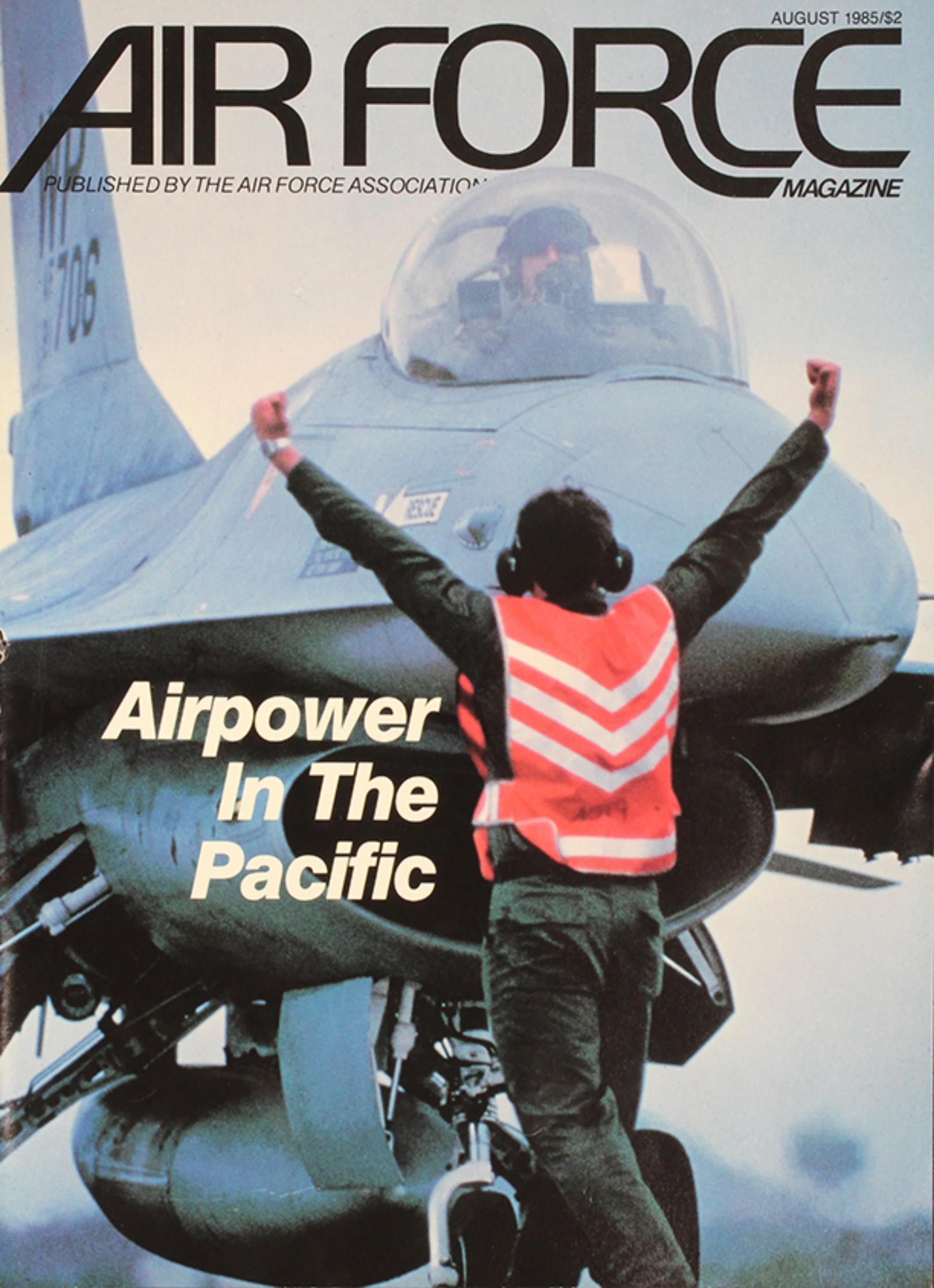


AUGUST 1985/\$2

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE

A photograph of a person from behind, wearing a dark flight suit and a bright orange and white reflective safety vest. The person has their arms raised in a celebratory gesture. They are standing in front of a blue fighter jet, possibly an F-16, with a pilot visible in the cockpit. The tail fin of another aircraft with the number '706' is visible on the left. The background is a clear sky.

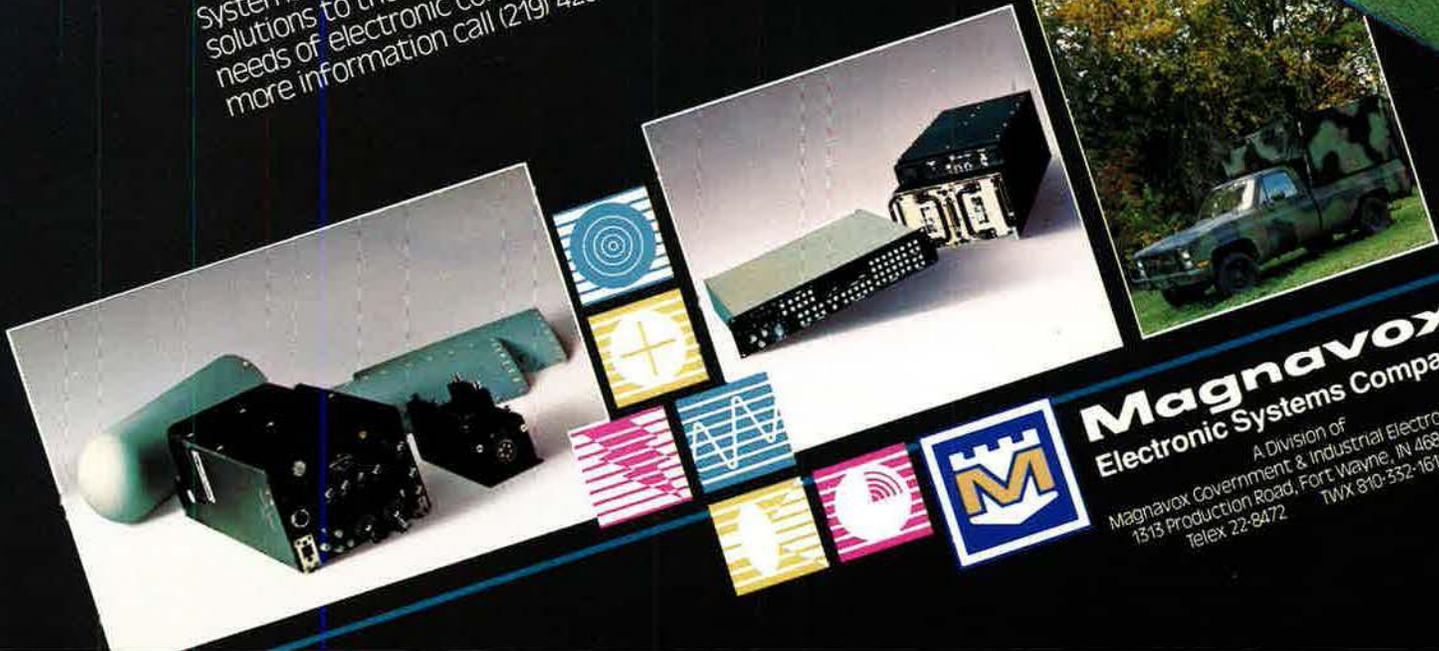
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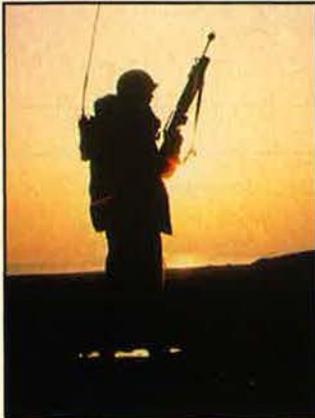
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GARRETT



Page 49



Page 38



About the cover: An F-16 Fighting Falcon from the 35th Tactical Fighter Squadron at Kunsan AB, Korea, lines up for final taxi and takeoff during a theater exercise. A special section on "Airpower in the Pacific" begins on page 42. (USAF photo by SSGT. Joe Coleman)

Special Section: Airpower in the Pacific

- PACAF's Global Perspective** / By James P. Coyne 42
Pacific Air Forces faces a growing threat in a far-flung theater.
- Our Thin Pacific Line** / By Gen. T. R. Milton, USAF (Ret.) 49
Barely sufficient forces back vital US interests in the Pacific basin.
- Soviet Eyes on Asia** / By Lt. Col. Ralph A. Cossa, USAF 54
The Soviets are building up military forces to project power in the Far East.
- The Thai Tigers** / By Capt. Randall J. Larsen, USAF 60
The professional pilots of the RTAF often find combat only minutes away.
- The Royal Australian Air Force** / By Terry Gwynn-Jones 66
One of the world's oldest air forces is rethinking its future role.

Features

- Legislating Competition** / Editorial by John T. Correll 4
The side effects haven't helped the F100 engine posture.
- The Birds of Le Bourget** / By James P. Coyne 38
The Fighting Falcon shared the Parisian skies with the huge Soviet Condor.
- As Sam Nunn Sees It** / By James W. Canan 72
The heir of Scoop Jackson wields much power over matters of defense.
- Commitments To Keep** / By Edgar Ulsamer 78
The Chief of Staff says USAF will have to balance readiness and modernization.
- Here Comes the B-1B** / By John T. Correll 87
The Air Force welcomes its new strategic bomber while working toward the ATB.
- USAFE at Forty** / A Special Report 92
US Air Forces in Europe has paid the price of freedom for four decades.
- Jane's All the World's Aircraft Supplement** / Compiled by John W. R. Taylor 93
- The Selling of Secrets** / By Gen. T. R. Milton, USAF (Ret.) 101
Today's lax moral attitudes create an atmosphere in which spying can flourish.
- Valor: A Point of Honor** / By John L. Frisbee 106
Rather than abandon the wounded pilot, two B-17 crewmen tried to land the bomber.
- The AFA Nominees for 1985-86** / By David C. Noerr 108

Departments

- | | | | | | |
|-----------------------------|----|-----------------------------|-----|---------------------------|-----|
| Airmail | 9 | Airman's Bookshelf | 90 | Intercom | 115 |
| In Focus . . . | 20 | Viewpoint | 101 | AFA State Contacts | 120 |
| Capitol Hill | 29 | The Bulletin Board | 102 | Coming Events | 124 |
| Aerospace World | 30 | Senior Staff Changes | 105 | Unit Reunions | 124 |
| Index to Advertisers | 36 | Valor | 106 | There I Was . . . | 128 |

AIR FORCE Magazine (ISSN 0730-6784) August 1985 (Vol. 68, No. 8) is published monthly by the Air Force Association, 1501 Lee Highway, Arlington, Va. 22209-1198. Phone (703) 247-5800. Second-class postage paid at Arlington, Va., and additional mailing offices. **Membership Rate:** \$18 per year; \$42 for three-year membership. **Life Membership:** \$250. **Subscription rate:** \$18 per year; \$25 per year additional for postage to foreign addresses (except Canada and Mexico, which are \$9 per year additional). Regular issues \$2 each. Special issues (Soviet Aerospace Almanac, USAF Almanac issue, Anniversary issue, and "Military Balance" issue) \$5 each. **Change of address** requires four weeks' notice. Please include mailing label. **POSTMASTER:** Send change of address to Air Force Association, 1501 Lee Highway, Arlington, Va. 22209-1198. Publisher assumes no responsibility for unsolicited material. Trademark registered by Air Force Association. Copyright 1985 by Air Force Association. All rights reserved. Pan-American Copyright Convention.

AN EDITORIAL

Legislating Competition

By John T. Correll, EDITOR IN CHIEF

IN the dismal days of 1979, eighty-eight of the Air Force's first-line fighter aircraft stood idle on the ramp, their engines awaiting repair. No serviceable spare engines were available. From that low point, the situation began to improve gradually as priorities in the 1980s shifted to readiness and supportability of weapon systems. F-15 and F-16 fighters last year posted their highest mission-capable rates ever.

There are, however, several disturbing footnotes to this success story. The main one is that the spare-parts problem with the F100 engine, which powers both the F-15 and the F-16, is not over yet. As recently as April, the supply of serviceable F-15 engine spares was still at only twenty-three percent of readiness goals. Maintenance shops did not have enough parts to keep the prescribed number of reserve engines in working order. Thanks to the continuing intensive effort of program managers, the level of F-15 spare engines had risen by July to forty-two percent of readiness objectives, and the F-16 was fully supportable on engine spares. The Air Force does not foresee full recovery before the fall of 1986.

That recovery is not made any easier by another phenomenon of the 1980s: public outrage about spare-parts overpricing on defense systems. Unfortunately, the demand for reform has been so strong that common sense is sometimes forgotten. Thus it is that an avalanche of new legislation on spare parts and procurement has added to the difficulties of those trying to correct the F100 engine shortage.

The legislation emphasizes two of the best tools in the cost-cutter's kit: competition and breakout. An item generally costs less when there are two or more vendors competing to sell it. And competition is increased when purchase of spare parts is separated—or "broken out"—from the prime system contract. On a program like the F100 engine, which has more than 6,000 basic parts (9,000 if you're counting accessories), the breakout possibilities become staggering. They can also lead—in fact, have led—to troublesome complications.

It takes longer to get a part than it once did. Under the new rules, every spare-parts procurement is screened for breakout and competitive award. The flow chart in the Defense Acquisition Regulation consists of sixty-five possible actions, intertwined with various routes for combining them. Step twenty-one, for example, asks, "Can the government buy rights in the data?" Such questions take a while to resolve. Meanwhile, the administrative lead time for putting a part on order has more than doubled in the past two years.

And the problems do not necessarily end when the

part is finally delivered. After decades of relying on prime contractors to make its parts or to police their subcontractors who made them, the Air Force is suddenly doing business with a host of new vendors. Less than twenty percent of the F100 engine parts are now bought sole source from the prime engine contractor.

Under open competition, the Air Force must award a spare-parts contract to the lowest bidder unless that bidder is demonstrably unqualified. The burden of proof is on the government. Some of the new vendors do a fine job. Others don't. Overall, the problem rate on openly competed F100 parts is more than three times the rate for parts bought sole source.

Whether the parts are hung up in procurement or unusable for quality reasons, it doesn't take too many of them missing at the flight-line level to make a real difference. The F100 engine shortages in the first half of this year centered around only a few dozen unavailable parts.

Amid all the furor about the \$916 stool caps and the \$7,622 coffee makers, it's easy to forget that the *original* spares problem was a failure to project, fund, and procure a sufficient number of parts. Spare-parts overpricing is intolerable, and it is being addressed with a vengeance. Nothing gets the attention of the Air Force or industry quicker than a potential case of overpricing. But the scope of that problem—which by worst case estimate is something less than six percent of the spare-parts budget—must be kept in mind and balanced against other problems that can be brought on by radical solutions.

It is axiomatic in defense procurement that there are three main variables—cost, schedule, and performance—and that if you overemphasize one of these, you will probably pay for it in the other two. Today, cost is the ascendant variable, often eclipsing schedule and performance in the public eye.

Still more legislation, creating even greater pressures for competition, is taking shape in Congress. If any significant consideration is being given to possible side effects, it is not much in evidence. USAF was an early and an enthusiastic advocate of competition and breakout and supports these techniques when they can be used wisely. In fact, breakout of selected F100 engine spares for competitive procurement began in 1978—long before spare parts became a household controversy.

Competition and breakout should be used in every instance when it makes good sense to do so. But it is important to remember that they are only tools to use or not use as the circumstances warrant. The objective is sound defense acquisition. ■



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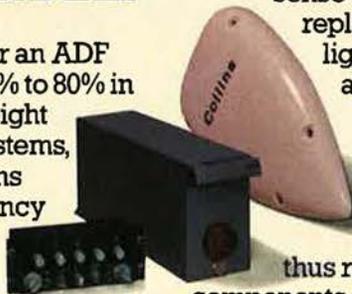
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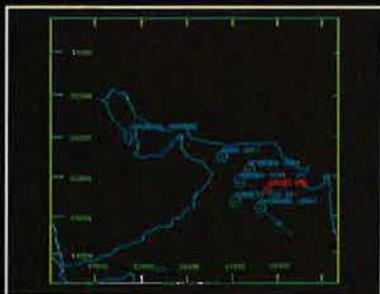
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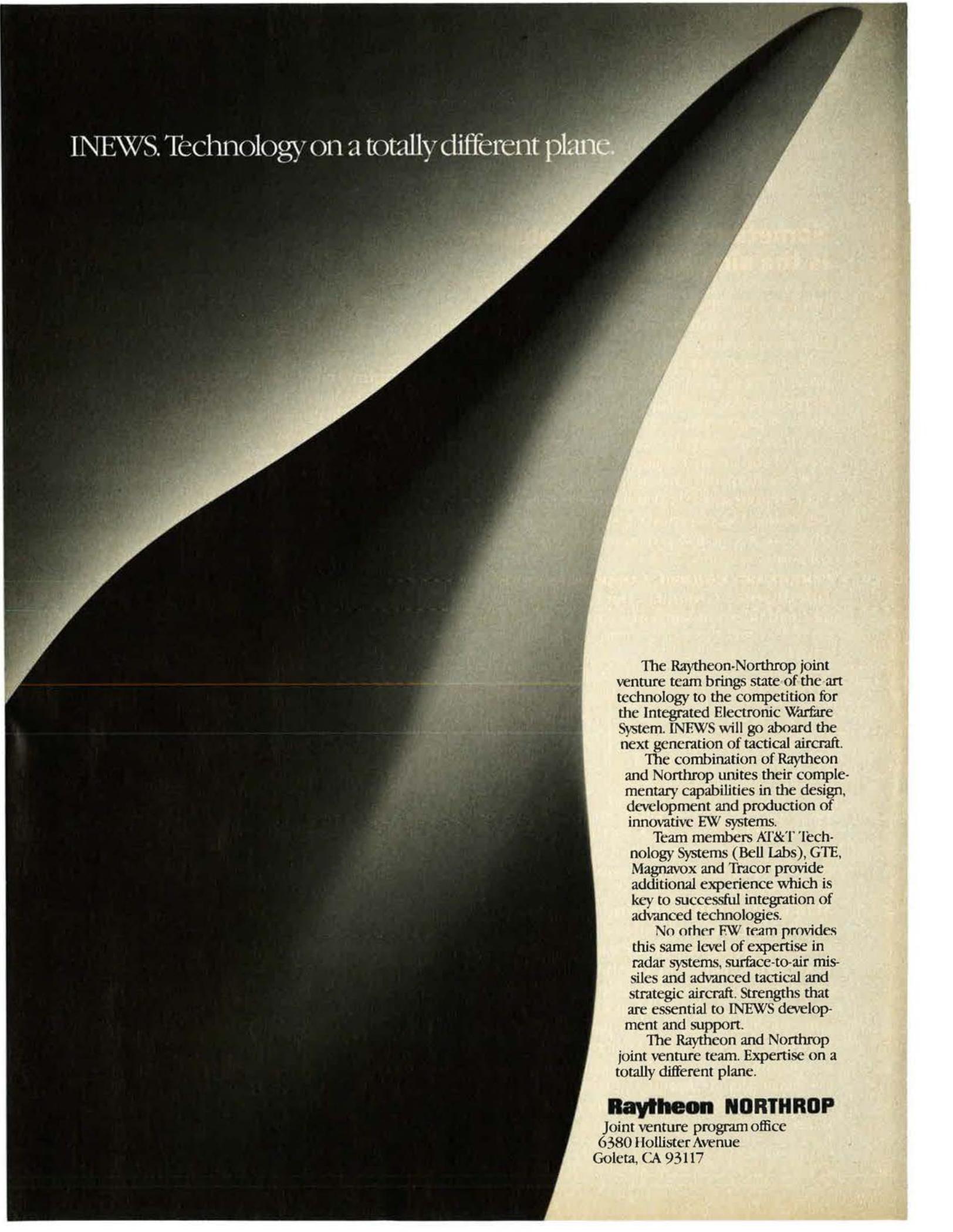
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AIRMAIL

Boon June

Congratulations on your June 1985 issue, which had advance distribution at the Paris Air Show and which focused on "USAF and the Electronic Future."

Of particular interest to me were two articles. The first, by James P. Coyne, provided a concise perspective into the well-rounded capability of USAF electronic forces (see "Electronics for the Shooting War," p. 72, June '85 issue). The second was written by Gen. T. R. Milton, USAF (Ret.), and concerned the policy muddle that is confusing and militarily weakening our longtime Chinese allies on Taiwan (see "Taiwan's Lonely Stand," p. 104, June '85 issue).

AIR FORCE Magazine has once again demonstrated the unique capability to assemble diverse topics, such as technology and foreign relations, and bring them into perspective for readers concerned with airpower and international security issues.

Col. Al Schalk, USAF (Ret.)
Rolling Meadows, Ill.

Our Friends on Taiwan

I am an Air Force Reserve Mobilization Augmentee assigned to the Twenty-third Air Force and am attached for training with the 41st Rescue and Weather Reconnaissance Wing at McClellan AFB, Calif. I have more than fifteen years of rated service in the active and reserve forces.

Your article in the June '85 issue of AIR FORCE Magazine, "Taiwan's Lonely Stand," struck a long hidden but still raw nerve. During a fifteen-month tour at Ching Chuan Kang AB, I developed a respect and admiration for the Taiwanese. They mount an endless struggle against overwhelming odds, and they do it with dignity and continuing good humor. The fact that we have apparently changed our priorities, the obvious mathematics and practicalities of world politics notwithstanding, and allied ourselves with Taiwan's adversary is one of the most ill-advised and shameful things we could have done.

Let us stop to consider the ideologies represented by the two

Chinas and rethink our position. Let us consider our ultimate responsibility first and foremost to support those who would exemplify and strengthen the cause of freedom in all areas of the world.

If we are concerned about world opinion, will not the world opinion of us be harmed by our diplomatic abandonment of our friends and ideological partners? If we are concerned about commerce, is not the dramatic success of Taiwan (and Hong Kong) sufficient evidence of the superiority of our system? It is not too late to approach the diplomatic shifts of the past decade thoughtfully and to reconsider whether our course is right.

I have often considered how I could in some way help support the Taiwanese against the rejection they have suffered over the past few years. You have found a way in this article. I, for one, am extremely grateful that you have given voice to what millions feel. Thank you!

As one final illustration of the kind of people the Taiwanese are: I lived in downtown Taichung in October 1971—the month when the PRC was voted into the UN to occupy the seat of the Republic of China. Prior to that event, large red banners were everywhere—over the streets, on the gas stations, hanging from public buildings—proclaiming such slogans as "Keep Communist Bandits Out of the UN." Editorials were common in Taipei's English-language paper, exhorting readers to support the ROC in staying in the UN.

Then the vote occurred. I was concerned about the reaction, especially

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because of the numerous Americans in Taichung. Yet nothing happened. The signs disappeared. There were one or two more editorials, but without rancor or bitterness. We were treated exactly the same as before—with friendship and helpfulness.

I hope that we can be deserving of such deep friendship.

Maj. George R. Henry, USAFR
Citrus Heights, Calif.

The Comprehension Crisis

In his June 1985 article, "Educating for the Technical Tomorrow," Capt. Napoleon B. Byars makes several fine points, two of which are deserving of further discussion. The first is his opening statement about an America in the midst of an "information age"; the second concerns the closing statistics on the inability of current students to draw inferences from simple written material and to write a persuasive essay. This polarization of strong academic need and weak abilities is leading us to what might be aptly called a "crisis of comprehension."

Comprehension is defined by Webster's as "understanding fully and grasping with the intellect." It is in this act of understanding that so many are failing. A natural response to this situation is to ask why. What has brought us to this point?

A primary reason is the failure to develop basic linguistic skills, for not only is ours an "information age," it's largely a "video age," with the primary medium now being television, particularly in the case of our nation's youth. In *The Great American Reading Machine*, David Yarrington presents data showing that, by the time the average youth graduates from high school, 11,000 hours have been spent in school and 22,000 hours have been spent watching television.

It's very tempting to use this type of data and point the finger of blame at television as the culprit in America's declining literacy. But television is only a symptom of our comprehension problem; the core problem is the widespread ignorance of our written language. In order to be successful in

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the technical age, reading competence cannot be overemphasized.

In his book, *Comprehension-Centered Reading*, Kenneth S. Goodman states that "if learners are to develop the competence to comprehend a wide range of reading materials, they must then develop general reading competence to handle other kinds of language." The text continues in a thorough study of the positive correlation between reading and comprehension, which can proceed in a building-block approach.

This approach does require one key element for success: the motivation of the individual to apply himself to the learning process. It's motivation that is disturbed by our many video inputs and that is readily apparent in interrupting the comprehension building-block approach. Quite simply, the video medium presents language at the lowest common level and in a verbal, not written, format. With the resulting failure of linguistic growth, we are headed toward a society of incomprehension.

The American military and, specifically, the Air Force are consumers of video-age products, i.e., an increasing number of poorly educated people. This presents a difficult problem and cannot be solved by one element in our society alone. To turn a high-school graduate from a video display viewer into a master of surrounding technology will take a combined effort of industry, military, government, parents, and teachers.

As with any problem, the longer a solution is delayed, the harder the problem will be to solve.

Capt. Lawrence Pratt, USAF
Davis-Monthan AFB, Ariz.

Hog Heaven

The "There I Was . . ." cartoon on the A-10 Hog was great (*June '85 issue, p. 168*). I was a Bee-One-Seven type in World War II, but really longed to fly the Douglas A-20 and get down to about ten feet above the trees, whipping up small waterspouts on the lakes with the prop tips. Alas, it was for naught.

Now the Air Force has another good old ground-hugging, stick-driven type. If I had my choice of any plane in the inventory to drive around in, I would choose the A-10.

I worked at Hill AFB, Utah, as a civil

engineer and had occasion to be out on the range one day, taking water samples in an area adjacent to the A-10 practice area. There were three of them doing their "brrrrps" just on the other side of a low range of hills. I looked up once and, lo and behold, they were coming on our side of the hills, heading right for the pickup I was in. Gulp! (Pickups are what they shoot at out there.)

They did a few of their evasive maneuvers and lined right up on the pickup. I had heart seizure. But then they turned away, having played their game with us.

But that didn't take away my fantasy of flying in one of those mamas.

Tom Demery
Vandenberg AFB, Calif.

Sensationalism?

Re: The article by Gen. T. R. Milton, USAF (Ret.), "Dominoes Again," in the June '85 issue.

In writing this article, General Milton is obviously more interested in shocking his audience, relying on sensationalism rather than facts.

General Milton sees the Soviets as attempting to gain a "permanent base on our continent." The truth is that the Soviets have been extremely reluctant in getting involved in Nicaragua. It costs the Soviet Union millions of dollars daily to maintain Cuba within its sphere of influence. For this reason, it would not be feasible to add Nicaragua to the list.

An attempt to convert Nicaragua into another Cuba would prove too costly. As a trading partner, Nicaragua has very little to offer the Soviet Union. The only thing that the Soviets could hope to accomplish would be to embarrass the United States.

President Reagan's actions are taking care of this situation, for he is certainly driving the Sandinistas into the Soviet camp. All the Soviets need do is wait.

With regard to El Salvador, the "intelligent, restrained US policy" to which General Milton alludes was made possible only because the US Congress had the common sense not to get involved further, as President Reagan wanted to do. Left up to Mr. Reagan, we would probably have American combat troops in the region.

It is Reagan's policies that are currently driving the Sandinistas to the Soviet Union. He has left them no other choice but to "cry uncle." For this reason—in which I am in agreement with General Milton—"there can be no doubt about the military buildup in Nicaragua" and the rising Soviet military shipments.

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I disagree with General Milton, however, as to why this is happening. This is all in response to President Reagan's actions in the area. He continues to arm Honduras and El Salvador (two traditional enemies of Nicaragua) at an alarming rate. These military shipments, plus the presence of large numbers of US military "advisers" and the history of US interventions in the area, have understandably made the Sandinistas nervous. Where else can they go in order to obtain weapons to defend themselves?

The reason that the Sandinistas can claim "with straight faces" that the elections that brought Daniel Ortega to power were free is because they were indeed free elections. This is another area in which General Milton forgot to do his homework. The opposition had the opportunity to run their own candidates, but they elected to sit it out. They saw that they were in a no-win situation. By boycotting the elections, they hoped to give the process a sense of illegitimacy. They took a gamble, they lost, and the plan backfired.

There is one more area in which General Milton, obviously, is not very well informed. The biggest "trick" when he talks about 30,000,000 refugees "pouring across our southern border" is getting that many people out of *all* of Central America! The population of Nicaragua is approximately 3,000,000, while the combined population of all of Central America is considerably less than 30,000,000. Even after virtually every man, woman, and child is accounted for, General Milton's theory cannot work. Would the Sandinistas, themselves, then be refugees?

Will you print this or not?

Dom Ayala, Jr.
Barksdale AFB, La.

Blue-Suit Aliens

I am writing to you in connection with "The Bulletin Board" item that appeared on page 148 of the June '85 issue of AIR FORCE Magazine. The item concerned foreign nationals serving in the military.

I am not a US citizen, but I serve proudly in the United States Air Force. I felt the strong need to serve in the military after immigrating; I have been in over a year now, and frankly, I have no regrets whatsoever, except that the citizenship factor does seem rather unfair.

I would like nothing better than to attain my US citizenship, but I have to wait for another two years until I can do so. I cannot compete for ROTC scholarships or other commissioning programs, despite the fact that I

have an excellent educational background, including a \$20,000 investment in flight training.

I feel that for those airmen desiring citizenship, the Air Force should help out, thereby benefiting both. After all, one will most probably be serving for a period of four years anyway. As far as the question of security goes, we are all aware that it takes all kinds to be a security risk. Citizenship guarantees nothing in that respect.

Why not help those airmen who are aspiring toward careers in the military?

A1C Anand V. Nevrekar, USAF
Langley AFB, Va.

• *The item in question reported on a new Air Force program, the Airmen Citizenship Effort, which is designed to help noncitizen airmen gain US citizenship.*—THE EDITORS

Aircraft Misidentification

Although I have no connection with the military, I have been an avid reader of AIR FORCE Magazine for two years. American military aviation has been a lifelong hobby, and I find your articles and photos to be the best available on current US military equipment and technology.

In any event, I was surprised to see you incorrectly identify both of the aircraft silhouetted in the photo on pages 72 and 73 of the June 1985 issue. Described as an F-15A and an F-4G, these planes are, in fact, an F-15D and an F-4E.

The F-15 shown is clearly a two-seater, even though the rear ejection seat is unmaned on this flight. Since it would be virtually impossible to distinguish a B or D model correctly in a photo of this nature, further speculation on my part would be foolish. The European theater would tend to indicate a D, however.

Some readers may have trouble distinguishing between an F-4E and G at first glance, since they share the same basic airframe and have a roughly similar profile. Closer study, however, makes it easy to distinguish them. The plane in this photo does carry the ALQ-119 ECM pod, which is common to either version, but the thin, tapered outline of the nose fairing is clearly that of a Vulcan cannon rather than the more bulbous housing of the APR-38 radar homing and warning

system. On this basis alone, the plane is marked as an F-4E.

Less obvious but far more telling, the spine and wingtips of the pictured aircraft show the plane to have received the ARN-101 modification. It lacks the blade antenna carried on the spine of a G and appears to have a TISEO unit mounted on the leading edge of the left wing, again clearly marking it as an E.

Having never been to Norway, however, I should quit now while I'm still ahead.

Tom Yearley
Horseheads, N. Y.

• *Reader Yearley is clearly correct that the F-15 pictured is a two-seater. We were unable to establish for certain whether it is a B model or a D model. We were also unable to verify the model of the F-4 pictured, but tend to agree with Mr. Yearley's rationale that it is an E model.*

We regret the errors.—THE EDITORS

General Tinker

We are currently collecting information on the life and career of Maj. Gen. Clarence L. Tinker, the native Oklahoman for whom Tinker AFB was named.

Anyone who knew General Tinker personally or professionally is invited to contact the address below.

James L. Crowder
OC-ALC/Office of History
Tinker AFB, Okla.
73145-5990

General Dynamics F-111

I would like to hear from anyone who has been associated with the F-111 or any of its variants. The purpose of my research is to gather material and data for future articles and also to compile an address list to put old friends back in touch.

Please contact me at the address below.

Warren E. Thompson
7201 Stamford Cove
Germantown, Tenn. 38138

FAC Aircraft

In order to prepare color artwork depicting their aircraft, I am seeking information on and photographs of the O-1E flown by Hilliard A. Wilbanks and the OV-10 flown by Steven L. Bennett (both Medal of Honor recipients) on their last missions.

Any information will be very much appreciated. Please contact me at the address below.

Walter Toysa
6522 Piedmont
Detroit, Mich. 48228

Car-Plane Crash

I am looking for information about a car-plane accident that, legend has it, happened at Patrick AFB, Fla., during the late 1950s. A plane evidently hit the rear of a red Porsche.

If anyone knows any specifics about the accident—date, type of aircraft, anything—I would greatly appreciate hearing from them. Please contact the address below.

Susan Peifer
187 Lake Ave.
St. James, N. Y. 11780

Interned in Switzerland

I am a veteran of the Eighth Air Force. I am seeking contact with B-24 and B-17 crewmen who were forced down in Switzerland during the period 1943–45.

I am seeking information about units, crews, aircraft serial numbers, and specifics regarding crashes and forced landings. Please contact me at the address below.

Forrest S. Clark
220 Fairmount Ave.
S. Plainfield, N. J. 07080

Training at Vancouver

I am doing genealogical research and would like to contact any USAF flyers who trained at Comox, Sea Island, Jericho Beach, Vancouver, British Columbia, in 1950–53.

Please contact me at the address below.

Sharon E. Gilrairie
#8 1017 Dog Creek Rd.
Williams Lake
British Columbia V2G 3G5
Canada

95th Bomb Group

I am seeking information for a history of the 95th Bomb Group (H), 3d Division, Eighth Air Force during World War II. I was a bombardier and completed thirty-four missions over the Bulge and bombed the marshaling yards at Cologne on December 24, 1944.

I had word in 1946 or 1947 that a Captain Campbell from Henderson, Ky.—or maybe it was a Captain Henderson from Campbell, Ky.—was working on the same subject. If anyone can help me in my research, please contact me at the address below.

Andrew Griparis
123 Emery St.
Joliet, Ill. 60436

Collectors' Corner

From 1960–63, I served with what was then billed as one of the last of the old Flying Tiger squadrons, assigned to Air Defense Command in Bangor,

AIRMAIL

Me. Our squadron, the 75th Fighter Interceptor Squadron, maintained a fleet of F-101Bs and some F-101Fs. There was also a squadron of F-106s to the north of us with the 27th FIS at Loring. They were fairly frequent visitors to our squadron at Dow AFB in Bangor.

I was a crew chief with primary responsibility for our -101s and secondary duties for the -106s from Loring. At the time of my discharge from USAF, my flight jacket had several patches on it. These included my 75th FIS patch, a Voodoo "Medicine Man" patch, and my F-106 Delta Dart patch. The jacket and patches have served me well in the last twenty-two years, but, like everything else, they finally had to be retired.

I have replaced the jacket with a new one and would like to replace the patches as well. But the 75th FIS is no longer. I have called some patch manufacturers to see if they perhaps had manufactured my patches during those years, but they all think I'm crazy and have happily offered to "make" me a new patch.

About the only person that I can think of who might remember the name of the squadron's patch manufacturer was our adjutant at the time. He was then a major, and his name is Harry Burkhardt.

Can any readers help me replace my old patches? I'm very proud of them and the units and machines they represent.

Please contact me at the address below.

Rick Riggio
Rte. 4, Box 1500
Odessa, Tex. 79763

Phone: (915) 381-2000

I am trying to locate copies of an old magazine entitled *Sportsman Pilot*. I would like to get as many as I can. In particular, I am looking especially for the following eleven issues:

January 1932; November 1932; May–June 1933; October 1933; November 1933; July 15, 1934; September 15, 1934; December 15, 1934; January 15, 1935; February 15, 1935; and August 15, 1936.

I am also looking for the *Air Trails* magazine from May 1947. I am interested in any old aviation pulp magazines from the 1930s that featured fiction. I am willing to trade magazines.

Any assistance that readers can give me in locating *Sportsman Pilot* or any other such magazines would be greatly appreciated. Please contact me at the address below.

Virgil Wilhite
P. O. Box 29368
Los Angeles, Calif. 90029
Phone: (213) 483-2826

Upon discharge from the Air Force in 1972, I received several amusing and eye-catching certificates for serving above and beyond the call, etc. The unit I had been attached to was the 100th Strategic Reconnaissance Wing, the home of the U-2 and certain special-purpose aircraft.

Somehow, over the years, I lost my certificates (I also had one from the then 350th Squadron), and while I know that the unit moved to Beale AFB, Calif., I don't know of any way to go about getting replacements.

Can any readers out there help me?

2d Lt. James J. Finkle,
NYANG
17 Laurel Dr.
Smithtown, N. Y. 11787

My present duties as the RAAF/USAF Exchange Program Coordinator bring me into frequent contact with USAF representatives here in Australia. In order to demonstrate some tangible link between this office and USAF, I would like to establish a representative collection of USAF heraldry for display in the Air Force Office.

Would any readers be able to donate USAF cloth patches, or any other items depicting USAF heraldry, for display here?

Sqdn. Ldr. B. M. Rogers, RAAF
Exchange Program
Coordinator
E-1-18
Russell Offices
Canberra ACT 2600
Australia

I am assembling a collection of USAF insignia and uniforms from the Vietnam era. Any and all donations would be appreciated and well cared for.

I have a particular interest in items from units that operated from Udorn Royal Thai AFB. Also of interest are items from units currently stationed in Japan, Korea, Iceland, Alaska, and Hawaii. Biographical data is welcome, and any postage costs will be reimbursed.

Please contact me at the address below.

Gilbert W. Burket
94-447 Kiilani St.
Miliilani, Hawaii 96789

A new-generation mapping radar helps classify military targets automatically, even at extreme ranges. The Advanced Synthetic Aperture Radar System (ASARS-2), designed to complement electro-optic sensors, is flown on a U.S. Air Force TR-1 reconnaissance aircraft and provides real-time radar imagery to a ground station in all weather. ASARS-2 sees with the high resolution of an infrared sensor, but not from a perspective view. Instead, imagery is processed to show targets in an overhead view. One benefit of this approach is that a computer can more easily classify targets based on their outlines. The Air Force gave ASARS-2 an excellent rating after strict operational performance tests. Hughes Aircraft Company is producing the system under a development and production contract.

Complex microelectronic hybrid circuits will be made in huge quantities in a new missile manufacturing facility at Hughes in Tucson, Arizona. The building covers 71,000 square feet and houses glassed-in production areas. These rooms are so clean that each cubic foot of air contains no more than 100,000 particles 5 microns or larger. Production equipment is interconnected to a host computer that controls the movement of all work, gathers quality data, and feeds operating instructions to machines. Operators plug into electrical, vacuum, water, and liquid nitrogen systems directly from their work stations. The production rate capability will grow from 800 hybrids a month in the old facility to 40,000 a month by 1987.

F-4F Phantoms equipped with the same radar carried by F/A-18 Hornets will maintain their effectiveness through the end of the century. The AN/APG-65 radar is an all-digital multimode system designed for both air-to-air and air-to-surface missions. In air-to-air operations, the Hughes radar will give the Phantom a clean radar scope in either look-up or look-down attitudes. It will also provide track-while-scan capability, long-range search and track, and close-in combat modes. The all-weather sensor will make the aircraft fully AIM-120 Amraam capable. Hughes is under contract from Messerschmitt-Boelkow-Blohm for the definition phase of West Germany's F-4F Improved Combat Efficiency program. The company will also work with AEG-Telefunken on the program.

In a historic milestone, a prototype high frequency hopping radio system has been tested successfully over several complex communications paths that were not restricted to line of sight. Frequency hopping techniques have been previously used only in the VHF and UHF portion of the radio spectrum to enhance the antijam capabilities of tactical and strategic military communications systems. The recent tests, conducted by Hughes engineers under contract to the U.S. Army, covered the high frequency range from 2 to 30 MHz. They showed that antijam communications are now possible over great ranges without line-of-sight paths, which require repeater stations or satellite relays. Hughes is developing the system, called Short Term Anti-Jam (STAJ), as a retrofit enhancement kit to its existing line of U.S. military standard high frequency tactical radios.

High-energy laser pointing and tracking systems are among the advanced electro-optical systems supported by the Albuquerque Engineering Center in New Mexico. The center's scientific disciplines include physics, optics, mathematics, lasers, image processing, electro-optical control systems, and computer science. Programs involve electro-optical sensors for strategic military applications, including work performed at the U.S. Air Force Weapons Laboratory at Kirtland Air Force Base and the White Sands Missile Range. The Hughes center is expected to expand from its current staff of 42 highly trained professionals to greater than 100 over the next three years.

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I collect Air Force, Air National Guard, Air Force Reserve, Navy, Marine Corps, and foreign patches. I have a great many patches available for trade and am always looking for new trading partners from this country or abroad.

I have a special interest in patches from the Southeast Asian conflict, old fighter interceptor squadron patches, patches from Southern Command, NATO patches, and "Wild Weasel" patches.

If you don't have any patches available for trade, I am willing to purchase patches in quantity for my collection. Please contact me at the address below.

Joseph J. Dudley, Jr.
Tenth Floor West
First National Bank Bldg.
St. Paul, Minn. 55101

Phone: (612) 291-1717

I am looking for a copy of a book called, I believe, *Student Pilot's Handbook*. I was issued (or bought) a copy of this book at Primary Flight School, Pine Bluff, Ark., when I was there with Class 44-A. It somehow disappeared from my bookshelf.

I would like very much to replace it so that I can be reminded of the "good old days." If anyone has a copy and would be willing to part with it, write to me at the address below. Please describe the book's condition and give your asking price.

Anyone having a copy of this book is asked to contact me at the address below.

Victor D. Iglesias
1200 Pembroke Lane
Newport Beach, Calif. 92660

I am looking for cloth unit patches for the 307th Bomb Wing, the 28th Bomb Wing, the 55th Strategic Reconnaissance Wing, and the 55th Field Maintenance Squadron.

Any readers having any of these patches are asked to contact me at the address below.

Terry G. Harpster
R. R. 1
Ewing, Neb. 68735

I am a collector of photos of nose art on USAF, Air Force Reserve, and Air National Guard aircraft of the past and present. I do hand paintings of nose art as a hobby and wish to col-

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lect more photos of nose art done by Air Force personnel.

I am willing to swap photos. Anyone interested or who can help should contact me at the address below.

Johnny Signor
3418 Carolyn Lane
Cocoa, Fla. 32926

I'm looking for any vets from World War II who were stationed on Iwo Jima in 1945 and who can help me find photos of aircraft belonging to VII Fighter Command. These fighters escorted B-29s on bombing missions to Japan.

I will return any photos that are sent

and will pay all postage. Please contact me at the address below.

Ron Witt
3220 S. Gavilan Rd.
Las Vegas, Nev. 89122
Phone: (702) 451-9096

I am a collector of military patches and badges, both US and foreign. If any readers could send me spare squadron patches, badges, etc., it would be highly appreciated.

Please send any donations to the address below.

SrA. Thomas G. Snipes, USAF
P. O. Box 6252
APO New York 09194-5420

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Extra Mile on Arms Control

By Edgar Ulsamer, SENIOR EDITOR (POLICY & TECHNOLOGY)

The US is scrapping another ballistic missile submarine, but at the same time will explore options to pursue if the Soviet Union fails to demonstrate reciprocal restraint.

Washington, D. C., July 3



To the elation of the political left and the chagrin of the political right, President Reagan on June 10 formally notified Congress that the US would "go the extra mile" in its

quest for equitable arms control and continue to abide by the terms of the expired SALT I and unratified SALT II accords. This decision, although linked to specific future Soviet responses and thus revocable, is far from an empty gesture in terms of the US force structure: It provides for the deactivation and dismantling of an existing, operational nuclear-powered ballistic missile submarine of the Poseidon class. This scrapping of a Poseidon SSBN comes on the heels of the dismantling of eight Polaris ballistic missile-launching SSBNs in phase with the commissioning of new Trident submarines.

Under the terms of SALT II, the introduction of new strategic weapons into the operational inventory requires the dismantling of older types in a balanced fashion. The SALT II accord, signed by President Carter in 1979 but never ratified by the US, expires at the end of this year. Although initially condemning the accord as seriously flawed, the Reagan Administration decided not to "undercut" SALT II in 1982. This action, as the President explained at the time, was meant to foster an atmosphere of mutual restraint conducive to serious negotiations at START (the strategic arms reduction talks).

Since then, as the President pointed out in his new report to Congress,

"the United States has not taken any actions that undercut existing arms-control agreements." He added that this country "has fully kept its part of the bargain. However, the Soviets have not. They have failed to comply with several provisions of SALT II, and we have serious concerns regarding their compliance with the provisions of other accords." While he conceded that "we cannot impose on ourselves a double standard that amounts to unilateral compliance," he declared the US ready "to go the extra mile in seeking an interim framework of truly mutual restraint."

In extension, the President pledged that the US would refrain from undercutting existing strategic arms agreements to the extent that the Soviet Union exercises comparable restraint and provided that the Soviet Union pursues arms-reduction agreements seriously in the nuclear-arms and space talks under way in Geneva. A stick goes with the carrot held out by the President:

"Appropriate and proportionate responses to Soviet noncompliance are called for to ensure our security, to provide incentives to the Soviets to correct their noncompliance, and to make it clear to Moscow that violations of arms obligations entail real costs."

In his classified message to Congress as well as in the accompanying public "Fact Sheet" that furnished additional, detailed information, the President made a firm distinction between those violations of valid arms-control accords perpetrated by the Soviets to date that are reversible and those that are irreversible. In the area of irreversible violations, the President cited the Soviet Union's flight testing and steps toward deployment "of the SS-X-25 missile, a second new type of ICBM . . . prohibited by the unratified SALT II agreement." Pointing out that this step cannot be undone, he said the US, therefore, reserves the right to respond in a proportionate manner at the appropriate time. The President emphasized that the small intercontinental ballistic missile (SICBM, also called

Midgetman) program "is particularly relevant in this regard."

In the case of those Soviet violations of arms-control accords that may be reversible—presumably typified by such breaches of SALT II as encryption of ballistic missile flight-test data essential for verification and the continuing jamming of US sensors that constitute the so-called "national technical means" of verification—the President took a remarkably magnanimous stance: "In these instances, we will provide the Soviet Union additional time to take . . . corrective action." Further, "as we monitor Soviet actions for evidence of the positive, concrete steps needed on their part to correct these activities, I have directed the Department of Defense to conduct a comprehensive assessment aimed at identifying specific actions which the United States could take to augment as necessary [this country's] strategic modernization program as a proportionate response to, and as a hedge against, the military consequences of those Soviet violations of existing arms agreements which [they] fail to correct."

This Pentagon study is to be submitted to the President by November 15, 1985, thereby providing sufficient time for him to consider US options before December 31, 1985, when the unratified SALT II accord would have expired anyway. Other options to be enumerated by the Pentagon's report to the President will focus on subsequent milestones that would occur if the "no undercut" policy were to be continued beyond SALT II's scheduled expiration date.

The President's report makes clear that the Administration might also consider specific programmatic options in direct response to instances of uncorrected Soviet noncompliance, "as needed, in submitting the FY '87 defense program to Congress in early 1986."

As a part of its report, the Defense Department will also review and evaluate a range of options available to this country for potential milestones that would be encountered under an indefinite extension of the SALT II

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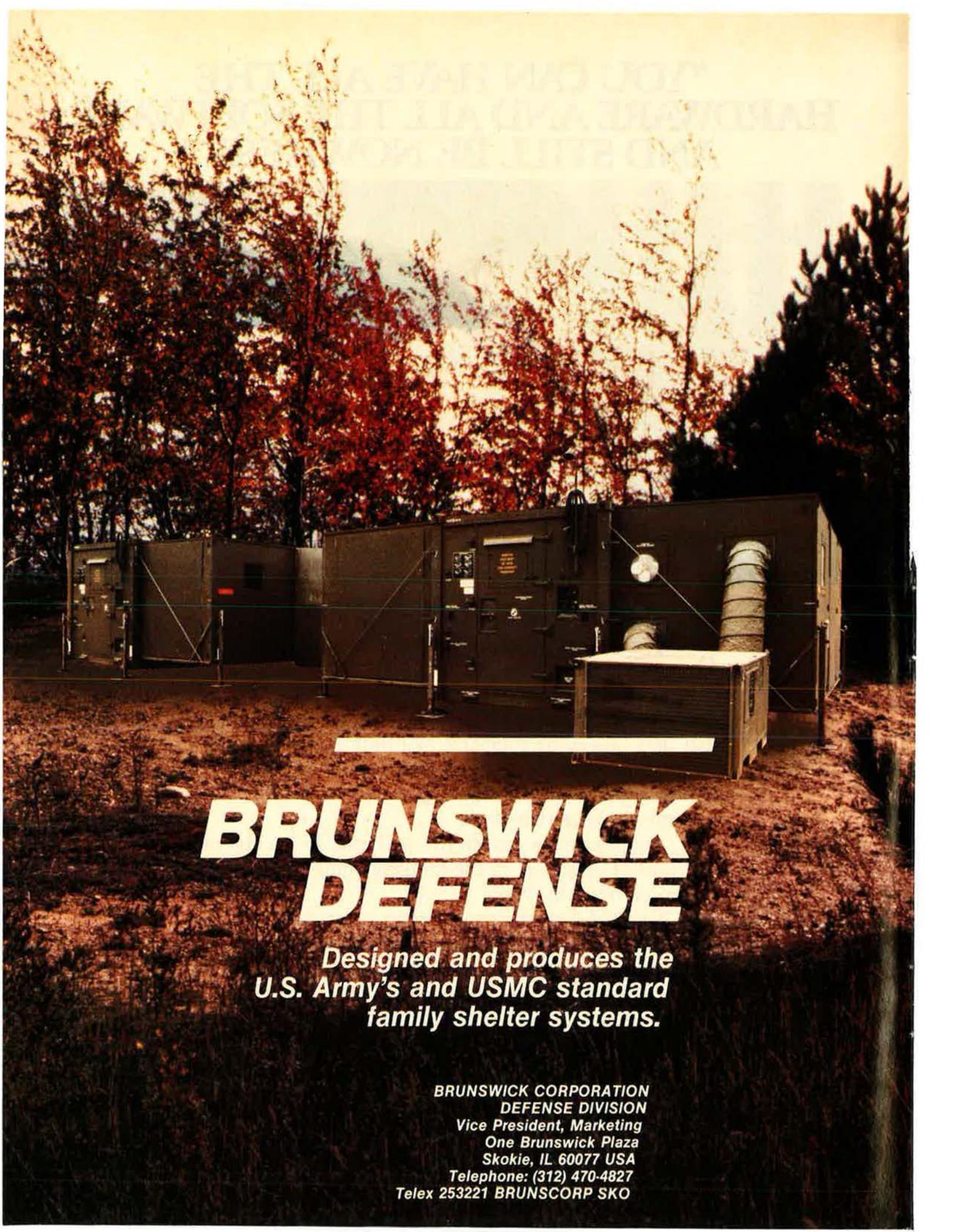
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terms. These milestones include the sea trials of additional Ohio-class SSBNs and the deployment of the 121st US air-launched cruise missile-carrying strategic bomber. As these more distant milestones are reached, the Administration will "assess the overall situation and make a final determination of the US course of action on a case-by-case basis in light of the [prevailing circumstances] and Soviet actions" on treaty compliance and at the current arms-reduction talks in Geneva.

The report "will also consider the consequences of continued Soviet force growth as indicated in the most recent National Intelligence Estimate on this subject, the alterations to the ICBM portion of the US strategic modernization program, which have resulted from recent congressional action, and the issue of how the second fifty Peacekeeper [MX] missiles should appropriately be based."

In a general sense, the President's report makes clear that the US options will be designed as "proportionate responses to specific instances of uncorrected Soviet noncompliance, hedging against the military consequences of such noncompliance." The Administration stressed that these responses "need not necessarily be equivalent types of actions. Rather, these options will attempt to deny the Soviets the potential benefits of their noncompliance and, to the extent possible, provide incentives to the Soviets to correct their noncompliant activity."

Reiterating a host of Soviet violations of various arms-control accords disclosed in previous White House reports, the President vented his frustration over the fact that, despite long and repeated US demarches, "the Soviet Union has neither provided satisfactory explanations nor undertaken corrective action. Instead, Soviet violations have continued and expanded as the Soviets have continued to build their strategic forces."

The White House report underscored the fact that "the Soviet Union has not been, and is not now, exercising the equal restraint upon which our interim restraint policy has been conditioned."

Among the violations cited by the White House is the new disclosure that the Soviets appear to be violating at least the spirit of SALT I, an agreement to which they have heretofore abided: "For example, after dismantling Yankee-class nuclear ballistic missile-carrying submarines to comply with SALT I constraints, they have already converted one such submarine into a [configuration] longer

IN FOCUS...

than the original and carrying modern, long-range, sea-launched cruise missiles. While not a violation of the letter of SALT I, the resulting submarine constitutes a threat to the US and allied security similar to the original Yankee-class submarine."

Administration Reassessing ICBM Modernization?

A number of US responses to Soviet arms violations and the continued buildup of its strategic forces are available, including some that are of "relatively low cost," the Defense Department's Assistant Secretary for International Security Policy, Richard N. Perle, told this writer recently. One obvious and cost-effective response would be to halt further dismantling of SSBNs "after the first one." The options here include converting the Poseidon fleet to cruise missile launchers or to use some of these SSBNs—following the required modifications—as training ships.

Even though neither technically nor politically a response to present or possible future Soviet treaty violations, vigorous pursuit of the US strategic force modernization program would help offset the continued growth in Soviet strategic capabilities. He suggested that the President's decision to continue US compliance with the SALT accords in the face of mounting evidence of wholesale Soviet violations might increase Congress's currently flagging support of the Administration's strategic force modernization program, especially with regard to ballistic missiles.

At the same time, Secretary Perle expressed concern about the extent to which the ICBM force can be modernized and kept survivable. In the case of the MX Peacekeeper, he expressed doubts that this weapon "can be made mobile after everything we have been through." In some ways, he explained, MX is a "tribute to arms control" considerations of the past. Because of the need to make full use of the silo dimensions as specified by SALT, "it weighs what it does" and hence can't be moved "on ordinary road nets." He expressed doubt in general that "we are ready to move ICBMs on interstate highways" and suggested that, for a variety of reasons, it makes little sense to consider rail-mobile deployment for a portion

of the MX force in the manner of its latest Soviet equivalent, the SS-X-24.

Environmental problems are the key factors that militate against such a deployment approach in this country, he suggested. (A senior Administration official recently expressed similar reservations about the political feasibility of maintaining the US land-based ICBM force in a survivable state over the long term. He suggested, therefore, that increased strategic defense capabilities will be needed to maintain effective deterrence.)

Secretary Perle suggested that a hard look should be taken at deploying some Peacekeeper missiles in "combination with silos far more resistant to blast [overpressures] than we have now and [dedicated point] defenses." He added that, in principle, point defense is attractive because of one "enormous virtue: It gives you relatively high survivability with a relatively small offensive force" and thus enhances nuclear stability.

So far as the single-warhead, small ICBM (Midgetman) is concerned, Secretary Perle expressed surprise that a budget-conscious Congress would remain wildly enthusiastic about a missile system that promises to be extraordinarily expensive, especially when measured in terms of the cost of delivering individual warheads on their targets. The Administration endorsed the concept of small, single-warhead ICBM as outlined by the Scowcroft Commission, in spite of "some reservations, in the belief that a congressional consensus had coalesced around the entire package" proposed by that bipartisan commission.

The Commission's recommendations centered on comprehensive modernization of the strategic nuclear forces and linked this to vigorous pursuit of equitable arms-reduction talks with the Soviets. But, in Secretary Perle's view, "Congress did not keep its end of the implicit bargain." As a result, "it is only right—given the responsibilities we [in the Administration] have for the strategic program and for the budget—to take a good hard look at whether Midgetman . . . is a sensible long-term investment" under existing and foreseeable circumstances.

He pointed out that the available land owned by the Defense Department is limited. As a result, a mobile ICBM system would be confined to a relatively small area. Any kind of ballistic missile deployed in mobile modes is "vulnerable to relatively low overpressures," meaning that the lethal radius of the attacker's nuclear

weapons is rather large under such circumstances, according to Secretary Perle. He suggested that it is "far from self-evident that this weapon, [which was] designed not by weapons designers but by arms-control specialists," will prove as cost-effective and survivable as originally claimed.

While Secretary Perle acknowledged the "obvious attractiveness of invulnerable strategic nuclear weapons," he countered that "there is really no such thing. The question, in fact, is one of [relative degrees] of invulnerability." Because technology is evolving more rapidly than expected, "aggregate invulnerability will have to be achieved through a multiplicity of partial solutions." It therefore follows that "we will need more rather than fewer programs" and that these programs, individually, be much smaller than at present. There is no good reason, he said, why "we shouldn't have one ICBM type in two or three basing modes, each one of which requires a force configured differently for attack" against it. As a consequence, the enemy's forces would be so stressed that he could only "get some but not all of our ICBMs."

Secretary Perle blamed this country's failure to respond to Soviet strategic weapons proliferation and treaty violations for the emergence of yet another crop of new Soviet ICBMs. He predicted that one or more new "fifth-generation" ICBMs—beyond the SS-X-24 and SS-X-25—will soon enter flight-testing in violation of the SALT accords. Secretary Perle expressed doubt, however, that sufficient hard evidence about these new Soviet missiles will be available to cite these violations officially in the Defense Department's report due to President Reagan on November 15, 1985.

While he declined to disclose specific details of the new Soviet ICBM types for reasons of security, he told this writer that, in general, the traits sought by Moscow in the "fifth-generation" ICBMs are "greater accuracy, some mobility, and improvements in the quality of the payload." He did not consider an overall increase in the number of launchers likely, mainly because there is no military need to proliferate that force further.

Secretary Perle was equally skeptical about the notion that the Soviets were interested at this time in vast increases in the number of warheads carried by their ICBM force. They "are happy" now with the advantages they have gained already under SALT II and "the extent to which they comply with it." He debunked the notion held by some US arms-control ideologues that, in case of a breakdown of arms-

IN FOCUS...

reduction negotiations with this country, the Soviets would boost to thirty the number of MIRVs (multiple independently targetable reentry vehicles, or warheads) carried by their largest operational missile, the SS-18. That notion, he emphasized, was "rubbish" in 1979, when SALT II was nearing signing, and "it is rubbish now. They built the SS-18 to give them a hard-target kill capability. They are not about to drastically lower their warhead yield."

At the same time, he stressed that there is "serious evidence that the SS-18 carries more than ten RVs," the limit set by SALT II. He declined to give a specific number.

(As disclosed in this space previously, other sources reported that up to fourteen MIRVs have been test-launched in a tiered arrangement by the SS-18. The former Under Secretary of Defense for Research and Engineering, Richard DeLauer, calculated that the SS-18's throw-weight and "footprint," the area over which a given number of warheads can be dispersed, might be sufficient to accommodate as many as eighteen MIRVs.)

Secretary Perle described the President's decision to abide by the terms of the SALT accords as not being a "permanent" commitment. The decision, he added, "varied from all the options offered by his cabinet officers." While the White House decision shrewdly "maximizes US leverage on Soviet compliance," it leaves "open all options."

He added that while the President in his report to Congress said "three times that he is willing to go that extra mile, he didn't say he was going to go three extra miles," Secretary Perle quipped.

Washington Observations

★ The Defense Department has launched a major and intensive effort to enhance US capabilities in the field of tactical deception. This effort, which involves all services, centers on the use of relatively low-cost decoys of such weapons as aircraft, tanks, and ships to draw the enemy's fire away from real targets. These decoys simulate real targets with extremely high fidelity in terms of visual appearance as well as radar and infrared signatures.

Initial tests of such decoys during

maneuvers in Europe produced startling results. USAF fighter crews, even though aware that decoys had been deployed, reported proudly the destruction of "enemy" aircraft on the ground, only to be told that they had been deceived by decoys.

In a related field, significant progress is being made on electronic warfare systems that interfere with the guidance systems of hostile cruise missiles.

★ Competition on the Joint Tactical Missile System (JTACMS), a low-observable standoff weapon, has been narrowed to two designs. One of these designs of a "stealthy" missile capable of reaching targets in the enemy's second echelon is being developed under joint Air Force and Army aegis, with Northrop as the prime contractor; the other version is being developed under the aegis of the Navy, with Lockheed as the prime contractor.

Influential elements in Congress have suggested that JTACMS might also serve as a substitute for the semi-ballistic SRAM II, a proposed follow-on to the short-range attack missile that is also a key component of the Air Force's ASAT space interceptor. The SRAM II program is encountering serious opposition in Congress, even though SAC considers it a high-priority requirement.

★ Air Force planners indicate that recent technological advances support the notion that significant elements of the single integrated operational plan (SIOP) target system could be covered by nonnuclear, conventional weapons.

★ The Chairman of the House Armed Services Committee, Rep. Les Aspin (D-Wis.), told this reporter recently that unless he can get a "substantial change" of the military retirement system approved this year, "we will be back [on this issue] next year." He explained that "we won't accept [the Pentagon] finding some funny [surplus] money" as a means for sidestepping the House Armed Services Committee's request that about \$4 billion be cut from the retirement funds in FY '86.

★ The Administration authorized the release of an unclassified summary of the National Intelligence Estimate (NIE) that discloses that Soviet strategic forces can deploy 9,000 nuclear warheads at this time by means of bombers and ballistic missiles. By 1990, that total is expected to swell to about 12,000 warheads. ■



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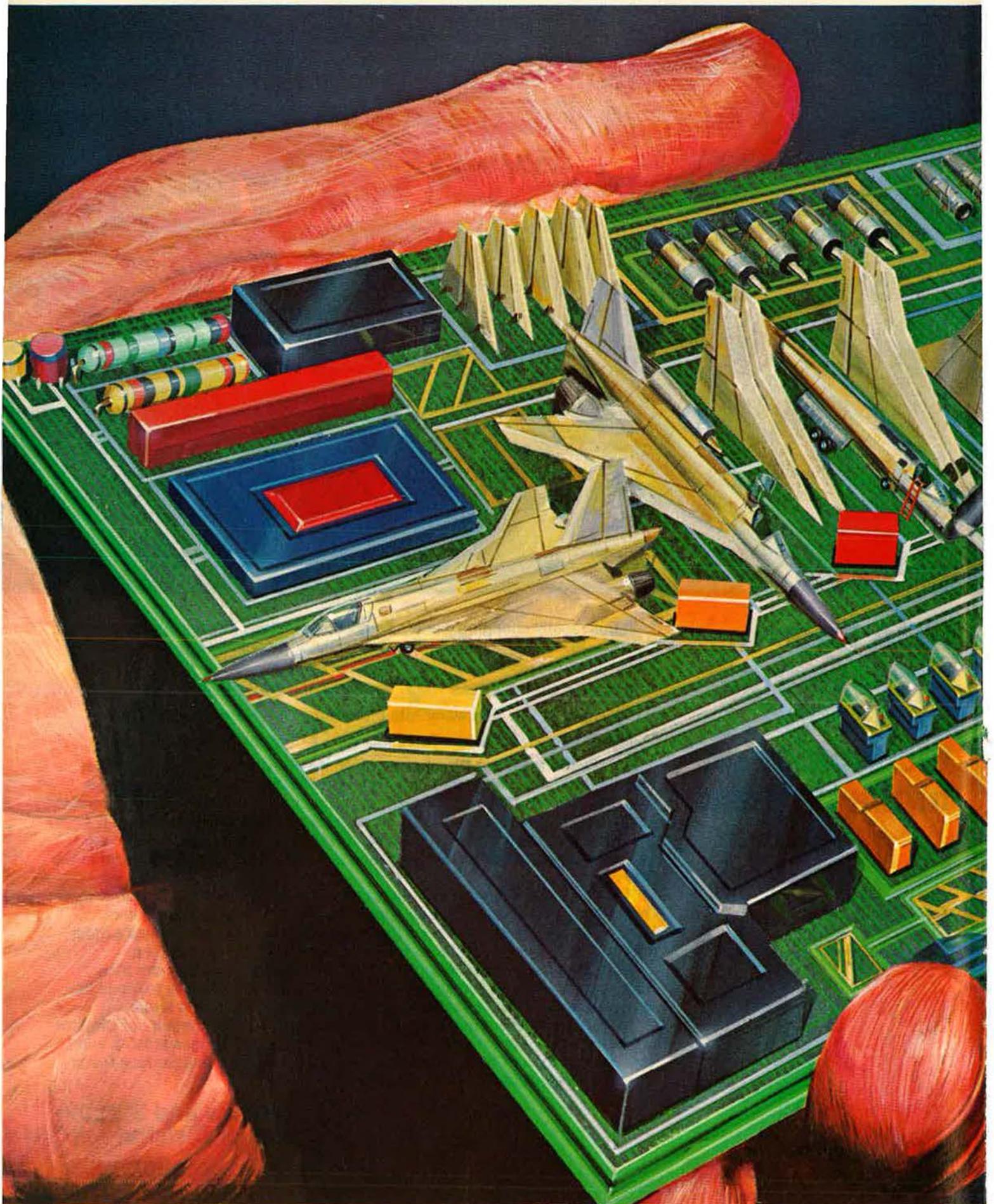
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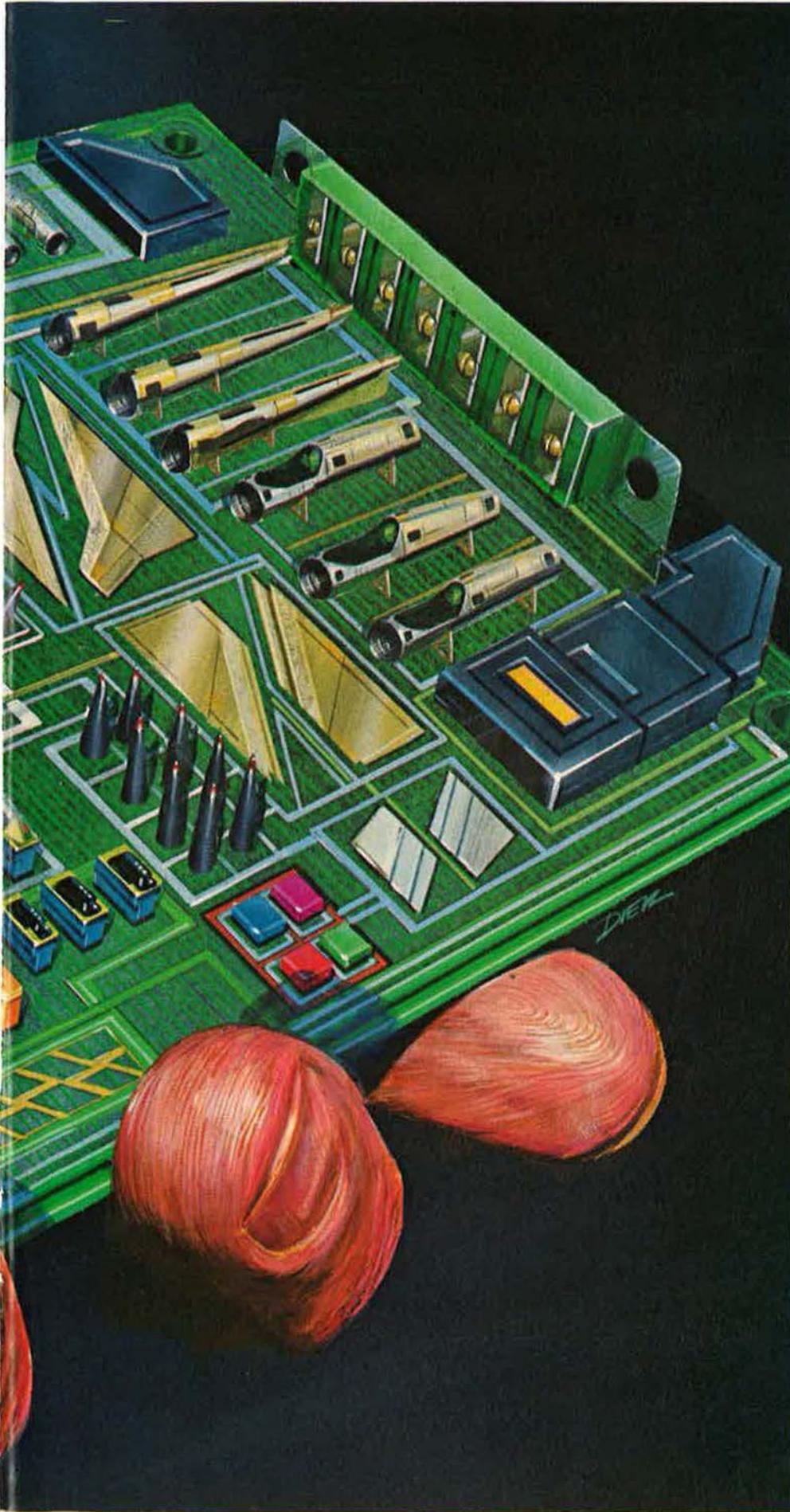
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CAPITOL HILL

By Kathleen G. McAuliffe, AFA DIRECTOR OF LEGISLATIVE RESEARCH

Washington, D. C., June 24 Restricting MX Deployment

The House went beyond the Senate in restricting the future of MX by limiting deployment to forty missiles. The Administration planned to deploy 100. A total of forty-two MX Peacekeeper missiles is already funded.

Earlier, the Senate voted to allow only fifty MX ICBMs to be based in existing silos, with further deployments hinging on a recommendation by the President for a different basing scheme. The House, however, provided no similar option for further deployments and no funds to buy any missiles, even for testing purposes, in FY '86. The Senate proposed a buy of twelve missiles next year.

The MX issue now will have to be resolved in a House-Senate conference. The Administration expects to get some production missiles, and there is speculation that the House will go along in conference with the Senate plan to base fifty missiles in existing silos. The Air Force wants the House to yield to the Senate and drop its restrictive language prohibiting any deployment beyond a specific number.

Cooperative NATO Efforts

The Senate wants NATO to get more bang for the buck in conventional programs and is encouraging greater cooperative efforts among the NATO nations in research, development, and production of weapon systems.

The congressional concern centers on the fact that, over the last ten years, NATO has outspent the Warsaw Pact but continually produces less defense equipment by a wide margin. For example, during this period, NATO produced 6,730 tactical combat aircraft while the Pact produced forty percent more. In 1984, a high point in US defense spending, NATO fielded 525 new fighters while the USSR alone produced 900.

Sen. Sam Nunn (D-Ga.), a leading proponent of enhanced NATO conventional force structure, said the disparity results from the Alliance's failure to coordinate the development and production of military equip-

ment. The Senator, while not advocating Soviet-style regimentation in defense production, believes NATO can increase output by doing a better job of pooling efforts to meet similar military requirements.

The Senate has approved legislation that sets aside funds in each service R&D account to be spent only as part of cooperative development ventures with the allies. Further, the legislation requires that possible cooperative weapons projects be analyzed for DoD consideration at the front end of the acquisition process. Funds are also provided to conduct comparative testing of systems and subsystems produced by the US and those produced by the allies.

House Reduces Authorization

The House accepted a proposal by its Armed Services Committee Chairman, Rep. Les Aspin (D-Wis.), to delete most of the funds requested by the Administration to offset future inflation. This reduces the level of the FY '86 Defense Authorization to that stipulated by the House-approved budget resolution. The House budget plan froze defense spending for next year at the FY '85 level of \$292.6 billion, without any allowance for inflation.

The proposal by Representative Aspin took \$10 billion out of the DoD Authorization by deleting \$5.6 billion in future inflation money and by chalking up \$4.4 billion in savings from previously appropriated funds that were unobligated. Defense Secretary Caspar Weinberger, who had identified these funds earlier, wanted the \$4.4 billion to offset congressional program cuts. The FY '86 budget proposed by the Administration included \$8.2 billion for inflation costs beyond FY '86. The Chairman earlier informed colleagues that he believed the Pentagon had received from \$18 billion to \$50 billion in excess appropriations in the last few years because of lower-than-projected inflation rates.

Representative Aspin believes the defense budget should fund inflation one year at a time in order to prevent

such excesses. There is concern among some on Capitol Hill, however, that it will be impossible for Congress to get a true picture of the cost of weapon systems unless future inflation is factored into each budget request.

ASAT Testing

The Senate has approved a compromise antisatellite (ASAT) system testing amendment that is almost identical to the previous year's legislation. Last year's bill allowed the Administration to test ASATs against objects in space so long as the President certified that the US was "endeavoring in good faith" to negotiate an ASAT limitation agreement with the Soviet Union. The Senate gave the Administration added flexibility this year by including a provision that would allow more than three ASAT tests so long as the President fulfills the certification requirement.

Meanwhile, the House will consider an amendment by Rep. George Brown (D-Calif.) banning all ASAT tests against objects in space unless the Soviets conduct a similar test of their already operational ASAT. A similar proposal was approved by the House last year and could pass again this year.

A testing ban would reverse the recommendation of the House Armed Services Committee, which funded the request to buy two miniature homing vehicles to be launched from F-15s. The panel expressed support for the Geneva negotiations on space, saying that while negotiations continue, any "restrictions or funding limitations on the US ASAT program would be unwise and destructive to the US position."

The Committee expressed concern about the Soviet monopoly in deployed ASATs as well as their ground-based test lasers and nuclear-tipped Galosh antiballistic missiles, both with possible ASAT capabilities. The Committee noted that the Soviets could test a laser ASAT prototype in this decade and deploy satellites armed with this capability by the end of the century. ■

AEROSPACE WORLD

News, Views & Comments

By James P. Coyne, SENIOR EDITOR

Washington, D. C., July 3
★ Aerospace defense industry observers are growing increasingly concerned with the public perception of the industry's efficiency, performance, and honesty.

Karl G. Harr, Jr., President, Aerospace Industries Association, has authored a response to current media and public commentary on the industry, "Some Perspectives on the Defense/Space Industry," which cogently addresses the problem. The belief that abuses reported so far are "merely the tip of a sinister iceberg" is nonsense, he says, "because there is no submerged iceberg." He makes his point by stressing the huge size of the aerospace industry, with its millions of workers and extreme diversity of products. By comparison, the mistakes and abuses are infinitesimal.

He recognizes, however, that in a free society, perceptions held by the public and the government are as important as the realities. He points out that a large part of the problem is that

firms in the industry operate at the frontier of advancing technology. They are often asked not just to produce a product, but to invent it. They operate under an unparalleled degree of scrutiny, and their management prerogatives are often usurped by superimposed government program management. They are heavily audited, far more than counterparts in civilian industry, and they are supervised by both the executive and legislative branches of government.

In spite of this, he points out, virtually all major programs nowadays are coming in at or under cost and schedule. But public perceptions based on some of industry's performance in the past, when the present defense industry was in its formative stages and mistakes were made as part of the learning process, continue to color the industry image. "The principal problem today," he writes, "lies in public perception of how the system works and the trend that perception has inspired toward relieving

industry of either the authority or the responsibility for doing its own job. The rationale for that trend is that industry cannot be trusted."

In reality, Mr. Harr states, the headlined abuses are anomalies. "This can be demonstrated by placing in perspective such facts as the sheer size of the procurement effort; the layer upon layer of auditings that routinely occur; the quality and advanced technological complexity of the products produced; and, despite all of the foregoing, the sheer paucity of the deficiencies uncovered. We know that what has surfaced is the distillation of the intensive and comprehensive audit of millions of transactions—not the fruits of random sampling.

"But the fact that we know this is not enough. The American public is being led to accept a contrary view, and as long as this is going on, we must use every avenue at our command to ensure their correct understanding of the facts." First, he says, the weapons procurement system itself must be improved through the proper assignment of responsibility. He lists ways to bring about the improvements:

- Achieve shorter procurement cycles, because prolonged cycles increase cost.
- Avoid overspecification.
- Give program managers the authority they need—when everyone is in charge, no one's in charge.
- Provide contract incentives for cost, schedule, quality, reliability, and performance and penalties when they are not met.
- Ensure that equipment is properly maintained by the customer and that sufficient spare parts are provided.
- Project downstream program costs more accurately and weigh affordability more accurately; otherwise, the result is cut programs or stretched-out programs resulting in waste or higher costs.
- Prevent and penalize overoptimistic "buy-in" bidding on new programs; this results in cutbacks or stretched-out programs and destruction of budgeting credibility.
- Seek more commonality of



Marking the first time since 1972 that US fighters have been assigned on mainland Japan, Col. Michael E. Ryan, 432d Tactical Fighter Wing Commander, receives a welcoming bouquet of flowers from Yoko Okuda, acting on behalf of the Japan Air Self-Defense Force, after his arrival in one of the wing's F-16 Fighting Falcons at Misawa AB during activation ceremonies.

equipment among the services to effect the economies of larger-scale procurement.

- React swiftly and in concert to ferret out and correct the causes of systemic problems, such as spares pricing.

Finally, Harr says, a major educational process is needed for both the public at large and people in government. "If Congress, for example, is going to continue to involve itself in the minutiae of procurement matters as directly as it has in the recent past, then it is important that Congress be better informed." Then, he says, "all parties to the process should step back from the politics of procurement and get on with applying well-known organizational principles under an arrangement that properly assigns authority and responsibility."

Similar sentiments were voiced by Malcolm T. Stamper, Vice Chairman, the Boeing Co., in an address to the annual meeting of the Aerospace Industries Association in Williamsburg, Va.

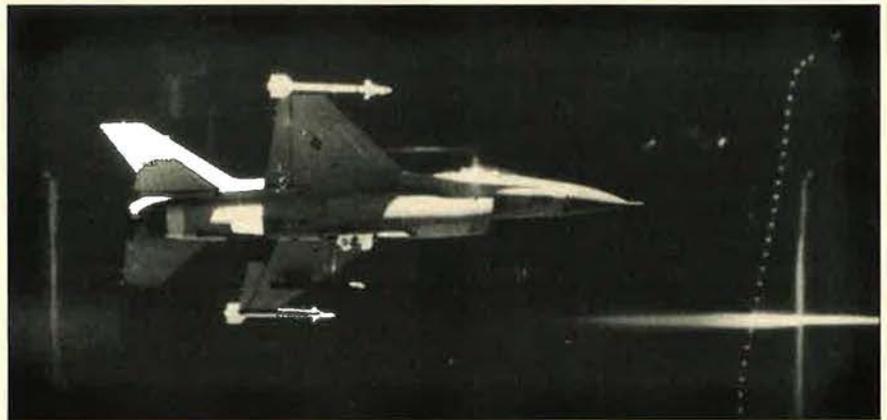
He recommends that industry and the Department of Defense attack the problem in partnership. "We recommend a select task force of key executives from DoD, such as those assigned to streamlining projects, and top industry personnel . . . a crack team of no-nonsense managers, experienced procurement experts, and sharp-pencil finance types. Legions of committees have addressed the problem. Let's convene an action task force to find the solution." After establishing targets and goals in several broad categories, the task force would develop specific recommendations and proposals.

These would be submitted to a senior review committee of "extremely knowledgeable people with previous congressional or Administration experience" who would then develop findings to be reported to the Secretary of Defense. At the same time, Stamper said, industry should carry out aggressive employee motivation programs to improve efficiency. Also, this would help counteract negative employee reaction to what they feel are allegations that impugn their integrity. Boeing has already started an employee awareness program, part of what Stamper calls the "bottom up approach."

Meanwhile, President Reagan announced the formation of an independent, bipartisan, blue-ribbon Commission on Defense Management, headed by former Deputy Secretary of Defense David Packard. Before announcing the name of the commission chairman, he complimented Secretary of Defense Caspar Wein-

berger for his efforts in ferreting out waste and fraud. In fact, he said, Weinberger's efforts are "the reasons why you hear about it in the news. But a public misconception has developed from all of this, a misconception born, at least, in part of a drumbeat of propaganda and demagoguery that denies the real accomplishment of these four years. The situation reminds me of the old saying, 'Don't clean the skeletons out of the closet. They'll accuse you of murder.'"

The new commission, the President said, will review the management reforms already carried out in DoD as well as proposals for new changes. The commission will also study and report on the congressional oversight process and its effects on the operation of the Defense Department. Finally, the commission will develop a "blueprint for action" for continuing improvement of DoD effectiveness.



A prototype Advanced Medium-Range Air-to-Air Missile (AMRAAM) scored a computed "hit" on its first guided launch during the full-scale development program. The missile (lower right) was launched from an F-16.

- ★ A prototype Advanced Medium-Range Air-to-Air Missile (AMRAAM) passed within lethal distance of a target in the first guided launch to take place during its full-scale development program, the Air Force announced after analyzing the missile's flight-test data.

The Hughes Aircraft Co. missile was launched from a USAF F-16 flying at Mach 0.85 at an altitude of 21,000 feet. The unarmed, telemetry-equipped missile was fired from the rear quadrant at a QF-100 drone flying at Mach 0.7 at 21,800 feet over White Sands Missile Range, N. M. Initial data indicates that the test launch met all planned test objectives successfully, according to the Air Force's Armament Division (AFSC), Eglin AFB, Fla., which is responsible for overall management of the AMRAAM program.

The AMRAAM, which has been designated the AIM-120A, and its companion rail launcher are in develop-

ment by Hughes for both the Air Force and the Navy. This flight verified AMRAAM's interface with the F-16 avionics system and the performance of its active-radar guidance capabilities. About 100 missiles will be produced for full-scale development testing. There is no production contract as yet.

AMRAAM was designed for use on the Air Force's F-15 and F-16 and the Navy's F-14 and F/A-18 aircraft. The missile, which is twelve feet long and weighs 326 pounds, is equipped with advanced digital technology and electronics packaging and a state-of-the-art radar transmitter that gives it a "launch and leave" capability. According to Ben R. McRee, AMRAAM program manager for Hughes, plans call for the missile to be carried by combat aircraft of the United Kingdom and the Federal Republic of Germany.

The "Capitol Hill" column in last month's AIR FORCE Magazine (see p. 24, July '85 issue) reported that the House Armed Services Committee had terminated funding for AMRAAM. Subsequently, after an intervention by Secretary of Defense Caspar Weinberger and a joint House-Senate conference, funds were restored in the budget to continue AMRAAM.

- ★ USAF analysts are intensively scrutinizing a General Dynamics offer to sell the Air Force a specially configured F-16C aircraft at a flyaway cost of \$9.7 million (in FY '85 dollars) each, with a guaranteed maintenance cost of \$554 per flying hour. The General Dynamics offer competes directly with Northrop Corp.'s offer to sell its F-20 to the Air Force for \$11.7 million each, with a maintenance per flying hour cost of \$475. A "full-up" F-16C would cost \$12 million, with an unspecified maintenance cost per flying hour cost.

AEROSPACE WORLD

Upon receiving the unsolicited offer from Stanley C. Pace, Vice Chairman of General Dynamics, Secretary of the Air Force Verne Orr said, "We see the unsolicited proposal from General Dynamics on a lower-priced F-16C as a healthy initiative. This proposal is a result of the competitive atmosphere we are fostering in order to get the fighters we need at the best price for the taxpayers.

"That atmosphere led to one of our best successes for the American taxpayer—the recent fighter engine competition that brought us greatly improved engines. Preparation of the 1987 budget is under way and discussions with the Defense Resources Board will begin . . . at which time the future fighter aircraft procurement issue will be discussed."

It would appear that Secretary Orr's drive to bring free enterprise to the DoD marketplace is paying off handsomely. But the proposal also raises the possibility of cost problems for the "full-up" F-16. The Air Force points with pride to savings of \$257 million in the purchase so far of 1,139 F-16s under multiyear funding, rather than the usual DoD year-by-year funding. With multiyear funding, aircraft manufacturers, suppliers, and subcontractors can accurately predict costs for labor, materials, floorspace, and equipment over an extended period of time. With single-year, "stop and go" funding, these costs are not only unpredictable, they are always higher. The Air Force plans to buy a total of 2,795 F-16s through FY '93. The buy is multiyear through FY '90.

★ Two McDonnell Douglas F/A-18 Hornet fighters have completed a record nonstop 7,700-mile flight from the United States to Australia in fifteen hours, the longest flight completed by these fighter aircraft. The aircraft took off from Naval Air Station Lemoore, Calif., and landed at the Royal Australian Air Force Base in Williamstown, 100 miles north of Sydney.

The flight of two was accompanied to Australia by a McDonnell Douglas USAF KC-10 tanker from March AFB, Calif. A second KC-10 staging from Hawaii refueled the first tanker and the fighters en route. The fighters received a total of 26,000 gallons of fuel from the KC-10s.

Australia is buying seventy-five F/A-18s. Both Hornets were flown by Australian crews. The fighter is in service with the US Navy and Marine Corps and the Canadian forces. The Spanish Air Force will begin receiving F/A-18s in 1986.

★ Pan American World Airways has taken delivery of the first Boeing 747 Superjet Civil Reserve Air Fleet (CRAF) cargo conversion aircraft. Gen. Thomas M. Ryan, Jr., Commander in Chief, Military Airlift Command, represented the Air Force at the cere-

mony at the Boeing Military Airplane Co. in Wichita, Kan.

The CRAF enhancement program involves modification of passenger 747 Superjets for use by the Air Force as military equipment carriers in crisis situations. Up to nineteen Pan American 747s will be modified by Boeing. The modification includes strengthening the main deck floor and installation of a cargo-handling system and side cargo door. The aircraft is then able to carry passengers or cargo. Modifying each aircraft takes two to three months.

★ A unique example of utilization of excess US government property is embodied in a thunder research laboratory atop a mountain in New Mexico. Langmuir Laboratory for Atmospheric Research, operated by the New Mexico Institute of Mining and Technology in Socorro, N. M., is the only thunderstorm laboratory in the world. It attracts researchers from France, Australia, England, and throughout the United States.

Because of the physical setting near Socorro, frequent, small, isolated thunderstorms form over the mountains during the summer and live out their life cycles within a few miles of their origin. The isolated, almost stationary nature of the storms creates a nearly ideal natural laboratory for studying the role played by electricity during thunderstorms. The lab sits within a 30,000-acre scientific preserve established by Congress expressly for atmospheric and astrophysics research. The Federal Aviation Administration has established a twenty-five-square-mile restricted airspace around the location so that researchers can safely fire rockets and instrumented probes into active thunderstorm clouds.

Although the laboratory is involved in basic scientific research, it is a Department of Defense contractor funded by both the National Science Foundation and the Office of Naval Research. As a recipient of DoD funds, Langmuir qualifies for equal priority with any active military organization for excess property that is recycled from one military unit to another under the DoD reutilization program. The program is managed by the Defense Property Disposal Service (DPDS), Battle Creek, Mich., a subsidiary of the Defense Logistics Agency.

Langmuir Laboratory Chairman Charles B. Moore describes the sort of excess property the installation has acquired: "The five-story annex that houses most of our scientific observation equipment was constructed in



The first Boeing 747 to be converted to Civil Reserve Air Fleet (CRAF) configuration, shown here during conversion at the Boeing Military Airplane Co. plant, has been delivered to Pan American World Airways.

As in other commands, PACAF's greatest asset is its people, whom Commander in Chief Gen. Robert W. Bazley characterizes as "superb." This group of technicians gives close attention to the task of inspecting several avionics components on a Wolfpack F-16A being readied for an air-to-air training mission.



ple areas for high-performance training. "On the European continent, we can't fire air-to-air missiles, we can't fly at high speeds, and we can't fly low level," he says. "We can do all those things here in PACAF, and more. So, the training is more realistic."

One advantage to nearby training areas is that little time on a training sortie is used flying to and from the area. In Europe, and in most places in the United States, a significant percentage of flying time is spent between bases and the various training areas.

The most frequent PACAF exercise is Cope Thunder, a Pacific version of Red Flag. Taking place seven times a year, this two-week exercise is flown in the Crow Valley training area near Clark AB. It aims at giving aircrews the experience they will need to survive the critical first ten combat missions in an actual war. It includes realistic simulated ground electronic threats and attacks by the Aggressors of the 26th Tactical Fighter Squadron, using their adversary tactics. US Navy and Marine Corps air units and elements from friendly and allied air forces participate, as do B-52s from SAC's wing on Guam. Last year, 7,869

Cope Thunder sorties were flown. Other nations participating were Thailand, Singapore, New Zealand, and the Philippines.

Cope North, an air defense exercise, is conducted quarterly with the Japan Air Self-Defense Force, flying from bases in Japan.

Team Spirit, conducted annually in Korea, is the largest of PACAF's exercises. In fact, it is the largest combined exercise in the free world. More than 200,000 US and Republic of Korea military people take part, testing in a realistic war-time scenario their readiness and rapid deployment capability as well as their ability to fight together. Included are forces of all US services.

Coalition Warfare Essential

Combined exercises are especially important. "In a real shooting war in the Pacific, the command would be heavily dependent on coalition warfare to defend against the threat," General Bazley says. A big difficulty in fighting this kind of war is that there is no umbrella organization, such as NATO, binding together the nations of the Pacific. US agreements in the area are bilateral. But with other forces to augment PACAF's, he believes, the balance

would not be so one-sided as it appears today.

The Japanese would use their aircraft to defend their own interests. At present, they believe that their constitution prevents them from doing anything more. But this would free up US dual-purpose forces in Japan. Augmenting PACAF's 300 aircraft would be a good portion of the 700 US Navy carrier and Marine aircraft stationed in the Pacific theater. "The exact number available would depend on how many carriers were required to be in port for repairs or overhaul," he points out. The Republic of Korea's 400 tactical aircraft would fight. So would Australia's modern air force, with its F-18s and F-111s. Several other nations, with relatively small forces, but good ones, would help, General Bazley believes, even if they only defended their own territory. Finally, there would be reinforcements from the US.

And most important of all would be PACAF's most obvious feature—its vastness. An aggressor would have to fight his way through allied and friendly nations across the broad expanse of the Pacific Command, covering half the earth. ■

possible, doing away with malpositioning, and getting closer to putting things where they will be needed." PACAF's munitions inventory has grown eleven percent since 1980. Munitions quality has improved as the command has acquired newer missiles and advanced bombs and fuzing and retarding devices. Two new munitions preload complexes in Korea have greatly increased production of preloaded munitions racks, which can be quickly loaded onto aircraft for combat missions.

Twelve new fuel tanks with a capacity of 900,000 barrels of WRM fuel have been constructed in several strategic PACAF locations. In Korea, virtually all fuel storage tanks have been hardened, increasing protected capacity by thirty percent. Since 1980, seven of PACAF's nine liquid oxygen- and liquid nitrogen-producing plants have been replaced with new, state-of-the-art plants, significantly increasing peacetime and contingency production capability. The largest base-level mechanized materiel handling system project in the Air Force, valued at \$4 million, was completed in May at Kadena.

Air-base defense was upgraded last year when the first USAF Stinger surface-to-air missile system became operational in the Republic of Korea. The shoulder-mounted, heat-seeking missiles are at Osan and Kunsan ABs. This is the first time USAF has operated its own ground-based air defenses.

PACAF's People

General Bazley credits the continuing improvement of PACAF's posture to good people. "PACAF people are superb," he says. "I am proud of them and their performance. They produce all the time, and they make the sacrifices required to carry out our mission."

Considering the command's area of responsibility, the size of the force is small. PACAF has about 37,000 people at ten major locations and several smaller facilities. Just under 10,000 of these are civilians. In addition, there are approximately 21,000 people in theater from other Air Force commands. PACAF people like being in the Pacific. A higher percentage of them elects to extend their tours there than in most other commands.

F-4Es arcing high overhead symbolize the power and versatility of PACAF's relatively limited force. While the command's air assets four years ago consisted mostly of early models of the Phantom, today's force has been more than sixty percent modernized. Equipment ranges from these F-4Es through the F-4G "Wild Weasel" to the F-15, F-16, and A-10, all with more range, attack capability, and firepower than the previous aircraft.



"We do have some concerns," General Bazley says. "There isn't enough on-base housing, and the quality of housing on the economy is usually not up to American standards. Sometimes, families wait months for base housing. We are doing something about this by making our needs known to Congress, which is where money for housing comes from. Congress has provided good support for this command in other areas, and we hope for help on an improved quarters situation."

The quality of the PACAF force is excellent. More than ninety-nine percent of the enlisted people are high school graduates. The retention rate for airmen completing their first terms of enlistment is about seventy-five percent. About ninety percent of PACAF pilots, navigators, and support officers elect to serve past their initial duty obligation tour. It's a young force—three-quarters of the enlisted force and more than one-third of the officers are under age thirty. More than eighty-three percent of officers and sixty percent of the enlisted members are married. Virtually the only PACAF statistic that matches, rather than stands above, the Air

Force average is the percentage of the force in the command who are women—eleven percent.

The Morale, Welfare and Recreation (MWR) facilities improvement program is aggressive. Right now, eighty-one projects are programmed. In the last three years, forty-eight projects were completed, including child-care centers, youth centers, racquetball courts, bowling centers, and open messes.

In the last fiscal year, thirty-five military construction projects were funded. Among these were dormitories in Korea, aircraft and crew shelters at Osan, and "Commando Port," the beddown of the new F-16 wing at Misawa. Twenty-nine projects are under way for FY '85.

Realism in Training

General Bazley believes the high quality of the warfighting force flows from high performance in training. PACAF people participate in about seventy exercises a year, many of them with other services and the forces of allied nations. One advantage to training in the Pacific is that most bases have training ranges and areas close by, General Bazley points out, and there are am-

explains. "My responsibility—because I am responsible for PACAF's area of operations—covers 100,-000,000 square miles."

Because of the long distances involved, about a third of the flying done by C-130s in theater is long haul of passengers and cargo rather than tactical airlift in forward areas, says General Mears. In an actual conflict, this might well increase because of the requirement to move materiel related to combat force deployments. In Europe, that requirement is not nearly so great because materiel can be prepositioned much farther forward than in PACAF.

By far, however, most strategic airlift missions in PACAF are flown by C-141s, C-5s, contract airliners, or KC-10s in the airlift role. In 1984, MAC moved more than 300,000 tons of cargo and 1,600,000 passengers in PACAF, an increase of approximately fifteen percent over the year before and more than was moved in the European theater of operations.

Airlift people, especially in PACAF, look forward to the arrival of the C-17. This aircraft, still in development, will be about the size of a C-141 or KC-10, but will be able to lift outside Army cargo and deliver it to short, rough airstrips in forward areas.

Today, only the C-5 can carry outside Army cargo, and it cannot go into small, rough fields. Strategic airlift aircraft must fly into a theater of operations and land at a prepared field some distance behind the battle area, where troops and equipment are transferred to a tactical airlift aircraft like the C-130.

In a major exercise in Korea this year, the Army's 7th Infantry Division flew from the US in C-5s to Osan AB, Korea, and then cross-loaded into C-130s for the leg into the exercise area. This required fifty-two C-130 sorties in four days. C-17 transports could have gone all the way to the forward landing field, and the C-130 sorties would not have been needed. The C-17 is expected to be economical, too. Projections are that it will be able to haul ninety percent of a C-5's capacity from the East Coast of the US to Europe at half the operating cost.

Maintenance practices are also affected by PACAF's vast distances. During the force reductions in the late 1970s, planners became con-

cerned about the availability of airlift to transport spare parts and components between user units and Stateside depots. Long distances translated into lengthy transit times and presented the possibility of parts shortages.

Centralized Maintenance Facility

The answer was to establish the PACAF Logistics Support Center (PLSC) at Kadena to perform intermediate-level repair work. Conceived when North Korea was perceived as the principal threat in the theater, the PLSC provided a safe haven for maintenance and repair of equipment removed from aircraft, but it was still in reasonable proximity to the potential combat area.

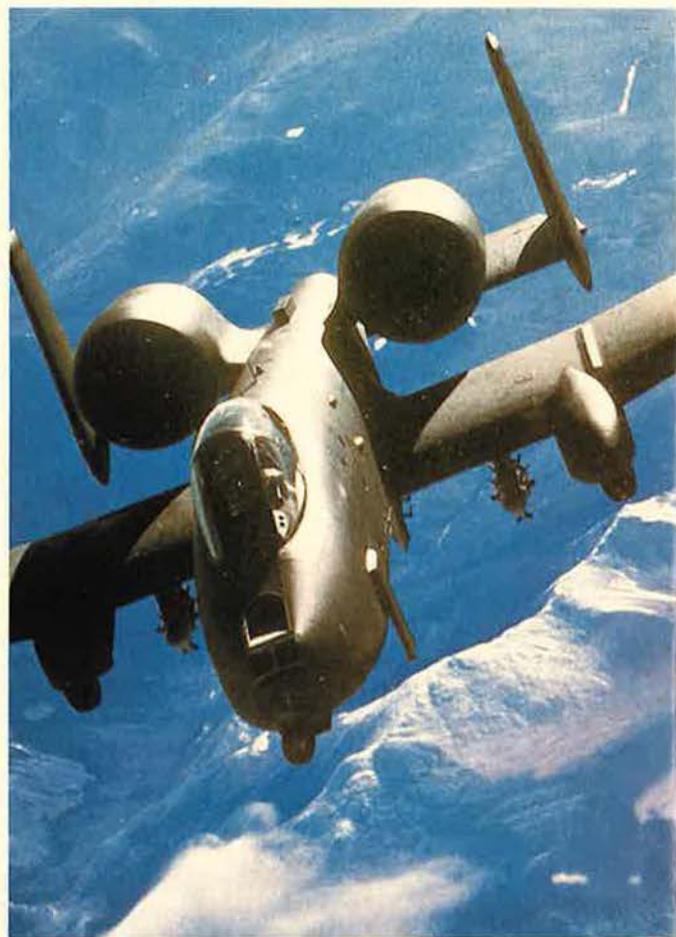
With today's threat, it may not be as safe a haven as it once was, but the PLSC has done an exemplary job and remains the only centralized intermediate repair facility of its kind in the Air Force. Placing the facility in an accompanied tour area means less personnel turnover because short-tour rotations are no longer necessary. This results in an

overall higher level of experience for repair personnel. The Center averages production of more than 2,000 spares units and forty-six jet engines a month.

The PLSC has worked so well that Air Force Logistics Command has carried the concept one step farther and added a new detachment at Kadena to perform major, or depot-level, maintenance. Called the Support Center Pacific, or SCP, it pools special technical skills to allow repair in PACAF of critical, depot-reparable items like F-15 and F-16 avionics. The result is that a significant portion of depot-reparable items will now be repaired in a fraction of the time formerly required because the trip back to Stateside depots, which had been as long as 14,000 miles, has been eliminated.

General Bazley has carried out an aggressive policy to improve behind-the-line support for PACAF forces. "We have made, and continue to make, significant inroads on War Reserve Materiel (WRM) problems—POL, munitions, and related items," he says. "We're pushing up-front storage as much as

Newest addition to PACAF's modernized aircraft arsenal is the A-10 Thunderbolt II. Its 30-mm gun is the ideal weapon for knocking out tanks and armor. This aircraft, on an air refueling training mission, is assigned to the 25th Tactical Fighter Squadron at Suwon AB, South Korea, and is well placed to confront any attack by North Korean forces.





tem (AWACS). AWACS can control large numbers of tactical aircraft in air battles hundreds of miles away. Kadena's E-3As are assigned to Tactical Air Command, but are under the operational control of PACAF.

Still farther south, in the Republic of the Philippines, is Clark AB and Hq., Thirteenth Air Force. Thirteenth Air Force is responsible for all Air Force operations in Southeast Asia. The 3d Tactical Fighter Wing, with F-4E and F-4G "Wild Weasel" teams, operates from Clark.

F-5 "Aggressors" at Clark provide realistic air combat training for US aircrews by using Soviet and other adversary tactics in practice air-to-air encounters. Also at Clark are several MAC organizations, including a rescue and recovery squadron flying the HH-3 Jolly Green Giant helicopter. MAC's 374th Tactical Airlift Wing is there, managing C-130 tactical airlift operations as well as C-9 Nightingale aeromedical evacuation aircraft and MC-130s for special operations missions.

PACAF Headquarters is at Hickam AFB, Hawaii. Flying

forces there include the EC-135 Airborne Command Post. F-4Cs of the Hawaii Air National Guard, together with the 326th Air Division at Wheeler AFB, are charged with air defense of the Hawaiian Islands. The 326th also operates OV-10s, which fly out of Wheeler.

Operating throughout the theater is the Strategic Air Command, which provides air refueling support with the KC-135 and KC-10, maintains the reconnaissance aircraft at Kadena and Osan, and exercises operational command over a squadron of B-52s at Andersen AFB, Guam. The bombers fly maritime operations missions, such as mine-laying and sea reconnaissance. The squadron is soon to be equipped with Harpoon antiship missiles. Under the direction of the 3d Air Division at Andersen, B-52s carry out other conventional operations that include show of force, conventional bombing, and frequent exercises.

One exercise is Busy Boomerang, which involves "round-robin" flights to Australia and back, including low-level training. (In SAC,

a "round-robin" flight is one that starts and finishes at the same airfield, with the aircraft overflying several designated points along its route.) Another exercise is Glad Customer, in which US-based B-52s stage through Andersen to Darwin, Australia. From Darwin, they fly "round-robin" sea reconnaissance and surveillance missions into the Indian Ocean and back to Darwin, and then stage back to the US through Andersen. Andersen B-52s also participate in joint SAC and Navy exercises and in PACAF exercises conducted several times a year near Clark AB.

Airlift Is Critical

Military Airlift Command operations in the Pacific are most closely related to one of General Bazley's biggest problems. "Time and distance considerations give me logistics and operational concerns," he says. "Range and payload tradeoffs figure in most transportation decisions in this command because the territory we cover is so vast." Brig. Gen. Gary H. Mears, Commander, 834th Airlift Division at Hickam,



Airmen of the Royal Thai Air Force and the US Air Force together examine the wingtip of a USAF F-4E Phantom. Combat air operations are practiced several times a year during Cope Thunder, in which US Air Force, Navy, and Marine aircraft and people and often the forces of other Pacific nations fly in realistic aerial combat training operations against simulated ground and air threats.

An F-16 assigned to Kunsan AB's famous 8th Tactical Fighter Wing—the Wolfpack—rolls in for a practice ground attack mission. Although the Wolfpack's primary role in Korea is air-to-ground, its Fighting Falcons possess a formidable air-to-air capability that suits the aircraft well for employment in any high-density air war that might be fought over the peninsula.



tical forces in PACAF now include some 300 fighter, attack, and reconnaissance aircraft—a twenty-five percent increase over the 240 aircraft in the command a few years ago. Aircraft include the F-15, F-16, F-4, A-10, RF-4, and OV-10.

PACAF is acquiring these forces in an equipment-improvement program that has been under way for four years. The previous level was what remained in the theater after the drawdown from a Vietnam high of 1,882 aircraft, most of which were in Southeast Asia. "Only about twenty percent of the force was really modern," General Bazley says. "Essentially, PACAF was an F-4 force, and many were early versions. Today, more than sixty percent—the F-15s, F-16s, and A-10s—has been modernized." Modernization in the command continues with the arrival this summer of a new wing of F-16s at Misawa AB, Japan.

Because of the vast distances involved in fighting a war in his theater of operations, General Bazley would welcome the addition of some F-111s, with their long range and high speed. He looks forward to the possibility of acquiring the

F-15E, which has a longer range than current F-15 versions.

PACAF's Lineup

Suwon AB, Korea, is equipped with a squadron of A-10 Thunderbolts for close air support. With Maverick missiles and its 30-mm gun designed specifically for knocking out tanks, the A-10 is an ideal weapon system for support of ground forces against North Korean armor.

At Kunsan AB, Korea, the famous "Wolfpack"—the 8th Tactical Fighter Wing—is equipped with F-16s. The Wolfpack's mission is ground attack, although the F-16 also has a formidable air-to-air capability.

At Osan AB, Korea, the 51st Tactical Fighter Wing is equipped with F-4Es for the air defense role. One squadron of this wing, the 497th, is stationed at Taegu AB, where maintenance is performed jointly by American and Republic of Korea Air Force (ROKAF) people. Osan is also the site of a hardened Tactical Air Control Center, which provides information for combined command and control of USAF and ROKAF aircraft. In Korea, crews of both air

forces practice flying and fighting together on a routine basis. OV-10 Broncos are stationed at Osan to provide forward air control support for the fighters.

In Japan, Yokota AB is the site of Hq., Fifth Air Force, responsible for air operations in Northeast Asia. A squadron of C-130 tactical airlift aircraft is also located at Yokota. These are Military Airlift Command (MAC) aircraft under the operational control of PACAF while in the Pacific.

To the south is Kadena AB, on Okinawa. This is PACAF's largest base, with the most varied mix of aircraft. Headquarters of the 313th Air Division, the base includes the 18th Tactical Fighter Wing, equipped with F-15 air-superiority fighters and RF-4C reconnaissance aircraft. Strategic Air Command maintains KC-135 tankers at Kadena as well as strategic reconnaissance assets like the SR-71 Blackbird, fastest aircraft in the world, and the RC-135. These two types of aircraft range the entire PACAF theater of operations on high-altitude reconnaissance missions. The base also boasts the E-3A Sentry, the Airborne Warning and Control Sys-

It stretches halfway around the world, from the west coast of the United States to the coast of Africa and from the Arctic to the Antarctic. PACAF spans twelve time zones—the continental US, only four.

"This is a big command," General Bazley says. "All of USAFE [US Air Forces in Europe] would fill a small box on the map somewhere between Hawaii and Wake Island." To put the size in perspective, remember that a jet transport takes less than six hours to fly from one coast of the continental United States to the other. By comparison, it takes *nineteen* hours to fly from the west coast of the United States to the farthest US base in the Indian Ocean, on the island of Diego Garcia. Elapsed time for a giant C-5 to make the trip without in-flight refueling (although the C-5 does have an in-flight refueling capability) is *thirty-two* hours, allowing a standard two-and-a-half-hour turn-

around time at each ground stop along the way. Transit time for a naval task force to traverse the same distance is measured in weeks.

Changing Mindset

The perception of the threat in the Pacific has changed, General Bazley says: "The focus of our Pacific forces mindset has swung from defense of the South Korean peninsula to viewing a Pacific war in a global context—not ignoring the North Koreans, but facing them as part of a global threat.

"The Soviets, having greatly modernized their European forces in the Central Region facing NATO, have been funneling their most modern equipment to the Far East Military District. These weapons are a significant threat to most of Asia and the transpacific trade routes as well as to US forces in the northern and western Pacific." Cam Ranh Bay, in Vietnam, gives the Soviets a significant warm water port

facility more than 2,400 miles south of their main Far East port, Vladivostok.

A bright spot on PACAF's horizon is China. Looking to Western nations for new technology, Beijing supports the aims of NATO, has joined the International Monetary Fund, and is seeking credit and trade. So this giant country and its army of 4,000,000 will be viewed by PACAF planners as a stabilizing force in the region for the foreseeable future.

But in Northeast Asia, North Korea—guided by a doctrine stressing mass, mobility, armor, and firepower—continues to threaten South Korea. In Southeast Asia, Vietnam dominates its neighbors and maintains a standing army of more than 1,000,000—third largest in the world.

Facing this formidable situation are General Bazley's Pacific Air Forces, which have recently been strengthened and improved. Tac-



In so vast a theater, concerns about range, payload, and time are omnipresent.

PACAF's Global Perspective

**BY JAMES P. COYNE
SENIOR EDITOR**

Two USAF F-15s take off on an air-superiority training mission from Kadena AB, Okinawa, Japan, the largest base in Pacific Air Forces' theater of operations. The tail markings show that the aircraft are assigned to the 18th Tactical Fighter Wing.

PACIFIC Air Forces planners in Hawaii focus today on two primary facts of life—the vast size of PACAF's theater of operations and the ever-growing Soviet threat, which they now view in a new, global-war context.

Great distances impose range and payload tradeoffs that directly affect attack capabilities as well as air supply and reinforcement. To cover long distances, attack aircraft must carry more fuel tanks and fewer weapons. Transports must load up on fuel, reducing the payload they can haul to combat forces. And in-flight refueling aircraft must consume more fuel to fly the longer distances and consequently have less available in their tanks to offload to other aircraft.

This concerns Gen. Robert W. Bazley, Commander in Chief of Pacific Air Forces. PACAF is the air component of Pacific Command, which is geographically by far the biggest of all US unified commands.



some in the turns (by far the widest of any aircraft in the show) or in high-speed passes down the flight line, it nevertheless brought conversation to a stop when it halted in midflight, pirouetted in place, dipped its nose as if bowing to the crowd, pirouetted once again, and left the demonstration area in a near-vertical climb.

Seasoned observers were disappointed at the loss of the Northrop F-20 Tigershark, which had been scheduled to appear. It had crashed at Goose Bay, Labrador, en route to Paris. Northrop spokesmen said the



Impressive in all maneuvers was the joint Italian/Brazilian AMX attack aircraft, expected to enter service in 1987.



Lockheed demonstrated a new airborne early warning and control (AEW&C) version of the well-known P-3 Orion (above), while the French showed three differently configured Mirage 2000s. This air-to-ground version (left) is being towed from the static display area to the flight line.

crash does not in any way change the company's plans for marketing the aircraft.

One interesting addition to the show was the nosegear-up landing by the Yugoslavian Soko G-4 Super Galeb. The pilot kissed down on the main gear and gently lowered the nose to the runway, with minimum damage to the aircraft on rollout.

On the static display line, the longest lines were at the Grumman X-29 mockup. The sleek little experimental plane with canards and forward-swept wings attracted visitors from all over the world.

The huge Soviet Condor, however, clearly attracted the largest crowds. With a reported wingspan of more than 240 feet, it beats the C-5 by almost eighteen feet. Its length, however, 228 feet, is almost twenty feet shorter than the C-5. The Condor's maximum takeoff weight, which is given by the Soviets as 892,872 pounds, is significantly more than the C-5's max takeoff weight of 800,000 pounds. Also, with its twenty-four-wheel landing gear, it is believed that the Condor can operate from unprepared fields—something the C-5 does not do. ■



General Dynamics F-16, which by far climbed more steeply on takeoff, turned more tightly inside the field boundaries, and came over the top lower than any other aircraft, bottoming out at the prescribed minimum altitude of 150 meters (between 450 and 500 feet) above the ground. Wingtip smoke generators added to the drama of the F-16 show by delineating clearly how tightly the aircraft was being flown. Before the third day of the show, some other manufacturers had also added smoke to their demonstrations.

Star of the show was the General Dynamics F-16C, shown here in a high-G, inside-the-field boundary turn, trailing smoke from wingtip generators and condensation from the wing strakes. (Photo courtesy General Dynamics)

Perhaps the most breathtaking maneuver by a jet was the tail slide and hammerhead stall included each day in the routine by one of the three French Mirage 2000s. These maneuvers are not included in US flying demonstrations because they are not stressed in combat training. Also spectacular was the daily display by the British Aerospace Sea Harrier. While not particularly awe-



The UK's Airship Industries Skyship 600 demonstrated potential use in the sea-rescue role. The company has teamed with Westinghouse to study the long-term fleet surveillance mission.

A huge new Soviet transport was the big attention-getter at the Paris Air Show.

The Birds of Le Bourget

BY JAMES P. COYNE
SENIOR EDITOR

Photos by John Amrhein

The thirty-sixth Paris Air Show at Le Bourget Airport was, as usual, spectacular, with more than 1,000 exhibitors from about thirty-four countries displaying everything from ultralight sport airplanes to the huge new Soviet transport, the Antonov An-124, which appears to have taken the title of "largest aircraft in the world" away from the US C-5 Galaxy.

The An-124, NATO codenamed "Condor," flew at the show only on the first and last days. (For more on the An-124, see the report in the "Jane's Supplement," starting on p. 93 of this issue.) Other new aircraft that flew in the show at Paris included the Soviet Kamov Ka-32 utility helicopter, with its counter-rotating dual main rotor system; the swift Aeritalia/Aermacchi/Embraer AMX fighter bomber; Argentina's IA.63 jet trainer; Romania's IAR-99 jet trainer; the Yugoslav/Romanian Orao close support aircraft; Israel Aircraft Industries' (IAI) Westwind Astra business jet transport; the Dornier Seastar amphibian; and Italy's Agusta A129 attack helicopter.

The most spectacular performances of the show were by the US

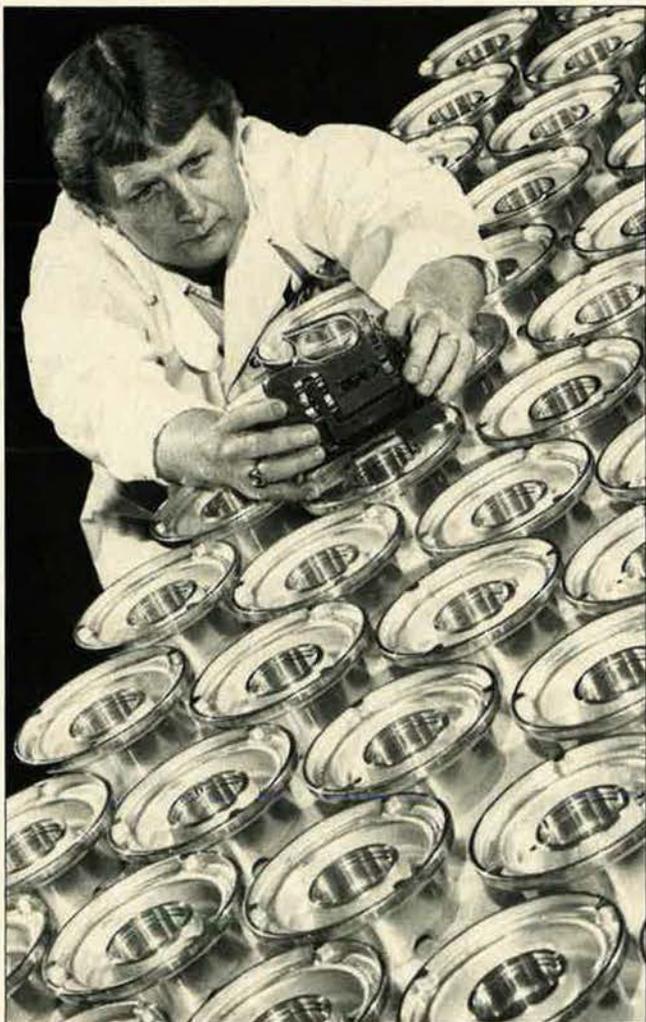




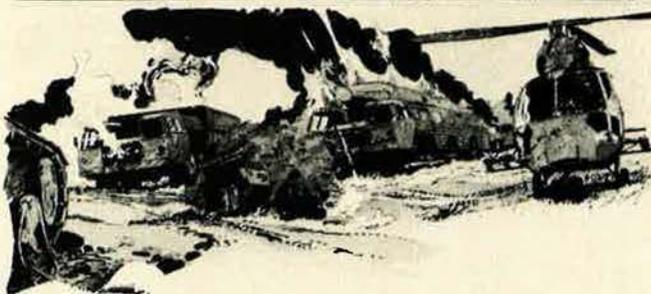
The huge new Soviet An-124 Condor dwarfed everything else in the show, while the Embraer Tucano turbo (inset) flew a dazzling display.



Kenneth F. Stetson, an aerospace engineer in the Flight Dynamics Laboratory, Wright-Patterson AFB, Ohio, has received FDL's highest honor, the General Benjamin D. Foulois Award, for outstanding research and development accomplishment in his work on the effects of hypersonic speeds on boundary layer stability.



Dozens of aluminum wheels for Kaman Seasprite helicopters are checked within tolerances before leaving the factory at Goodyear Aerospace in Akron, Ohio. Helicopter wheels are small, but must be able to withstand the stress of hard vertical landings.



tactical support bomb

BAT 120

To neutralize the columns of mechanized units as they travel along their axes of advance (roads, railway-tracks) before they deploy over the combat-zone.

- Optimal aircraft loading: 18 bombs under just one pylon (735 kg on a single carrying point). Other carrying points available for fuel, ECM, air-to-air missiles.
- Weapon-system adaptable to all combat-aircraft, including the lightest, whether they are fitted with a fire control system or not.
- Two weapon-systems in one:
 - with no adjustment, the adaptors installed on the aircraft can accommodate the BAT 120 or BAP 100 (cratering bomb) indifferently;
 - in both cases less than 10 min is required to load the bombs on the aircraft.
- Weapon-system in service with the French Air Force.

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several civilian aerobatic demonstrations, including old-fashioned wing walking. The field will be open from dawn to dusk.

★ The eighth successful MX Peacekeeper missile test flight has taken place from Vandenberg AFB, Calif., the Air Force has announced. The flight lasted thirty minutes and covered approximately 4,000 miles to a target area in the Kwajalein Missile Test Range in the Pacific Ocean.

The missile carried six unarmed Mk 21 reentry vehicles. This is the fourth time the Peacekeeper carried Mk 21s and the second time they were carried exclusively. When operational, the missile will carry ten independently targetable reentry vehicles more than 5,000 miles.

This was the eighth of twenty planned research and development test flights and was the third in Phase II of the four-phase test program. This phase will include silo launches and full integration of the Mk 21. Phase I tested missile functional performance and validated the missile guidance system and booster performance. The test was launched from an above-ground canister on a con-

AEROSPACE WORLD

crete pad. The final twelve test missiles will be launched from modified Minuteman silos at Vandenberg. The test missiles carry a command destruct package that ensures the missile can be safely destroyed if it deviates from its planned flight path. None of the test missiles carries an actual warhead.

The Peacekeeper is a four-stage intercontinental ballistic missile (ICBM) designed to modernize the US ICBM force. It is significantly advanced over existing Minuteman missiles in range, accuracy, and payload capability. Planned initial operational capability (IOC) for ten missiles on strategic alert at F. E. Warren AFB, Wyo., is December 1986.

★ Implementation of the Department of Defense Acquisition Streamlining Initiative aimed at reducing excessive requirements that unnecessarily raise

the cost of DoD weapon systems has been expanded by Deputy Secretary of Defense William H. Taft IV. "With implementation of this initiative, industry will be given a greater opportunity to recommend the most cost-effective application of specifications, standards, and other contract requirements as weapon systems evolve through development," his memo read.

Emphasis will be placed on specifying results rather than the "how-to" procedures presently required in requests for proposals and contracts. Secretary Taft's memo requires that acquisition streamlining be applied to all DoD system acquisition programs initiated after September 30, 1985. Acquisition streamlining has already been implemented in thirty-three existing acquisition programs.

"Detailed specifications and standards will be used only for guidance during the early phases of development of a weapon system," he said. "Limits will also be placed on incorporating contract requirements through referenced documents in specifications and standards."

★ The Flight Dynamics Laboratory (FDL), Wright-Patterson AFB, Ohio, has awarded its highest honor, the General Benjamin D. Foulois Award, to Kenneth F. Stetson for his research involving the boundary layer between the surface of an object moving through air and the air mass surrounding it.

The Foulois Award was established in 1965 to "perpetuate the exploratory spirit of the military aviation pioneer" and is awarded to the FDL individual or group responsible for the most outstanding in-house research and development accomplishments during the past year. It is named after an early Chief of the US Army Air Corps.

Stetson is an aerospace engineer in the lab's High Speed Aero Performance Branch, Aeromechanics Division. His work focused on the stability of the extremely thin boundary layer as it is subject to hypersonic speeds—more than five times the speed of sound—and other factors, such as atmospheric density, nosetip bluntness, and angle of attack. At such speeds, "the frictional effects make it very important to protect the structure from heat," Stetson said at the award ceremony.

In his most recent experiments, he has tested a sharp cone at various angles of attack at a speed of Mach 8. These experiments will help determine how much protection an aircraft or missile will need to ensure survival in the atmosphere. ■

INDEX TO ADVERTISERS

Aerospace Historian	122
Allied Bendix Aerospace	71
Avco Systems Div.	Cover III
Boeing Military Airplane Co.	26 and 27
Brunswick Corp., Defense Div.	22
Data General Corp.	12
EDO Corp., Government Systems Div.	34
Electronic Data Systems Corp.	21
E-Systems, Inc., ECI Div.	28
Ferde Grofe—Aviation A. V. Library	122 and 124
Flight Systems Inc., Tracor	17
Ford Aerospace & Communications Corp.	64 and 65
Garrett Corp.	2
General Dynamics Corp.	1
Grumman Aerospace Corp.	83
Grumman Data Systems Corp.	6 and 7
Hughes Aircraft Co.	15
Lockheed Corp., The	18 and 19
Magnavox Electronic Systems Co.	Cover II
McDonnell Douglas Corp.	Cover IV
Northrop Corp.	11
Raytheon Co.	8
RCA Missile & Surface Radar	25
Rockwell International, Collins Government Avionics Div.	5
Rockwell International, North American Aircraft Operations	63 and 84
Swedlow, Inc.	124
Texas Instruments	59
Thomson Brandt Armements	37
United Technologies Corp., Pratt & Whitney	16
AFA Convention	123
AFA Field Supplies	125
AFA Insurance	126 and 127
"AFA's Gathering of Eagles—1986"	111, 112, 113, and 114
AFA Symposia	107

The first set of Michelin Air X radials will be delivered to McDonnell Douglas by mid-1986. They will be for the main wheels and nose wheel. The decision to use radials was based on a forecast twenty percent weight saving, which would increase the tactical effectiveness of the F-15E, according to the plane manufacturer. The Air X radial has logged more than 15,000 failure-free flights on the Aérospatiale A300 Airbus airliner and the Mirage III fighter and other business and commercial aircraft since being introduced in mid-1983.

★ The highest number of accident-free flying hours in US Air Force rotary wing history is claimed by the 89th Military Airlift Wing's 1st Helicopter Squadron at Andrews AFB, Md. The wing surpassed 120,000 hours of accident-free flying on June 7, just under twenty-eight years after it was formed.

The squadron is responsible for supporting contingency plans that provide for the transportation of government officials should the need arise. The unit also provides local air transportation for authorized civilian, military, and government officials, medical evacuation flights, and aircrew currency training. In 1984, the squadron flew 4,900 sorties for 4,300 flying hours.

★ The US Air Force Reserve's 94th Tactical Airlift Wing from Dobbins AFB, Ga., is the overall champion of the 1985 Volant Rodeo, an airdrop competition among US and allied military airlift units. The competition took place at Pope AFB, N. C., over a five-day period. It is a military exercise of C-130 and C-141 airlift unit performance.

The 94th is the first Reserve unit to

AEROSPACE WORLD



Lockheed-Georgia Company's High Technology Test Bed Aircraft (HTTB) has set three time-to-climb records for short takeoff and landing aircraft, including reaching 31,000 feet in 17.7 minutes. Man in foreground measures wind speed.

win the Military Airlift Command-sponsored exercise since its inception in 1978. The 94th Tactical Airlift Wing scored 6,229 points out of a possible 7,040 to outperform thirty-two challengers.

Australia had the best allied team score in a field that included competition from Brazil, West Germany, Italy, and Portugal. Venezuela and the US Marine Corps sent observers, but did not compete.

One of the more interesting events was the combat control team event, which included a six-mile run with a forty-pound rucksack. It was won by the 62d Military Airlift Wing, McChord AFB, Wash., followed by the team from Italy.

★ A \$462.1 million contract to produce more than 1,500 high-speed antiradiation missiles (HARM) has been awarded by the US Navy to Texas Instruments, Dallas, Tex. This is a follow-on to a previous contract for \$60,000,000 awarded in March.

Texas Instruments was awarded the initial contract to develop the HARM in 1974 to counter an expanding air defense threat. After extensive testing and enhancement, the missile went into production in 1981. To date, 470 tactical missiles have been delivered, and an additional 764 were ordered prior to the FY '85 contract. During the next three years, 1,571 missiles will be produced.

The missiles are warranted to meet performance, quality, and reliability requirements specified by the Department of Defense. When initially provided by the company in 1984, the warranty was the first of its kind on an expendable US weapon system. The HARM is designed to be carried by tactical aircraft and employed to attack enemy air defense radars that direct surface-to-air missiles or anti-aircraft artillery.

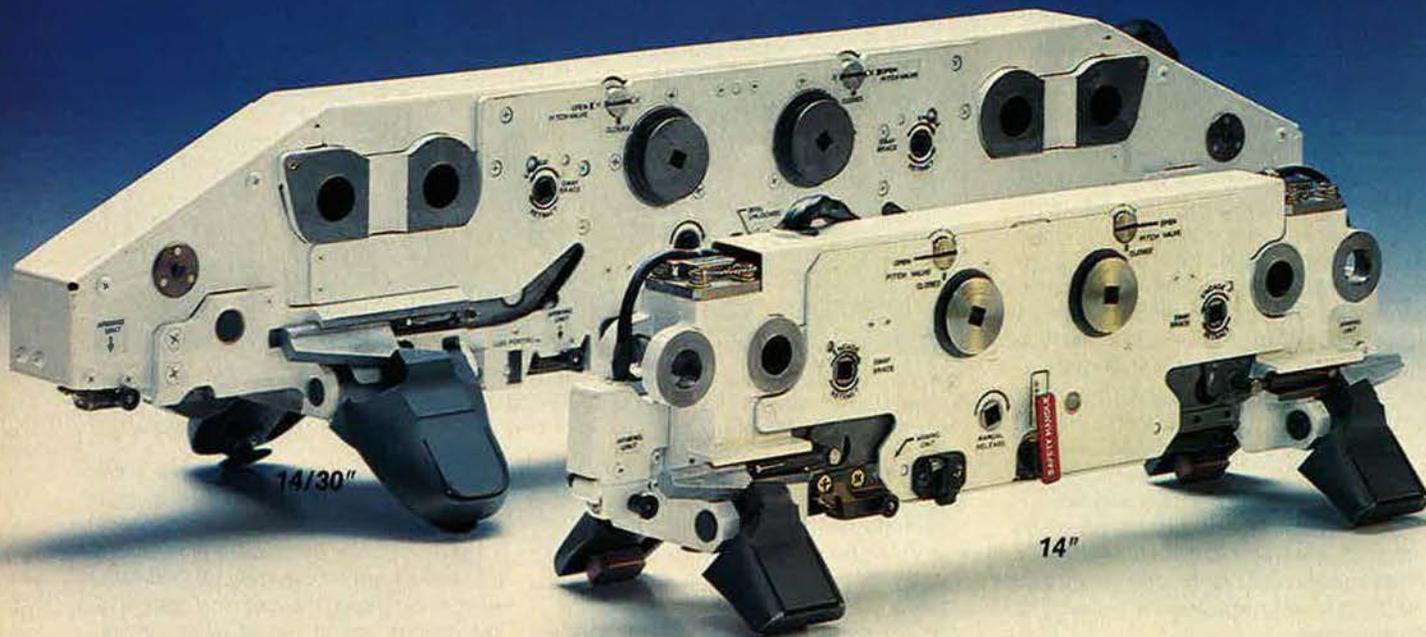
HARM is employed by the Navy's A-7E and F/A-18 and the Air Force's F-4G Wild Weasel aircraft. Integration efforts are under way for employment of the missile on the Navy's EA-6B and A-6E and the German version of the Tornado attack aircraft.

★ The Confederate Air Force's "Ghost Squadron" will present its first annual Wings Over Houston Air Show at Ellington Field, Tex., on August 24 and 25. Featured will be the CAF's Air Power Demonstration, with more than 100 World War II vintage aircraft as well as modern static military aircraft displays, jet fighter flybys by the Texas Air National Guard, and



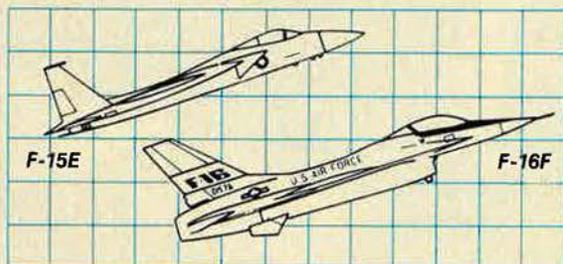
The first of Lockheed's giant new C-5B Galaxy military transports, after installation of its wings, is moved to the final assembly position so the four General Electric engines can be mounted. USAF is buying fifty C-5Bs.

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the late 1960s with a combined National Science Foundation grant of \$85,000 and considerable excess property. The steel frame came from White Sands Missile Range, the floor covering from Holloman AFB, and the steel radar tower and the electronic equipment inside it from Kirtland AFB and Sandia National Laboratories."

The laboratory has obtained machine tools, power supplies, recorders, anemometers, rain gauges, timing equipment, data panels, relays and controls, balloon-tracking equipment, and building material available to it under military contract. Only two trucks have been purchased for Langmuir. All other four-wheeled transportation and service vehicles have been obtained as military surplus, including bulldozers, cranes, "cherry picker" extendable-arm lift devices, road graders, forklifts, some thirty trucks of various sizes and capacities, and two "long dog" limousines manufactured by the Checker Taxicab Co.

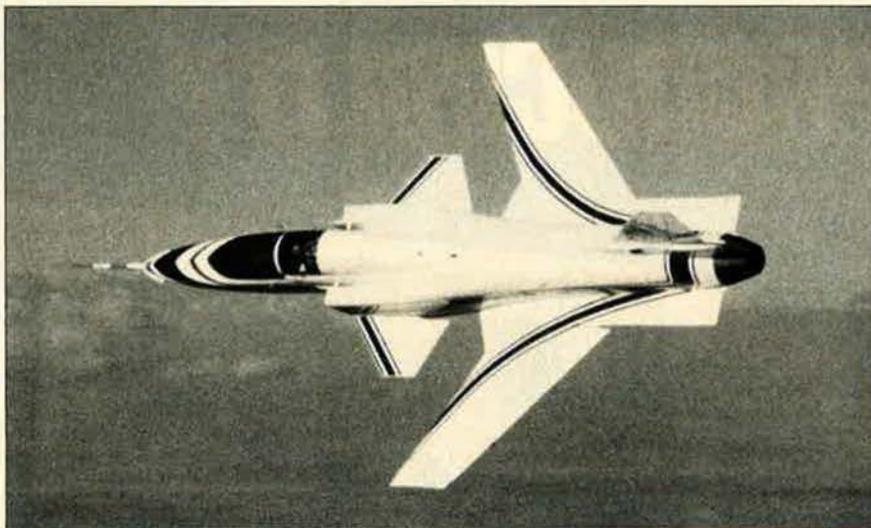
Seven trailers obtained as excess property are used to house electronic instruments and photographic equipment, and another four are used as dormitories.

Major research equipment obtained through the excess property program includes the laboratory's main research aircraft, Special Purpose Test Vehicle for Atmospheric Research (SPTVAR I), which is a modified drone that was used for electronic surveillance during the Vietnamese conflict. SPTVAR I has been stretched to include a cockpit and instruments for its special research mission. "The SPTVAR I has flown more than 600 hours in thunderclouds and has been struck by lightning more than fifteen times," Moore recalls. A second drone, also obtained as excess property, has been utilized for spare parts.

As part of the laboratory's experiments, researchers strung a cable a mile long across a canyon behind the lab and attached the cable to a 150,000-volt power supply in an attempt to reverse the natural polarity of a thundercloud. The cable, towers, insulators, and high-voltage power source were all reutilized excess property.

One of the things scientists are trying to do there is to answer the age-old question of which comes first—lightning or rain. The special radar used for this purpose was constructed from components of a Korean War mortar-tracking radar. It is able to detect changes in clouds early in their development.

There is a digitalized astronomy lab for observation of supernovas. "The



Unique platform of the Grumman X-29A Forward-Sweptwing Demonstrator is shown as the aircraft turns in USAF/NASA/DARPA tests over Edwards AFB, Calif. Forward-sweptwings provide many benefits, including lower drag in the transonic region.

tower was an old Atlas missile silo," Moore says, "and the dome was part of a military shelter for wind-measuring equipment." Speaking of the installation as a whole, he adds, "We have been able to take materials the military no longer needs and beneficially convert them to support basic research. It's made our research dollars stretch much further."

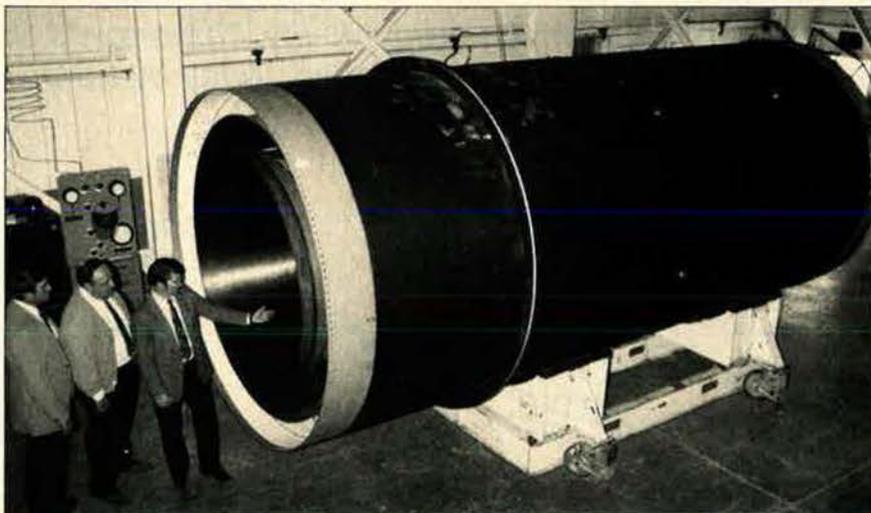
★ The first in a series of eight Peacekeeper Stage II solid-propellant rocket motors has been successfully test-fired at the Air Force's Arnold Engineering Development Center (AEDC) in Tennessee. The motor was fired in a vertical configuration in AEDC's massive J-4 Rocket Development Test Cell, the largest of its kind in the world.

The rocket test was the first in the critical "qualification" phase of the motor's development. Eleven Peace-

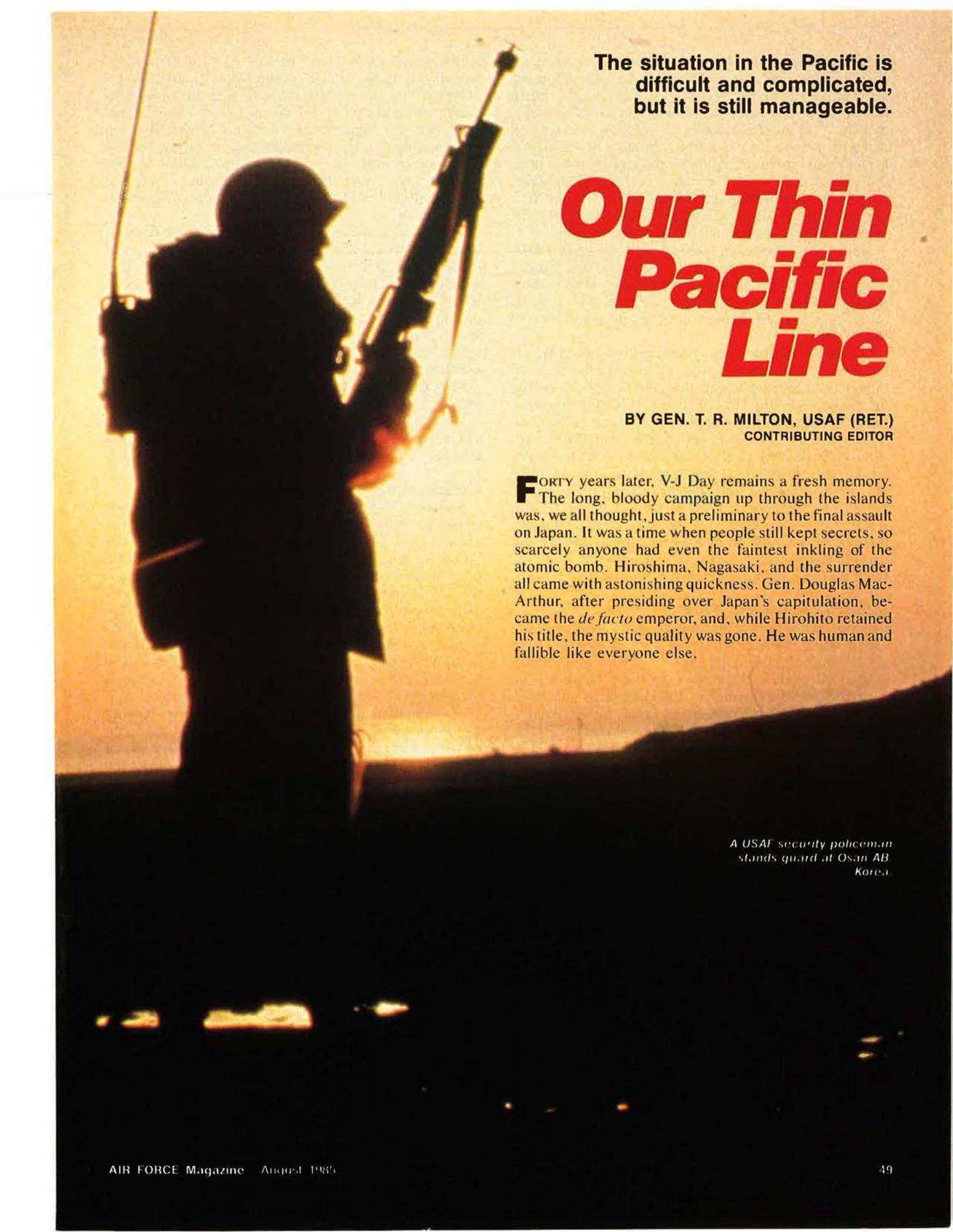
keeper Stage II rocket motors have been test-fired at AEDC in previous phases of the development program.

Ignition took place at a simulated altitude of approximately 50,000 feet, which is where the second stage of the rocket would ignite in an actual launch. The motor produced about 350,000 pounds of thrust. Test objectives, which were successfully attained, were to verify motor performance characteristics at simulated ignition altitude and at temperatures of approximately 100 degrees Fahrenheit.

★ The F-15E dual-role fighter will roll on radial tires, according to Michelin Tire Corp. McDonnell Douglas Corp. has awarded Michelin a contract for full-scale development of radials for the fighter. This is the first time a US manufacturer has specified radial tires for an aircraft.



A giant Peacekeeper II solid-propellant rocket motor, now undergoing tests at Arnold Engineering Development Center, dwarfs technicians (see item).



The situation in the Pacific is difficult and complicated, but it is still manageable.

Our Thin Pacific Line

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

FORTY years later, V-J Day remains a fresh memory. The long, bloody campaign up through the islands was, we all thought, just a preliminary to the final assault on Japan. It was a time when people still kept secrets, so scarcely anyone had even the faintest inkling of the atomic bomb. Hiroshima, Nagasaki, and the surrender all came with astonishing quickness. Gen. Douglas MacArthur, after presiding over Japan's capitulation, became the *de facto* emperor, and, while Hirohito retained his title, the mystic quality was gone. He was human and fallible like everyone else.

A USAF security policeman stands guard at Osan AB, Korea.

All in all, the MacArthur occupation years were benevolent ones, as those things go. And so, when the occupation was ended by a peace treaty in 1951, Japan was prepared to resume its place in the world—except, that is, in the matter of defense. The new constitution that went along with regained sovereignty was designed to foreclose any future Japanese militarism. It has been the excuse ever since for paltry outlays for defense. Even the euphemistic names of its forces—Ground Self-Defense Force, Air Self-Defense Force, Maritime Self-Defense Force—reflect Japan's postwar pacifism.

Now, forty years later, the United States finds it difficult to convince the Japanese, happy in their Toyota affluence, that it is time to worry about more serious things. In Fiscal 1984, the Japanese spent \$12.5 billion on defense, a sizable amount but scarcely one percent of their GNP.

One of the curious aspects of our post-World War II history has been our military fixation on Europe, even though our only two wars in that time have been Pacific ones. The reason for this, of course, is NATO, an enduring and powerfully structured alliance. John Foster Dulles had in mind a similarly strong alliance in the Pacific, the Southeast Asia Treaty Organization, which was designed to meet the China threat, but it never really came off. For one thing, SEATO included neither Japan nor South Korea nor, for that matter, the Republic of China. It was not an all-embracing Pacific alliance, but instead a patronizing association of former colonial powers and various other nations having little in common, with the United States acting as everyone's friendly big brother.

SEATO's Decline and Demise

It was not an easy role to play. The Commander in Chief Pacific, then as always an admiral, served as the US SEATO representative and, *ex officio*, as SEATO's dominant member. Or, at least, he tried. However, the British still had lingering Far East claims to influence, the French were uncooperative, and the Pakistanis, furious over the lack of SEATO support in their war with India, withdrew. Australia and New Zealand were interested, but their real worry was Sukarno's Indonesia, at that time tilting heavily toward the Communist Chinese with enthusiastic Soviet support.

Unlike NATO's impressive bureaucracy, SEATO's structure, headquartered in Bangkok, was a modest one. Periodic SEATO exercises consisted, for the most part, of US and Thai contingents, with Britain, Australia, and New Zealand chipping in some air. Vietnam polished off SEATO, although it had long since become moribund, and the years following Saigon's fall have not seen anything to replace it.

The threat in the western Pacific is no longer as neatly defined as it was when Red China was the prospective enemy. There is, of course, the clear image of Soviet Russia as the principal mischief-maker and potential enemy, but there are complications that prevent a simplistic strategic view.

Red China, the People's Republic of China, has become, if not precisely our friend, a close acquaintance. A few months ago, the Chairman of the US Joint Chiefs of Staff paid a twelve-day visit to the People's Republic and lectured at their War College, an unthinkable event not many years ago. Our Navy is establishing cordial

relations with the Navy of the People's Republic, and we will shortly begin selling certain weapons to Beijing.

Meanwhile, the United States has a continuing obligation ninety miles across the Formosa Strait. Our friendship with the Republic of China on Taiwan is of an estranged sort, at least on the surface, but there is still a deep commitment to Taiwan's defense. Since it goes without saying that the threat to Taiwan is from the People's Republic, the strategic situation is decidedly complicated.

Then there is the eternal confrontation of the Koreans. Thirty-two years after the Armistice, the sideshow at Panmunjom goes on, two opponents across the table agreeing on nothing. The savage murder of an American officer by North Korean soldiers, which took place in the DMZ a few years ago, is a reminder that the Korean War has never really ended. And that, in turn, raises questions. Would Beijing still support Pyongyang if the shooting started again? Would the Soviets, if China did not? And would China then be on our side or a bystander?

We can hope never to learn those answers, yet they are, nevertheless, a part of the complications affecting strategy in the Pacific. There are others.

Complications Galore

South of Taiwan, the Philippines are in trouble, not yet desperate trouble, but not negligible either. Two keystones of any Pacific strategy we might envision are the Philippine bases, Clark and Subic Bay. Neither of these huge bases is really defensible against determined guerrilla attack, not, at any rate, while carrying out its mission. It would be almost prohibitively expensive to replace these bases, and any replacements—say, in the Marianas—would be less well situated. This new revolt in the Philippines is still embryonic, but it poses a very real danger to our Pacific strategy. The next few years in the Philippines will be critical ones for the US.

The humiliating American withdrawal from Saigon, and the television coverage of that sad affair, gave credence to the fiction that the US had finally lost a war. For that reason, perhaps, the country drew a veil across the Pacific. President Carter proposed a troop withdrawal from South Korea and was dissuaded only by overwhelming opposition. The Carter State Department deprecated the importance of the Philippine bases. Even USAF went along with this Pacific derogation by reducing the rank of the Pacific Air Forces Commander from four to three stars. NATO, which had been slighted during the Vietnam War and which had begun to doubt the steadfastness of its American ally, was once more the focus of US attention.

It still is, but there is a new awareness of the United States's stake in the vast Pacific basin and the knowledge that that stake is no longer unchallenged. The USSR is becoming assertive.

When KAL 007 went down near the Kuriles, it was not only a massacre but a statement of the USSR's new status as a Pacific power. Of all the strategic errors of World War II—the Yalta agreements, Potsdam, stopping on our side at the Elbe—perhaps the gravest in hindsight was to allow the Soviets to participate in the final victory over Japan. They came in not only in the final act but just before the curtain, yet they shared handsomely in the

US Air Force and Japan Air Self-Defense Force pilots debrief after flying a simulated combat mission together during Cope North, an exercise in defending the Japanese home islands.



spoils of that war. The Soviet seizure of the Kuriles, a prize they clearly intend to keep, gives the USSR a significant new position in the Pacific.

Always a touchy area to venture near, the Kuriles have become even touchier in recent years. The Soviet military deployments on these islands are a direct threat to Japan. In fact, they should be sufficient incentive for a sharply increased Japanese defense budget, but four decades of complacency are not undone overnight. The USAF F-16 wing now activating at Misawa is in direct response to this Soviet buildup. The day must come, however, when Japan puts up a real defense.

There is some movement toward a more realistic Japanese defense posture with the agreement to advance Japan's defense frontier a thousand miles to sea, although it has not yet been matched with a budget. Until such time as help arrives from that industrial giant, Pacific strategy and the security of the sea and air lanes remain a US responsibility. How to meet it is an interesting problem for strategists.

End of the Battleship Era

December 7, 1941, laid to rest forever the notion that battleships determine the balance of power in the Pacific. The Japanese showed us that airpower had become synonymous with maritime power. A maritime strategy would henceforth be conducted above the sea and below it, but only incidentally on it. Well, not entirely incidentally, for the battle of Surigao Strait was a great surface naval victory. It was there that Adm. Jesse L. Oldendorf carried out a classic strategy with cruisers and battleships, perhaps the last major naval battle ever without airplanes. The surface Navy's guns were, of course, essential to landing operations.

Because, in those days, an airplane's endurance was limited to the fuel it had aboard and speeds were less than half of today's standards, the problem became one of getting airplanes to a point where a target was within the radius of action. Carriers were one means; capturing bases was the other. Strangely, because it was well within the state of the art in those days, no serious attempt was made to develop aerial refueling. The six-plus-day flight of the *Question Mark* in 1929 was to remain just a spectacular one-time stunt until after World War II.

The war against Japan, for all the savage ground battles, was essentially an air campaign. MacArthur's island-hopping was primarily a fight for air bases. Once the base was secured, the remaining Japanese troops were bypassed, left to wait out the war in futility. Gen. George Kenney, MacArthur's air commander, deserves a large share of the credit for this strategy of never advancing beyond air cover. Leyte Gulf, the one exception to this credo, was uncomfortably touch and go.

The ultimate purpose of winning air bases, especially the epic and bloody struggles for Iwo Jima and Okinawa, was the air bombardment of Japan itself. Gen. H. H. "Hap" Arnold's chosen instrument for this final assault was the B-29, an airplane that had been rushed into production somewhat before its time.

Arnold had pulled off a dazzling feat of bureaucratic legerdemain in establishing the Twentieth Air Force as a separate entity in the Pacific responsible directly to him. His commander on the spot was Maj. Gen. Curtis LeMay, late of the Eighth Air Force in England and the acknowledged new master of bomber warfare.

Weather and the unreliability of the B-29's engines at high altitude convinced LeMay of the need for new tactics. Taking a gamble, he threw out the book and

began low-level night sorties against the Japanese home islands. This systematic destruction of the Japanese capacity to fight had already produced peace feelers before Hiroshima and Nagasaki.

William Manchester, in a footnote in his biography of Douglas MacArthur, *American Caesar*, points out a supreme irony of the war in the Pacific. Japan, the abject loser, has achieved its prewar goal of a Greater East Asia Co-Prosperity Sphere. This is true enough, for the colonial powers—France, the Netherlands, and the United Kingdom—have all gone home, and the United States itself is under siege from an expanding Japanese economy.

Nevertheless, it is United States military power that still counts in the Pacific, although it is a dim shadow of the might that was there in 1945. Fourteen hundred ships lay offshore for the invasion of Okinawa, a battle that cost more than 12,000 American lives and another 37,000 wounded. The Pacific Fleet today has a total of 213 ships.

A lasting outcome of that slaughter is our principal military bastion in the western Pacific. In the years after World War II, Okinawa was, for all practical purposes, US territory; the governor, a US Army major general.

When the island reverted to Japanese sovereignty in 1972, the US kept the huge base at Kadena, along with a Marine post near Naha. With Taiwan off limits, the Philippines in political trouble, and the Japanese home islands not particularly friendly to American military bases—Misawa on northern Honshu island being a notable exception—Kadena has become essential to US strategy in the western Pacific.

The concentration of power on Kadena includes an F-15 wing, SAC tankers, an F-4 recce squadron, and assorted utility aircraft. For the nostalgic, there are a couple of shiny old F-86F Sabrejets parked discreetly across the runway from the main activity. These venerable but still eye-catching birds belong to a company that tows the gunnery dart for a fee. That drudgery is no

longer performed at Kadena by the fighter wing, and the savings in both money and mission-oriented flying hours are demonstrable.

Thin Line of Airpower

It is, however, a thin line of airpower running from Misawa in the north, with its two newly activated F-16 squadrons, to Osan in Korea with another three F-16 squadrons, to Kadena, and ending with Clark's two F-4 squadrons. From there, it is 1,500 miles east to Guam and SAC's contingent of B-52s and tankers. Add to these assets six attack carriers, and you have our Pacific airpower inventory.

Until Cam Ranh Bay became the USSR's first foreign base in the Pacific since it lost Port Arthur in 1955, the Soviets were limited in what they could do. Cam Ranh Bay has opened up new vistas. The Soviet Navy now bases twenty or so ships there, including submarines, along with sixteen Badger bombers, a squadron of MiG-23s, and long-range Bear reconnaissance and ASW aircraft. This contingent creates a direct threat in the South China Sea to the tanker routes from the Mideast and Indonesia, a country that has supplanted Saudi Arabia as our largest overseas oil supplier.

Beyond that, the Soviet presence in Southeast Asia, coupled with its aggressive and well-armed Vietnamese satrapy, is cause for general alarm. Cam Ranh Bay, at the very least, serves as a counter to Clark and Subic, an offsetting military presence. And while there is as yet no evidence that Cam Ranh has been furnishing clandestine support to the New Peoples' Army in the Philippines or to other disaffected groups throughout the area, it would be foolish to rule out that possibility. Whatever may be in mind, Cam Ranh Bay is a worry, evidence that the Soviets, too, have concluded airplanes and submarines are what count in the Pacific.

When China served as the agreed-upon menace and SEATO as the instrument of retaliation, strategic planning was simple, if a bit unrealistic. Now the United



Team Spirit, largest combined exercise in the free world, employs people and weaponry from all services of the US and Korean armed forces in practicing the defense of South Korea. Here, an F-16 from Kunsan AB, Korea, escorts a B-52 out of Andersen AFB, Guam, on a simulated minelaying mission over the Sea of Japan.

LeMay's Alternative

Looking back on that war in the Pacific, we can marvel that it turned out the way it did. Japan's success at Pearl Harbor left the United States shocked and essentially defenseless; yet the Japanese failed to follow up that first attack. The ultimate result of Pearl was an aroused and united America.

Then, when the war was reaching its final stages, our strategy was still tied to an invasion of Japan. The total number of American casualties expected was one million.

With the adoption of low-level night tactics, the Twentieth Air Force had begun an all-out assault on Japan in May 1945. General LeMay informed Adm. Chester W. Nimitz, the commander of all American military forces in the area, of his plan to fly each B-29 120 hours a month until October and of the consequent responsibility of the Navy to keep him supplied with bombs and fuel. The Navy, at first openly skeptical, somehow found extra ships in a scramble to keep up with the Twentieth's demands.

Early that summer, General Arnold asked LeMay if he thought his campaign could end the war without an invasion and, if so, when. The answer was a detailed briefing listing targets yet to be destroyed and a timetable. By October 1945, LeMay calculated, the Japanese would be helpless.

Arnold, who wanted to avoid both the atomic bomb and an invasion, was impressed and sent LeMay on a one-stop journey from Guam to Washington. The JCS, still focused on invasion, yawned their way through the briefing, dismissing it, presumably, as airpower zealotry.

The rest we know.

States has a series of bilateral defense agreements: with Japan, the Philippines, Thailand, and the ANZUS treaty organization, which has become, since New Zealand's flight from reality, essentially a bilateral arrangement with Australia. Additionally, of course, there is the defense agreement with the Republic of China on Taiwan.

Variety of Threats

The nations in the western Pacific face a variety of threats: Thailand by Vietnam, the Philippines by insurrection, and Taiwan by the PRC. Meanwhile, Vietnam must keep an eye peeled for China, and the USSR, we can hope, has nightmares about this same country, modernized and hostile.

To a considerable extent, then, our role in the Pacific these days is that of an interested bystander. The 2d Infantry Division in Korea serves as visible proof of a US involvement in that as yet unsettled war, but in any future Pacific conflict elsewhere, ground forces must necessarily play a small part. As for the remainder of that enormous area—a SACEUR headquartered in St. Louis would be no more remote from Germany than CINCPAC, in Hawaii, is from the Philippines—the American military presence will consist of air and naval forces.

The Pacific Fleet, as we have noted, has six carriers, a number ordinarily sufficient to keep two on deployment.

That leaves a considerable task to the land-based air forces already deployed in the western Pacific. B-52s from Guam, with their immense radius of action, are a serious threat to the Soviet Navy. F-15s, supported by tankers and AWACS, are still another threat. Tankers, in fact do much the same job as carriers: They get the airplanes within reach of the target. As an interesting example of this far-ranging fighter mobility, *Air Force One* was discreetly escorted last year all the way from Alaska to Japan by F-15s, AWACS, and tankers.

When the ceremonies took place on the deck of the battleship *Missouri* that September day in 1945, the Pacific Ocean was an American sea, truly *mare nostrum*, to borrow Mussolini's vainglorious claim to the Mediterranean. The years have taken care of that proprietary notion. Soviet Russia has become a Pacific power, and one of these days there may be a third in Communist China. The United States still has the edge, although it is a slim one.

No More Vast Fleets

As in World War II, airpower continues to be the key factor in a Pacific maritime strategy, and, again as in World War II, the Pacific is playing second fiddle to Europe. But whereas even the second-priority theater had immense resources in World War II, that will never again be the case. To a considerable extent, US successes in that war depended on our ability to overwhelm the enemy. We will never again see vast fleets, like the 1,400 ships off Okinawa, or hundreds of bombers. A realistic Pacific strategy must now envision going with what we have. That, in turn, calls for a high degree of readiness and for force multipliers, a purpose for which tankers and AWACS serve admirably.

It would be a major advantage if the People's Republic of China were to be on our side in any confrontation with the USSR, but we had better not count on it. China under communism has shown itself to be an enigmatic and unpredictable nation. Only one thing is certain, and that is China's basic ideological commitment.

In the final analysis, the United States is essentially alone in facing the rising challenge of the USSR. Such help as we can count on is mainly regional. That is the bad news. The good news is that the Soviets are also essentially alone. Their Vietnam ally is an economic drain on the USSR and, it would appear, not particularly tractable. Cam Ranh Bay notwithstanding, the US forces are far better based than are those of the Soviets, who have the added concern of China.

Pacific security, then, would seem to be a difficult problem, but nevertheless a manageable one. It would be less difficult and more manageable with more in the way of air and naval assets. ■

Gen. T. R. Milton, USAF (Ret.), is a longtime Contributing Editor to this magazine. His "Viewpoint" column appears monthly, and several times a year he writes feature articles like this one. General Milton's forty-year military career included combat service with Eighth Air Force in World War II, participation in the Berlin Airlift, command of Thirteenth Air Force in the Philippines, service as Air Force Inspector General and USAF Comptroller, and duty as the US Representative to the NATO Military Committee. He retired from active duty in 1974 and makes his home in Colorado Springs, Colo.

CINCPAC says the military balance in the Pacific is too close to call.

Soviet Eyes on Asia

BY LT. COL. RALPH A. COSSA, USAF

IN early 1980, Adm. Robert L. J. Long, then Commander in Chief, US Pacific Command (USCINCPAC), testified that the American ground, air, and naval forces under his operational control "cannot guarantee success in a direct conflict with the Soviet Union in the Pacific today; the Soviet expansion and force buildup of the 1970s has made the situation too close to call." Admiral Long was referring to the unprecedented Soviet Far East military buildup that had transformed the Soviet Far East from an "economy of force" theater to one possessing fully one-third of the Soviets' conventional and nuclear strength.

The Soviet buildup occurred in two phases. The first, running from the mid-1960s until 1978, was prompted largely, though not exclusively, by the growing rift between Moscow and Beijing. Evidence of this split first came to light in 1960 when the Soviets began withdrawing their economic and technical advisors from China. An important new security dimension evolved when China detonated its first atomic device in 1964. Increased posturing by both sides along the Sino-Soviet border during 1968, culminating in the Chinese-initiated ambush at Chen Bao (Damansky) Island in the Ussuri River in March 1969, added a sense of urgency to the Soviets' desire to protect their sparsely defended eastern flank.

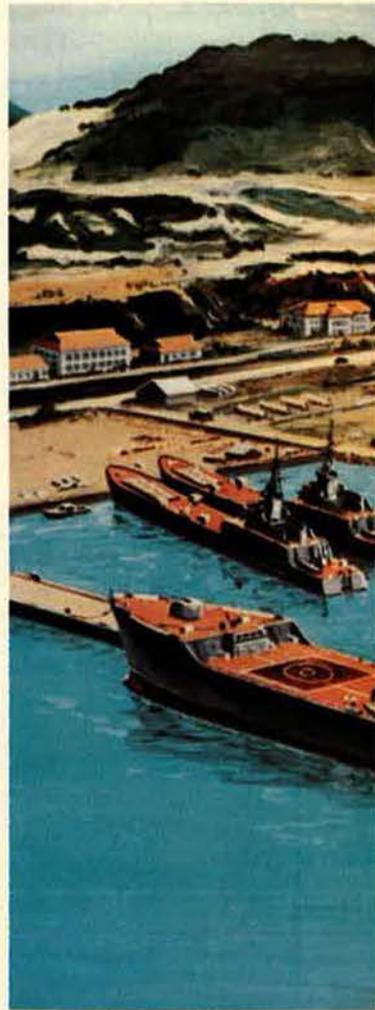
In 1968, prior to the first open clashes along the Sino-Soviet border, the Soviets had 210,000 ground troops based in the four Far East military districts. Ten years

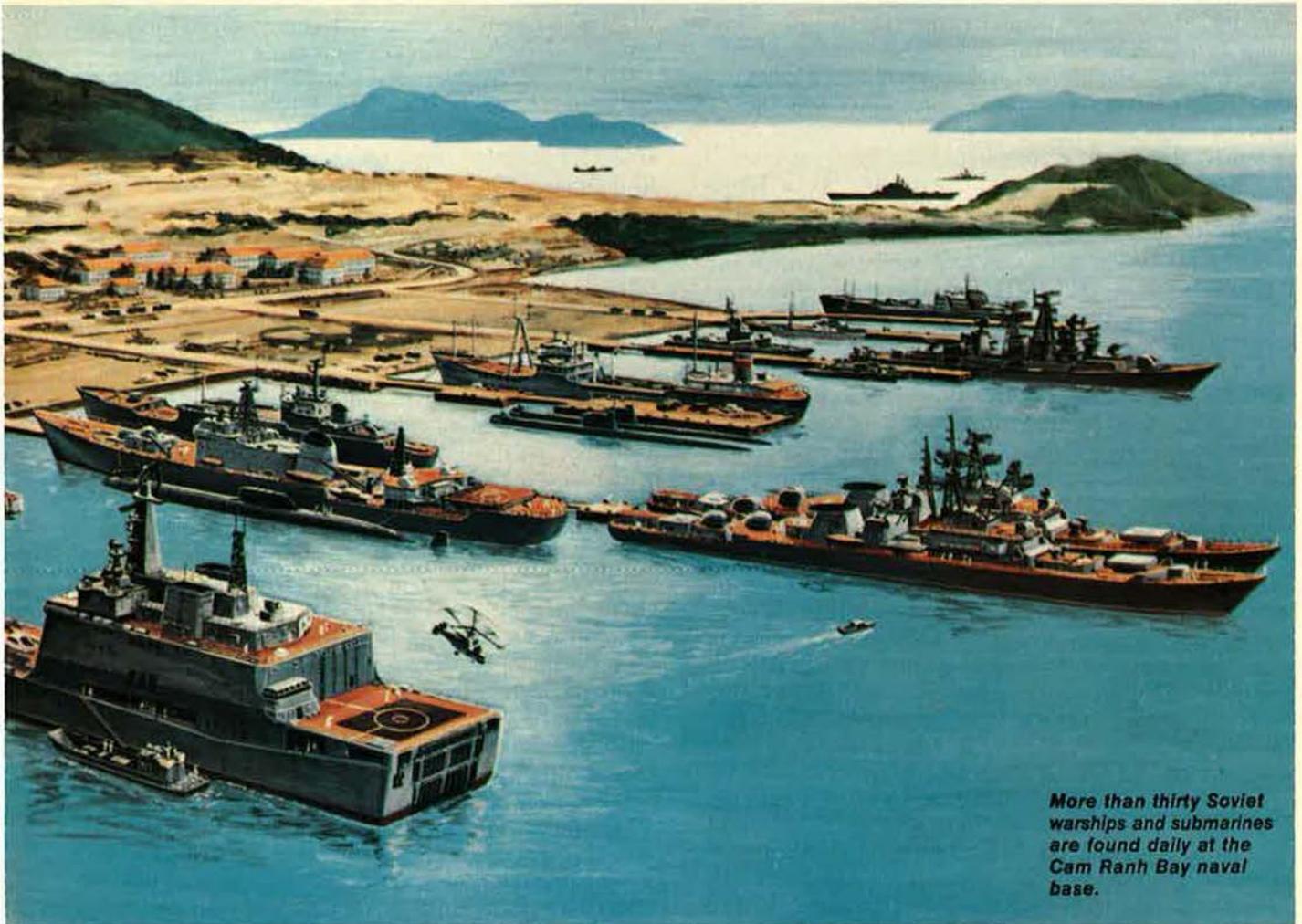
later, this figure had almost doubled, to 410,000 soldiers. The number of army divisions had likewise grown from about twenty-five to forty-three. Meanwhile, the primary ground logistical artery, the Trans-Siberian Railroad, was upgraded to a dual-track system, and the Baykal-Amur Rail Spur was initiated farther to the north to provide an additional (and more survivable) link to the Asian coast.

The number of combat aircraft in the theater also grew by more than thirty-five percent between 1968 and 1978. The bomber order of battle rose from 215 to 340, while the fighter/attack and interceptor aircraft inventory jumped from 1,050 to more than 1,400. The Soviet Pacific Fleet also experienced a modest ten percent overall force buildup, although the number of major combatants (warships and attack submarines) rose only slightly, from 150 to 157. The most significant naval advance was in the number of ballistic missile submarines, which jumped from ten to thirty. However, for the purpose of this review, these submarines are more appropriately viewed as part of the Soviet Union's global strategic effort rather than as part of its Pacific theater force buildup.

The Turning Point

The first phase of the Asia/Pacific buildup culminated in 1978 with the establishment of a Far Eastern High Command, with authority over all nonstrategic ground, air, and naval forces from the far western PRC border to





More than thirty Soviet warships and submarines are found daily at the Cam Ranh Bay naval base.

the Pacific coast, to include Soviet forces in Mongolia. This provided Moscow with the same type of command and control apparatus already in place in the Warsaw Pact region. The Soviets had established their desired two-front warfighting capability. They now possessed the ability to conduct large-scale military operations in Asia simultaneous with hostilities in Europe. Their vulnerable Asian flank was covered, at least as far as the threat from China was concerned.

Politically, 1978 was an important turning point for the Soviets in Asia. The marriage of convenience between Hanoi and Beijing officially ended, and Vietnam joined the Council for Mutual Economic Assistance (CMEA) and signed a "Treaty of Friendship" with the Soviet Union. Farther west, the Communist coup in Afghanistan brought to power a government that would later seal its own fate by inviting the Soviets to invade under the terms of the 1978 Soviet-Afghan Friendship Treaty.

These events were overshadowed, however, by two developments that were interpreted in Moscow as major setbacks. One was the signing of a Peace and Friendship Treaty between Japan and the People's Republic of China. Tokyo's willingness to accede to Beijing's demand that the agreement contain an antihegemony clause increased Moscow's paranoia about a growing anti-Soviet alliance. The second event, the establishment of diplomatic relations between China and the United States, added greatly to this feeling of encirclement.

Any degree of cooperation among the other Pacific powers was cause for Soviet concern and provided added incentive to Moscow's quest to expand, modernize, and project its Asian power base.

A Switch in Emphasis

Since 1978, the Soviet military buildup has placed increased emphasis on power projection forces—forces that threaten not only the PRC but United States and Japanese (and other free world) forces and interests as well. Complementing this shift in emphasis has been a widespread modernization effort. Historically, the Far East lagged at least a decade behind the Western USSR and Soviet forces in Eastern Europe in receiving new weapon systems. This is no longer the case.

The buildup in theater nuclear forces illustrates this point. The SS-20 intermediate-range ballistic missile became operational in 1977. The first sites appeared in the Soviet Far East the following year. On at least two occasions, the Soviet leadership (for political reasons) has announced a freeze on SS-20 deployments opposite Europe. In each case, the Far East buildup continued unabated.

Today, one-third of the total force, some 135 missiles (each with three nuclear warheads), is based in Soviet Asia. These 5,000-kilometer-range missiles can blanket not only China but also Korea, Japan, portions of Alaska and the Philippines, and much of south Asia. Not-so-veiled threats to employ these missiles against Asia's

“unsinkable aircraft carrier” came shortly after Japanese Prime Minister Yasuhiro Nakasone used that phrase to describe his nation and provide clear evidence that the Soviets do not plan to restrict these missiles to Chinese targets.

Supersonic Backfire bombers have been introduced at a steady rate since 1978. Soviet Air Force Long-Range Aviation (LRA) ground-attack-oriented aircraft, with their unrefueled range of 5,500 kilometers, place most of the Asian landmass and Japan at risk. From available LRA northern staging bases, they could strike any target in Alaska and portions of the upper US West Coast as well.

Soviet Naval Aviation (SNA) Backfires soon joined their LRA counterparts. Both the Air Force and Navy fly the same airframe, the supersonic Backfire-B, which is capable of performing nuclear strike, conventional attack, and antiship missions. A total of eighty of these aircraft is now based in the Soviet Far East. From coastal bases, the SNA Backfires can reach out to the Aleutians and western Alaska and the sea lanes as far away as Midway, Guam, and the northern Philippines. From northern staging bases, the eastern Pacific waterways used to carry Alaska's oil to West Coast consumers are easily in range, even without refueling. SNA Backfires, with their 150-mile-range, nuclear-capable AS-4 Kitchen cruise missiles, can be expected to operate throughout the Sea of Japan and the Northern Pacific in a sea interdiction role.

Despite this Backfire buildup, the overall bomber figures since 1978 have grown only slightly, from 340 to 355, as older bombers have been retired from the active inventory. However, both the number and quality of tactical aircraft have continued to rise steadily. The fighter/attack and interceptor order of battle has climbed from 1,400 to 1,725, a twenty-three percent increase.

More than ninety percent of this modernized force now consists of the latest generation of fighters.

Since 1978, the MiG-21 Fishbed has gone from being the pride of the Far East force to one of the oldest fighters in the Asian inventory. MiG-25 Foxbat and MiG-31 Foxhound interceptors now provide front-line air defense while new, longer-range Su-24 Fencer fighter/bombers, with their 1,800-kilometer combat radius, have extended the tactical battle zone well beyond Soviet shores. The Soviet air unit in the occupied Japanese Northern Territories transitioned from Korean War vintage MiG-17s to MiG-21s and then on to MiG-23 Flogger fighter/attack aircraft during the first four years of this decade.

Army forces have also continued to expand and modernize since 1978 and now total half a million troops organized in fifty-three divisions. Approximately ninety percent are situated along the PRC border. This includes five divisions inside Mongolia. One division is based in the occupied Japanese Northern Territories, within artillery range of Hokkaido. Soviet regular army troops had not been stationed on these islands since the 1950s. They were reintroduced shortly after the signing of the Sino-Japanese Treaty in 1978, thereby sending Tokyo a strong signal of Moscow's displeasure over its improved ties with Beijing. It would appear that Moscow's focus has not shifted away from China since 1978; it has merely expanded to include the US and Japan and other free Asian nations.

The Pacific-based navy has also grown into the largest of the four Soviet fleets, possessing more than 800 ships and submarines. The number of surface combatants has grown from sixty-seven to eighty-seven and now includes two of the Soviet Union's three operational aircraft carriers. The submarine force has grown from ninety to ninety-seven boats, despite the retirement of

Far East Force Trends

	Mid 1960s	1978		Present		Overall Trend
Ground Forces	101,000	91,000	50%▼	52,000	29%▲	US 49%▼
	210,000	410,000	95%▲	500,000	22%▲	USSR 138%▲
*Naval Combatants	210	124	41%▼	134	8%▲	US 38%▼
	160	167	5%▲	184	17%▲	USSR 23%▲
Bombers	92	14	85%▼	16	14%▲	US 83%▼
	215	340	58%▲	355	4%▲	USSR 65%▲
Tactical Aircraft	1,210	936	31%▼	1,157	38%▲	US 4%▼
	1,050	1,405	34%▲	1,725	23%▲	USSR 64%▲

*Naval combatant totals do not include ballistic missile submarines.



Eighty supersonic Backfire-B bombers are now based in the Soviet Far East.



Su-24 Fencer fighter/bombers have extended the tactical battle zone well beyond Soviet territory.

many aging units. More than half of the Pacific Fleet's submarines are nuclear-powered. The Soviets have clearly developed a blue-water navy capable of projecting Soviet power throughout the Pacific and even into the Indian Ocean.

Extended Presence

Footholds established at Cam Ranh Bay in Vietnam and in South Yemen put Soviet warships and naval reconnaissance and strike aircraft astride vital Pacific and Indian Ocean chokepoints—the economic lifelines of Asia. On any given day, up to sixty Soviet Pacific Fleet ships can be found operating along these sea lanes. The number of out-of-area ship days has more than doubled since 1978, a clear signal of power projection orientation.

The Soviet presence at Cam Ranh Bay is particularly disconcerting. The first Soviet warships visited Vietnam in the spring of 1979. They have maintained a constant presence in the region since then, with upwards of thirty Soviet ships and submarines routinely found in or around Cam Ranh today. Soviet Pacific-based aircraft carriers have made several visits to Vietnam and on one occasion operated far north into the Gulf of Thailand.

Between four and eight Bear reconnaissance aircraft have also become a permanent fixture at Cam Ranh

since the beginning of this decade. Their unrefueled range of up to 8,300 kilometers permits them to cover all the key straits in the Association of Southeast Asian Nations (ASEAN) region. Cam Ranh-based Bears conduct missions as far away as the Philippine Sea and the Pacific Ocean region southeast of Japan. Flights over the South China Sea and along the PRC coast are more common.

In November 1983, the Soviet threat to Southeast Asia took on an important new dimension when up to ten Tu-16 Badgers deployed to Cam Ranh. The number of these medium-range bombers, capable of delivering both conventional and nuclear ordnance, has since grown to sixteen aircraft. Strike, electronic countermeasures, and tanker variants are all now based at Cam Ranh. All the ASEAN capitals and northern Australia are within the 3,100-kilometer unrefueled radius of these bombers.

In return for this access, the Soviets are providing Hanoi with military and economic aid valued at between \$3 million and \$4 million a day. This high price tag attests to the value the Soviets attach to their seemingly unrestricted access to the port and airfield facilities at Cam Ranh.

There can be little question that the Soviets are preparing for a long-term stay in Vietnam. They have emplaced several long-range, high-frequency, direction-finding sites at Cam Ranh, have added several floating piers to increase berthing space, and have improved petroleum-storage facilities. They further upgraded their air defenses recently with the deployment of a squadron of MiG-23 Floggers.

In the face of all this, the senior Soviet military attaché in Tokyo claimed in March 1985 that Cam Ranh was merely "a liberty port" where Soviet ships "occasionally stopped for rest and relaxation" and "not a [Soviet] base at all." Apparently, the Floggers are just there to provide air cover for vacationing Soviet sailors.

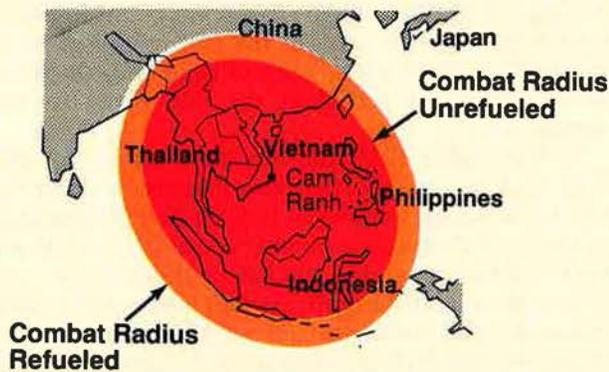
The Soviets' move into Vietnam in early 1979 was their first giant step into south Asia. The second step followed at year's end. On Christmas Day 1979, the Soviets began pouring occupation forces into Afghanistan at the request, they claimed, of Afghan President Hafizullah Amin. By New Year's Day, the takeover of Afghanistan was history, and so was President Amin. He had been murdered by his "defenders" and replaced by a puppet government that clearly intended (and intends) to do Moscow's bidding.

The Soviet objective to control the central government in Kabul was rapidly achieved. Their desire to pacify and control the countryside has been less attainable, thanks to the tenacity and courage of the Mujaheddin. However, this should not detract from the fact that the Soviets, in addition to adding a new satellite to their empire, have also established a relatively secure foothold within 300 miles of the vital Strait of Hormuz and the sea lanes (and warm waters) of the Indian Ocean.

The four Soviet divisions in Afghanistan, with their several hundred attack aircraft and helicopters, were not counted in the earlier discussion of their Far East order of battle. They are nonetheless available for further power projection into the Asia/Pacific theater.

Since 1978, the Soviet military has become a force to be reckoned with, not just in northeast Asia but through-

Soviet Tu-16/BADGER Combat Radius From Cam Ranh Airfield



Soviet BEAR Operating Area



Medium-range Badger bombers and long-range Bear reconnaissance aircraft operating out of the airfield at Cam Ranh Bay enable the Soviets to cruise vital Far East sea lanes and straits.

out the region. But the Soviet buildup raises more than purely military concerns. It also represents an attempt by Moscow to use its military muscle for political or psychological advantage. The Soviets have generally been unsuccessful in their attempt to penetrate Asia economically. Their political success has been limited outside Indochina. They now appear intent on using their military might to gain the influence that has otherwise eluded them in Asia.

So far, this scheme has not worked that well for them. Their expanded presence in the Japanese Northern Territories and Cam Ranh Bay, their increased operations throughout the Pacific and Indian Oceans and South China Sea, and their overall heavy-handed manner have instead increased public awareness of the Soviet threat and provided incentives for free nations to improve their defenses.

However, the United States cannot rely solely on continued Soviet political ineptness. As the buildup continues and as Moscow becomes more adept at demonstrating its military might, the Soviet strategy may, unless it is countered, begin to work.

The Challenge Ahead

Underlying any US force-improvement plan for Asia must be a realization of the changed nature of the Soviet threat. The introduction of LRA and SNA Backfire bombers has created air defense requirements in such

areas as Midway, Wake, and the upper US West Coast, where such requirements did not exist a few years ago. The threat posed by such aircraft as the Backfire and Fencer further complicates air defense requirements for Japan, Korea, Alaska, and the Aleutians.

The presence of medium-range Badger attack bombers at Cam Ranh raises the air defense requirements not only for US forces based in the Philippines but for all the ASEAN nations and northern Australia. With the introduction of these strike aircraft, Cam Ranh has gone from a vulnerable minor annoyance to a well-defended threat—one that will likely require a concentrated and continued effort to neutralize.

Within this context, the importance of a strong forward-deployed US presence throughout the region, but particularly in southeast Asia, becomes readily apparent. While the US cannot stand alone in Asia or elsewhere, in the final analysis only American forces possess the necessary strength and credibility to counter the military and political/psychological advantages otherwise inherent in the Soviets' expanded presence.

Continued American access to air and naval facilities in the Philippines appears critical to this effort. One of the major challenges faced by the United States will be to ensure this continued access, through the consent of the Philippine people and their government.

The introduction of additional power projection forces could serve as another means of countering the Soviets' growing military might. One of the most apparent characteristics of the Pacific region is the vast distances between potential US footholds; one of the most disturbing characteristics of the Pacific Air Forces is the lack of long-range tactical air. The F-111, a fighter/bomber ideally suited for extended range operations, is nowhere to be found among US Pacific-based forces. A squadron of these all-weather aircraft at some central location would add to the credibility of America's declared intent to defend free world interests.

The Soviet buildup in the Pacific, under way since the mid-1960s, has shifted to greater emphasis on power projection. By moving into Vietnam, the Soviets further demonstrated their desire to influence nations and events in Asia. Their march into Afghanistan proved they would not hesitate to use their military muscle when the circumstances, in their opinion, permitted its uncontested application.

A renewed American commitment in the Pacific has enabled the US to keep abreast of the Soviets thus far. However, whether the US can maintain or improve on the current tenuous military balance will depend on its willingness to press ahead with the force improvements planned for the Pacific theater. In the meantime, the situation remains "too close to call." ■

Lt. Col. Ralph A. Cossa, USAF, is serving as a National Fellow at the Hoover Institution on War, Revolution and Peace, Stanford University, under the auspices of the USAF Research Associate Program. He has been investigating the Soviet buildup in Asia and its implications for US military policy in the Asia/Pacific theater. Opinions expressed in this article are solely his own and do not necessarily reflect the views of USAF, the Department of Defense, or the Hoover Institution.



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**TEXAS
INSTRUMENTS**

THE tranquility of the morning air above the Korat plain was shattered by the roar of two Royal Thai Air Force (RTAF) F-5Es. Heavily laden with centerline tanks and Mk 82 bombs, they began a slow arcing turn to the east. This was not a mission to the range. It was real combat.

Within a matter of minutes, the two F-5s would be exposed to ground fire from AAA and SA-7s. A unit of the Royal Thai Army (RTA) was engaged with a Vietnamese force that had penetrated the Thai border.

The F-5s were quickly overhead, talking to the forward air controller. The pilots had little time for careful analysis of the situation. A fierce battle was under way on the ground, and hesitation or indecision by the airmen could have resulted in heavy losses for the RTA.

Acting on instincts developed over years of training, the flight leader identified the target and rolled in. He saw the twinkling lights from the muzzle flashes of the Vietnamese gunners, but they did not distract his concentration. As the bombs released, the leader made a hard turn to the west. Tracers were visible in the sky around him, but in another second, the guns would be silenced.

The air strike, combined with an artillery barrage, broke the Vietnamese attack. The RTA unit moved from its defensive positions and forced the aggressors back across the border. The F-5s formed up and turned west for Korat.

During the past three years, the Vietnamese have made numerous forays into Thailand. The Thai armed forces have driven them out each time. In many instances, the F-5s from Korat have been called upon for support.

For the RTAF's F-5 pilots, who are known as the "Thai Tigers," combat readiness is more than just a slogan. Actual combat is a reality that may be only minutes away.

The making of a "Thai Tiger" is a lengthy and demanding process. Before a young officer can attain the position of flight leader, he must complete more than ten years of ex-

tensive military and flight training. During the past year, I have had the opportunity to examine this training process closely. My first impression of the Thai process was how similar it is to USAF training. On the other hand, much of the program is uniquely Thai. The most lasting impression, though, is of the dedication of the Thai cadets and officers. These young men are constantly aware of the armed threat to Thailand. It is real and very close.

The Military Academies

The first five years of training are at the military academies. For their first year, cadets attend the Royal Armed Forces Preparatory Academy in Bangkok. It is a joint service school operated by the Royal Thai Supreme Command. After that, the students fan out to their respective military service academies.

For the RTAF, this is the Royal Thai Air Force Military Academy at Don Muang, adjacent to the RTAF Headquarters. A graduate of the USAF Academy would feel right at home at the RTAF Academy. With the obvious exceptions of the Rocky Mountains, the cool temperatures, and the lack of female cadets, the two academies have much in common.

Prior to 1953, the RTAF had to seek its officers among graduates of other service academies and civilian universities. An academy to prepare officers especially for the RTAF was created in 1952, and the first graduating class entered in 1953. A graduate of that first class, Air Vice Marshal Weera Kitchathorn, is now the Superintendent of the RTAF Academy.

There are currently 620 cadets attending the RTAF Academy. Another sixty cadets are studying abroad, twenty of them in postgraduate programs. The staff consists of 133 professors, twelve with doctorates and seventy-two with master of science degrees.

The students take a basic core of courses, but then are free to choose their majors in disciplines that range from social sciences to computers and engineering. The computer science department is currently mod-

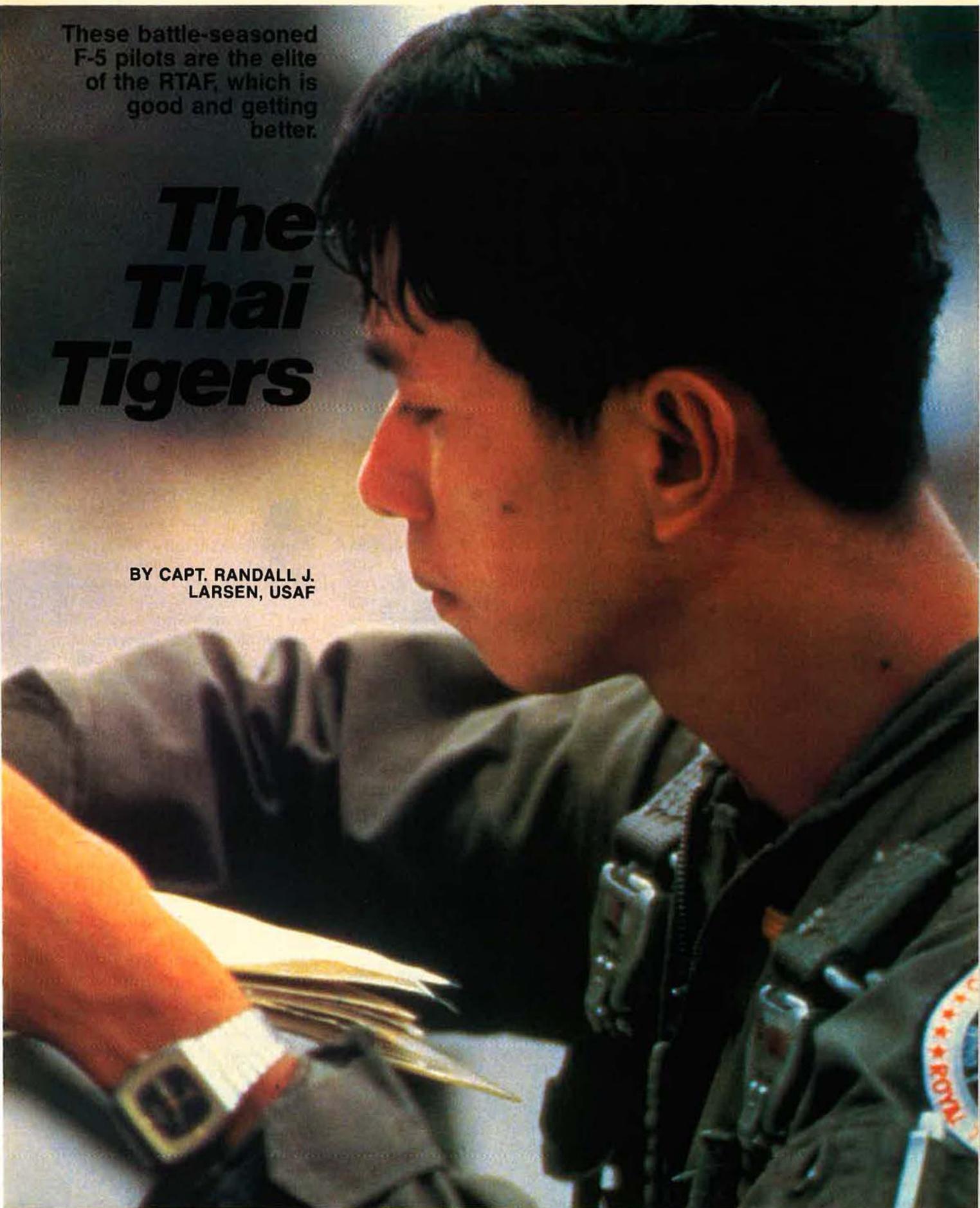
This Royal Thai Air Force pilot has been honing his combat skills through participation in PACAF's Cope Thunder exercise. (USAF photo)



These battle-seasoned
F-5 pilots are the elite
of the RTAF, which is
good and getting
better.

The Thai Tigers

BY CAPT. RANDALL J.
LARSEN, USAF



ernizing its facilities to prepare officers for the advanced systems of tomorrow. The military training department helps the cadets to develop their leadership skills. The emphasis at the Academy is on teaching cadets to be soldiers first. Even though most of them will become pilots, computer specialists, and logisticians, all must know the basic skills of soldiering.

During the fourth year of academy training, officers selected for pilot training have the opportunity to "slip the surly bonds" in the powered glider training program. Upon graduation, they will attend the Flight Training School at Kampaeng San.

Reminders of Reese

The Flying Training School, a joint project between the RTAF and USAF, was completed in 1969. When the author (a former T-38 instructor) visited the school, it was like old home week at Reese AFB, Tex. The buildings, the briefing rooms, the grease boards, the schedulers running down the halls carrying clipboards, the **BOLD FACE** items displayed in convenient places in the restrooms, the 0600 takeoffs (meaning "O-Dark-Thirty" wakeups), the "time line," and the sound of the three-thousand-pound dog whistle (the T-37) brought back memories.

The staff at the flight training school does a magnificent job of managing resources. Operating three different types of aircraft from a single runway while conducting student training in a monsoon environment is not an easy task. When I was there recently, however, I noticed that all classes were ahead of the time line. The staff is doing an incredible job under less than ideal conditions.

Instructor pilots must have a minimum of 700 hours of flight time, and most of the instructors come from fighter backgrounds. Many of the T-37 instructors have completed the Pilot Instructor Training course at Randolph AFB, Tex. Most of them were also checked out at the Auger Inn and other centers of cultural enlightenment in San Antonio.

The undergraduate flight training program takes one year and is divided into primary and advanced phases. The primary training is

done in the CT-4 Airtrainer and consists of ninety hours of flight training and 200 classroom hours.

After the completion of the primary phase, the class is divided into two sections. The students selected for fighter or attack aircraft (approximately forty percent) go on to the advanced phase in the T-37 aircraft. The others receive their advanced training in the Marchetti 260. Fighter/attack students get 110 hours of flight instruction and 169 hours of academic instruction during the advanced phase.

One aspect of RTAF pilot training that differs from USAF training is that the Thai students are not allowed to marry until they complete undergraduate pilot training. Just like its USAF counterpart, the flight training school is very demanding. Students seem to develop a love-hate relationship with the school. They love to fly, but the long days and lonely nights make them all glad to see the front gate of Kampaeng San in the rearview mirror.

In each class, approximately twenty students receive their advanced training in the T-37. Approximately forty percent of these students go to the fighter lead-in course at Korat. Those students not selected for this program are assigned to squadrons that fly the A-37 or OV-10.

Fighter Lead-in

Several years ago, the RTAF realized that the young graduates needed further seasoning prior to training in the F-5. The RTAF developed a fighter lead-in program modeled after the USAF program at Holloman AFB, N. M. During this program, the RTAF pilots receive training in the T-33. The syllabus includes fighter tactics, ground-controlled intercepts, ground attack, photo reconnaissance, and advanced instrument flying. After five months in the T-33, the pilots move on to the F-5A and F-5E.

F-5 training is conducted at either Korat or Takhli. This program consists of 145 hours of flight instruction and 290 hours in the classroom and provides low-cost, effective training in air-to-air, air-to-ground, and advanced instrument flying. Once the pilots have completed the formal F-5 training, they are combat-ready as wingmen and join the

"Thai Tigers." It normally takes three or four years before the wingmen are upgraded to flight leaders.

Tigers at Six O'Clock

The RTAF has conducted combined exercises with USAF for the past three years. USAF Military Training Teams have participated in Commando West at Takhli, and the RTAF has gone to Cope Thunder, held at Clark AB in the Philippines.

The pilots from the 26th Aggressor Squadron at Clark have great respect for the capabilities of the RTAF F-5 pilots. During the most recent Commando West exercise, USAF F-4 crews frequently found "Tigers" at their six o'clock positions.

The primary reason that the RTAF has one of the best air forces in Asia is because of its excellent training. These programs produce great fighter pilots and highly professional, dedicated officers.

The Royal Thai Air Force is commanded by Air Chief Marshal Prapan Dhupatemiya. At present, the RTAF inventory comprises aircraft from various generations, ranging from the C-47 to the F-5E. Air Chief Marshal Prapan has planned an extensive modernization program that will include a modern tactical air defense system, an air combat maneuvering instrumentation system, and the acquisition of an advanced fighter aircraft. These programs are very expensive. Air Chief Marshal Prapan believes, however, that they are necessary if the RTAF is to remain a viable deterrent and an effective fighting force in the 1990s.

Even though these acquisitions are a high priority for Air Chief Marshal Prapan, the number-one priority of the Royal Thai Air Force is to ensure that the training of personnel continues to meet the highest standards.

Many civilians in Thailand refer to Air Chief Marshal Prapan as *mae tab faa*, which means "man who owns the sky." With the RTAF modernization program and his highly capable "Thai Tigers," there is no question who owns the skies over Thailand. ■

Capt. Randall J. Larsen, USAF, is Assistant Air Attaché at the US Embassy in Bangkok, Thailand.

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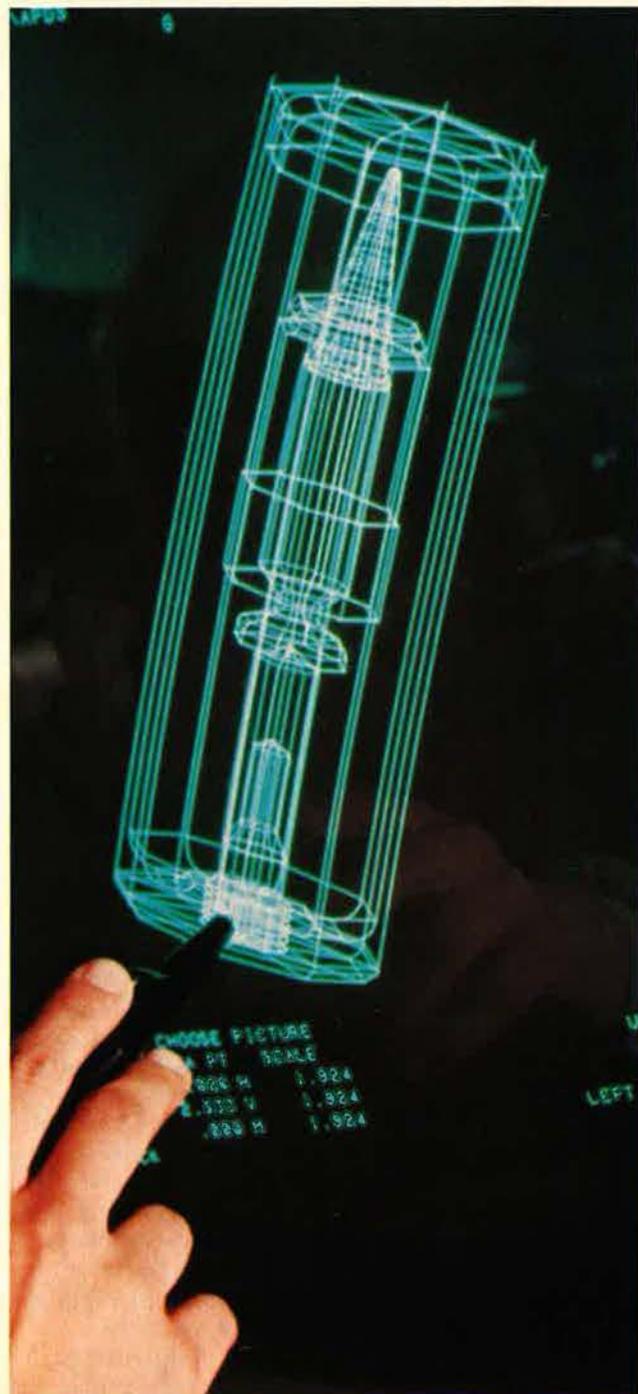
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With F-111s and F/A-18s, the Australians will be hard-hitting and flexible. They're still short, though, on force multipliers.

The Royal Australian Air Force

BY TERRY GWYNN-JONES



The McDonnell Douglas F/A-18 is a superior aircraft in both the air defense and ground attack roles. Seventy-five aircraft are on order for the RAAF to replace their Australian-built Mirage fighters.

It may not be large by superpower standards, but the Royal Australian Air Force is one of the oldest and most professional air forces in the world. Its airmen have fought alongside their American allies in every major conflict from World War I to Vietnam. Over the years, the RAAF has gained a reputation for producing skilled, aggressive pilots.

Australia's involvement with military aviation goes back to December 30, 1911, when an announcement calling for the "Appointment of Two Competent Mechanists and Aviators" appeared in the government's *Commonwealth Gazette*. The announcement noted cautiously that "the Commonwealth Government will accept no liability for accidents." In October 1912—by which time the numbers had been increased to four officer pilots and thirty-nine other ranks—Military Order 570 approved the formation of the Australian Flying Corps.

Seventy-four years later, the RAAF, which in 1921 evolved from the Australian Flying Corps, is responsible for the air defense of a continent the size of the United States. It is a daunting task for a service whose financial resources are provided by a population of only 15,000,000. With Australia spending only about three percent of its Gross Domestic Product on defense, the RAAF is currently at a peacetime level of 22,500 men and women. A further 6,000 part-time personnel with the active Reserve provide support services.

Australia's defense policies have come under critical review in the wake the recent collapse of ANZUS (the mutual defense agreement among Australia, New Zealand, and the United States). The Australian Defence Force (ADF) has been criticized for inadequacies in short-term operational deployment capability and combat sustainability against low-level threats. On the positive side, the demise of ANZUS has brought an acceptance of Australia's need for an independent defense force capable of deterring aggression by all but the superpowers. With this has come a new consciousness of the need to rebuild and reshape its defense forces.

The former Chief of the Air Staff, Air Marshal David Evans, publicly

highlighted the RAAF's problems shortly before he retired last May. Concerned with the lack of agreement within Australia's Department of Defence on how best to defend the country, he welcomed the news that Australia's Defence Minister, Kim Beasley, had appointed a former intelligence officer and strategic analyst to devise a new overall defense strategy.

Multipliers Missing

The RAAF's future role in an independent defense force, as envisioned by Air Marshal Evans, would be to attack potential enemies before they reached Australian shores. However, despite the judicious acquisition of multirole F-111Cs and F/A-18s to give the RAAF a hard-hitting and flexible attacking force, he pinpointed "a major chink in our armor." The Air Marshal was referring to the lack of "force multipliers" required to make the fighting force fully effective. These are the airborne early warning aircraft and in-flight refueling tankers that the RAAF desperately needs for total credibility.

"In assessing the seriousness of this deficiency, I accept that at this moment there is no identifiable threat. Thus, the degree of risk can be accepted, but it would be foolhardy to extend the period of risk for

any longer than is absolutely necessary," Air Marshal Evans commented a few days before handing over command to the present Chief of Staff, Air Vice Marshal John Newham, leader of the first flight of F-111s ferried to Australia in 1973.

Based at the Department of Defence in Australia's capital, Canberra, Air Vice Marshal Newham is responsible to the Minister for Defence. As commander of the RAAF, he administers and controls the service through two functional commands:

Operational Command (OP-COM), headquartered at Glenbrook in New South Wales, is responsible for operational activities and exercises. Support Command (SUP-COM) controls flying training, ground training, supply, major maintenance, and research and development from its headquarters in Melbourne, Victoria.

The experience of World War II, when the RAAF's strength skyrocketed to 160,000 personnel and almost 6,000 aircraft, proved the vital importance of a peacetime force that can rapidly expand to meet the needs of war. Accordingly, the RAAF today maintains this capability in all areas of flying operations, and its sixteen operational squadrons cover the spectrum of military aviation.

Strike Force

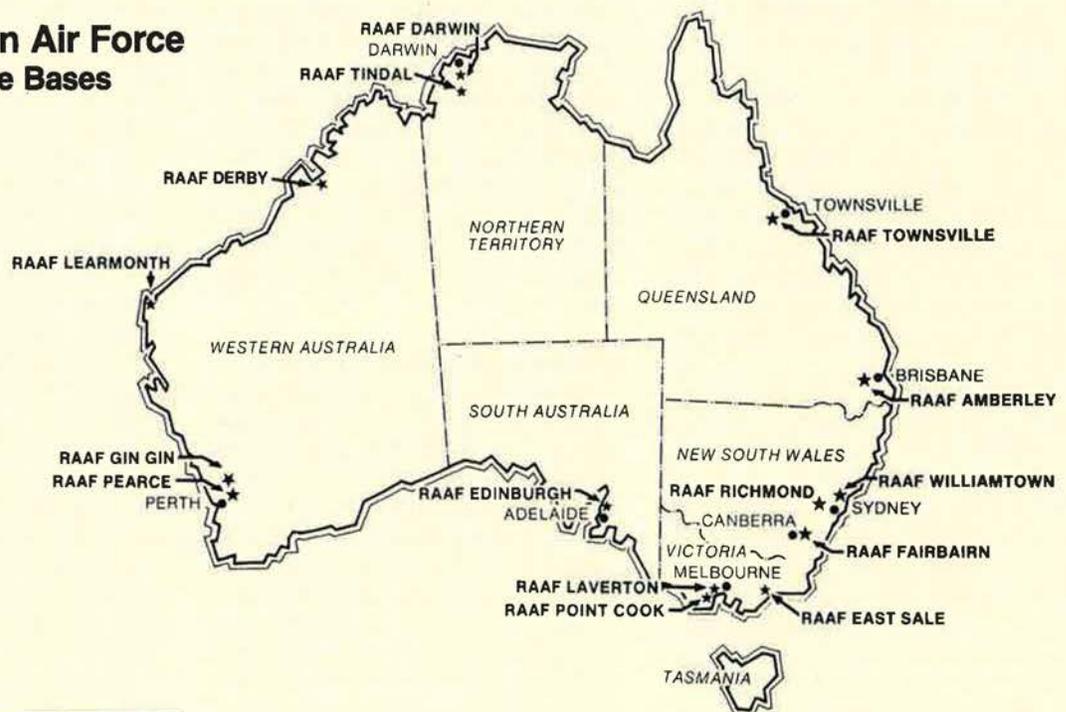
The RAAF has two squadrons, Nos. 1 and 6, based at RAAF Amberley in Queensland, operating F-111C strike aircraft. The F-111C was chosen in 1963 as a replacement for the aging B-57 Canberra bomber to give the RAAF an effective long-range strike capability. However, when the F-111 program was delayed by design problems, the squadrons were temporarily equipped with F-4E Phantoms until the F-111s arrived in 1973.

To preserve their effectiveness, the F-111s are being updated continuously with new technology and new systems, including the Pave Tack guided weapon system and a new radar homing and warning system (RHAWS).

Pave Tack uses a forward-looking infrared device to locate targets at night and in adverse weather. A laser rangefinder/designator then provides precise information for the aiming of conventional weapons and for target designation for laser-guided bombs. RHAWS detects radar emissions and alerts the F-111's crew to potential danger of attack from air or ground. New weaponry on order includes the formidable sea-skimming Harpoon missile and GBU-15 guided glide bombs.

Pave Tack embodies more recent technology than that of the on-

Royal Australian Air Force Principal Air Force Bases



board F-111C avionics; it uses digital techniques, while the F-111C employs analog-type avionics. Thus, it was necessary for General Dynamics to design and build an Analog Interface Unit (AIU) to match Pave Tack to RAAF F-111s.

Four of the aircraft are fitted for photographic reconnaissance work and are designated RF-111C.

Tactical Fighter Force

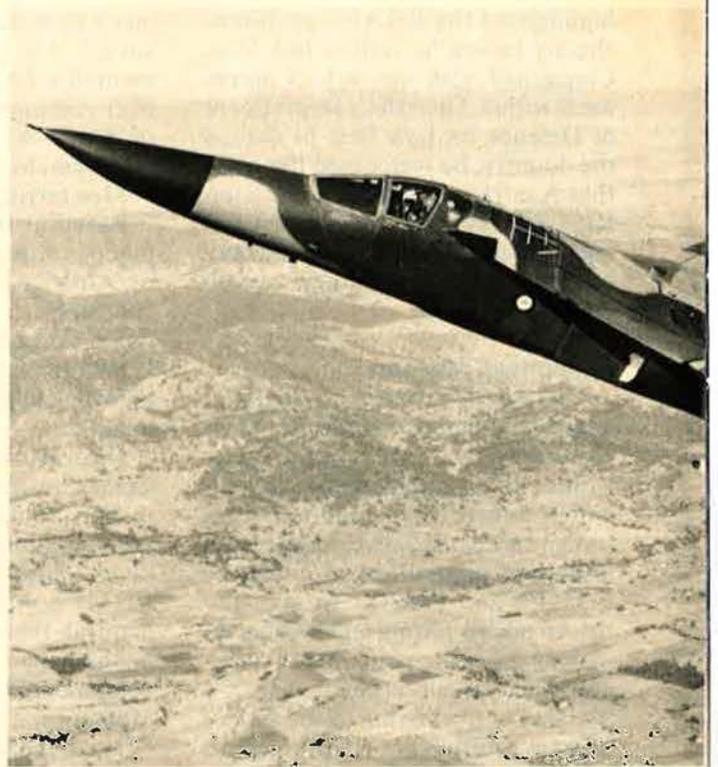
The three fighter squadrons—Nos. 3, 75, and 77—are based, respectively, at RAAF Butterworth in Malaysia, RAAF Darwin in the Northern Territory, and RAAF Williamtown, New South Wales. They currently fly French-designed Mirage IIIIO all-weather interceptors. A hundred single-seat versions and sixteen dual-seat trainers were built under license in Australia at the Government Aircraft Factories and Commonwealth Aircraft Corp. (CAC) in Melbourne.

The Mirage has been the backbone of the fighter force for the twenty years since retirement of the much-loved CAC Sabre—a reworked, Rolls-Royce Avon-powered version of the F-86 that Aussie pilots swore was the hottest Sabre ever. The Australian Mirages are equipped with French Matra Magic and Matra R.530 air-to-air missiles and twin 30-mm cannons.

In May of this year, the RAAF took delivery of the first four (of the seventy-five) McDonnell Douglas F/A-18 Hornets that are to replace its Mirages. The two lead aircraft were built in the United States, and the remainder are being manufactured in Australia. Their weapons packages include the latest all-Aspect AIM-9 Sidewinder short-range and AIM-7 Sparrow long-range missiles, Harpoon antishipping missiles, 910-kg laser-guided and conventional bombs, and a 20-mm cannon.

Advanced digital computers will allow even an inexperienced F/A-18 pilot to deliver weapons with three times the accuracy of a top Mirage jock. The aircraft will also be equipped with Hughes APG-65 pulse Doppler radar with a "look-down/shoot-down" capability. It removes the tactical advantage previously enjoyed by low-flying intruders—the cover of ground clutter to avoid radar detection.

The RAAF has two squadrons of General Dynamics F-111C strike aircraft based in Queensland. The RAAF F-111s are being updated continuously with new technology and systems, including Pave Tack, RHAWS, Harpoon missiles, and GBU-15 guided bombs.



Six RAAF pilots have undergone Hornet training with the US Navy at Lemoore NAS, Calif. They will form the instructor nucleus of Australia's F/A-18 operational conversion unit, which is scheduled to start training No. 3 Squadron pilots in 1986. All three squadrons are expected to be operational with the F/A-18 by early 1989.

In line with the policy of increasing deployment of front-line squadrons, No. 75 will be stationed at a new permanent base being constructed at Tindal in Australia's isolated Northern Territory. Nos. 77 and 3 will remain at RAAF Williamtown and will rotate to RAAF Butterworth, maintaining Australia's longstanding participation as a member of the Integrated Air Defence System of Malaysia-Singapore.

Maritime and Support Roles

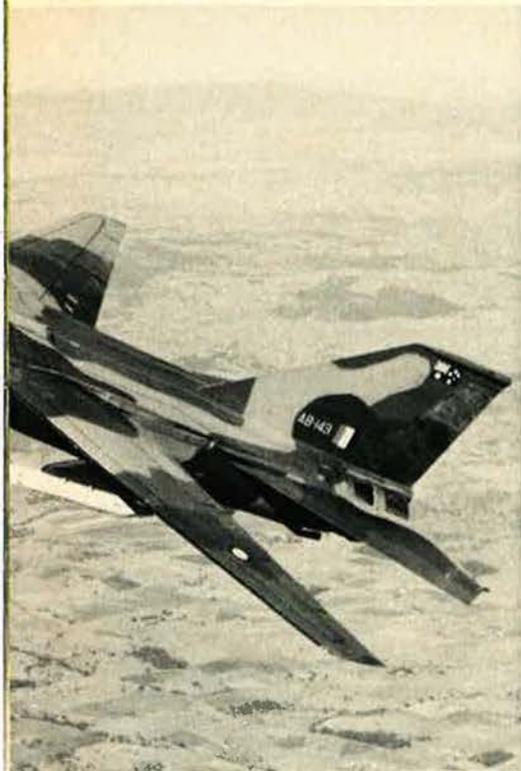
With 12,000 miles of coast line on the Pacific, Indian, and Southern oceans, Australia places great importance on maritime surveillance. The RAAF contribution is furnished by two squadrons of Lockheed P-3 Orion long-range maritime reconnaissance aircraft, both based at RAAF Edinburgh, South Australia. No. 10 Squadron is equipped with P-3Cs, and No. 11 Squadron is currently replacing its P-3Bs with C

models. Two Orions, rotated from RAAF Edinburgh, are on permanent attachment at RAAF Butterworth, Malaysia.

For submarine detection, the RAAF's Orions are equipped with the Australian-designed Barra sonobuoy and a British sonic processor. Their armament includes depth charges and, for strikes against surface vessels, torpedoes and Harpoon sea-skimming missiles. In addition to their blue-water role, the Orions patrol Australia's coast line regularly, looking for illegal activities in the nation's 200-mile economic resources zone.

The RAAF maintains two squadrons of Bell UH-1H Iroquois helicopters—No. 5 Squadron based in Canberra and No. 9 Squadron at RAAF Amberley, Queensland. The primary function of No. 9 Squadron is Army support, the role it fulfilled at Vung Tau throughout the Vietnam conflict. No. 5 Squadron is responsible for the training of all helicopter pilots for the Air Force and Navy and uses newly acquired Aérospatiale AS 350B Squirrel helicopters for that mission. No. 5 also maintains eight Iroquois at El Gorah in Egypt, where it operates with the Multinational Force and Observers in the Sinai.

Also based at RAAF Amberley, No. 12 Squadron uses Boeing



CH-47C Chinook helicopters to transport equipment and supplies in support of the Army. No. 35 Squadron, RAAF Townsville, Queensland—a composite squadron operating Iroquois helicopters and de Havilland Caribou transports—supports the Army's Operational Deployment Force.

Four squadrons—Nos. 35, 36, 37, and 38—are the mainstay of the Australian Defence Force's capability for rapid deployment. Nos. 36 and 37 Squadrons, equipped with Lockheed C-130H and C-130E aircraft respectively, are based at RAAF Richmond. Each squadron has twelve aircraft, giving the RAAF a considerable medium-haul transport force.

In addition to their military role, the C-130s are frequently in the news—dropping fodder to stock during drought or flood, rushing medical teams and supplies to cyclone-ravaged areas, fighting brushfires, and conducting search and rescue missions.

Also based at RAAF Richmond,

No. 38 Squadron operates Caribous that figure prominently in civil air work in addition to their normal military duties. The Caribous of No. 35 (the RAAF Townsville-based composite squadron) were well known in Vietnam. They were based at Vung Tau for seven and a half years and, operating under the call sign "Wallaby," became known as the "Wallaby Airline."

RAAF Fairbairn in Canberra is the home of No. 34 Squadron. Since 1956, it has had the special duty of VIP transport, carrying senior members of the government, visiting dignitaries, and members of the Royal Family. It operates Hawker Siddeley 748s, BAC-111s, and a trio of Mystère 20s—Fan Jet Falcons. No. 33 Squadron, formed in 1983 at RAAF Richmond, operates Boeing 707-338C aircraft, which perform a dual role of troop/cargo and VIP transport.

Training Is Top Notch

Pilot and navigator training in the RAAF sets a standard unsurpassed in the world. Australia developed expertise in flight crew training during World War II when, as a member of the Empire Air Training Scheme, it was called on to turn out 11,000 aircrew each year, contributing to the 50,000 annual target for Britain, Canada, Australia, New Zealand, and Rhodesia.

Today's RAAF pilots spend twenty-four weeks in preliminary ground and air training at No. 1 Flying Training School, RAAF Point Cook, near Melbourne. At RAAF Point Cook, they log sixty hours of basic flight training in New Zealand-built CT-4A Airtrainer aircraft. The Airtrainer, a piston-engine, fixed-undercarriage, fully aerobatic machine, was developed from the Australian-designed Victa Aircruiser.

RAAF Point Cook is also the home of the RAAF Academy, where selected officer cadets receive a four-year science degree before commencing flight training. In 1986, Academy cadets will begin

training at the new Australian Defence Force Academy (ADFA), which is nearing completion in Canberra. ADFA will train officers from all three services. It will also provide courses for technical engineering officers. These officers are currently trained at civilian universities and technical institutes.

On completion of basic flight training, students pilots move on to RAAF Pearce, Western Australia, where they complete 120 hours of advanced training in the Italian-designed Aermacchi MB-326H jet trainer. Ninety-seven Aermacchis were built under license in Australia. At RAAF Pearce, the skills of instrument flying, formation flying, low-level navigation, and aerobatics are emphasized.

On reaching "wings" standard, pilots are commissioned as flying officers and assigned to squadrons where conversion and operational training takes place. Budding fighter pilots are phased through an operational conversion unit, where they are given their initial ground attack and air combat training in Aermacchis before converting to front-line aircraft.

Navigators train at the School of Air Navigation at RAAF East Sale, Victoria. Their flight training is conducted in HS-748s fitted out as flying classrooms. Other aircrew members—flight engineers, airborne electronics analysts, loadmasters, and helicopter crewmen—are trained at the Airmen Aircrew Flying Training School at RAAF Edinburgh, South Australia.

Flight instructor training for the RAAF is carried out at RAAF East Sale's Central Flying School (CFS). Trainee instructors are selected from operational units and undergo a stringent ground and flight training course before being assigned to a flying training school. CFS staff instructors, flying orange-and-white Aermacchis, also form the RAAF "Roulettes" precision formation aerobatic team.

Almost every profession or trade found in the civilian community has its counterpart in the Air Force. To meet its demand for skilled personnel, the RAAF conducts more than 400 training courses for its airmen and airwomen. The ever-increasing complexities of modern aircraft and their weapon systems create a con-

Terry Gwynn-Jones has served as a fighter pilot with the RAAF, the RAF, and the Royal Canadian Air Force. He is now an Examiner of Airmen in Australia's Department of Transport Aviation. In 1976, he set a round-the-world speed record for piston-engine aircraft. A regular contributor to aviation and travel publications, he is the author of recent articles in AIR FORCE Magazine on Jimmy Doolittle's Schneider Trophy win (January '85) and the downing of Yamamoto (April '85).

stant need for people with ever-higher skills. Technical trade training is carried out at two main centers—the RAAF School of Technical Training at Wagga Wagga, New South Wales, and the RAAF School of Radio at RAAF Laverton, Victoria.

The RAAF has three little-publicized flying units performing specialized tasks. A photographic survey flight equipped with Learjets is attached to No. 6 (F-111C) Squadron. Forward air controllers train at RAAF Williamtown using CAC Winjeel trainers. The Winjeel (aboriginal for "young eagle") was designed and built in Australia in 1953 as a basic trainer. Though thirty years old, these rugged and simple aircraft have proved ideal for training in this specialized role. Another veteran still serving is the much-loved DC-3, or C-47, Gooney Bird. Five DC-3s perform general duties at the Aircraft Research and Development Unit at RAAF Edinburgh.

The Force of 1995

Most Australian defense experts see little prospect for significant change in the size and composition of the RAAF. Looking ahead to 1995, Air Marshal Evans expects that updated F-111C aircraft will continue to fulfill the major land-strike role and will then still have a twenty-year life remaining.

The F/A-18 squadrons will be fully operational and exercised in their defense, interdiction, and anti-shiping roles. Their multirole capability will be maximized by modified Boeing 707 tanker aircraft and Lockheed Orions carrying an effective airborne early warning system with an over-the-horizon radar capability. The Air Marshal also believes that a number of two-seat F/A-18 derivatives could be produced for strike operations.

He predicts that the two squadrons of P-3C Orions, with greatly improved radar and electronic support measures equipment, will continue to survey Australian waters. The RAAF's airlift capacity will remain roughly the same, although short-range troop transport will have been improved with the introduction of a more effective utility helicopter. It is possible that a new vertical-lift vehicle, such as the revolutionary Bell JVX tilt-rotor craft,

In the beginning, the airmen were outnumbered by their aircraft!

The RAAF at War

A "half-flight" of four officer pilots and forty-one other ranks made Australia's first contribution to the history of aerial warfare. The tiny force went to war in April 1915, flying Maurice Farman and Caudron biplanes against the Turks in Mesopotamia. As aerial combat escalated during World War I, the Australian Flying Corps expanded to eight squadrons and took part in operations in Palestine as well as over the Western Front.

When the RAAF was formed in 1921, its first Chief of the Air Staff, Wing Commander Richard Williams, controlled a force of twenty-one officers and 130 airmen. However, the tiny service did not lack aircraft. Britain, grateful for Australia's wartime effort, presented it with 128 surplus machines. This gift, coupled with the forty-two aircraft already in Australia, meant that the RAAF began in the unique position of having more aircraft than men!

By the outbreak of World War II, RAAF manpower had slowly increased to 3,500, but its twelve squadrons were equipped with 164 obsolete operational aircraft. At the height of the war, it had expanded to 20,000 officers, 144,000 airmen, 18,000 airwomen, and nearly 6,000 aircraft. To cope with its Empire Air Training Scheme commitment to train around 1,000 Allied aircrew each month—a gigantic task—the RAAF trained 3,000 flight instructors.

Australian pilots fought in the Battle of Britain and took part in every major operation mounted by RAF Bomber Command. RAAF bomber crews paid a dreadful price—3,486 men killed in Bomber Command alone.

In the early days of the Pacific War, a handful of RAAF squadrons fought a rearguard action against the advancing Japanese. Flying obsolete Brewster Buffalo fighters, Lockheed Hudsons, and Australian Wirraway trainers (modeled on the T-6), they took heavy losses. With the increasing US involvement in the Pacific came a steady flow of modern combat aircraft, and the RAAF reequipped with such types as P-40 Kittyhawks and Douglas A-20 Boston bombers. Australia's front-line aircraft strength in the Pacific theater eventually exceeded 3,000 machines.

The RAAF's thirty-seven operational and six transport squadrons fought in every theater of World War II. With the surrender of the Axis in 1945, it became the world's fourth largest air force—exceeded only by those of the US, Britain, and Russia—and every man and woman was a volunteer. Official casualty figures disclose that nearly 10,000 Australian airmen had been killed—6,396 in action against Germany and Italy and 3,527 on Pacific operations.

In 1948, the RAAF was back in action, sending two squadrons to assist Britain during the Malayan Emergency. There, during eight years operating against Communist terrorists, No. 1 Squadron's Avro Lincoln bombers flew more than 3,000 sorties, and No. 38 Squadron Dakotas conducted troop-carrying and supply operations. During the last two years of the emergency, they were joined by two additional squadrons operating CAC Sabres and Canberra bombers.

When the Korean War broke out in 1950, No. 77 Squadron's P-51 Mustangs were the first allied squadron to go into action with USAF. The squadron was later reequipped with Gloster Meteor VIII jet fighters, which, inferior to the MiG-15, were eventually switched to a ground-attack role. RAAF Dakotas also conducted transport operations in Korea. When the war ended in 1953, No. 77 had lost forty-two pilots (thirty-two in Meteors) whilst flying 19,000 sorties.

The RAAF committed three squadrons to the war in Vietnam. No. 35 Squadron operated Caribous from the US Army base at Vung Tau, where it became known to the 600,000 passengers it carried as the "Wallaby Airline." No. 9 Squadron's Iroquois helicopters also flew from Vung Tau in support of the 1st Australian Army Task Force based at Nui Dat, in Phuoc Toy province.

B-57 Canberra bombers of No. 2 Squadron operated from Phan Rang air base under USAF operational control from 1967-71. Despite its age, the Canberra, with its long range and level-bombing capability, proved one of the most valuable operational aircraft in Vietnam. In the first three years of operations, No. 2's Canberras destroyed 7,000 structures, 10,000 bunkers, 1,100 sampans, and thirty-six bridges.

will replace the Chinook and Caribou.

"In essence, 1995 should see an air force fully capable of undertaking its role in the defense of Australia through the projection of a very real deterrent and, together

with the capabilities of its sister services, will hopefully prevent the development of a threat to this country," Air Marshal Evans says. "Whilst trained and structured for war, the mission of the Royal Australian Air Force is peace." ■



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Sen. Sam Nunn (D-Ga.) prepares to fly in an F-15 Eagle fighter bearing his name during a Red Flag exercise at Nellis AFB, Nev. Senator Nunn is senior Democrat on the Senate Armed Services Committee. His views on defense issues are widely respected and highly influential.

The Pentagon may not like all of what the powerful Senator says, but can ill afford to ignore it.

As Sam Nunn Sees It

BY JAMES W. CANAN
SENIOR EDITOR

IN HIS nearly thirteen years as a US Senator from Georgia, conservative Democrat Sam Nunn has earned the respect of colleagues of all ideological persuasions on both sides of the aisle for his savvy on defense issues, his parliamentary skills in debating them, and his record of consistently supporting a strong national defense without becoming the Pentagon's puppet.

Given such credentials, Senator Nunn, who will turn forty-seven on September 8, now commands the attention reserved for statesmen when he speaks out on defense. As the senior Democrat on the Senate Armed Services Committee, he has a bully pulpit from which to speak out and is in position to become the committee's chairman, should his party capture the Senate in next year's elections.

Can Ill Afford to Ignore

Much of what Senator Nunn has to say the Pentagon may not want to hear, but can ill afford to ignore—witness the success of his performance in the Senate debate on the MX ICBM program earlier this year.

Senator Nunn is increasingly concerned about what he perceives as fuzzily defined US defense poli-

cies and strategies and about the ways in which the US military is organized, sets its priorities, and allocates its resources.

He has come to be convinced that sharp corrections are overdue in all such areas, especially in light of the political disfavor into which defense spending now seems to have fallen.

"We won't have the resources to keep on going the way we are," the Senator declares. "In the 1970s, it was clear that we did not have the resources to implement a realistic defense strategy. When we began getting the resources, we did not couple them with meaningful defense goals.

"We have not sorted out our defense priorities. Now that we are again facing resource constraints, we must have a strategy and goals that take them into account."

Senator Nunn is for military reform but stops short of describing himself as a military reformer. What sets him apart from many who operate under that mantle is a style devoid of flamboyance and a preference for legislative persuasion over passionate rhetoric.

Early this year, he joined with Sen. Barry Goldwater (R-Ariz.), chairman of the Senate Armed Services Committee, in ordering a bi-

partisan committee staff study of the Office of the Secretary of Defense and the armed services.

"We are serious," Senator Nunn told AIR FORCE Magazine, "about coming up—this year—with a plan for some restructuring of the military services, the Joint Chiefs of Staff, and the Defense Department. We are taking a sound legislative approach to this."

Force to Reckon With

Senator Nunn came into his own this year as a singular force to be reckoned with on national defense. His proposal to constrain the deployment of MX ICBMs in fixed silos attracted enough bipartisan support in the Senate to force the Reagan Administration to come to terms.

Senator Nunn's growing clout had become obvious even before his victory in the Senate MX debate.

He succeeded the late Sen. Henry M. Jackson (D-Wash.), whom he describes as "my friend and my teacher from the day I arrived in Washington," as the Armed Services Committee's ranking Democrat in late 1983. The next year, his first full one in that advantageous post, he rattled Washington and Western European capitals with a

move that seemed, at first, out of character for him as a longtime champion of the North Atlantic Treaty Organization.

Senator Nunn introduced an amendment to the Fiscal Year 1985 military authorization bill that would have frozen and then drastically cut the number of US troops in Europe unless the NATO allies did more to shoulder their monetary and military share of the burden of defending western Europe.

He lost—but the vote was a surprisingly close fifty-five to forty-one, even after President Reagan, Secretary of Defense Caspar W. Weinberger, and Secretary of State George P. Shultz lobbied hard in the Senate against his amendment.

Senator Nunn's near-miss got NATO's attention. It had the desired effect of influencing the European allies to concentrate harder on building up munitions stockpiles and on other means of sustaining a nonnuclear defense of their own territory.

The Nunn proposal was all the more effective because of its sponsor's track record as a NATO stalwart.

Shortly after coming to the Senate, for example, Senator Nunn fought and voted against a proposal by Sen. Mike Mansfield (D-Mont.), at the time the Senate Majority Leader and now US Ambassador to Japan, to phase out US forces from Europe.

Years later, Senator Nunn co-authored legislation aimed at making the Pentagon cooperate more earnestly with the NATO allies in bringing about greater standardization and interoperability of NATO weapon systems.

At the time of last year's debate on the Nunn troop-withdrawal amendment, Sen. John Tower (R-Tex.), who later retired from the Senate and the chairmanship of its Armed Services Committee, put Senator Nunn's powers of persuasion into plain-language perspective.

"He's like a 500-pound gorilla. He can do anything he wants to," Mr. Tower said.

Citing DoD Statistics

In typical fashion, Senator Nunn used the Pentagon's own data against it in making his case for his

proposed NATO amendment. On the Senate floor, he cited DoD statistics that clearly showed the European allies falling far short of defense-spending promises they had made in 1978.

This year, with even more telling effect, Senator Nunn again knotted the Pentagon's own past logic and conclusions around its neck during

"With ten highly accurate warheads each, the forty operational MX missiles will counterbalance 308 Soviet SS-18s and threaten a few superhard control centers.

"However, neither MX by itself—nor MX combined with 900 Minuteman III Mk 12A warheads—can deliver a crippling blow to the total of approximately 1,400 Soviet silos.



On both NATO and MX, Senator Nunn used the Pentagon's own data to make his case.

the Senate debate on the MX program.

Showing his lawyer's sharp eye for supportive documentation and his penchant for doing his homework, the Senator resurrected a three-year-old Air Force report that had made the very same points he was trying to get across in arguing for deployment of only forty MX missiles in fixed silos—not the one hundred such missiles proposed by the Administration.

On the Senate floor, Senator Nunn recalled that the Administration's original 1981 decision on MX basing was to deploy forty of the missiles in Minuteman silos "as an interim [basing] solution until a permanent solution could be found."

He then proceeded to quote a February 1982 report that the Air Force had sent the Senate Foreign Relations Committee in support of that Administration decision, as follows:

"The initial deployment of forty MX in existing silos will be sufficient to hold the most threatening Soviet silo sanctuaries at risk.

"However, it is not sufficient to pose a destabilizing threat of a disarming first strike.

"This will provide sufficient firepower on line in a timely manner to allow the US to pursue further basing options without fear of Soviet coercion."

That Air Force report unintentionally but neatly summed up Senator Nunn's own main arguments—namely, that fixed-silo ICBMs have become too vulnerable to a first strike and that the formidable deployment of 100 MX missiles with 1,000 warheads in such silos could well lead to an extremely perilous launch-on-warning posture by both superpowers.

"Prompt Launch" Concerns

Senator Nunn's concern about the US being forced into what he calls a "prompt launch" through overdependence on fixed-silo ICBMs is said to have been unwittingly heightened by the testimony of at least one US military witness during the Armed Services Committee's MX hearings last spring.

He expressed his concern about the Soviets also taking a launch-on-warning stance:

"Someone once said that anyone who has ridden in an elevator in the Soviet Union has got to be a little bit

uncomfortable about having the fate of our country rely entirely on whether Soviet sensors and radars could correctly inform them whether America is attacking or whether a flock of geese has reversed course over Siberia.

"That's the way I feel. I feel that the world is moving inexorably toward a hair-trigger on both sides."

Having quoted the 1982 Air Force letter during the Senate MX debate, Senator Nunn, resting his case, said:

"I must say that I continue to find this Air Force logic very compelling.

"As far as I am concerned, nothing has happened regarding the survivability of MX since the Air Force presented this report. A permanent basing mode has not been found, and I am persuaded that neither the Pentagon nor the White House is looking for such a [basing] solution."

Senator Nunn acknowledged that the Air Force report had preceded the 1983 report of the bipartisan Presidential Commission on Strategic Forces (the Scowcroft Commission). Its recommendation to deploy 100 MX missiles in Minuteman silos—one of many recommendations for a cohesive strategic force of bombers, cruise missiles, and land-based and sea-based ICBMs—was adopted by the Administration and was instrumental in persuading Congress to approve the onset of MX production.

With 20/20 hindsight, it is now clear that Pentagon advocacy of the MX in the late 1970s and the early 1980s overemphasized the survivability aspect of the rationale for MX deployment and did not do justice to what the missile itself was all about. The need for MX as a hard-target ICBM to offset the Soviet deployment of a new generation of very powerful, very accurate ICBMs did not come through loud and clear.

The Scowcroft Commission put that need into proper perspective and addressed the vulnerability issue by urging the development of a small, single-warhead ICBM—now called SICBM, or Midgetman—to be deployed in a mobile mode, making it less vulnerable and thus less susceptible to launch on warning than MX.

The upshot of the Senate MX debate was that the Administration met Senator Nunn more than halfway, agreeing, for now, to deploy only fifty MX missiles.

"The Pentagon and the Air Force have been given a message that they needed to hear—that we expect them to move promptly down the road to the small ICBM and to take another look at survivable basing modes," Senator Nunn declared.

Fifty Not Forever

He also emphasized that he may someday favor the deployment of more than fifty MX missiles if such survivable basing modes can be found and if he deems such deployment necessary at the time.

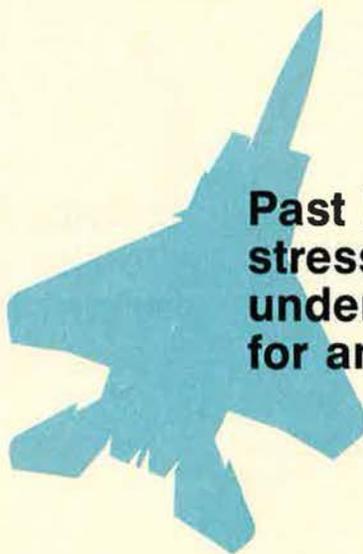
Some knowledgeable observers of the ups and downs of what Senator Nunn calls "this most controversial and wearying MX program" believe he may actually have saved MX from an even worse fate in Congress this year by heading off at the pass the adamantly anti-MX con-

place during the critical first few years of the Geneva talks" with the Soviets.

Senator Nunn sees those talks as "terribly important." If they break down, he says, the US will be forced into "enormous expenditures—possibly hundreds of billions of dollars" on strategic weapons and on the means of defending them.

In his opinion, "land-based missiles have the biggest stake in the success of arms control." Without it, they will need to be based in mobile and defensible modes even more urgently than they need to be at the moment.

"I think we're a long way from the end of the land-based ICBM," Senator Nunn says, "but I also think we're going to have to go more and more to sea [with the ballistic-missile force]. The time will come when not even mobility will be sufficient to keep our ICBMs safe, and we would need deceptive basing and perhaps some form of defense for them."



Past MX advocacy overstressed survivability and underemphasized the need for an effective missile.

gressional forces that would have preferred to quash the program here and now.

The Senator himself voted early this year to release the funding that Congress had fenced off for MX in the current fiscal year.

He told the Senate at that time that "there is no ready alternative to MX since both the Trident D-5 [submarine-launched ballistic missile] and the Midgetman are a number of years behind it." Killing MX "would leave no strategic land-based missile production line in

Assumptions About D-5

In his considerations of the future makeup of US strategic forces, Senator Nunn takes for granted that the D-5 submarine-launched ballistic missile scheduled for deployment later in this decade will be accurate enough to serve as a hard-target killer. This is the assessment of the Navy and of the Office of the Secretary of Defense as well, but there is lingering skepticism about it in some military circles.

Perhaps optimistically, Senator Nunn also assumes the invol-

nerability of the Navy's ballistic missile submarines "a long way" into the future. He notes, however, that this applies only to those at sea. "A good number of them are in port all the time, maybe up to fifty percent of them," and they can be targeted there.

The key to keeping the Soviets at bay in the strategic arena, the Senator believes, is to make them spend so much money in developing and building defenses against US strategic weapons they presently could not counter that it hurts.

This is why, he says, "I'm high on the Advanced Technology Bomber (ATB) and the Advanced Cruise Missile (ACM)," both of which are being developed with so-called Stealth technologies to give them extremely small radar and infrared signatures and thus to make them very hard to detect.

"So I rate these two programs as much, much more important than the MX in vulnerable silos," Senator Nunn declares. "Nothing will suit me better—if we don't reach arms-control agreements—than the Soviet Union spending \$500 billion to \$1 trillion defending against the ATBs and the ACMs. Those [Soviet] resources would not then go into the kind of conventional armaments that put so much of the world in jeopardy from Soviet forces—including Europe, the Persian Gulf, and Southwest Asia.

"The ATB would give us tremendous economic leverage. It's not that it can't be defended against, it's that the Soviets would have to spend *huge* money to do it—by substantially revamping their entire air defense system."

On the other hand, Senator Nunn sees "very little economic leverage" in the B-1B bomber program because "the Soviets have already invested several hundred billion dollars in defenses against our present bomber force—probably anticipating, to a considerable degree, the B-1."

He adds: "My case against the B-1 is not based on the weapon but on the economics. I believe it will be particularly useful in a conventional role, such as against targets at sea."

The Senator makes it clear, however, that he would fight hard against any Pentagon move to extend B-1B production beyond the

presently planned 100 bombers if this would mean stretching or otherwise slighting the development of the ATB and the ACM.

Consistent with his practice of recent years, he recently joined with Sen. Robert C. Byrd (D-W. Va.), the Senate Minority Leader, on a provision in the Senate Fiscal Year 1986 military authorization bill that forbids any shift of ATB or ACM development funding to the B-1B program. The Nunn-Byrd provision also specifies that the ATB and the ACM are "critical" and orders that their development proceed apace.

Senator Nunn was once suspicious that the Air Force would eventually try to get OSD and congressional approval for more than 100 B-1B bombers and for putting the ATB on the back burner in the bargain. He now tends to accept the Air Force's protestations to the contrary.

Consequences of the Squeeze

He is concerned, however, that the new squeeze on defense spend-

ing, which he expects to become even tighter over the next few years, will work in favor of the B-1B and against the ATB.

The reason: It is always cheaper and safer to extend the production of workable weapon systems already being produced than it is to start up production lines for new and untried weapon systems.

"In a tight budget environment, a case may be made by others to keep the B-1B going," the Senator says. It would be a "myopic" case, in his opinion, however, because it would miss what he believes is the salient point that US defense planners and budgeters should—but don't—address.

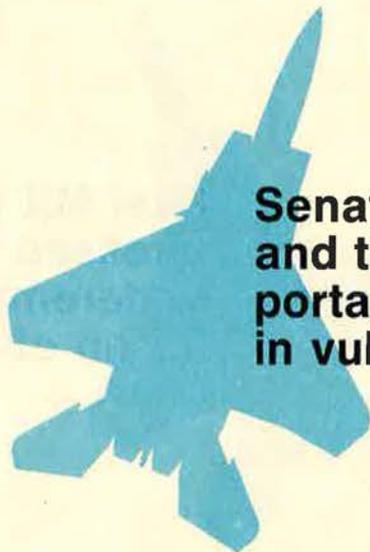
As the Senator expresses it: "What matters is not the money going into the Pentagon, but the military capabilities coming out."

He maintains that those capabilities at the moment are far from sufficient to enable US military forces to carry out the Administration's "three-and-a-half-wars strategy," as described by the Senator, even considering the \$1 trillion that have been spent on defense over the past four years. Nor will they be sufficient in the future, he claims.

"We have a big strategy-capability gap," he asserts.

Moreover, as he recently wrote: "Our own defense planning is out of sync with that of our allies, and our mobilization goals are out of sync with NATO capabilities and war plans."

The latter point underlies Senator Nunn's decision not to reintroduce his NATO troop-withdrawal amend-



Senator Nunn rates the ATB and the ACM as more important than Peacekeeper in vulnerable silos.

ment this year, but to press instead, through legislation, for an upsurge of transatlantic cooperation in the development, procurement, and deployment of nonnuclear weapons and munitions to be common to all NATO forces.

He says he is easing up his demand that the NATO allies live up to their pledges of solid annual defense-spending increases because "economics are working heavily against *their* defense budgets, too."

He warns, however: "I will not continue to support the expenditure

of some \$180 billion each year from the US defense budget in order to carry out our part of a strategy that cannot work without the Europeans doing much more than they are."

In this connection, he also declares:

"Why on earth we would buy thousands of tactical aircraft five to ten years before the facilities and shelters needed to use them effectively are built in Europe is unexplainable.

"Why we would buy and ship to Europe enough munitions to allow our forces to fight three to four times longer than our allies is equally incredible. When their munitions run out, it's all over.

"In a period of budget austerity, we in Congress will have to take a much harder look at our forces and our commitments."

Nunn's Key Questions

Such an examination, Senator Nunn told the Senate, should be based in part on the following questions:

"Can we expand the number of Army divisions to seventeen, and can we afford to equip and train five different kinds of divisions?"

"Can we expand the tactical Air Force from thirty-six to forty wings, all the while developing new and improved capabilities, like the Advanced Tactical Fighter, that are likely to be even more expensive?"

"Can we expand the Navy to 600 ships, buy enough attack submarines and enough Tridents, and still modernize naval aviation on a substantial scale, including the Advanced Tactical Aircraft (ATA)?"

"Can we afford the development of a new airlift transport, a new VTOL aircraft, a new series of utility helicopters, and other major new starts when the requirements for these are far from clear and our ability to fund them is dubious?"

"Can we afford to fence off all of the President's strategic modernization program, treating it as our highest-priority undertaking?"

His answer: No. Next year, he says, will be "the real year of reckoning, the year when there will simply not be enough money to sustain those DoD outyear plans."

Thus it is "urgent," Senator Nunn asserts, that the Administration and Congress cooperate in reshaping

US force structures, weapon systems, and military commitments in accordance with what he calls "the real world."

As it now stands, he claims, "Our current military strategy as set forth in [Secretary of Defense Caspar W.] Weinberger's defense posture statements has little relationship to our present capability or to our foreseeable resources."



The JCS and the CINCs need to be strengthened, Senator Nunn says.

Reshaping the Establishment

The first place to start in such reshaping, he claims, is the defense establishment itself—"the services, the JCS, and the entire DoD.

"The JCS needs to be strengthened and the CINCs [Commanders in Chief] need to be strengthened," Senator Nunn declares.

He says he prefers to wait for the results of the Goldwater-Nunn Senate Armed Services Committee staff study of the military establishment before going into detail on military reorganization.

It is obvious to him, however, that the JCS must be made into a vehicle for "giving better advice to the Secretary of Defense—he's not getting good advice now from the services"—and for "saying no to the individual services across service lines. *Somebody's* got to be able to do that."

Senator Nunn says that the CINCs, whatever the color of their uniforms, complain in private that the Army, Navy, and Air Force components under their command are too often more responsive to the priorities of their respective service hierarchies than they are to the op-

erational dictates of the CINCs themselves.

"Their lines of communication are back to the services, not to the CINCs, so what you have is that the CINCs are isolated from everybody, and yet they are the guys who would have to lead the fight," Senator Nunn declares.

This shows up, for example, "when the CINCs want munitions

but can't get them because the services want platforms," he adds.

His preliminary views on military reorganization do not imply any weakening of the Office of the Secretary of Defense or of civilian control of the military establishment, Senator Nunn maintains.

On the contrary, he insists, a stronger JCS and more powerful CINCs "would make it easier" for the Secretary to set and to oversee defense policy and strategy more in keeping with the wishes of a military that would be less caught up in interservice snarls—and thus would make for greater harmony all around.

In that same vein, "all mechanisms for joint programs and joint operations need to be strengthened," Senator Nunn asserts.

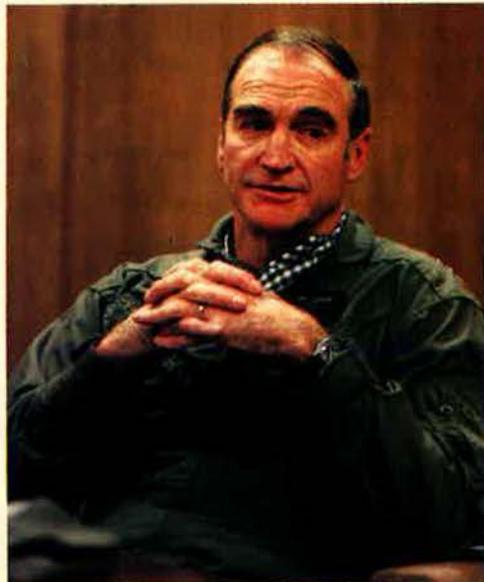
One thing is already very clear: Any move that Senator Goldwater and Senator Nunn make toward military reorganization this year will include a proposal to cut personnel at the Pentagon, probably by a whole lot.

"There are far too many people in the Department of Defense," Senator Nunn asserts. ■

The Chief talks about budget pressures and how they could affect the continued strength and effectiveness of the Air Force.

Commitments To Keep

BY EDGAR ULSAMER
SENIOR EDITOR (POLICY & TECHNOLOGY)



THE strength and effectiveness of America's armed forces depend on excellent people, superior weapons and equipment, and sustained public support of fundamental national security requirements. While there has been great progress over the past several years in all these areas, there are still some reasons for concern, in the view of USAF's Chief of Staff, Gen. Charles A. Gabriel.

In an exclusive interview with *AIR FORCE Magazine*, he termed congressional moves to cut back military retirement by \$4 billion a year "very troublesome" because of potentially devastating effects on the quality of the All-Volunteer Force. Military retirement, he pointed out, is a fundamental element of the integrated pay and compensation package designed to attract and retain top-notch people. "That package is the reason why we have the best people in our history." While neither officers nor enlisted personnel normally join the Air Force—or the other services—for narrow, pecuniary reasons, essential needs obviously must be covered. Central here is the stability of the retirement system, the "one thing that people can hang their hats on," he warned.

Military Pay Below "Comparability"

Military pay is presently ten percent below "comparability" with civilian salaries. Additionally, according to General Gabriel, stretchouts in cost-of-living adjustments and changes in the formula for calculating retired pay have resulted in a smaller overall compensation package. Finally, military moves generally entail costs well above government reimbursement, causing out-of-pocket expenses averaging about \$1,500 per move for lower ranks and some \$3,000 for higher-ranking personnel. These factors continue to keep the total

compensation package well below the levels originally called for. If Congress were to waltz on the "twenty-year and thirty-year retirement pegpoints [governing eligibility]—and the multipliers between—and attack the one thing that has been stable, I don't know what would happen to the military personnel picture," General Gabriel stressed.

Adverse media reports concerning the efficacy and

The Air Force is determined to shield two areas—people programs and readiness—from damaging cuts.

integrity of the acquisition process are diminishing public support for essential military requirements, even though these accounts are often based on exaggeration and grandstanding. Explaining that these episodes represent isolated mistakes—usually discovered and corrected by the military before the media sensationalize them—General Gabriel complained that the enormous, steady progress in increasing the effectiveness of the development and procurement process is being largely ignored by the press. Conversely, a few mistakes are being portrayed as the rule rather than the exception.

The Air Force last year succeeded in saving some \$570 million by streamlining the acquisition and the stocking of the almost 900,000 spares and parts in the inventory. Also, the Air Force has racked up some \$3 billion in savings so far by shifting—when appropriate—to multiyear purchasing arrangements. Additional savings are being realized by a range of cost-cutting measures, such as "baselining" new acquisition programs, buying at the most economical rates, and increasing competition among vendors. The Air Force recently created a corps of some 1,000 "competition advocates," meaning specialists assigned exclusively to the task of using competitive leverage as a tool to drive down vendor prices. Lastly, the Air Force and its contractors are arranging the return of what would be "windfall" profits on the part of industry due to lower than expected inflation rates, General Gabriel explained.

Balancing Readiness and Modernization

In a break with its performance over the past few years, Congress this year cut the Administration's FY '86 defense budget request substantially. General Gabriel does not interpret this action as presaging the impending breakup of the public and congressional consensus

on national defense or as a permanent loss of the momentum toward strengthening the nation's defense capabilities. These cuts, he stated, primarily reflect recognition of a national problem, "the federal deficit, and that all federal spending will have to gear down in order to ease the problem."

Congress will have to weigh very carefully the risks associated with cutting defense spending below the levels requested by the Administration. The budget request, he stressed, reflects the requirement to uphold "our national commitments around the world" as specified by the Administration, on the one hand, and the discernible threat, on the other: "We in the military obviously don't control national commitments or the threat. We advise what is needed to fulfill commitments and meet the threat. We are conservative; anybody responsible for the security of this nation would be."

Congress, by contrast, has the "tough job" of setting the level of all federal spending and of arbitrating various requirements, including the crucial question of how much the country can afford to spend "on guns and how much on butter." Congress is thus ultimately responsible for determining the "risk the country has to take in meeting its national security objectives," USAF's Chief of Staff pointed out.

The cuts made so far by Congress in the FY '86 Air Force budget will clearly cause program stretchouts and drive up costs, including those in the strategic force modernization sector. Tactical force modernization, in the main the fighter enhancement and modernization program, will have to bear the brunt of the cuts because of the high priority on strategic modernization, readiness, and airlift improvements, General Gabriel said.

Two areas the Air Force is determined to shield from damaging cuts are people and readiness. All the services put the "people issue up front—that is pervasive—but in all the drills on the budget, we also are protecting investments in readiness. We think that is important because readiness affects our people directly" in terms of training and the quality of the available weapons, according to General Gabriel. He added that, in the area of sustainability, "we will have to give some."

Over the past four to five years, the Air Force was able to score a fivefold increase in its parts and munitions stocks funding: "Obviously, some of that we will have to back off from." Even if there are some cuts in munitions, the US stores levels would remain well above those of some of our NATO allies, General Gabriel pointed out. He explained that some figures about the state of Air Force munitions stores are misleading because they express wartime requirements in terms of "modern, preferred munitions." The Mk 82 bomb "may not be a modern, preferred munition, but you put it on an F-16 and you get a five-foot CEP—that will get the job done." The "top gun" at a recent Air Force gunnery exercise averaged accuracies in the five-foot range, he pointed out with obvious pride.

The Air Force, he stressed, is prepared to adjust to budget cuts imposed by Congress "because we do what we are told to do. Of course, we will have to rereck everything so that we still have a good balance in capabilities. Everything we do involves a balance, and usually it is the difference between readiness today and modernization tomorrow."

Modernization Requirements

While General Gabriel underscored the importance of hardware modernization over the near term as well as the far term, he made short shrift of recent claims by a handful of civilian defense theoreticians that US military thinking and planning have become stale and ineffective. It is frustrating, he said, "to see so much attention being paid to so few people who know so little." He believes that US military professionals know more about what it takes to fight and win wars than armchair strategists, many of whom have never faced combat.

Aspects of the defense picture that warrant review and analysis in the view of General Gabriel are the technology base and long-term efforts in the field of science that could revolutionize military capabilities. Driving these concerns are Soviet technical advances that threaten the US technological lead in crucial mission areas. As a first step toward correcting these deficiencies, the Air Force, under the leadership of AFSC Commander Gen. Lawrence A. Skantze, is drawing up plans for an across-the-board examination of potential high payoff areas in science and technology. This review is slated to get under way very soon and will be accomplished in the tradition of the "Toward New Horizons" study undertaken at the end of World War II and "Project Forecast" launched in the early 1960s, he said. He underscored the importance of maintaining this country's technological advantage by reiterating that "this lead—plus the quality of our people—is our salvation."

One of the major long-term technological challenges facing the Air Force and the other services is strategic defense against ballistic missiles. The Air Force "fully supports the strategic defense initiative," or SDI, USAF's Chief of Staff said.

Among the pivotal reasons that make strategic defense compelling is the advent of such new mobile Soviet ICBMs as the SS-X-24 and SS-X-25: "If we are uncertain about the location of these missiles, a comprehensive system might be the only way to defend against them. SDI is aimed toward determining the feasibility of strategic defense and, if it is feasible, how the job might be done." The MIRVed SS-X-24 is "especially bothersome," he said. The most promising way of dealing offensively with such relocatable enemy weapons is by using penetrating strategic bombers. Oddly, in one respect, the Soviet shift to mobile ICBMs has some advantages for USAF: "Their CEPs [circular errors probable] haven't improved as rapidly as they would have with a new generation of silo-based systems, because it's hard to get your best accuracy with mobile ICBMs."

Of the some 140 "working projects" that make up the strategic defense initiative, the Air Force runs fifty-eight that, in the aggregate, represent about forty percent of the total SDI budget request. The transition from today's retaliatory offensive deterrence to one based on defensive capabilities will be "difficult," in General Gabriel's view: "We hope that we will have some kind of arms control going on to monitor and control this process." Safeguards of this kind won't be easy to come by, but are very necessary.

He also expressed concern about the possibility that a gradual buildup of SDI-derived defenses might cause a premature and precipitous retirement of strategic offensive forces. The US, he emphasized, "at all times will

have to have a strong offensive deterrent in place that is perceived as highly effective by the Soviets. We hope that we will be able to reduce the strategic retaliatory forces on both sides in an equitable and verifiable way until we have a comprehensive defensive system in operation."

For the time being, the US is clearly ahead of the Soviets in terms of bombers and cruise missiles. The leverage in terms of military investment that ensues from this condition is major, causing the Soviets to spend far more on atmospheric defenses than the US invests in air-breathing strategic offensive weapons. On the other hand, the Soviets are in the throes of building up their strategic bomber and cruise missile forces with such systems as Backfire, Bear-H, and Blackjack, along with air-launched and sea-launched cruise missiles, General Gabriel pointed out.

As the Soviet air-breathing threat becomes more formidable, the US will have to counter with suitable air defenses. It would make no sense militarily to deploy comprehensive ballistic missile defenses without comparable air defense capabilities, General Gabriel asserted. In this context, the current void in this country's atmospheric defense capabilities is of critical importance.

Space Program Properly Paced

As the importance of strategic defense capabilities increases, the question of who should be in charge of these forces becomes acute, General Gabriel acknowledged. The Unified Space Command, scheduled to start up in Colorado Springs, Colo., on October 1, 1985, is a candidate for absorbing strategic defense functions, but no binding decision has yet been made in this regard, he explained.

The Air Force Chief suggested that there is an "obvious tie between atmospheric defense against air-breathing threats, defense against ballistic missiles, and the sensors that warn us of an attack. It's a related mission. There are many good reasons why it should be in one command." General Gabriel asserted that the Joint Chiefs of Staff are in full agreement about the need for a Unified Space Command and the fact that the tactical warning and attack assessment and space defense functions should be assigned to the new command. Both these critically important functions reside already in the Air Force Space Command. The control over such emerging functions as attack avoidance on orbit by means of maneuvering and active defense against threats will also be assigned to the Unified Space Command, he disclosed. General Gabriel declined to comment on the proposed makeup of the new command in terms of service roles.

The pace of the US military space program has been "about right." Claims alleging conservatism on the part of the Air Force in capitalizing on the utility of space systems don't take into account the balance that must be maintained among competing needs. For example, the pronounced lack in spending in the strategic area in the 1970s had to be set right, General Gabriel said.

He is disconcerted, however, in regard to two space-related issues: "The Soviets have the only operational ASAT and ABM capability. Yet they have made catchwords of the terms 'space weapons' and 'militarization

of space.' They are funding these things far more heavily than we are. Also, they have been engaged in SDI for longer and far more heavily than we have.' The Soviets, nevertheless, are very concerned that US space-based SDI capabilities might make their ICBMs—far and away the primary Soviet strategic offensive weapon—"not as effective as they are now."

The other space issue of major concern to the Air

General Gabriel says the pace of the military space program is "about right."

Force is the fact that there is less than full political support for the US ASAT program: "The other side has this capability, and we don't. I think that is wrong. We need to continue to work on a homing space interceptor that can be launched from F-15s."

Overall, he believes that space has become a very important player in an offensive as well as a defensive sense through such support functions as surveillance, navigation, communications, and weather. It follows that the space-based systems performing these functions must be provided with survivability and, if necessary, dedicated defenses, General Gabriel pointed out.

The Two-Bomber Program

Recent actions by both chambers of Congress mandate that in-depth reviews of the B-1B and Advanced Technology Bomber, known as ATB, or "Stealth" for short, be presented to the Armed Services Committees by the end of this year. The request implies that some members believe there is a need to reexamine the rationale underlying the proper mix of the two aircraft.

General Gabriel came out squarely in support of the Air Force's matchup of the two bomber programs, asserting that it will easily pass muster under the requested scrutiny. In the case of the B-1B program, he said the fact that the current design is a refined, mature variant of the canceled B-1A made possible significant product improvements, even though termination of the B-1A in 1977 slowed acquisition of the weapon system by several years and upped costs. The current program, he stressed, is ahead of schedule and below cost.

While the B-1B's low-observable characteristics, especially its radar cross section, are significantly better than those of its predecessor, General Gabriel emphasized that "there is only so much that can be done with an existing airframe" to enhance its Stealth characteris-

tics. That is the primary reason for ATB, he said: "You can get amazingly lower signatures when you design in low-observable features from the start." The ATB, he added, is "meant for the year 2000 and beyond, even though it will come into the inventory before that. It is going to last for quite a while because it combines low-signature features with the very latest in ECM [electronic countermeasures] technology."



The basic soundness of a two-bomber program is unassailable and has paid off in the past in various mission areas: "It pays to have one design in existence and another one on the books. We would be remiss if we didn't." He stressed that, media allegations to the contrary, the ATB as well as the B-1B are fully funded and progressing well in a technical as well as a cost-control sense.

Although cruise missiles complement the manned strategic bomber force effectively, General Gabriel thinks the notion of such unmanned systems replacing manned bombers in the foreseeable future is overblown. "Stealth characteristics indeed will help the effectiveness of cruise missiles a great deal." But General Gabriel rejected the notion that, over the next two decades, "ground-based intercontinental cruise missiles equipped with 'artificial intelligence' could take over the role of the manned bomber."

Further dampening the prospects for such a shift in capability is the ever-increasing requirement to deal with imprecisely located and mobile targets in real time. There is no technology on the horizon that could enable intercontinental cruise missiles to locate and attack relocatable targets: "That is simply too tough. That's where man is needed, at least for the foreseeable future."

Scrutiny for the ICBM Force

Another major strategic program singled out by Congress for further review and possible adjustment is the new small ICBM, known as SICBM or Midgetman. The authorizing committees asked for a Defense Department status report on the SICBM program by this fall, with the findings from a comprehensive Defense Science Board study due early next year. The congressional request that the small ICBM be held to a weight in the

30,000- to 33,000-pound range, that it have a single warhead, that it be capable of carrying penetration aids, and that it be either silo-based or deployed in mobile fashion poses no major problems, according to General Gabriel: "Technologically, the job can be done."

In "baselining" SICBM, Congress last year closely followed the reasoning of the so-called Scowcroft Report, a White House study that dealt with strategic force



modernization in a cohesive, integrated fashion and that originated the SICBM concept. Enhanced stability of the nuclear balance through increased basing flexibility and survivability was specified as the premier criterion for the SICBM design.

In General Gabriel's view, this will probably mean a ground-mobile basing mode. Encouraging this orientation toward mobile deployment is the assumption that—even though it may be many years away—the Soviets could attain a "zero CEP," thus making the theoretical survivability of silo-based weapons problematical. The requirement for mobility, General Gabriel pointed out, is going to drive up both acquisition and operating costs: "There is the cost of the transporters, of the people operating them, and of the security provisions. And of course there are environmental issues to be dealt with." The Air Force, he added, is running a series of environmental studies and site surveys on government land in connection with the SICBM program.

The fact that the baseline for the small ICBM stipulates a single-warhead missile—in order to bias the exchange ratio in its favor and thereby, in concert with enhanced survivability, boost strategic stability—will also increase its cost per weapon, General Gabriel explained. The reasons are obvious: It saves money to launch several warheads (or MIRVs, for multiple independently targetable reentry vehicles) from one missile carrying one post-boost vehicle equipped with one guidance system, compared to a single-RV design wagging the same "logistics tail." The mandate to hold Midgetman's weight to the 30,000-pound range, General Gabriel pointed out, "would make it hard for us to MIRV" this weapon and, of course, rules out anything like the Soviet SS-X-24—a ten-warhead mobile ICBM.

In line with the findings of the White House study on strategic force modernization requirements, the Air

Force Chief stressed the links and synergism between Midgetman and MX: "This is a good combination that will give us effectiveness against their harder silos and command and control bunkers. We have to have the Peacekeeper [ahead of the SICBM] in order to safeguard our deterrent."

He said MX was working "exceptionally well." (The eighth flight test involving the firing of six inert Mk 21

The requirement for mobility of ICBMs will drive up both acquisition and operating costs—and bring on environmental questions.

RVs occurred shortly after this interview and went off flawlessly.) General Gabriel expressed regret that, for reasons of security, the accuracy figures associated with the MX tests can't be released. They show, the Air Force Chief says, "just how great we are doing in terms of accuracy and reliability and why we are so happy" with the Peacekeeper program.

While the Air Force recognizes the importance of survivability in connection with its ICBM force, the service does not see this trait as the "most important issue," according to General Gabriel: "The fundamental issue is deterrence, and we have never changed our basic policy in this regard." Stressing that nuclear war must be looked at from the perspective of what it takes to deter the Soviets, General Gabriel suggested that "if they see 1,000 very accurate, hard-target-capable weapons [warheads]—the best in the world for many years to come—aligned against them, their planners and leaders will have to figure the worst case. To my mind, that's deterrence, that's real military capability." The Soviets favor a high-confidence approach: "If we put 100 Peacekeepers in the field [a plan put in question by recent congressional action], the Soviet decision-makers would have no way of gaining their objectives without risks that are unacceptable to them."

The Air Force, he explained, has given a lot of thought to basing MX in superhard silos and in other modes that enhance survivability. While the technological capabilities for such basing options exist, they would add "cost and time." (Congressional actions subsequent to the interview will probably lead to the requirement to deploy half or more of the MX ICBMs in a basing mode other than refurbished Minuteman silos.)

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ranking behind other Air Force priorities—and Congress so far this year having cut or even zeroed several key tactical programs—slowdowns in the Air Force's long-sought goal of a forty-wing tactical fighter force are unavoidable. Attaining this force level "has been a moving target for us for quite some time," General Gabriel conceded.

There are strong congressional pressures to accelerate the buildup toward forty wings by acquiring the relatively low-cost F-20 and at the same time strengthening competition in the acquisition of fighter aircraft. General Gabriel termed the F-20 "a good aircraft. It looks like we are going to get it whether we want it or not" because of the need for competitive leverage to lower the cost of fighter aircraft. He added that "if we had meaningful competition, the prospects for lower acquisition costs would indeed brighten." Buying F-20s, he suggested, would be in line with the Air Force's traditional high/low mix. The Air Force will adhere to this mix concept by acquiring F-15s and F-16s for some time to come. This particular form of high/low mix, he said, has served "our purpose very well," especially in light of the fact that the acquisition of the F-16 under a multiyear procurement arrangement has saved "us lots of money."

The F-20 Tigershark, the Air Force believes, has about "two-thirds of the range/payload [capability] of the F-16. Inside of its range, the F-20 is a very competent airplane. In some situations, it is ideal," according to General Gabriel. In this context, he singled out the air defense mission. "The F-20 is very fast—probably the fastest in the world today from start to intercept"—due in part to "such things as its rapid ring laser gyro INS [inertial navigation system]." But there is a broader context, General Gabriel stressed: "We have to meet the situation around the world and in every spectrum of warfare. We think what we have in our program now works very well."

Congress, he explained, has no quarrel with the capabilities developed and deployed by the Air Force in the fighter field. But there has been concern about the degree of competition that exists under a multiyear procurement (MYP) arrangement, especially beyond the early phase, General Gabriel said. But there is a catch, he suggested: "How can you have competition when you are buying one aircraft at the rate of one hundred and fifty a year and the other one is not yet off the ground?" There is, however, no way of getting around the fact that "competition saves us money. What we are doing now is to consider how we should go about creating a competitive environment in the fighter business, and Congress is encouraging us to do that." He added that about fifty percent of the F-16 program's dollar value is represented by government-furnished equipment that is being acquired on a competitive basis. A consideration that favors acquisition of the F-20, he acknowledged, is "its potential for third-country sales. The F-20 would be ideal for a number of these countries, but they won't buy it unless we [USAF] do."

Current Air Force plans—subject to congressional support in terms of funding—call for an increase of the tactical fighter force from the current level of thirty-six wing-equivalents to between thirty-eight and a half and thirty-nine by the end of the present five-year program.

By the early 1990s, the Air Force hopes finally to get up to forty wing-equivalents. "But this, of course, depends on the [FY '86] budget, [which] has just been cut." He expressed hope that USAF's buy rate will eventually reach 276 fighters a year, "which would give us the opportunity not only to modernize but also to flesh out the force."

Air Superiority and Force Multipliers

Arguments in Congress and elsewhere about whether the Air Force should proceed with its next air-superiority fighter, the Advanced Tactical Fighter (ATF), or build a close air support aircraft first are based on misconceptions, according to General Gabriel: "By the time we get ATF, it will have been twenty years since F-15 production started." The lag between production start of the F-4 and the F-15's entry into the force ten years later had been the longest in previous Air Force experience, he pointed out: "We can't let the Soviets outnumber and outspend us and at the same time relinquish our technological lead."

The central priority of the ATF program is "that we go on with it," according to General Gabriel. By the early 1990s, the Soviets will have large numbers of look-down/shoot-down defense fighters in their inventory. Unless the US is able to ease this threat by means of adequate "top cover, all the forces we have built will be less effective. We need top cover for survivability; that's what ATF is all about."

There is some opposition in Congress to the pace of the ATF program because of the belief that product improvements of the existing force—involving, in the main, the F-15 and F-16—might lead to capabilities that would reduce the need for ATF, at least for some time. General Gabriel does not agree: "Product improvements on the F-15 and F-16 are necessary and help get us the most out of existing forces. We need this in the interim until we get something beyond that in numbers—and that is going to be restrained by the budget."

The need for top cover and air superiority in general will intensify as new sensor platforms enter the inventory, the Air Force Chief pointed out. Among these "force extenders," he said, are the E-3A AWACS, the Joint Surveillance and Target Attack Radar System (JSTARS), the TR-1 surveillance sensor, and the Precision Location Strike System (PLSS) platforms. These systems, which are essential to "get more out of our force structure, are worth having up front, and we know we will have to protect them." The House Armed Services Committee earlier this year zeroed funding of one of these systems, JSTARS, alleging that the platform, a modified Boeing 707 bearing the military designation of C-18, lacked survivability. The implication was that the committee preferred the high-flying TR-1 as the JSTARS carrier.

General Gabriel countered by stressing that JSTARS—which is being developed for use by both the Army and the Air Force—is a "clear-cut success story in the joint arena." The program merges two independent requirements of the two services. It is one of thirty-one initiatives in the joint force development process agreed on last year by the Chiefs of Staff of the Army and the Air Force. The two services have agreed since then to award a full-scale development contract for JSTARS this

fall—assuming, of course, favorable resolution of the impasse created by the House Armed Services Committee's action. Selection of the C-18 platform, General Gabriel pointed out, was agreed on by both services. In part, the decision is based on the fact that this long-range aircraft permits use of the system on a global basis, not just in Europe, making it suitable for a variety of missions.

There are strong pressures to build toward forty tactical wings by acquiring the relatively low-cost F-20.

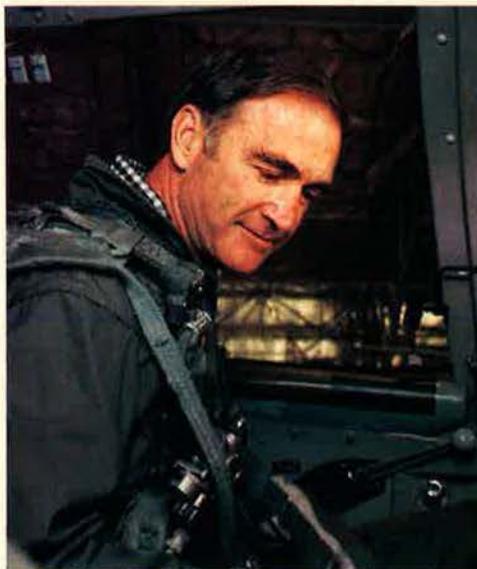
The Need for Standoff Capability

Defense analysts on and off Capitol Hill frequently accuse the Air Force of playing down the potential of standoff systems in order to protect its manned force. General Gabriel gets impatient with this insinuation: "We do need standoff for two reasons. First, we need it on our side of the FEBA [forward edge of the battle area] to get through to targets on the other side. The JTACMS [the Joint Tactical Missile System] that we are working with the Army will be able to do this." He pointed out that JTACMS is essential for both the fighter and strategic bomber forces under conventional warfare conditions.

Standoff also is essential to attacks on heavily defended targets in the second echelon, such as airfields: "You won't find wall-to-wall SAMs [surface-to-air missiles], even in Central Europe. We expect to be able to get through the SAM belts and penetrate into the rear areas, but once there, we will need standoff weapons to get through the terminal defenses. We are working on this, and we are going to get it." He mentioned in this context that the GBU boost glide weapon (AGM-130) and the low-level laser-guided bomb (LLLGB) offer the option to go after heavily defended targets from either high or low altitudes. A standoff weapon already in being, the GBU-15 guided glide bomb, can also be used from various altitudes, he added.

Even though the Air Force keeps examining the potential of RPVs (remotely piloted vehicles), "we haven't seen anything yet that's promising enough to put a lot of money in." He expressed skepticism about the wisdom of building RPVs for their own sake to do jobs that "man can do better." Such RPVs require "expensive and complicated command and control systems and sensors that provide playback so that the vehicle can be flown from

the ground and flown into areas held by the enemy. This automatically reduces both range and flexibility at low altitude and makes it harder to dodge the threat as it comes up." RPVs, he added, are useful for such reconnaissance work as was performed by the "Buffalo Hunter" reconnaissance drone during the Vietnam War, but "they don't seem to be ready to replace manned fighter aircraft in the near future."



The Air Force Chief was relatively sanguine about the utility of another "high-tech" concept, the use of ballistic missiles armed with conventional warheads against high-priority second-echelon targets. At the same time, he expressed doubts about the cost-effectiveness and political ramifications associated with this approach: "Looked at from the field commander's position, the quickness of ballistic missiles is extremely attractive. It has great military utility for standoff missions [involving conventional munitions or submunitions], such as putting airfields out of business within a matter of minutes."

The drawback of such systems is "cost, because you might have to return to the target and reservice it a number of times. Also, there is the grave concern by the [NATO] allies that, to the Soviets, a ballistic missile is a ballistic missile and that they therefore might strike back with nuclear weapons." If it were possible to get past "these two hurdles, conventionally armed ballistic missiles might have military utility in some specific situations," he acknowledged.

Areas of major progress that the Chief pointed to with obvious pride are the gains made over the past four years in the quality and morale of the people serving in the Air Force. The fact is that the Total Force has changed from a concept to a "reality. The Guard and Reserve are a full-fledged part of the Total Force. They are getting F-15s and F-16s, and, this year, they are getting the C-5." Assignment of the giant airlifter to the Reserve component, he said, is "logical" for a number of reasons, noting that "we don't need it that much in peacetime." Turning over some C-5s to the Reserve Associates *in toto* will give the reserve forces "the best possible equipment and training," according to General Gabriel. ■

Cost, schedule, and performance all look good, and USAF is well pleased with its sleek new bomber.

Here Comes The B-1B

BY JOHN T. CORRELL
EDITOR IN CHIEF

THE Air Force is obviously well pleased with its new bomber, the B-1B.

"On the B-1B, we have what we need—and what we can afford," Maj. Gen. Harold J. R. Williams, USAF Director of Operational Requirements, told an Aerospace Education Center Roundtable in late May. That pretty well sums up the prevailing assessment.

A determined effort by both the Air Force and industry has kept the B-1B acquisition within cost and schedule limits, and USAF says the aircraft has met or exceeded specifications during flight tests. Full performance at high speed and low level has yet to be demonstrated, but program officials are convinced

that this capability will come along as the system matures. The Air Force says it has encountered only minor problems—nothing that can't be fixed—in its testing of the B-1B.

Indeed, Roundtable panelist Charles W. Corddry of the Baltimore *Sun* speculated that politics may have more to do with subsequent B-1 developments than either cost or technical factors. He wondered if too tight a lid had not been placed on the B-1 program.

Given that the Administration has capped B-1B procurement at 100 aircraft and a cost of \$20.5 billion in 1981 dollars, Mr. Corddry worried that "the B-1 may not have everything in it that is the best that's possible to put in it." In addition to

expressing concern that the B-1B may be shortchanged on the latest technology, he took issue with the numerical constraints, asking: "Generals, what are you doing about the hundred-and-first B-1B?"

"The one-hundred B-1 buy is sort of like pregnancy," said Gen. Russell E. Dougherty, USAF (Ret.), AFA Executive Director and Roundtable moderator. "It's not a requirement—it's a condition. That is what \$20.5 billion will buy." He said that the original requirement for B-1 bombers, calculated when he was Commander in Chief of Strategic Air Command, was for 235 operational aircraft.

The Air Force is currently committed to a two-bomber program, in



The B-1 has held to a tight baseline, but key technological enhancements have been incorporated.

which 100 advanced technology "Stealth" aircraft will be deployed along with the 100 B-1Bs. Sen. Sam Nunn (D-Ga.), among others, has been vigilant for any twitching that might indicate a move to extend the B-1 production run. (See also "As Sam Nunn Sees It," p. 72 of this issue.)

Rep. Bill Chappell (D-Fla.) told the Roundtable audience that Congress is firm on the figures and that "we are going to hold the complementary programs of the B-1B and the ATB to one hundred each." Representative Chappell led House action in the Ninety-sixth Congress to retain a manned bomber option in the US defense strategy.

Mr. Corddy asked: "Are the boys in the back room working on the B-1C, D, E, or F? And in the new birth of competition in the Pentagon, will it be competed against the ATB for a while to keep both companies honest?"

The idea of a follow-on B-1 model has arisen and has been batted down several times over the past few years. The Air Force has said not only that it needs features that the ATB will have—and that cannot be achieved by souping up the B-1 with Stealth technology—but also that the deployment of two different bombers will make it more difficult for the Soviet Union to devise defenses against them.

Technological Currency

Maj. Gen. William E. Thurman, Aeronautical Systems Division deputy for the B-1, addressed the question of technological obsolescence in view of the strict baseline on B-1 cost and schedule:

"We have been concerned over the fact that we had to build an airplane that could be modified and into which we could add the latest capabilities at low cost without restructuring or rewiring the whole airplane. So that was an area where we used some of our advanced technologies—to build a modular concept for the B-1."

General Thurman has since been promoted to lieutenant general and is now Vice Commander of Air Force Systems Command.

Representative Chappell said that extra R&D money had been put into the B-1 account specifically to fund state-of-the-art adjustments. "We

have made changes in the airplane," General Thurman said, pointing to upgrades in the computers and the radar. Another improvement was to tie together the offensive and defensive avionics systems so they can feed each other cues on what their sensors are picking up. "We found that this was a simple software change that cost less than \$100,000 for all 100 B-1s," General Thurman said.

Careful logistics planning began early in the B-1B development. The sleek new bomber is packed with complex, integrated electronics, and that, according to Gen. Earl T.

Cockpit and aircraft subsystems necessary to maintain the B-1B are incorporated into the Simulated Maintenance Trainer built by Cubic Corp. Trainees know exactly how each cockpit element responds and can track subsystem configurations and test points—such as the powerplant—on a series of twelve-inch boards, such as the ones being used here.



O'Loughlin, Commander of Air Force Logistics Command, influences the support concept for it in major ways.

"While our work load is not decreased in absolute terms, it is shifted considerably in nature and emphasis," he said. "We now do fewer stock, store, and issue actions, but more engineering and engineering-related functions." He said that avionics amount to almost twenty percent of the unit cost of each B-1B, as compared with one percent for avionics in the B-52 when it first entered the Air Force inventory thirty years ago.

General O'Loughlin cited the observation of a British scientist who holds that the next generation of combat aircraft can be regarded as complex avionics systems surrounded by metal configured to allow the avionics to fly.

"The general acceleration toward total avionics integration will have a profound impact on the way we support a system such as the B-1B," he said. "When the data from the flight controls, the weapon delivery sys-

tem, and the electronic warfare system all become enmeshed in the computer architecture of an integrated information network, the old classifications will really become meaningless. We may no longer be able to separate the airplane into discrete functional areas for our technology repair centers to handle."

Test Results Encouraging

In view of rumors circulating about performance problems and flight envelope restrictions (see "The B-1B Whisper Campaign," p. 29, June 1985 issue), General Thur-

man's report on test results was of particular interest.

"There are no show-stoppers," he said. "We've found a lot of little things wrong, but fortunately we've found an equal number of fixes. The systems on the airplane are working very well. The F101 engine not only gives us margins in any way you want to measure the performance itself, but for the first time ever, we're building a 3,000-hour engine that looks as if its on-the-wing time will exceed five years. We've never had that on any system in the Air Force before."

The most vexing problem, he said, has been foreign-object damage (FOD). The B-1B is not a "ramp sweeper," though. The difficulty is with "structural FOD"—bits and pieces of debris and manufacturing residue that cause damage that's barely visible and that can be felt only with a fingernail. In less sophisticated aircraft, such small nicks would not count for anything, but in the B-1B they do. General Thurman said he was confident that the problem will be fixed.

"The deficiencies that we see in the airplane result principally from the immaturity of some of the new systems," he said. "We are also finding some of the typical kinds of problems that you find when you start to operate new systems. It takes a while to build up the capability to do terrain-following with your radar. We're pleased with the progress we're making."

The aircraft has not yet demonstrated full operation at 200 feet at high speeds. Low-altitude penetration of enemy airspace is a central performance standard for the new bomber.

"A B-1 in penetration is at faster speed than a .45-caliber bullet as it leaves the barrel of a gun," General Thurman said. "You can imagine there is very little margin for error, and you have to approach these things in a very systematic way."

"As we build up to this capability, we are also going to be delivering airplanes to the Strategic Air Command. We are going to give SAC all the capability it needs to train its pilots and prepare for initial operational capability in September 1986. But the airplane, initially, won't be able to take off at its maximum weight. It won't have all of the avionics systems demonstrated in flight tests. We will not have cleared all of the weapons on that airplane, initially. We'll be phasing in those capabilities over time. And they will coincide with the delivery of the initial operational capability of the airplane."

Moderator Dougherty said that the pattern was not unusual—that most new aircraft have some validation and demonstration work remaining to be done when they are first delivered. "It's really nothing new," General O'Loughlin agreed. "It took us a long time to develop SRAM [Short-Range Attack Missile] capability in the FB-111, long after we had IOC."

Need for Munitions

The Air Force has always envisioned the B-1 as a multipurpose bomber, a long-range platform that could deliver both nuclear and conventional ordnance. The lack of effective conventional munitions has disturbed strategic planners for some time. Nobody is better aware of the outstanding requirement than

General Williams, who was SAC DCS/Plans before moving to the Air Staff as Director of Requirements.

"Munitions technology is moving fast," he said. "As new conventional munitions come along—particularly those that give us the capability to stand outside the most lethal range of enemy defenses, launch, and strike with a high degree of precision—we anticipate they will be bought and integrated into the B-1B conventional capability. We don't have those munitions at this point."

The B-1B benefits from Military Standard 1760, under which the aircraft and all future munitions will be designed to fit each other. "When a weapon is available," said General Thurman, "incorporating it into the airplane is going to be a relatively easy thing to do, as compared with going back and wiring the airplane for a unique weapon."

Nuclear munitions also need updating. A leading item in this category is the Stealth-like SRAM II, which will be carried by the ATB as well as by the B-1B. The requirement for this missile is driven by the results of aging on the current SRAM and by the increased hardness and mobility of Soviet targets.

"SRAM dates from 1972 and was designed originally for a shelf life of five years," General Williams said. "We are having increasing problems with the solid propellant. It's beginning to break down. We need to be able to launch a low radar cross-section, very-high-speed supersonic short munition, outside the enemy defenses, but one that has a high degree of accuracy and that can attack some of the Soviets' most difficult targets."

"By the time we get SRAM II, the original munition designed for five years will be twenty years old. We think it's important that we move along with urgency."

Legacy of the A Model

A legacy of historical circumstance gave the B-1B an extraordinary base upon which to build. The B-1A was well along in development before the Carter Administration killed it. While the B-1B is a superior machine in many respects—the best known example being its radar cross section, which is ten times smaller than the B-1A's and a hun-

dred times smaller than the B-52's—it is also true that it has drawn extensively on the B-1A program.

"We hit the ground running," said General Thurman. "We reconstituted the team from the original B-1A program so we could share that experience. We used the best of the old program in fixing only the things that needed to be fixed."

Logistics was a tough part, he said, because "in the original program, there was nothing done on logistics. We didn't have a base there from which to depart."

Overall, though, the B-1B was judged to be so unusually mature for a new acquisition that the Air Force decided to do the system integration work itself rather than to contract it out.

"Because the Air Force accepted the risk of integrating the system, we believe that we've saved somewhere between \$600 million and \$800 million over what we would have paid a contractor to accept that risk," General Thurman said. "It worked well because of where we were in the development. We had a lot of experience with the B-1A airplane. We understood what its performance was and what its capabilities were. We essentially made avionics changes to the B-1A to give it the advanced capabilities the airplane currently has."

He said that on more typical developments, where there are many unknowns and much technological uncertainty, the Air Force is better off letting an experienced contractor handle the risk of system integration.

SAC has been waiting for the B-1 for a long, long time, and the new bomber is assured of an enthusiastic welcome as deployments begin.

"I flew the B-1 on its first full-length combat profile mission in 1977," said General Dougherty, who was CINCSAC during later development of the B-1A. "I recognized then, to the point of conviction, that it could do what it was designed to do—penetrate successfully to various target areas, deliver ordnance accurately, escape from those, and fly again and again and again."

"I said in an interview just after that flight, 'I wish we had it now.' That was true then. It's even more true today." ■

AIRMAN'S BOOKSHELF

Recondite Russia

Survival Is Not Enough, by Richard Pipes. Simon & Schuster, New York, N. Y., 1984. 302 pages. \$16.95.

The world as seen by the Soviet power structure and the Soviet people is almost totally different from the world seen by Americans or Europeans.

Russian values are different. Their traditions and culture are different. Their geography is different. Their economic and political history is fundamentally different. Their Byzantine Christian outlook is different from that of Western civilization. They are, in fact, not Europeans.

From the historic legacy of the Russian people, according to Richard Pipes, flow a number of consequences of grave importance for the understanding of Russian political culture—"a culture that greatly influences Russian political behavior, whatever the declared objectives of the government in power."

The author of *Survival Is Not Enough* is Baird Professor of History at Harvard University. In 1981-82, he served on the National Security Council as Director for East European and Soviet Affairs. In 1976, he chaired the so-called "Team B," which was appointed by the President's Foreign Intelligence Advisory Board to analyze Soviet strategic intentions.

"The Russian rulers of premodern times," he writes, "required the landowning gentry to render the monarchy lifelong military or civil service and enserfed virtually all the landowners, compelling them to work either for the rulers or for their service class. Until the middle of the eighteenth century, there were in Russia, for all practical purposes, no freemen endowed with rights."

The result, says Professor Pipes, is that "the fusion of traditional Russian autocracy and Marxism, adapted to Russian conditions and mentalities, produced a regime that was quite outside of the experience of the West, but that the West nevertheless has ever

since sought to explain in Western categories."

This book is devoted mainly to the Soviet system, its political interests and strategy, and its strengths and weaknesses. It also proposes a policy designed to assist—from the outside—certain forces within the Soviet Union that could change it for the better. He believes that "the Soviet Union will be a partner in peace only if and when it makes peace with its own people."

The book emphasizes the power and the compelling motivations of the relatively small elite that rules the Soviet Union—the *nomenklatura*. The *nomenklatura* is "the new privileged political scientific class" predicted by the anarchist critic of Marx, Mikhail Bakunin, the "state engineers" who would "command" the mass of the people. They "run this awesome political conglomerate with its insatiable appetite for territorial acquisitions and mergers, an appetite that seemingly nothing short of control of the globe will ever appease."

Professor Pipes addresses his harshest criticism to this "self-seeking Communist bureaucracy" that for the past sixty years has run the Soviet state. When one says "Soviet government," one actually means the *nomenklatura*, because it is not only the population at large that is excluded from the political process (except for ritualistic purposes) but also the rank and file of the Communist Party, presently some 18,000,000 in number, who have been reduced to the status of executors of the *nomenklatura's* will.

This supreme elite holds the Soviet Union in ownership, says Professor Pipes. About 75,000 individuals hold the highest positions. Together with their families and other dependents, they may number 3,000,000 persons, or less than 1.5 percent of the country's population. The most privileged echelons, estimated to number 100,000, are concentrated in Moscow and Leningrad.

Nomenklatura officials receive high salaries and access to special retail facilities, food stores, restaurants, ex-

clusive hospitals, pharmacies, sanitariums, living quarters, nuclear shelters, and even cemeteries.

According to Professor Pipes, "The *nomenklatura* has at its disposal a powerful military force of its own in the form of so-called 'internal armies,' controlled by the Ministry of the Interior [and] numbering several hundred thousand men. These troops have the means to quell officer plots and soldier mutinies of the kind that in February 1917 had brought down Tsarism."

Another major theme in *Survival Is Not Enough* is the Soviet "Grand Strategy." Professor Pipes explains: "The term *politics* is used in Communist societies in a sense very different from that common in democracies. In the West, politics means civic activity—that is, the practice of administration or more broadly the art of governing. Communist theoreticians, however, have militarized politics and view it exclusively as a form of class warfare."

In their dealings with foreign powers, the Soviet leaders say they try to initiate actions or respond to the actions of others in accordance with a systematic assessment of the correlation of forces.

Arkady N. Shevchenko, who defected in 1978 to the United States when he was the United Nations Under Secretary-General, wrote in *Breaking With Moscow*: "There is no disagreement among Soviet leaders—political or military, young or old—as far as their ultimate goals are concerned. They view world development in terms of a continuing struggle between two opposing social and political systems. They believe in the inevitable, if long forthcoming, victory of Soviet-style socialism in the course of what they call 'the objective development' of human society. But they do not intend to achieve their victory by resorting to nuclear war."

Professor Pipes observes that "for all the importance they assign to military power, Soviet strategists do not detach it from the rest of the instruments of Grand Strategy. They profess to being perplexed by the narrow

technical manner with which their American counterparts approach security issues, by concentrating on military forces to the exclusion of all else."

If survival is *not* enough, if more is needed, if there is to be lasting peace, what can be done? Richard Pipes wants to alter the nature of the discussion of East-West relations and the means of preventing nuclear war by "shifting attention from the internal American concerns to Soviet realities."

He takes on a difficult task when he attempts to convince the American reader that Soviet society and its political culture are *significantly different* from those familiar to Westerners. Americans, as a whole, just can't believe that people everywhere are not basically the same—that all don't have the same aspirations that we do. Many in our country believe that if only the leaders of the US and the USSR would get together to discuss their differences, things could be worked out.

But Professor Pipes does make his case, I believe, to the informed, open-minded reader. Soviet society and its political culture are significantly different from those familiar to Westerners. The USSR is governed by a powerful, self-perpetuating ruling class, the *nomenklatura*. The Soviet ruling class *does* have international objectives and strategies different from ours.

The key to peace, concludes Professor Pipes, lies in "an internal transformation of the Soviet system in the direction of economic decentralization, greater scope of contractual work and free enterprise, national self-determination, human rights, and legality." In a chapter on "What Can We Do?" he devotes seventy pages to suggesting approaches to achieve this.

The book's first 200 pages will convince many readers that this objective is a compelling goal for all who seek lasting world peace. Sooner or later, both political and military planners and policymakers will not be able to avoid the need to consider Richard Pipes's conclusions.

—Reviewed by Frank W. Jennings. Mr. Jennings retired this year after a thirty-six-year career as a writer for military leadership communication programs.

New Books in Brief

Air Force Combat Wings: Lineage and Honors Histories, 1947–1977, by Charles A. Ravenstein. Compiled under the auspices of the USAF Histor-

ical Research Center, this reference directory of Air Force-controlled combat wings organizes a wealth of specific information on more than 200 units. Each entry covers heading, lineage, assignments, components, stations, commanders, aircraft/misiles, operations, service streamers, campaign streamers, decorations, and unit emblem (including a photo). A special bonus is the index of wing commanders. While this volume is designed for use by serious historians, the casual browser is certain to find nuggets here and there that will captivate the attention. With appendices and indexes. Published by the Office of Air Force History; available from Superintendent of Documents, US GPO, Washington, D. C. 20402, 1984. 341 pages. \$14.

EAA Oshkosh: The World's Biggest Aviation Event, by Nigel Moll. Aircraft aficionados who have never visited the modern Experimental Aircraft Association Air Center and Air Museum in Oshkosh, Wis., can now do so vicariously. The text here takes a backseat to a bright four-color photo catalog of assorted antiques, warbirds, and unusual flying contraptions. Capturing perfectly the wonder of the EAA's annual Fly-In, this book will delight even the most unflappable aircraft fan. Published by Osprey Publishing Ltd.; distributed by Motorbooks International, Osceola, Wis., 1985. 128 pages. \$11.95.

Ultralights, by Rick Carrier. Written for the nervous neophyte, this breezy book on ultralights—flimsy aircraft that are basically powered hang gliders—is sure to reassure any lingering doubters and to refresh enthusiasm for the fast-growing sport. Following a general rundown on the principles of flight, aviation safety, and ultralight aircraft, the author turns to two day-by-day training routines for learning to fly two of the more popular ultralight models—the Eagle XL and the Quicksilver MX. Other topics covered include FAA regulations governing ultralights and ultralight manufacturers. Though, as the author points out, no book by itself could possibly serve as an adequate introduction to flight, this guide would be a good place to start for those interested in learning about this sport. With photos. Doubleday & Co., New York, N. Y., 1985. 140 pages. \$12.95.

The U.S. Intelligence Community, by Jeffrey T. Richelson. This book is ambitious in scope: in one volume, to provide a comprehensive primer on the various organizations that con-

stitute the US intelligence establishment. Author Richelson catalogs those government agencies meticulously, scrutinizing their methods of intelligence-gathering and examining pertinent management and analysis procedures. Topics covered range from imaging and signals intelligence to counterintelligence and covert action. The book concludes with a short examination of unresolved management and policy issues. In sum, this scholarly work provides a clear and inclusive portrait of the administration and operation of the intelligence infrastructure. With charts and tables, notes, and index. Ballinger Publishing Co., Cambridge, Mass., 1985. 392 pages. \$16.95 (paper).

Victory in Europe, text by Max Hastings, photographs by George Stevens. In 1944, Gen. Dwight Eisenhower asked Hollywood director George Stevens, who in 1943 had organized the Special Coverage Unit of the US Army Signal Corps—the "Hollywood Irregulars," to film the coming campaign on the Continent. Stevens's unit did so in Army regulation 35-mm black-and-white. Stevens hauled along his 16-mm camera and color Kodachrome film as well, filming the war personally from D-Day to the banks of the Elbe. Now, after forty years, 200 selected stills from those unique color films have been published in this handsome, large-format book, complemented by British historian Max Hastings's crisp commentary and a number of detailed maps. With an introduction by George Stevens, Jr., bibliography, and index. Little, Brown and Co., Boston, Mass., 1985. 192 pages. \$25.

Wings of World War II, by Russell J. Huff. As readers of the "Airmail" column of this magazine know well, the collecting of military wings and patches is a popular pastime. With this large-format pictorial history, Author Huff contributes greatly to that pastime by presenting the result of almost five years of prodigious effort to assemble, catalog, and photograph the aviation qualification badges—wings—of the major combatant air forces of World War II and of almost all the lesser combatants and armed neutrals as well. Boasting more than 1,600 pieces from more than forty nations, collectors of WW II wings are sure to laud this compilation as a lode of valuable information. Huff & Associates, Inc., P. O. Box 40023, Sarasota, Fla. 34242, 1985. 250 pages. \$25 plus \$2.50 postage.

—Reviewed by Hugh Winkler, Assistant Managing Editor.

They call it R³: the right people, the right mission, and right now.

USAFE at Forty

A SPECIAL REPORT



FREEDOM isn't free" reads the headline of posters now displayed in work areas throughout the United States Air Forces in Europe (USAFE). The posters reflect the attitude of the command as it prepares to mark its fortieth anniversary on August 7.

As Gen. Charles L. Donnelly, USAFE's Commander in Chief, notes on the poster: "USAFE people—blue-suiters, civilians, and family members—pay the price unselfishly through long hours, cold flight-line duty, and family separations."

While USAFE can look back on forty years of peace—most of those four decades as an integral part of the North Atlantic Treaty Organization—the command now stands ready along the Iron Curtain to protect this cherished freedom.

USAFE was formed August 7, 1945, when the US Strategic Air Forces in Europe—a successor to Eighth Air Force—was renamed and the War Department deleted "Strategic" from its title. Like most post-World War II units, it was reduced dramatically from its former might and carried out occupational duties in Germany and Austria, disarming remnants of the German Luftwaffe.

The command's first major challenge came when the Soviets blocked all ground routes to West Berlin in June 1948. The West answered with the massive Berlin Airlift, and USAFE people joined with the Military Air Transport Service to airlift food, fuel, and medical supplies to the beleaguered city. The Soviets capitulated eleven months later and lifted the blockade. As a direct consequence, USAFE expanded its forces with seventy-five new F-80 jet aircraft.

NATO was formed in 1949, committing the United States to assist in the defense of Western Europe. As a result, the command strengthened its airpower by building air bases in France and in the French-occupied zone of Germany, west of the Rhine River. USAFE continued to build through the 1950s and had responsibilities in such diverse areas as French Morocco, Libya, and Saudi Arabia.

The command underwent a major reorganization when the French government required all foreign troops to leave its territory by April 1, 1967. Nine major bases and seventy-eight smaller installations were closed, and people and materiel were moved to the United Kingdom, Germany, or returned to the US. Units shipped back to the States continued to be committed to NATO and are returned annually during Exercise Crested Cap.

Headquarters for USAFE was moved to Ramstein AB, near Kaiserslautern, from Lindsey AS, Wiesbaden, in 1973. In June 1974, Allied Air Forces Central Europe was established, also at Ramstein AB, with USAFE's Commander in Chief also serving as commander of AAFCE.

The command has added a number of new weapon systems throughout the years. The latest acquisition is the ground-launched cruise missile. Four tactical missile wings are now activated in the United Kingdom, Italy, Belgium, and Germany. USAFE flying wings are equipped with the Air Force's most advanced weapon systems, including F-16, F-15, F-111, and A-10 aircraft.

C-23A Shermas, assigned to Zweibrücken AB, Germany, participate in the European Delivery System by fly-

ing vitally needed parts and other supplies to units throughout the command.

Through recent realignment and reconfiguration of its forces, USAFE is a streamlined, tightly managed, NATO-committed organization possessing a force ready to respond to any challenge immediately.

A major challenge facing the command on its fortieth anniversary results from the congressional limitation on the number of military personnel permanently assigned in Europe. This ceiling places a severe restraint on the US's ability to field conventional forces rapidly in response to a Warsaw Pact threat.

As General Donnelly has pointed out a number of times, the command faces the enemy "right now." The inability to increase the command's fighting capability logically as new, sophisticated weapons are added presents USAFE with a monumental challenge.

The "right now" phrase used by USAFE's Commander in Chief is part of a campaign under way in USAFE this anniversary year. The full R³ formula is "right people, right mission, right now!" Together, the three Rs show the command is at the peak of readiness.

In keeping with the "right" campaign, an unofficial logo has been made available to command members. With the words "Freedom's Guardian" embossed on a shield, it pictures an eagle in full flight clutching the "sword of freedom," symbolizing the command's steadfastness during forty years as a protector of freedom.

It has done a commendable job as "Freedom's Guardian." ■

JANE'S

ALL THE WORLD'S AIRCRAFT SUPPLEMENT

AUGUST 1985



Arrival of the An-124 at the 1985 Paris Air Show (Austin J. Brown)

ANTONOV

OLEG K. ANTONOV DESIGN BUREAU: Kiev, Ukraine, USSR

GENERAL DESIGNER: Pyotr V. Balabuev

Following an exclusive interview with the late Oleg K. Antonov at the 1977 Paris Air Show, *Jane's All the World's Aircraft* was able to report in its 1977-78 edition "that the Antonov design bureau was working on a new, very large, turbofan powered transport in the class of the USAF's Lockheed C-5 Galaxy [that is] intended as a replacement for the turboprop powered An-22 strategic freighter, of which production was terminated in 1974". The

new transport was listed under the provisional designation of An-40. This had changed to An-400 by 1984, when it became possible to produce for the current edition of *Jane's* a reasonably representative three-view drawing and estimated dimensions now known to be accurate to within 1.5 m (5 ft) in the case of overall length. NATO had, meanwhile, allocated to the aircraft the reporting name Condor, after the world's largest flying bird. Its range of likely loads had expanded over the years from the largest Soviet army tanks to complete SS-20 nuclear missile systems, Siberian oil well equipment, and earth movers.

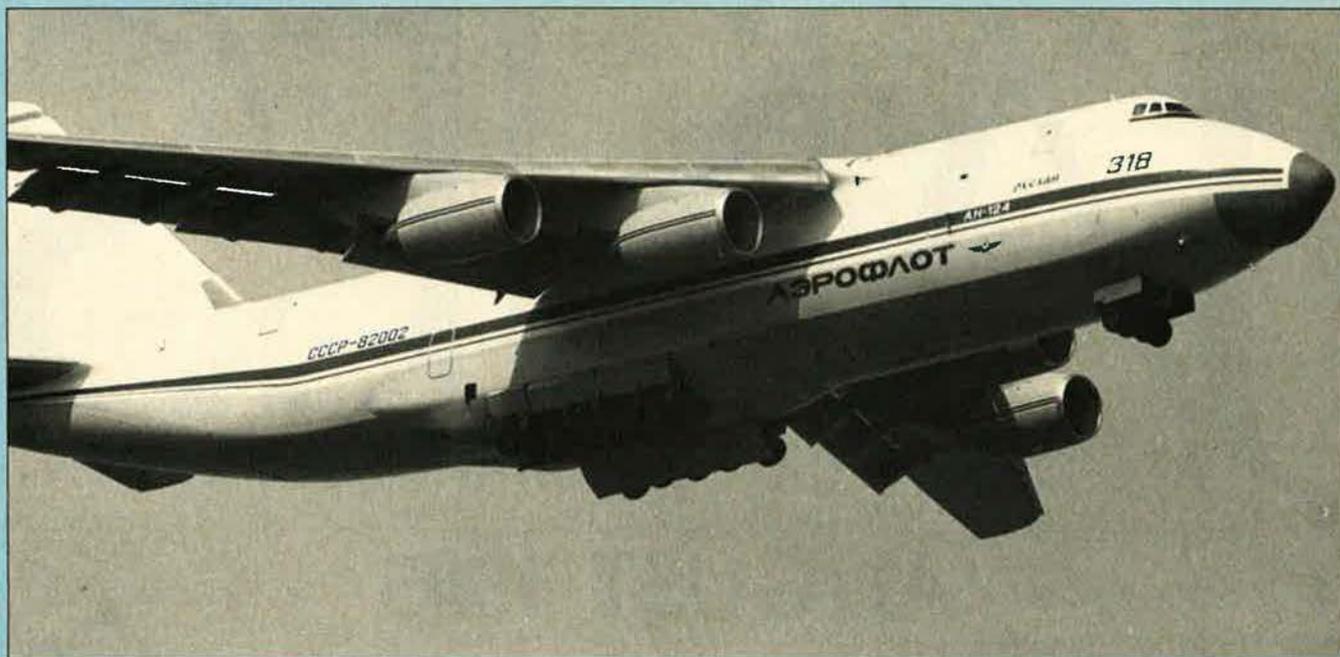
In June of this year an example of the new An-

tonov transport was exhibited in public for the first time at the Paris Air Show, where it arrived under the command of Antonov's chief test pilot, Vladimir Terski, and copilot Yuri Pobol. Its service designation was revealed as An-124, and it was confirmed as the largest aircraft currently flying, in terms of wing span, with the heaviest max take-off weight of any aeroplane yet flown.

ANTONOV An-124

NATO reporting name: Condor

The example of the An-124 displayed at the Paris Air Show (SSSR-82002 *Ruslan*) is one of three aircraft of this type flown by mid-1985. First flight of



Antonov's An-124 heavy-lift freighter, largest aircraft flying in 1985 (Air Portraits)

the original prototype had been made on 26 December 1982. Production is said to be well advanced, with initial operational capability scheduled for mid-1986.

Except for having a low mounted tailplane, the general configuration of the An-124 is similar to that of its US counterpart, the Lockheed C-5 Galaxy. It has an upward hinged visor type nose, and rear fuselage ramp-door, for simultaneous front and rear loading/unloading. Advanced features include a 100 per cent fly-by-wire flight control system, titanium floor throughout the main hold, and 5,500 kg (12,125 lb) of composites, making up 1,500 m² (16,150 sq ft) of its surface area and giving a weight saving of 1,800 kg (3,968 lb). The 24-wheel landing gear enables the An-124 to operate from unprepared fields, hard packed snow, and ice covered swampland.

TYPE: Long-range heavy-lift freight transport.

WINGS: Cantilever shoulder-wing monoplane, with anhedral and approx 30° sweepback at quarter-chord. Conventional light alloy construction. Carbonfibre skin panels on undersurface forward of trailing-edge control surfaces. Glassfibre wing-tips. Each wing has two-section aileron, three-section single-slotted Fowler flaps, and six-section full-span leading-edge flaps. Small spoiler inset in lower surface of two inner flap segments on each side, at inboard leading-edge, to optimise aerodynamics. Front and rear portions of each flap guide fairing made of glassfibre; centre portion of carbonfibre. Eight spoilers on upper surface of each wing, forward of trailing-edge flaps. No tabs. All moving surfaces hydraulically operated, with hydraulic flutter dampers on ailerons. Bleed air anti-icing of wing leading-edges.

FUSELAGE: Conventional semi-monocoque light alloy structure of basic double-bubble form. Hard chine between sides and shallow-section bottom surface. Visor type nose door and rear ramp-door described under Accommodation heading. Skin panels over upper longerons, from rear of flight deck to tailplane leading-edge, and wingroot fairings, made primarily of glassfibre with central portion of carbonfibre. Other carbonfibre components include nose and main landing gear doors, doors to hold forward of wing on port side and aft of wing on starboard side, and clamshell doors aft of rear loading ramp. Glassfibre components include most of bottom skin panels forming underfuselage blister fairing between main landing gear legs, plus nosecone and tailcone. All control runs and other services are channelled along roof of fuselage.

TAIL UNIT: Cantilever all-metal structure, except for glassfibre tips of fixed-incidence tailplane. Rudder and each elevator in two sections, without tabs. Control surfaces hydraulically operated, with hydraulic flutter dampers. Fence at mid-point on fin leading-edge. Electro-impulse de-icing of fin and tailplane leading-edges.

LANDING GEAR: Hydraulically retractable nose-wheel type. Nose gear comprises two independent forward retracting twin-wheel units, side by side. Each main gear comprises five independent inward retracting twin-wheel units. Each main-wheel bogie is enclosed by separate upper and lower doors when retracted. Nosewheel doors and lower mainwheel doors close when gear is extended. All wheel doors are of carbonfibre. Nosewheels and front pair of mainwheels on each side are steerable; two rear pairs are castoring. Main gear bogies can be retracted individually for repair or wheel change. Mainwheel tyres size 1270 x 510. Nosewheel tyres size 1120 x 450. Aircraft can 'kneel' towards front or rear, giving floor of hold a 3.5° to 4° slope to assist loading and unloading. Brakes are normally toe operated, via rudder pedals. For severe braking, pedals are depressed by both toes and heels.

POWER PLANT: Four Lotarev D-18T turbopfan engines, each rated at 229.75 kN (51,650 lb st). Thrust reversers standard. Engine cowlings of glassfibre; pylons have carbonfibre skin. All fuel in integral tanks in wings.

ACCOMMODATION: All crew and passenger accommodation on upper deck; freight and/or vehicles on lower deck. Crew of six, in pairs, on flight deck. Pilot and copilot on fully adjustable seats, which rotate for improved access. Two flight engineers, on wall-facing seats on starboard side, have complete control of master fuel cocks. Behind pilot are the navigator and communications specialist, also on wall-facing seats. Between flight deck and wing carry-through structure, on port side, are toilets, washing facilities, galley, equipment compartment, and two cabins for total of up to six relief crew, with table and facing bench seats convertible into bunks. Aft of wing carry-through is a passenger cabin for up to 88 persons. Flight deck and passenger cabin are each accessible from cargo hold by means of an hydraulically folding ladder, operated automatically with manual override. Rearward sliding and jettisonable window on each side of flight deck. Primary access to flight deck via airstair door, with ladder extension, forward of wing on port side. Smaller door forward of this and slightly

higher. Door from main hold aft of wing on starboard side. Upper deck doors at rear of flight deck on starboard side and at rear of passenger cabin on each side. Emergency exit from upper deck aft of wing on each side. Hydraulically operated visor type upward hinged nose takes 7 min to open fully, with simultaneous extension of folding nose loading ramp. When open, nose is steadied by reinforcing arms against wind gusts. No hydraulic, electrical, or other system lines are broken when nose is open. Radar wiring passes through hollow tube in hinge. Hydraulically operated rear loading doors take 3 min to open, with simultaneous extension of three-part folding ramp. Aft of ramp, centre panel of fuselage under-surface hinges upward; clamshell door to each side opens downward. Completely unobstructed lower deck freight hold has titanium floor with retractable attachments for cargo tiedowns. Folding canvas seats along sidewalls are not normally used in flight, because of low pressurisation of hold. Two electric travelling cranes located in roof of hold, each with two lifting points, offer total lifting capacity of 20,000 kg (44,100 lb).

SYSTEMS: Entire interior of aircraft is pressurised and air-conditioned. Max pressure differential 0.55 bars (7.8 lb/sq in) on upper deck, 0.25 bars (3.55 lb/sq in) on lower deck. Four independent hydraulic systems. Quadruple redundant fly-by-wire flight control system, with mechanical emergency fifth channel to hydraulic control servos. Special secondary bus electrical system. Landing lights under nose and at front of each main landing gear fairing. APU in rear of each landing gear fairing can be operated in the air or on the ground to open loading doors for airdrop from rear or normal ground loading/unloading.

AVIONICS AND EQUIPMENT: Aircraft displayed at 1985 Paris Air Show has comprehensive but conventional flight deck equipment, including large radar screen and moving map display forward of throttle and thrust reverse levers on centre console. No electronic flight displays. Two dielectric areas of nose visor enclose forward looking weather radar and downward looking ground mapping/navigation radar. Hemispherical dielectric fairing above centre fuselage, possibly for satellite navigation receiver. Quadruple INS. Small two-face mirror, of V form, enables pilots to adjust their seating position until their eyes are reflected in the appropriate mirror, which ensures an optimum field of view from the flight deck.

DIMENSIONS, EXTERNAL:

Wing span	73.3 m (240 ft 5 3/4 in)
Length overall	69.5 m (228 ft 0 1/4 in)
Height overall	20.2 m (66 ft 3 1/4 in)

DIMENSIONS, INTERNAL:

Cargo hold: Length	36.0 m (118 ft 1 1/4 in)
Max width	6.4 m (21 ft 0 in)
Max height	4.4 m (14 ft 5 1/4 in)

WEIGHTS:

Max payload	150,000 kg (330,693 lb)
Max T-O weight	405,000 kg (892,872 lb)

PERFORMANCE:

Max cruising speed	467 knots (865 km/h; 537 mph)
Normal cruising speed at 10,000–12,000 m (32,800–39,370 ft)	432–459 knots (800–850 km/h; 497–528 mph)
Approach speed	124–140 knots (230–260 km/h; 143–162 mph)
T-O balanced field length at max T-O weight	3,000 m (9,850 ft)
Landing run at max landing weight	800 m (2,625 ft)
Range with max payload	2,430 nm (4,500 km; 2,795 miles)
Range with max fuel	8,900 nm (16,500 km; 10,250 miles)

XIAN

STATE AIRCRAFT FACTORY, Xian, Shaanxi Province, People's Republic of China

XIAN (MIKOYAN) J-7

Chinese name: Jianjiji-7 (Fighter aircraft 7) or Jian-7

Export designations: F-7 and F-7M

NATO reporting name: Fishbed

The Chinese version of the Mikoyan MiG-21 day fighter was based originally on a number of Soviet built MiG-21Fs ('Fishbed-Cs') delivered to China before the political break with the USSR in 1960. The task of copying the airframe, the Tumansky R-11 afterburning turbojet engine (built at Chengdu as the Wopen-7 or WP-7), and equipment was accomplished quickly, and the first J-7 made its initial flight in December 1964. The type began to enter service with the air force of the People's Liberation Army in 1965.

Between 60 and 80 J-7s had been completed before production was halted in 1966 by the onset of the Cultural Revolution, but was resumed subsequently with a number of modifications. An early priority was to extend the very short TBO (said to be only about 100 hours) of the original power plant, and this has been at least doubled in the improved Wopen-7A, which develops 43.1 kN (4,400 kg; 9,700 lb st) dry and 50.0 kN (5,100 kg; 11,243 lb st) with afterburning. Exports of early production



As on Lockheed's C-5 Galaxy, the Antonov's visor nose opens upward around the flight deck (Air Portraits)

J-7/F-7s were made to Albania and Tanzania.

The early model J-7 suffered from the same operational shortcomings as the MiG-21F, namely short endurance and a lack of adequate air-to-air firepower. Since the beginning of the 1980s Chinese engineers have undertaken a further series of modifications aimed at upgrading both handling qualities and combat performance of the aircraft. Major improvements have included use of a Wopen-7B engine, in which the afterburning thrust is increased by 9.8 kN (1,000 kg; 2,205 lb), the addition on the port side of a second 30 mm gun, and the ability to carry an 800 litre drop tank under the fuselage. The three-position, mechanically movable shock cone in the MiG-21F's nose intake, housing the range-only radar, has been replaced by a more efficient no-step system permitting continuously variable positioning of the centrebody, similar to that introduced on the Soviet built 'Fishbed-E' in the mid-1960s. Introduction of a new zero-height/low-speed ejection seat is accompanied by a new cockpit canopy, hinged at the rear and opening upward, in place of the early pattern MiG-21 canopy, which was hinged at the base of the windscreen. The tail braking parachute has been transferred from under the rear fuselage to a 'bullet' fairing beneath the rudder, as on late-production Chinese J-6s and

Q-5s. Current export versions of the aircraft, designated F-7, are to this standard.

Components and engines for the F-7 have been exported in some numbers to Egypt, which has also ordered up to 160 complete aircraft for its own use (as advanced trainers) and for supply to Iraq. These aircraft, and Egypt's Soviet supplied MiG-21MFs, are being retrofitted with a GEC Avionics head-up display and launchers for AIM-9P3/4 Sidewinder air-to-air missiles. Delivery of F-7s to equip one squadron of the Zimbabwe Air Force, reported to be imminent in 1983, has not yet been confirmed; that country was said to be negotiating for up to 24 F-7s in late 1984.

In 1984 China released details of an improved export version known as the F-7M, differing mainly in having more modern Western made avionics, which include a HUDWACS (head-up display and weapon aiming computer system) instead of the optical sighting system, a more effective ranging radar, new air data computer and radar altimeter, new IFF, and more secure com radio. Other changes include a more efficient electrical power system to cater for the new avionics; two additional underwing stores points; ability to carry the newer PL-7 air-to-air missile, which outwardly resembles the Matra Magic; a slightly different version of the Wopen-7B engine; and a relocated nose probe. According to some reports, export versions of the J-7 are produced at Chengdu; marketing is currently carried out by CATIC in China and via agents in other countries such as SAI (Singapore) and Custom Associates (USA).

Current Soviet versions of the MiG-21 are fully described and illustrated in the USSR section of the 1984-85 *Jane's*. The following description applies to the current standard F-7 Chinese model, except where indicated:

TYPE: Single-seat day fighter and close support aircraft.

WINGS: As for standard MiG-21, with 57° sweep-back on leading-edges, 2° anhedral, slotted flaps, and balanced ailerons.

FUSELAGE: Generally as MiG-21F except for automatically operated, continuously adjustable shock cone in centre of nose intake, instead of three-step mechanically adjustable centrebody of earlier J-7s. Brake-chute relocated from under rear fuselage to 'bullet' fairing at base of vertical tail. In F-7M, nose probe is relocated above intake, offset to starboard, as on Soviet built MiG-21PFM 'Fishbed-J'.

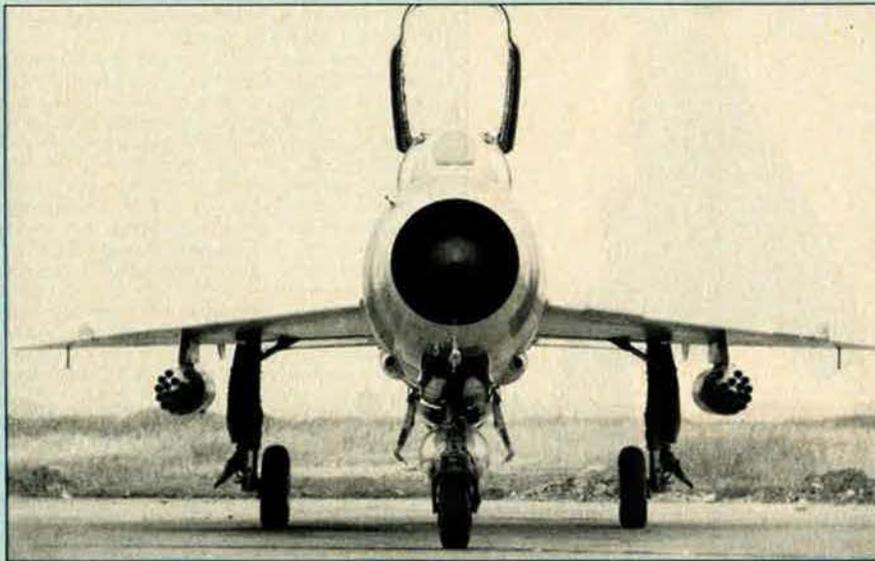
TAIL UNIT: All-swept surfaces, with all-moving tail-plane, as for MiG-21.

LANDING GEAR: Inward retracting mainwheels, with 660 × 220 tyres and LS-16 disc brakes; forward retracting nosewheel, with 500 × 180 tyre and LS-15 double-acting brake. Tail braking parachute at base of vertical tail.

POWER PLANT: One Chengdu Wopen-7B turbojet



Xian J-7, China's greatly refined version of the Soviet MiG-21F day fighter and close support aircraft



Head-on view of the Xian J-7 shows the new rearward hinged canopy and twin 30 mm guns

engine (43.1 kN/4,400 kg; 9,700 lb st dry, 59.8 kN/6,100 kg; 13,448 lb st with afterburning). Wopen-7B(BM) in F-7M has same ratings, but kerosene (instead of gasoline) starting. Provision for carrying a centreline drop tank of up to 800 litres (176 Imp gallons; 211 US gallons) under fuselage, and (F-7M) a 480 litre (105.5 Imp gallon; 127 US gallon) drop tank on each inboard underwing station.

ACCOMMODATION: Pilot only, on zero-height/low-speed ejection seat operable between 97 and 459 knots (180–850 km/h; 112–528 mph) IAS. One-piece canopy, hinged at rear to open upward.

SYSTEM: Improved electrical system in F-7M, using three static (instead of four rotary) inverters, to cater for additional avionics.

AVIONICS (F-7): Include CT-3 VHF com radio, WL-7 radio compass, Type 262 radio altimeter, XS-5A marker beacon receiver, Type 222 ranging radar, and Type 602 (Soviet 'Odd Rods' type) IFF transponder. (F-7M): GEC Avionics AD 3400 two-band com radio with encryption unit, replacing CT-3; Type 226 ranging radar replacing Type 222, with improved anti-jamming (frequency hopping) capability, permitting use of longer-range missiles; new (digital) IFF transponder, of Western origin; new radar altimeter; and addition of an air data computer.

ARMAMENT (F-7): Two 30 mm Type 30-1 cannon, with 60 rds/gun, in fairings under front fuselage just forward of wing-root leading-edges. One hardpoint under each wing, each capable of carrying a PL-2 ('Atoll' type) or similar infra-red homing air-to-air missile, a pod of eighteen 57 mm unguided rockets, or a bomb of up to 250 kg size (500 kg in max overload condition). SM-3A optical gunsight interfaced with ranging radar and angle of attack sideslip transmitter, with gun camera mounted on sighting head. (F-7M): Gunsight replaced by a GEC Avionics Type 956 head-up display (also showing navigational data) and a weapon aiming computer. Rocket pods or air-to-air missiles (including the newer PL-7) transferred to new outboard attachment point under each wing, permitting each of the inboard stations to carry a 480 litre auxiliary fuel tank (see 'Power Plant' paragraph) or additional rocket pods.

DIMENSIONS, EXTERNAL:

Wing span 7.15 m (23 ft 5½ in)
 Length overall 13.94 m (45 ft 8¾ in)
 Height overall (static) 4.10 m (13 ft 5½ in)

AREA:

Wings, gross 23.00 m² (247.6 sq ft)

WEIGHTS AND LOADINGS:

Weight empty: F-7 5,145 kg (11,343 lb)
 Normal T-O weight with two PL-2 air-to-air missiles:
 F-7 7,372 kg (16,252 lb)

Max T-O weight: F-7M 8,900 kg (19,621 lb)
 Max wing loading:
 F-7M 387 kg/m² (79.3 lb/sq ft)
 Max power loading:
 F-7M 0.89 kg/kN (1.46 lb/lb st)

PERFORMANCE (F-7 at T-O weight of 7,372 kg; 16,252 lb):
 Max level speed between 12,500 and 18,500 m (41,010 and 60,700 ft) Mach 2.05 (1,175 knots; 2,175 km/h; 1,350 mph)

Unstuck speed 167–178 knots (310–330 km/h; 193–205 mph)
 Touchdown speed 162–173 knots (300–320 km/h; 186–199 mph)
 Max rate of climb at S/L 9,000 m (29,527 ft)/min

Service ceiling 18,800 m (61,680 ft)
 Absolute ceiling 19,200 m (62,990 ft)
 T-O run, and landing run with brake-chute 800–1,000 m (2,625–3,280 ft)

Max range at 11,000 m (36,100 ft):
 with two PL-2 missiles 647 nm (1,200 km; 745 miles)
 with two PL-2s and 800 litre drop tank 804 nm (1,490 km; 926 miles)
 g limit with two PL-2 missiles +7

SHENYANG

STATE AIRCRAFT FACTORY, Shenyang, Liaoning Province, People's Republic of China

SHENYANG J-8

Further to the description of this aircraft which appeared in the April Supplement, *Jane's* has been reliably informed that the lateral-intakes version of this fighter made its first flight in early May 1984. Flight testing is understood to have been "extremely successful," although production has apparently not yet started.

WSK-PZL MIELEC

WYTÓRNIĄ SPRZETU KOMUNIKACYJNEGO-PZL MIELEC (Transport Equipment Manufacturing Centre, Mielec); ul. Ludowego Wojska Polskiego 3, 39-301 Mielec, Poland

Founded in 1938, the WSK factory at Mielec began producing the Soviet designed An-2 general utility biplane in 1960 and has since built more than 9,500 examples of this aircraft, including over 8,400 for delivery to the USSR. Others have been for domestic use or for export to Bulgaria, Czechoslovakia, Egypt, France, the German Democratic Republic, Hungary, North Korea, Mongolia, Netherlands, Romania, Sudan, Tunisia, and Yugoslavia.

Polish production of the An-2 is continuing, but at a diminishing rate, in 1985.

Other aircraft produced at Mielec currently include the M-18 Dromader agricultural aircraft and the TS-11 Iskra jet trainer. In 1977 Mielec began to manufacture components, including fins, tailplanes, engine pylons, ailerons, and wing slats and flaps, for the Ilyushin Il-86 Soviet wide-bodied transport. In 1978 it was announced that Mielec would be responsible for series production of the Soviet Antonov An-28 twin-turboprop light general purpose transport, and this began in 1984. The Polish press has also reported that Mielec will undertake production of the Antonov An-3, a turboprop powered development of the An-2.

PZL MIELEC (ANTONOV) An-28

NATO reporting name: Cash

The prototype of this enlarged turboprop version of the piston engined An-14 light general purpose transport (SSSR-1968), initially designated An-14M, flew for the first time in the USSR in September 1969, powered by two 604 kW (810 shp) Isotov TVD-850 turboprop engines. It was described in the Soviet section of the 1974-75 and previous editions of *Jane's*; differences from the original An-14, and subsequent design changes, have been recorded in the 1983-84 and earlier editions.

Official Soviet flight testing was completed in 1972, and the production designation An-28 was allocated during 1973. The first pre-production An-28 (SSSR-19723) originally retained the same engines as the prototype, but in April 1975 (re-registered SSSR-19753) it flew for the first time with 716 kW (960 shp) Glushenkov TVD-10 turboprops, which are specified also for production An-28s.

The Antonov design bureau developed the An-28 for service on Aeroflot's shortest routes, particularly those operated by An-2 biplanes into places that are relatively inaccessible to other types of fixed-wing aircraft. The turboprop engines make possible full-payload operation under high temperature conditions and in mountainous regions; and the An-28 is suitable for carrying passengers, cargo and mail, for scientific expeditions, geological surveying, forest fire patrol, air ambulance or rescue operations, and parachute training.

The late Mr Oleg Antonov stated that Aeroflot pilots will begin their flying careers on the An-28, which will not stall, even with the control column held in the extreme rearward position, because of the action of its automatic slats. If an engine fails, the upper surface spoiler forward of the aileron on the opposite wing is opened automatically; as a result, the wing bearing the 'dead' engine drops only 12° in 5 s instead of the 30° that it would drop through loss of lift without the action of the Antonov patented spoiler. The fixed tailplane slat, also patented, improves handling during a high angle of attack climbout. Under icing conditions, if the normal anti-icing system fails, ice collects on the slat rather than the tailplane, to retain controllability.

Following Polish-Soviet talks in February 1978, it was announced that series production of the An-28 was to be entrusted to PZL Mielec. A temporary type certificate, under Soviet NLGS-2 regulations, was awarded on 4 October 1978, and the second Soviet built pre-production aircraft (originally SSSR-19754, later SSSR-48105) was displayed at the Paris Air Show in June 1979.

Polish manufacture is beginning with an initial batch of 15 aircraft. Four had been completed by the Spring of 1985, and the first of these made its first flight on 22 July 1984. The following description applies to the Polish production version:

TYPE: Twin-turboprop short-range transport aircraft.

WINGS: Braced high-wing monoplane, with single streamline section bracing strut each side. Wing section TsAGI P-11-14 (thickness/chord ratio 14 per cent). Constant chord, non-swept no-dihedral centre-section, set at 4° incidence; tapered outer panels have 2° dihedral, negative incidence, and 2° sweepback at quarter-chord. Conventional two-spar all-duralumin torsion box structure.

with steel attachment fittings, built by PZL Mielec; metal to metal bonding by PZL Swidnik. Duralumin automatic leading-edge slats (by PZL Swidnik) over full span of outer panels. Entire trailing-edges hinged, the single-slotted mass and aerodynamically balanced ailerons being designed to droop with the large, two-segment double-slotted flaps. Unpowered ailerons and hydraulically actuated flaps are of duralumin, with fabric and carbon plastics skins respectively; port aileron has a carbon plastics trim tab. Slab type spoiler, also of carbon plastics, forward of each aileron and each outer flap segment at 75 per cent chord. Thermal anti-icing of wing leading-edges by engine bleed air. Short stub-wing extends from each side of the lower fuselage, carrying the main landing gear unit and providing lower attachment for the wing bracing strut.

FUSELAGE: Conventional all-metal semi-monocoque non-pressurised structure. Underside of rear fuselage upswept and incorporating clamshell doors for passenger and cargo loading.

TAIL UNIT: Cantilever all-metal structure. Twin fins and rudders, mounted vertically on an inverted-aerofoil, no-dihedral fixed incidence tailplane. Fixed leading-edge slat (by PZL Swidnik) under full span of tailplane leading-edge. Electrically actuated trim tab in each rudder and each elevator; main controls are unpowered. Thermal (engine bleed air) anti-icing of tailplane and fin leading-edges.

LANDING GEAR: Non-retractable tricycle type, manufactured by PZL Krosno, with single Soviet built wheel and PZL Krosno oleo-pneumatic shock absorber on each unit. Main units have wide tread balloon tyres of Soviet manufacture, size 720 x 320 x 248 mm, pressure 3.5 bars (51 lb/sq in), and are mounted on small stub-wings that curve forward and downward at front to serve as mudguards. Steerable (50° left and right) and self-centering nosewheel, with size 595 x 185 x 280 mm Stomil (Poland) tyre, pressure 3.5 bars (51 lb/sq in). Soviet multi-disc hydraulic brakes on main units, and Soviet inertial anti-skid units.

POWER PLANT: Two 716 kW (960 shp) PZL Rzeszow TVD-10S (Glushenkov TVD-10B) turboprop engines, each driving a PZL-AW-24AN three-blade automatic propeller with full feathering and reversible-pitch capability. Two centre-section and two outer-wing integral fuel tanks in wing spar boxes, with total capacity of 1,960 litres (431 Imp gallons). Refuelling point on each tank. Oil capacity 16 litres (3.5 Imp gallons) per engine. Air intakes lined with epoxy laminate and anti-iced by engine oil; propellers, spinners, and pitot heads anti-iced electrically.

ACCOMMODATION: Pilot and co-pilot on flight deck, which has bulged side windows and electric anti-icing for windscreens and is separated from main cabin by a bulkhead with connecting door. Dual controls standard. Jettisonable emergency door at front on port side. Standard cabin layout of passenger version has seats for 17 people, with six single seats on port side, one single seat and five double seats on starboard side of aisle, at 72



Antonov An-28 light general purpose transport (two Glushenkov TVD-10B turboprop engines)

cm (28 in) pitch. Aisle width 34.5 cm (13.5 in). Five passenger windows in each side of cabin. Seats fold back against walls when aircraft is operated as a freighter or in mixed passenger/cargo role, the seat attachments providing cargo tiedown points. Entire cabin heated, ventilated, and soundproofed. Outward/downward opening clamshell double door, under upswept rear fuselage, for passenger and cargo loading. Emergency exit at rear of cabin on port side.

SYSTEMS: No air-conditioning, pressurisation, or pneumatic systems. Hydraulic system (PZL Wroclaw) for flap and spoiler actuation, main-wheel brakes, and nosewheel steering, with emergency backup system for spoiler extension and mainwheel braking. Primary electrical system is three-phase AC, with two engine driven alternators providing 200/115V power for heating systems, engine vibration monitoring, fuel pump, radio, recorders, and instrument lights. Transformer-rectifiers on this system provide 36V AC power for pressure gauges, artificial horizon, navigation and recording equipment, and 27V DC for control systems and signalling, internal and external lighting, fire detection system, propeller pitch control and feathering, radio, and engine starting and monitoring systems. In emergency, 36V AC can be provided by a static inverter and 27V DC by two 25Ah batteries. Thermal (engine bleed air) anti-icing of outer-wing, fin, and tailplane leading-edges. Electrical anti-icing of flight deck windscreens, propellers, spinners, and pitot heads. Oxygen system (for crew plus two passengers) optional. No APU.

AVIONICS: Standard avionics include Baklan-5 (USSR) com radio, R-855UM (USSR) VHF emergency locator transmitter, ARK-15 radio compass, MRP-66 marker beacon receiver, RW-5 or A-037 radio altimeter, Grieben-1 navigation unit, BUR-1-2A flight recorder, and SGU-6 intercom. Blind-flying instrumentation standard.

DIMENSIONS, EXTERNAL:

Wing span	22.07 m (72 ft 5 in)
Wing chord: at root	2.20 m (7 ft 2½ in)
at tip	1.10 m (3 ft 7¼ in)
Wing aspect ratio	12.25
Length overall	13.10 m (42 ft 11¼ in)
Fuselage: Length	12.68 m (41 ft 7¼ in)
Max width	2.14 m (7 ft 0¼ in)
Max depth	1.90 m (6 ft 2¼ in)
Height overall	4.90 m (16 ft 1 in)
Tailplane span	5.14 m (16 ft 10¼ in)
Wheel track	3.405 m (11 ft 2 in)
Wheelbase	4.44 m (14 ft 6¼ in)
Propeller diameter	2.80 m (9 ft 2¼ in)
Propeller ground clearance	1.25 m (4 ft 1¼ in)
Distance between propeller centres	5.20 m (17 ft 0¼ in)

Rear clamshell doors:

Length	2.40 m (7 ft 10½ in)
Total width: at top	1.00 m (3 ft 3¼ in)
at sill	1.40 m (4 ft 7 in)

Emergency exit (port, rear):

Height	0.91 m (3 ft 0 in)
Width	0.51 m (1 ft 8 in)

DIMENSIONS, INTERNAL:

Cabin, excl flight deck:	
Length	5.26 m (17 ft 3 in)
Max width	1.74 m (5 ft 8½ in)
Max height	1.60 m (5 ft 3 in)
Floor area	approx 7.5 m² (80.73 sq ft)
Volume	approx 14.0 m³ (494.4 cu ft)

AREAS:

Wings, gross	39.72 m² (427.5 sq ft)
Ailerons (total)	4.33 m² (46.61 sq ft)
Trailing-edge flaps (total)	7.986 m² (85.96 sq ft)
Spoilers (total)	1.922 m² (20.69 sq ft)
Fins (total)	10.00 m² (107.64 sq ft)
Rudders (total, incl tabs)	4.00 m² (43.06 sq ft)
Tailplane	8.85 m² (95.26 sq ft)
Elevators (total, incl tabs)	2.56 m² (27.56 sq ft)

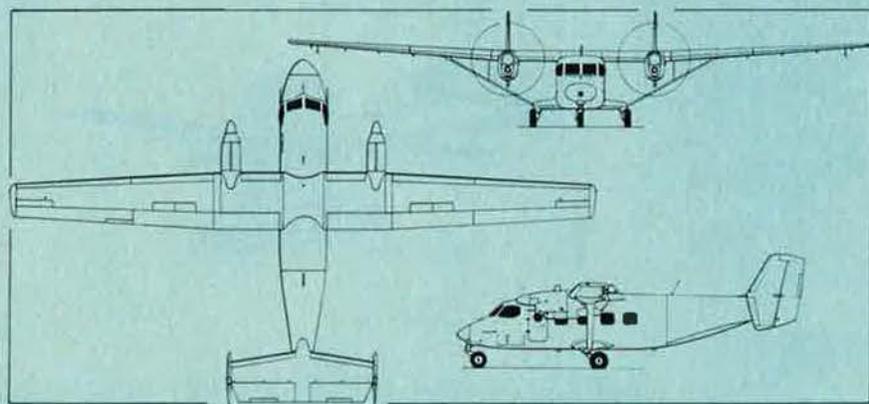
WEIGHTS AND LOADINGS:

Weight empty, equipped	3,750 kg (8,267 lb)
Max fuel load	1,567 kg (3,454 lb)
Max payload	2,000 kg (4,409 lb)
Max T-O and landing weight	6,500 kg (14,330 lb)

Normal wing loading	153.5 kg/m² (31.5 lb/sq ft)
Max power loading	4.64 kg/kW (7.62 lb/shp)

PERFORMANCE (at max T-O weight):

Never-exceed speed	210 knots (390 km/h; 242 mph)
Max level and max cruising speed at 3,000 m (9,850 ft)	189 knots (350 km/h; 217 mph)
Econ cruising speed at 3,000 m (9,850 ft)	182 knots (337 km/h; 209 mph)
Max rate of climb at S/L	705 m (2,315 ft)/min
Rate of climb at S/L, one engine out	210 m (689 ft)/min
Service ceiling	about 6,000 m (19,675 ft)
Min ground turning radius	16.00 m (52 ft 6 in)
T-O run	260 m (853 ft)
T-O to 10.7 m (35 ft)	360 m (1,180 ft)
Landing from 15 m (50 ft)	315 m (1,035 ft)



Antonov An-28 light transport, produced in Poland by WSK-PZL Mielec (Pilot Press)

Landing run 170 m (558 ft)
 Range:
 max payload, no reserves 302 nm (560 km; 348 miles)
 1,000 kg (2,205 lb) payload, 30 min reserves 736 nm (1,365 km; 848 miles)

GEC AVIONICS

GEC AVIONICS LIMITED: Airport Works, Rochester, Kent ME1 2XX, UK

GEC AVIONICS PHOENIX

The requirement for Phoenix arose out of an earlier programme known as Supervisor, which was cancelled in 1979. Phoenix will be the British Army's first fully equipped pilotless aircraft system for real-time remote targeting and battlefield surveillance. After entry into Army service, it is intended to play a part in supporting long-range artillery. The complete system comprises a small air vehicle, an air-to-ground data link, a mobile ground station, and logistics vehicles for launch and recovery. The parachute-recoverable, fixed-wing air vehicle will carry advanced avionics and a thermal imager (stabilised infra-red camera) with a zoom lens. It is designed to have low radar, infra-red, and acoustic signatures, to make it hard to detect. Modular construction and small size make it easy for soldiers to assemble, launch, and recover.

To meet the Army's requirement, Phoenix has to be highly mobile, capable of quick deployment, and flexible in operation, in extreme environments and demanding conditions of electronic warfare. Thirteen different proposals were considered initially, of which four were selected by the Ministry of Defence (Procurement Executive) for more detailed consideration. Two of them (team entries from GEC Avionics/Flight Refuelling and Ferranti/Slingsby Aviation) were chosen to undergo a 15-month competitive engineering design phase, and in February 1985 this resulted in the award of a fixed price contract, valued at approximately £80 million, to the GEC Avionics team. The contract is a complete package deal covering full development and production of the total number of Phoenix systems currently required. GEC Avionics is overall programme manager for the complete system; the air vehicle will be manufactured under subcontract by Flight Refuelling Ltd, which is also responsible for the launch and recovery systems.

TYPE: Battlefield surveillance and target acquisition RPV.

AIRFRAME: Mid-wing monoplane, with central fuselage nacelle and twin tailbooms; large, detachable underfuselage pod contains the mission-related avionics, including the imaging sensor and data link. Pod is roll-stabilised to minimise demands on the sensor and the directional antenna used for the data link. Modular construction, to facilitate assembly/launch/recovery by soldiers in the field. Wing centre-section integral with fuselage nacelle; tapered, "plug-in" outer panels, with ailerons. Crushable recovery module fairing

on top of fuselage. Sweptback endplate fins, integral with tailbooms, supporting a central tailplane with one-piece elevator. Airframe components of sandwich composite construction, for low radar signature, manufactured by Herman Smith Hitco Ltd.

POWER PLANT: One flat-twin aircooled piston engine, in hinged module at front of nacelle, driving a two-blade wooden tractor propeller. Fuel tank in fuselage.

LAUNCH AND RECOVERY: Pneumatic catapult launch from vehicle mounted ramp. Recovery by parachute stored in fuselage. (Drone is inverted during recovery phase, landing on crushable dorsal fairing, to protect mission pod and IR sensor on impact.)

GUIDANCE AND CONTROL: Flight control and navigation systems derived from those used in earlier Machan research RPV (see 1984-85 and previous *Jane's*). Air vehicle commands and surveillance data are transmitted via uplink/downlink using advanced component technology. The complex ground control facility interfaces with the Army's Marconi Command and Control Systems Ltd BATES battlefield command and control system and includes a new GEC Avionics digital moving map display; software for this and other ground control station installations supplied by Scicon Ltd. Installation of equipment in GCS undertaken by Hunting Hivolt Ltd.

AVIONICS AND EQUIPMENT: Ball mounting beneath ventral mission systems pod houses infra-red camera, based on the GEC Avionics TICM II (thermal imaging common modules) and fitted with a Pilkington PE lens having zoom capability.

DIMENSIONS, WEIGHTS, AND PERFORMANCE: Classified.

RTAF (SWDC)

ROYAL THAI AIR FORCE (Science and Weapon Systems Development Centre): Office of Aeronautics and Aircraft Design, Directorate of Aeronautical Engineering (DAE), No. 1 Pradipath Street, Dusit, Bangkok 10300, Thailand

The Royal Thai Air Force's Office of Aeronautics and Aircraft Design was set up in 1975 and has been responsible for all subsequent design activity. Its latest and most ambitious product to date, now undergoing flight testing, is the RTAF-5 turboprop trainer and forward air control (FAC) aircraft, designed and built entirely in Thailand.

RTAF-5

Design of the RTAF-5 started in February 1975, and construction of the first of two prototypes began on 26 May the following year. This aircraft made a successful 12 min first flight at Don Muang Air Base on 5 October 1984, carrying minimum fuel and with the landing gear fixed in the down position. Following the second test flight, on 18 December 1984, the aircraft was to be fitted with its landing gear retraction mechanism and undergo minor

modifications, such as redesign of the air intake scoops and relocation of the oil cooler.

TYPE: Tandem two-seat advanced trainer and forward air control aircraft.

WINGS: Cantilever mid-wing monoplane, with constant chord centre-section and slightly tapered outer panels, with provision for small wingtip fuel tanks. Wing section NACA 63, A415 at root, NACA 63, A412 at tip. Dihedral 3° on outer panels, none on centre-section. Incidence 3° at root. Conventional aluminium alloy (7075 main spars and 2024-T3) two-spar fail-safe structure. Manually operated ailerons, each with inset balance tab. Electrically operated single-slotted Fowler trailing-edge flaps, in two sections on each wing separated by tailbooms.

FUSELAGE: Pod type central nacelle, suspended from wing, of conventional aluminium alloy (2024-T3) semi-monocoque fail-safe construction. Forward section contains equipment bay and crew accommodation, under large glazed canopy. Rear section houses wing carry-through structure and power plant.

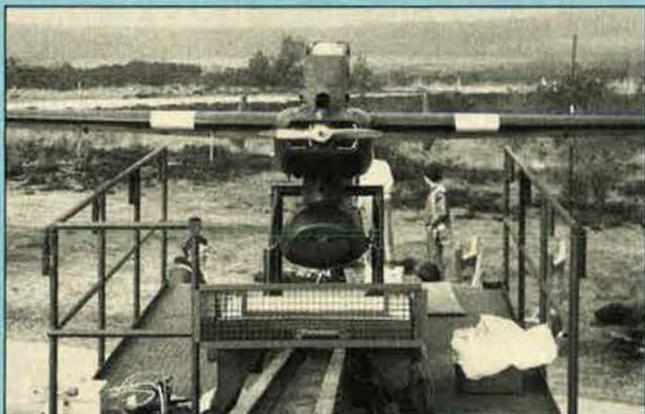
TAIL UNIT: Cantilever all-metal (2024-T3) structure carried on twin booms of semi-monocoque construction. Horizontal tailplane, with one-piece elevator, mounted between tips of sweptback vertical fins. Manually operated rudders and elevator. Adjustable trim tabs in elevator only. Tail-skid below boom under each fin.

LANDING GEAR: Electrically retractable type, with twin wheels on main units and single nosewheel. (Fixed down for preliminary flight test only.) All wheels retract forward, mainwheels into front of tailbooms with outer wheel on each side protruding slightly; tip of nosewheel also exposed when retracted. Oleo-pneumatic shock absorber in nose unit. Mainwheel legs have rubber in compression shock absorbers. Steerable nosewheel with tyre size 5.00-5, pressure 3.10 bars (45 lb/sq in). Mainwheel tyre size 7.00-6, pressure 3.45 bars (50 lb/sq in). Bendix hydraulic disc brakes on mainwheels.

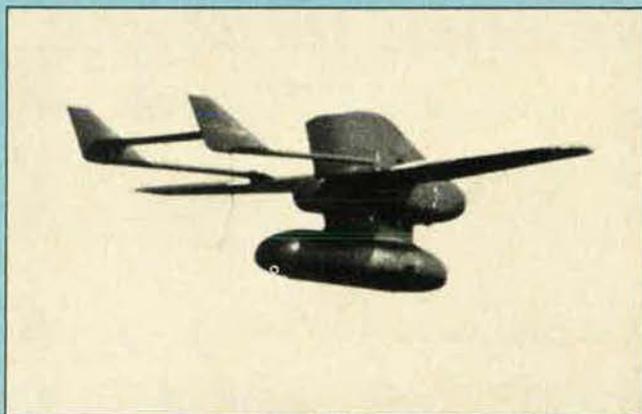
POWER PLANT: One 313 kW (420 shp) Allison 250-B17C turboprop engine, driving a Hartzell three-blade constant-speed pusher propeller with spinner. Integral fuel tank in wing centre-section, capacity 76 litres (16.5 Imp gallons; 20 US gallons); 113 litre (25 Imp gallon; 30 US gallon) fuselage tank and 30 litre (6.5 Imp gallon; 8 US gallon) collector tank. Total internal fuel capacity 219 litres (48 Imp gallons; 58 US gallons). Refuelling points in top of wing centre-section and (for fuselage tank) underneath wing. Provision for wingtip tanks, total capacity 95 litres (21 Imp gallons; 25 US gallons). Oil capacity 11.4 litres (2.5 Imp gallons; 3 US gallons).

ACCOMMODATION: Pilot and co-pilot (pupil at front, instructor at rear in trainer version) in tandem under large framed canopy that opens sideways to port. Rear seat elevated 7.5 cm (3 in). Dual controls standard. Accommodation ventilated. ELECTRICAL SYSTEM: 28V DC (150Ah battery).

AVIONICS AND EQUIPMENT: VHF nav/com. UHF, transponder, ADF, intercom, rotating beacon.



GEC Avionics Phoenix battlefield surveillance and target acquisition RPV on its launching ramp



Phoenix carries its mission-related avionics in a detachable underfuselage pod



Prototype of the Royal Thai Air Force's RTAF-5 advanced trainer and forward air control aircraft

navigation and position lights, instrument and warning lights, are all standard. Gunsight can be installed above front instrument panel.

ARMAMENT: Four weapon attachment points under wings, with capacity of 68 kg (150 lb) on each inner hardpoint and 45 kg (100 lb) on each outer point.

DIMENSIONS, EXTERNAL:

Wing span	9.55 m (31 ft 4 in)
Wing span over tip tanks	9.86 m (32 ft 3 3/4 in)
Wing chord:	
at root	1.65 m (5 ft 5 in)
at tip	1.44 m (4 ft 8 1/2 in)
Wing aspect ratio (incl tip tanks)	6.18
Length overall (incl nose probe)	9.96 m (32 ft 8 in)
Fuselage: Length	6.71 m (22 ft 0 in)
Max width	1.14 m (3 ft 9 in)
Height overall	3.05 m (10 ft 0 in)
Tailplane span	3.66 m (12 ft 0 in)
Wheel track	3.76 m (12 ft 4 in)
Wheelbase	2.84 m (9 ft 4 in)
Propeller diameter	2.29 m (7 ft 6 in)
Propeller ground clearance (static)	15.25 cm (6 in)

AREAS:

Wings, gross (incl tip tanks)	15.67 m ² (168.7 sq ft)
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Ailerons (total)	1.49 m ² (16.00 sq ft)
Trailing-edge flaps (total)	
Fins (total)	1.50 m ² (16.13 sq ft)
Rudders (total)	2.42 m ² (26.03 sq ft)
Tailplane	0.84 m ² (9.00 sq ft)
Elevator (incl tabs)	2.84 m ² (30.60 sq ft)
Elevator (incl tabs)	1.11 m ² (12.00 sq ft)
WEIGHTS AND LOADINGS:	
Weight empty	1,645 kg (3,628 lb)
Fuel weight (284 litres; 62.5 Imp gallons; 75 US gallons)	236 kg (520 lb)
Max ramp weight	2,177 kg (4,800 lb)
Max T-O weight	2,154 kg (4,750 lb)
Max zero-fuel weight	1,746 kg (3,850 lb)
Max landing weight	2,086 kg (4,600 lb)
Max wing loading	137.4 kg/m ² (28.16 lb/sq ft)
Max power loading	6.88 kg/kW (11.3 lb/shp)
PERFORMANCE (estimated at max T-O weight):	
Max cruising speed at 3,050 m (10,000 ft)	180 knots (333 km/h; 207 mph)
Econ cruising speed at 3,050 m (10,000 ft)	160 knots (296 km/h; 184 mph)
Stalling speed, 30° flap	85 knots (158 km/h; 98 mph)
T-O run (hot day)	549 m (1,800 ft)
T-O to 15 m (50 ft) (hot day)	701 m (2,300 ft)
Landing from 15 m (50 ft) (hot day)	915 m (3,000 ft)

PZL

WSK-PZL WARSZAWA-OKECIE, Al. Krakowska 110/114, 00-973 Warsaw, Poland

PZL-130 ORLIK (EAGLET)

The Orlik is one of three elements, together with a flight simulator and an electronic diagnostic system, in a new Polish system now being developed for the training of future military and civilian pilots. It is intended to use the aircraft for a wide range of duties, including preselection training, basic handling, aerobatics, instrument flying, navigation training, formation flying, aerial combat training, air gunnery and ground attack, reconnaissance and target acquisition, and target towing. Cockpit instruments and displays are installed in modular units similar to those of modern combat aircraft to permit quick changes of avionics and equipment and enable the Orlik to perform as a 'flying operational simulator' for jet powered military aircraft.

Initial proposals for the PZL-130 were prepared in 1980, and detail design began in the Autumn of 1981 under the leadership of Mr Andrzej Frydrychewicz. Prototype construction started in the Spring of 1983. Two prototypes began flight testing in 1984: SP-PCA (c/n 002) on 12 October and SP-PCC on 29 December, followed by SP-PCB on 12 January 1985; a static test aircraft has also been completed. The Orlik was designed and built to FAR Pt 23 standards and will be certificated in all three categories (Normal, Utility, and Aerobatic). Construction of pre-production aircraft also started in 1985. Future plans include a version with extended wingtips, increasing span to 9.00 m (29 ft 6 1/2 in), and one with a turboprop engine.

The following description applies to the prototypes:

TYPE: Tandem two-seat primary, basic, and multi-purpose trainer.

WINGS: Cantilever low-wing monoplane. Wing section NACA 64-215 (modified). Dihedral 5° from roots, incidence 0° at root, -3° at tip. One-piece all-metal (light alloy) multi-spar torsion box structure, forming integral fuel tankage. Tapered planform, with raked tips of glassfibre/epoxy. Leading-edges are detachable; trailing-edge skin panels are electrically spot welded. All-metal constant chord single-slotted trailing-edge flaps, actuated electrically (max deflection 40°). Frise differential ailerons (25° up/15° down) are also all-metal and of constant chord, actuated mechanically via pushrods and torque tube in fuselage.



First flights of the RTAF-5 were made with the landing gear fixed in the down position



First flying prototype of the PZL-130 Orlik trainer (Vedenyev M-14Pm radial piston engine)

Electrically actuated trim tab on port aileron. No slats, spoilers, or airbrakes. Provision for anti-icing system.

FUSELAGE: All-metal (light alloy) unpressurised semi-monocoque structure, with electrically spot welded engine cowling and skin panels.

TAIL UNIT: Cantilever light alloy structure with sweptback vertical and non-swept horizontal surfaces. Small, curved dorsal fin; shallow ventral strake under fuselage tailcone. Fixed-incidence tailplane. Elevators aerodynamically and mass balanced, controlled by rods and cables; electrically actuated trim tab on port elevator. Aerodynamically and mass balanced rudder, also with electrically actuated trim tab, is cable controlled. Provision for anti-icing system.

LANDING GEAR: Pneumatically retractable type, all three units retracting into fuselage (mainwheels inward, nosewheel rearward). Oleo-pneumatic shock absorber in each unit (mainwheels on rockers, nosewheel on semi-fork with shimmy damper and centering device). Low pressure tubeless tyres, size 500 x 200 (main) and 400 x 140 (nose). Hydraulic disc brakes, operated pneumatically. No brake cooling or anti-skid units.

POWER PLANT: One 243 kW (325 hp) Vedenyev M-14Pm (m = modified) nine-cylinder radial air-cooled engine, driving a PZL US-142 three-blade constant-speed metal propeller with pointed spinner. Four integral fuel tanks (two of 110 litres; 24.2 Imp gallons and two of 100 litres; 22.0 Imp gallons capacity) in wing torsion box, plus a 10 litre (2.2 Imp gallon) collector tank in fuselage; total internal fuel capacity 430 litres (94.6 Imp gallons). Overwing refuelling point for each wing tank. No provision for external fuel tanks. Oil

capacity 26 litres (5.7 Imp gallons). Fuel and oil systems adapted for aerobatics, including up to 60 s of inverted flight. Electrically adjustable exhaust flaps for engine cooling air.

ACCOMMODATION: Tandem seating for trainee and instructor under one-piece framed canopy, which opens sideways to starboard. Rear (instructor's) seat slightly elevated. Both seats are adjustable electrically, can accommodate back type and seat type parachutes, and are fitted with seat belts/harnesses. Full dual controls standard; rudder pedals are adjustable (three positions). Windscreen and canopy frames are of glassfibre/epoxy; windscreen is removable, canopy jettisonable. Cockpits heated (electric heater with blower) and ventilated. Baggage compartment aft of rear seat, with external access via upward opening door in port side of fuselage.

SYSTEMS: Two independent pneumatic systems, each at 49 bars (711 lb/sq in) pressure; main system for engine starting, landing gear extension/retraction, and wheel braking/steering, emergency system for all of these except landing gear retraction. External source connector. No hydraulic system. Electrical power (24V DC) supplied by 3kW generator and 18Ah battery; system includes voltage regulator with overvoltage relay, and external DC power socket. Provision for oxygen bottles and individual masks. Provision also for anti-icing of wing and tail leading-edges.

AVIONICS AND EQUIPMENT: One RS-6102 720-channel UHF com (UNIMOR), one ARL-1601 ADF (RADMOR), and blind-flying instrumentation are standard; nav, VOR/ILS, transponder, and radio altimeter are optional.

ARMAMENT: No installed armament. Two under-

wing pylons for practice bombs, gun pods, or other weapon training stores. Provision for gun-sight, gun camera, and armament control system.

DIMENSIONS, EXTERNAL:

Wing span	8.00 m (26 ft 3 in)
Wing chord: at root	2.00 m (6 ft 6 1/4 in)
mean aerodynamic	1.62 m (5 ft 3 3/4 in)
Wing aspect ratio	5.2
Length overall	8.45 m (27 ft 8 3/4 in)
Fuselage: Max width	0.90 m (2 ft 11 1/2 in)
Height overall (incl fin tip antenna)	4.00 m (13 ft 1 1/2 in)

Tailplane span	3.50 m (11 ft 5 3/4 in)
Wheel track	3.10 m (10 ft 2 in)
Wheelbase	2.22 m (7 ft 3 1/2 in)
Propeller diameter	1.95 m (6 ft 4 1/4 in)
Propeller ground clearance	0.30 m (11 3/4 in)

DIMENSIONS, INTERNAL:

Cabin: Length	2.95 m (9 ft 8 1/4 in)
Max width	0.71 m (2 ft 4 in)
Baggage compartment volume	0.17 m ³ (6.0 cu ft)

AREAS:

Wings, gross	12.30 m ² (132.4 sq ft)
Ailerons (total, incl tab)	1.38 m ² (14.85 sq ft)
Trailing-edge flaps (total)	1.37 m ² (14.75 sq ft)
Fin	1.46 m ² (15.71 sq ft)
Rudder, incl tab	0.65 m ² (6.97 sq ft)
Tailplane	1.81 m ² (19.48 sq ft)
Elevators (total, incl tab)	0.94 m ² (10.12 sq ft)

WEIGHTS AND LOADINGS (estimated):

Weight empty, standard	947 kg (2,088 lb)
Max fuel weight	310 kg (683 lb)
Standard T-O weight	1,300 kg (2,866 lb)
Max T-O weight	1,500 kg (3,307 lb)
Max wing loading	121.95 kg/m ² (24.99 lb/sq ft)
Max power loading	6.17 kg/kW (10.14 lb/hp)

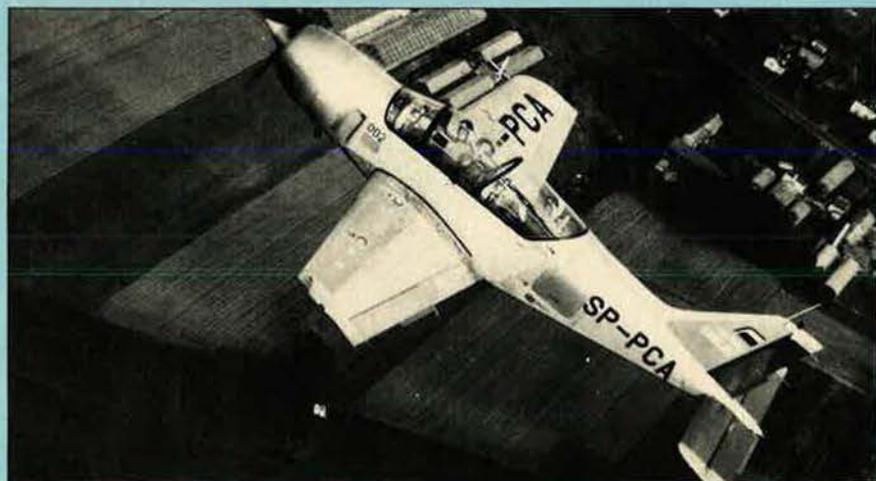
PERFORMANCE (S/L, estimated):

Never-exceed speed	302 knots (560 km/h; 348 mph)
Max level speed	208 knots (385 km/h; 239 mph)
Max cruising speed	194 knots (360 km/h; 224 mph)
Max manoeuvring speed	185 knots (344 km/h; 214 mph)

Stalling speed:

flaps up	71 knots (130 km/h; 81 mph)
flaps down	57 knots (104 km/h; 65 mph)
Max rate of climb at S/L	444 m (1,456 ft)/min
Service ceiling	7,000 m (22,965 ft)
T-O run (concrete)	330 m (1,083 ft)
Landing run (concrete)	243 m (797 ft)
Range with max fuel	1,208 nm (2,240 km; 1,392 miles)

Max endurance	6 h 35 min
g limits:	
at 1,300 kg (2,866 lb) AUW	+7.0/-3.5
at 1,500 kg (3,307 lb) AUW	+6.0/-3.0



PZL-130 Orlik primary, basic, and multi-purpose trainer for military and civilian pilots

VIEWPOINT

The Selling of Secrets

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

Tougher rules on security clearances may help—but another part of the problem is our national tolerance in matters of patriotism and ethics.



It may be stretching a point to link the dismal business of the Walker spy ring with sympathy for the Hanoi regime during the Vietnam War, but let's stretch it anyway. By the

standards that earned Axis Sally and Tokyo Rose national indignation and prison sentences, such conduct should at least have suffered widespread contempt. Instead, as we all know, those who engaged in it are much admired figures, so to speak.

Be that as it may, our tolerance of aberrant behavior has undergone a remarkable change in these last two decades. The Chicago White Sox of the 1919 World Series scandal were banished forever to baseball's outer darkness, while athletic cheaters these days attract sympathy and advocates for a second chance. Ethics and patriotism, it appears, are not what they used to be.

The Walker business is an example of just how low the moral standards of that particular group of fellow citizens have fallen. They do not even have the excuse of ideology, as did the Rosenbergs, only a desire to make an easy buck. Whether that desire would have been tempered by thoughts of the electric-chair death of the Rosenbergs is an academic question. John Walker and his pals knew the worst they faced was prison.

As a result of the Walker case, there is to be a general tightening of security, or at least an effort in that direction. Defense Secretary Caspar Weinberger has ordered a ten percent reduction in security clearances, while Navy Secretary John Lehman has gone even further, vowing an eventual cutback of fifty percent.

So long as the removal of clearances is done judiciously, which is to

say after determining that there is no need to know, it may serve a purpose, but it is by no means a cure. Clearances held by those who have no need to know are, for the most part, simply status symbols. People holding that kind of clearance are not likely to turn to spying, if only because they have little to offer. Conversely, those with a need to know in order to perform their duties must be cleared. All the recent spy cases have come from that category. More rigid background checks might possibly have turned up something, but it is by no means certain, for these non-ideological turncoats did not associate with Communists—that is, not socially.

According to some counterintelligence estimates, the Soviets may have as many as 800 agents—KGB and GRU—in the United States. If each of these agents has five or six dupes on his string—and that seems to be the usual number—then we have 4,000 or 5,000 Walkers in our midst. What this amounts to in technological leakage is anyone's guess, but signs of that leakage are there for all to see. The MiG-29, for instance, could just as well be a version of the F-15. Soviet developments in refueling, AWACS, bombers, and transports all owe a visible debt to US technology as well as, we can suppose, to those prostitutes who make life easy for Soviet agents.

One of the comforting reassurances to USSR quantitative superiority has been our superiority in technology. We must now come to grips with the possibility that anything we develop will shortly find its way into Soviet hands, thanks to our security sieve. We buy, they fly.

We have one spy's word for it that the game is not worth the price. Christopher Boyce, the real-life Falcon of the movie *The Falcon and the Snowman*, is currently doing sixty-eight years in a federal prison for espionage and escape. In an interview with Ted Koppel on the television program *Nightline*, which was conducted from prison, Boyce drew the similarity between working for the

KGB and carrying around a sixty-pound stone that one could not put down. He went on, a disillusioned traitor, to warn that the KGB, beyond gathering secrets, is really interested in influencing US policy through its hired stooges. Boyce, for one, claims to have seen the light, albeit a little late. The discouraging note in that interview was his statement that, when he became a traitor, he viewed the CIA as the enemy—a trendy attitude a few years ago and one still in vogue on certain campuses.

For a time, canceling clearances may make everyone more conscious of the problem. Sooner or later, however, the number of clearances will inevitably increase, or essential tasks will not get done. Yet a way must be found to curb this sordid business of selling out the country. The first thing that comes to mind is a swift and severe penalty for peacetime espionage, something Secretary Weinberger has already suggested. To paraphrase Samuel Johnson, the thought of the electric chair might wonderfully concentrate potentially traitorous minds on other ways of augmenting income.

Capital punishment, however, is only a partial answer. The United States will always be the world's easiest and most profitable target for espionage. There is not much anyone can do to alter the fact that foreign agents have little difficulty in moving around this country and talking to anyone they choose. Somehow, then, there must be a renewed awareness of what treason is all about. It is not only a loathsome crime but, by its very nature, a danger to us all.

For those who are presently engaged in selling secrets, it is too late for an appeal to conscience. We can only hope they are caught. But the kind of mindless acquiescence that left Hanoi sympathizers unmarked and that welcomed home the draft dodgers has had something to do with this breakdown in what used to be called patriotism. It is past time for beginning once more to teach the young just what betrayal of one's country actually means. ■

THE BULLETIN BOARD

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

President Pins Fourth Star on Doolittle

In a mid-June White House ceremony, President Ronald Reagan formally pinned a fourth star on Gen. Jimmy Doolittle (see June 1985 "Bulletin Board" for additional details on the promotions of Jimmy Doolittle and Ira Eaker to four-star rank). An admiring audience of many of the active and retired four-star Air Force officers watched as the President presented a four-star insignia to General Doolittle that had been originally given to Doolittle in 1945 by Army Gen. George Patton.

When General Patton received his own fourth star forty years ago, he gave General Doolittle an extra four-star insignia because, he said, he knew Doolittle "would one day receive his fourth star." With his promotion, Jimmy Doolittle, who was AFA's first President, becomes the first four-star general in the Air Force Reserve.

Model Installation Program Working

The Air Force is now halfway through a three-year test of a new DoD management concept—the Model Installation Program—in which commanders at ten bases have been given flexibility to manage resources

and test innovative ideas. The program allows the commanders to waive major command or Air Force regulations and directives so that savings can be enhanced. Any savings realized are then retained at the base to improve the quality of life there.

Both Air Force Secretary Verne Orr and Chief of Staff Gen. Charles A. Gabriel, pleased with the test results so far, have now tasked *all* commanders to "use all the authority available to them and demand relief from stifling overregulation." The top Air Force leaders' joint message lauds the "innovative spirit" exemplified by the ongoing management experiment and calls for its extension throughout the Air Force. Despite the message, though, there are no plans at present to end the three-year test program early.

Lt. Col. Jack Jones, a model-installation project officer at the Pentagon, says the test program is proving that the "commanders can and will operate more efficiently, if given more authority to run their daily business. . . . We need to spread the model installation concept to the rest of the service." He added that commanders "can be innovative with the authority they already have."

In applying the model installation

philosophy to all levels, Secretary Orr and General Gabriel directed commanders to "institute a streamlined approval process, publicize the program, promote innovation, and begin eliminating unneeded bureaucratic rules and layers."

Colonel Jones notes, "This says to everyone in the Air Force, 'Let's apply this concept everywhere.' If the idea is accepted throughout the Air Force and DoD, there won't be a need for the model installation program. The program will be built into the system."

New Stamp Honors ROTC Pioneer

The United States Postal Service recently honored the 200th anniversary of Alden Partridge's birth by adding an eleven-cent stamp with his likeness to the "Great Americans" commemorative stamp series.

Who was Alden Partridge? Many would be hard pressed to answer that; yet many, many thousands have been significantly touched by his contribution.

In 1820, Partridge opened the American Literary, Scientific, and Military Academy in Norwich, Vt., with 100 students. He believed that young men should receive instruction in scientific and military subjects as well as in the classics. With the passage of the National Defense Act of 1916, his idea of education and the citizen-soldier was incorporated into the Reserve Officer Training Corps.

Partridge, a West Point graduate, taught at the Military Academy and in 1815 was appointed Permanent Superintendent. Two years later, he resigned under "disputable circumstances," but continued on in the educational arena, finally founding his Academy. He would eventually found seven other schools and colleges.

Today his Academy is called Norwich University, and ROTC has become a major commissioning source for all the services. In the Air Force, some 180,000 officers have entered through ROTC since 1948. Currently, 152 colleges and universities across the nation host AFROTC units, and



PACAF people at Hickam AFB, Hawaii, are donating their lunch money to fight starvation in drought-stricken Africa. Some of the almost \$1,500 collected so far is displayed by, from left, Bob Greenslade, Hickam Red Cross Manager; Marilyn Conn, who suggested the charity drive; Capt. Diane Ganzemuller, fundraiser project officer; and Col. Arthur Crum, PACAF DCS/Personnel.



Brig Gen. Mary Alice Opdyke Marsh, USAF, Director for Manpower and Personnel for the Organization of the Joint Chiefs of Staff, was recently honored as a Distinguished Alumna of Murray State University. General Marsh, a 1951 graduate, was honored with fellow alumni Maj. Gen. John I. Hudson, USMC, left, and Brig. Gen. Bobby F. Brashears, USA.



Mrs. Jane Weinberger, right, wife of Defense Secretary Caspar Weinberger, visits with resident Ruth Hoysa at the Bob Hope Village at Fort Walton Beach, Fla. The Village houses widows of enlisted USAF personnel.

students from an additional 550 colleges located near AFROTC host units can attend military classes through separate "cross-town" enrollment or consortium agreements.

And what about Norwich University itself? Today it hosts ROTC units from all three services, with about 1,300 members in the corps of cadets. More than 500 of those are AFROTC cadets.

Blue-Suiter Named White House Fellow

Maj. John L. Barry, a student at the Armed Forces Staff College in Norfolk, Va., has been appointed by President Reagan to the 1985-86 class of White House Fellows. Fourteen Fellows make up this class, the twenty-first since the program began in 1964.

The group was selected from among 1,139 applicants and was screened by eleven regional panels. At the national level, the President's Commission on White House Fellowships, chaired by Vice Adm. James B. Stockdale, USN (Ret.), interviewed thirty-four finalists to select the four-

teen finally recommended to the President. The Fellows begin their service on September 1.

Fellows serve for one year as Special Assistants to the Vice President, members of the Cabinet, and the President's principal staff. The Fellowship also includes an education program that parallels and broadens the rare experience of working at the highest levels of the federal government.

The program is open to US citizens from all occupations and professions who are in the early stages of their careers. Federal government employees, except for military people, are not eligible. Leadership, character, intellectual and professional ability, and commitment to community and nation are the principal criteria employed in the selection process.

Major Barry, born in the Bronx, is an honor graduate of the USAF Academy and received his MPA degree from the University of Oklahoma. He's a fighter pilot who has captured top honors in the William Tell Worldwide Weapons Meet and who has served as a test pilot at Nellis AFB, Nev., and as an aide to the Commander, Twelfth Air Force. An active participant in the Big

Brother organization, he is also the author of several publications on leadership, fighter tactics, and aerospace safety.

USAF Triumphs in Racquetball Tourney

The Air Force captured five of six titles in the 1985 Interservice Racquetball Tournament, losing only the women's singles crown, which went to Army.

Lou Souther, Los Angeles AFS, Calif., beat Al Stock, Luke AFB, Ariz., in the all-Air Force final of the men's open category. Men's open doubles also pitted Air Force against Air Force, as did the senior singles competition. The team of Frank Pruitt, Camp New Amsterdam, the Netherlands, and Duane Stevens, Barksdale AFB, La., routed Souther and Stock in the doubles. The singles senior crown went to Thomas Kinbrough, Eglin AFB, Fla. He and his opponent, Robert Ellis, Kelly AFB, Tex., then went on to smash the Army duo to capture senior doubles. The lone Army winner, Jackie Yzaguirne, West Berlin, Germany, beat Diana Reyes, Brooks AFB, Tex., in the women's singles category. Reyes then teamed with Jayne Vigil, Randolph AFB, Tex., to walk off with the women's doubles title.

Air Force Lifesavers

The "good citizen" aspect of the Air Force experience is an important part of the blue-suit community. This was highlighted recently as a spate of news items surfaced from around the nation that featured Air Force active-duty people, reservists, and civilians in lifesaving roles.



USAF boat crew members SSgts. William Ray, Richard Mounts, and Gregory Smith recently participated in the rescue of two civilians. See item.

Out of Eglin AFB, Fla., SSgt. Gregory A. Smith (boatmaster), SSgt. William Ray (first mate), SSgt. Richard Mounts (chief engineer), and Sgt. Fred Luna (seaman) of the 3246th Test Wing Marine Branch rescued two civilians from the Gulf of Mexico after the civilian boat had capsized in ten-foot waves and forty-knot winds (see photo on the preceding page).

The Eglin crew was returning from a twelve-hour work shift during which they had picked up thirty Army swimmers when they heard a Coast Guard emergency call. The Coast Guard boat responding to the call had to abandon the search because of rough seas. The Air Force team, working with an Air Force C-130 and HH-60, successfully located and rescued the survivors after a three-hour search. It was Sergeant Smith's first time out as boatmaster.

Up at Westover AFB, Mass., an Air Force Reservist has been credited with saving the lives of a Springfield, Mass., woman and her two children. TSgt. Albert Drenthe of the 439th Civil Engineering Squadron noticed smoke coming from the eaves of a neighbor's house as he returned home at 5:00 a.m. from his civilian job.

He ran quickly to the burning house and awakened the mother and two children. Springfield fire officials note that his prompt action saved the lives of the family. "The roof was near collapse when they escaped from the house," said the officials.

THE BULLETIN BOARD

Sergeant Drenthe is a sixteen-year veteran of the Air Force Reserve and serves as a production electrician with his unit.

Meanwhile, the quick reactions of a civilian worker from the Air Force Manpower and Personnel Center at Randolph AFB, Tex., and two Air Force Reserve medics from Kelly AFB, Tex., were credited with saving the life of an accident victim near San Antonio.

Geff Willstrop, a computer analyst at AFMPC, and SSgt. Charles M. Blake and SrA. Robert W. Jones, the Reservists, were first to arrive on the scene of a close-to-midnight traffic accident. Disregarding gasoline flowing from a ruptured fuel line, the trio pulled open the jammed car door, jumped into the car, lifted out the victim, and carried him across the highway away from the potentially explosive car. The two medics then treated the victim for shock and patched up a head wound.

Navy Expands Its Frocking Policy

The Navy, which has long practiced "frocking"—or provisional advance-



Air War College graduate Col. Robert A. Wiswell, right, receives the first Douhet-Mitchell International Air Power Trophy from Air University Commander Lt. Gen. Thomas C. Richards. Sponsored by the Sons of Italy, the award will be presented annually to a graduate from AWC and from the Italian Air Force War College.

ment of promoted people into their new grade without the accompanying pay increase, pending their formal advancement as vacancies occur—has expanded the practice to its E-8 and E-9 selectees. They now may pin on their new insignia when selection board results are announced. This same practice has been long followed for Navy officers.

The Air Force has strenuously resisted the practice of frocking, but this new action will undoubtedly intensify pressure for it to follow suit. Air Force officials have been concerned with the problems of wearing rank that is not yet "official." This doesn't seem to bother the Navy.

Short Bursts

According to congressional testimony by Lt. Gen. Duane H. Cassidy, Air Force Deputy Chief of Staff for Manpower and Personnel, the size of the Air Reserve Forces has increased thirty-five percent since 1973. The active force shrank twelve percent during that same time. During the next five years, he projects, the reserve billets will expand at twice the rate of the active force.

The recent appointment of Lt. Gen. William E. Thurman as Vice Commander of Air Force Systems Command puts two Annapolis grads in charge of this command. AFSC Com-



A "Gathering of Chiefs" took place last May at the Retired Reserve General Officers Conference at the Pentagon. The three past Chiefs of the Air Force Reserve joined the current Chief, Maj. Gen. Sloan R. Gill, left, to discuss AFRES affairs. Pictured, from right, are Maj. Gen. Homer I. Lewis, Maj. Gen. William Lyon, Maj. Gen. Richard Bodycombe, and General Gill. (USAF photo by Fred Henshaw)

MSgt. Craig Collins, left, has been named the nation's top Air National Guard recruiter for 1985. Presenting the award to Sergeant Collins is Lt. Col. John Butler. (USAF photo by SSgt. Lisa Ramsey)



mander **Gen. Lawrence A. Skantze** is also a USNA alumnus.

Rep. Gerald B. H. Solomon (R-N. Y.) has introduced legislation that would **bar a Selective Service-eligible person who has not registered** from being hired for a **Civil Service job**.

The VA reminds veterans that they **don't have to visit a VA office for benefits information**. All VA regional offices have toll-free numbers for this service. Check your local telephone directory under "US Government."

The **top Air National Guard Re-**

cruiter for 1985 is MSgt. Craig N. Collins, Topeka, Kan. He was a security policeman with the 190th Air Refueling Group, Kansas ANG, prior to becoming a recruiter (see photo).

The **new commander of the Army and Air Force Exchange Service is Brig. Gen. John E. Long, USA**. He had been deputy to former commander **Maj. Gen. Richard D. Murray, USAF**, who is retiring.

Congressman Stan Parris (R-Va.) wants a **memorial** built in Washington, D. C., to honor **Korean War veter-**

ans. He says it's "incredible" that no such memorial exists. Meanwhile, Congresswoman Mary Rose Oakar (D-Ohio) is plugging for a **memorial to honor the "thousands of women who've served in the armed forces."** She notes, "Contrary to popular belief, women have experienced combat action while serving their country since the American Revolution in a variety of military occupations, such as spies, couriers, and test pilots."

Any **service-connected disabled veteran who becomes blind** is entitled to a **seeing-eye dog from the VA**. The benefit includes all costs in securing the animal, training both the veteran and the dog, and costs for veterinarian care.

The Army is spearheading research into the feasibility of developing a "smart" card—a **modern soldier-data tag** that would store **personnel, medical, and financial information** on a small plastic tag. Information could be entered, altered, or retrieved by computer. The tag would be used as an emergency record both in and out of combat. ■

SENIOR STAFF CHANGES

PROMOTIONS: To be **General:** John T. Chain, Jr. To be **Lieutenant General:** Murphy A. Chesney.

RETIREMENTS: M/G William P. Acker; L/G Max B. Bralliar; M/G Kenneth D. Burns; L/G William J. Campbell; B/G William M. Constantine; Gen. James E. Dalton; M/G Richard D. Murray; B/G Wilma L. Vaught.

CHANGES: M/G Michael P. C. Carns, from DCS/Plans, Hq. PACAF, Hickam AFB, Hawaii, to DCS/Ops. & Intel., Hq. PACAF, Hickam AFB, Hawaii, replacing M/G Thomas G. McInerney . . . **L/G (Gen. selectee) John T. Chain, Jr.**, from Dir., Bureau of Politico-Military Affairs, Dept. of State, Washington, D. C., to C/S, SHAPE, Mons, Belgium, replacing retired Gen. James E. Dalton . . . **Col. (B/G selectee) Edward D. Cherry**, from Cmdr., 8th TFW, PACAF, Kunsan AB, Korea, to DCS/Plans, Hq. PACAF, Hickam AFB, Hawaii, replacing M/G Michael P. C. Carns . . . **M/G (L/G selectee) Murphy A. Chesney**, from Dep. Surgeon General, Office of the Surgeon General, Hq. USAF, Bolling AFB, D. C., to Surgeon General of the Air Force, Hq. USAF, Bolling AFB, D. C., replacing retired L/G Max B. Bralliar . . . **B/G Richard L. Craft**, from Dep. Dir. for Ops., Nat'l Mil. Cmd. Ctr., J-3, OJCS, Washington, D. C., to Dep. Dir., Nat'l Mil. Cmd. System, J-3, OJCS, Washington, D. C., replacing retiring B/G William M. Constantine.

B/G John P. Dickey, from Cmdr., 513th TAW, USAF, RAF Mildenhall, England, to Dep. Cmdr., 5ATAF, Vicenza, Italy, replacing B/G Richard G. Head . . . **L/G Monroe W. Hatch, Jr.**, from IG, Hq. USAF, Washington, D. C., to Vice CINC, Hq. SAC, Offutt AFB, Neb., replacing retiring L/G William J. Campbell . . . **B/G Richard G. Head**, from Dep. Cmdr., 5ATAF, Vicenza, Italy, to Dep. Dir. for Ops., Nat'l Mil. Cmd. Ctr., J-3, OJCS, Washington, D. C., replacing B/G Richard L. Craft . . . **B/G James D. Kellim**, Cmdr., Hq. ARPC, Denver, Colo., to Vice Cmdr., MTMC, Washington, D. C., replacing B/G Donald C. Smith . . . **Col. (B/G selectee) George W. Larson, Jr.**, from Cmdr., 380th Bomb Wing, SAC, Plattsburgh AFB, N. Y., to Ass't DCS/Plans, Hq. SAC, Offutt AFB, Neb., replacing B/G (M/G

selectee) Leo W. Smith II, who moves to Hq. USAF (see below).

M/G Buford D. Lary, from Sr. Mil. Ass't to the Dep. Sec. of Def., OSD, Washington, D. C., to Dep. Cmdr. for Air Def., Hq. TAC, Langley AFB, Va., replacing M/G Russell L. Violett . . . **M/G Thomas G. McInerney**, from DCS/Ops. & Intel., Hq. PACAF, Hickam AFB, Hawaii, to Cmdr., 3d AF, USAF, RAF Mildenhall, England, replacing retiring M/G William P. Acker . . . **M/G Maurice C. Padden**, from Vice Dir., J-3, OJCS, Washington, D. C., to Vice CINC, Hq. NORAD, & Ass't Vice Cmdr., Hq. SPACECMD, Peterson AFB, Colo., replacing M/G Robert A. Rosenberg . . . **M/G Robert A. Rosenberg**, from Vice CINC, Hq. NORAD, & Ass't Vice Cmdr., Hq. SPACECMD, Peterson AFB, Colo., to Dir., DMA, Washington, D. C. . . . **B/G Alexander M. Sloan**, from Dir., Medical Plans & Resources, Office of the Surgeon General, Hq. USAF, Bolling AFB, D. C., to Dep. Surgeon General, Office of the Surgeon General, Hq. USAF, Bolling AFB, D. C., replacing M/G (L/G selectee) Murphy A. Chesney.

B/G Donald C. Smith, from Vice Cmdr., MTMC, Washington, D. C., to Ass't DCS/Ops., Hq. MAC, Scott AFB, Ill., replacing B/G Charles A. Vickery . . . **B/G (M/G selectee) Leo W. Smith II**, from Ass't DCS/Plans, Hq. SAC, Offutt AFB, Neb., to Dir. of Budget, Air Force Comptroller Office, Hq. USAF, Washington, D. C., replacing M/G Claudius E. Watts III . . . **B/G Charles A. Vickery**, from Ass't DCS/Ops., Hq. MAC, Scott AFB, Ill., to Dep. Dir. for Ops., Nat'l Mil. Cmd. Ctr., J-3, OJCS, Washington, D. C. . . . **M/G Russell L. Violett**, from Dep. Cmdr. for Air Defense, Hq. TAC, Langley AFB, Va., to Chief, US Mil. Training Mission, Dhahran, Saudi Arabia . . . **M/G Claudius E. Watts III**, from Dir. of Budget, Air Force Comptroller Office, Hq. USAF, Washington, D. C., to Sr. Mil. Ass't to the Dep. Sec. of Def., OSD, Washington, D. C., replacing M/G Buford D. Lary.

SENIOR ENLISTED ADVISOR CHANGES: **CMSgt. James C. Binnicker**, to SEA, Hq. TAC, Langley AFB, Va., replacing CMSgt. Richard P. E. Cook . . . **SMSgt. (CMSgt. selectee) Roy T. Day**, to SEA, Hq. AFOSI, Bolling AFB, D. C., replacing CMSgt. David O. Goodman . . . **CMSgt. James W. Garrison**, to SEA, Hq. AFMEA, Randolph AFB, Tex. ■

A Point of Honor

The battle-scarred B-17 circled its base in the UK with wounded aboard and no pilot to land it.

BY JOHN L. FRISBEE
CONTRIBUTING EDITOR

By November 1943, the invasion of Europe was only eight months away, and Allied air forces were still far from winning control of the air over the Continent. Air superiority would be essential to the success of the planned Normandy landings. But the strength of the Luftwaffe fighter force was, if anything, increasing.

Lt. Gen. Carl "Tooney" Spaatz, commander of US Strategic Air Forces in Europe, knew that a sustained, all-out attack on Nazi Germany's aircraft industry must be launched—and quickly. At last, after an agonizingly slow buildup, he had the bombers to do the job and enough long-range fighters to escort them to their targets.

A strategic bombing campaign, which was code-named Argument, was worked out in meticulous detail by the operations staffs of Spaatz's headquarters, the Eighth Air Force, VIII Fighter Command, and Ninth Air Force, which provided additional fighters. Spaatz also needed a week of weather good enough for visual bombing if those small targets were to be hit. That was a long time in coming.

Finally, after several postponements due to bad weather, Argument got under way on February 20, 1944—the start of the Big Week that was to break the back of the Luftwaffe. Before dawn on that day, more than 1,000 heavy bombers escorted by some 900 US and RAF fighters climbed through a heavy overcast and icing to attack aircraft factories in eastern Germany and Poland. It was the largest Eighth Air Force bombing raid up to that time.

The 351st Bombardment Group,

based at Polebrook in the UK, was assigned a target in the heavily defended Leipzig area, about 100 miles southwest of Berlin. This was going to be a long, tough mission, especially for 2d Lt. Walter E. Truemper, a young navigator, and engineer Sgt. Archibald Mathies, members of a 351st crew and both on their second mission.

In a running battle near the target, the 351st was attacked by a squadron of Luftwaffe fighters. The B-17 crewed by Truemper and Mathies took direct hits in the cockpit that killed the copilot and left the pilot bleeding and unconscious. As the B-17 fell, out of control, crew members dragged the copilot's body out of the right seat. Lieutenant Truemper, with no experience as a pilot, took over the controls and pulled the bomber out of its dive. Although the cockpit was badly smashed and some of the instruments shot out, he managed, with Sergeant Mathies's help, to fly back to his base at Polebrook, contact the control tower, and describe the condition of the plane and crew.

Truemper reported that he and Sergeant Mathies would try to land the plane after other crew members had bailed out. The group commander, Col. Eugene Romig, and his Operations Officer, Col. Robert W. Burns, checked the condition of the plane and judged that it could

not be landed by an untrained pilot. Truemper was told to put the unconscious pilot in a chute and drop him out of the plane. He replied that the pilot couldn't be moved and that he and Mathies would not abandon the wounded man. Under these circumstances, they were reluctantly cleared to attempt a landing.

Colonel Burns, now a retired major general, recalls what happened as he and Colonel Romig flew alongside the damaged bomber, its cockpit windows blackened and its windshield shattered. Two men with no pilot experience had only a slim chance of landing the crippled plane. Nevertheless, the navigator and engineer were determined to save the life of their pilot, and with luck perhaps they could.

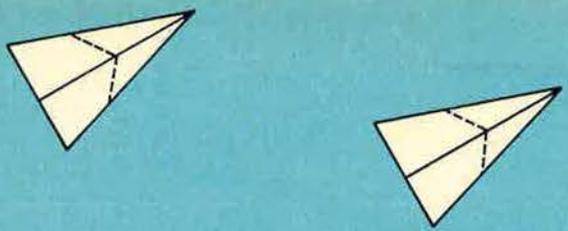
Truemper was instructed to follow Burns and Romig, who would lead them to a landing on the runway. Because of inexperience, battle damage, or both, Truemper wasn't able to slow the B-17 enough to stay with the lead plane or to get his bomber on the ground. Climbing back to traffic altitude, they again attempted a landing, without success.

The stricken B-17's two-man crew decided they could not land on the runway, but might get down safely with gear retracted in an open field near the base. About forty-five minutes after arriving at Polebrook, they came in over the field, cut the engines, touched down, and slid straight ahead on the plane's belly. It looked as though they had won their gamble. Then the plane hit an obstruction and disintegrated. There were no survivors.

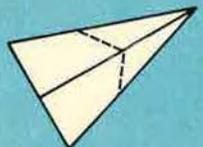
Lt. Walter Truemper and Sgt. Archibald Mathies could have abandoned the critically wounded pilot and lived, but as courageous and honorable men, they saw no alternative to their desperate and almost successful attempt to save his life. Both men were awarded the Medal of Honor posthumously for their gallantry on that bleak February day in 1944. ■



Sgt. Archibald Mathies (left) and Lt. Walter Truemper died trying to bring their critically wounded pilot back to their base in Britain.



**Special Note—
For your planning
... and your
calendar**



Two more Air Force Association Major National Symposia coming up in 1985...

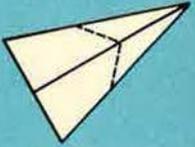
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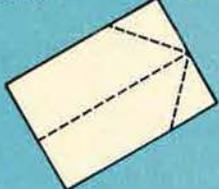


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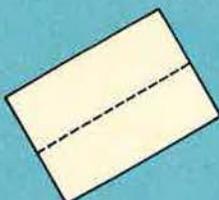
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January 30–31



The AFA Nominees for 1985-86

BY DAVID C. NOERR

At a meeting on May 23 in Colorado Springs, Colo., the Air Force Association Nominating Committee selected a slate of candidates for the four national officer positions and the eighteen elective positions on the Board of Directors that will be presented to the delegates at the National Convention in Washington, D. C., on September 17. The Nominating Committee consists of the five most recent past National Presidents, the twelve National Vice Presidents, and one representative from each of the twelve regions.

Nominated for his second term as National President of the Air Force Association was **Martin H. Harris** of Winter Park, Fla. Presently an aerospace industry executive, he received his Bachelor of Aeronautical Engineering degree from New York University in 1953. Mr. Harris later earned his Master of Science degree in Systems Management from the University of Southern California. Having previously served on active duty with the Air Force, he is now retired from the Air Force Reserve.

Mr. Harris is active in community af-

fairs and holds memberships in the American Management Society, the American Helicopter Society, the Army Aviation Association of America, and the Retired Officers Association. He served as National Vice President of the American Defense Preparedness Association.

Mr. Harris was Chairman of the first AFA/SAC Strategic Requirements Symposium in 1971 and was AFA's National Secretary and Chairman of AFA's Resolution Committee for four years. He has also served AFA as State President, Chapter President, National Vice President (Southeast Region), and Organizational Advisory Council member. Currently, he serves as National President, a permanent member of the Board of Directors, Chairman of the Executive Committee, and a trustee of the Aerospace Education Foundation. He received AFA's Man of the Year Award in 1972 and is a Life Member of AFA.

Edward A. Stearn of Redlands, Calif., was nominated for the office of Chairman of the Board. An aerospace industry executive, he is an alumnus of the University of Pennsylvania and served in the US Army during World War II.

Mr. Stearn's numerous civic activities include service as the President of Scholarships for Children of American Military Personnel and Chairman of the Advisory Committee of the AFA/Bob Hope Charity Golf Tournament. He is also active in the Air Force Museum



Martin H. Harris



Edward A. Stearn

Foundation, Inc., is a trustee of the Air Force Museum of the West, and is involved with local units of the Association of the United States Army, the Navy League, and the Air Force Sergeants Association. His volunteer work includes service with the Arrowhead United Way, the YMCA, and the American Institute of Aeronautics and Astronautics. He is a member of both the Los Angeles Area and San Bernardino Area Chambers of Commerce.

Mr. Stearn is a permanent member of AFA's Board of Directors and is currently a member of the Executive Committee and has also served AFA as National Vice President (Far West Region), State President, and Chapter President. In addition, he is a trustee of the Aerospace Education Foundation. He received AFA's Man of the Year Award in 1977 and is a Life Member of AFA.

A. A. "Bud" West of Hayes, Va., was nominated for the office of National Secretary. A retired aerospace executive, he received his Bachelor of Science degree from MIT in 1947 and did graduate study at MIT's Sloans School of Industrial Management. Having served on active duty as a combat pilot in World War II and as a research and development staff officer in the Korean War, he retired from the Air Force Reserve in 1974 with the rank of colonel.

Mr. West has been active in numerous civic and professional organizations, having served as president of the Virginia Peninsula Chamber of Commerce

and National President of the 57th Bomb Wing Association. He holds membership in the Retired Officers Association, the American Helicopter Society, and the Daedalian Society.

In addition to his current service as permanent National Director of the Association, Mr. West is a member of the Finance Committee and a trustee of the Aerospace Education Foundation. He has also held the elective offices of National Vice President (Central East Region), State President, and Chapter President and has served as a member of the Executive Committee, Constitution Committee, and Scientific Advisory Committee. Mr. West is an AFA Life Member.

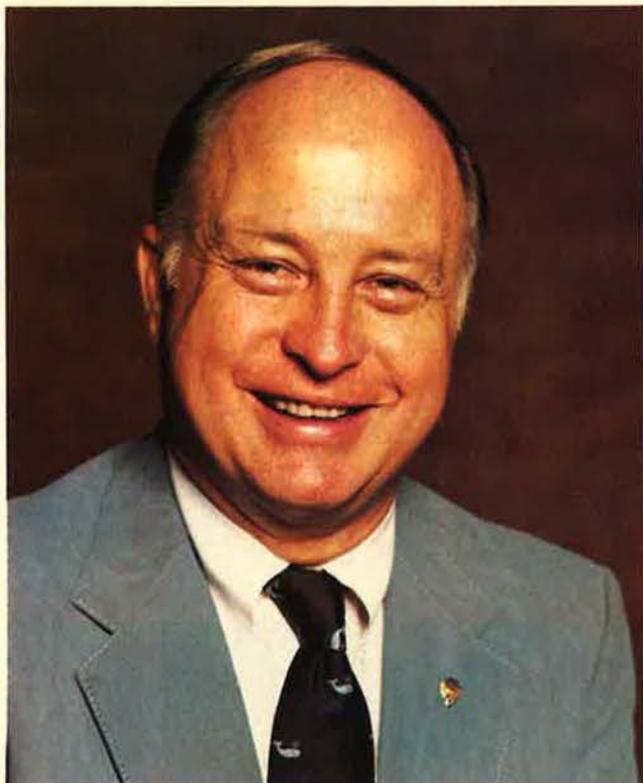
Nominated for his fifth term as National Treasurer was **George H. Chabbott** of Dover, Del. He is a management consultant and real estate counselor. He served in the Air Force for twenty-three years, retiring as a colonel in 1973. He participated in fifty combat missions flying B-26s in Korea and flew 100 combat missions as a forward air controller in the Vietnam War. A graduate of Utah State University, he attended senior-level finance courses at the Columbia School of Bank Administration and Management and has been awarded the designation of Certified Commercial Investment Member (CCIM) by the National Real Estate Marketing Institute.

In addition to his current service as National Treasurer, Mr. Chabbott is

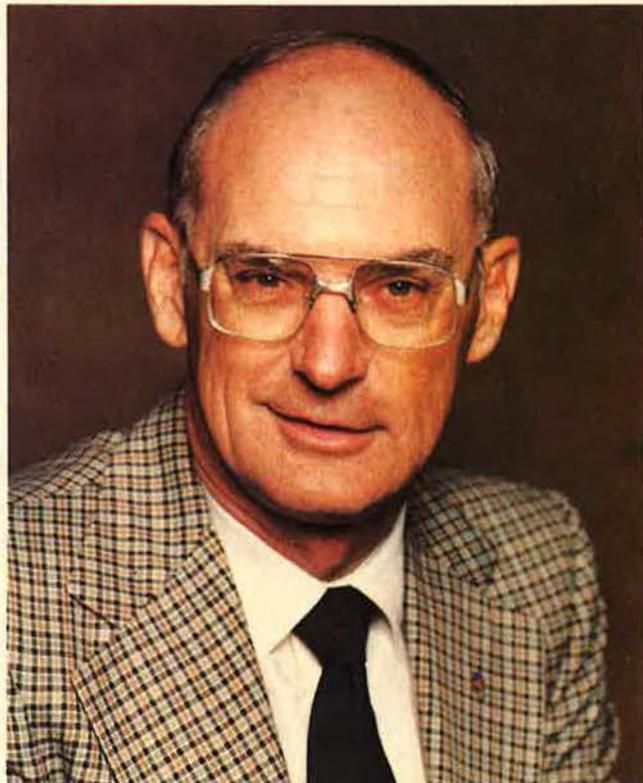
Chairman of the Finance Committee and a member of the Executive Committee. He also has held the elective offices of National Director, National Vice President (Central East Region), and State President. Mr. Chabbott is an AFA Life Member.

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, David L. Blankenship, John G. Brosky, Daniel F. Callahan, Earl D. Clark, Jr., Edward P. Curtis, James H. Doolittle, George M. Douglas, Joe Foss, James P. Grazioso, Jack B. Gross, George D. Hardy, Alexander E. Harris, 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, J. P. McConnell, J. B. Montgomery, Edward T. Nedder, J. Gilbert Nettleton, Jr., Jack C. Price, Julian B. Rosenthal, Peter J. Schenk, Joe L. Shosid, C. R. Smith, William W. Spruance, Thos. F. Stack, Edward A. Stearn, James H. Straubel, Harold C. Stuart, James M. Trail, A. A. West, and Sherman W. Wilkins.

The nineteen people whose photographs appear on the following page are nominees for the eighteen elected Directorships for the coming year. Asterisks indicate incumbent National Directors.



A. A. West



George H. Chabbott

***Richard H. Becker**, Oak Brook, Ill. Retired senior account executive. Former State President and Chapter President. Current National Director, national committee member, and Advisory Council member for the Aerospace Education Foundation. Life Member.

Robert L. Carr, Pittsburgh, Pa. Real estate agent. Former National Director, National Vice President (Northeast Region), and State and Chapter President. Current Chapter President. Life Member.

***R. L. Devoucoux**, Portsmouth, N. H. Stockbroker. Former National Vice President (New England Region), national committee member, and State and Chapter President. Current National Director and national committee member. Life Member.

***Jon R. Donnelly**, Richmond, Va. Editor. Former Under-40 National Director, National Vice President (South Central Region), national committee member, and State and Chapter President. Current National Director, national committee chairman, and AEF trustee. Life Member.

***Joseph R. Falcone**, Rockville, Conn. Industry administrator. Former National Vice President (New England Region), national committee member, and State and Chapter President. Current National Director. Life Member.

rent National Director. Life Member.

***E. F. Faust**, San Antonio, Tex. Bank executive. Former National Vice President (Southwest Region), State President, and National Trustee of the Arnold Air Society. Current National Director, national committee member, and Chapter President. Life Member.

***Thomas J. Hanlon**, Buffalo, N. Y. Industry executive. Former National Vice President (Northeast Region), national committee member, and State President. Current National Director and national committee member. Life Member.

***H. B. Henderson**, Seaford, Va. Aerospace industry executive. Former national committee member, National Vice President (Central East Region), and State and Chapter President. Current National Director and national committee member. Life Member.

***Francis L. Jones**, Wichita Falls, Tex. Property manager. Former National Vice President (Southwest Region), national committee member, and Chapter President. Current National Director. Life Member.

Karen M. Kyriltz, Golden, Colo. Telephone company executive and Air National Guard officer. Former State President, Under-40 Director, and JOAC representative. Current National Vice President (Rocky Mountain Region)

and national committee member. Life Member.

Jan M. Laitos, Rapid City, S. D. Corporate business consultant. Former State President and national committee member. Current Chapter Officer, National Vice President (North Central Region), and national committee member. Life Member.

***Frank M. Lugo**, Mobile, Ala. Educator. Former National Vice President (South Central Region), AEF trustee, and State and Chapter President. Current National Director, national committee member, and member of the Aerospace Education Foundation Advisory Council. Life Member.

William V. McBride, San Antonio, Tex. Chamber of Commerce executive. Former USAF Vice Chief of Staff, National Director, and national committee member. Current national committee member and AEF trustee. Life Member.

***James M. McCoy**, Bellevue, Neb. Insurance executive. Former Chief Master Sergeant of the Air Force. Former national committee member. Current National Director, national committee chairman, and national committee member. Life Member.

***Edward J. Monaghan**, Anchorage, Alaska. Flight school instructor/president. Former National Vice President (Northwest Region) and State and Chapter

President. Current National Director and national committee member.

***William C. Rapp**, Buffalo, N. Y. Telephone company executive. Former National Vice President (Northeast Region), national committee member, and State and Chapter President. Current National Director and Aerospace Education Foundation trustee. Life Member.

Mary Ann Seibel, St. Louis, Mo. Administration officer. Former Under-40 Director and Chapter President. Current Under-40 Director, national committee member, and Chapter President. Life Member.

***Howard C. Strand**, Marshall, Mich. Retired Air National Guard Commander. Former national committee member, State and Chapter President, AEF Advisory Council member, and National Vice President (Great Lakes Region). Current National Director and national committee member. Life Member.

***Herbert M. West**, Tallahassee, Fla. Retired environmental engineer consultant. Former National Vice President (Southeast Region), National Director, national committee member, State Treasurer, and State and Chapter President. Current National Director and national committee member.

Nominees for AFA's Board of Directors



Becker



Carr



Devoucoux



Donnelly



Falcone



Faust



Hanlon



Henderson



Jones



Kyriltz



Laitos



Lugo



McBride



McCoy



Monaghan



Rapp



Seibel



Strand



West



Air Force Association's Gathering of Eagles—1986

Las Vegas Convention Center
April 27–May 1, 1986

- *The Confederate Air Force*
 - *Magnificent Honors Night Banquet*
 - *The USAF "Thunderbirds"*
 - *"Live" USAF Tactical Capabilities Exercise*
 - *Exciting Aerospace Exhibits*
 - *Professional Symposia*
 - *Educational Workshop*
 - *Gala Stage Show*
-

Registration Form



AFA's Gathering of Eagles 1986
Las Vegas, Nevada, April 27, 1986–May 1, 1986

Package #1:

(All activities including Honors Banquet—limited to first 3,500 registrants)

AFA Member/Patron
AFA Spouse/Dependent

Non-Member

Postmark Date
Prior to
Nov. 1, 1985

- \$195
- \$195
- \$195
- \$195
- \$225
- \$225

Postmark Date
Nov. 1, 1985 to
February 28, 1986

- \$205
- \$205
- \$205
- \$205
- \$235
- \$235

Postmark Date
On and After
March 1, 1986
(and on site)

- \$250
- \$250
- \$250
- \$250
- \$250
- \$250

Package #2:

(All activities except Honors Banquet, Wed., April 30)

AFA Member/Patron
AFA Spouse/Dependent

Non-Member

- \$145
- \$145
- \$145
- \$145
- \$175
- \$175

- \$155
- \$155
- \$155
- \$155
- \$185
- \$185

- \$200
- \$200
- \$200
- \$200
- \$200
- \$200

REGISTRATION FORMS MUST BE ACCOMPANIED BY U.S. DOLLAR CHECK OR MONEY ORDER PAYABLE TO "AFA," OR CREDIT CARD AUTHORIZATION

What Name/Title on your Registration Badge(s):

Your Name: _____

Other Registrants: _____

Your Address: _____
Street Address
City State Zip
Country

Phone Number: () _____

Send this form and your payment to:

**"Gathering of Eagles"
Air Force Association
1501 Lee Highway
Arlington, VA 22209-1198**

I enclose \$ _____ U.S. Dollars
(in check or money order only) for
_____ Registration Packages

or:

Charge \$ _____ U.S. Dollars to
my credit card, as indicated:

- AM EX
- VISA
- MasterCard

Account number: _____

Expiration date: _____

Cardholder's signature: _____

AFA's "Gathering" airlines—United and Eastern—are offering discount fares to Las Vegas.

When making airline reservations, be sure to identify yourself with the special AFA account numbers as follows:

United Airlines
Eastern Air Lines

ACCOUNT NUMBER
609-G
EZ4P13

TOLL FREE LINE
(800) 521-4041
(800) 468-7022
or in Florida: (800) 282-0244

Air Force Association's Gathering of Eagles—1986

Las Vegas, Nevada, April 27, 1986–May 1, 1986



APPLICATION FOR HOTEL RESERVATIONS

HOTELS	Single	Double	1-Bedroom Suite	2-Bedroom Suite
MGM Grand	\$77	\$77	\$178-up	\$260-up
Caesar's Palace	70	70	200	300
Flamingo Hilton	60	60	150-up	240-up
Dunes	58	58	180	250
Imperial Palace	60	60	150	210
Maxim	38	38	---	---
Continental	45	45	---	---
Alexis Park (All Suites)	70/90	70/90	---	---
Tropicana	42	42	125	250
Hacienda	55	55	100	165
Marina	42	42	100	150
Sands	55	55	125-up	225-up
Desert Inn	75	75	150-up	225-up
Frontier	54	54	185	225
Riviera	55	55	150	200
Sahara	55	55	90-up	180-up
Landmark	52	52	95-125	---
Las Vegas Hilton	64	64	---	---
Mardi Gras (All Suites)	33	33	---	---

Application for Hotel Reservations

(Please print or type)

Please list three choices of hotels:

1st _____
2nd _____
3rd _____

Type of Accommodation .

___ Single Rate _____
___ Double Rate _____
___ 1 B/R Suite Rate _____
___ 2 B/R Suite Rate _____

Room will be occupied by:

Name _____

Affiliation _____

Street _____

City _____ State _____ Zip _____

Date of Arrival: _____

_____ Hour _____ AM-PM

Date of Departure: _____

_____ Hour _____ AM-PM

Note:

1. The AFA Housing Bureau will handle all reservations. Do not contact hotels. If changes need to be made after receiving confirmation, contact hotel directly.
2. A deposit of one night's lodging must be sent directly to the hotel once you receive confirmation.
3. Room assignments will be made on a first-come, first-served basis.
4. If a block of rooms is required, attach a list of individuals needing rooms to this form with arrival and departure dates and times.

Fill out this form completely and mail to:

"AFA Housing Bureau"
Las Vegas Convention & Visitors Authority
3150 Paradise Road
Las Vegas, Nevada 89109-9096

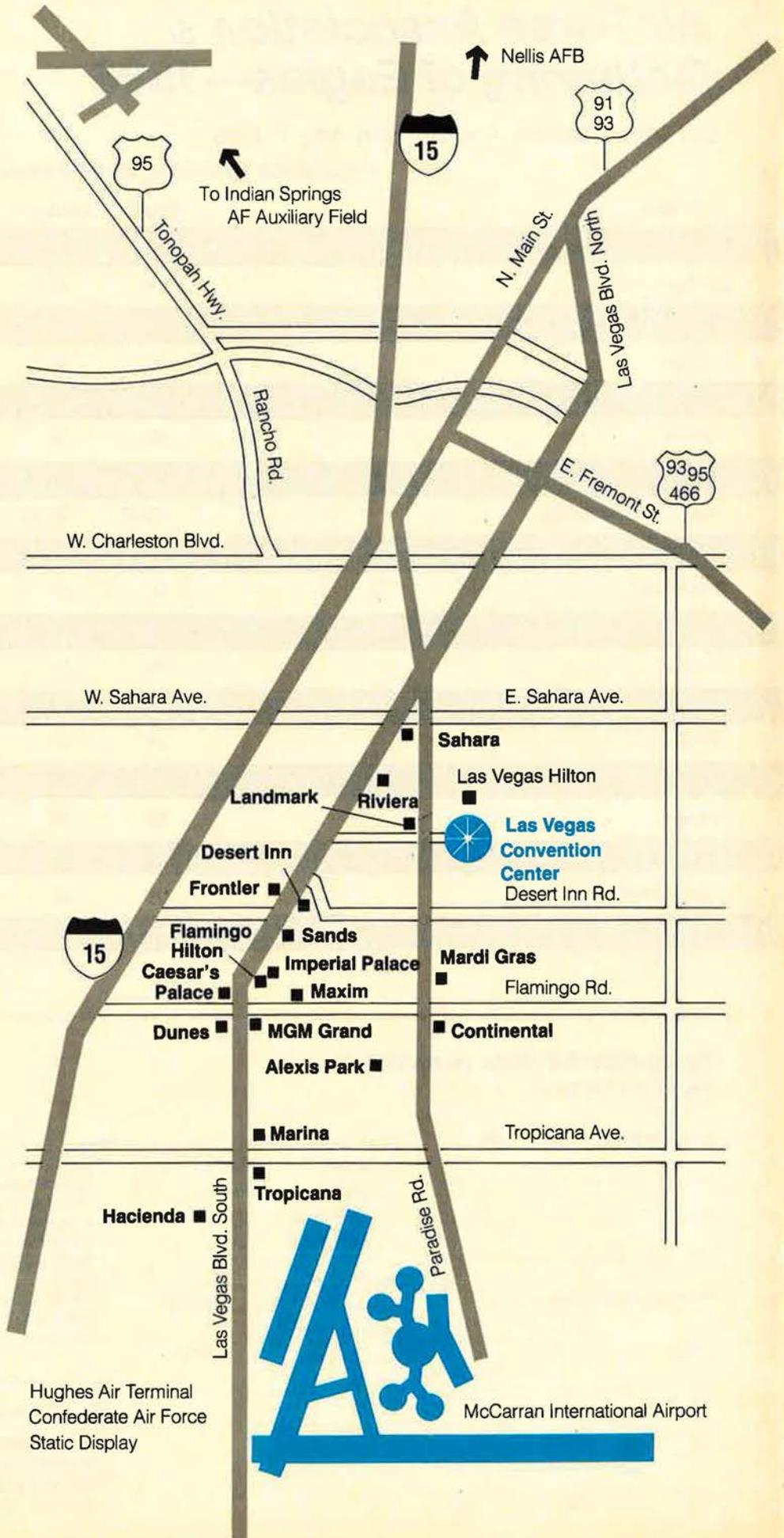
To reserve a room at one of the 19 hotels in which AFA has blocked rooms, fill out the housing form on the previous page and return it to the "AFA Housing Bureau" in Las Vegas at the address indicated on the form. The Housing Bureau will handle all reservations. Do not contact hotels. (However, if you need to make a change after you've received confirmation, contact the hotel directly.) Once you receive confirmation from the hotel, send a deposit of one night's lodging directly to the hotel.

Room assignments are on a first-come, first-served basis.

If a block of rooms is required, attach a list of names with arrival and departure times and dates to the housing form on the previous page.

Remember, this form is not to be mailed to AFA, but must be sent directly to the AFA Housing Bureau in Las Vegas. The cut-off date for reservations is March 25, 1986.

Locations for AFA's "Gathering" hotels are indicated on the map.





By Robin L. Whittle, AFA DIRECTOR OF COMMUNICATIONS

AFA National President Charters Fifteen New Chapters in Europe

"I got to Europe on a Monday. We started chartering on Tuesday, and eight days later, we had fifteen AFA units chartered in USAFE," AFA National President Marty Harris told the Board of Directors at its meeting in Colorado Springs, Colo., in late May.

AFA chapters are now formally established in Germany, the Netherlands, Spain, Greece, Turkey, and Italy, with four or five AFA units yet to be chartered in the United Kingdom.

The success of the whirlwind chartering tour was typified by the organizational dinner at AFA's Hahn Chapter. A large and enthusiastic crowd turned out for the chartering. After President Harris presented his keynote address, discussion centered on the philosophical underpinnings of AFA.

Col. Clifton C. Clark, Jr., Commander of the 50th Tactical Fighter Wing at Hahn AB, and Col. Bruce A. Westbrook, Commander of the 38th Tactical Fighter Wing, helped host the event, and both pledged total support to the new AFA unit. Maj. Gen. Richard Pascoe, Chief of Staff, United States Air Forces in Europe, also attended and reiterated CINC USAFE



While chartering new AFA chapters in Germany, AFA National President Marty Harris visited with Maj. Gen. Richard Pascoe, USAFE Chief of Staff, left, and Gen. Eberhardt Eimler, right, Chief of Staff of the West German Air Force.

Gen. Charles Donnelly's strong support for AFA chapters throughout the command.

In addition to presentation of the charter, the event included the election of officers: Lt. Col. William O'Bar, President; Lt. Col. William Elliot, Vice President for Council Activities; Lt. Col. Jamie Longino, Vice President for Programs; Capt. Terrance Stuart, Secretary; and Capt. (Maj. selectee) Gary Smith, Treasurer. Lt. Col. John

Moore will serve as the Hahn AB membership drive chairman.

Members and guests were entertained by traditional German music performed by the Dickenshied Youth Band. "The solidarity of the greater Hahn military and local communities was evident by the fact that several of the German band members are also related to Air Force members assigned to Hahn," Captain Stuart noted.

A final highlight of the dinner occurred when Colonel Clark presented President Harris a framed etching depicting the narrowest house in Germany.

AFA's foreign chapters differ from those Stateside in structure and philosophy. Active-duty members overseas may hold elective office, and chapter activities focus on the blue-suit community rather than the foreign community in which the base and the AFA unit reside.

Arizona AFA's Tenth Air Force Ball A Great Success

"There may have been a brass ensemble playing at the Phoenix Zoo's black-tie gala, but the big brass were

(Continued on page 118)



Lt. Col. Richard J. Erickson, left, President of AFA's new chapter at Hellenikon AB, Greece, accepts the official charter from AFA President Marty Harris during an April chartering ceremony. The number of overseas AFA chapters is expanding.

Northwest Region Notes

We formed the Northwest Region Executive Committee in October. State and Chapter Presidents, along with other key AFA leaders from Alaska, Idaho, Oregon, Washington, and Montana, constitute the Committee, which met in January to review AFA's challenges and procedures for the coming year.

Community involvement is an action item for Northwest AFA. "Nu-Clear Vision," a nationwide organization headquartered in the East, has organized local cells in the region with the announced intention of declaring local cities, counties, and states as "nuclear-free zones." Ordinances have already been introduced that would make it unlawful to manufacture, store, and transport products used in nuclear-weapons production in some of the region's municipalities. AFA units have the opportunity to make clear to the public the importance of a strong nuclear deterrent capability and the obvious unfavorable economic impact of these ordinances. Local Chambers of Commerce and veterans organizations are proving to be good partners in this endeavor.

Air University's National Security Briefing Team has made several appearances in the Northwest Region, outlining national security issues in our schools, civic clubs, and governmental bodies. This team does an excellent job of detailing the potential threats America must be capable of confronting at any given time. I encourage AFA leaders to make good use of the team's talents.

Initial plans are under way to establish new chapters in Oregon and Montana. The addition of a chapter in Montana is especially important since it would allow formation of another state organization in the Northwest Region.

—*Phillip G. Saxton, National Vice President/Northwest Region.*

Alaska

AFA has two chapters in Alaska that work closely with the nearby Air Force bases. AFA's Anchorage Chapter near Elmendorf AFB published an outstanding book, now in its second printing, on the Air Force and aviation in Alaska. Entitled *Top Cover for America*, the book was authored by John Haile Cloe and the late Maj. Mike Monaghan, son of AFA National Director Ed Monaghan and Anchorage Chapter Treasurer Mary Monaghan. The Fairbanks Midnight Sun Chapter near Eielson AFB hosted the 1985 Alaska state convention in mid-June.

Alaska AFA is led by Michael T. Cook, the Anchorage Chapter is headed by Frank M. Weaver, and the Fairbanks Midnight Sun Chapter is directed by William L. Pair.



Participants in the Northwest Region's Workshop held last January included, from left, Eugene J. Nuss, Tacoma Chapter President; Craig Lindberg, AFA Director of Field Operations; Tacoma Chapter Secretary Margaret Moore; Phil Saxton, National Vice President for the Northwest Region; and Bob Eisenhart, Greater Seattle Chapter President.

Idaho

Stanley I. Anderson leads Idaho AFA, which includes three chapters—Boise Valley Chapter, Donald G. Troyer; Magic Valley Chapter, Twin Falls area, L. Reed Hansen; and Snake River Valley Chapter, near Mountain Home AFB, Chester A. "Soapy" Walborn.

A large crowd turned out for the Snake River Valley Chapter spring dinner meeting on April 19 that was the last official appearance for Gen. Jerome F. O'Malley and his wife, Diane. The next evening they were both killed in an aircraft accident at the Scranton Airport while en route to another speaking engagement.

Montana

Montana does not have a state organization because it has only one chapter—AFA's Big Sky Chapter in the Great Falls area near Malmstrom AFB.

Big Sky Chapter President Ed White says the Chapter presented "Airman, NCO, and Senior NCO of the Year and Quarter" awards at a dinner at the Malmstrom AFB NCO Club in February and cosponsored a luncheon for 300 featuring Maj. Gen. Russell L. Violett, ADTAC, as guest speaker. The Great Falls Chamber of Commerce Military Affairs Committee and the local chapter of the Armed Forces Communications and Electronics Association (AFCEA) also contributed to the luncheon.

Work is proceeding on establishing another AFA Chapter in Bozeman, with the official chartering possibly this summer or fall, Mr. White reports.

Oregon

Oregon State President Zane Harper has arranged to have Aerospace Education Center Roundtable videotapes aired on local-access cable channels several times in the Portland and Vancouver, Wash., viewing areas and has worked out an arrangement with Rogers and Liberty Cable Companies to have Roundtable and AFA videotapes aired in a proposed thirteen-part series.

Oregon AFA has two chapters—Portland, led by Arthur H. Martin, and Eugene, led by Harry Hance. Mr. Hance, in response to a large, vocal, and activist antidefense lobby, formed the "Defense Education Committee of Eugene." The committee sponsors programs in support of a strong national defense posture and publishes an outstanding newsletter.

The success of the Eugene Defense Education Committee encouraged AFA's Portland Chapter to form a similar organization, led by Dr. Clayton Gross, former Portland Chapter and Oregon AFA President and AFA National Vice President for the Northwest Region. The Portland group publishes a newsletter and is tracking such local developments as the "nuclear-free zone" movement.

The Portland Chapter hosted the 1985 state convention, which featured Brig. Gen. Robert R. Rankine, Jr., special assistant for the Strategic Defense Initiative, as speaker. The Chapter also held its tenth Annual Winter Rendezvous with the local Reserve Officers Association. Featured speaker was Gen. B. L. Davis, then CINC

SAC, on SAC's "response to the challenge," said Oregon Communications Director Hal Langerud.

AFA National Vice President Phil Saxton serves as chairman of the Portland Chamber of Commerce Military Affairs Committee.

Washington

Washington AFA is led by David H. Anderson and has four chapters: Central Washington, in the Yakima area, led by Paul C. Payne; Greater Seattle Chapter, led by Robert D. Eisenhart; Spokane Chapter, led by Andrew P. Kelly; and the Tacoma Chapter, led by Eugene J. Nuss.

Last fall, Greater Seattle Chapter officials and, in particular, former Chapter President and current Washington State Communications Director Al Lloyd orchestrated a two-day Soviet threat briefing by Maj. Richard W. Relyea, USAFR, a trial attorney, in Seattle, Tacoma, and Olympia. Major Relyea conducted unclassified briefings before the Jackson School of International Affairs at the University of Washington, Kiwanis Clubs, and several Chamber of Commerce Military Affairs Committees. Classified briefings were provided to Boeing Co. officials. Said Gen. B. L. Davis, CINC SAC, in a letter of thanks to Mr. Lloyd: "That the Soviet threat briefings were so well received has just as much to do with your successful orchestration as it does with the quality of 'our story.'"

Greater Seattle Chapter officials have also sponsored meetings with Col. Norman A. McDaniel, USAF, 3636th CCTW (AT/CC), on his captivity in the "Hanoi Hilton"; Dr. Edith W. Martin, Vice President of Technology Assessment at Boeing, on DoD science and technology programs and America's future; Lt. Col. Timothy Kinnan, Commander, 318th Fighter Interceptor Squadron, McChord AFB, on the F-15; and Col. Richard Uppstrom, Director, Air Force Museum, on Museum plans and Seattle's "Museum of Flight." The Chapter hosted the Washington State AFA Convention, August 2-4, themed to "Fifty Years of Strategic Power."

Spokane Chapter President Andy Kelly reports that the Chapter secured and financed facilities for Fairchild AFB's Base Security team to test-fire its weaponry; purchased uniforms, caps, and scarves for Fairchild's Weapons Loading and Base Security teams and for participants in SAC "bomb comps"; provided prizes for airmen fundraisers and the annual base softball game; donated memorabilia to the base museum; commissioned a mural and presented it to the 3636th Survival School; held several joint meetings with the Spokane Chamber of Commerce Military Affairs Committee; worked with the Greater Seattle Chapter on the highly successful Soviet threat briefings mentioned earlier; sponsored a luncheon for more than 100 local businessmen to assist Fairchild AFB in its "Operation 2000," a concept of Fairchild AFB's future and how local businesses can get involved; established a



AFA's Spokane Chapter in Washington showed its support for nearby Fairchild AFB by financing a firing range for the base security team, pictured above, and by purchasing uniforms, caps, and scarves for the team.

"Blue Ribbon Committee" of local business leaders that has raised \$13,000 in two years for Fairchild; purchased two "traveling trophies" for base intramural athletic programs; contributed \$500 to Fairchild's "Operation Warm Heart," which assists needy enlisted families at Christmas; and contributed to the Officers' Wives Club and the Medical Lake High AFJROTC.

The Tacoma Chapter, led by Eugene J. Nuss, presented \$750 scholarships to two AFROTC cadets from the University of Puget Sound and honored Edward V. Hudson, a charter member, and Jack H. Sandstrom, Chairman, Tacoma Chamber Military Affairs Committee, at its Christmas meeting. The Chapter also held a meeting in April that featured Col. Al Stewart, Direc-

tor of Resource Management, Hq. 47th Air Division (SAC), who spoke on the Soviet Union. The meeting also saw awards to active-duty, cadet, and civilian recipients, a donation to the Payne Field CAP Squadron for flying hours at the annual solo encampment for the Washington CAP wing, and a raffle that brought \$1,578 into the Tacoma Scholarship fund. In addition, the Chapter sponsored sixty civic leaders for briefings, tours, and an orientation flight at McChord AFB on May 4 and joined some 500 aviation enthusiasts to witness the induction of five aeronautical pioneers into the Pathfinders. Those inducted included Adm. James S. Russell, USN, former Vice Chief of Naval Operations and a longtime Tacoma Chapter member.



Col. Richard Uppstrom, USAF Museum Director, second from left, was the featured speaker at a recent Greater Seattle Chapter dinner meeting. Pictured are, from left, David H. Anderson, Washington State President; Colonel Uppstrom; Robert Eisenhart, Greater Seattle Chapter President; and AFA National Secretary Sherman W. Wilkins.

(Continued from page 115)

at the tenth annual Arizona Air Force Association Ball," said Margery Rose-Clapp in her column "High Profile," which appears in the *Arizona Republic*.

The event, which raises funds for Arizona AFROTC and Civil Air Patrol units, was held in the North Ballroom of the Registry Resort in Scottsdale in early May. Before the Ball, a group gathered at the home of Darrow Tully, publisher of the *Arizona Republic* and the *Phoenix Gazette*. Mr. Tully is a lieutenant colonel in the Air Force Reserve, and his son-in-law serves as an Air Force major at Vandenberg AFB, Calif.

The Air Force Academy Band and its "Moods in Blue" singers entertained the some 250 members and guests at the Ball. Music for dancing was performed by the Lynn Roberts Band.

Maj. Gen. Carl G. Schneider, USAF (Ret.), served as Ball coordinator, and Mrs. Patricia Tully and Mrs. Dorri Owens cochaired the Ball committee. Guests included Rep. John McCain (R-Ariz.) and a number of civic and military leaders.

In a humorous highlight of the evening, a Moods in Blue singer picked General Schneider to join him in a musical skit. The Ball Coordinator donned a ten-gallon hat and, to the delight of the crowd, joined the entertainer in a rendition of "Lord, It's Hard to Be Humble."

Richmond Chapter Supports VaANG Run For Special Olympics

On Armed Forces Day, AFA's Richmond, Va., Chapter participated in a charity event that would bring the Chapter great exposure not only among the physically fit but among youth, women, and other active community people as well.

Chapter officials got involved in the Virginia Air National Guard's ten-kilometer (6.2-mile) race, which benefits the Virginia Special Olympics, by paying for the cost of printing the announcements and providing workers to help throughout the race. Chapter officials also sponsored a booth with the Civil Air Patrol, providing information on both organizations to the crowd.

"The idea was for the local AFA chapter to act as a catalyst for the Virginia Air Guard," said AFA National Director Jon Donnelly. "The Guard and its 1,100 members already are involved in a number of community activities, but none was 'high profile' in terms of what it accomplished for the

INTERCOM

community and for enhancing the Guard's image."

The idea of a benefit race had a number of interesting possibilities. Everyone, Mr. Donnelly noted, is concerned with fitness, and a 10-K race is a popular fitness exercise. Having it on Armed Forces Day was an obvious way of attracting attention to the na-



Those attending Arizona State AFA's Tenth Annual Air Force Ball included, from left, Maj. Gen. Carl Schneider, Ball coordinator; Rep. John McCain (R-Ariz.); and Robert Borgmann, former Arizona state president and current Phoenix Sky Harbor Chapter President. See item.

tion's military needs in general and of highlighting the Air Guard in particular.

"We linked the Virginia Air Guard with Virginia Special Olympics because Special Olympics always needs volunteer workers for their sports games. The Guard has those 1,100 folks from throughout the state who can carry home the message and carry on the work in their local communities. And, of course, Special Olympics has a spotless reputation and is an organization that the Air Force family can be proud to associate with," Mr. Donnelly said.

Race planners decided to start the race at the Virginia Air Guard base at Byrd International Airport, thus providing a scenic view of the Guard's flight line and its A-7D aircraft. The route provided good "speed time" for competitive runners and scenic diversity for everyone. Other aviation enthusiasts were brought in to help sponsor the event, including the Airport Commission and Eastern Air Lines, which sponsored the grand prize—two roundtrip tickets to any of the 131 cities served by Eastern.

The Guard decided to hold the race on a drill weekend when full- and part-time Guardsmen would be on base. In addition, the VaANG took the opportunity to hold a small-scale open house for friends and relatives who turned out to watch. The Guard encouraged runners to find sponsors to pledge money for each kilometer the participant ran. Funds were donated to the Special Olympics.

"In short, all parties benefited from this joint project," Mr. Donnelly said. Air Guard volunteers carry the main weight in setting up facilities and conducting the race, and they do so with enthusiasm and professionalism, Mr. Donnelly noted.

"Virginia Special Olympics benefits from the funds it receives, the public awareness the race generates, and the potential for greater public involvement and understanding.

"Other sponsoring groups get the satisfaction of helping to successfully carry out a first-rate operation, and AFA does what it should be doing—sparking public awareness about one aspect of our national defense structure while gaining visibility with a younger generation," Mr. Donnelly said.

Antelope Valley Chapter Holds Its Annual Awards Banquet Dinner

AFA's Antelope Valley Chapter in the Lancaster, Calif., area sponsored its annual awards banquet in March at the Antelope Valley Convention Center in Lancaster, reports Chapter President Dick Hallion.

More than 300 members and guests heard banquet speaker Bruce Herschensohn, KABC-TV's "Eyewitness News" political commentator, deliver "a scathing indictment of So-

viet foreign policy goals since the Communists took control in 1917," Mr. Hallion said. He quoted the former White House advisor as stating that American policy "should be not one cent for defense if there is no potential threat, and not one cent for anything but defense if there is such a threat, even if it takes every cent to ensure our preservation as a country."

During the evening, eleven outstanding military and civilian honorees received recognition for their contributions to the Air Force Flight Test Center at Edwards AFB and to national defense preparedness.

Those honored included Col. Paul H. Kennard, the Col. Frank M. Fleming Outstanding Reservist Award; 1st Lt. Kenneth E. Birk, Outstanding AF-FTC Officer; Roger C. Crane, Outstanding AFFTC Civilian; MSgt. Dean H. Brakel, Outstanding AFFTC Senior NCO; TSgt. John W. McDaniel, Outstanding AFFTC Career NCO; SrA. Kevin J. O'Rourke, Outstanding AF-FTC First-Term Airman; Capt. Gary A. Bare, Outstanding Tenant Unit Officer; Wayne M. Pritz, Outstanding Tenant Unit Civilian; MSgt. Henry J. Weathers, Outstanding Tenant Unit Senior NCO; MSgt. Dieter Freundner, Outstanding Tenant Unit Career NCO; and A1C Kurt D. Emans, Outstanding Tenant Unit First-Term Airman.

On the Scene in AFA's Busy and Active Grass Roots

Missouri AFA and the Greater Seattle Chapter in Washington are the latest units to publish newsletters, thanks to the work of Missouri State President **Orville R. Blair** and Greater Seattle newsletter editor **Maurice E. Marler**. Both newsletters contain solid news and are very well done . . . "T-bird pride" is how **Virginia Biggins** described it in the Newport News, Va., *Times-Herald*. The occasion was the Langley Chapter's cookout in honor of the ground crews who keep the Thunderbirds flying. Said **TSgt. Cheryl Pascal**, a twenty-six-year-old environmental systems technician for the F-16, "It's difficult to go on to other jobs after serving as a member of the elite Thunderbird squadron." The support personnel are handpicked for their jobs with the team, vying with thousands of others in the selection process.

The entire cadet wing of the Air Force Academy, several Air Force generals, and an F-15 Eagle starred in a "spectacular tribute to retired Air Force **Gen. Theodore R. Milton**," reported the Colorado Springs *Sun*. Some 2,000 onlookers crowded onto

the bleachers at the Cadet Parade Field to watch as General Milton, a Contributing Editor of *AIR FORCE Magazine* and a columnist for several major newspapers, including the *Sun*, received the Thomas D. White National Defense Award. "I never expected anything like this to happen. This is a wonderful thing to happen to an old man—to have your service give you such a present," General Milton said. Last year's recipient was AFA Executive Director **Russell E. Dougherty**.

Henry Coffin III, a member of the Brandywine Chapter in Pennsylvania and former National Commander of the American Balloon Corps Veterans, has a copy of "Liberation Bulletin," a newsletter hastily put together by the 3,785 POWs interned at Santo Tomas University in Manila when the Japanese torched the town and fled during World War II. Mr. Coffin was assigned at the time to the Troop Carrier Command (now a part of Military Airlift Command). Mr. Coffin reminisced about those days of liberation: "Columns of smoke curled high into the air above Manila, and there were still skirmishes between Japanese and US troops in various sections of Manila. The 1st Cavalry knocked down utility poles along the main highway north of Manila to make enough width for our wingspan so we could land on the highway adjacent to Santo Tomas," Mr. Coffin said. In another episode, "We learned about the 2,146 POWs being held in a POW camp at Los Banos in southeast Luzon and rescued them with a parachute jump." The Japanese commander there "was very methodical and strict and insisted that the POWs

exercise every morning at the same time. Troops guarding the POWs would march them out to a stretch of open ground, stack their arms, and do exercises with the POWs," Mr. Coffin reported. "One morning, at exercise time, our troop carriers flew in and dropped paratroops between where the guards had stacked their rifles and the exercise area." Mr. Coffin recently had "a sort of reunion" in Philadelphia with one of the paratroopers who had jumped into the Los Banos POW camp to liberate the POWs. The former paratrooper was attending the AFROTC graduation exercises at St. Joseph's College in Philadelphia because "his son was one of the graduating students," Mr. Coffin said.

William Feder, Sr., received the "People Who Care" award from the community of Pueblo, Colo., and the "Outstanding AFA Member for 1984 Award" from AFA's Pueblo Chapter for his work as director of the Fred Weisbrod Transportation Museum at Pueblo Memorial Airport. Mr. Feder has been involved in the restoration of twenty-two World War II and postwar aircraft . . . Reno Chapter members toured the SR-71 and U-2 static displays, the altitude chamber, the Pave Paws radar, and the museum at Beale AFB, Calif., as part of a field trip in July organized by **Tony Martinez** . . . **Pat Schittulli**, deputy director of civilian personnel at Hq. USAF, told AFA's Silver and Gold Chapter in Colorado to expect elimination of the FY '86 COLA and a pay freeze in FY '86, for both are likely. However, a move to gauge retirement pay on a "high five" basis is not likely to prove successful, and un-



AIR FORCE Magazine Contributing Editor **Gen. T. R. Milton, USAF (Ret.)**, received the **Thomas D. White National Defense Award** in ceremonies at the Air Force Academy in Colorado Springs, Colo., in May. Some 2,000 spectators attended the ceremonies.



AFA State Contacts

Following each state name, in parentheses, are the names of the communities 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 appropriate contact.

ALABAMA (Auburn, Birmingham, Huntsville, Mobile, Montgomery, Selma): **Jim Patterson**, 802 Brickell Rd., N.W., Huntsville, Ala. 35805 (phone 205-837-5087).

ALASKA (Anchorage, Fairbanks): **Michael T. Cook**, P. O. Box 25, Fairbanks, Alaska 99707 (phone 907-456-7762).

ARIZONA (Green Valley, Phoenix, Sedona, Sun City, Tucson): **Meryll Frost**, 7426 E. Random Ridge Drive, Tucson, Ariz. 85710 (phone 602-298-1580).

ARKANSAS (Blytheville, Fayetteville, Fort Smith, Little Rock): **Aaron E. Dickerson**, 710 S. 12th, Rogers, Ark. 72756 (phone 501-636-7460).

CALIFORNIA (Apple Valley, Edwards, Fairfield, Fresno, Hermosa Beach, Los Angeles, Merced, Monterey, Novato, Orange County, Pasadena, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, San Jose, Santa Barbara, Santa Monica, Sunnyvale, Vandenberg AFB, Yuba City): **David Graham**, 29611 Vista Plaza Drive, Laguna Niguel, Calif. 92677 (phone 714-495-4622).

COLORADO (Boulder, Colorado Springs, Denver, Fort Collins, Grand Junction, Greeley, Littleton, Pueblo, Waterton): **Thomas W. Ratterree**, P. O. Box 26029, Colorado Springs, Colo. 80936 (phone 303-599-0143).

CONNECTICUT (East Hartford, Middletown, North Haven, Storrs, Stratford, Westport, Windsor Locks): **Raymond E. Choquette**, 16 Tonica Springs Trail, Manchester, Conn. 06040 (phone 203-646-4818).

DELAWARE (Dover, Wilmington): **Joseph H. Allen, Jr.**, 31 Muirfield Court, Dover, Del. 19901 (phone 302-674-3400).

DISTRICT OF COLUMBIA (Washington, D. C.): **Howard W. Cannon**, 1501 Lee Highway, Arlington, Va. 22209-1198 (phone 703-247-5820).

FLORIDA (Avon Park, Brandon, Cape Coral, Daytona Beach, Fort Walton Beach, Gainesville, Homestead, Jacksonville, Leesburg, Naples, Neptune Beach, New Port Richey, Orlando, Panama City, Patrick AFB, Redington Beach, Sarasota, Tallahassee, Tampa, West Palm Beach, Winter Haven): **H. Lake Hamrick**, 206 Sotir Ave., N. W., Fort Walton Beach, Fla. 32548 (phone 904-862-5067).

GEORGIA (Athens, Atlanta, Columbus, Rome, Savannah, St. Simons Island, Valdosta, Warner Robins): **Wilbur H. Keck**, 116 Stillwood Drive, Warner Robins, Ga. 31093 (phone 912-922-0655).

GUAM (Agana): **Joe Gyulavics**, P. O. Box 21543, Guam 96921 (phone 671-734-2369).

HAWAII (Honolulu): **Don J. Daley**, P. O. Box 3200, Honolulu, Hawaii 96847 (phone 808-525-6296).

IDAHO (Boise, Mountain Home, Twin Falls): **Stanley I. Anderson**, Box 45, Gowen Field, Boise, Idaho 83707 (phone 208-362-9360).

ILLINOIS (Belleville, Champaign, Chicago, Elmhurst, Peoria, Springfield-Decatur): **Kyle Robeson**, P. O. Box 697, Champaign, Ill. 61820 (phone 217-352-3936).

INDIANA (Bloomfield, Fort Wayne, Indianapolis, Lafayette, Logansport, Marion, Mentone, South Bend): **John Kagel**, 1029 Riverside Drive, South Bend, Ind. 46616 (phone 219-234-8855).

IOWA (Des Moines, Sioux City): **Carl B. Zimmerman**, 608 Waterloo Bldg., Waterloo, Iowa 50701 (phone 319-232-2650).

KANSAS (Garden City, Topeka, Wichita): **Cletus J. Pottebaum**, 6503 E. Murdock, Wichita, Kan. 67206 (phone 316-683-3963).

KENTUCKY (Lexington, Louisville): **Jo Brendel**, 726 Fairhill Drive, Louisville, Ky. 40207 (phone 502-897-7647).

LOUISIANA (Alexandria, Baton Rouge, Bossier City, Monroe, New Orleans, Shreveport): **James P. LeBlanc**, 3645 Monroe St., Mandeville, La. 70448 (phone 504-626-4516).

MAINE (Bangor, Limestone, N. Berwick): **Alban E. Cyr, Sr.**, P. O. Box 160, Caribou, Me. 04736 (phone 207-496-3331).

MARYLAND (Andrews AFB area, Baltimore, Rockville): **Francis R. O'Clair**, 6604 Groveton Drive, Clinton, Md. 20735 (phone 301-372-6186).

MASSACHUSETTS (Bedford, Boston, Falmouth, Florence, Hanscom AFB, Lexington, Taunton, West Springfield, Worcester): **John F. White**, 49 West Eagle St., East Boston, Mass. 02128 (phone 617-567-1592).

MICHIGAN (Alpena, Battle Creek, Detroit, Kalamazoo, Marquette, Mount Clemens, Oscoda, Petoskey, Southfield): **Robert J. Schaeztl**, 42247 Trotwood Court, Canton, Mich. 48187 (phone 313-552-3280).

MINNESOTA (Duluth, Minneapolis-St. Paul): **Paul G. Markgraf**, 2101 E. 3d St., St. Paul, Minn. 55119 (phone 612-735-4411).

MISSISSIPPI (Biloxi, Columbus, Jackson): **R. E. Smith**, Route 3, Box 282, Columbus, Miss. 39701 (phone 601-327-4422).

MISSOURI (Kansas City, Knob Noster, Springfield, St. Louis): **Orville R.**

Blair, 1504 Golden Drive, St. Louis, Mo. 63137 (phone 314-867-0285).

MONTANA (Great Falls): **Ed White**, 2333 6th Ave., South, Great Falls, Mont. 59405 (phone 406-453-2054).

NEBRASKA (Lincoln, Omaha): **Donald D. Adams**, First Tier Inc., 17th & Farnam, Omaha, Neb. 68102 (phone: 402-348-7905).

NEVADA (Las Vegas, Reno): **Vern Frye**, 4665 Rio Encantado Lane, Reno, Nev. 89502 (phone 702-825-1125).

NEW HAMPSHIRE (Manchester, Pease AFB): **Robert N. McChesney**, Scruton Pond Rd., Barrington, N. H. 03825 (phone 603-664-5090).

NEW JERSEY (Andover, Atlantic City, Belleville, Camden, Chatham, Cherry Hill, E. Rutherford, Forked River, Fort Monmouth, Jersey City, McGuire AFB, Middlesex County, Newark, Old Bridge, Trenton, Wallington, West Orange, Whitehouse Station): **Gilbert Freeman**, 42 Weirimus Lane, Hillsdale, N. J. 07642 (phone 201-666-5379).

NEW MEXICO (Alamogordo, Albuquerque, Clovis): **Louie T. Evers**, P. O. Box 1946, Clovis, N. M. 88101 (phone 505-762-1798).

NEW YORK (Albany, Brooklyn, Buffalo, Chautauqua, Garden City, Hempstead, Hudson Valley, New York City, Niagara Falls, Plattsburgh, Queens, Rochester, Rome/Utica, Southern Tier, Staten Island, Suffolk County, Syosset, Syracuse, Westchester): **Robert H. Root**, 57 Wynnwood Ave., Tonawanda, N. Y. 14150 (phone 716-692-2100).

NORTH CAROLINA (Asheville, Charlotte, Fayetteville, Goldsboro, Greensboro, Kitty Hawk, Raleigh): **Bobby G. Suggs**, 501 Bloomfield Drive, Fayetteville, N. C. 28301 (phone 919-323-5281).

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OREGON (Eugene, Portland): **Zane R. Harper**, 5360 SW Dover Lane, Portland, Ore. 97225 (phone 503-244-4561).

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town, Lewistown, Mon-Valley, Philadelphia, Pittsburgh, Scranton, State College, Willow Grove, York): **Jack B. Flaig**, P. O. Box 375, Lemont, Pa. 16851 (phone 814-238-4212).

PUERTO RICO (San Juan): **Fred Brown**, 1991 Jose F. Diaz, Rio Piedras, P. R. 00928 (phone 809-790-5288).

RHODE ISLAND (Warwick): **King Odell**, 413 Atlantic Ave., Warwick, R. I. 02888 (phone 401-941-5472).

SOUTH CAROLINA (Charleston, Clemson, Columbia, Myrtle Beach, Sumter): **James Catington**, 2122 Gin Branch Rd., Sumter, S. C. 29154 (phone 803-481-2634).

SOUTH DAKOTA (Rapid City, Sioux Falls): **John E. Kittelson**, 141 N. Main, Suite 308, Sioux Falls, S. D. 57102 (phone 605-336-2498).

TENNESSEE (Chattanooga, Knoxville, Memphis, Nashville, Tri-Cities Area, Tullahoma): **Jack K. Westbrook**, P. O. Box 1801, Knoxville, Tenn. 37901 (phone 615-523-6000).

TEXAS (Abilene, Amarillo, Austin, Big Spring, College Station, Commerce, Corpus Christi, Dallas, Del Rio, Denton, El Paso, Fort Worth, Harlingen, Houston, Kerrville, Laredo, Lubbock, San Angelo, San Antonio, Waco, Wichita Falls): **Bryan L. Murphy, Jr.**, General Dynamics, P. O. Box 748 MZ 1221, Fort Worth, Tex. 76101 (phone 817-429-0693).

UTAH (Brigham City, Clearfield, Ogden, Provo, Salt Lake City): **Jack Certain**, 2369 N. 2600 East, Layton, Utah 84041 (phone 801-777-7235).

VERMONT (Burlington): **John D. Navin**, 6 Belwood Ave., Chocoma, Vt. 05446 (phone 802-863-1510).

VIRGINIA (Arlington, Danville, Harrisonburg, Langley AFB, Lynchburg, Norfolk, Petersburg, Richmond, Roanoke): **C. W. Scott**, 7 Bray Wood, Williamsburg, Va. 23185 (phone 703-553-3822).

WASHINGTON (Bellingham, Seattle, Spokane, Tacoma, Yakima): **David Anderson**, 915 E. Lake Sammamish Shore Lane, SE, Issaquah, Wash. 98027 (phone 206-392-5052).

WEST VIRGINIA (Huntington): **David Bush**, 2317 S. Walnut Drive, St. Albans, W. Va. 25177 (phone 304-722-3583).

WISCONSIN (Madison, Milwaukee): **Charles Marotske**, 7945 S. Verdev Drive, Oak Creek, Wis. 53154 (phone 414-762-4383).

WYOMING (Cheyenne): **William Helms**, 808 Shoshoni, Cheyenne, Wyo. 82009 (phone 307-638-3114).

used sick leave will continue to be credited, **Bob Buckley** reported in the *Mirror*, the Silver and Gold Chapter newsletter edited by **Ted Stell**.

Tennessee Ernie Ford's down-home brand of entertainment was featured at the second annual Military Ball, sponsored by AFA's Austin Chapter, the Navy League, the Marine Corps League, and the Texas National Guard at the La Mansion Hotel on May 11. The Ball garnered excellent publicity in the *Austin American-Statesman*, with a circulation of 180,000 . . . AFA's Florida Highlands Chapter paid tribute to the twenty-three Royal Air Force cadets who were killed during training in the Arcadia area during World War II. The wreath-laying ceremony attracted more than 200 people, including guests from the British Isles, says Chapter President **Roy Whitton** and members **Wilbur Young**, **Dick Lampe**, and **Bob Palmer**.

"This is a no-cost event" said the flier that announced the **Donald W. Steele, Sr., Chapter's** reception for new and charter members and guests at AFA's headquarters building on June 7. A good turnout and a good time made the event a great idea for other chapters. President **Rick George** and Communications Director **Mike Winslow** report in the Steele Chapter's May newsletter that a visit to AFA's national archives helped them discover the Chapter's twenty-fifth anniversary date, which provided an excellent opportunity to review Chapter history and accomplishments in the newsletter. The newsletter included a write-up on the Chapter's namesake, the late **Donald W. Steele, Sr.**, AFA Associate Executive Director at the time of his death in 1979 . . . Gen. Frank M. Andrews Chapter President **Tim Myers**, an AFA Medal of Merit recipient, will leave Nashville, Tenn., for a ten-month tour at Air Command and Staff College at Maxwell AFB, Ala. "He has done an outstanding job," said Tennessee State President **Jack Westbrook**. Mr. Myers was a C-130 navigator with the Air Guard in Nashville and City Manager of Goodlettsville.

General Robert F. Travis Chapter leader **Walter W. Scott** was the guest speaker at the Air Force Sergeants Association (Division 11) Awards Banquet held in Cheyenne, Wyo., on May 17. During his thirty-year Air Force flying career, Mr. Scott served in a variety of roles, from flying crew member to manager of flight-test programs. During the Vietnam War, he developed, tested, and perfected a night flare illumination system and a container delivery release system and adapted the parachute low-altitude delivery air-

INTERCOM



CAP Cadet Maj. Joseph P. Lupo was recently honored by AFA's **John C. Meyer Chapter in Florida** as the **Outstanding Group 18 CAP Cadet for 1985**. **Meyer Chapter President A. J. Martha, right**, looks on as **Maj. Gen. John J. O'Hara, USAF (Ret.), left**, congratulates Cadet Lupo.

drop system for the C-123. In other Travis Chapter news, the unit held its tenth annual AFA Memorial Day Golf Tournament at the Cypress Lakes Golf Course on May 27 . . . **Virgil Slough**, chairman of Armed Forces Day 1985 for the Greater Cheyenne Chamber of Commerce, **Bill Helms**, President of AFA's Cheyenne Chapter in Wyoming, **Mary Ann Marek**, banquet chairwoman, and **Col. Arlen D. Jameson**, Commander of the 90th Strategic Missile Wing at F. E. Warren AFB, helped plan Cheyenne's Armed Forces Day dinner, cosponsored by the Military Affairs Committee of the Cheyenne Chamber and the Cheyenne Chapter. The May 17 dinner featured **Brig. Gen. Donald Wayne Hansen**, assistant judge advocate general of the Army, as speaker.

Alamo AFA member **Drue Helms** has been promoted to head the requirements and distribution branch, Automatic Test Division, at the San Antonio Air Logistics Center . . . The *Altus, Okla., Times*, *Boulder, Colo., Camera*, *Grand Forks, N. D., Leader*, *Austin, Tex., American-Statesman*, *Belleville, Ill., Command Post*, and *Alamogordo, N. M., News* have carried stories on AFA's membership drive. These latest stories join an ever-increasing stack of articles generated by local AFA chapters nationwide . . . **Jack Alkire**, who writes a column for the *Lafayette, Ind., Journal & Courier*, asked **Leon Thompson**, a free-lance

writer in Kent, Wash., how he was doing on his research for a book on aviation-related ghost stories. In a letter in the "Airmail" section of *AIR FORCE Magazine*, Mr. Thompson had asked readers to contribute their ghost stories. "Some ghost stories

I've received are real hair-raisers," he told the columnist. "I've found, for instance, that German World War II flyers are showing up at an airfield in England where their bomber crashed and they were killed." Mr. Alkire reports that Mr. Thompson was inspired to write the book as a result of an eerie experience involving his dog, Brutus, who appeared in the background of a photo he took of his house three months after the dog had died.

Retired **Sgt. J. D. Roberts**, a participant in the abortive US rescue attempt in Iran, addressed a recent meeting of AFA's Weld County Chapter in Greeley, Colo. . . . **Dr. Don Garrison**, former president of AFA's Aerospace Education Foundation, wrote an editorial supporting **Sen. Strom Thurmond's** (R-S. C.) Skilled Enlisted Reserve Training Act (SERTA). The bill, which was introduced a few years ago and which Dr. Garrison helped draft, would allow a student to enroll in a specific program at a two-year college as determined by the military. The military would pick up the tab at a very low cost, and, in return, the student would commit to two years of military service. "The Air Force Association has endorsed it for the past two years and almost everyone with whom I have discussed the measure sees it as a way to improve our military preparedness, our nation's technological and economic strength, and our educational opportunities for

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people held back only by finances." Dr. Garrison wrote . . . AFA's **Langley Chapter** in Virginia recently donated \$1,000 to the Air Force Enlisted Men's Widows and Dependents Home Foundation, Inc. Proceeds came from an "Oyster Roast," which raised most of the money, with the Chapter's executive council making up the balance of the \$1,000 donation.

The Defense Education Committee of Lane County in Eugene, Ore., sponsored a meeting on May 27 that featured **Michael J. Dunn**, a weapon systems analyst, rocket propulsion specialist, and laser systems engineer for Boeing Aerospace. Mr. Dunn discussed the Strategic Defense Initiative (SDI) and kinetic-energy weapon systems (such as rockets and railguns). In a related matter, **Harry Hance**, cofounder of the Eugene Defense Education Committee and Eugene AFA Chapter President, was honored at the Oregon AFA state convention for significant and outstanding leadership and contributions . . . Retired **Lt. Col. Donald Goldstein**, who assisted the late **Gordon W. Prange** in writing *Target Tokyo*, *At Dawn We Slept*, and *Miracle of Midway*, addressed AFA's Greater Pittsburgh Chapter on May 8, reports Chapter President **Bob Carr**.

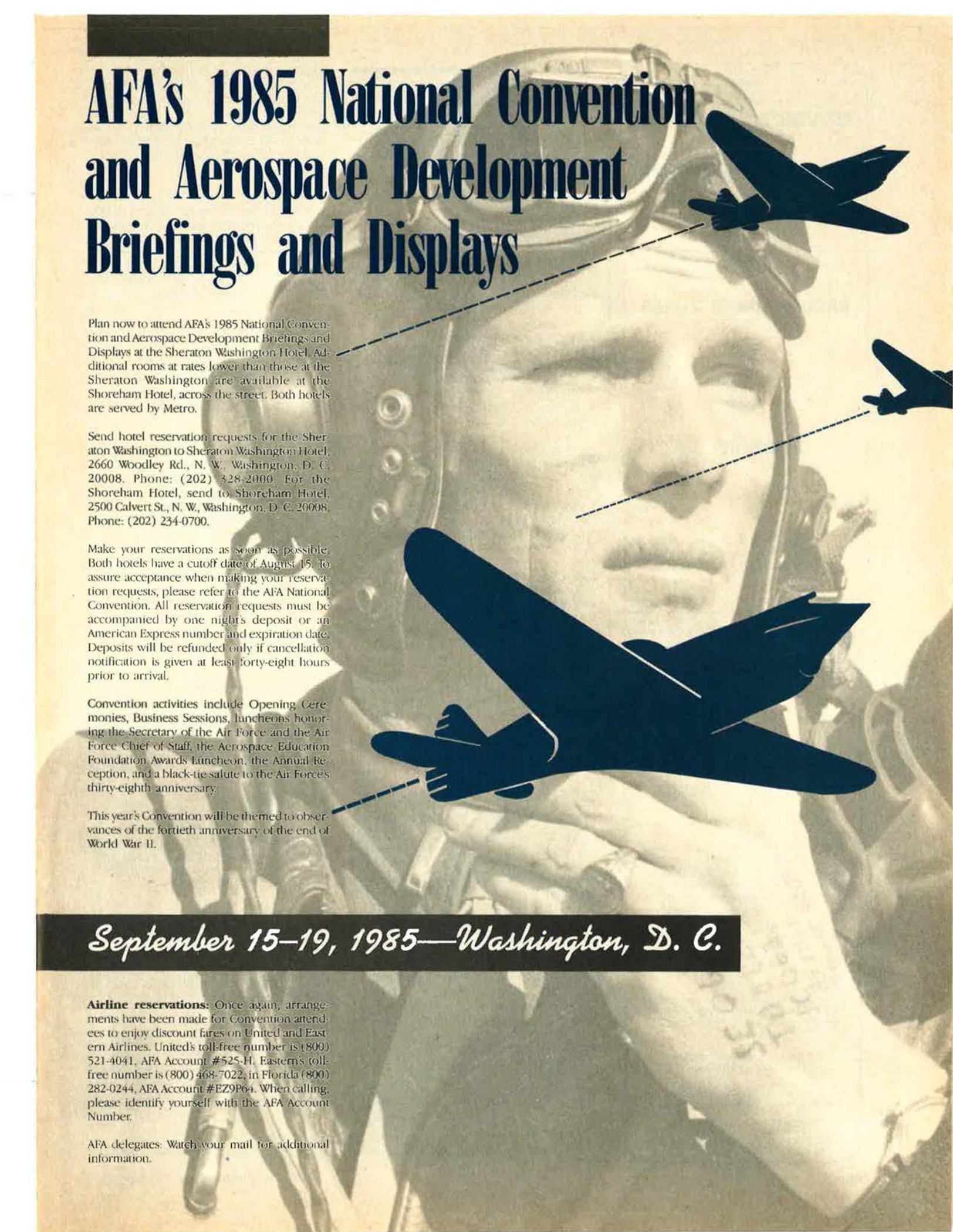
Spokane Chapter President **Andy Kelly** says the Chapter's May 22 luncheon at Fairchild AFB, Wash., featuring **Col. Eldon W. Joerez** on the SR-71, was excellent. Colonel Joerez set several international speed records in the Blackbird . . . Heritage High AFJROTC cadets from Maryville, Tenn., were proclaimed the overall winners of the Aerospace Education Foundation's national AFJROTC contest on "Aerospace History in Our Area." The cadets submitted a sound/slide presentation on the theme and will be awarded the \$1,500 prize and a plaque at AFA's National Convention in September. Category winners are **East Jefferson High**, Metairie, La., audiotape category; **Dover High**, Del., Miscellaneous Category—Games; **Heritage High**, sound/slide; **Scotch Plains-Fanwood High**, Scotch Plains, N. J. (overall winner in 1984 and 1983), videotape category; and **Southern High**, Graham, N. C., essay category. Each category winner receives \$500 and a distinctive plaque. There were twenty Honorable Mentions in the contest.

On May 24, AFA's Riverside County, Calif., Chapter sponsored its third annual AFA/March AFB Field Day, which featured shuttle relays, tug-of-war contests, horseshoe matches, bucket races, and "all the food you can eat" for \$1.50. The Chapter held the event "to express our appreciation to March AFB for the many nice things they do in support of our Chapter and to stimulate interest in our 1985 Membership Drive," reports **Monk Aamodt**, publisher of the Chapter newsletter . . . In February, AFA's Pease Chapter in New Hampshire, led by **Lee Blythe Lilljedahl**, heard guest speaker **Dr. Robert Houston, Jr.**, talk about his research in upper atmosphere rocketry experiments and the Space Shuttle. In March, the Chapter held its annual "bring-a-guest brunch" at the Pease AFB NCO Club. The brunch featured **Rep. Robert C. Smith** (R-N. H.) as guest speaker. He discussed Soviet activities around the world, budget constraints, and the need for a strong national defense. The Chapter also hosted the 1985 state convention at the Pease AFB Officers' Club. **Lt. Gen. Charles J. Cunningham, Jr.**, deputy chief of staff for programs and resources, Hq. USAF, spoke.

Utah AFA's sixth annual AFA Charity Golf Tournament, held on June 26-28, was chaired by **Ed Hawkins**. Last year's Tournament brought in enough money to award scholarships totaling \$5,250 to students at Utah State University, in addition to donations of \$2,625 each to the Utah Air Force Heritage Foundation and the Air Force Assistance Fund . . . Sport aviation is captured for display at the spectacular Experimental Aircraft Association (EAA) Aviation Center in Oshkosh, Wis., which has been compared favorably to the National Air and Space Museum in Washington, D. C. AFA member **Gregory J. Anderson** thinks AFA members would enjoy its exhibits.

Maj. Gen. Jack L. Watkins, Commander of SAC's 1st Strategic Aerospace Division at Vandenberg AFB, Calif., was invested simultaneously as a Jimmy Doolittle Fellow and Ira Eaker Fellow on May 16. The Chambers of Commerce of the cities of Solvang, Lompoc, and Santa Maria presented the Doolittle Fellowship, while AFA's Goddard Chapter and Aerospace Associates at Vandenberg presented the Eaker Fellowship. At the presentation were **Joe Sesto**, Santa Maria Chamber; **Bob Griffin**, Goddard Chapter President; **Roy Alexander**, Solvang Chamber; AFA National Director and Aerospace Education Foundation trustee **Ed Stearn**; and **Dick Kline**, Lompoc Chamber. ■

AFA's 1985 National Convention and Aerospace Development Briefings and Displays



Plan now to attend AFA's 1985 National Convention and Aerospace Development Briefings and Displays at the Sheraton Washington Hotel. Additional rooms at rates lower than those at the Sheraton Washington are available at the Shoreham Hotel, across the street. Both hotels are served by Metro.

Send hotel reservation requests for the Sheraton Washington to Sheraton Washington Hotel, 2660 Woodley Rd., N. W., Washington, D. C. 20008. Phone: (202) 328-2000. For the Shoreham Hotel, send to Shoreham Hotel, 2500 Calvert St., N. W., Washington, D. C. 20008. Phone: (202) 234-0700.

Make your reservations as soon as possible. Both hotels have a cutoff date of August 15. To assure acceptance when making your reservation requests, please refer to the AFA National Convention. All reservation requests must be accompanied by one night's deposit or an American Express number and expiration date. Deposits will be refunded only if cancellation notification is given at least forty-eight hours prior to arrival.

Convention activities include Opening Ceremonies, Business Sessions, luncheons honoring the Secretary of the Air Force and the Air Force Chief of Staff, the Aerospace Education Foundation Awards Luncheon, the Annual Reception, and a black-tie salute to the Air Force's thirty-eighth anniversary.

This year's Convention will be themed to observances of the fortieth anniversary of the end of World War II.

September 15-19, 1985—Washington, D. C.

Airline reservations: Once again, arrangements have been made for Convention attendees to enjoy discount fares on United and Eastern Airlines. United's toll-free number is (800) 521-4041, AFA Account #525-H. Eastern's toll-free number is (800) 468-7022, in Florida (800) 282-0244, AFA Account #EZ9P64. When calling, please identify yourself with the AFA Account Number.

AFA delegates: Watch your mail for additional information.

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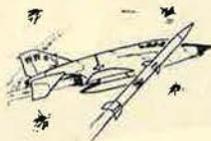
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UNIT REUNIONS

AACS

Airways and Air Communications Service (AAF/USAF) alumni will hold their ninth reunion on October 4-6, 1985, in Washington, D. C. **Contact:** Bob and Jane Dickerson, 2514 Lexington Rd., Falls Church, Va. 22043. Phone: (703) 560-7046.

Air Commando Association

The Air Commando Association will hold its fifteenth annual reunion on October 11-13, 1985, at the Officers' Club at Hurlburt Field, Fla. **Contact:** Hap Lutz, P. O. Box 7, Mary Esther, Fla. 32569. Phone: (904) 243-4601.

Air War College

Members and faculty of the Air War College Class of 1970 are planning to hold a reunion during AFA's "Gathering of Eagles—1986" on April 27-May 2, 1986, in Las Vegas, Nev. **Contact:** Phil Saxton, 16346 N. E. Tillamook St., Portland, Ore. 97230. Phone: (503) 255-7872.

Allied Air Forces

Allied Air Forces members will hold their reunion on October 26, 1985, at the Royal York Hotel in Toronto, Canada. **Contact:** N. W. Emmott, 240 Vodden St. West, Brampton, Ontario L6X 2Y3, Canada.

Cheddington Airfield Ass'n

Personnel who were stationed at Cheddington Airfield, England, during World War II will hold a reunion on October 16-24, 1985, in Luton and London, England. **Contact:** Brig. Gen. Brian S. Gunderson, USAF (Ret.), 8231 Crown Court Rd., Alexandria, Va. 22308.

Coming Events

August 2-3, **Utah State Convention**, Park City... August 2-4, **Michigan State Convention**, Selfridge ANGB... August 2-4, **New York State Convention**, Niagara Falls... August 2-4, **Virginia State Convention**, Richmond... August 2-4, **Washington State Convention**, Bellevue... August 9-10, **Arkansas State Convention**, Blytheville AFB... August 16-17, **Wisconsin State Convention**, Milwaukee... August 22-24, **California State Convention**, San Diego... August 23-24, **North Dakota State Convention**, Minot... September 6-7, **Arizona State Convention**, Sedona... September 15-19, **AFA National Convention and Aerospace Development Briefings and Displays**, Washington, D. C.

Chinese-American Composite Wing

The Chinese-American Composite Wing and the Operational Training Unit at Kachachi will hold a reunion on August 29, 1985, in Tucson, Ariz. **Contact:** Guy Williams, 8143 E. Gail Rd., Scottsdale, Ariz. 85260. Phone: (602) 951-0619.

JUSMMAT

Members who served at the Joint US Military Mission for Aid to Turkey (JUSMMAT), Air Force Section, during 1964-68 will hold a reunion on October 11-13, 1985, at the Green Oaks Inn in Fort Worth, Tex. **Contact:** Col. C. W. Bagstad, USAF (Ret.), 3809 Lawndale Ave., Fort Worth, Tex. 76133. Phone: (817) 292-4504.

Military Flight Service

Military Flight Service personnel will hold a reunion on September 20-22, 1985, at the Marines Memorial Club in San Francisco, Calif. **Contact:** Tom J. E. Hunt, #75 Townhouse Lane, Corpus Christi, Tex. 78412. Phone: (512) 991-1879.

Ranch Hands

The Vietnam Ranch Hands twentieth annual reunion and memorial dedication will be held on October 11-13, 1985, in Fort Walton Beach, Fla. **Contact:** Jack Spey, 800 Tarpon, Fort Walton Beach, Fla. 32548. Phone: (904) 243-5696.

SHAEF Reunion

Veterans formerly attached to the Supreme Headquarters Allied Expeditionary Force (SHAEF) are invited to attend the first reunion since World War II. To be held in London, England, the reunion will run from October 7 through October 28, 1985. **Contact:** SHAEF Reunion Hq., P. O. Box 59, Rumson, N. J. 07760.

Silver Wings Fraternity

The Silver Wings Fraternity will hold its twenty-seventh annual convention and awards banquet on September 19-21, 1985, at the Hotel Royale in Wichita, Kan. **Contact:** Jean O. Moore, 1044 N. Waco, Wichita, Kan. 67203.

Wild Weasels

Individuals involved in the development and employment of Wild Weasel aircraft are holding a reunion on September 6-8, 1985, in Las Vegas, Nev. **Contact:** Bill Hickey, P. O. Box 566, Shalimar, Fla. 32579. Phone: (904) 651-4970.

12th Bomb Group

Members of the 12th Bomb Group will hold their reunion on September 12-15, 1985, at the Airport Inn Resort, Vancouver International Airport, British Columbia, Canada. **Contact:** Alex M. Adair, 817 N. E. 91st St., Seattle, Wash. 98115.

22d Bomb Wing Ass'n

The 22d Bomb Wing will hold its reunion on November 1-2, 1985, at March AFB, Calif. **Contact:** Willie Gaberdiel, Riverside Chamber of Commerce, 4261 Main St., Riverside, Calif. 92501. Phone: (714) 683-7100.

Class 40-F

Members of the Flying Cadet Class 40-F

(Kelly and Brooks Fields) will hold their reunion on October 4-6, 1985, in Newport Beach, Calif. **Contact:** Col. William S. Collinson, USAF (Ret.), 887 Sandcastle Dr., Corona del Mar, Calif. 92625. Phone: (714) 644-2177.

46th Troop Carrier Squadron

The 46th Troop Carrier Squadron "Jungle Skippers" will hold a reunion on September 12-15, 1985, at the Ramada Inn East (Columbus Airport) in Columbus, Ohio. **Contact:** Tom Soltis, 23332 Roger Dr., Euclid, Ohio 44123. Phone: (216) 732-9492.

75th Troop Carrier Squadron

The 75th Troop Carrier Squadron will hold a reunion on September 12-14, 1985, in Charleston, S. C. **Contact:** Robert C. Richards, 139 Kiser Dr., Tipp City, Ohio 45371. Phone: (513) 667-3827.

93d Fighter Squadron

Members of the 93d Fighter Squadron, 81st Fighter Group, will hold their reunion on October 11-13, 1985, in Myrtle Beach, S. C. **Contact:** John Dougherty, 201 Bartram Lane, Ocean City, N. J. 08226. Phone: (609) 398-5375.

320th Bomb Group

The 320th Bomb Group will hold a reunion on October 3-5, 1985, at the Town and Country Hotel and Convention Center in San Diego, Calif. **Contact:** Stu Rowan, 108 Aspen, Hereford, Tex. 79045. Phone: (806) 364-4015.

403d Troop Carrier Group

The 403d Troop Carrier Group, including the 63d and 64th Troop Carrier Squadrons and the 801st Medical Evacuation Unit, will hold its reunion on October 2-4, 1985, at the Quality Inn in Orlando, Fla. **Contact:** Aron J. Tobiska, 31 S. Holland St., Lakewood, Colo. 80226. Phone: (303) 237-8995.

445th Bomb Group

Members of the 445th Bomb Group are planning to hold their reunion on September 5-8, 1985, at the Great Gorge Hotel in McAfee, N. J. **Contact:** Francis J. Di Mola, 390 Madison Ave., New Milford, N. J. 07646.

461st Bomb Wing

Members of the 461st Bomb Wing will hold their reunion on October 3-5, 1985, at the Villa Inn in Amarillo, Tex. **Contact:** Ralph Leone, 6204 Jameson Rd., Amarillo, Tex. 79106. Phone: (806) 352-4805.

782d Bomb Squadron

The first reunion of the 782d Bomb Squadron will be held on August 23-25, 1985, at the Marriott Hotel in Dayton, Ohio. **Contact:** William F. Bruce, Jr., 1683 Eggert Rd., Eggertsville, N. Y. 14226. Phone: (1-716) 834-8144. Chester J. Milczarek, 529 Fairfield Dr., Corpus Christi, Tex. 78412.

Van Nuys Field

I am attempting to locate individuals who were stationed at Van Nuys Airfield, Calif., during 1943-45. I would like to organize a reunion for people who were stationed at this field.

Please contact the address below.
Edward A. Seitz
4300 Old Dominion Dr., #515
Arlington, Va. 22207
Phone: (703) 525-9226

Class 42-D

I would like to hear from members of Pilot Class 42-D (Tulare, Taft, and Victorville) who would be interested in holding a reunion. Contact the address below.
G. P. Harry
2419 Ormsby Circle
Jacksonville, Fla. 32210
Phone: (904) 778-2528

Class 45-D

I would like to hear from members of Aviation Cadet Class 45-D (Lancaster, Minter, Douglas, and Luke) who would like to hold a class reunion.
Please contact the address below.
Lt. Col. Alvin G. Hagen,
USAF (Ret.)
4800 Baja Ct., N. E.
Albuquerque, N. M. 87111
Phone: (505) 296-2056

52d Fighter Wing

I would like to hear from anyone who served with the 52d Fighter Wing at McGuire AFB, N. J., during 1950-52. We are planning a reunion.
Please contact the address below.
James O. Cantrell
135 Donelson Pike
Nashville, Tenn. 37214
Phone: (615) 883-8823

Class 53-D

I would like to hear from members of Class 53-D, Bartow AFB, Fla., who would be interested in holding a reunion.
Please contact the address below.
Col. Raymond W. Kahl, Jr.,
USAF (Ret.)
American Consulate Rio
APO Miami 34030

90th Bomb Squadron

I would like to hear from personnel of the 90th Bomb Squadron, 3d Bomb Group, who would be interested in holding a reunion.
Please contact the address below.
James H. Lee, Jr.
400 Summitt St.
Farmersville, Tex. 75031
Phone: (214) 782-8326

306th BG/622d AREFS

I am a former member of the 369th Bomb Squadron, 306th Bomb Group, stationed at Thurleigh, England, from May 1945 to September 1945. I am interested in hearing from anyone who might know of future reunion plans for either the 306th or the 369th.
Also, I would like to hear from former members of the 622d Air Refueling Squadron who served during the period 1955-59 at Alexandria AFB, La. Are there any reunion plans for this outfit?
Please contact me at the address below.
Earl R. Saunders
13452 Gable Hill Dr.
Sun City West, Ariz. 85375

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A selection of AFA jewelry complete with full color AFA logos, for all Members, Life Members, and Leaders—Past & Present.

ORDER FORM: Please indicate below the quantity desired for each item to be shipped. Prices are subject to change without notice.

- A. Tie Bar \$20 each _____
B. Member Lapel Pin \$15 each _____
C. Member Tie Tac \$10 each _____
D. Lapel Pin \$15 each (Please specify: President, Past President or Life Member) _____
E. Stickpin \$16 each (Please specify: Member or Life Member) _____

TOTAL AMOUNT ENCLOSED _____

Enclose your check or money order made payable to Air Force Association, 1501 Lee Highway, Arlington, VA 22209-1198. (Virginia residents please add 4% sales tax.)

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

Please send me an AFA gift brochure.

All members
under age 65
now eligible to apply

RECORD BENEFITS

CURRENT BENEFIT TABLES

Including Substantial Benefit Increases for Policyholders Under Age 65
(effective June 30, 1984)

Member's Attained Age	STANDARD Premium: \$10 per month	HIGH OPTION Premium: \$15 per month	HIGH OPTION PLUS PLAN Premium: \$20 per month
	Basic Benefit*	Basic Benefit*	Basic Benefit*
20-24	\$125,000	\$187,500	\$250,000
25-29	110,000	165,000	220,000
30-34	80,000	120,000	160,000
35-39	65,000	97,500	130,000
40-44	40,000	60,000	80,000
45-49	25,000	37,500	50,000
50-54	18,000	27,000	36,000
55-59	12,000	18,000	24,000
60-64	9,000	13,500	18,000
65-69	4,000	6,000	8,000
70-74	2,500	3,750	5,000

AVIATION DEATH BENEFIT* (for pilots and crew members)

Non-war related: Ages 20-34—Payment of ½ the scheduled benefit. (Applies to Standard, High Option and High Option Plus Plans)
Ages 35-74—Payment of the full scheduled benefit. (Applies to Standard, High Option and High Option Plus Plans)

War related:	\$15,000	\$22,500	\$30,000
EXTRA ACCIDENTAL DEATH BENEFIT**	\$12,500	\$15,000	\$17,500

*AVIATION DEATH BENEFIT: The coverage provided under the Aviation Death Benefit is paid for death which is caused by an aviation accident in which the insured is serving as pilot or crew member of the aircraft involved. Under this condition, the Aviation Death Benefit is paid in lieu of all other benefits of this coverage. Furthermore, the non-war related benefit will be paid in all cases where the death does

not result from war or act of war, whether declared or undeclared.

**EXTRA ACCIDENTAL DEATH BENEFIT: In the event of an accidental death occurring within 13 weeks of the accident, these AFA plans pay an additional lump sum benefit as shown in the tables, except as noted under AVIATION DEATH BENEFIT above.

OTHER IMPORTANT BENEFITS

COVERAGE YOU CAN KEEP. Provided you apply for coverage under age 65 (See "ELIGIBILITY") your insurance may be retained at the same low group rates to age 75.

FULL TIME, WORLD WIDE PROTECTION. The policy contains no war clause, hazardous duty restriction, combat zone waiting period or geographical limitation.

DISABILITY WAIVER OF PREMIUM. If you become totally disabled at any time prior to age 60 for at least a 9-month period, your coverage will be continued in force without further payment of premiums as long as you remain disabled.

FULL CHOICE OF SETTLEMENT OPTIONS. All standard forms of settlement options, as well as special options agreed to by the insured and United of Omaha, are available to insured members.

CONVENIENT PAYMENT PLANS. Premium payments may be made by monthly government allotment (payable to Air Force Association), or direct to AFA in quarterly, annual or semi-annual installments.

DIVIDEND POLICY. AFA's primary policy is to provide maximum coverage at the lowest possible cost. Consistent with this policy, AFA has provided year-end dividends in all but three years (during the Vietnam War) since the program was initiated in 1961, and basic coverage has been increased on seven separate occasions.

ADDITIONAL INFORMATION

Effective Date of Your Coverage. All certificates are dated and take effect on the last day of the month in which your application for coverage is approved, and coverage runs concurrently with AFA membership. AFA Group Life Insurance is written in conformity with the insurance regulations of the State of Minnesota. The insurance will be provided under the group insurance policy issued by United of Omaha to the First National Bank of Minnesota as trustees of the Air Force Association Group Insurance Trust.

EXCEPTIONS: There are a few logical exceptions to this coverage. They are:

Group Life Insurance: Benefits for suicide or death from injuries intentionally self-inflicted while sane or insane will not be effective until your coverage has been in force for 12 months.

The Accidental Death Benefit and Aviation Death Benefit shall not be effective if death results: (1) From injuries intentionally self-inflicted while sane or insane, or (2) From injuries sustained while committing a felony, or (3) Either directly or indirectly from bodily or mental infirmity, poisoning or asphyxiation from carbon monoxide, or (4) During any period a member's coverage is being continued under the waiver of premium provision, or (5) From an aviation accident, either military or civilian, in which the insured was acting as pilot or crew member of the aircraft involved, except as provided under AVIATION DEATH BENEFIT.

ELIGIBILITY

All members of the Air Force Association are eligible to apply for this coverage provided they are under age 65 at the time application for coverage is made.

*Because of certain restrictions on the issuance of group insurance coverage, applications for coverage under the group program cannot be accepted from non-active duty personnel residing in New York.

OPTIONAL FAMILY COVERAGE PREMIUM: \$2.50 per month

Member's Attained Age	Life Insurance Coverage for Spouse	Life Insurance Coverage for each child*
20-39	\$20,000.00	\$4,000.00
40-44	15,000.00	4,000.00
45-49	10,000.00	4,000.00
50-54	7,000.00	4,000.00
55-59	5,000.00	4,000.00
60-64	3,000.00	4,000.00
65-69	2,000.00	4,000.00
70-75	1,000.00	4,000.00

*Children under six months are provided with \$250 coverage once they are 15 days old and discharged from the hospital. Upon attaining age 21, and upon submission of satisfactory evidence of insurability, insured dependent children may replace this \$4,000 group coverage (in most states) with a \$10,000 permanent individual life insurance policy with guaranteed purchase options.

Please Retain This Medical Bureau Prenotification For Your Records

Information regarding your insurability will be treated as confidential. United of Omaha Life Insurance Company may, however, make a brief report thereon to the Medical Information Bureau, a nonprofit membership organization of life insurance companies, which operates an information exchange on behalf of its members. If you apply to another bureau member company for life or health insurance coverage, or a claim for benefits is submitted to such a company, the Bureau, upon request, will supply such company with the information in its file.

Upon receipt of a request from you, the Bureau will arrange disclosure of any information it may have in your file. (Medical information will be disclosed only to your attending physician.) If you question the accuracy of information in the Bureau's file, you may contact the Bureau and seek a correction in accordance with the procedures set forth in the federal Fair Credit Reporting Act. The address of the Bureau's information office is P.O. Box 105, Essex Station, Boston, Mass. 02112. Phone (617) 426-3660.

United of Omaha Life Insurance Company may also release information in its file to other life insurance companies to whom you may apply for life or health insurance, or to whom a claim for benefits may be submitted.

NOW AVAILABLE



APPLICATION FOR AFA GROUP LIFE INSURANCE



Group Policy GLG-2625
United of Omaha Life Insurance Company
Home Office Omaha Nebraska

Full name of member _____
Rank Last First Middle

Address _____
Number and Street City State ZIP Code

Date of birth			Height	Weight	Social Security Number
Mo.	Day	Yr.			

This insurance is available only to AFA members

- I enclose \$18 for annual AFA membership dues (includes subscription (\$14) to AIR FORCE Magazine).
- I am an AFA member.

Name and relationship of primary beneficiary

Name and relationship of contingent beneficiary

Please indicate below the Mode of Payment and the Plan you elect:

Mode of Payment	Standard Plan		Plan of Insurance High Option Plan		High Option PLUS Plan	
	Member Only	Member And Dependents	Member Only	Member And Dependents	Member Only	Member And Dependents
Monthly government allotment (only for military personnel). I enclose 2 month's premium to cover the necessary period for my allotment (payable to Air Force Association) to be established.	<input type="checkbox"/> \$ 10.00	<input type="checkbox"/> \$ 12.50	<input type="checkbox"/> \$ 15.00	<input type="checkbox"/> \$ 17.50	<input type="checkbox"/> \$ 20.00	<input type="checkbox"/> \$ 22.50
Quarterly. I enclose amount checked.	<input type="checkbox"/> \$ 30.00	<input type="checkbox"/> \$ 37.50	<input type="checkbox"/> \$ 45.00	<input type="checkbox"/> \$ 52.50	<input type="checkbox"/> \$ 60.00	<input type="checkbox"/> \$ 67.50
Semi-Annually. I enclose amount checked.	<input type="checkbox"/> \$ 60.00	<input type="checkbox"/> \$ 75.00	<input type="checkbox"/> \$ 90.00	<input type="checkbox"/> \$105.00	<input type="checkbox"/> \$120.00	<input type="checkbox"/> \$135.00
Annually. I enclose amount checked.	<input type="checkbox"/> \$120.00	<input type="checkbox"/> \$150.00	<input type="checkbox"/> \$180.00	<input type="checkbox"/> \$210.00	<input type="checkbox"/> \$240.00	<input type="checkbox"/> \$270.00

Names of Dependents To Be Insured	Relationship to Member	Dates of Birth			Height	Weight
		Mo.	Day	Yr.		

Have you or any dependents for whom you are requesting insurance ever had or received advice or treatment for: kidney disease, cancer, diabetes, respiratory disease, epilepsy, arteriosclerosis, high blood pressure, heart disease or disorder, stroke, venereal disease or tuberculosis? Yes No

Have you or any dependents for whom you are requesting insurance been confined to any hospital, sanatorium, asylum or similar institution in the past 5 years? Yes No

Have you or any dependents for whom you are requesting insurance received medical attention or surgical advice or treatment in the past 5 years or are now under treatment or using medications for any disease or disorder? Yes No

If YOU ANSWERED "YES" TO ANY OF THE ABOVE QUESTIONS, EXPLAIN FULLY including date, name, degree of recovery and name and address of doctor. (Use additional sheet of paper if necessary.)

I apply to United of Omaha Life Insurance Company for insurance under the group plan issued to the First National Bank of Minneapolis as Trustee of the Air Force Association Group Insurance Trust. Information in this application, a copy of which shall be attached to and made a part of my certificate when issued, is given to obtain the plan requested and is true and complete to the best of my knowledge and belief. I agree that no insurance will be effective until a certificate has been issued and the initial premium paid.

I hereby authorize any licensed physician, medical practitioner, hospital, clinic or other medical or medically related facility, insurance company, the Medical Information Bureau or other organization, institution or person, that has any records or knowledge of me or my health, to give to the United of Omaha Life Insurance Company any such information. A photographic copy of this authorization shall be as valid as the original. I hereby acknowledge that I have a copy of the Medical Information Bureau's prenotification information.

Date _____, 19____ Member's Signature _____

Bob Stevens'

"There I was..."

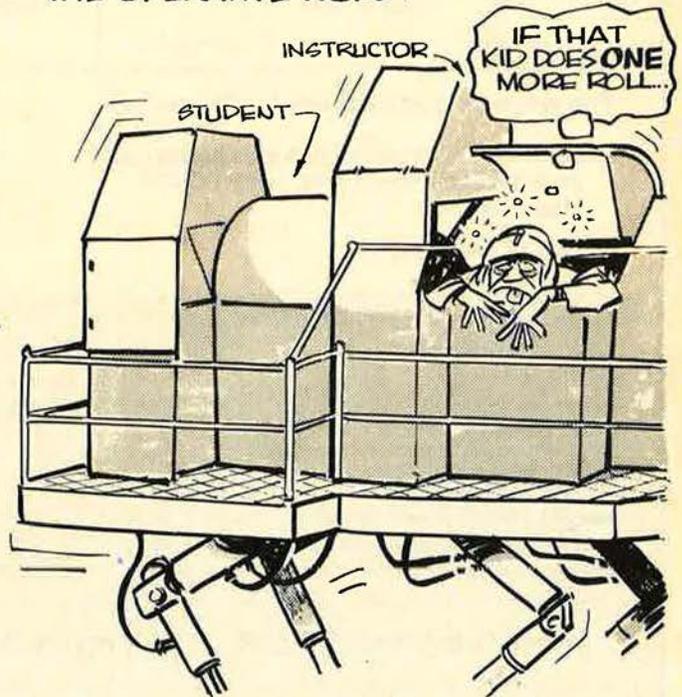


THE "SIM" OPERATORS (CIVILIANS) ARE JUST ABOUT UNFLAPPABLE -

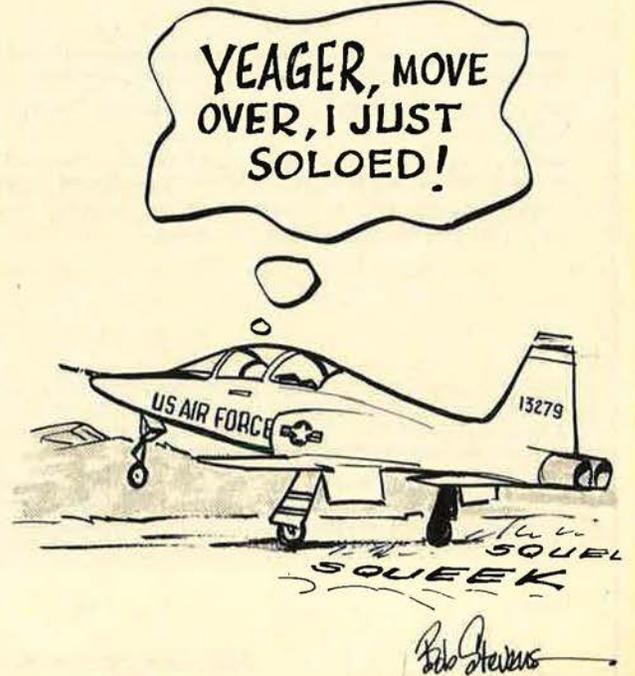


...AT "WILLY"-WILLIAMS AFB, ARIZONA— AFTER AN ABSENCE OF 42 YEARS! (I HAD GRADUATED THERE, CLASS OF 43-E). IT WAS SPOOKY. MOST EVERYTHING HAD CHANGED DRAMATICALLY, BUT SOME THINGS WERE JUST AS THEY WERE IN MAY 1943.

ONE BIG CHANGE IN THE CURRICULUM AT WILLY SINCE WWII IS THE USE OF SIMULATORS VIS-À-VIS AIRCRAFT. REALISM IS THE OPERATIVE WORD.



BUT THE BREAD and BUTTER AT WILLY IS STILL THE HANDS-ON EXPERIENCE OF DRIVIN' A REAL FLYIN' MACHINE.



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No enemy pilot makes a successful takeoff or landing when BKEP's around.

The Boosted Kinetic Energy Penetrator, BLU-106/B, has been demonstrated to blast through runways creating large craters, heave, and rubble that severely retard enemy clearing and repair operations. BKEP closes down airfields!

BKEP is completing engineering development for the Air Force's Armament Division at Eglin Air Force Base. USAF plans to weaponize BKEP in a variety of delivery systems to

give tactical air forces low-cost, efficient, and effective means to counter enemy air operations.

QUALITY
THE AVCO
ADVANTAGE



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Because of our use of carbon-epoxy composites for more than 25% of our Harrier II structure, America has a plane that can land or take off vertically—and go twice as far or carry twice as much as earlier models.

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We're McDonnell Douglas.



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DOUGLAS**

