Spouse*	*Each Child*
Under 50	$19.03	$23.30	$11.00
50-54	$23.78	$29.10	$11.00
55-59	$30.13	$36.90	$11.00
60-64	$39.65	$48.55	$11.00
In-Patient and Out-Patient Benefits			
Under 50	$26.80	$31.05	$27.50
50-54	$33.48	$38.80	$27.50
55-59	$42.43	$49.18	$27.50
60-64	$55.83	$64.73	$27.50

Plan 2—For dependents of active duty personnel.

In-Patient Only	None	$ 8.80	$ 4.40
In-Patient and Out-Patient	None	$35.20	$22.00

Note: Plan II premiums are listed on an annual basis. Because of the very low cost, persons requesting this coverage are asked to make annual payments.

APPLICATION FOR AFA CHAMPUS SUPPLEMENT INSURANCE

Group Policy GMG-FC70
Mutual of Omaha 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 _____ (Month/Day/Year) Current Age ____ Height ____ Weight ____ Soc. Sec. No. _____

This insurance coverage may only be issued to AFA members. Please check the appropriate box below:

☐ I am currently an AFA Member.

☐ I enclose $13 for annual AFA membership dues (includes subscription ($9) to AIR FORCE Magazine).

☐ I am over 65 years of age. Please send information on AFA's Medicare Supplement.

PLAN & TYPE OF COVERAGE REQUESTED

Plan Requested (Check One)
☐ AFA CHAMPLUS PLAN I (for military retirees & dependents)
☐ AFA CHAMPLUS PLAN II (for dependents of active duty personnel)

Coverage Requested (Check One)
☐ Inpatient Benefits Only
☐ Inpatient and Outpatient Benefits

Person(s) to be Insured (Check One)
☐ Member Only
☐ Spouse Only
☐ Member & Spouse
☐ Member & Children
☐ Spouse & Children
☐ Member, Spouse & Children

PREMIUM CALCULATION

All premiums are based on the attained age of the AFA member applying for this coverage. Premium payments are normally paid on a quarterly basis (see table for rate table). Upon request, however, they may be made on either a semi-annual or annual basis.

Quarterly premium for member (age ____) $_____

Quarterly premium for spouse $_____

Quarterly premium for ____ children @ $____ $_____

Requests for active duty dependent coverage under Plan 2 should include annual premiums.

Total premium enclosed $_____

If this application requests coverage for your spouse and/or eligible children, please complete the following information for each person for whom you are requesting coverage.

Names of Dependents to be Insured	Relationship to Member	Date of Birth (Month/Day/Year)

(To list additional dependents, please use a separate sheet.)

In applying for this coverage, I understand and agree that (a) coverage shall become effective on the last day of the calendar month during which my application together with the proper amount is mailed to AFA, (b) only hospital confinements (both inpatient and outpatient) or other CHAMPUS-approved services commencing after the effective date of insurance are covered and (c) any conditions for which I or my eligible dependents received medical treatment or advice or have taken prescribed drugs or medicine within 12 months prior to the effective date of this insurance coverage will not be covered until the expiration of 12 consecutive months of insurance coverage without medical treatment or advice or having taken prescribed drugs or medicine for such conditions. I also understand and agree that all such pre-existing conditions will be covered after this insurance has been in effect for 24 consecutive months.

Date _____, 19____ _____ Member's Signature

NOTE: Application must be accompanied by check or money order.
Send remittance to:
Insurance Division, AFA, 1750 Pennsylvania Ave., NW, Washington, D.C. 20006.

Form 6173GH App. 8/81

Bob Stevens'

"There I was..."

THE ARMADA-STYLE WWII BOMBER RAIDS OVER EUROPE WERE AWESOME IN SIZE, DESTRUCTION and LOSSES. THERE HAS BEEN A LOT OF SOMBER NEWSPRINT, and RIGHTFULLY SO, ABOUT PLACES LIKE SCHWEINFURT, PLOESTI, BERLIN, ET AL., BUT, THERE WERE SOME LIGHTER MOMENTS, TOO...

HAL OYSTER, AKRON, O.

PHIL TAYLOR, ALAMEDA, CA.

Electronic warfare systems are now more tactical and practical...

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Sperry is increasing the capabilities and availabilities of electronic warfare systems.

Light tactical aircraft and helicopters now can be protected by Jam Pac (V), our variable configuration jamming module. It has two transmitting systems which can be fuselage or wing mounted. Multiple modules provide complete coverage for surveillance, acquisition and fire control radars.

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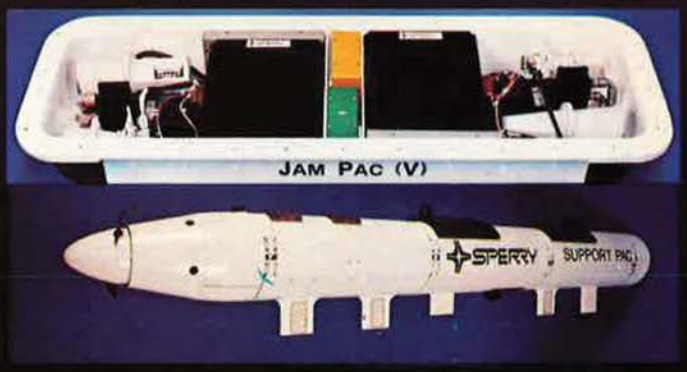
We're currently developing a surveillance radar jamming module for the U.S. Air Force's AN/ALQ-131 ECM pod. And we're applying our advanced synthesizer technology to future EW systems and simulators.

From signal analysis simulators which prepare shipboard EW crews, to training simulators for airborne countermeasures teams, Sperry is keeping a technological step ahead.

For more information on what we're up to in electronic warfare, just ask us...we understand how important it is to listen.

Write to: Sperry Division, EW Marketing, P.O. Box 4648, Clearwater, FL 33518. Or call (813) 577-1900.



SPERRY

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Eyes on the olive branch, but arrows at the ready.

The American Eagle's stance on the Great Seal of the United States symbolizes what our country's great leaders have taught for two centuries: Seek peace from a position of strength.

President George Washington captured its meaning in his first message to Congress in 1789. "To be prepared for war is one of the most effectual means of preserving peace."

Today, the United States Air Force F-15 Eagle is a manifestation of the Great Seal's symbology. Strong enough to win, awesome enough to deter. By its very presence it is an expression of national will.

F-15 Eagle

MCDONNELL DOUGLAS