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AIR FORCE

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MAGAZINE



Gen. David C. Jones
Chairman, Joint Chiefs of Staff

Gen. Lew Allen, Jr.
Chief of Staff, US Air Force

See Pages 1 and 34

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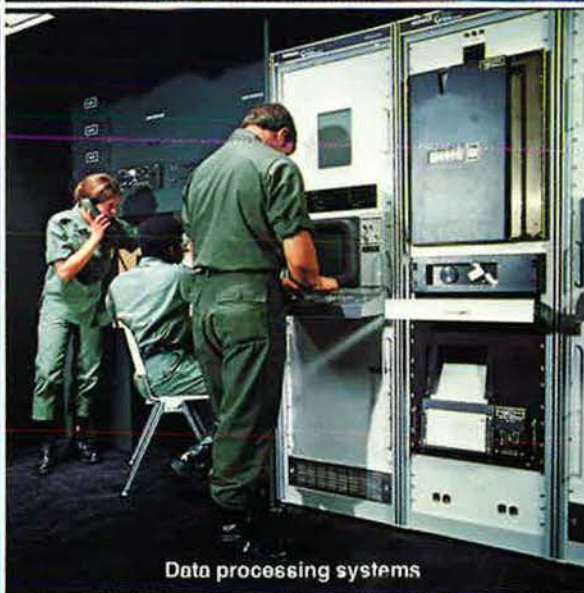
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Associate Publishers:
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Patricia R. Muncy

Advertising Director:

Charles E. Cruze
1750 Pennsylvania Ave., N.W.
Washington, D.C. 20006
Telephone: (202) 637-3330

Advertising Service Manager: Patricia Teevan

Area Sales Managers:

Bayard Nicholas, Stamford, Conn.
(203) 357-7781

William T. Farrell, Chicago (312) 446-4304

Harold L. Keeler, Los Angeles (213) 879-2447

William Coughlin, San Francisco
(415) 546-1234

Yoshi Yamamoto, Tokyo 535-6614

European Sales Representative:

Richard A. Ewin
Overseas Publicity Ltd.
214 Oxford St.
London W1N 0EA, England
Telephone: 01-636-8296

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ABOUT THE COVER



Efficient managerial skills are credited for the nomination of both Gen. David C. Jones as Chairman of the Joint Chiefs of Staff and Gen. Lew Allen, Jr., as Air Force Chief of Staff. For details on the Air Force leaders' careers, see the article beginning on p. 34. The Senate is expected to confirm the nominations by early June. The cover photo is by Art Director Bill Ford.

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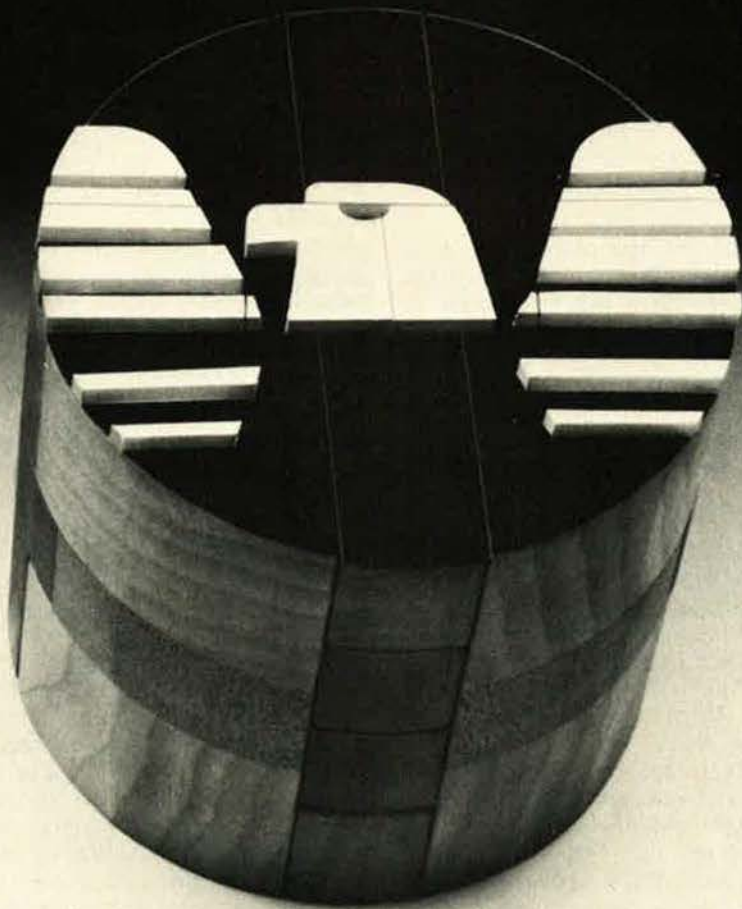
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Faith and the Gathering Storm

EACH rattle and cataract in the flow of time is unique unto itself, and a significant part of that uniqueness lies in the eye of the beholder. To the men and women of the Armed Forces of the United States, this must be a time that is uniquely disturbing.

Many of the reasons for our season of discontent have been reported and discussed in this magazine. We will recall only a few. There were the Administration's decisions to withdraw US troops from Korea, to cancel the B-1, and to defer production of the so-called neutron bomb—all taken against the advice of the military or without their counsel. Then there have been a series of SALT concessions and the drive for a Comprehensive Test Ban Treaty that could do irreparable harm to national defense. The Panama Canal Treaties have been interpreted by many as a symptom of retreat from American global responsibilities, as have the weak and vacillating stand on Soviet/Cuban intervention in the Horn of Africa and the total lack of US interest in the Afghanistan coup.

The Administration has acknowledged a wide disparity between Soviet and US defense forces and spending, while increasing our defense budget marginally or not at all. We are assured that the US still has "essential equivalence," apparently an infinitely elastic security blanket that can be stretched to cover a deteriorating military balance.

At Winston-Salem, N. C., in March, the President delivered a sabre-rattling—or at least a canteen-cup-rattling—warning to the Soviets, only to have it followed immediately by an Administration spokesman's assurance to the Kremlin that those brave words were for domestic consumption.

Shakespeare's Henry V rallied his troops before the walls of Harfleur with the cry, "Once more unto the breach, dear friends, once more." The Carter Administration's rallying cry puts a reverse twist on that clarion call to battle.

To us, even more alarming was a recent conversation with an old and trusted friend—a man who is not given to emotional judgments. He has had long association with the military colleges, and he told us of the deep concern he now finds among middle-ranking student officers who are being groomed for positions of leadership.

Many of them believe—as we do—that there are frightening similarities between our time and the years immediately preceding World War II. *The Gathering Storm*, the first volume of Winston Churchill's history of World War II, chronicled that period. Its theme is "How the English-speaking people through their unwisdom, carelessness, and good nature allowed the wicked to rearm." Well, the

parallel is not exact. Historical analogies never are. Still, the storm clouds are there and much larger than a man's hand. If the storm breaks, the US military will be up against long odds, and time will not again be on our side.

We also were told that some young officers are deeply concerned over what they believe to be a politicizing of the military leadership. Whether that view is widespread or not, any notion that has the potential for weakening the solidarity of a service is cause for worry.

Earlier the same day, we had talked with another old, trusted, and very hardheaded friend who is close to the center of military power. His unsolicited comments on politicization of the military—a frequent media topic these days—are worth thinking about. In sum, this is what he said:

In our system of government, defense is never totally divorced from politics. A senior military leader who lacks political sensitivity can't be fully effective as a spokesman for his service or for national security in the broader sense. Inevitably he will have to make choices between the best interests of the nation and the more parochial interests of his own service. The national interest has to come first, and that may be considered by service partisans as a service defeat. We seldom hear about the times when the military leadership has had a large part in averting a bad decision or influencing a good one. Why not? Because in this supposedly open administration, military people are less free to express their opinions publicly than they have been for many years. That was his message.

We must not forget that the men who lead our military services are products of an environment that puts the highest premium on dedication to service traditions, the well-being of subordinates, and above all the interests of the nation. Now, we believe, is a time for faith in their dedication, their character, and their moral courage to speak out if events demand it.

It is a time, too, for hope that, as the burden on each of the services grows out of proportion to its resources, the individual services will put aside narrow interests for the greater interest of the country. And it is a time for charity when circumstances may demand a compromise between what is possible and what is desirable. Faith, hope, charity; but in this case, the greatest of these is faith.

The military is the bedrock on which this nation was built and on which, God willing, it will survive and prosper. If ever there was a time when the military leadership needed the support and the faith of its own, and of the public it serves, that time is now.

—JOHN L. FRISBEE, EDITOR

Tomorrow's victor is here today. The F-14/Phoenix system.



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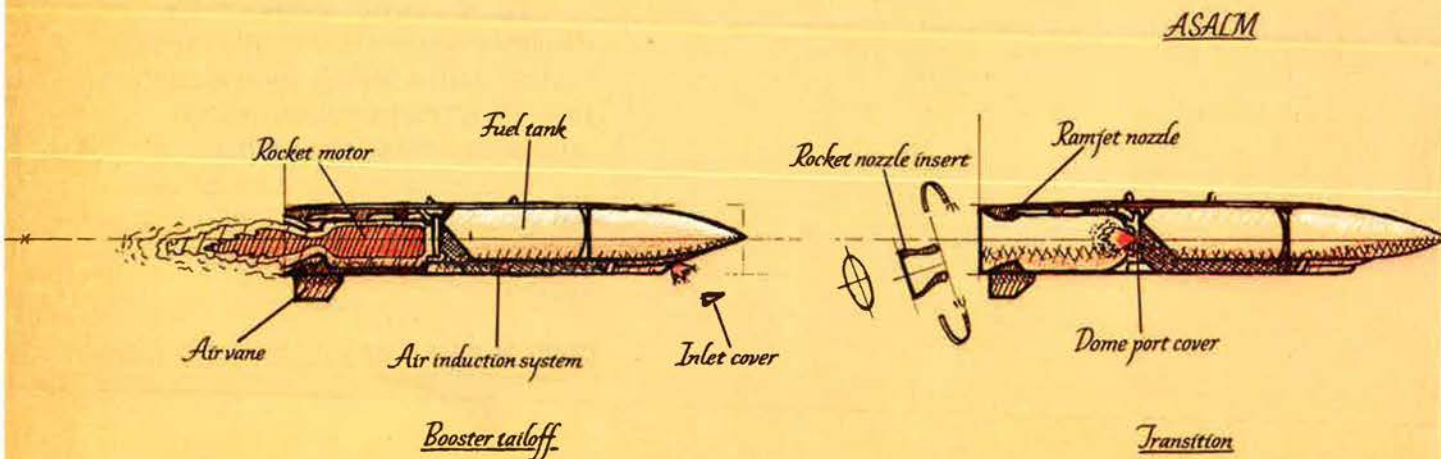
What's more, today's F-14/Phoenix system is the only modern fighter with a swing-wing design, providing tremendous maneuverability and performance.

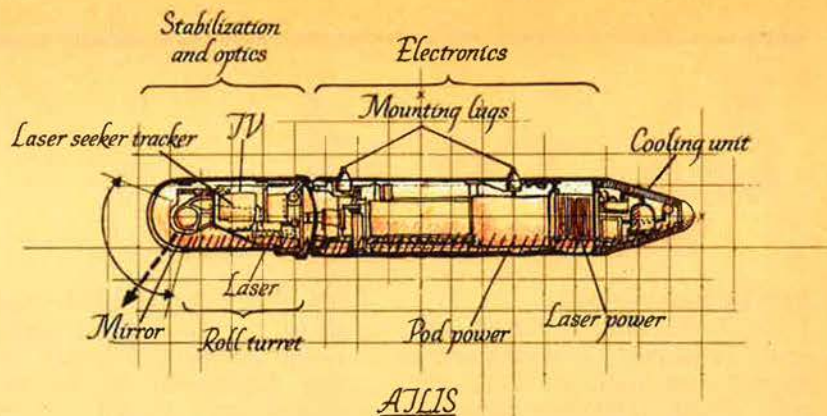
The answer to future air combat victory, close-in or long-range, is here now. The F-14/Phoenix system.

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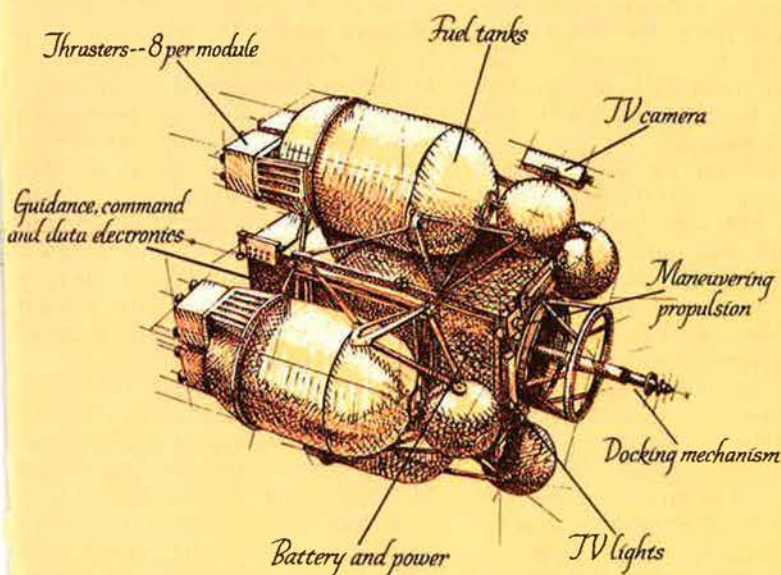
At Martin Marietta we encourage our people to seek future challenges in space and defense. By perceiving such needs and finding solutions to them, we have advanced our technology in many disciplines while building an inventory of capabilities for the development of new systems when they are required.

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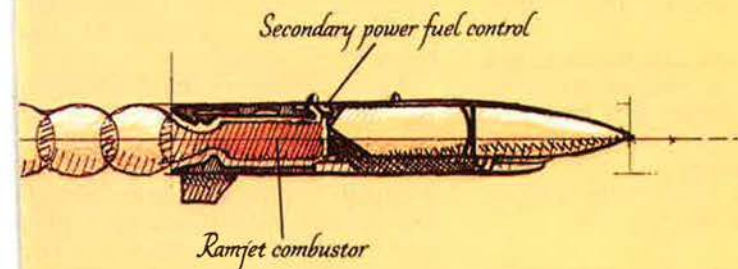
This approach has proven equally valuable in space systems. For the Space Shuttle we saw a need for a small, reusable craft, controlled from the Shuttle, that can survey and maneuver space objects. By using concepts developed for such space projects as Skylab and Viking, we built a maneuverable space tug called Teleoperator. It's now scheduled for an early Shuttle mission.

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Airmail

PVO SV Development

I found the March "Soviet Aerospace Almanac" interesting and informative as usual. Being an Army type myself (although notoriously sympathetic to the Air Force), I read the section on the PVO SV first. I find that I have a number of comments on, and some difficulties with, the article "Air Defense of Soviet Ground Forces," by Col. Daniel K. Malone.

On pages 78 and 79, the concept of mobile air defense weapons accompanying mechanized columns is seen as a recent development. This is not so. Rather than being predictive, the open press articles mentioned were properly describing contemporary organization. The Red Army had truck-mounted AA guns accompanying its columns in the 1930s, had experimented with track-mounted 76-mm AA, and had track-mounted 37-mm AA in 1945. During the 1950s and early 1960s, before the current generation of weapons was fielded, SP 57-mm AA guns were organic to tank regiments. Towed guns also marched in columns and could be brought into action in less than a minute, or could be leapfrogged and put into positions to defend passing columns. What we now see is the 1978 state of affairs in an area of military organization and tactics that the Soviets have worked on for over forty years.

During the war in SEA, the Soviets were concerned with technical secrecy, or had decided to help NVN as cheaply as possible. The NVN air defense included many old AA guns such as the 37-mm, 85-mm, and 100-mm, which were no longer in use in the USSR. The only missiles used were the SA-2 and SA-7. The SA-4, SA-6, and SA-9 were not used. This concern didn't exist where the Mideast was concerned, possibly because the Arabs were expected to pay for the weapons.

It is hard to believe that we were startled and incredulous about the ZSU 23-4. We had seen it eight years before the Mideast war, studied it, and had a pretty good idea of its capabilities. So in no way was

the ZSU 23-4 a whole new ball game. To the Soviets' credit, they combined state-of-the-art weapons and electronics on an available chassis and fielded an effective weapon—something that generally seems to be beyond US capabilities or desires.

The PVO SV organization for combat depicted is a considerable overestimate of what actually exists. A basic point ignored by the author in his concept is that the newer weapons are for the most part replacements for older ones, not additive. Specifically, those regiments that have the SA-9/ZSU 23-4 battery do not have ZU 23. This would drastically reduce the number of weapons shown in the diagram on page 82.

Also note that the French/German/US Roland is the world's newest mobile SAM, not the SA-8.

As for the last paragraph in the article, NATO air forces, particularly ours, have been working for years on weapons, aircraft, electronic warfare equipment and techniques, and tactics for overcoming the impressive Soviet air defense system and hitting the ground forces it protects. Our aerial attack capability probably looks as menacing to them as their air defense system does to us. The non-Soviet Pact armies are less well-protected than the Soviet, for that matter, and they make up a majority of Pact forces for initial operation in Europe. The photo on page 25 of this issue and the ad on pages 64-65 are cases in point; they should make any tank driver take notice. There is certainly no place for complacency in this dynamic, competitive area, but we are not dragging our heels, and the situation merits concern rather than alarm.

I have run on, but these affairs are my hobby as well as my work, and I am concerned that the reading public be as accurately informed as possible.

Lt. Col. Louis F. De Mouche
Fairfax, Va.

The author replies: Our differences are mostly of degree or perspective

rather than substance. I'm sorry Colonel De Mouche got the impression that air defense weaponry was being presented as totally new. I assumed basic knowledge that all major armies had AA weapons of one sort or another, and just did not anticipate that conclusion. I, too, enjoy following such things, so was tempted to trace more history, even trotted out the 1930 parade photo of the truck-mounted AA guns he mentioned. The new *Soviet Military Encyclopedia*, which was one of my sources, provides a detailed historical account of PVO SV evolution. The entry notes such WW I efforts as especially equipping three-inch field guns for use in air defense. That was evidently the "in" thing.

However, while the totality of air defense evolution is necessary for some of us, comments from other of my colleagues indicated the article was getting too historical for a general readership. I chose instead to take a snapshot of that passing train at a time when the see-saw of aircraft vs. anti-aircraft was out of synch in a specific area, i.e., the armored warfare concepts being proposed. The Soviets have indeed been working on mobile air defense for forty years, but I point out they only recently satisfactorily worked it out. Neither do I wish to imply the solution is permanent.

As for US reaction to the effectiveness of the ZSU 23-4, I'll stick to my guns because it typifies a recurring event in the use and misuse of intelligence. It is certainly true that most people within the intelligence community concerned with such things were not surprised. However, outside, and in some cases within, there were those who for various reasons were surprised, would not believe it, or did not want to believe the effectiveness of gun technology in the air defense role. That syndrome, more than the lack of technical capability Colonel De Mouche notes, in part explains why the US developed no comparable weapons. The Army is, however, going ahead with a Division Air Defense Gun at present.

As for Roland or the SA-8 being the newest mobile SAM, again it's a matter of perspective. SA-8 is, from my perspective, the newest. Although the program is doing well and on schedule, it will be a long time until Roland exists in any meaningful numbers. Production has not been started.

Counter programs are and have been under way. However, after talking with various knowledgeable people, it seems some are further along, others further behind than Roland. I placed my bets on the level of awareness in the broadest readership, figured ablation rather than penetration would raise more heated debate, so chose to make the point by being blunt—with no intent or implication to downplay the excellent efforts of people concerned with countermeasure development.

In these days of tight budgets and arguable priorities, a much broader look at the spectrum of tactical options in staving off a Warsaw Pact armored steamroller needs to be taken. Aircraft cannot backstop our own armor and antiarmor weaponry unless the attacking aircraft or complementary systems can suppress the mobile air defense umbrella we know exists. I do not believe the problem has been approached by anyone in requisite totality. But there are efforts under way to do so.

Col. Daniel K. Malone, USA

Two On the Secret Formula

Fine story by Russell Warren Howe in the February issue ["Dr. Sweeney's Secret Formula"]. Technical authenticity seems to be there in discussing Merlin engines and 100-octane fuel. I debate the statement when the author says, "A diving Spit was the first aircraft to go through the sound barrier. . . ."

It is true that diving aircraft experienced supersonic airflow over the wing; however, depending upon wing geometry, this occurred at aircraft speeds as low as Mach 0.78. If I consider the "sound barrier" to be defined as Mach 1.0, then I believe that Chuck Yeager and his X-1 were indeed the first to fly at or faster than the speed of sound.

Maj. Gen. Robert M. White
APO New York

Regarding David R. Winans' letter in the May issue—Dr. Sweeney did not claim to have invented 100-octane fuel, but to have been, with his colleagues, the developer of BAM-100, the fuel that satisfied the RAF specifications for the Merlin engine. This was the point of the article. Mr. Winans' old colleague, Alec Ogston, whom I quoted, confirms that some of the *Beacon Hill* shipment, not a component thereof,

was set aside as the reference fuel for future BAM-100 shipments.

In answer to Arthur C. Peterson's letter in the same issue—

1. The turning radii of the aircraft came from *Fighter*, the new Battle of Britain history by Len Deighton, who quoted from RAF manuals.

2. The report of a diving Spitfire unintentionally going through the sound barrier has appeared in many publications and was quoted by Sir Frank Whittle. Mr. Peterson's theory about a faulty IAS and TAS is contradicted by the pilot's experiencing the crossed-controls factor.

3. As the article explained, the Merlin's *rich-mixture response* with BAM-100 raised power by thirty percent. BAM-100 was, as stated, the first fuel to achieve the 100/130 designation.

4. Mr. Peterson appears to be confusing the restriction keeping first-generation Spitfires (as mentioned in the article) at a manifold pressure of "6" at takeoff with the "gate" associated with "through-the-gate" short bursts of top speed.

5. Finally, my point was that the fuel gave Fighter Command the edge to prolong the battle indecisively until the end of September 1940, thus ruling out a German invasion until the following year, by which time Hitler had revised his strategy and decided to attack Russia. For the record, before editing, my last sentence did not read "the edge needed to win the battle" but "the edge needed not to lose the battle."

Russell Warren Howe
Washington, D. C.

The Other Side of a CTBT

I would like to take exception to your April issue's "Focus On . . . The Folly of CTB."

To label a Comprehensive Test Ban Treaty (CTBT) as folly simply because it would end testing of nuclear devices for development of new and advanced types of weapons is to look at the question from only one side—that of the military importance of testing weapons. National political aims and priorities must be considered also. If the elected leaders of our country decide that limiting nuclear testing by the Soviet Union, and possibly preventing continued nuclear proliferation, is a higher priority than definite knowledge and proof of advancements in nuclear technology obtained through testing of

weapons, we in the military and scientific communities must work within these bounds. Obviously, it is our responsibility to advise our leaders on these matters to the best of our knowledge and ability. However, our advice should be correct, unbiased, and without self-interest.

While the article contained many facts and opinions, it seemed to be a little biased against the CTBT. It would appear to be somewhat self-serving that both experts called on for opinions were from the segment of the scientific community that deals with research and development of nuclear weapon designs. It certainly seems that for information

CORRECTION

In Capt. Stephen H. Russell's April issue article, "Base Housing vs. Buying a Home," the Defense Documentation Center was erroneously mentioned, p. 42, as the office to write for a copy of *The Rent-Buy Decision for Military Families* (US Air Force Academy Technical Report, July 1977) AD-A042 952 (\$4.00 paperback; \$3.00 microfiche). The correct office to contact is National Technical Information Service, Department of Commerce, 5285 Ft. Royal Road, Springfield, Va. 22161. Requests should include both the publication's title and number.

or opinions as to the feasibility of monitoring a CTBT, an individual involved with current monitoring efforts, or in a scientific discipline associated with monitoring techniques, such as seismology, should have been asked to contribute knowledge to the article. Quoting information such as that which places a five- to ten-kiloton threshold as the limit of detection in 1971 focuses on the date, as if early notice of a high detection threshold bolsters the argument against the CTBT.

On the contrary, it simply is a statement of a limitation of our means to detect nuclear tests as of 1971. Increases in detection capability would be expected over a period of seven years. Advances such as the Large Aperture Seismic

Airmail

Array in Montana, the NORSAR array in Norway, the Alaskan Long Period Array, as well as a global cooperative World-Wide Standardized Seismograph Network (WWSSN), have increased scientific capabilities in detection and accurate location of earthquakes as well as man-made disturbances.

Given our own belief and trust in our capability to monitor a CTBT, and given the national fortitude to confront violators with their breach of the treaty and to enforce whatever sanctions were provided in a CTBT, our current adversaries would be in the same position as we with respect to testing of new developments and verifying reliability of current stockpiled weapons.

Perhaps the Soviet Union would tread a bit lighter in the world political arena if they were not so certain of the reliability of their arsenal of nuclear weapons.

TSgt. Thomas A. Jardine
Satellite Beach, Fla.

Bumbling Barling Bomber

A friend sent me a copy of your February issue article "The Short, Unhappy Life of the Barling Bomber," since I know something about the Barling. The author, Capt. Earl Tilford, Jr., has done a fine job of outlining its history and good and bad points.

The photo on page 70 shows the emergency front landing gear wheels that I insisted be put on prior to the first flight, as I knew that the last plane Barling had built (in England) nosed up on its first flight and killed the pilot! This gear was removed after the first few flights, since the longitudinal control was excellent at all speeds and angles of attack.

Captain Tilford seemed to be much impressed with the trick throttle control device. So was I until I tried to use it. Out it came after the first few flights and was replaced by individual throttles, with master bars to push all forward or back, for simultaneous operation.

The Barling was the noisiest airplane I ever flew, except the GAX [an early Ground Attack Experimental triplane]. Communication

between the pilot and flight engineer was with chalk on a small blackboard!

When General Patrick asked me if I would take the Barling to Washington for a showing to the Congress, I told him I would be glad to. He finally decided against this, however, since if one of the six engines failed in flight over the mountains, the plane might not be able to clear the higher terrain, with counterproductive publicity.

Incidentally, the April 1978 issue of the Wings Club *Bulletin*, describing the April 12 Wings Club Sight Lecture by Richard Jackson, says: "Following closely the theme laid down by the late former Wings [Club] President Harold R. Harris, namely using 'hindsight,' 'insight,' and 'foresight'. . ." If the Wings Club is correct, I should not have paid my income tax this year!

Brig. Gen. Harold R. Harris,
USAF (Ret.)
New Canaan, Conn.

RPV Unit

While Maj. Joe Tillman provided a fair overview of the modern RPV program ["RPVs Are Fearless," April '78 issue], he has omitted two organizations that have made significant contributions to the program.

One unit not mentioned in the article is FTD 512 (ATC). The detachment has been conducting training on RPVs for about eleven years. Currently, there are nineteen instructors teaching twenty-seven courses on RPV systems. These courses cover the specialized manned aircraft systems as well as the RPV itself. The target population for these courses is the maintenance side of the house, but training sessions and seminars are conducted for the flight crews, primarily for winch operators and LCO/RCO personnel, who have no other source for flight characteristics.

Because of the loss of experience associated with the SAC-to-TAC conversion, the training needs of the 432d [TDG] have been tremendous. The detachment has met those needs very well.

The other unit not mentioned in the article is the 6514th Test Squadron (AFSC), now stationed at Hill AFB, Utah. The 6514th provides most of the initial flight-test effort for remotely piloted vehicles. With-

out their efforts, a significant portion of the operational resources of the 432d would have to be set aside for development work, restricting their operational capability tremendously.

The 432d is indeed our only operational unit, but their capabilities are in large measure the result of efforts of the other two units, and the article [in your April issue] would have been better if it had recognized that effort.

MSgt. David A. Matthews, Jr.
Tucson, Ariz.

And the Other Eighty Percent

"USAFSS: People Proud of Their Mission," by Ed Gates, in your April issue, was an eye-catcher, especially since I had spent five years assigned to this unique command. Mr. Gates did an excellent job of telling of the operators who are dedicated to gathering intelligence. But he failed to make mention of the other eighty percent of the command, the seemingly insignificant people who support the mission equally alongside these dedicated operators.

I'm speaking of the maintenance personnel, the dedicated electronics specialists who maintain the airborne and ground equipment used to collect invaluable data. These men must be knowledgeable and skilled with a degree of expertise that far outranks their counterparts in other commands to keep the equipment tuned to a high level of reliability.

I'm also speaking of the unseen operators, the men and women who take the raw data collected, analyze it, and produce a usable product for "customers" around the world. And I'm speaking of the personnel people, without whom the operators would not have half the ease with which a PCS move is made.

Mr. Gates, there are others: security police, supply, civil engineers, and many others, all with equal dedication and all with the same common goal. Sorry, Mr. Gates, but I must say you just hit the tip of the iceberg.

SSgt. John K. Wheeler
Nellis AFB, Nev.

Deserving of Credit

I want to thank you and Ed Gates for the recognition provided the many dedicated Security Service people in your April issue ["Speaking of People," p. 87]. They deserve

**The newest
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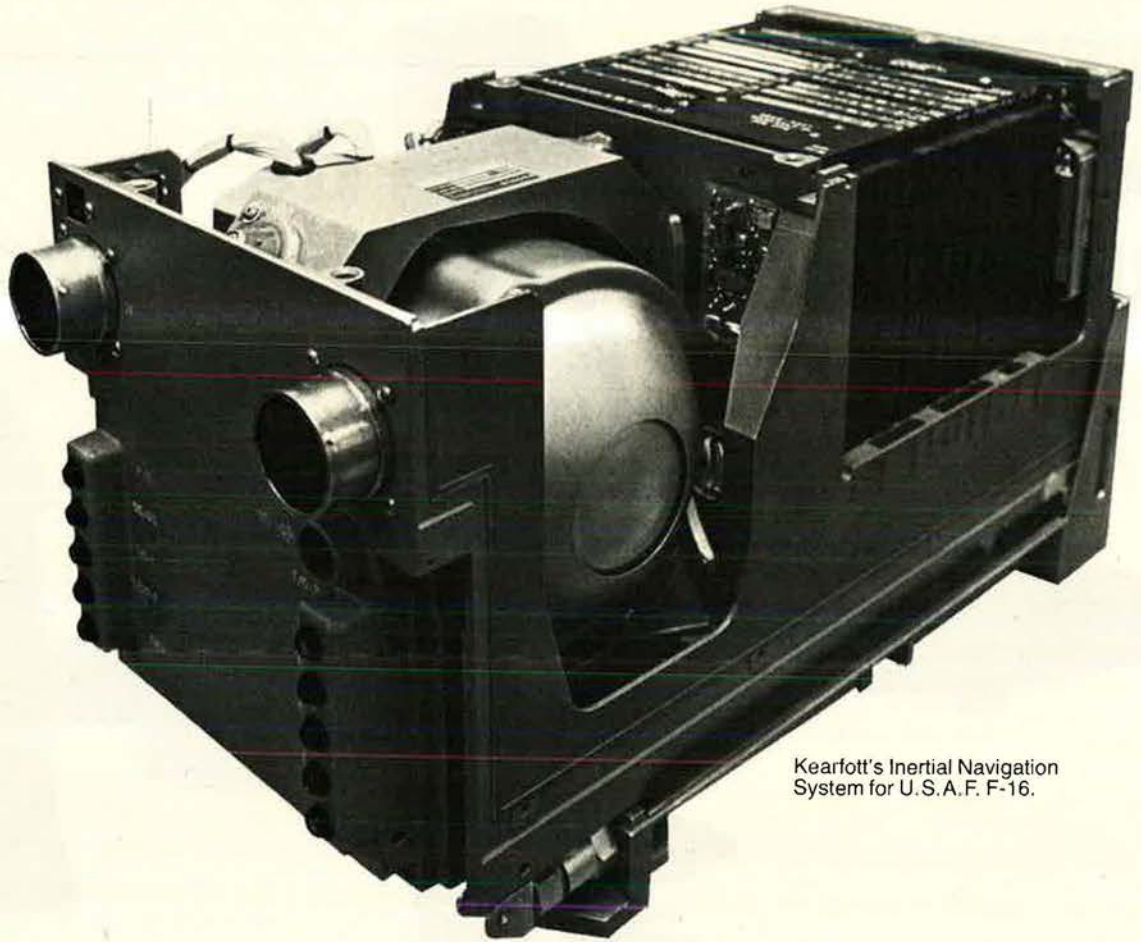
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much credit for the vital and largely unheralded work they do.

One point of clarification is necessary. It is Air Force and Security Service policy that certain intelligence operations and information require stringent security protection in accordance with law, regulation, and Presidential directive. I believe it important to set the record straight on this point.

Again, I appreciate your interest in the Air Force Security Service and enjoy reading your fine magazine.

Brig. Gen. Kenneth D. Burns
Commander
USAF Security Service
Kelly AFB, Tex.

Aviation in West Virginia

I am writing a history of aviation in West Virginia and would appreciate data of interest for this project, particularly information concerning Mountain State personalities who have made significant contributions. Memorabilia offered for inclusion will be returned after recording. Tales of "good ol' boys" and their exploits are welcome, if applicable.

Maj. G. T. "Bud" Martin,
USAFR (Ret.)
P. O. Box 2243
Charleston, W. Va. 25328

UNIT REUNIONS

Air Rescue Association

All former and current rescue members, spouses, and civilians are invited to the reunion of the Air Rescue Association in Albuquerque, N. M., October 5-7. Those planning to attend please notify

Air Rescue Association
5025 66th Ave., West
Tacoma, Wash. 98467

2d Air Division

The annual reunion of the 2d Air Division, WW II 8th AF, will be held in San Diego, Calif., July 13-15. Contact

Evelyn Cohen
610 Plaza Towers
2301 Woodward St.
Philadelphia, Pa. 19115

WW II Bombardiers

The Bombardiers Alumni Association (BAA) invites all bombardiers and their spouses—particularly Class 45-5B, Childress AFB, Tex.—to join our 8th bi-annual gala reunion in Dayton, Ohio,

August 2-6. For reunion information, contact

Jack P. Dorfman
901 McMillian Dr.
Trotwood, Ohio 45426

For BAA organization information, contact

Bill Burmester
485 E. Lincoln Ave.
Mt. Vernon, N. Y. 10552
Phone: (914) 390-5847

27th Fighter Bomber Group

Visit to Air Force Museum and other interesting programs are planned for the reunion of the 27th Fighter Bomber Group, June 23-25, at Stouffer's Inn, Dayton, Ohio. Contact

Brig. Gen. Dorr E. Newton, Jr.,
USAF (Ret.)
808 Milam Bldg.
San Antonio, Tex. 78205
or
Lowell A. Smith
4449 Charlotte Ann Dr.
Louisville, Ky. 40216

Class 38-C

Flying School Class 1938-C will hold a 40th reunion at Vandenberg AFB, Calif., October 4-6. Contact

Oscar Heinlein
107 Wyoming St.
Boulder City, Nev. 89005

Class 47-C

Pilot Class 47-C "Guinea Pigs" will hold their 31st annual reunion October 5-8, at the Sheraton Motel, Harlingen, Tex. Contact

Bob Campion
Box 88
Richardson, Tex. 75080

C-141 Development

The 5th annual reunion of those associated with C-141 development during 1961-1966 will be held in Los Angeles, Calif., June 14. Contact

Col. Charles Craig
10126 Reseda, Villa 115
Northridge, Calif. 91324
Phone: (213) 885-9305

308th Bomb Wing

The first reunion in 25 years will be held by 308th Bomb Wing personnel stationed at Hunter AFB, Ga., 1953-58, at the Airport Quality Inn, Savannah, Ga., June 30-July 2d. Information from

Paul B. Summey
1 Benjamin Franklin Dr., #93
Sarasota, Fla. 33577
Phone: (813) 388-1239

452d Bomb Sqdn.

The 5th annual reunion of the 452d Bomb Squadron, 322d Bomb Group, will be held at the Imperial House South, Dayton, Ohio, July 28-30. Contact

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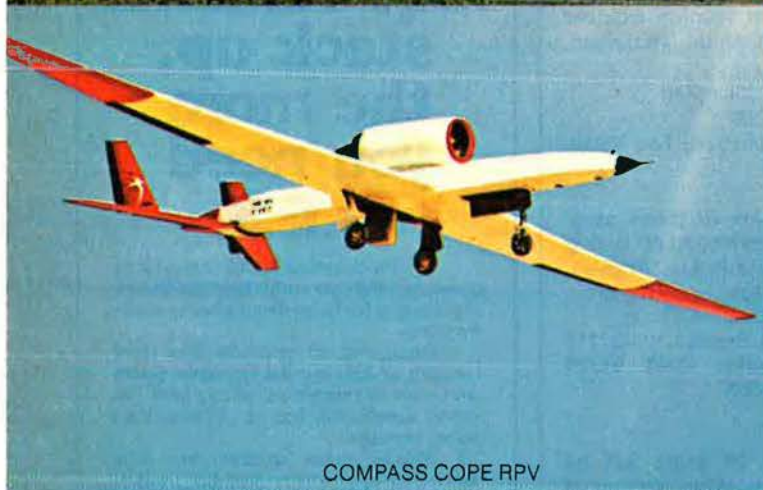
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Focus On...

BY EDGAR ULSAMER, SENIOR EDITOR

Washington, D. C., April 27

Special Nuclear Materials

The Departments of Defense and Energy are at loggerheads with the State Department, especially Secretary Cyrus Vance and US Ambassador to the UN Andrew Young, and the US Arms Control and Disarmament Agency (ACDA) over plans to halt the production of SNM (Special Nuclear Materials, the fundamental element of all nuclear weapons). State and ACDA are pressing the White House to propose, at the forthcoming United Nations special session on disarmament, that this country and the Soviet Union agree to a total halt of SNM production. The ACDA/State campaign in the White House, highly placed sources told this column, was not coordinated with DoD and DoE and, in certain phases, was conducted without even informing either of the two departments directly concerned with nuclear weapons. Opposition to such a treaty centers on the belief that compliance cannot be verified by any known technological means and on the fact that American SNM supplies already are critically short.

The amounts of SNM required for the nuclear armed cruise missile force could be obtained only by re-processing part of the 100 metric tons of SNM contained in US tactical nuclear weapons in Europe. The effect of such an action on NATO, coming on the heels of a US decision to delay or forego deployment of enhanced radiation "neutron" weapons, would be intolerable. Energy Secretary James R. Schlesinger, according to congressional sources, insisted on personally briefing President Carter on the dangers of such an agreement. He pointed out specifically, according to these sources, that Secretary Vance's proposal to place the International Atomic Energy Agency in charge of verification was unrealistic.

The UN Special Session on Disarmament, scheduled to be held in New York from May 23 to June 28, 1978, is billed as a concerted global

effort to advance the cause of disarmament. According to State Department literature, the event provides an opportunity to "develop wider support for the Administration's arms-control initiatives—especially SALT II and the comprehensive nuclear test ban treaty—and encourage better understanding of our overall arms control goals." There is considerable concern in Congress that the US arms-control lobby will use the occasion to promote extreme commitments to disarmament on the part of this country.

MX-Trident II Commonality Study

Senior OSD executives have initiated an MX-Trident II "commonality study." Trident II is the larger, longer-range second-generation ballistic missile of the new Trident submarine, also referred to as the D-5 SLBM. As presently conceived, two approaches are to be examined by the Under Secretary of Defense for Research and Engineering in conjunction with the two services. One alternative centers on the design of a missile that both USAF and the Navy can use without significant modification and adaptation. The other option envisions joint development of two separate weapon systems, one optimized for the MX and the other for the D-5 mission, while retaining a maximum degree of component commonality to hold down costs. Full-scale engineering development and flight testing of either system would seem precluded by the Protocol section of the pending SALT II accord. The Protocol is to be in effect for a three-year period and specifically prohibits test and production of MX and the Trident II SLBM.

Congressional experts suspect that influential elements of the Administration oppose full-scale development of MX on arms-control grounds. Two recent studies are thought to have had considerable impact on the White House. One was the "Report of the Office of Science and Technology [an ele-

ment of the White House] on the MX Missile System." The other, the "JASON Report on Minuteman Survivability," contains this conclusion: "The MX, with its designed great accuracy, large payload, and deceptive basing, will have profound implications for future arms-control agreements and strategic stability."

Both studies claim that, contrary to Defense Department and Joint Chief of Staff findings, the latest generation of Soviet ICBMs—even given continuing accuracy gains—is not likely to represent a decisive threat to the US ICBM force "before the mid-1980s." Further, it is argued that development of a doctrine and policy to launch Minuteman under massive attack would reduce its vulnerability and dissuade the Soviet Union from building an extensive countersilo force.

These findings are in conflict with recent testimony by the Under Secretary of Defense for Research and Engineering, Dr. William J. Perry, who said that Soviet advances in effectiveness and accuracy are likely to give the USSR CEPs in the range of 0.15 to 0.1 nautical mile. (CEP—circular error probable—is the radius of a circle within which half of the warheads are expected to fall.) He warned that Minuteman's survivability could be in jeopardy by 1982 or 1983, three years earlier than previous calculations indicated.

Soviet accuracy gains have important practical meaning; excluding a hedge against some of their missiles' malfunctioning, the Soviets could target only one warhead against each US ICBM silo with a high probability of success. But lacking extreme accuracy, they would have to target more than one warhead against each silo. This, however, introduces the problem of fratricidal effect: When two warheads are programmed to arrive over a target almost simultaneously, detonation of the first is likely to make the second ineffective.

Two articles of the pending SALT II agreement, jointly approved by US and Soviet negotiators, are cause for additional concern about MX. Article II—unlike the Protocol to the agreement, which is limited to a three-year period—says: "The Parties agree that after the date on which the Protocol ceases to be in force, mobile ICBMs shall be subject to the relevant limitations of the treaty which are applicable to ICBM

launchers. . . ."

Under Article IV, the signatories cannot start constructing "additional fixed ICBM launchers" or "relocate fixed ICBM launchers." MX, even though popularly referred to as a mobile ICBM, is a "multiple aimpoint" weapon. Most of the basing modes under study involve shunting the missile among various kinds of fixed sites to introduce major uncertainties for the attacker. The SALT II treaty language could be interpreted to mean that MX, as presently conceived, could not be deployed at all.

Reflecting recommendations and reservations by prominent strategic analysts in the Pentagon and both Houses of Congress, the head of the Republican Task Force on National Defense, Rep. Robin L. Beard (R-Tenn.) urged the Administration to add the following amendment to SALT II: "The development and testing of ICBMs for the purpose of allowing their deployment and launching from multiple aimpoints is allowed. The concept of deployment of multiple aimpoints includes ICBMs that are mobile and also ICBMs that are deployed at several redundant sites. Also the development and testing of associated canisters, transporters, and launchers is allowed. If ICBMs are deployed in a multiple aimpoint mode, they will be counted under SALT limits in terms of the number of missiles and not in the context of launchers. The side undertaking such a deployment must provide for the adequate verification of the number of missiles deployed."

Most intelligence experts agree that verifying multiple aimpoint systems is not appreciably different from verifying the number of SLBMs, an existing form of mobile ballistic missile.

A Letter to Paul Warnke

On April 4, 1978, four members of the House Armed Services Committee (HASC), probing the effects of a Comprehensive Test Ban Treaty on US national security, wrote a letter to Paul Warnke, Director of the US Arms Control and Disarmament Agency, critical of the Administration's position on this proposed accord with the Soviets. The four, all members of HASC's Intelligence and Military Application of Nuclear Energy subcommittee, are Democrats Samuel S. Stratton (N. Y.) and Jan Daniel (Va.), and Republicans

Robin Beard (Tenn.) and Robert W. Daniel, Jr. (Va.). They reported that "witnesses from the various [government] agencies testified that the government had not yet decided on whether a future treaty would consist of a zero yield test ban, or permit some form of low-level nuclear testing. We were most disturbed with this revelation because of the inherent contradiction in the policy of the Administration to be in the midst of negotiations with the Soviet Union, without first having defined the US position on this most fundamental issue."

The congressmen's letter also confirmed a report that appeared in this space last month—namely, that there are no means for verifying Soviet nuclear weapons tests involving yields of up to ten kilotons or significantly higher if the Soviets want to go to the trouble of masking such shots. With the Soviets able to maintain the reliability of their nuclear weapons stockpile while the US is constrained by the treaty's terms, "very dangerous military asymmetries would develop," in their view.

According to the group, ACDA Director Warnke subsequently attempted to classify the letter on grounds that its content might be "embarrassing to the Soviets." An equally unusual Administration action occurred two days before the subcommittee's hearings got under way in February, according to Representative Beard. All of the scheduled witnesses were summoned to the White House for a "so-called coordinating session. While the witnesses testified that they had no restrictions imposed on them, the appearance of impropriety is indisputable. Of equal concern, after the subcommittee sent each of the agencies its portion of the transcript for editing purposes, the Arms Control and Disarmament Agency informed each agency that testified before the subcommittee to send its portion of the transcript to ACDA so that ACDA could edit the transcripts before returning them to the subcommittee."

Continued B-1 R&D?

At this writing, highly placed sources report unofficially that the House Armed Services Committee has stricken from the Defense Budget request \$105.5 million sought by the Air Force for continued research and development

of the B-1, whose production was canceled by the White House last year. The Senate Armed Services Committee, which has not yet completed marking up the Defense Budget, is expected to approve the B-1 funds. Ultimately, the issue may have to be resolved in conference between the two committees. USAF views continued research on the B-1 as crucial because it can provide the technological building blocks—especially in engines and avionics—for a new penetrating strategic aircraft.

Clipper Bow

Clipper Bow, a new space-based ocean surveillance system, originally considered to incorporate bomber and cruise missile surveillance, is being confined to the naval mission, this column was told by DoD's Under Secretary for Research and Engineering William J. Perry. Reason is that ocean surveillance is "much easier" to do than the other missions that were considered. Expanding Clipper Bow's scope would have added to the system's complexity and cost. The new space system appears to be the US answer to the Soviet radar satellites used for ocean surveillance.

Two More E-4Bs?

In a recent memorandum to the White House, Secretary of Defense Harold Brown recommended buying two additional E-4 (Boeing 747) Advanced Airborne Command Post (AABNCP) aircraft, for a full fleet of six E-4B aircraft to "support both the National Emergency Airborne Command Post (NEACAP) and Strategic Air Command (CINCSAC) mission requirements." Early last year, President Carter had ordered the Defense Department to review the E-4 program, with emphasis on its cost-effectiveness, coupled to a temporary halt in procurement.

Expressing strong support of the program, Secretary Brown termed it "costly but necessary. Total costs will approach a billion dollars. The remaining two airframes would be about \$70 million. But in terms of assuring the survival of an adequate decision-making and force execution capability, the enhancement of deterrence is worth the cost. . . . Such a fleet will significantly enhance the force connectivity and provide greater assurance that the command and control of the SIOP [Single Integrated Operational

Focus On...

Plan] forces will survive," he said.

Secretary Brown's recommendation appears to halt the so-called SEACAP project that envisioned the use of converted Polaris submarines capable of launching special communications satellites in place of NEACAP to provide the National Command Authorities with a survivable command and control mechanism.

Toward ASW Solutions

As reported in this space last month, both the US and the USSR are pursuing research that may dispel the aura of eternal invulnerability that has surrounded ballistic missile submarines.

John M. Collins, the Library of Congress's senior national defense specialist, in a study of American-Soviet military trends published by the Georgetown Center for Strategic and International Studies, comments sagely on the antisubmarine warfare (ASW) subject.

"Traditional detection methods count on acoustical apparatus that identify distinctive submarine sounds. Alternatively, they try to find anomalies that submerged submarines make in the earth's magnetic field." But these conventional methods are not likely to make the oceans transparent in the near future, Mr. Collins suggests. Of far greater concern are Soviet efforts in other, more arcane, fields of detection:

"Moving submarines, for example, cause thermal disruptions. They also leave biological tracks of dying microorganisms in their wake, and disturb ultraviolet radiations in sea water."

This column learned from authoritative sources, in extension of Mr. Collins's assertion, that the extremely sophisticated navigation and orientation system of the migrating salmon—until recently not understood at all—is now viewed as a promising, long-term candidate for bringing about breakthroughs in submarine detectability.

The Library of Congress report states that "the larger the submarine, the more likely hydrodynamic disturbances can be detected." Apparently referring to "convection cells," first publicly reported on by

AIR FORCE Magazine, he adds that, in addition, radar at exceptionally high frequencies can recognize "submarine signatures in the atmosphere above the ocean. Collating and coordinating of data via satellite communications could help."

Budgetary Bailout

There is apprehension among congressional experts that deficiencies in US naval capabilities, brought on in part by faulty management and program slippages, might be corrected at the expense of the Air Force, the service whose management record is exemplary. There is little danger that the Air Force's budget request will be cut significantly below the FY '79 funding proposal. It is probable, however, that most congressional add-ons will go to beefing up the US Navy, with little or no money left to flesh out such austere funded USAF programs as the MX ICBM and to reinstitute the AMST Advanced Medium STOL Transport program, for which no funding was provided under the FY '79 Defense Budget request. Fears of the Air Force having to bail out the Navy in a budgetary sense are based on the fact that the first congressional budget resolution sets an ironclad overall ceiling for defense expenditure.

JAWS Evaluation

The harmonious relationship between USAF and the US Army is being strained by covert Army maneuvering on Capitol Hill in connection with the Joint Attack Weapon Systems (JAWS) Evaluation effort. JAWS' principal protagonists are USAF's A-10 Thunderbolt close air support aircraft and the Army's Advanced Attack Helicopter. Air Force feelings were lacerated when Army witnesses deviated from the mutually agreed funding levels concerning the two weapon systems that are at once complementary and competitive.

Sokolov's Role

Prominent US Sovietologists see evidence that Gen. of the Army Sergei Leonidovich Sokolov serves as the First Deputy Minister of Defense for Foreign Operations. The latest CIA "Directory of USSR Ministry of Defense and Armed Forces Officials" lists General Sokolov as a First Deputy Minister whose responsibility is undetermined. (Of the other two First Deputy Ministers,

one is responsible for Warsaw Pact forces and the other oversees the Soviet General Staff, according to the CIA.) Sokolov, this column was told, seems to be in charge of such foreign operations as masterminding Cuban forces in Africa and controlling the flow of Soviet weapons to third-world countries. The same sources also see strong circumstantial evidence that the influence of the Defense Ministry on the Soviet SALT stance is being strengthened with First Deputy Minister Nikolai Vasilyevich Ogarkov and Deputy Minister Col. Gen. Nikolai N. Alekseyev assuming the role of SALT overseers.

Middle East Fact-Finding

Air Force Secretary John C. Stetson, returning from a fact-finding tour of the Middle East, warned that the Saudis view US willingness to sell them sixty F-15 fighter aircraft as a very serious test of their relationship with this country. The Administration's commitment to provide Saudi Arabia with USAF's most advanced fighter aircraft is meeting formidable congressional opposition. US winking on the sale, Secretary Stetson told Pentagon reporters, would prompt the Saudis to buy advanced fighters from other countries. Secretary Stetson hinted that the Saudi Arabian requirement—based on the size of the territory to be defended—is far in excess of the number of F-15s okayed by the Administration, which he termed "a drop in the bucket."

Iran, he reported, continues to be interested in USAF's proposed AMST (Advanced Medium STOL Transport, a wide-body design dropped from the FY '79 Defense Department budget) and may proceed with its development at Iran's expense. Acknowledging that the US military capability to aid Middle Eastern countries in case of a Soviet attack is limited, he said that having a B-52 base in that part of the world would help considerably.

Concerning NATO requirements, Secretary Stetson said that MRBMs (medium-range ballistic missiles) would be a "good adjunct" to cruise missiles.

The Middle Eastern countries he visited would prefer a more aggressive US stance in the Horn of Africa to fend off Soviet/Cuban infiltration, Secretary Stetson said. He rated US intelligence in that part of Africa "superlative." ■

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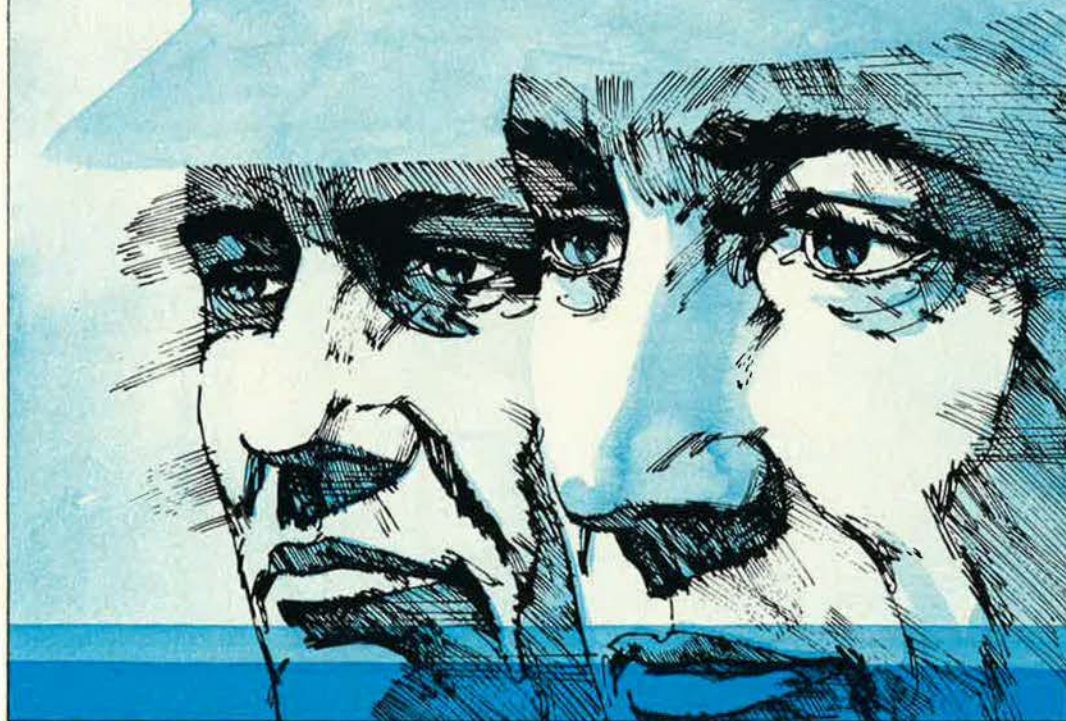
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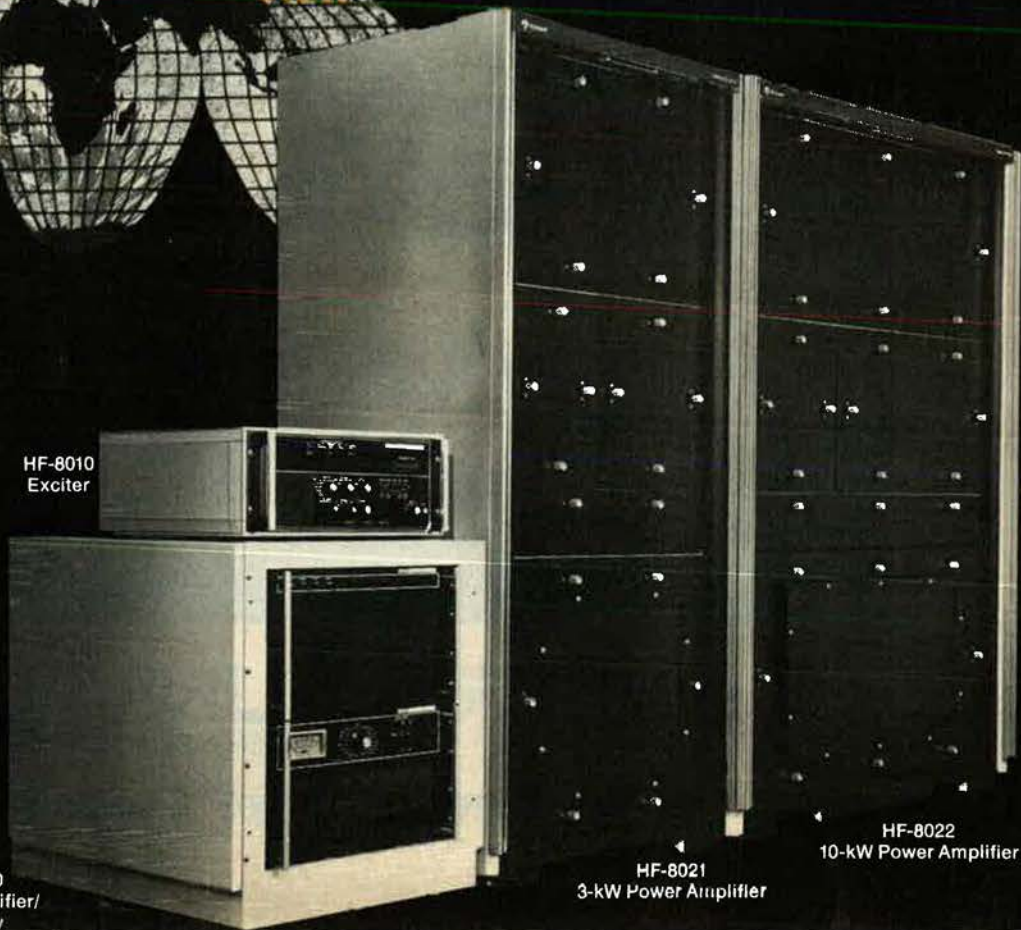
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Capitol Hill

By the Air Force Association Staff

Washington, D. C., April 26

The Trend Continues

Each week, the number of Members of Congress announcing they won't be running for reelection this fall seems to increase. Ten senators and forty-two representatives have now said they're going to hang it up, or have decided to run for another office. Nine representatives will be trying for the Senate; five will be running for governor; and one other representative is running for state attorney general.

This turnover continues the trend begun a few years ago that helped result in the great influx of freshman congressmen. That surge of youth was expected to turn the Congress more liberal, but political observers have been surprised. The *Congressional Quarterly* recently noted that, based on voting records compiled by five political lobbying organizations, "House members are acting more conservatively than had been expected."

Spending Guidelines

House and Senate Budget Committees have reported their recommended guidelines for defense budget authority and outlays for FY '79. Spending levels will be finalized by mid-September. The House committee voted to cut \$1 billion from the President's budget authority request of \$128.4 billion, and \$2.1 billion from his \$117.8 billion request for outlays, thus ignoring earlier recommendations of the House Armed Services and Appropriations Committees. (See "Capitol Hill," May '78 issue, p. 23.)

In its formal report, the House Budget Committee stated: "The Committee does not accept the assumption that defense budgets must necessarily be increased every year in real terms, nor does it assume that real funding increases of two to three percent each year invariably improve our security."

The Senate Budget Committee increased defense budget authority by \$1.36 billion over the President's request, and cut his proposed out-

lays by \$1.9 billion. Both the House and Senate committees added approximately \$2 billion in authority and \$1.5 billion in outlays to the President's \$19 billion request for the Veterans Administration.

DOPMA

Contrary to published reports, Sen. Sam Nunn (D-Ga.), Chairman of the Senate's Manpower Subcommittee, has not changed his position on the Defense Officer Personnel Management Act (DOPMA) pending in Congress.

He has said for some time that his committee would hold hearings on the proposal, but only after it had seen the recommendations of the President's Commission on Military Compensation.

With the Commission's report submitted, Senator Nunn says he will proceed with hearings, probably beginning this summer. His reservations about DOPMA, particularly its "up-or-out" provisions, remain.

New Legislation

- **H.R. 11844**, Carney (D-Ohio), to increase the maximum amount from \$250 to \$350 that the Veterans Administration may pay for funeral expenses;

- **H.R. 11889**, Montgomery (D-Miss.), to increase from \$100 to \$200 the monthly special pension for Medal of Honor recipients;

- **H.R. 12103**, Tucker (D-Ark.), to include civilian security police of the Department of Defense within the Civil Service Commission retirement system;

- **H.R. 12209**, Spellman (D-Md.), to promote domestic recruiting of teachers for positions in overseas DoD dependents schools;

- **S. 2309**, Bayh (D-Ind.), to provide that a member of a reserve component of the armed forces shall not be denied employment because of membership in such component; and

- **S. 2856**, Morgan (D-N. C.), to permit members and former members of the uniformed services who

have completed eligibility requirements but have not, because of age, become entitled to retired pay to participate in the survivor benefit plan, and to make dependents of such members who died before becoming entitled to such retired pay eligible for certain medical and dental benefits.

In addition, Rep. Hillis (R-Ind.) introduced a resolution expressing sense of the House that DoD should change payment of housing allowance to military personnel on foreign duty to an actual average expense basis by grade.

What They're Saying

"Although there has always been a certain irreducible amount of attrition from the military, attrition in the first term of military service has risen substantially with the all-volunteer force.

"From a level of twenty-five percent just five years ago, attrition has now reached approximately forty percent.

"To put it simply, out of every 100 individuals who joined the armed forces, forty left the service prior to completion of their tour of duty." —Sen. Harry Byrd (D-Va.)

"... the neutron bomb becomes a partial equalizer to the massive Soviet buildup in Eastern Europe that has been proceeding under the guise of détente." —Sen. Harrison Schmitt (R-N. M.)

"... here is one Senator who hopes he [President Carter] will decide against going ahead with the neutron bomb, for the simple reason that this weapon lowers the nuclear threshold—that is, it makes the nightmare of a nuclear war more likely." —Sen. William Proxmire (D-Wis.)

Capitol Humor

Rep. Romano Mazzoli (D-Ky.) says his constituents in Portland think there's too much concern over the Panama Canal and not enough over the "insidious" giveaway of the Portland Canal, which, according to a Louisville *Times* article he inserted in the *Congressional Record*, is their "main line of defense if Indiana wants to attack."

While arguing against the Panama Canal Treaties, Sen. James B. Allen (D-Ala.) found himself alone on the Senate floor. But, said Allen, "I shall not take advantage of the absence of my colleagues by moving to table the treaties." ■

Long term cost reduction and better skill development are dual goals of Honeywell maintenance trainer programs.

The idea of computer based maintenance training is new, but the reasons for it are very old—to reduce costs and deliver a better qualified technician to the fleet, squadron or brigade.

Training on operational equipment is expensive, risky and it takes vital operating hardware out of service. In the long run, a simulator is far less expensive and it does a better job of training.

With a Honeywell maintenance trainer, the instructional staff has the flexibility to modify and change a program so that the trainee is exposed to a wide variety of faults, malfunctions and equipment problems.

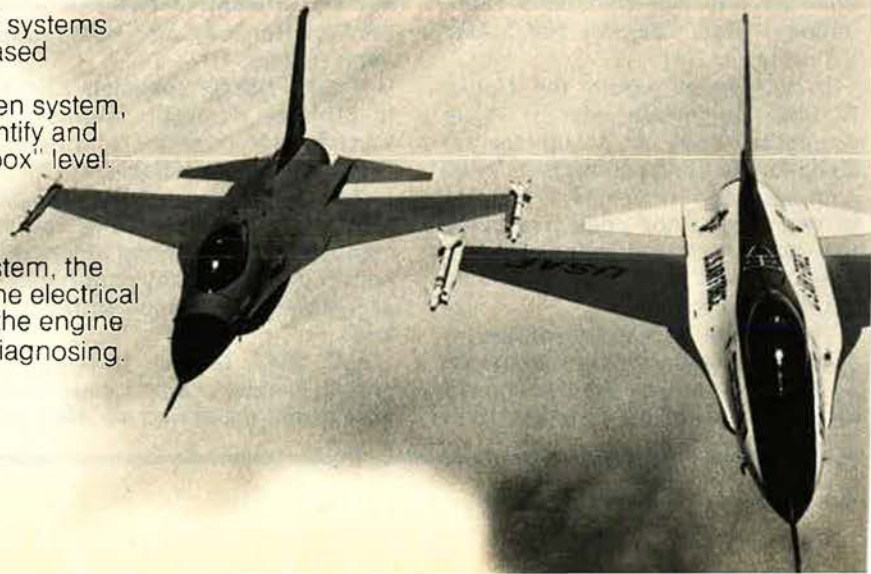
More students can be trained at one time and the instructor can monitor each student's progress—stopping to correct mistakes as they occur. The Honeywell system also produces a hard copy performance report which can be used to evaluate student progress.

Technicians will learn F-16 systems on Honeywell maintenance trainers.

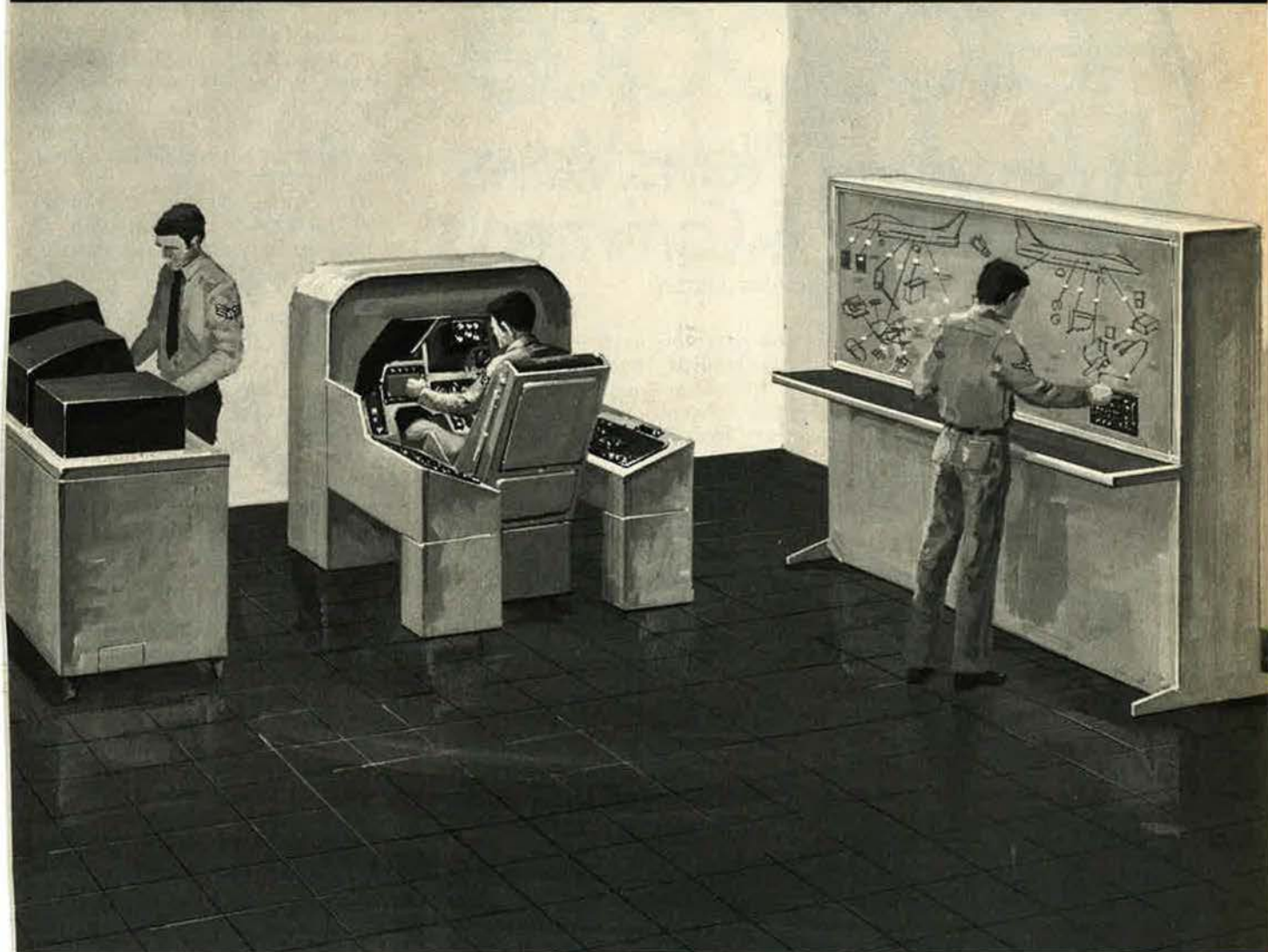
Technicians will soon be able to learn F-16 systems maintenance on a Honeywell computer based maintenance trainer.

The trainer will be a computer driven system, which will train "O" level mechanics to identify and locate equipment problems at the "black box" level.

Systems incorporated in the Honeywell trainer include the environmental control system, the flight control and instrument system, the fire control system, the hydraulic system, the navigation system, the electrical system, the weapons control system and the engine system including starting, operating and diagnosing.



Trainers of tomorrow are at Honeywell today.



Honeywell advances maintenance training with new computer and instructional techniques.

Future combat needs will require quick response with highly sophisticated, fully operational equipment. To achieve these vital goals, maintenance technicians will have to have a better understanding of the equipment they're responsible for.

Computer simulated maintenance training frees operational equipment for the field and enables instructors to teach significant equipment malfunctions and how to correct them.

Honeywell's front end analysis results in simulation that is tailored to specific customer requirements. The research Honeywell is doing today could be tomorrow's shipboard electronic maintenance trainer for Spruance Class Destroyers or systems trainer for XM-1 tank crews.



If you'd like more information about Honeywell Training Systems, contact the Marketing Dept., Honeywell Defense Electronics Division, 1200 East San Bernardino Road, West Covina, California 91790. Phone 213/331-0011. Telex 670-452. Branch offices in Australia, England, France, Germany, Italy, Japan and Sweden.

Honeywell

Aerospace World News, Views & Comments

By William P. Schlitz, ASSISTANT MANAGING EDITOR

Washington, D. C., May 1
★ Management of USAF's Air-Launched and Ground-Launched Cruise Missile programs has been shifted from AFSC's Aeronautical Systems Division, Wright-Patterson AFB, Ohio, to DoD's Joint Air Force-Navy Cruise Missiles Project Office in Washington, D. C.

The Joint Office has the responsibility for developing an Air-Launched Cruise Missile with optimum performance and minimum cost "as a matter of the highest national defense priority," USAF said.

Some 110 military and thirty-five civilian personnel have been reassigned to the newly created Aeronautical Systems Division Detachment 2 at the Joint Office. They'll remain in Washington until the mis-

sile programs have passed DSARC III—Defense System Acquisition and Review Council—the decision point for final production approval. Then, management for the Air- and Ground-Launched programs will revert to ASD at Wright-Patterson for the next phase in the development process. Navy will retain management of the Sea-Launched program in Washington.

To select an ALCM, the Joint Office will conduct a flyoff between Boeing Aerospace Co.'s AGM-86 and General Dynamics Convair Division's AGM-109 at Edwards AFB, Calif., in 1979.

For its part, ASD is currently supervising the avionics and other modifications that are required if the B-52 is to assume the ALCM

carrier role. It also has under development the ramjet-powered supersonic Advanced Strategic Air-Launched Missile (ASALM).

In April, ASD issued Requests for Proposals to three aerospace companies to undertake feasibility studies of using wide-body aircraft to supplement B-52s as cruise missile launch platforms.

The three—Boeing, Lockheed, and McDonnell Douglas—are all producers of commercial wide-body transport aircraft. Included in the suitability studies will be the prototypes developed by Boeing and McDonnell Douglas as competitors in the Advanced Medium Short Take-off and Landing Transport (AMST) program. AMST, now on the back burner because of funding denial in the FY '79 budget, was visualized as a potent addition to the airlift fleet in terms of such outsize cargo as tanks and other heavy equipment.

★ Astronauts John W. Young, commander, and Robert L. Crippen, pilot, will crew the Space Shuttle's first orbital flight test (OFT-1) set for launch from the Kennedy Space Center, Fla., next spring.

Backup crew will be Joe H. Engle and Richard H. Truly, commander and pilot respectively.

The space agency plans a series



Four generations of Lockheed four-engine aircraft on the ramp at Harrisburg International Airport, Pa. Joining the ANG 193d Tactical Electronic Warfare Group's C-121 Super Constellation and C-130 Hercules are the C-141 StarLifter and C-5 Galaxy. Lt. Col. Bob Eno, safety officer of the 193d, quickly had Air Guard photographer SSgt. Dave Hamilton record the event on film.

of six orbital flights of increasing complexity to prove out the world's first reusable spacecraft. On the first four flights, the seventy-five-ton Orbiter will return from space to unpowered landings on the dry lakebed at NASA's Dryden Flight Research Center, Edwards AFB, Calif. Thereafter, the craft will use the specially constructed runway at the Kennedy Space Center launch site in Florida. (For details on the Center's preparations to conduct Shuttle operations, see the following item.)

Astronaut Young, a retired Navy captain and a veteran of four space missions, is currently Chief of the Astronaut Office. He's been an astronaut since 1962. Crippen, a Navy commander who has been a NASA astronaut since 1969, will be making his first space flight. Air Force Col. Joe H. Engle commanded one of the two crews that flew the Shuttle approach and landing tests last year. He was a test pilot in the X-15 research program before becoming an astronaut in 1966. Navy Cmdr. Richard H. Truly flew with Engle in last year's Shuttle tests. As did Crippen, he transferred to NASA from the canceled USAF Manned Orbiting Laboratory (MOL) program in 1969.

Two other crews have been named to begin training for as yet unspecified Shuttle missions: Fred W. Haise, commander, and Jack R. Lousma, pilot; and Vance D. Brand, commander, and Charles G. Fullerton, pilot.

Civilian Haise was Apollo-13 lunar module pilot and commanded the other Shuttle crew last year. Formerly a NASA research pilot, he became an astronaut in 1966. USMC's Lousma, a lieutenant colonel, was a Skylab-3 pilot in 1973. He's been an astronaut since 1966. Civilian Brand was command module pilot for the Apollo/Soyuz mission in 1975, and an astronaut since 1966. USAF Col. Charles G. Fullerton flew with Haise in last year's tests. He was assigned to the MOL program before becoming a NASA astronaut in 1969.

★ With the advent of Space Shuttle flights in mid-1979, the Kennedy Space Center in Florida will once again be the hub of the US's manned space program.

Construction and modification of Shuttle support facilities are on schedule, according to NASA.



During tests at White Sands Missile Range, N. M., a supersonic missile blasts from the launch tube of a US Roland short-range, all-weather air defense system. Roland is the first major European weapon system slated for production in the US and deployment with the Army. Roland is a step toward further standardization of equipment among NATO forces.

Northwest of the Vehicle Assembly Building (VAB)—that huge structure that once housed massive Apollo hardware—has been constructed the Orbiter Landing Facility. One of the longest runways in the world, it measures 15,000 feet (4.5 kilometers) long by 300 feet (ninety-one m) wide and has a 1,000-foot (300 m) safety overrun at each end. Orbiters will be guided to automatic landings on it by a microwave landing system.

The only other new structure at Kennedy Center is the Orbiter Processing Facility, adjacent to the VAB. The two-bay building will serve as an aircraft hangar and "clean room," where flight equipment and payloads will be handled.

The VAB itself has received extensive modification; it is here that the Shuttle's major components will be integrated. The external tank

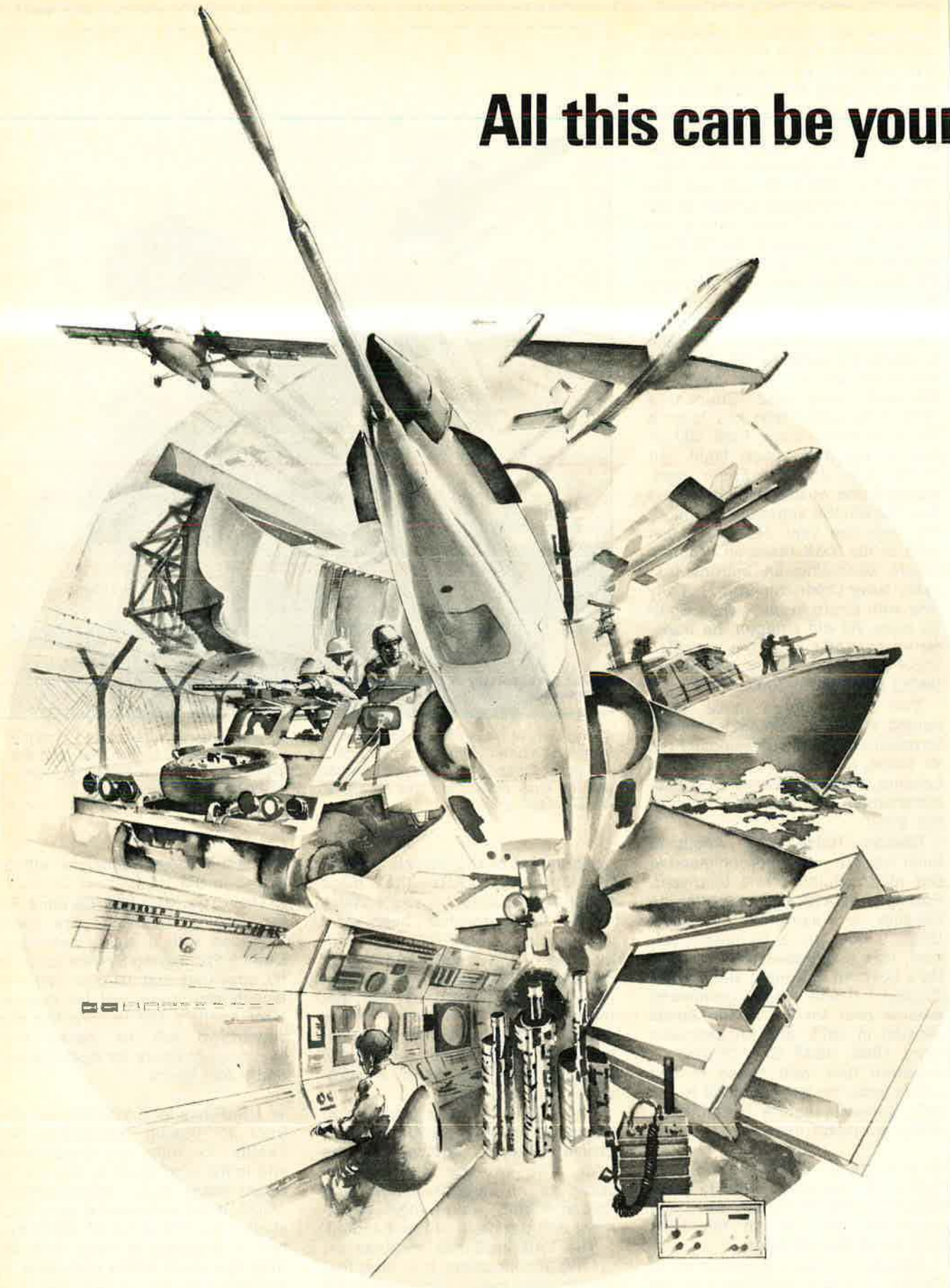
and solid rocket boosters will be stored in the VAB.

The Launch Control Center's Firing Rooms 1 and 2 are being equipped with a highly automated Launch Processing System for Shuttle checkout and launch; required launch manpower will be reduced from Apollo's 450 to forty-five and countdown will be pared from twenty-eight hours for Apollo to two and a half hours.

★ USAF has let a \$265 million contract to Boeing Aerospace Co., Seattle, for full-scale development and initial production of the Inertial Upper Stage (IUS) vehicle system.

IUS, to be equipped with a multi-stage solid-fueled rocket motor system, is designed to boost satellites from low earth orbits attainable by the Space Shuttle to high-energy or interplanetary trajectories.

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Aerospace World

Under the Air Force Space and Missile Systems Organization award, Boeing will build nine IUS vehicles, plus all space and ground-support equipment. Of them, DoD will use four and NASA will use five.

Though IUS is being developed primarily for use in conjunction with the Space Shuttle, it will be compatible with USAF's new expendable launch vehicle—the Titan III (34-D). In fact, the first four IUS launches of DoD spacecraft will be via this launch vehicle.

With Space Shuttle use, the IUS will be carried to low earth orbits of from 100 to 500 nautical miles in the cargo bay. There, the bay doors will open and the Orbiter's launch arm will deposit the IUS (and its payload) outside. Once free of the Orbiter, the IUS will be fired.

First launch of an IUS aboard a Shuttle is scheduled for July 1980 from Kennedy Space Center on a NASA mission.

★ In a further move toward standardization, USAF jet aircraft in the United Kingdom have switched to the use of the safer, kerosene-based JP-8 fuel currently used by

the RAF and most other NATO countries. Previously, USAF fueled jet aircraft with the naphtha-based JP-4.

JP-8, known as F-34 in NATO terminology, is a blend with icing and corrosion inhibitors added and is similar to fuels used by civilian jetliners. In the next several years, all USAFE bases will convert to JP-8; there is an agreement in principle among NATO nations to shift exclusively to it, as a means of furthering interoperability among alliance forces.

Only minor engine adjustments have been required to effect the changeover, Air Force officials said. Tests have shown that "engines adjusted for JP-4 can use JP-8 occasionally with no adverse effect or loss of performance." Transient or deployed aircraft would have no problems refueling with JP-8.

Conversion to JP-8 will mean a larger jet fuel supply for NATO aircraft, which will be able to tap civil airline sources in an emergency or contingency situation. CONUS-based military jets will continue to use JP-4.

★ As part of its Quick Strike Reconnaissance feasibility program, USAF is testing at Eglin AFB, Fla., a new laser beam film recorder that provides ground-based photo interpreters with high-resolution photos within seconds of photography from a high-speed aircraft.

Called Tactical Laser Beam Re-

recorder (TLBR), the RCA-developed system beams electronic photo data at the rate of 2,400 lines per second to a ground terminal. There, the TLBR's self-contained processor instantly produces a five-inch-wide dry silver film in a continuous photographic map of the terrain beneath the plane.

Also provided is such digital information as aircraft position and altitude, time, sensor mode, and special interest areas.

★ A second fence—at a cost of \$13 million—will join the ten-foot-high barrier already in place around the new international airport at Narita, a farm community about forty miles northwest of Tokyo.

A security fence is also to be erected around the facility's main control tower, whose air traffic control equipment was destroyed during a leftist riot this past spring. The damage postponed the airport's opening.

Narita was built to siphon traffic from overburdened Haneda Airport, the forty-seven-year-old facility a few miles southeast of the Japanese capital that handles some 400 domestic and overseas flights each day. The plan is for Haneda to take only domestic and ceremonial flights.

Controversial Narita ran into formidable opposition from the outset. At issue initially was the expropriation of ancestral farmland that had been in Japanese families

General Dynamics funded preliminary design of this two-seat F-16 Wild Weasel that would carry electronic equipment and munitions to detect and destroy enemy radars, SAM sites, and radar-directed AAA. The aircraft could deliver conventional and area-coverage weapons as well. General Dynamics is seeking a market overseas for a Wild Weasel F-16.



for generations. Then radical groups joined to protest against the government.

The series of violent confrontations that followed left a number of people dead and many more injured.

The airport has been beset with a host of other problems as well. Among them: unpredictable air turbulence at low altitudes over the airport, union discontent, cracks in the single runway, and the need for an efficient means of transport between city and airport (two hours' driving time and a \$50 cab fare).

A silver lining for Narita-area hostelries however: As a hedge against Tokyo's notorious highway congestion, many of the 20,000 travelers moving through the airport daily are expected to arrive for their flights a day early.

★ Japan is planning the "largest space exposition to be held out-

side the US." The event certainly will be the longest running—from July 16, 1978, to January 15, 1979. Theme of "Space Expo": "Space—Dream and Hope for Humanity."

Space Expo, to be staged at Tokyo, is being billed as a public educational exhibit—especially for the young. As such, it will feature US and Japanese space accomplishments. On display will be hardware from NASA and the National Air and Space Museum. This will include a 224-foot (68.2 m) Saturn-1B, and an Apollo command module, service module, and escape tower. Also on hand will be such space veterans as Mercury and Gemini capsules, Saturn-V rocket engines, and various types of research and communications satellites.

Sponsored by Japanese government agencies and scientific and industrial organizations, Space Expo is budgeted at about \$21 million,



British Skylark research rocket gets going-over in the electromagnetic "clean room" at a British Aerospace facility in southwest England. Adjacent is "probably the best and most up-to-date computer data acquisition and analysis equipment anywhere in the world," the firm said.

Pentagon Ready Base Closures and Reductions

DoD officials have recommended that eighty-five military installations and activities in the US be closed or reduced in the next year.

If implemented, the realignment could save as much as \$337 million annually, officials said, with the elimination of 14,600 military and 8,600 civilian posts.

For its part, USAF has proposed actions that would affect five major installations and "in excess" of forty radar sites, saving about \$160 million annually. More than 6,500 military and 2,400 civilian slots would be lost.

The major installations affected:

- Chanute AFB, Ill., would be closed, "with comparatively limited disruption" of the ATC training mission. About 1,200 military, 800 civilian, and 450 contract positions would be erased.
- Goodfellow AFB, Tex., would be closed, for an annual saving of \$14 million and the loss of 375 military and 225 civilian jobs.
- Kingsley Field, Ore., would lose its defense alert commitment, for a saving annually of \$10 million and the elimination of 275 military and 200 civilian posts.
- Los Angeles AFS, Calif.; Space and Missile Systems Organization (SAMSO) activities would be relocated, making possible 100 military, seventy-five civilian, and about 400 contractor reductions.
- Under the proposals, the fifteen KC-135s of SAC's 301st ARW at Rickenbacker AFB, Ohio, would be shifted to other units, reducing the base population by about 1,800 military and 450 civilian personnel, and saving \$24 million a year. About 3,300 ANG and AFRES personnel would remain.

By deactivating forty or so Semi-Automatic Ground Environment (SAGE) system radar sites around the country, \$57 million would be saved a year, with the phaseout of some 3,200 military and 700 civilian authorizations. The long-range radars of the USAF/FAA Joint Surveillance System would take up the slack.

Among other major military installations facing closure is the Army's training center at Fort Dix, N. J.

to come from ticket sales, donations, and grants. The preparation and shipping of all US equipment and exhibits will be paid in full by the Japanese government.

★ Gen. Robert J. Dixon, who retired from the Air Force this past spring, and Tactical Air Command have been awarded the Collier Trophy, the nation's oldest aviation award.

The General and TAC were cited for the development and implementation of the Red Flag combat simulated flight training program, under which the most realistic combat training in peacetime is conducted.

Under Red Flag, ten four-week exercises a year are undertaken at Nellis AFB, Nev., during which US and allied aircrews are pitted against a mix of SAMs, AAA, and "enemy" fighters in scenarios designed to challenge mission capabilities. Extensive range instrumentation provides a broad data base useful in the debriefings that follow.

In 1977, more than 8,200 aircrews trained in the exercises, assisted by 10,000 ground troops.

The Collier Trophy, sponsored by the National Aeronautic Association, is awarded annually for the "greatest achievement in aeronautics and astronautics in America" during the preceding year.

Aerospace World

★ A C-5 Galaxy aircrew from Dover AFB, Del., has been named winner of the 1977 Mackay Trophy, the oldest award exclusively for USAF flight personnel.

In an unprecedented mission last June, the C-5 hauled a forty-ton superconducting electromagnet and forty-five tons of support equipment nonstop (two aerial refuelings in heavy weather) from O'Hare IAP to Shermetyevo Airport, Moscow. The equipment is being used in a cooperative energy research project.

Those honored are members of the 435th Military Airlift Wing and the 512th MAW (Associate) at Dover. They include: Capt. David M. Sprinkel, aircraft commander, and Capt. John M. Zinkievich, Peter D. Jones, and Robert M. Murdock; 1st Lt. Richard D. Surman; CMSgt. Ronald C. Euscher; SMSgt. Charles S. Beck; MSgt. Lester E. Finney; TSgts. Gerald P. Slocum and Glen W. Eskridge; SSGts. Robert D. McLendon, George S. Stacey, George C. Marasco, James C. Krause, and Robert A. Mooney; SrA. Thomas P. J. Naravaez; and A1C John M. Thompson.

The Mackay Trophy, sponsored by USAF and the National Aeronautic Association, is presented annually for the "most meritorious flight of the year" by an Air Force person, persons, or organization. MAC aircrews also won the trophy in 1974 for their participation in the return of the SEA POWs.

★ While no decision has been made to deploy the MX advanced follow-on to the Minuteman ICBM (see April issue for an AFA policy paper on the subject), preliminary actions are being taken.

Foremost among them is a "rigorous" examination of the weapon's prospects for survival under nuclear attack. From this study will be derived the missile's basing mode (a likely contender is an elongated covered trench in any portion of which the ICBM could be hidden).

With this in mind, many studies (including environmental impact



History was made in April 1942 when, led by then-Lt. Col. James "Jimmy" Doolittle, sixteen B-25 bombers took off from the deck of the carrier Hornet for the raid on Japan, one of the earliest offensive missions of the war and a tremendous boost to US morale. This past April, General Doolittle and more than thirty of the raiders and their wives assembled in Rapid City, N. D., to mark the thirty-sixth anniversary of the event. Here is the group, with General Doolittle in the front row, standing, third from the left.

analyses) will have to be conducted to, in effect, lay the groundwork for MX. USAF currently is screening ten western states—Arizona, California, Colorado, Kansas, Nebraska, Nevada, New Mexico, Oklahoma, Texas, and Utah—to "identify areas geographically suited as sites" for the ICBM system.

Once candidate sites are selected, in 1980 or '81, such specific data as soil characteristics, engineering feasibility, ownership, and costs will have to be determined.

★ NEWS NOTES—USAF's Advanced Tanker Cargo Aircraft, a new wide-body tanker derived from

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the McDonnell Douglas DC-10, has been designated the **KC-10A**. Initial delivery is expected in 1980.

Former Astronaut **Michael Collins**, Director of the National Air and Space Museum since 1971, has been named **Under Secretary of the Smithsonian Institution**. Named **Acting Director** of NASM is **Melvin B. Zisfein**, previously Deputy Director.

MAC has issued a call for USAF pilots with more than 3,000 flying hours to join the prestigious **89th Military Airlift Group**, Andrews AFB, Md. The 89th provides worldwide airlift for the President, Vice President, and other high-ranking government officials. Applications should be submitted according to AF Reg. 36-20, para. 27. Send them to MAC/DPROA1C, Scott AFB, Ill. 62225, or call George Lewis, AUTOVON 638-4874.

Late in 1980, the **USS Saratoga** will enter the US Naval Shipyard at Philadelphia, Pa., for 2½ years of a Service Life Extension Program (SLEP). Planned modernization of the four *Forrestal*-class carriers will extend their operational life into the late 1990s and will cost about \$500 million each.

US Army announced completion of a realignment of Hq., Department of the Army, which amounted to a 24.3 percent reduction or reassignment of military and civilian personnel. Included were 1,081 transfers



Sad news came from the Air Force Academy in April with the death of one of the cadets' favorite mascots, the Arctic gyrfalcon Baffin. She appeared at all home football games during her thirteen years at the Academy.

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and 226 eliminations. **US Navy** is currently undergoing a **twenty percent reduction** in military and civilian headquarters personnel, including USMC. For **USAF's actions** in reducing headquarters staff, see p. 32.

On March 31, the USSR launched its 1,000th Cosmos satellite, identified for the first time as one in a series of navigation aids. Cosmos-1,000 will help the Soviet merchant,

fishing, and naval fleets—including submarines—get their bearings.

Died: Frank Tallman, long-time stunt pilot and AFA member, in a plane crash in California in April. He was fifty-nine.

Died: Gen. Lucius D. Clay, USA (Ret.), who, in 1948, ordered the Berlin Airlift, at Chatham, Mass., in April. He was eighty. (See also p. 59.) ■

HIGHLIGHTS OF USAF DEPARTMENTAL HEADQUARTERS REALIGNMENTS

THE Air Force decision to realign departmental headquarters and the functions of certain subordinate commands and agencies was announced on April 12, 1978, as our May issue was going to press. Decisions affecting mainly the commands and agencies were reported on p. 91 of that issue. The major realignments within the Office of the Secretary of the Air Force and the Air Staff are outlined below.

Both the Secretariat and the Air

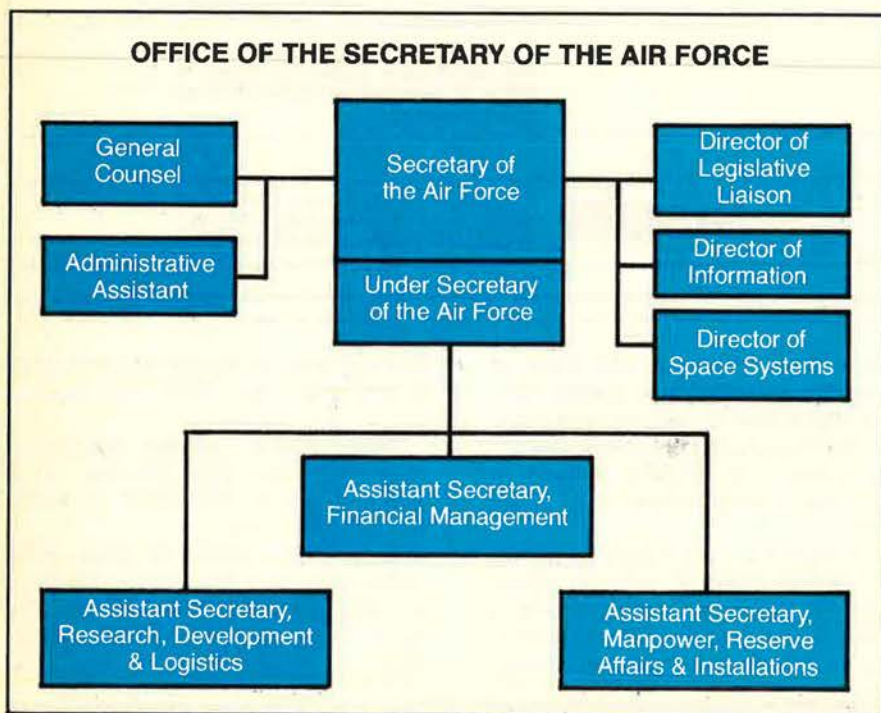
Staff structures have been simplified by grouping related functions. The number of elements reporting directly to the Secretary and the Chief of Staff has been reduced, and both staffs have been made more nearly parallel to the new Office, Secretary of Defense (OSD), organization. In the case of the Air Staff, the number of directorates has been reduced and the responsibility of directors for conducting day-to-day Air Force business has been increased. (See the

organization charts below and on the facing page.) Many "non-policy" functions will be transferred to field activities.

These organizational changes will reduce the number of Air Force manpower authorizations in the National Capital Region by about 1,500 (940 military and 560 civilian). Most of the realignment actions will begin this fiscal year, and are to be completed by September 30, 1979. The net cost of the realignments (including those reported in the May issue) is estimated at \$4.7 million over the next five years, with subsequent annual savings of about \$1.5 million.

There are two major changes in the Secretariat: The Assistant Secretary of the Air Force for International Affairs is being disestablished, and deputies to the Assistant Secretary for Research, Development and Logistics will be reduced from eight to six.

On the Air Staff side, the DCS Research and Development becomes the DCS Research and Acquisition (AF/RA), absorbing some functions previously performed by the Assistant Chief of Staff Communications and Computer Resources (now eliminated) and the Directorate of Procurement Policy (formerly an element of DCS Systems and Logistics). Some functions previously carried out by the DCS/R&D Office of International Programs, Directorate of



Space, and Directorate of Reconnaissance and Electronic Warfare are being transferred to Air Force Systems Command.

The DCS Plans and Operations becomes DCS Operations, Plans and Readiness (AF/XO), losing some study functions to the newly formed DCS Programs and Analysis but gaining two new directorates: Intelligence and Reconnaissance, and Command and Control. The latter replaces the Office of Assistant Chief of Staff for Communications and Computer Resources, which is being disestablished.

The Deputy Chief of Staff Programs and Resources becomes DCS Programs and Analysis (AF/PA), losing the Directorate of Manpower and Organization to the new DCS Manpower and Personnel (formerly DCS Personnel) and certain engineering and service functions to the DCS Logistics and Engineering. AF/PA will take over some management functions from the Comptroller of the Air Force, absorb the functions of the Assistant Chief of Staff for Studies and Analysis and the Office of Air Force History, and establish a new Directorate of Concepts and Analysis.

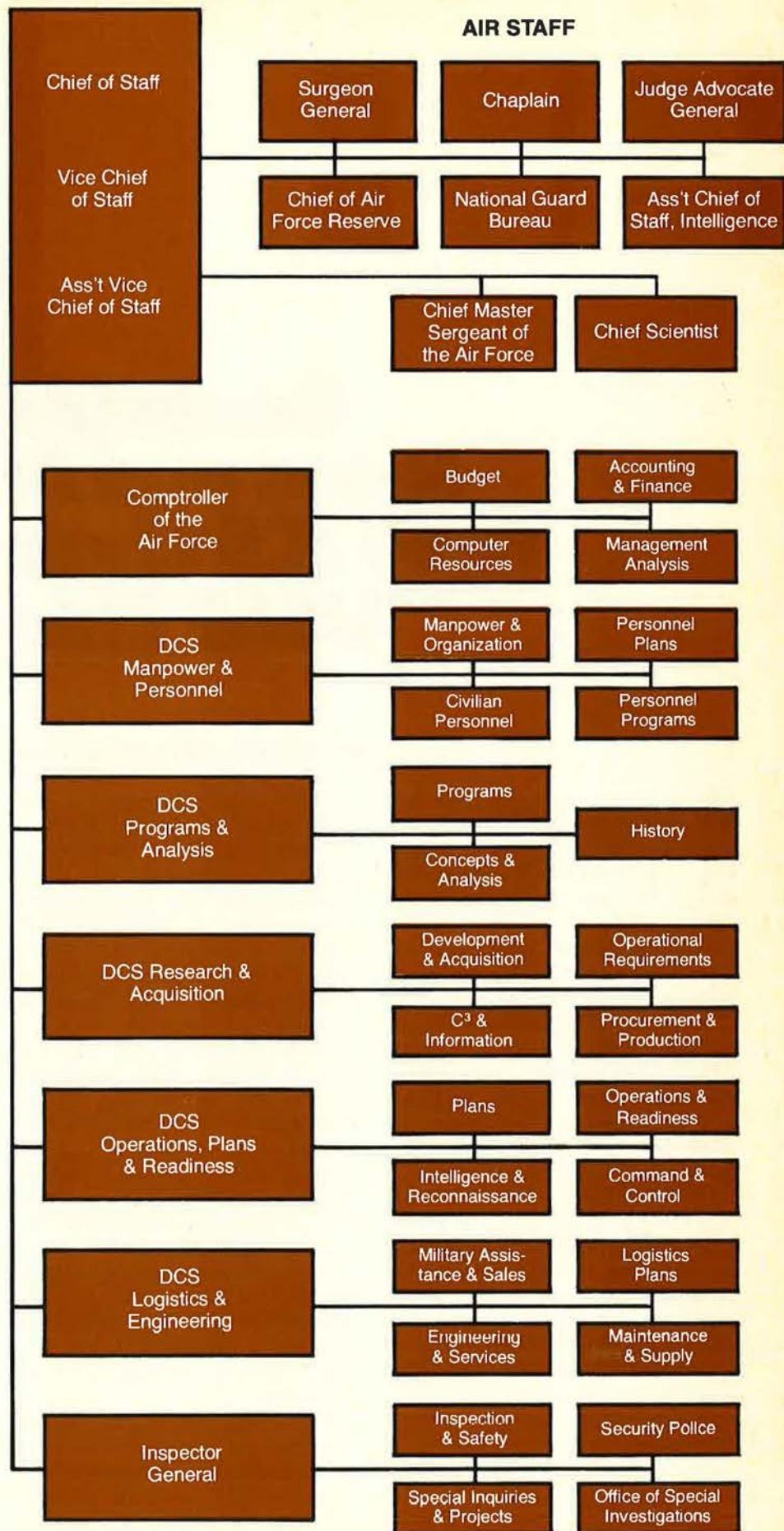
The DCS Systems and Logistics becomes DCS Logistics and Engineering (AF/LE), losing its former procurement functions to DCS Research and Acquisition, and gaining the Directorate of Engineering and Services formerly under DCS Programs and Resources.

The Comptroller of the Air Force gains the automation data processing function from the disestablished Assistant Chief of Staff Communications and Computer Resources, and transfers to the new DCS Programs and Analysis certain cost analysis functions.

The Inspector General is realigned at deputy chief of staff level with Security Police, which formerly reported directly to the Chief of Staff, becoming a directorate.

The Office of the Assistant Chief of Staff Intelligence is retained, but some of its functions are realigned under DCS Operations, Plans and Readiness.

Functions of the Scientific Advisory Board's secretariat are to be transferred to Air Force Systems Command Headquarters. ■



Generals Jones and Allen To Be JCS Chairman, USAF Chief

BY BONNER DAY, SENIOR EDITOR

EFFICIENT managerial skills are credited for the nomination of both Gen. David C. Jones as Chairman of the Joint Chiefs of Staff and Gen. Lew Allen, Jr., as Air Force Chief of Staff.

The nominations, announced on April 5, are expected to be confirmed by the Senate by early June.

The choice of General Jones to be the nation's top military advisor to the President recognizes an officer who concentrated on the management of resources at a time when the Air Force was growing smaller in personnel and aircraft.

Four years ago, General Jones said his priorities as the new Air Force Chief of Staff were to be increased readiness for NATO, innovative management of people and equipment, and an emphasis on weapons and training for nonnuclear war.

During his stewardship of the Air Force, he is credited with stressing

Air Force war preparedness over planning for future wars, and with increasing the ratio of resources assigned to operational rather than support duties. He is largely responsible also for the reorganization of NATO airpower in the central region, begun while he was Commander in Chief of US Air Forces in Europe.

A close observer says: "He has pushed systems and operational analysis, but he has also stressed that numbers have to be considered in light of human factors."

On general defense issues, General Jones is considered more open-minded and less doctrinaire than some of his predecessors.

Says one acquaintance: "He is always more likely to take the broad perspective on military matters than most senior officers—with him, it is what is best for the nation, not the Air Force."

Like chiefs before him, General Jones has put great stress on readiness. Among his innovations is a series of "flag" training exercises, including Red Flag for simulated

air combat, Black Flag for maintenance people, and Blue Flag for air staff training.

When he was named Air Force chief, General Jones announced he planned to reorganize the Air Force to eliminate a number of headquarters and cut back overhead and support costs to improve the "teeth-to-tail" ratio. Within months, the reorganization was in progress.

The move was one of a list of decisions that established General Jones as an advocate of innovative management when the rising cost of military programs was an increasing concern of civilian leaders.

Another program he began was a service-wide effort to identify combat assignments for all personnel, regardless of their current job or specialty. In the event of war, this program would permit Reservists to be brought on duty to free dual-

Gen. David C. Jones; above, from left nominated as Chairman, JCS, and Gen. Lew Allen, Jr., as Air Force Chief of Staff. Below, from left, Cadet Jones in pilot training and Captain Allen in a Los Alamos lab.



assigned people for combat duties.

In his new job as chairman of the Joint Chiefs of Staff, he is expected to continue stressing management, preparedness, and an increase in NATO strength.

General Jones entered the Army Air Forces as an aviation cadet in 1942 and served during the war as a flying instructor. He first saw combat in the Korean War, commanding the 19th Bombardment Squadron as a major and flying more than 300 hours on twenty-nine bombing missions.

Like many Air Force officers who have risen to the top of their service, General Jones has had extensive service in the Strategic Air Command, serving as a bomber pilot, an air refueling squadron commander, and the chief of the Second Air Force.

Other service with SAC came at headquarters at Offutt AFB, Neb., where he was operations planner and an aide to Gen. Curtis E. LeMay. In 1960, he moved to headquarters in the Pentagon for a four-year tour in key staff positions.

He went on to the Tactical Air Command, eventually heading the 33d Tactical Fighter Wing at Eglin AFB, Fla.

The concern over NATO preparedness that has been a part of General Jones's stewardship comes in part from years of experience with the US Air Forces in Europe.

He first went to USAFE in 1965 as Inspector General. When he left USAFE in 1969 he was Deputy Chief of Staff for Plans and Operations.

Assigned to duty in Vietnam, he was Vice Commander of the Seventh Air Force under Gen. George S. Brown, whom he now has been announced to succeed.

After returning from Vietnam to command the Second Air Force at Barksdale AFB, La., General Jones was again assigned to Europe in 1971, where he rose to become Commander in Chief of US Air Forces in Europe.

General Jones was born in July

1921 in Aberdeen, S. D. He went to the University of North Dakota and Minot State College, but left college after the attack on Pearl Harbor to enlist as a cadet in the AAF. He was commissioned in 1943.

General Jones and his wife, the former Lois M. Tarbell of Rugby, N. D., have three children.

For exercise, General Jones runs four to seven miles a day and plays an occasional game of golf.

President Carter's nominee as head of the Air Force has moved fast in the past year, going three steps up the service ladder in the space of eight months.

Gen. Lew Allen, Jr., went from Director of the National Security Agency to head the Air Force Systems Command in August 1977. Then on April 1 of this year he became Vice Chief of Staff of the Air Force.

Four days later, he was nominated to be Air Force Chief of Staff.

As military head of the Air Force, General Allen is expected to continue efforts to improve its management, particularly in the development and purchase of new weapons and equipment, and to take an active role in the Pentagon's strategic and tactical nuclear planning.

The elevation of General Allen would bring together two nuclear physicists who worked closely during the Kennedy and Johnson Administrations. Harold Brown, now Defense Secretary, was Director of Defense Research and Engineering in the early 1960s when he had Allen, a lieutenant colonel at the time, as a staff assistant.

General Allen, in 1965, moved to Los Angeles as a deputy director in the office of Special Projects for Secretary of the Air Force Eugene Zuckert. In 1968, he was brought back to Washington and named deputy director of the Office of Space Systems by Harold Brown, who by then was Air Force Secretary.

From 1970 to his appointment in 1977 as head of Systems Command, General Allen served in the office of Special Projects and the Space and Missile Systems Organization (SAMSO) in Los Angeles; Systems

Command Chief of Staff at Andrews AFB, Md.; Deputy to the Director of Central Intelligence in Washington; and Director of the National Security Agency at Ft. Meade, Md.

General Allen is the first Air Force Chief of Staff without service in World War II. He finished high school in Gainesville, Tex., in 1942, and the US Military Academy at West Point, in 1946.

In 1950, General Allen entered the University of Illinois for graduate training in nuclear physics. As an officer student he received a master of science degree in 1952 and a doctorate in physics in 1954. His dissertation was on high-energy photonuclear reactions.

The Air Force put this training to work immediately. At Kirtland AFB, N. M., General Allen studied the military effects of high-altitude nuclear explosions and participated in a series of weapons tests. During this period he was scientific director of a major experiment that tested the characteristics of nuclear bursts at high altitude.

In the 1960s, General Allen was assigned to duties that continued to make use of his experience in nuclear physics, including three years with the Atomic Energy Commission at Los Alamos, N. M., and staff assignments in Washington and Los Angeles.

General Allen and his wife, the former Barbara Frink Hatch of Washington, D. C., have five children.

In his spare time, General Allen is a balloonist, a scuba diver, and a parachutist. He is known among associates for his mild manner and easy-going nature. Says one fellow officer: "Both at work and in his hobbies, General Allen fits neither the public image of the fire-breathing general nor the introverted scientist." ■

The comprehensive modernization of USAF's tactical airpower and of the US Army's surface-to-air missile systems—both tailored to NATO's needs—combines with stiffening resolve on the part of the NATO member countries to band together in their common defense. In a series of interviews in Washington and Europe, AIR FORCE Magazine finds good reasons for . . .

NATO's New Cautious Optimism

BY EDGAR ULSAMER, SENIOR EDITOR

NATO airpower, outnumbered by Warsaw Pact air forces, must depend on qualitative superiority to do its deterrent job. Technological prowess—along with better force management and greater crew skills—is fundamental. While the Air Force's broad modernization program—augmented by similar but lesser-scale efforts in Western Europe—promises to assure NATO's technological lead in many crucial hardware areas, others require technological fence mending, according to Gen. William J. Evans, Commander of NATO's Allied Air Forces Central Europe (AAFCE) and Commander in Chief of United States Air Forces in Europe (USAFE).

Meanwhile, Dr. William J. Perry, Under Secretary of Defense for Research and Engineering (USDR&E, formerly DDR&E) told AIR FORCE Magazine that a range of deficiencies plagues US tactical air capabilities. They include:

- The ability to kill low-altitude formations of attacking aircraft;
- Interdicting ground forces beneath low ceilings;
- Continuous surveillance of moving vehicles;
- Air defense suppression;
- Excess weight, cost, and complexity that afflict US air-to-air missiles.

Maj. Gen. Len C. Russell, USAFE's Deputy Chief of Staff for Plans, told this reporter that NATO airpower would gain significantly from an advanced short-range, dogfight missile with a wider launch envelope and better turn and maneuver capability than the AIM-9 "so that an opponent can't defeat the weapon by outturning it with his airplane." Such a weapon, he added, would complement the F-15, whose high maneuverability makes possible a favorable launch position.

The joint USAF/Navy Air Intercept Missile Evaluation (AIMVAL) program—carried out last year at the Nellis AFB, Nev., test range to evaluate short-range air-to-air missile concepts—backed up the need for such a missile; hence a new, as yet exploratory, program known as the Advanced Short-Range Air-to-Air Missile (ASRAAM). For the time being, this joint USAF/Navy project is con-

finied to seeker technologies and other component design. It is part of a wider effort carried out by the two services under USDR&E. Called WVR, for Within Visual Range, the first phase is meant to upgrade and eventually replace the AIM-9L Sidewinder through improved seeker, rocket motor, and optical fuze technology for a head-on potential against nonafterburning targets. It will be produced both in the US and Germany. ASRAAM's exact features and attributes are being defined jointly by USAF and the Navy. Several questions, including various cooling techniques and advanced technology warhead designs, are still being probed. "When we have sufficient data to merge the efforts of the two services into a joint program," Dr. Perry said, "a lead service will be designated and a prototype development effort initiated."

Another important munitions requirement in the air-superiority arena, according to Dr. Perry, centers on the BVR (Beyond Visual Range) field. The key objective is to come up with a replacement for the radar-guided AIM-7F Advanced Sparrow with emphasis on significantly smaller size and lower cost. The latter trait should make it possible to buy these missiles in large enough quantities so that the less reliable early models of the AIM-7 can be phased out relatively quickly. The BVR missile is to be compatible with future USAF and Navy aircraft as well as with fighters produced by other NATO countries.

A joint BVR Project Office, headed by the Air Force, has been set up, patterned after the "highly successful USAF Lightweight Fighter prototype program," according to the Under Secretary. By using a "shoot-before-buy" approach, the Defense Department hopes to shorten the BVR's development process, cut costs, and improve quality. Full-scale development is slated for 1981, with an initial operational capability (IOC) scheduled for the mid-1980s.

The Defense Department also is evaluating the British-developed XJ521 Skyflash missile as a possible interim weapon until the new BVR missile becomes available, Dr. Perry said.

All-Weather and Standoff Weapons

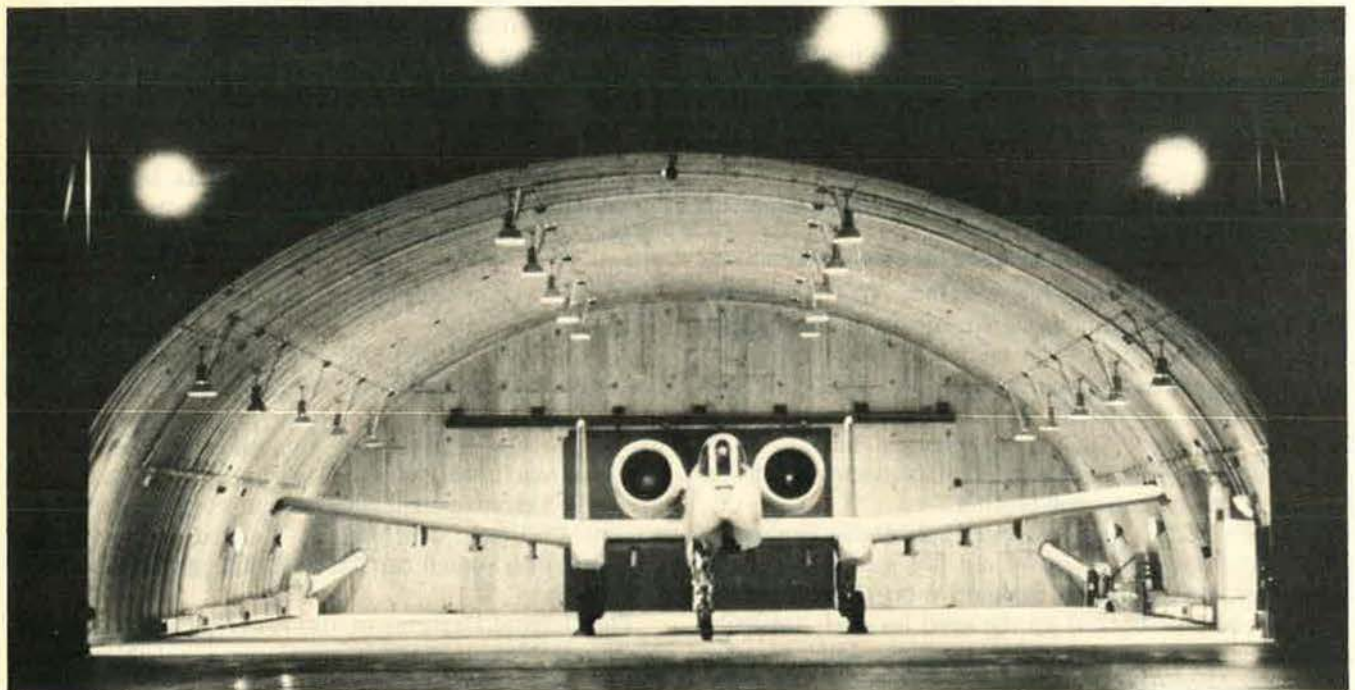
Among key NATO airpower requirements, according to General Evans, are weapons that reduce the exposure of aircraft to the Warsaw Pact's dense air defenses while retaining or increasing their ability to cope with a vast target complex: "We need standoff munitions so we don't have to overfly the targets." The NATO air commander attached special importance to the family of Maverick missiles now under development or in production. A TV-guided version of Maverick already serves as the Air Force's primary antiarmor tactical air-to-surface missile. Both a laser and an Imaging Infrared (IIR) guided Maverick also are in development. The laser-guided version of the AGM-65 Maverick is part of an Air Force-managed triservice program, the Close Air Support Weapon System, or CASWS, that provides a common seeker for the Army's Hellfire, the Navy's Walleye glide bomb, and the Air Force's Maverick and GBU-15 weapons.

Maverick, in more than 500 launches, has scored more than ninety percent direct hits. When equipped with the electro-optical (TV) guidance package, AGM-65 frees the launching aircraft to leave the target area once the missile is launched. Remarkably flexible, Maverick can cope with fixed and mobile targets at ranges from a few thousand feet to several miles; the weapon can be launched from near treetop to high altitudes. But the TV-guided version has operational limitations, especially in Central Europe, since it is not usable at night or where optical contrast between the target and its background is insufficient. The laser-guided Maverick, the AGM-65C, cures this problem. Close-support targets can be marked by either an airborne or a ground laser designator. Picking up and identifying targets doubtlessly would be easier with a ground-based designator.

The potentially most interesting Maverick variant is the AGM-65D Imaging Infrared (IIR) missile, especially against armor in the Central European winter environment. Its importance increases as the Warsaw Pact forces expand their already extensive night training, as more and more night vision equipment enters their inventory, and as their doctrinal emphasis on night and adverse weather attack intensifies. As General Evans pointed out, "This weapon will deny the Pact forces the ability to build up or maneuver at night." The IIR Maverick guidance unit "sees" the target through temperature contrast that it converts into a standard TV picture in the aircraft cockpit. The system also can be used with such longer-range acquisition systems as the Pave Tack night and limited adverse weather FLIR (forward-looking IR) target acquisition and laser designator system of the F-4 and F-111, as well as the Pave Penny laser target identification system of the A-10, A-7D, and F-16.

A key element of the IIR Maverick, a digital centroid tracker developed by Hughes Aircraft Co., was tested earlier this year at the Baumholder German Army military training area in West Germany. The tracker processes information from the IIR sensor to calculate the boundaries of a target and guides the missile to its approximate center. One of the deficiencies of the older analog tracker has been the occasional loss of target lock-on. Digital tracker tests indicate this problem is solved. A pilot production program of the IIR Maverick is expected to start in FY '81. Early estimates of the Air Force's AGM-65D buy range as high as 30,000 units. Additional IIR guidance units for the GBU-15 and Walleye glide bombs can be expected to reach 6,000 or 7,000 units.

Another defense suppression/standoff weapon tailored



The A-10 Thunderbolt, a member of General Evans's "tactical triad," achieved IOC status last fall, three months ahead of schedule.

to the European environment is the Low Level Laser Guided Bomb that the Air Force will begin developing this year. Releasable at very low altitudes, this weapon is needed to cope with a range of targets that includes bridges, depot and airfield facilities, fixed radar installa-

tions, and structures too large for Maverick and too numerous for the more expensive GBU-15. The latter should be reserved for a limited number of heavily defended, high-priority, large targets, according to Gen. Alton D. Slay, AFSC Commander.

Assault Breaker and BETA

One of this year's most comprehensive NATO-related programs is a three-pronged concept for increased force effectiveness. One element involves developing a reconnaissance system to provide instant information about targets beyond the Forward Edge of the Battle Area (FEBA). This system links with advanced precision munitions guidance for artillery, aircraft, rockets, and missiles to improve single-shot kill probability. Finally, work is under way to increase the lethality of ground and air-delivered conventional munitions, including kinetic energy antiarmor rounds and area munitions.

A strong candidate for providing comprehensive, near-real-time intelligence and targeting information, according to Dr. Perry, is the joint Army/Air Force/DARPA (Defense Advanced Research Projects Agency) BETA (Battlefield Exploitation and Target Acquisition) project. Information from sensors will be automatically correlated for use by USAF tactical air control centers and Army command centers. This system, Dr. Perry believes, could "make enemy rear areas and second-echelon forces vulnerable as never before."

BETA is a functional extension of the Tactical Information Processing and Interpretation System. The need for such a system was underscored by a recent Air Force/Army Reconnaissance Force Study probing, according to General Slay, Commander of the Air Force Systems Command, the technical means for providing continuous all-weather, day-and-night coverage of the battlefield and rear areas with electronic sensors and remote imagery.

The study examined all reconnaissance systems in the inventory of or under development by the US and the other NATO powers, and found deficiencies in standoff

surveillance systems and platforms. As a first step toward redressing this deficiency, the Air Force launched the TR-1 program to provide tactical commanders timely, continuous surveillance information needed especially for force management. The TR-1, according to General Slay, is a new version of the U-2R strategic reconnaissance aircraft that incorporates a complement of advanced sensors. Included in the program are special ground-based processors. The twenty-five-aircraft TR-1 fleet is expected to cost \$551 million—\$348 million for the aircraft and \$203 million for sensors. The entire TR-1 fleet is to be operational by the end of 1984. Side-looking airborne radar (SLAR) and Moving Target Indicator (MTI) radar probably will be included among the new aircraft's sensors.

Once the tactical commander can establish target priorities, he must have the means to destroy them with minimum losses. Hence, a new program called Assault Breaker that ties together target acquisition and attack missions to counter numerically superior enemy forces in the second echelon. Emphasis is on radically increased kill effectiveness using conventional weapons against massed armor. The Assault Breaker concept relies on the active and passive all-weather sensors of the surveillance aircraft to provide mid-course command guidance of standoff weapons, including terminally guided munitions, area munitions, and guided submunitions, and a new battlefield attack missile optimized for destroying armor deep in the enemy's territory. Assault Breaker will include a ground-fire control center that processes sensor information to pinpoint targets, and guides cluster munitions against them.

The Precision Location Strike System

USAF's Precision Location Strike System (PLSS) eventually will complement and absorb some of the functions of Assault Breaker. USAF's Vice Commander in Chief, Lt. Gen. John Pauly, predicts that PLSS "will open tremendous possibilities for all of our standoff operations." The Defense System Acquisition and Review Council (DSARC II) approved full-scale development of PLSS in September 1977 in order to have an integrated all-weather location and attack capability by the mid-1980s. Tailored to the high-threat, high-target density environment expected in the next decade, PLSS will identify and locate targets precisely enough to attack them with artillery, missiles, glide bombs, or free-fall weapons under night and all weather conditions. One of its functions is to pinpoint radiating targets, such as radar, in the dense

European electronic environment. The system uses a detection process that combines direction-of-arrival information with Time Difference of Arrival/Distance Measuring Equipment (TDOA/DME) techniques. PLSS keeps track of the location and characteristics of all "emitting" targets within its range, monitors their movement and changes in performance, and brings attack aircraft to precomputed release points for guided-glide or free-fall weapons.

PLSS incorporates a significant subelement, the PTS, or Photogrammetric Target System, patterned after existing strategic and intelligence systems, that uses reconnaissance imagery, optical devices, and computers to establish the precise location of nonradiating fixed targets. PLSS eventually will employ a high-altitude, long-

endurance platform—possibly the TR-1 or some other U-2 derivative—to relay weapons command guidance and ferret out emitters over long distances, especially in

the Warsaw Pact's second echelon. The Air Force has asked for about \$87 million in FY '79 funds for the PLSS program.

Limited Role for RPV?

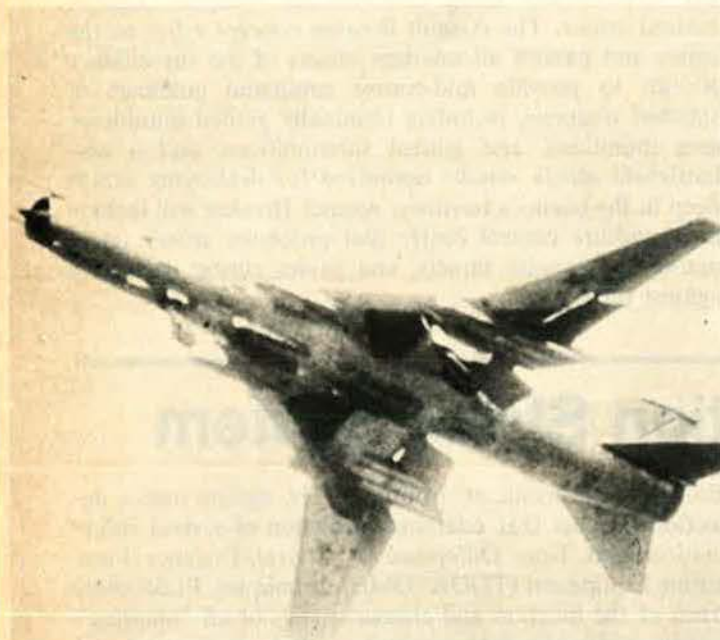
The remotely piloted vehicle technology that got under way with great promise during the Southeast Asian war is being viewed more charily by Air Force and Defense Department officials in the context of NATO scenarios. Most experts doubt that RPVs, at the present state of technology, could operate effectively in the high-threat European environment. Also, as General Evans pointed out, NATO doesn't depend on RPVs for recce and chaff-dispensing missions as the US did in Southeast Asia. The USAF Commander in Chief was more sanguine about the potential of mini-RPVs in Europe, "especially in the harassment role."

One type of RPV, the expendable low-cost harassment vehicle, however, is eminently suitable for the NATO environment and is being financed by both USAF and the Federal Republic of Germany. Other countries in the NATO Air Forces Armament Group have expressed strong interest in the harassment vehicle concept. (See

February '77 issue, "Flying Robots With a Lethal Sting.")

The harassment vehicle is meant to join the EF-111A, F-4G Wild Weasel, and the ECM pods carried by the manned strike force in the radar defense suppression role. The system is a preprogrammable, ground-launched expendable minidrone with a self-contained navigation system. It is essentially a sophisticated model airplane that uses a radar sensor to detect its prey, a seeker/homing system to guide it to the target, and an advanced lightweight HE (high explosive) warhead. The system can loiter for extended periods and incorporates enough computer "intelligence" to play cat and mouse with its intended victim. If the adversary radar goes off the air, the harassment drone stalks it until it resumes operation and then attacks. Preliminary tests of the system, according to General Slay, indicate that it can "render the target radar incapable of directing fire-control systems." The harassment RPV is scheduled for full testing in FY '80.

The Tactical Triad



Su-17-type aircraft, operated by both the Soviet and Polish air forces, are among the Pact's principal ground attack weapons.

The backbone of NATO airpower's defense suppression is what General Evans calls our "tactical triad, the EF-111A, the F-4G, and the A-10. These systems work as a team that backstops all other defense-suppression assets. They make it possible for us to penetrate and do the dual jobs of NATO airpower—close air support and interdiction."

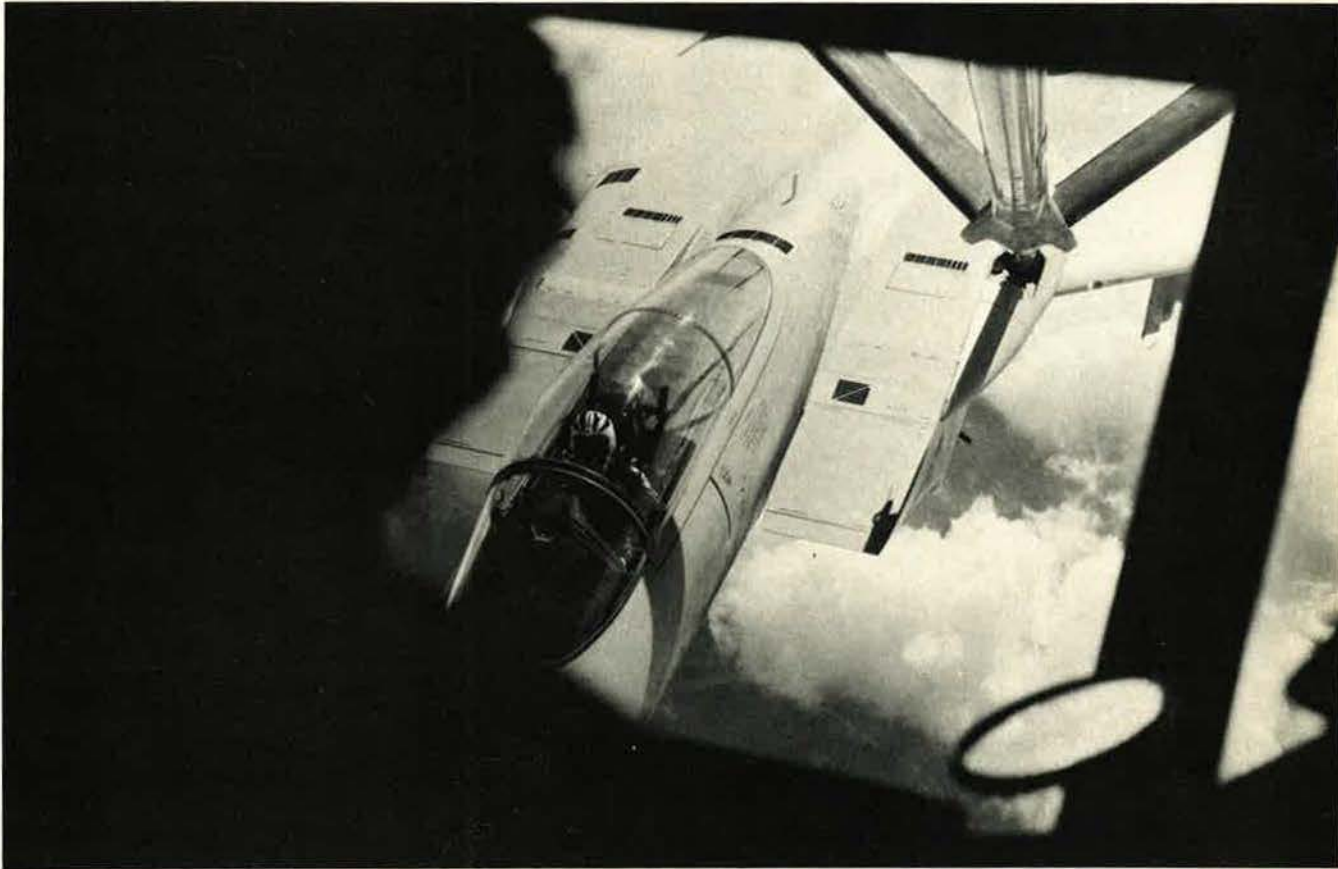
The A-10 achieved IOC in October 1977, three months ahead of schedule. More than 100 aircraft are now in USAF's inventory. As of FY '79, the number of production aircraft authorized will stand at 501 units. Funds for an additional 162 aircraft will be sought in FY '80. Because of the Warsaw Pact's intensifying night warfare capabilities, the Air Force is improving the A-10's effectiveness at night and under adverse weather conditions. An INS (Inertial Navigation System) will be added for low-level, day-and-night operations. Also, a Forward Looking Infrared Radar (FLIR) system will be adapted to the A-10. Lastly, the addition of a limited terrain-avoidance system to further boost the aircraft's capability is being considered.

The EF-111A tactical support jamming aircraft program was decelerated this year by the Air Force for cost reasons, with IOC now delayed by nine months to March 1982. The production program is expected to get under way in July, assuming a satisfactory DSARC III. Current plans call for forty-two EF-111As. The new tactical jamming system, an extensive modification of USAF's F-111As, can perform barrier/standoff jamming to mask the movement of friendly aircraft. In addition, it will be capable of flying penetration/escort missions with strike/attack forces to shield them against the enemy's air-defense system. Lastly, in the close air support role the EF-111A, operating along the FEBA, can suppress the enemy's antiaircraft artillery and SAMs.

The third member of the "tactical triad," the F-4G Wild Weasel, is designed to detect, identify, locate, and suppress/destroy hostile radar emitters. The aircraft can

use a variety of weapons including antiradiation missiles of the HARM (high-speed antiradiation missile), Standard ARM, and Shrike type; standoff guided munitions, especially the IIR Maverick; or conventional, unguided weapons. The F-4G can be employed either as a strike

force escort or independently as a hunter-killer force against targets of opportunity. The new USAF budget seeks funds for the remaining twenty-nine Wild Weasel modification kits, with eighty-seven units having been funded previously.



The F-15, generally rated as the world's best air-superiority fighter, would gain further effectiveness if equipped with an advanced short-range dogfight missile with a wider launch envelope and better turn and maneuver capability than the presently used AIM-9.

Modernizing Ground-Based Air Defenses

The effectiveness of NATO's ground-based air defenses will determine in a major way the degree to which dual-capable air-superiority/attack aircraft can be assigned to the crucial ground support mission.

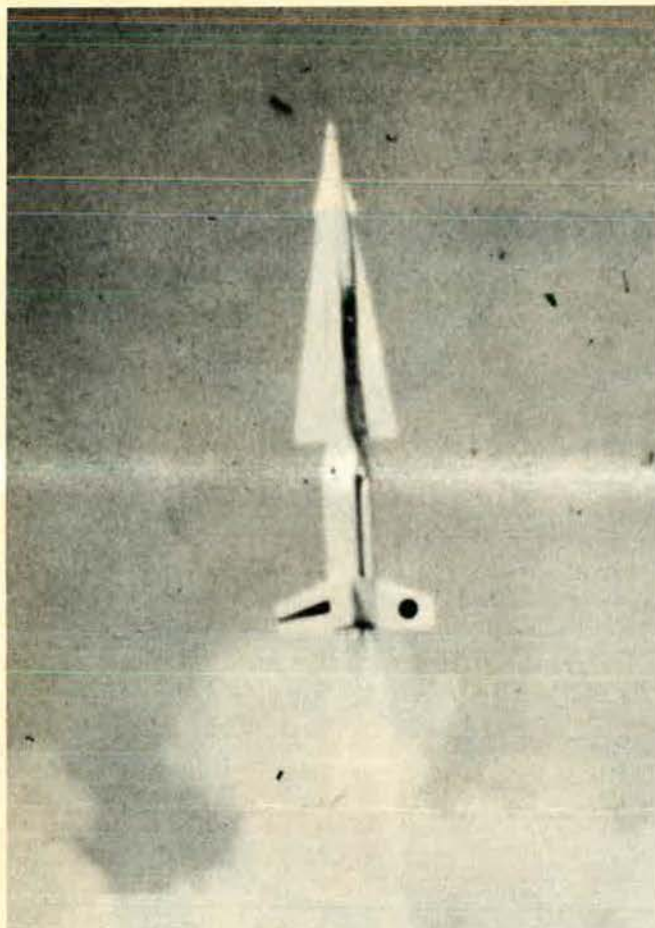
As the AAFCE Commander, General Evans is in charge of the Central Region's ground-based Nike-Hercules and Hawk air-defense forces. Integration of the surface-to-air missile forces (SAMs) with NATO's interceptor forces is being improved and involves procedural as well as technological efforts to "assure safe passage and to make sure that we don't shoot down our own aircraft through IFF (Identification Friend or Foe) errors." That error rate, NATO exercises have shown, could reach critical levels if no corrective measures are taken. Over the long term, modernization of the SAM forces becomes imperative, according to General Evans.

As Army Under Secretary Dr. Walter B. LaBerge puts it, the present NATO surface-to-air-missile system involves a "mélange of equipment" that once upon

a time "made sense, but it cannot meet our future needs."

NATO's SAM units in the Central Region number more than 1,200 missile launchers, almost two-thirds of which are low- to medium-altitude, medium-range systems, in the main the US Hawk and the British Rapier. The remainder are high-altitude Nike-Hercules and Bloodhound missiles. There also is a mix of anti-aircraft guns and hand-held missile systems. This congeries of weapons is tied together by the ground-based radars of NADGE (NATO Air Defense Ground Environment). That link, however, is weak because it can't detect Soviet high-performance aircraft penetrating at low altitude. This crucial deficiency can be corrected with USAF's E-3 AWACS through its high-performance look-down radar, and by the British Nimrod radar aircraft.

A number of improvements of US and NATO surface-to-air weapons is under way. An Improved Hawk is being fielded by all NATO Central Region countries except Belgium, which plans to upgrade its existing



One of NATO's most pressing requirements is the modernization and standardization of its ground-based air defense systems.

Hawks. Hawk, like Nike-Hercules, embodies technology of the 1950s and early 1960s and is relatively costly to operate and maintain.

Because of the many deficiencies that encumber the present hodgepodge of aging weapons, the NATO Military and Defense Planning Committees formed NATO Task Force 5 to deal with air defense as a top-priority issue.

There is consensus that the US SAM D Patriot system should replace Nike-Hercules in NATO. Further, the prospects are good that a Patriot variant could and should replace the Improved Hawks. Under development by the US Army since 1972, Patriot entered full-scale engineering development in FY '77 and is expected to be ready for production in April 1980. Featuring high fire-power, including the ability to engage a number of targets simultaneously at high or medium altitudes, Patriot is invulnerable to most hostile electronic countermeasures (ECM), is fully mobile, and requires less maintenance and fewer operating personnel than present systems. Twenty-three guided flight tests have scored twenty-two successes. All recent tests were conducted in a countermeasures environment. FY '79 funding sought for Patriot is close to \$300 million. If NATO decides to standardize on this system, the US will offer a multinational production arrangement.

Competing against Patriot is an Anglo/French concept—EuroSam—which is in a “prefeasibility” stage. Its basis is the British Royal Navy’s Sea Dart, a ramjet air-defense missile. Like the Improved Hawk, it would have separate acquisition and target illumination radars. EuroSam probably would lag at least ten years behind Patriot’s availability.

Short-Range Air Defense

The Roland program is a pioneering US effort to adopt a foreign-developed (French/German) major weapon system for production by this country. Roland is an all-weather, day-or-night, low-altitude air-defense system that after successful completion of current tests might enter production in September of this year. Some US-produced missiles already have been fired by French fire units. Total US development cost of the system, according to the Defense Department, is estimated at about \$275 million. While there are differences between the European-built and US-built Roland, there will be sufficient interchangeability to permit French and German forces to fire the US version from their launchers, and vice versa. Roland is to replace the aging Chaparral weapon—limited to fair weather, daylight-only use—to provide air defense in the corps and rear areas.

A modernization program with significant impact on the Central Region’s crucial air-defense challenge is the man-portable Stinger SAM system that entered production late in 1977. This shoulder-launched IR-guided missile provides major improvements over the Redeye missile it replaces. Advantages include all-aspect, high-speed target-engagement capabilities and greatly increased resistance to ECM. The system uses a passive optical

scanner for the detection and acquisition of targets.

Another new program to boost the Army’s organic air defense of armor and mechanized units is the Division Air Defense Gun development. This radar-directed weapon, using either 35-mm or 40-mm twin cannons in an armored turret mounted on a tracked vehicle, is currently in competitive engineering development by Ford Aerospace and Communications Corp. and General Dynamics’ Pomona Division.

Even though the severity of the Warsaw Pact’s challenge—detailed in AIR FORCE Magazine’s preceding article on NATO airpower—weighs heavily on General Evans, he believes that “cautious optimism” is now justified. The combined effects of the current US/NATO modernization program, this country’s increasing commitment to “think NATO,” and the US/NATO edge in force management, crew training, motivation, and readiness bode well for NATO’s successful defense, he believes. Mounting awareness of the steadily increasing Warsaw Pact threat, he adds, “is strengthening the resolve of NATO member countries to band together in their common defense. That strengthening of the will is paying off in a formidable growth of combat capabilities, and thus effective deterrence.” ■

DO THE Soviets really share the American desire for arms control? Or are they merely using SALT to improve their strategic position at our expense?

Administration officials appear convinced that the Kremlin is sincere in wishing to halt the "arms race." The chief American arms negotiator, Paul C. Warnke, said that the Soviets are negotiating in good faith because they are "strongly motivated" to reach a new arms agreement. He ascribed their more cooperative attitude chiefly to economic reasons, since they seem to be spending far more on defense than we had thought. The CIA has doubled its previous estimate of Soviet military expenditures and now puts them at between eleven and thirteen percent of the gross national product—about twice the percentage spent by the United States. Unofficial sources consider the revised CIA estimate still too low. It is generally agreed that the Soviet military buildup is putting a severe strain on the economy.

But there is less agreement on whether the Soviet leaders therefore feel compelled to accept arms limitations. Critics of the Administration's arms-control policy see little concrete evidence to support Mr. Warnke's optimistic view of the SALT prospects. The Soviet economy seems to have been capable of sustaining an enormous armaments program without any apparent damage. Although the strategic arms limitation talks offered opportunities for reciprocal reductions, the buildup of Soviet military forces has been going on during the entire decade while the negotiations were in progress. It continued even after the Interim Arms Agreement of 1972, which put no serious constraint on further Soviet expansion.

The critics find it difficult to reconcile this record with the assumed Soviet need for relief from the arms burden. They are not persuaded by the argument that substantive results in SALT had to wait until the Kremlin had satisfied its understandable desire for strategic parity with the United States, and that progress thereafter had to be slow because of the complexity of the subject and because of the Byzantine operating style of the Soviet leaders. Skeptics point out that this does not account for the numerous occasions when the Soviets proved quite capable of negotiating in a businesslike fashion and of reaching prompt agreement on equally difficult issues.

"The Administration's assessment of Soviet motives in SALT is not supported by what is known about the Soviet economy, nor is it a plausible interpretation of Soviet behavior patterns," according to the author, a long-time participant in defense affairs. The security of this country and of our allies could be put at hazard by the Administration's . . .

BY FREDERICK M. SALLAGAR

The dispute between the Administration and its critics over the Soviets' real purpose in the current round of arms negotiations should be a matter of concern to the general public as well. So long as the American people are led to believe that the Soviet Union is genuinely interested in arms control, they will encourage or pressure the Administration to make concessions in the hope that the other side will reciprocate.

Westerners take it for granted that the purpose of negotiation is to arrive at an agreement. But as we should have learned from past experience, this is not necessarily true of Communist negotiators. Their purpose may be to use the process of negotiation in order to gain political or other advantages unconnected with the ostensible object of the discussion. It, therefore, would be in their interest to string out the process until these gains are won or until our patience runs out.

The Administration's repeated assertion that economic imperatives have forced the Soviet leaders to seek arms reductions, regardless of their preferences, implies that more is known about the economic situation in the Soviet Union, and how it is affected by the arms race, than has been made available to the public.

Soviet statistics show that the economic growth targets set by their planners have not been attained. It is also obvious that the living standard, though much improved in recent years, is still abysmally low by Western standards. These shortcomings may trouble the Soviet leaders, but scarcely add up to the kind of imperatives postulated by the Administration.

It is possible that secret intelligence has provided more conclusive information. But it is also possible, and perhaps more likely, that our assumptions about the strain on the Soviet economy derive from our customary mirror image of the other side. The American people have often been warned by highest authority that military expenditures beyond a certain level will "bankrupt the economy." If this is a danger in the United States, one might reason that it must be a much greater danger in the Soviet Union. Such reasoning, however, does not take account of basic differences between the two societies. We need to take a closer look at these differences and how they affect the impact of the arms race on each side.

SALT ILLUSIONS

Fundamental Differences

If the arms race poses a threat to the American economy, it is not because the United States lacks sufficient industrial capacity, adequate access to resources, or an abundant supply of skilled labor. Our defense effort, great as it is by peacetime standards, does not require curtailment of the civilian sector. Consumer goods are in lavish supply, and there is no shortage of resources to inhibit economic growth. Defense expenditures do cause problems, but they make themselves felt in other ways.

The economic impact arises from the manner in which military expenditures must be financed in a market economy. Funds allocated to defense are reflected in higher personal and corporate taxes, continued deficits in the federal budget, a mounting national debt, and inflationary pressures. The reaction of the business community to what it regards as these symptoms of an unsound economy in turn has repercussions that are more troublesome than the problems themselves. Investors lose confidence, the stock market turns sluggish, consumer spending declines, and unemployment increases.

The economic dislocations caused directly or indirectly by government spending have other undesirable effects as well. They are a source of political controversy and internal dissension that sometimes threaten the vital functions of government. In our kind of society, the people have access to information about the government's fiscal and financial policy and are free to register their protest against measures that affect their pocketbook. The Administration thus becomes embroiled in conflict with different interest groups and their congressional allies, as each faction seeks to shift the burden away from itself and to some other group. Such domestic friction may well be one of the most troublesome aspects of government spending.

We tend to put the blame on military expenditures as if they were the main source of these problems. Yet the budget of the Department of Health, Education and Welfare (HEW) is half again as large as that of the Defense Department. It therefore contributes that much more to

the government's fiscal and financial difficulties, while providing fewer offsetting economic benefits in the form of employment per dollar spent. But the HEW budget is accepted as necessary to promote social welfare, whereas the Pentagon budget is resented as a wasteful use of public funds. Both create economic problems that arouse domestic controversy. In the case of military expenditures, however, the dissension is exacerbated by the lack of popular consensus on the need for them.

These troublesome aspects of the arms race are a penalty we pay for our free institutions. They do not arise, or are easier to control, in a managed economy. An authoritarian regime like that of the Soviet Union can finance military expenditures by means other than a Hobson's choice between taxation and deficit financing. It can raise funds through forced savings and through its control of the pricing mechanism. It does not have to be concerned about the effect of government deficits on the bond market. Inflationary pressures can be suppressed or kept under control. Neither is it exposed to the social and political friction that defense spending arouses in a free society.

Although the Soviets do not have our problems in raising funds internally, it is difficult for them to obtain the foreign exchange needed for purchases from the West since the ruble is not convertible and Soviet exports to hard currency countries are inadequate. The Soviet Union depends on advanced Western technology for specialized equipment, both for use in its armaments program and to modernize its still backward industry. There is a periodic need to import billions of dollars worth of grain from abroad. By slowing up the arms race, the Soviets could save some of their scarce foreign exchange for other high-priority needs.

But they may not need to, thanks to the West's easy credit policy, and the relaxation of restrictions on the export of strategic materials. In order to promote trade with the East and foster the détente atmosphere, the industrialized nations have granted the USSR liberal credit with the risk usually shared by the governments involved.

"These troublesome aspects of the arms race are a penalty we pay for our free institutions."

As a result, the Soviet bloc's debt to the West has tripled in recent years, rising to a high of around \$40 billion by the end of 1976.

The Administration has been in favor of this policy, but it met with considerable opposition in Congress, where numerous hearings have been held on the subject. As long ago as 1973, when the bloc's debt was only \$13 billion, the advisability of granting such large credits was questioned by expert witnesses. In his April 17, 1973, testimony before Senator Jackson's subcommittee, Professor Walter Laqueur remarked: "If they [the Soviets] would cut their military budget to the same extent proportionately as the West has done, they would not need credits. They need credits because they have a very considerable defense budget. I don't think that the West should indirectly subsidize the Soviet defense budget."

If it is true that the Soviet Union is forced to seek relief from the economic burden of the arms race, it must be for other reasons.

Industrial Progress vs. the Consumer

A possible reason could be the strain on resources. Unlike the United States, the Soviet economy has no surplus capacity. The defense effort absorbs a substantial portion of the available industrial capacity, raw materials, and labor, all of which could otherwise be employed to improve the civilian sector. It is the opportunity cost of these resources that constitutes the real burden of the arms race, since their money cost is not a serious problem in a managed economy. In order to carry out their military buildup, the Soviets had to accept slower progress in modernizing industry and agriculture, less intensive development of their natural resources, and a continued shortage of consumer goods.

This last factor is considered the strongest incentive for the Soviets to limit their arms programs. We take it for granted that the Kremlin would wish to raise the living standard of the Russian masses if it had the resources to do so. But here again we may be applying our mirror image to the other side. It is by no means certain that

the regime would be in favor of a consumer-oriented economy on the Western model, with all the problems that would follow in its wake.

The regime did allow the supply of consumer goods to increase substantially during the last decade. It may have been obliged to do so, against its own preference. Increased contacts with the West have made the Russian people aware of their inferior living standard and aroused aspirations that could not be totally disregarded without risking the kind of internal unrest that has been plaguing some of the East European governments. But how far the Soviet regime would wish to go along that road is a different matter. In an authoritarian society, stability is also served by leaving such aspirations partly unfulfilled. Western reporters have commented on the fact that in the Soviet Union "people are so busy chasing elusive goods that they have little time for, or interest in, larger matters." It is easier to rule a people who are kept docile because they are too preoccupied with the problems of daily living.

It is obviously impossible to know how the Soviet leaders would use the resources made available by a relaxation of the arms race. If past experience is any guide, however, it suggests that insofar as it depended on their own preference they would give a higher priority to catching up with the West's economic and industrial progress than to matching its living standard.

Our problem here is not to decide which of these two objectives would prove more compelling. The question is whether either, or both, may constitute sufficient motivation for the Soviets to seek arms limitations. The Administration believes that this is the case. But this presupposes that the shortcomings of the civilian sector appear as such a pressing problem to the Soviet leaders that they must seek a remedy even at the expense of their military ambitions. There is no evidence that the economy is in such dire straits. The regime is unquestionably troubled by the economic deficiencies that do exist, but may be willing to tolerate them for the sake of the strategic and political benefits it hopes to gain from military power.

"It is easier to rule a people who are kept docile because they are too preoccupied with the problems of daily living."

The SALT/MBFR Dichotomy

We don't know how the Soviet leaders themselves evaluate the economic situation. But if they were sufficiently concerned about it to seek a SALT agreement, would they not show more interest in an agreement on other arms as well? Why would they be "negotiating in good faith" only on the limitation of strategic forces and not on the limitation of the other forces that consume a far greater share of economic resources?

In July 1976, the Arms Control and Disarmament Agency remarked on this anomaly in an official report: "Partly because of the concentration on nuclear weapons in recent arms-control negotiations, there has been a tendency to emphasize strategic force budgets in analyzing the arms race and defense expenditures. Actually, expenditures for conventional forces are much larger." This is true of both sides. The US defense budget for Fiscal Year 1978 allocates about four times as much to general-purpose forces as to strategic forces. The comparable figures on the Soviet side can only be approximated since their budget categories are different, and their published statistics on the defense budget are fragmentary and unreliable. There is sufficient information, however, to show that the Soviets are also spending much more on conventional than on nuclear forces.

An unclassified CIA report of May 1976 estimates that Soviet expenditures for "Strategic Rocket Forces"—a category that includes all land-based ballistic missiles with a range of more than 1,000 kilometers—have fluctuated in recent years between seven and fourteen percent of the total defense budget, depending on the status of the programs involved. The additional amounts spent for strategic forces covered in other budget categories, such as submarine-launched ballistic missiles and strategic bombers, are also substantial, but less than those allocated to the Strategic Rocket Forces. The total for all strategic forces included in the strategic arms limitation talks probably accounts for no more than one-quarter of Soviet defense spending, leaving the major portion of the budget available for conventional forces. That it was so used is

Frederick M. Sallagar served on General LeMay's staff in the Marianas during World War II. Later, he was Military Planning Advisor to the Air Staff, and Special Assistant to Secretary of the Air Force Thomas Finletter. He also has served as a consultant to Secretary of the Air Force Eugene Zuckert, to the Office of the Secretary of Defense, and to the TRW Systems Group. Mr. Sallagar was long associated with the Rand Corp. as a Senior Member of the Research Staff. He is the author of The Road To Total War (Van Nostrand Reinhold Co., 1974) and of many articles on defense affairs.

confirmed by the extensive changes and improvements in these forces. In the last decade, Soviet military manpower increased by more than 700,000, most of it in the ground forces. Both air and ground forces were reequipped with new and improved weapons, the tank strength of the first-line units in Europe and Western Russia was greatly augmented, aerial and ground supply capabilities were modernized, the Navy was expanded into a formidable force with global mobility.

This ambitious program was undertaken despite efforts by the United States and its NATO allies to reach an agreement on the mutual reduction of NATO and Warsaw Pact forces in Europe. After prolonged bickering, the Soviets finally consented in October 1973 to enter into negotiations on what came to be called Mutual Balanced Force Reductions (MBFR). These talks have now been dragging on for four and a half years without even the meager results obtained in the strategic arms negotiations. The reason was Soviet refusal to consider any force reductions that would result in a more equitable balance between the opposing sides.

The attitude of the Soviets in the MBFR negotiations casts further doubt on the assumption that their economic plight is so serious as to demand relief from the arms burden even if they have to give up something in return. They are evidently able to hold out for an arms-control agreement that would give them a unilateral advantage.

The chances that they might get such an agreement,

"In the last decade, Soviet military manpower increased by more than 700,000, most of it in the ground forces."

either in MBFR or in SALT, have diminished in recent years. The growing American disillusionment with the Interim Arms Agreement of 1972 was a warning that a future treaty granting similar concessions would have hard sledding in Congress. Why, then, do the Soviets continue to negotiate in SALT as if they were still interested in a new agreement that would not be as favorable as the last? We know the Administration's answer. But there could be other explanations.

One obvious possibility is that the Soviets have not heeded the warning. They may hope that our inclination to settle for the appearance of an agreement will allow them to slip in provisions that would be binding on us but not on them, or that could be interpreted in their favor. They may also count on American popular fears of the nuclear peril to override congressional opposition to the kind of agreement that the Administration might be tempted to grant.

Another, more plausible explanation was suggested earlier. A SALT agreement may not be the real Soviet purpose in the negotiations. If they should get one on their own terms it would be a welcome bonus. They may be using the process of negotiation merely as a means of pursuing other objectives that have nothing to do with arms limitation.

Keeping Détente Alive

One objective high on their list would be to keep the détente atmosphere alive. The Soviets profit from the Western illusion that détente means to them what it does to us, and that their verbal endorsement of the concept indicates they wish to cooperate in ending the "era of confrontation." Experts on the Soviet Union have warned that this illusion ignores what we know about the Soviet mentality, and will play into their hands. But it has persisted nevertheless since it accords with wishful thinking in the West.

It encouraged the free world to relax its guard and to take a tolerant attitude toward the troublemaking activities of the Soviet Union. By proclaiming its faith in the

new era of détente, the Nixon Administration was able to mute opposition to the concessions granted in the Interim SALT Agreement and to the easing of restrictions on trade with the Communist bloc. The US defense budget began its downward path, and projected new weapons developments were deferred or canceled. Our NATO allies allowed their military position to slip further behind as they concentrated instead on promoting exports to the East on liberal credit terms. Throughout the West there was a move toward establishing closer political and economic relations with our adversary. The Soviets were able to acquire technical expertise from the more advanced countries under the guise of "cultural and scientific exchanges." Communist parties in Western Europe also benefited from the new and more benign image of the Soviet Union as a partner in détente, because it lent them greater respectability and made possible the rise of Eurocommunism.

The Soviets did not find it necessary to change their basic policies in order to prove their commitment to détente. They toned down their vituperative language, paid lip service to the need for a relaxation of tensions, and made token gestures that could be interpreted as a lessening of their hostility to the West. But they continued their disruptive activities in Southeast Asia, the Middle East, Africa, in the United Nations, and wherever opportunities for mischief presented themselves. Although these actions were clearly inconsistent with the Western notion of détente, and did raise occasional doubts about Soviet sincerity, they did not dispel our optimistic illusions.

If there was one single factor best calculated to help the West maintain its belief in the reality of détente, despite all evidence to the contrary, it was that the Soviets appeared to be genuinely interested in the control of strategic weapons. They were wise in choosing SALT rather than MBFR as the fulcrum of their détente tactics. It enabled them to play on Western fears of the nuclear peril, and on the hopes that the peril could be removed or lessened through a new agreement on limiting the

"A SALT agreement may not be the real Soviet purpose in the negotiations."

weapons that are dreaded most. This, too, is an illusion, but it served the Soviet purpose because fear and hope are the parents of wishful thinking.

Apart from being instrumental in keeping the détente atmosphere alive, the SALT process has another important benefit for the Soviets as a source of strategic intelligence. It is not that they lack information on American military planning or weapons developments. Our open society, with its insistence on an unparalleled freedom of information, makes it virtually impossible to keep military secrets. The only problem an opponent has in being confronted with this plethora of information is to separate the wheat from the chaff. In the strategic arms negotiations, we do our best to solve this problem for the Soviets.

It is one thing to read about our military posture in American or British publications or in congressional hearings, and quite another to have the facts authoritatively confirmed by the official SALT negotiators. The American tendency in negotiation is to try and dispel Soviet suspicions by demonstrating good faith and exchanging as much information as possible. In the process, the opponent also finds out what *we* know about *his* military capabilities. This obviously has strategic value for the Soviets, although it may not always be welcome for domestic reasons. In an interesting sidelight on bureaucratic infighting within the Soviet Union, the senior military member of the Soviet delegation, then Colonel-General Nikolai Ogarkov, once complained privately to an American delegate that his political colleagues on the delegation were being given more information on Soviet military capabilities than he thought civilians should have.

To sum up, it would seem that the advantages they can derive from the SALT negotiating process itself are sufficient to satisfy the Soviets even if no agreement is reached that would improve their strategic position as well. The advantages may be great enough for them to continue the process, if necessary at the price of accepting a less favorable interim agreement. If they do, however, it is likely to be not because the state of their economy requires it, but because they put a greater value on the benefits obtained from negotiation, and especially those

that are derived from Western illusions about détente.

* * *

Whatever can be said about Soviet motives or intentions necessarily must be based on circumstantial evidence. This is often taken as an excuse for ignoring such evidence altogether in favor of a more convenient mirror image. As one experienced observer of the Soviet scene remarked: "... the great riddle is not what Soviet policy is but why so little progress has been made in understanding it. *It simply is not true that we know very little about the Soviet Union.* On the contrary, a solid body of knowledge has been amassed over the years. The key to the riddle is psychological: People all over the world tend to interpret events by their own values and experiences."

Although this is a normal human tendency, we must wonder why responsible government officials allow themselves to succumb to it. The Administration's assessment of Soviet motives in SALT is not supported by what is known about the Soviet economy, nor is it a plausible interpretation of Soviet behavior patterns. Our government has available to it within its own ranks and in the professional community all the expertise needed to avoid such misconceptions about the Soviet Union. Yet, American officials continue to entertain illusions about Soviet objectives in SALT that are doubly dangerous because they encourage public opinion to pressure the Administration into making even more unnecessary concessions than it is already tempted to grant.

The tendency to impute our own motives to the other side is partly responsible. Other reasons are the incurable malady of wishful thinking, the opposition to defense spending, the desire for at least the appearance of foreign policy successes to offset domestic failures, the reluctance of democratic governments to lock the barn door until the horse has been stolen.

In reviewing the record of postwar relations with the Soviet Union, one is sadly reminded of Churchill's theme for the concluding volume of his World War II memoirs: "How the great democracies triumphed and so were able to resume the follies which had so nearly cost them their life." ■

"...the SALT process has another important benefit for the Soviets as a source of strategic intelligence."

JANE'S

ALL THE WORLD'S AIRCRAFT SUPPLEMENT



Artist's impression of two Tornado F. Mk 2 air defence fighters, scheduled to enter RAF service in the early 1980s

PANAVIA
PANAVIA AIRCRAFT GmbH; Head
Office: 8 München 86, Postfach 860629,
Arabellastrasse 16, German Federal Republic

PANAVIA TORNADO
RAF designation: Tornado GR. Mk 1

As recorded in the 1977-78 *Jane's*, the ninth and last Tornado prototype made its first flight on 5 February 1977; the 10th airframe is being used for static tests. Of the six pre-series Tornados which are fol-

lowing, three had flown by early 1978: No. 11 in Germany on 5 February 1977, No. 12 in the UK on 14 March 1977, and No. 13 in Germany on 10 January 1978. By that time these three, and the nine prototypes, had accumulated more than 1,500 hours' flying in approx 1,400 flights. Tornado No. 11, the third (and first German) dual-control aircraft, has RB.199-34R-03 engines (each approx 37.8 kN; 8,500 lb st dry and 66.7 kN; 15,000 lb st with afterburning) and production-standard fin fillet and 'full-

length' rudder; No. 12 also has -03 engines; and the similarly-powered No. 13 introduced a kinked leading-edge to the tailplane. The remaining three pre-series Tornados, all due to fly during 1978, will introduce production-standard wings (on No. 14), rear fuselage and 'wet' fin (No. 15), and forward fuselage (No. 16).

With approximately 90% of the flight envelope already cleared, delivery to service test centres has started, beginning with No. 12 to the Aeroplane and Armament



Tornado pre-series No. 12, in GR Mk 1 interdictor/strike configuration

Experimental Establishment at Boscombe Down on 3 February 1978, to be followed by No. 11 to the Official Test Centre at Manching, Germany, and No. 14 to Pratica di Mare, Italy, later in the year.

Two production contracts have so far been placed for the Tornado. The first, for 40 aircraft, will provide 20 Tornado GR Mk 1 interdictor/strike versions for the RAF; three F. Mk 2 prototypes for the RAF (see separate description); and 17 Tornados for the Federal German Luftwaffe and Marineflieger. The second contract, for 110 Tornados, will provide 55 aircraft for the RAF, 40 for Germany, and 15 for the Aeronautica Militare Italiano. Major components for the first production batch are under construction, and deliveries are scheduled to begin in early 1979. A three-nation Operational Conversion Unit is to be set up at RAF Cottesmore. Initial production aircraft will have RB.199-34R-04 Mk 101 engines, which are expected to deliver approx 40.0 kN (9,000 lb st) dry and 71.2 kN (16,000 lb st) with afterburning.

Nominal max weapons load of the IDS (interdictor/strike) Tornado is 8,165 kg (18,000 lb) on three twin hardpoints in tandem under the fuselage, two inboard points in tandem underwing, and two single outboard points underwing. A new missile designated P3T, a turbojet-powered active-radar development of the HSD/Matra Martel, is to be developed for the RAF's GR Mk 1, which is also expected to have the capability to carry Pavé Spike pods for laser weapons guidance. Primary armament of the German Navy Tornados will be four MBB Kormoran anti-shiping missiles. Italy's Tornados are expected to be equipped with the Selenia Aspide 1A air-to-air missile.

The following weight and performance figures for the Tornado have been released: WEIGHTS AND PERFORMANCE (prototype/pre-series aircraft, with development engines, up to early 1978):

Max weapon load carried	7,257 kg (16,000 lb)
Max T-O weight, 'clean,' full internal fuel	20,411 kg (45,000 lb)
Max T-O weight, with external stores	26,308 kg (58,000 lb)
Max level speed at altitude, 'clean'	Mach 1.93 (1,108 knots; 2,053 km/h; 1,275 mph)
Max level speed with external stores	Mach 0.92 (600 knots; 1,112 km/h; 691 mph)

Time to 9,145 m (30,000 ft) from brakes off	less than 2 min
T-O and landing run	less than 457 m (1,500 ft)
Max normal acceleration	7.5g
Max 360° rapid-roll clearance with full lateral control	4.0g

PANAVIA TORNADO ADV

RAF designation: Tornado F. Mk 2

Full-scale development of the Tornado ADV (air defence variant) was authorised by the British government on 4 March 1976. This version is being developed specifically for the RAF, which will include 165 of this model, designated F. Mk 2, in its total procurement of 385 Tornados, to re-equip two Lightning squadrons and seven squadrons of Phantoms.

Although possessing some 80% commonality with the interdictor/strike version, the Tornado F. Mk 2 will differ in several important respects, and the initial Tornado production contract for 40 aircraft includes provision for three prototypes of this version. The first of these, now under construction at Warton, is due to fly in early 1979, and the other two by the end of that year.

The F. Mk 2 is intended to fulfil an RAF requirement for a high-speed bomber destroyer, able to cover a wide UK defence region extending from the Atlantic approaches to the Baltic, and from Iceland to the English Channel, and possessing good climb and acceleration. It will be able to patrol at 260-345 nm (480-640 km; 300-400 miles) from its base for more than two hours, including 10 min combat, without in-flight refuelling. Its armament will consist of a single 27 mm built-in IWKA-Mauser cannon in the starboard side of the lower forward fuselage, four Hawker Siddeley Dynamics Sky Flash medium-range air-to-air missiles semi-recessed under the centre-fuselage, and two NWC AIM-9L Sidewinder short-range infra-red air-to-air missiles on the inboard outer-wing stations.

These weapons will be operated in conjunction with a new, all-British airborne interception radar named Foxhunter, designed and developed by Marconi-Elliott Avionics Systems Ltd, with Ferranti as sub-contractor for the transmitter and aerial scanning mechanism. Foxhunter will enable the Tornado F. Mk 2 to detect targets up to 100 nm (185 km; 115 miles) away, and to track several targets simultaneously; and the Sky Flash missiles will be able to engage

targets at levels below 75 m (250 ft), and at stand-off ranges of more than 22 nm (40 km; 25 miles). The first phase of air trials had been completed by early 1978. The Tornado F. Mk 2 will carry a two-man crew, the rear (navigator's) cockpit being equipped with a Ferranti FH 31A 3 in (76 mm) AC-driven horizon gyro which, in addition to providing an attitude display for the navigator, will feed pitch and roll signals to other electronics systems in the aircraft in certain modes. A pilot's head-up display and ECCM will also be standard.

Two main airframe modifications apply to this version, of which the principal one is a 1.22 m (4 ft) increase in fuselage length, created by the longer nose radome and the need for a small 'stretch' aft of the cockpit to allow the four Sky Flash missiles to be carried in two tandem pairs. This extension provides additional space for electronics equipment, and for an extra 909 litres (200 Imp gallons) of internal fuel. A fully-retractable flight refuelling probe is mounted in the nose, and drop-tanks can be carried on the inner underwing stations. The fixed inboard portions of the wings are extended forward at the leading-edges, to give additional chord. Power plant will be an updated version of the present standard RB.199-34R-04 engine.

In early 1978 the Tornado was evaluated by the Canadian Armed Forces as one of six contenders to meet its NFA (New Fighter Aircraft) requirement for a replacement for its CF-101, CF-104, and CF-5 aircraft. The evaluation included in-flight refuelling from RAF Victor K. Mk 2 tankers. The Canadian selection, expected to lead to orders for 120-150 aircraft, is to be announced later this year.

US AIR FORCE
HEADQUARTERS, AERONAUTICAL
SYSTEMS DIVISION (AFSC); Address:
Wright-Patterson AFB, Ohio 45433, USA

USAF (FDL) XBQM-106

This experimental mini-RPV was designed and built by the USAF Flight Dynamics Laboratory, and was first flown in 1975. It is designed for easily-obtainable flexibility, and up to early 1978 six variants had flown, incorporating various alternative wing, nose, tail, and engine configurations, and with payloads ranging from 11.3 to 45.4 kg (25-100 lb). Development is continuing.

The following description applies to the basic configuration:

AIRFRAME: Cantilever shoulder-wing monoplane configuration, with pod-and-boom fuselage, sweptback fin and rudder, constant-chord non-swept wings, and non-swept horizontal tail. Twin, dependent endplate fins and rudders also tested. Construction mainly of foam plastics.

POWER PLANT: One McCulloch MC-101A single-cylinder piston engine, mounted above wing centre-section and driving a two-blade pusher propeller. Engines of 9-13.5 kW (12-18 hp) have been fitted.

LAUNCH AND RECOVERY: Launched by bungee-assisted trolley. Normal recovery by landing on ventral skid. Recovery using powered ram-air canopy has also been demonstrated.

GUIDANCE AND CONTROL: Radio and radar command guidance system. Real-time ground-based control system; USAF-developed autopilot or manual control optional. Aerodynamic control by ailerons, elevator, and rudder. Special wings-level steering available via side-force control for accurate target strike experiments.



Ram-air canopy experimental version of the XBQM-106 mini-RPV on its take-off dolly

SPECIAL EQUIPMENT: Air-to-ground telemetry utilised on some missions. Wide variety of possible payloads, accommodated in nose sections of standard or modified shape.

DIMENSIONS, EXTERNAL:

Wing span 2.90 m (9 ft 6 in)
 Wing area, gross 1.25 m² (13.5 sq ft)
 Length overall 3.05 m (10 ft 0 in)

WEIGHTS:

Payload range 11.3–25 kg (25–55 lb)
 Max T-O weight 61 kg (135 lb)

PERFORMANCE:

Cruising speed 100 knots (185 km/h; 115 mph)
 Max rate of climb at S/L 229 m (750 ft)/min
 Service ceiling 3,050 m (10,000 ft)
 Endurance up to 5 h

ANTONOV ANTONOV DESIGN BUREAU; Headquarters: Kiev, Ukraine, USSR

On 22 December 1977 the prototype of a new twin-turboprop STOL transport known as the Antonov An-72 flew for the first time in the Soviet Union. Few details have yet been released officially, except that the aircraft's nominal payload is 5,000 kg (11,023 lb). Allied to an obvious similarity of configuration between the An-72 and the much larger Boeing YC-14 AMST, this scrap of data permits the general design and performance parameters of the An-72 to be estimated realistically.

ANTONOV An-72

According to the Soviet *Tass* news agency, the An-72 has been designed as a STOL replacement for the An-26 twin-turboprop transports operated by Aeroflot and other airlines. The military potential of a transport able to utilise small, unprepared landing areas in undeveloped countries, or even small fields in Europe, is obvious. In particular, the An-72 might be an ideal aircraft with which to support operations by the new generation of V/STOL combat aircraft that is expected to follow the pioneering Yak-36. Its low-pressure tyres and bogie landing gear are well suited to off-runway operations, and the high-set engines should avoid problems caused by foreign object ingestion.

Primary reason for this particular engine

arrangement, as on the YC-14, is to enable the exhaust to be ejected over the upper surface of the wing and down over the very large double-slotted flaps. By taking advantage of the so-called 'Coanda effect', which causes the airflow to 'attach to' the extended flaps, a considerable increase in lift can be achieved.

Until more information is made available, it is impossible to know whether or not the An-72 embodies some of the more advanced features of the YC-14, and which contributed so much to the latter's remarkable capabilities. Does it, for example, have a supercritical wing section; and do its engine nacelles house a complex system of doors and deflectors to make optimum use of the exhaust flow during both take-off and landing? It has been suggested that the presence of trim tabs on the tail unit indicates that the An-72 can be flown manually, and may lack completely an electronically controlled flap and spoiler system of the kind that Boeing considered essential to cope with 'engine-out' handling of the YC-14. Lack of sophistication can, however, be an advantage for an aircraft intended to operate into remote places, and under combat conditions.

The following details should be regarded as provisional:

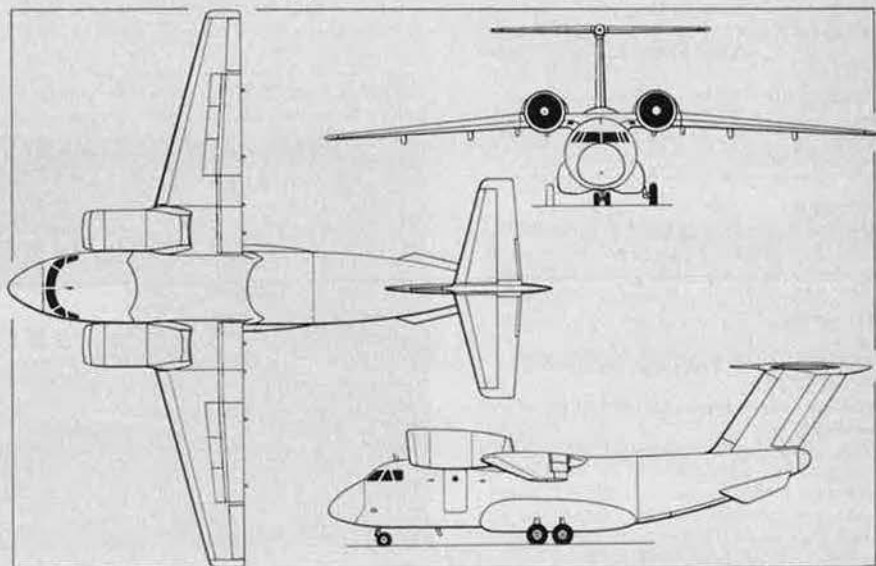
TYPE: Twin-turboprop light STOL transport.

WINGS: Cantilever high-wing monoplane, with moderate sweepback on leading-edges. Short rectangular centre-section, without dihedral or anhedral. Marked anhedral on outer panels. Wing upper-surface blowing concept requires the engines to be mounted above and forward of the wings, so that they exhaust over the upper surface. Full-span leading-edge flaps on outer panels. Wide-span trailing-edge double-slotted flaps on centre-section and outer panels. When extended, flaps induce the efflux from the engines to cling to the surface of the wing/flap system, and direct it downward, generating powered lift. Conventional ailerons outboard of trailing-edge flaps.

FUSELAGE: Conventional all-metal semi-monocoque structure of circular cross-section.

TAIL UNIT: Cantilever all-metal T-tail, with wide-chord swept vertical surfaces. Double-hinged rudder, with tab in rearward section. Tailplane leading-edge sweep similar to that of wing. Horn-balanced elevators. Tapered fairing forward of fin/tailplane

Provisional three-view drawing of the Antonov An-72 (Pilot Press)





Prototype of the Antonov An-72 twin-turbofan STOL transport (Tass)

junction. Two large outward-canted ventral fins.

LANDING GEAR: Retractable tricycle type.

Twin wheels on steerable nose unit. Each main unit comprises two trailing-arm legs, in tandem, retracting inward through 90° so that wheels lie horizontally in bottom of large fairings, outside fuselage pressure cell. Low-pressure tyres.

POWER PLANT: Two high bypass ratio turbofans, probably related to the Lotarev D-36 engines (each 63.2 kN; 14,200 lb st) used in the Yakovlev Yak-42 transport.

ACCOMMODATION: Likely accommodation for a crew of three to five, and about 52 passengers, 40 paratroops, or 24 stretchers, as an alternative to a maximum 6,500 kg (14,330 lb) of freight. Rear-loading ramp-doors in undersurface of upswept rear fuselage. Main passenger and crew door at front of cabin on port side. Small emergency exit and servicing door at rear of cabin on starboard side.

ELECTRONICS AND EQUIPMENT: Large radome over navigation/weather radar in nose. Air intake in leading-edge of port centre-section, presumably for APU.

DIMENSIONS: Not available.

WEIGHTS (estimated):

Max payload 6,500 kg (14,330 lb)
Max T-O weight 29,000 kg (63,935 lb)

PERFORMANCE (estimated):

Cruising speed 325-378 knots
(600-700 km/h; 373-435 mph)
T-O run 470 m (1,542 ft)
Range with 5,000 kg (11,023 lb) payload
540 nm (1,000 km; 620 miles)

EMBRAER

EMPRESA BRASILEIRA DE AERONAUTICA SA; Head Office and Works: Av Brig Faria Lima No. 2170, Caixa Postal 343, 12200 São José dos Campos, São Paulo State, Brazil

EMBRAER EMB-110 BANDEIRANTE (PIONEER)

Brazilian Air Force designations: C-95 and R-95

The Bandeirante twin-turboprop light transport was developed to a Ministry of Aeronautics specification calling for a general-purpose aircraft capable of carrying out missions such as transport, navigation training, and aeromedical evacuation.

The first YC-95 prototype (2130) flew for the first time on 26 October 1968, followed by the second (2131) on 19 October 1969, and the basically similar third aircraft (PP-ZCN) on 26 June 1970. These prototypes, designated EMB-100, were described in the 1970-71 *Jane's*.

The first production EMB-110 Bandeirante (C-95/2133) flew for the first time on 9 August 1972, and was test-flown until December 1972 as part of the certification programme. Following the completion of testing to FAR Pt 23, the aircraft was granted a type certificate by the Aerospace Technical Centre of the Ministry of Aeronautics, and the first three Bandeirantes were delivered to the Brazilian Air Force on 9 February 1973.

By 1 January 1978 a total of 187 Bandeirantes of various models had been sold, to some 35 operators. The 100th Bandeirante was delivered on 7 May 1976, and production was scheduled to continue during 1977-78 at a rate of four per month.

The Bandeirante is available in the following versions:

EMB-110. Basic 12-seat aircraft; 60 operated by Brazilian Air Force as **C-95**.

EMB-110B. Aerial photogrammetric version, with electrically-operated ventral sliding door, size 0.84 m x 1.86 m (2 ft 9 in x 6 ft 1¼ in), permitting the use of aerial cameras (Zeiss RMK A8.5/23, RMK A15/23,

RMK A30/23, and Wild RC-10), a Zeiss IRU regulator, and Zeiss NT-1 navigation visors. Other equipment includes Decca 72 Doppler navigation system. Crew includes three equipment operators. Six operated by Brazilian Air Force as **R-95**. TerraFoto, a Brazilian enterprise, has the **EMB-110B1**, with quick-change aerial photogrammetric/nine-passenger executive interior; one B1 also ordered by Uruguayan Air Force, with convertible aerial photogrammetric/14-passenger feederliner interior.

EMB-110C. Standard 15-passenger commercial transport version. Entered commercial service with Transbrasil on 16 April 1973. Acquired also by Chilean Navy (three) as **EMB-110C(N)** and Uruguayan Air Force (five).

EMB-110E(J). Executive transport version with accommodation for seven passengers, four in individual seats and three on a sideways-facing sofa. Other features include a galley, wardrobe, and stereo AM/FM and tape deck.

EMB-110K1. All-cargo version, lengthened by insertion of a 0.85 m (2 ft 9½ in) plug between the flight deck and the centre-fuselage, and with upward-opening 1.80 m x 1.42 m (5 ft 10½ in x 4 ft 8 in) cargo door on port side of rear fuselage. Two 559 kW (750 shp) PT6A-34 engines. Twenty ordered by Brazilian Air Force as **C-95A**. Described separately.

EMBRAER EMB-110P2 commuter transport which completed an eight-nation African tour before being delivered to Air Westward of the UK



EMB-110P. Commercial third-level commuter version for 18 passengers, developed from EMB-110C. Described separately.

EMB-110P1. Quick-change version of EMB-110K1, for passenger and cargo operations. Described separately.

EMB-110P2. Third-level commuter transport counterpart of EMB-110K1, carrying up to 21 passengers. First flown on 3 May 1977. Two ordered by Air Littoral and three by Air Sudan. Detailed description applies to this version.

EMB-110S1. Geophysical survey version, with 559 kW (750 shp) PT6A-34 engines, increased internal fuel (1,914 litres; 421 Imp gallons), and provision for two 318 litre (70 Imp gallon) wingtip tanks. Proton magnetometer in extended tailboom, gamma ray spectrometers, Doppler navigation system, and data recording system.

EMB-111. Maritime patrol version, described separately.

The following description, except where noted, applies to the standard production EMB-110P2:

TYPE: Twin-turboprop general-purpose transport.

WINGS: Cantilever low-wing monoplane. Wing section NACA 23016 (modified) at root, NACA 23012 (modified) at tip. Sweepback 19° 48" at quarter-chord. Dihedral 7° at 28% chord. Incidence 3°. All-metal two-spar structure, of 2024-T3 and -T4 aluminium alloy, with detachable glassfibre wingtips. Glassfibre fuselage/wing fairing. All-metal statically-balanced ailerons and double-slotted flaps. Trim tab in port aileron. De-icing system optional.

FUSELAGE: All-metal semi-monocoque structure of 2024-T3 aluminium alloy. Two upward-hinged doors, one on each side of nose, provide access to electronics equipment.

TAIL UNIT: Cantilever all-metal structure, with sweptback vertical surfaces. Glassfibre dorsal fin. Trim tabs in rudder and port elevator. Tab in starboard elevator linked to flaps, to offset pitching moment during flap extension. De-icing system optional.

LANDING GEAR: Hydraulically-retractable tri-cycle type, with single wheel and oleopneumatic shock-absorber on each unit. Main-wheel tyre size 670 x 210-2, pressure 5.52-5.86 bars (80-85 lb/sq in). Steerable, forward-retracting nosewheel unit has tyre size 6.50-8, pressure 2.75-3.10 bars (40-45 lb/sq in).

POWER PLANT: Two 559 kW (750 shp) Pratt & Whitney Aircraft of Canada PT6A-34 turboprop engines, each driving a Hartzell HC-B3TN-3C/T10178H-8R constant-speed three-blade metal propeller with autofeathering and full reverse-pitch capability. Four integral fuel tanks in wings, with total capacity of 1,720 litres (378 Imp gallons). Gravity refuelling point on top of each wing. Optional de-icing system for engine air inlets and propellers.

ACCOMMODATION: Seats for pilot and co-pilot side by side on flight deck. Seats for up to 21 passengers in main cabin. Crew/passenger door at front and passenger/baggage door at rear, both on port side; emergency exit over wing on each side, and opposite crew/passenger door on starboard side. Crew/passenger door can also be used as emergency exit. Cabin floor stressed for uniformly distributed loads of up to 488 kg/m² (100 lb/sq ft). Baggage compartment at rear of cabin, with total capacity of 2.0 m³ (70.6 cu ft). Flush-type toilet in compartment at rear of cabin. Toilet/lavatory standard. Windscreen de-icing optional.

SYSTEMS: Air-cycle-type air-conditioning sys-

tem with cooling capacity of 25,000 BTU/h and engine bleed heating. Hydraulic system, pressure 207 bars (3,000 lb/sq in), for landing gear actuation, dual independent braking systems, nosewheel steering, and parking brake. Electrical system utilises two starter generators, giving 200A continuously or 300A for one minute, and one 24V 34Ah nickel-cadmium battery with two 250VA static inverters to supply 115/26V 400Hz AC power. External power receptacle on port side of forward fuselage. Oxygen system for crew and passengers, using oxygen cylinder in rear of fuselage with capacity of 3.3 m³ (115 cu ft) at 128 bars (1,850 lb/sq in) pressure.

ELECTRONICS AND EQUIPMENT: Electronics available in one of three standard packages. No. 1 package includes two Collins 618M-3 360-channel VHF transceivers, two Collins VIR-30A VOR/ILS/marker beacon receivers, two Collins DF-206 ADF receivers, and one or two Collins PN-101 gyromagnetic compass systems. No. 2 package includes one Collins 51Z-6 marker beacon receiver, two Bendix DFA-73A ADF systems, one Collins 618M-2B VHF1 system and one Whinner TC-609 VHF2 system, one Sunair ASB-100A HF system, one Collins 51R-7A/51V-5 VOR/ILS receiver, and one or two Collins PN-101 gyromagnetic compass systems. No. 3 package includes one or two King KC-55A gyromagnetic compass systems, two King KX-175BE VHF nav/com, two King KN-75 glideslope receivers, two King KR-21 marker beacon receivers, and two King KR-85 ADF receivers. Optional electronics include one Sunair ASB-100A HF/AM/SSB transceiver, one RCA AVQ-47 or Bendix RDR-1200 weather radar, Bendix M4-C or M4-D autopilot, one Collins DME-40 or two King KN-65A DME systems, one Collins TDR-90 or two King KT-76A ATC transponders, one Garrett Rescu/88L emergency locator transmitter, one Collins AVR-101 voice recorder, one Collins ALT-50 or King KRA-405 radio altimeter, entertainment radio, tape deck, PA system, and complete de-icing and anti-icing systems. Standard equipment includes engine fire detection system, propeller synchroniser, eight-day clock, annunciator panel, dual heated pitot heads, heated static port, external power socket, dual landing lights, taxi light, rotating beacons, dual map lights, instrument lighting system, soundproofing, low-profile glareshield, and tow-bar. Optional equipment includes three-light strobe system, toilet, a variety of cabinets, and a range of galley equipment.

DIMENSIONS, EXTERNAL:

Wing span	15.30 m (50 ft 2½ in)
Wing chord at root	2.45 m (8 ft 0½ in)
Wing chord at tip	1.35 m (4 ft 5 in)
Wing aspect ratio	8.09
Length overall	15.10 m (49 ft 6½ in)
Length of fuselage	14.60 m (47 ft 10¾ in)
Height overall	4.73 m (15 ft 6¼ in)
Fuselage: Max width	1.72 m (5 ft 7¾ in)
Tailplane span	7.54 m (24 ft 9 in)
Propeller diameter	2.36 m (7 ft 9 in)
Distance between propeller centres	4.80 m (15 ft 9 in)
Propeller ground clearance	0.345 m (1 ft 1½ in)
Wheel track	4.94 m (16 ft 2½ in)
Wheelbase	5.41 m (17 ft 9 in)
Passenger door (rear, port):	
Height	1.35 m (4 ft 5¼ in)
Width	0.85 m (2 ft 9½ in)
Crew/passenger door (fwd, port):	
Height	1.42 m (4 ft 8 in)
Width	0.63 m (2 ft 1 in)

Emergency exits (three, each):

Height	0.80 m (2 ft 7½ in)
Width	0.63 m (2 ft 1 in)

DIMENSIONS, INTERNAL:

Cabin: Max length	9.53 m (31 ft ¾ in)
Width	1.60 m (5 ft 3 in)
Height	1.60 m (5 ft 3 in)
Floor area	12.00 m ² (129.2 sq ft)

AREAS:

Wings, gross	29.00 m ² (312.15 sq ft)
Ailerons (total)	2.18 m ² (23.46 sq ft)
Flaps (total)	5.04 m ² (54.25 sq ft)
Fin, incl dorsal fin	2.07 m ² (22.28 sq ft)
Rudder, incl tab	1.67 m ² (17.98 sq ft)
Tailplane	5.42 m ² (58.34 sq ft)
Elevators, incl tabs	4.40 m ² (47.36 sq ft)

WEIGHTS AND LOADINGS:

Weight empty, equipped	3,516 kg (7,751 lb)
Max payload	1,681 kg (3,706 lb)
Max T-O weight	5,670 kg (12,500 lb)
Max landing and max zero-fuel weight	5,450 kg (12,015 lb)

Max wing loading	195.52 kg/m ² (40.04 lb/sq ft)
Max power loading	5.07 kg/kW (8.33 lb/shp)

PERFORMANCE (at max T-O weight, ISA, except where indicated):

Max level speed at 2,440 m (8,000 ft)	248 knots (460 km/h; 286 mph)
Max cruising speed at 3,050 m (10,000 ft)	225 knots (417 km/h; 259 mph)
Econ cruising speed at 3,050 m (10,000 ft)	176 knots (326 km/h; 203 mph)
Stalling speed at max landing weight	71 knots (132 km/h; 82 mph) CAS
Max rate of climb at S/L	545 m (1,788 ft)/min
Rate of climb at S/L, one engine out	146 m (480 ft)/min
Time to 3,050 m (10,000 ft)	6 min
Time to 4,575 m (15,000 ft)	10 min
Service ceiling at AUV of 5,300 kg (11,684 lb)	7,350 m (24,100 ft)
Service ceiling, one engine out, at AUV of 5,300 kg (11,684 lb)	3,780 m (12,400 ft)
T-O run	654 m (2,145 ft)
T-O to 15 m (50 ft)	450 m (1,476 ft)
Landing from 15 m (50 ft)	790 m (2,592 ft)
Landing run	540 m (1,772 ft)
Range at 3,050 m (10,000 ft), 45 min reserves:	
with max fuel	1,025 nm (1,900 km; 1,180 miles)
with 1,440 kg (3,175 lb) standard payload	268 nm (497 km; 309 miles)

EMBRAER EMB-110K1 and P1 BANDEIRANTE

Brazilian Air Force designation of EMB-110K1: C-95A

The following description applies to the K1 and P1, both of which are in current production:

WINGS: As EMB-110P2, but with optional inflatable de-icing boots on leading-edges.

FUSELAGE: As EMB-110P2, but with enlarged rear door for cargo loading.

TAIL UNIT, LANDING GEAR, AND POWER PLANT: As EMB-110P2.

ACCOMMODATION (EMB-110K1): Pilot and co-pilot side by side on flight deck. Crew door forward on port side; emergency exit forward of wing on starboard side. Cabin equipped for cargo only, with enlarged cargo door on port side at rear. Flush-type toilet behind co-pilot's seat.

ACCOMMODATION (EMB-110P1): As K1, but with quick-change cabin seating up to 18 persons. Overwing emergency exit on each side, making three in all.

SYSTEMS: Air-conditioning, hydraulic, and electrical systems as for EMB-110P2. Oxygen system optional.



The Brazilian Air Force's C-95A is an EMB-110K1 all-cargo version of the Bandeirante

ELECTRONICS AND EQUIPMENT: Standard and optional electronics and equipment as for EMB-110P2.

DIMENSIONS, EXTERNAL: As EMB-110P2, except:

Cargo door (rear, port):
 Height 1.42 m (4 ft 8 in)
 Width 1.80 m (5 ft 11 in)

DIMENSIONS, INTERNAL: As EMB-110P2

AREAS: As EMB-110P2

WEIGHTS AND LOADINGS: As EMB-110P2 except:

Max payload:
 K1 1,880 kg (4,145 lb)
 P1 (passenger configuration) 1,635 kg (3,605 lb)

PERFORMANCE (at max T-O weight, ISA, except where indicated): As EMB-110P2 except:

T-O run 470 m (1,542 ft)
 T-O to 15 m (50 ft) 760 m (2,494 ft)
 Range at 3,050 m (10,000 ft), 45 min reserves:
 K1 and P1 with max fuel 1,025 nm (1,900 km; 1,180 miles)
 K1 with 1,750 kg (3,856 lb) standard payload 165 nm (306 km; 190 miles)
 P1 with 1,440 kg (3,175 lb) standard payload 225 nm (417 km; 259 miles)

EMBRAER EMB-110P BANDEIRANTE

WINGS, FUSELAGE, TAIL UNIT, AND LANDING GEAR: As EMB-110P2, except for shorter fuselage with fewer doors and emergency exits (see Accommodation paragraph).

POWER PLANT: Two 507 kW (680 shp) Pratt & Whitney Aircraft of Canada PT6A-27 turboprop engines; otherwise as EMB-110P2.

ACCOMMODATION: Pilot and co-pilot side by side on flight deck, which is separated from main cabin by door. Cabin seats up to 18 passengers. Downward-hinged door on port side, aft of wing, with built-in airstairs. Cabin floor stressed for loads of up to 450 kg/m² (92 lb/sq ft). Emergency exit over wing on each side. Baggage compartment at rear of cabin, with total capacity of 2.0 m³ (70.6 cu ft). Toilet/lavatory standard.

SYSTEMS: As EMB-110P2.

ELECTRONICS AND EQUIPMENT: Standard electronics include two Collins 618M-2B 360-channel VHF transceivers, one Sunair ASB-100A HF/AM/SSB transceiver, one Collins 51R-7A VOR/ILS receiver, two

Bendix DFA-73A1 ADF receivers, one Collins 51Z-6 marker beacon receiver, and one Collins 51V-5 glideslope receiver. Optional electronics include RCA AVQ-47 or Bendix RDR-1200 weather radar, Bendix M4-C or M4-D autopilot, single or dual Sperry STARS IVB or IVC flight directors, entertainment radio, tape deck, PA system, and complete de-icing and anti-icing system. Standard and optional equipment as listed for EMB-110P2.

DIMENSIONS, EXTERNAL: As EMB-110P2 except:

Length overall 14.23 m (46 ft 8 1/4 in)
 Length of fuselage 13.74 m (45 ft 1 in)
 Wheelbase 4.56 m (14 ft 11 1/2 in)
 Crew/passenger door (forward, port) None
 Emergency exits Two only

DIMENSIONS, INTERNAL: As EMB-110P2 except:

Cabin: Max length 8.65 m (28 ft 4 1/2 in)
 Floor area (incl flight deck) 10.9 m² (117.3 sq ft)

AREAS: As EMB-110P2

WEIGHTS AND LOADINGS:

Weight empty, equipped 3,403 kg (7,502 lb)
 Max payload 1,645 kg (3,626 lb)
 Max T-O weight 5,600 kg (12,345 lb)
 Max landing and max zero-fuel weight 5,300 kg (11,684 lb)
 Max wing loading 193.10 kg/m² (39.55 lb/sq ft)
 Max power loading 5.52 kg/kW (9.08 lb/shp)

PERFORMANCE (at max T-O weight, ISA, except where indicated):

Max level speed at 2,285 m (7,500 ft) 244 knots (452 km/h; 280 mph)
 Max cruising speed at 3,050 m (10,000 ft) 232 knots (430 km/h; 267 mph)
 Econ cruising speed at 3,050 m (10,000 ft) 184 knots (341 km/h; 212 mph)
 Stalling speed at max landing weight 71 knots (132 km/h; 82 mph) CAS
 Max rate of climb at S/L 442 m (1,450 ft)/min

Rate of climb at S/L, one engine out 137 m (450 ft)/min

Time to 3,050 m (10,000 ft) 8 min

Time to 4,575 m (15,000 ft) 13 min

Service ceiling at AUV of 5,300 kg (11,684 lb) 7,700 m (25,300 ft)

Service ceiling, one engine out, at AUV of 5,300 kg (11,684 lb) 3,750 m (12,300 ft)

T-O run 452 m (1,480 ft)

T-O to, and landing from, 15 m (50 ft) 695 m (2,280 ft)

Landing run 372 m (1,220 ft)

Range at 3,050 m (10,000 ft), 45 min reserves:

with max fuel 1,100 nm (2,038 km; 1,266 miles)

with standard payload 320 nm (593 km; 368 miles)

EMBRAER EMB-111

Brazilian Air Force designation: P-95

This land-based maritime reconnaissance aircraft, based on the EMB-110 Bandeirante, was designed to meet specifications issued by the Comando Costeiro, the Brazilian Air Force's Coastal Command, which has ordered 12. Six have also been ordered by the Chilean Navy. The first EMB-111 (2262) flew for the first time on 15 August 1977; Brazilian Air Force aircraft will serve with the 1° Esquadrão of the 7° Grupo de

First in-flight photograph of the Dassault-Breguet Mirage 2000, which made its maiden flight at Istres on 10 March 1978. This new fighter was described in detail in the October 1977 Jane's Supplement





With AIL search radar in its nose, the EMB-111 is a specialised coastal patrol development of the basic Bandeirante

Aviação located at Salvador AFB, Bahia.

The main external differences in this version are the large nose radome, housing the search radar, and the addition of wingtip fuel tanks.

TYPE: Twin-turboprop maritime reconnaissance aircraft.

WINGS: As EMB-110P2, but with reinforced leading-edges and tip-tanks.

FUSELAGE: Similar to EMB-110P2, but with large nose radome.

TAIL UNIT AND LANDING GEAR: As EMB-110P2.

POWER PLANT: Two 559 kW (750 shp) Pratt & Whitney Aircraft of Canada PT6A-34 turboprop engines, each driving a three-blade propeller with spinner. Four integral fuel tanks in wings (total capacity 1,950 litres; 429 Imp gallons), and two permanent wingtip tanks (total capacity 636 litres; 140 Imp gallons). Max total fuel capacity 2,586 litres (569 Imp gallons), of which 2,550 litres (561 Imp gallons) are usable.

ACCOMMODATION: Pilot and co-pilot side by side on flight deck. Main cabin accommodates search radar/radio operator, navigator, and observer. Port-side door at rear, for crew and cargo, opens inwards and can be used to drop paratroops and survival equipment. Galley and toilet in main cabin.

ELECTRONICS AND EQUIPMENT: One Collins 618T-3B HF/AM/SSB/CW transceiver, two Collins 618M-3 VHF transceivers, two Sperry C-14 gyromagnetic compasses, two Bendix DFA-74A ADF receivers, two Collins VIR-31A VOR/ILS/marker beacon receivers, one Collins AN/APX-92 IFF transponder, one Collins DF-301E VHF/DF, one Collins DME-40 DME system, one Bendix ALA-51 radio altimeter, one Litton LN-33 inertial navigation system, and one AIL AN/APS-128 (SPAR-1) search radar. Leading-edge-mounted searchlight of 50 million candlepower for night operations. For target marking, six Brazilian-built MK-6 smoke grenades are

carried, as well as a Motorola SST-121 transponder. Flares of 200,000 candlepower are also available for illumination of targets at night. Optional electronics include Bendix M4-C or M4-D autopilot, single or dual Sperry STARS IVB or IVC flight directors, entertainment radio, tape deck, PA system, and complete de-icing and anti-icing system.

DIMENSIONS, EXTERNAL: As EMB-110P2 except:

Wing span (over tip-tanks)	15.96 m (52 ft 4½ in)
Wing chord at root	2.33 m (7 ft 7¾ in)
Length overall	14.83 m (48 ft 7¾ in)
Length of fuselage	14.34 m (47 ft 0½ in)
Height overall	4.74 m (15 ft 6½ in)
Propeller ground clearance	0.278 m (11 in)
Wheelbase	4.56 m (14 ft 11½ in)

DIMENSIONS, INTERNAL:

Cabin: Max length	8.65 m (28 ft 4½ in)
Width	1.60 m (5 ft 3 in)
Height	1.60 m (5 ft 3 in)
Floor area	11.60 m ² (124.9 sq ft)

AREAS: As EMB-110P2 except:

Rudder, incl tab	1.68 m ² (18.08 sq ft)
Tailplane	5.43 m ² (58.45 sq ft)

WEIGHTS AND LOADINGS:

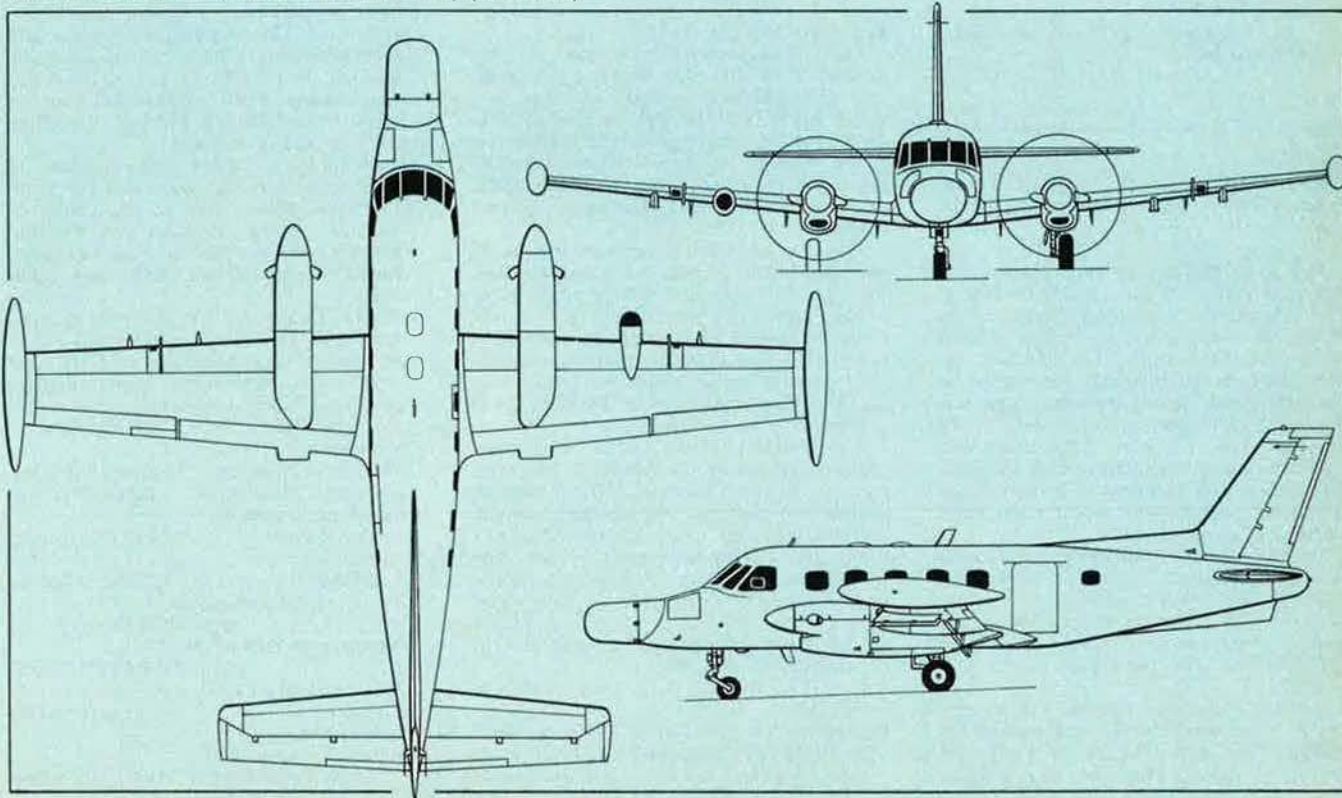
Weight empty, equipped	3,403 kg (7,502 lb)
Max payload	1,309 kg (2,886 lb)
Max T-O weight	7,000 kg (15,432 lb)
Max landing and max zero-fuel weight	5,450 kg (12,015 lb)

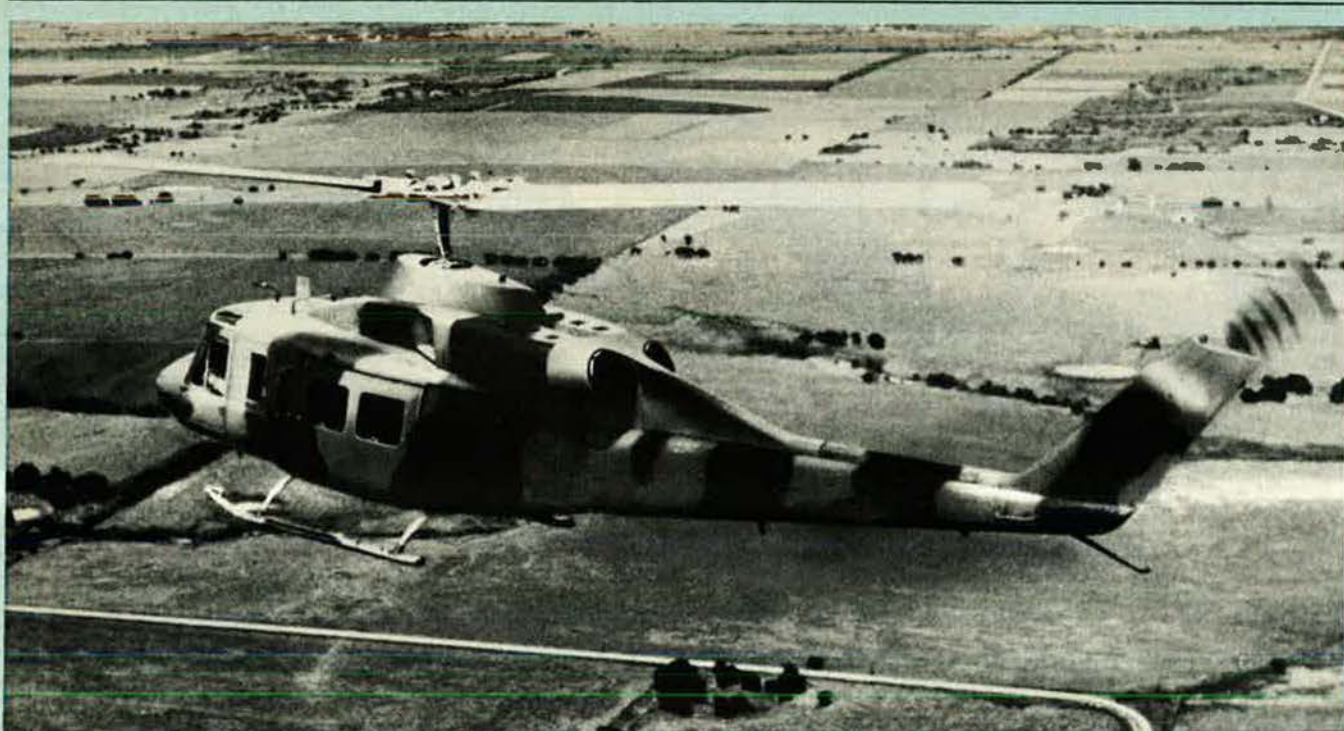
Max wing loading	241.38 kg/m ² (49.44 lb/sq ft)
Max power loading	6.26 kg/kW (10.29 lb/shp)

PERFORMANCE (at max T-O weight, ISA, except where indicated):

Max cruising speed at 3,050 m (10,000 ft)	218 knots (404 km/h; 251 mph)
Econ cruising speed at 3,050 m (10,000 ft)	187 knots (347 km/h; 216 mph)
Stalling speed at max landing weight	71 knots (132 km/h; 82 mph) CAS
Max rate of climb at S/L	402 m (1,319 ft)/min

EMBRAER EMB-111 (Brazilian Air Force P-95) (Pilot Press)





Experimental prototype of the Bell Model 214ST, under development for licence manufacture in Iran

Rate of climb at S/L, one engine out	58 m (190 ft)/min
Time to 3,050 m (10,000 ft)	9 min
Time to 4,575 m (15,000 ft)	16 min
Service ceiling at AUW of 5,300 kg (11,684 lb)	8,230 m (27,000 ft)
Service ceiling, one engine out, at AUW of 5,300 kg (11,684 lb)	4,570 m (14,990 ft)
T-O run	890 m (2,920 ft)
T-O to 15 m (50 ft)	1,200 m (3,940 ft)
Landing from 15 m (50 ft)	620 m (2,035 ft)
Landing run	400 m (1,312 ft)
Range at 3,050 m (10,000 ft), 45 min reserves:	
with max fuel	1,470 nm (2,725 km; 1,695 miles)
with max payload	1,120 nm (2,075 km; 1,290 miles)

IHI
IRANIAN HELICOPTER INDUSTRY; Address: 107 Sepahbod Zahedi Avenue, Tehran, Iran

As a major step in a national industrialisation programme, the government of Iran in 1975 selected Bell Helicopter Textron as its partner in establishing a modern aircraft industry in that country. The selection was made after an international competition in which proposals were considered from several major helicopter manufacturers in the USA and Europe; as a result, Bell established a new company, Bell Operations Corporation, staffed with experienced personnel and having full responsibility to carry out Bell's role in the programme.

This role includes furnishing special tooling and production components in support of the co-production programme; US manufacturers of other important components (eg, engines, electronics, hydraulics, and special materials) will also participate in the programme.

A major helicopter factory and training school is currently under construction at Isfahan. This was designed by Lockwood Greene of Atlanta, Georgia, and is being

built by JHP, a joint US/Iranian construction partnership; the first buildings are scheduled for completion in 1979. In addition, an extensive programme is under way to train Iranian personnel to operate and manage the helicopter industry in Iran. It is intended to achieve complete Iranian management after about five years, with Bell continuing thereafter in an advisory capacity.

First products of the new Iranian industry will be the Bell Model 214A (described in the US section of the 1977-78 edition of *Jane's All the World's Aircraft*) and Bell/IHI Model 214ST helicopters.

BELL/IHI MODEL 214ST

The initial agreement provided for co-production of 400 Bell Model 214A transport helicopters, in addition to those currently being built by Bell at Fort Worth, Texas, for the Iranian government. However, as the result of an important amendment to this contract, announced in March 1978, only 50 Model 214As will now be co-produced.

The remaining 350 helicopters will be of the new Model 214ST, developed specially for service in Iran, and will be produced in 1980-85. They are preceded by a Bell-built prototype, which has been flying since February 1977, and three pre-production examples, construction of which was under way in 1978. Certification under FAR Pt 29 is scheduled for early 1980.

The Bell/IHI Model 214ST is a twin-engined version of the Model 214A, powered by General Electric T700 turboshaft engines for improved hot day/high altitude performance, and will accommodate 17 troops in addition to a crew of two. The transmission system is an improved version of that fitted in the Model 214A. Bell, which designed the 214ST, is to develop a similar version for the commercial market, also to be available from 1980.

TYPE: Twin-turboshaft military transport helicopter.

ROTOR SYSTEM AND DRIVE: Generally similar to Model 214A, with two-blade main rotor, two-blade tail rotor, and Bell Noda-

Matic transmission system. Shaft drive to both rotors.

FUSELAGE: Semi-monocoque light alloy structure, fail-safe in critical areas. Limited use of light alloy honeycomb panels.

TAIL UNIT: Cantilever sweptback fin of light alloy. Tailplane, with small auxiliary end-plate fins, forward of main fin.

LANDING GEAR: Non-retractable tubular skid type.

POWER PLANT: Two General Electric T700-GE-TIC turboshaft engines, each flat rated at 1,212 kW (1,625 shp), mounted side by side above cabin. One engine will provide 88% of the max continuous power requirement. The two engines together will provide equivalent lift capability from S/L to 3,050 m (10,000 ft) and at increasing temperatures. Total internal fuel capacity 1,514 litres (400 US gallons). Refuelling point in side of fuselage.

ACCOMMODATION: Pilot and co-pilot on flight deck; seats in main cabin for up to 17 troops. Sliding door to main cabin on each side; separate door for crew. Freight/baggage compartment to rear of cabin. Entire accommodation heated and ventilated.

SYSTEMS: Twin redundant hydraulic systems. Dual 28V DC electrical systems.

ELECTRONICS AND EQUIPMENT: UHF and VHF radio. Blind-flying instrumentation, automatic flight control system, and stability augmentation system, all standard.

DIMENSIONS, EXTERNAL:

Main rotor diameter	15.85 m (52 ft 0 in)
Main rotor blade chord	0.84 m (2 ft 9 in)

DIMENSION, INTERNAL:

Cabin: Volume	7.73 m ³ (273.0 cu ft)
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WEIGHTS:

Fuel load	1,225 kg (2,700 lb)
Total internal useful load	approx 2,948 kg (6,500 lb)
Normal max T-O weight	7,030 kg (15,500 lb)
Max certification T-O weight, with external load	7,484 kg (16,500 lb)

PERFORMANCE:

Range on internal fuel	more than 400 nm (741 km; 460 miles)
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Thirty years ago this month, there began one of the most celebrated air operations of all time. Backed up by a then unique US strategic air arm, it demonstrated the political potency of airpower in a divided world, just as the recent war had demonstrated airpower's military might. That operation also was a signal to the Germans to rebuild their country. They did. It all came about through . . .



THE BERLIN AIRLIFT

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



Runways had to be extended and improved, and new ones built—the one shown above is at Tempelhof in Berlin. Venerable C-47s, left, soon were replaced by larger C-54s and other transport aircraft.

THE spring of 1948 saw some Americans, along with their British and French allies, living pretty high on the hog. They were occupying—as the term had it—Germany, and life could scarcely have been better for the occupiers. For the Germans, the occupied, it was a different story. Their major cities were in ruins, their industry shattered, and their money essentially worthless. Three years after V-E Day, the Germans were still an apathetic and dejected lot. The decidedly un-Teutonic traits of self-pity and docility were everywhere evident, and the cigarette, not the mark, was the sought-after currency.

A few cigarettes bought services and trinkets for the occupying forces. A few cartons could buy pianos, paintings, sporting rifles, and jewelry. The Germans, in turn, bought cabbage, potatoes, and pork with their Camels and Chesterfields. Cigarettes, which sold for a few cents a pack in the PXs, became something too valuable to smoke in the German economy. Until, that is, they reached the farmers who, being men with their immediate needs taken care of, smoked them. It was the equivalent of lighting a cigar with a dollar bill.

That spring, however, there were some changes in the air designed to

retire the cigarette as a means of exchange. Since they had been unable to obtain Soviet agreement to German currency reform, the Americans, British, and French agreed to go at it without the Russians. Accordingly, on June 20, 1948, new western-backed marks were issued to replace, at an exchange rate of one to ten, the notes of Hitler's regime. The Soviets' response was the Berlin Blockade.

The blockade was not unexpected. All during that spring of 1948 the deteriorating relations between the Russians and the western allies had been accompanied by Soviet pressures on Berlin. They were light pressures, more harassment than anything else, but omens, nevertheless, of what would come if the allies went too far in the rehabilitation of their part of Germany.

And so, there we were, cut off from the symbolically important city of Berlin by a Soviet blockade of the land routes. There were still the air corridors to Berlin, which some farsighted negotiator had inserted into the Four-Power Berlin agreement of 1945, but scarcely anyone viewed air transport as being an answer. Air transport would do for emergency cargo, and it could buy a little time,

but clearly airlift could not manage any real weight of supplies. After all, Berlin, at the time of the blockade, was getting around 13,000 tons a day by surface transport. At a minimum, the military governments estimated it would take 4,000 tons a day over any lengthy period to keep Berlin going. Happily, there were sufficient stocks on hand to sustain the city on short rations for a month or so if some supplementary airlift were provided.

Meanwhile, there was a great decision to be made. Should we call the Soviets' hand with an armed convoy, should we pull out of Berlin while we could still save some face, or should we see what we could do with air transport? There were proponents of all these views, and those who thought an airlift was the ultimate solution could probably have been counted on the fingers of one

hand. Maj. Gen. William H. Tunner, fidgeting impatiently at the headquarters of the newborn Military Air Transport Service (MATS), was one of that handful.

USAF's First Real Challenge

The Berlin Airlift was, in fact, already under way. It began on a sort of *ad hoc* basis following a telephone call from Gen. Lucius D. Clay, Commander in Chief European Command, to Lt. Gen. Curtis LeMay, Commander in Chief US Air Forces Europe. The US Air Force itself, as distinct from the US Army Air Forces, was not quite a year old when that call came in. General Clay asked General LeMay if he could haul coal and food to Berlin. It was the new Air Force's first real challenge, and Curt LeMay was just the man to take the call. No staff studies, no teletype conferences with Wash-

ington, just a question to be sure his aviator's ears weren't playing him tricks, then a quiet affirmative response. Brig. Gen. Joseph Smith, who would get his third star three and a half years later as Commander of the Military Air Transport Service, was LeMay's choice as Lucky Pierre. With no previous air transport experience, Joe Smith was told to organize and operate this aerial lifeline to the island of Berlin.

United States Air Forces Europe—USAFE—was headquartered in Wiesbaden in those days. Compared to most of Germany's cities, Wiesbaden had suffered relatively little damage. In fact, the only real damage came in the last few months of the war when the RAF laid a string of bombs across the town, perhaps mistaking Wiesbaden for some more strategic place. For the most part, the old health spa was in pretty good



**Gen. Lucius D. Clay,
USA (Ret.)
1897-1978**

home in Chatham, Mass., of emphysema at age eighty on April 17, just eleven weeks short of the thirtieth anniversary of the European crisis that he more than any other was credited with resolving in his country's and its allies' favor.

Lucius D. Clay was, at the time, military governor of western Germany and Commander of US forces in Europe. Although a graduate of West Point, he had never held a combat command, and his alternatives in dealing with the blockade were limited.

Under orders from President Truman not to use arms to force access, General Clay chose to relieve the threatened city by air. It was a daring gamble, to supply the daily requirements of food and fuel for a population of 2,000,000 by airlift. The outcome was a logistics miracle, due to the courage of US, British, and French aircrews and hard work by many others. After 327 days, the Soviets terminated the blockade.

General Clay's military career began with graduation from the Military Academy in 1918 and a commission in the Corps of Engineers. Most of his service in World War II concerned mobilization and supply, where he built a reputation for efficiency and tough-mindedness. (Shortly after the Normandy invasion, Supreme Allied Commander Gen. Dwight D. Eisenhower summoned General Clay to France to straighten out the logistics

snarl at the shattered port of Cherbourg. In just one day he doubled the flow of supplies to the front.)

General Clay, a descendant of Kentucky's famous Henry Clay, became known as the "great uncompromiser." As governor of Germany, he ruled with a firm but humane hand, initiating economic policies that were to put the war-torn country back on its feet.

Following the Berlin Airlift, General Clay retired from military service after thirty-one years to begin a second career in the business world. He was chairman of Continental Can Co. from 1950 to 1962 and became a senior partner in the investment banking firm of Lehman Brothers. He also found time to write a book, *Decision in Germany*.

Apart from his business interests, General Clay served in the public arena on many committees and commissions and as an advisor to Presidents.

He declined to seek the Republican nomination for President but did chair the party's national finance committee from 1965 to 1968.

Upon retirement from business in 1973, General Clay remained civically active, helping to raise funds for the Red Cross and other groups.

General Clay is survived by his wife, Marjorie; two sons: Gen. Lucius D., Jr., USAF (Ret.), and Maj. Gen. Frank B., USA (Ret.); seven grandchildren; and one great-grandchild.

shape, with hotels and other facilities immediately available to the occupying forces. Along the Wilhelmstrasse, the Cafe Blum became the NCO Club. The gambling casino was the Service Club. The Neroberg Hotel, perched on a hill overlooking the town, was taken over as an officers' club. The Wiesbaden Press Club occupied a fine old mansion on the banks of the Rhine. All in all, life was enjoyable and uncomplicated for the victors until Joe Smith started his airlift or, as he promptly named it, Operation Vittles.

It began with C-47s, the old Gooney Birds left over from Sicily, Normandy, and Arnheim. Using the troop carrier wings based at Rhein-Main, near Frankfurt, and Wiesbaden Air Base as the operating units, and commandeering every available C-47 in the theater, Joe Smith's Operation Vittles began to deliver supplies to the besieged city of Berlin.

The British were doing the same thing from their occupation zone, calling it, in a somewhat tortured pun, Operation Planefare. In addition to their Dakotas—the British name for a C-47—in Germany, they called on their transport resources in the United Kingdom for additional Dakotas and some forty four-engine Yorks, a transport version of the Lancaster bomber. By the end of July, Operation Planefare was delivering around 1,000 tons per day to Berlin's Gatow airport.

The initial success of this hastily organized operation gave some credibility to the idea of supporting Berlin by air. General Clay, on a trip to Washington, was promised the highest priority for Berlin's resupply, and four-engine C-54s began to arrive in Germany from the continental United States, Alaska, and Japan. Maj. Gen. Laurence Kuter, who had just taken over the newly formed Military Air Transport Service, a re-

sult of a shotgun marriage between the USAF Air Transport Command (ATC) and the Naval Air Transport Service (NATS), saw his transport assets begin to disappear. He also said farewell to his Deputy for Air Transport, Bill Tunner, who, together with a small group of staff officers, noncommissioned officers, and secretaries, left for Wiesbaden to form the Berlin Airlift Task Force. Headquarters space for this group was found in an apartment house facing a small park, site of the prewar hot sulphur bathhouse and not an inappropriate symbol as it turned out. There were to be some hot and sulphurous times in that old apartment house in the next few months.

Needed: 225 C-54s

That summer Vittles got into high gear. While the C-47s continued to operate from Wiesbaden Air Base, the emphasis was on the C-54, which could carry ten tons to the C-47's three. Shortly after establishing the headquarters of the Airlift Task Force, we came up with a figure of 225 C-54s as the number essential to guarantee the required Berlin tonnage. It turned out to be a surprisingly good estimate, considering the way it was arrived at.

As a result of a telephone call from



Food, coal, machinery—all the needs of a city of 2,000,000 were flown into Berlin. By August 1, 1949, 2,300,000 tons of supplies had been airlifted into the city and 82,000 tons flown out in some 275,000 flights.





The map at left shows the three air corridors through the Russian Zone to Berlin. Above, the three air terminals within the city.

LeMay's office, I was sent over to USAFE by Tunner to see what was wanted. What was wanted was how many C-54s did we need. It seems General Clay was waiting for the answer. I said I would hurry back to Airlift headquarters and get right on it. General LeMay told me to sit down right there and come up with an answer. And so, while he entertained a few foreign visitors, I scratched away in a corner. There were, obviously, enough compensating errors in those calculations to make the answer acceptable. At any rate, LeMay phoned General Clay, and the figure of 225 promptly became sanctified.

However, the really important work that summer went into the structuring of the airlift itself. There are three air corridors to Berlin, each twenty miles wide. When the airlift began, the Americans used the southern corridor, the British the northern one. Because C-47s and C-54s cruised at different speeds, it was necessary to schedule them in blocks. Beyond that, the distance to Berlin from the British Zone was about half that of the American Zone, and the land in northern Germany is flat, a feature that made for easy climb-outs and low cruising altitudes. The attractiveness of the British Zone was too obvious to overlook, especially in light of the increasing congestion on

the American bases. The British readily agreed to make room for the more productive C-54s and chose Fassberg, an old Luftwaffe training station on the Luneberg Heath, as the spot.

Problems at Fassberg

The initial results at Fassberg more than justified the move. True, the living conditions were poor, the place was isolated, and there was some confusion as to just who—the RAF or the USAF—was in charge, but the tonnage moved into Berlin. Then, as the initial enthusiasm ran down, real difficulties began to develop with a resultant effect on the cargo lifted. The combination of depressing surroundings, divided authority, and an impersonal functional organization that worked against any sense of unit esprit proved too much. Fassberg began to come apart.

The cure was simple, and the results dramatic. The pilots and mechanics were reorganized into squadrons to give people an identity; recreational runs were started to Hamburg and Copenhagen; and the RAF turned Fassberg over to the USAF. Col. Theron Coulter assumed command. His wife, the famous movie star Constance Bennett, revealed herself as one of the most formidable scroungers in any service. The mess halls took on a new look,

and the latest movies began to appear regularly. The barracks were spruced up, and new furniture was shipped to Fassberg by the brow-beaten USAFE supply services. Fassberg, very nearly a Berlin airlift disaster, became a showpiece. A lot went into turning it around, but the key factor appeared to have been the creation of the squadrons. Military people, it seems, want to belong to some identifiable unit and not just to some great amorphous organization. The lesson was not needed again.

Fassberg was followed by a British offer of a base at Celle, an attractive town near Hanover. When we first viewed Celle, it seemed a most unlikely transport base. Like many of the World War II Luftwaffe fighter fields, Celle was without runways or even, it seemed, room for a runway. However, the facilities were excellent, and the RAF simply wanted our agreement to go ahead—they would handle the rest. Watching the way the British engineers went at that project gave some insight into how the British Empire was built. The natives, in this case the local population, were driven hard. Celle opened on time and without a hitch.

Ending the Holding Patterns

As the summer went on, the airlift began to lose the happy informality of its early days. One horrendous foul-up over Berlin put an end to the sleepy air traffic control system that had served Berlin well enough before the blockade. The weather was bad that Friday, the 13th of August, and Bill Tunner was due in Berlin. He

was, in fact, overdue, as his airplane milled around in the stack over Tempelhof along with an undetermined number of others. Meanwhile, new arrivals were en route along the corridors, just to ensure chaos. It was a day to gladden the hearts of the Soviets and to infuriate Tunner. As it turned out, the day was a blessing. Given that kind of warning, there was time to straighten out the procedures and get some professional air traffic controllers back in uniform before the weather really turned sour later on.

A new radar, the CPS-5, came into Berlin along with the recalled controllers. Viewed at first with suspicion, the CPS-5 soon supplanted the traditional methods of handling area traffic and thus pioneered modern air traffic procedures. True enough, the new aircrew procedures instituted after that infamous Friday were calculated to make any air traffic controller's job easier. Things like requiring pilots to maintain exact airspeeds for climb, cruise, and let-down, and to make good precise

Gen. T. R. Milton, a USMA graduate who had been a B-17 pilot in Europe during World War II, was Chief of Staff for the Combined Airlift Task Force charged with delivering Berlin from the 1948 Soviet blockade. Later he commanded Thirteenth Air Force and served as Chief of Staff of TAC and as Comptroller of the Air Force. He was the US Representative to NATO's Military Committee prior to his retirement in 1974. A regular contributor to AIR FORCE Magazine, General Milton now lives in Colorado Springs.

times over certain checkpoints. And the new Tunner rule forbidding second tries at a Berlin landing made for a smooth and continuous circuit with no holding patterns in Berlin. With this sort of air discipline, and the radar to look down the corridors, air traffic control on the Berlin Airlift was probably the smoothest in aviation history.

It is still something to remember with nostalgia, the short perfunctory conversations between pilot and controllers as the C-54s headed into Berlin. The call signs themselves told the base of origin and the destination airfield, and, of course, whether the airplane was coming or going. When the airplanes reached Berlin, all was in readiness. Day or night, solid instruments or clear and unlimited,

they slowed down, let down, and positioned themselves on base leg. There, after one short transmission, they were in the hands of the world's most experienced, and accomplished, ground control approach teams.

GCA in Berlin was an experience no pilot ever forgot. There was a particular final approach controller, a Sergeant McNulty as I remember, who was able to make you believe, by gentle corrections interspersed with compliments, that your rotten job of flying into Tempelhof was one of aviation's milestones. A great man, McNulty.

Meanwhile, at Gatow

Across town, at Gatow, things were no different except for the accents. There the RAF was in charge and,

THREE DECADES OF MOVING MEN AND MACHINES

On June 1, 1948, the newly independent United States Air Force merged its airlift resources into a command called the Military Air Transport Service that, within days, was immersed in one of the most extraordinary airlift demonstrations in history—the Berlin Airlift. Ever since, that remarkable operation has symbolized the strategic and humanitarian importance of what now, on its thirtieth anniversary, is known as the Military Airlift Command.

Today, MAC is a specified command with a primary mission more vital than ever before: deploying and resupplying combat forces and their equipment anywhere in the world. The command is also responsible for aerial search, rescue, and recovery of downed flyers and space hardware; weather reconnaissance and atmospheric sampling, forecasting, and dissemination; aeromedical evacuation; presidential airlift; and documentary photography and audiovisual services.

Maj. Gen. Laurence S. Kuter, now retired, was the first MAC (MATS) commander. He guided the command through the Berlin Airlift when the command's resources numbered about 58,000 people and 432 aircraft, mainly C-54s and C-47s.

Now, in 1978, Gen. William G. Moore, Jr., directs almost 89,000 people and the operation of more than a thousand aircraft, including an airlift fleet made up of C-5 Galaxys, C-141 StarLifters, and C-130 Hercules. Other aircraft, ranging from Air Force One, the President's aircraft, to helicopters, are in the MAC inventory for technical services and special unit operations.

Over its thirty-year span, MAC has participated in

hundreds of contingencies, exercises, and humanitarian efforts.

The contingencies ranged from carrying passengers and priority supplies into Korea and Vietnam to flying peacekeeping forces to the Middle East. Perhaps the most dramatic contingency was the airlift credited with saving a nation—the resupply of Israel during the Yom Kippur War in 1973. MAC most recently airlifted UN troops for peacekeeping duties in Lebanon.

The command's humanitarian airlift operations have sent MAC aircraft into countries around the globe with food, medicine, and supplies in the wake of earthquakes, hurricanes and typhoons, floods, snowstorms, crop failures, and volcanic eruptions. MAC's happiest humanitarian effort was Operation Homecoming in 1973, when 566 US military servicemen, twenty-five US civilians, and nine third-country nationals were airlifted home from Vietnam prison camps.

In addition to its military aircraft, MAC depends on the civilian airlines for a great deal of airlift capability. The Civilian Reserve Air Fleet (CRAF) supports emergency airlift requirements, and participating CRAF airlines provide almost ninety percent of MAC's routine passenger travel. MAC acts as the executive agency for airlift contracts within the Department of Defense.

Since the Berlin Airlift of thirty years ago, MAC has performed strategic and humanitarian airlift with a sense of continuing pride and a growing tradition of accomplishment. MAC stands ready today, as it has for the past three decades, to move men and machines whenever and wherever necessary.

thus, host to the C-54s from Fassberg and Celle. Sometimes, admittedly, the long nights in Gatow tower were lightened by some irreverent American radio calls—the temptation to counter British formality was just too great. The Frohnau beacon, for instance, was a key checkpoint coming into Gatow. It became, late one evening, the Fraulein beacon, and the



High-intensity approach lights helped "the world's most accomplished GCA teams" handle 900 flights a day.

pilot announced he was over it with a load of cabbage. Then there was the anonymous immortal who gladdened the British traffic controllers' hearts forevermore with his inbound report:

Here comes a Yankee
with a blackened soul
Heading for Gatow
with a load of coal.

The nonsense, however, had nothing to do with the real work. At Tempelhof the landing minimums, into an airport with difficult approaches, were two hundred feet ceiling and a half-mile visibility. At Gatow, with good approaches, the minimums were one hundred feet and a quarter-mile. Thirty years later these are still about as low as landing minimums get. It is even more remarkable when we recall the pace of the airlift. Landings were two



To keep up morale in the city, especially among children, Lt. Gail Halvorsen conceived the idea of parachuting candy to youngsters lining the approach to Tempelhof. "Operation Little Vittles" soon was taken up by many of the airlift crews.

minutes apart at Gatow, three minutes at the more difficult Tempelhof, and two minutes at Tegel when it was built, of which more in a minute.

By early fall, the new US Air Force had made good on its pledge to General Clay. The C-54s were on the job, and the C-47s had been retired from the airlift. General LeMay had gone home to begin his historic tour with the Strategic Air Command. He was replaced in USAFE by Lt. Gen. John K. Cannon, a World War II tactical air commander who had earned a fine reputation in North Africa and Italy. Joe Cannon had an intensely personal approach to command. It was an approach that included a love of detail, even trivia, and a desire to know everything that was going on. It was also an approach that caused an immediate clash with Tunner, who had a proprietary attitude toward the airlift. The strained relations between the Commander in Chief USAFE and his subordinate, the airlift commander, were one of the less happy aspects of life in Wiesbaden, but they did not affect the operation. It was just one of those things.

A Combined Task Force

Meanwhile, the airlift was getting

too big to depend any longer on informal cooperation between the British and the Americans. Airspace, for instance, was becoming precious, and traffic control procedures had to be subordinated to a central authority if we were to make the best use of the airspace. There were other matters, cargo allocation being one, that seemed to need centralization.

The British would have preferred to continue on the basis of cooperation between two separate and independent efforts, but they agreed readily enough to a combined airlift task force under the command of General Tunner and responsible jointly to Air Marshal T. M. Williams, a bluff and thoroughly likable South African, and General Cannon. To give this new headquarters the cosmetic appearance of being joint, Air Commodore John Merer was named Deputy Commander. He came down to Wiesbaden from his own headquarters for a day each week, but the Combined Airlift Task Force Headquarters remained, except for the appointment of Group Captain Noel C. Hyde as Chief of Plans, essentially an American operation. However, Hetty Hyde, who had spent four years devising ways to



Although the Berlin Airlift was officially terminated on August 1, 1949, supporting flights into West Berlin continued until September 30, when this picture was taken. Tonnage figures shown on this C-54 were later revised.

escape from German prisoner of war camps, became a prominent and immensely popular member of the staff, and RAF interests were well protected.

Actually, there was not much to protect. The airlift became more and more routine as the procedures were refined and standardized. In fact, one of the visible disappointments to visitors—and there was a steady stream of them; everyone wanted to see the airlift—was the lack of excitement associated with this world-famous activity. Everything at Tempelhof or Gatow seemed so utterly routine. There would be a few airplanes on the ramp being rapidly unloaded, one landing, one taking off, and that was it, an unvarying pattern any time of the day or night. It took the French to stir up a little excitement.

A Role for France

From the beginning the airlift had been a British and American affair despite the French presence in Berlin as one of the Four Powers. After one or two haphazard supply runs direct from Paris to Berlin, the French agreed to let the airlift take on the job of supporting the French garrison.

That left France without a role in the counterblockade, a hard thing for Gallic pride. The answer lay in the need for a third airfield in Berlin to relieve the congestion at Gatow and Tempelhof. As it happened, the ideal site was in the French sector at Tegel, once a German drillground and thus free of buildings and obstructions.

Well, there was one obstruction, a radio antenna sticking up some nine hundred feet, but we could worry about that later. The new airfield would go ahead at Tegel under the supervision of American engineers. The French would see to the civilian labor supply and generally have jurisdiction over the area. Using rubble from bombed buildings as aggregate, they began the work. It had been necessary, of course, to fly in heavy machinery, and because the bulldozers, rock crushers, and steamrollers were too large for the airplanes, they were neatly sliced up by acetylene torches and flown in piecemeal. Once in Berlin these big machines were welded back together and performed like new. It was work of true artistry.

Altogether, the building of Tegel was an unforgettable sight: women in

high heels pushing heavy wheelbarrows, men who looked like doctors or professors, and probably were, wielding shovels. The enthusiasm of this unlikely crew was infectious. Not surprisingly, the airfield was finished in remarkable time, buildings, runways, ramps, all ready to go. There was only one problem—the radio tower, which stuck right into the landing pattern. A complication was the fact that the tower belonged to a station in East Berlin, a Soviet-controlled station. As long as it was there, Tegel would have limited utility, but the British and Americans proposed negotiating with the Soviets the dismantling of this tower. The French, at least the French military, were incredulous. In their view, the only way to deal with the offending tower was by direct action. And so, a few days after Tegel was completed, the French General Ganeval locked the small American contingent at Tegel into an office. Then, a platoon of French engineers marched out to the tower, planted a few charges and blew the thing flat. The Americans were released to join in a small champagne celebration of the clearing of Tegel's traffic pattern, a triumph for direct action over diplo-

macy. The Russians were annoyed, but as the French had predicted, nothing much came of it in the way of reprisal.

Quiet Deployment of B-29s

As a matter of fact, the airlift was almost entirely free of Soviet harassment, at least meaningful harassment. It would have been child's play to tie that vulnerable operation in knots simply by jamming, for example, the air traffic control frequencies. The fact that nothing of the kind ever happened can perhaps be explained by the quiet deployment, in the summer of 1948, of some B-29 squadrons to England. We were still the only possessors of both the atomic bomb and a means of delivering it. The message must have come across.

The constant drone of airplanes in and out of Berlin—Charles J. V. Murphy, in a *Fortune* article, called it a Rolls-Royce delivery to the world's biggest poorhouse—became more than a comforting sound to the Germans. It became an audible signal that their recent western enemies were now their friends. It was a signal to the Germans to get moving, to rebuild their country and once more assert themselves in a productive way. We all know how clear a signal it must have been.

And so now, thirty years later, we read of Germans sending food

parcels to impoverished GIs stationed in their country. The dollar, once sought and treasured in Europe as a symbol of everything solid and valuable, is now taken reluctantly in its debased state. The thirty years have erased most signs of the war that devastated Germany. Even in West Berlin the reconstruction is complete save for those shattered buildings preserved here and there as war memorials.

You don't hear much about the Berlin Airlift anymore, in Germany or anywhere else. There is a nice modernistic bit of sculpture in front of Tempelhof, commemorating that bridge in the sky so long ago, and there have been a few get-togethers in Berlin of some of the aging participants, but for the most part, the affair is ancient history. There is nothing, for instance, no plaque, not anything, on the old apartment house in Wiesbaden to mark the fact that the Combined Airlift Task Force once held forth there. Wiesbaden is no longer even an Air Force town. USAFE has gone south to Ramstein, and the air base is used by the US Army.

Still there are, in a way, all sorts of monuments to that great and unique operation. There is the Nassauer Hof Hotel in Wiesbaden, a bombed-out shell in 1948, and once more a luxury hotel since then.

A Message From the Governing Mayor of Berlin

With the Berlin Airlift, the three Western Powers, headed by the United States of America, successfully averted the attempt of the Soviet Union to deprive the inhabitants of the Western sectors of Berlin of their newly gained freedom.

The historic achievement of all those involved in the airlift will not be forgotten in Berlin. In those days, the forces occupying Berlin became our friends. Here are the roots of the friendly ties that now exist between the Federal Republic of Germany and the United States of America.

Today, just as in those days, Berlin needs the protection of its friends. This is the basis for our free existence. Today, just as in those days, we can count on the word given by our friends.

Because of this assurance, we have been able, despite all difficulties, to make Berlin one of the most spirited metropolises of the continent. The superiority of the order we live under and to which we subscribe is evident in our city.

Those who record the history of this century are bound to rate the successful Berlin Airlift among its most significant events and the beginning of new developments.

If there is one place in the world where the ties with the American people have become part of day-to-day life, it is—and will always be—the City of Berlin.

—Dietrich Stobbe
Governing Mayor of Berlin



The Airlift Memorial, built by the people of Berlin, honors the thirty-one Americans, thirty-nine British, and five Germans who lost their lives during the Berlin Airlift. This is the unveiling and dedication on July 11, 1951.

There is the city of Frankfurt, a hopeless pile of rubble in 1948. It marks its recovery from that year. There is, of course, all of Germany, a recovered, prosperous, and expensive tribute to the generous behavior of the western allies.

There is one more monument to our stubbornness about Berlin. It dates from the 1961 Berlin crisis, but it owes its origin to the stand we took in 1948. That one is the Berlin Wall, surely the most hideous monument anywhere, and thus an appropriate one to a system that must lock its citizens in.

Meanwhile, the chance of another Berlin crisis is always there. With the British and the French we even maintain a small headquarters in Belgium against that contingency. If it came to an airlift again, it would be a simple matter with today's giant transports, always providing, of course, there were no Soviet interference. That we no longer have a dominant strategic capability to act as policeman against interference is simply a melancholy fact of 1978. ■

The High Security Cost of CTB

BY BRIG. GEN. ALBION W. KNIGHT, USA (RET.)

In our April issue, Senior Editor Edgar Ulsamer discussed the effect of a Comprehensive Test Ban (CTB) on the future reliability of existing US nuclear weapons (see "Focus On . . . The Folly of CTB"). Here a nuclear weapons expert tells how CTB would foreclose two major operational areas where advanced weapons technology could enhance US security.

THERE is growing understanding that a Comprehensive Test Ban Treaty would cause fundamental changes in the US security posture and might further alter the strategic balance in favor of the USSR. The proposed treaty would halt all military and peaceful nuclear detonations by the United States, the Soviet Union, Britain, and any future parties to the treaty.

Arms-control advocates have long believed that stopping all nuclear testing would put a qualitative cap on the nuclear arms race and could be the most effective way of preventing an increase in the number of nuclear-armed states. This appeared to be President Carter's intent when

he said, shortly after his inauguration, "I am in favor of eliminating the testing of all nuclear devices instantly and completely."

While a Comprehensive Test Ban (CTB) might achieve those objectives (although political realists doubt it), there are major security costs that must be weighed carefully by the President, the Congress, and the American people before a treaty is signed and ratified. Edgar Ulsamer's definitive description of CTB issues, which appeared in the April 1978 AIR FORCE Magazine ("Focus On . . . The Folly of CTB"), summarizes tersely the fundamental costs of a complete test ban: "It could halt the development of new weapons and within a number of years put the reliability of the existing weapons in doubt."

Our nuclear weapon laboratory directors have been clear on the latter point. In a January 1978 unclassified letter to a member of the National Security Council staff, Dr. Harold M. Agnew, Director of the Los Alamos Scientific Laboratory said:

. . . I am forced to admit that we will not be able to maintain a viable stockpile under a CTB in the environment in which we are presently forced to operate.

Ulsamer noted the similar views of Dr. Roger E. Batzel, Director of Lawrence Livermore Laboratory:

. . . Perhaps the most important national security concern relating to a CTB is the possible erosion of the reliability of the strategic nuclear deterrent force. Nuclear weapons are typically constructed of materials whose chemical stability provides an ultimate limit on their lifetime. . . . One test could be crucial for assuring the reliability of the strategic deterrent.

This major cost of uncertain future nuclear weapon reliability should be enough to give our government pause before entering a CTB. It is getting close attention in congressional hearings on the test ban.

A second major cost, that of halting the development of new weapons, is getting almost no attention either within the Carter Administration or the Congress. The Administration gives the impression that it is determined to get a Comprehensive Test Ban Treaty regardless of the disadvantages.

There is equally little evidence that the armed services and the Department of Energy's nuclear weapons laboratories have analyzed seriously the improvements that could be made in our nuclear weapons capabilities if advanced nuclear weapons technology could be pursued in the vigorous manner required by the safeguards of the 1963 Limited Test Ban Treaty. Unless such analysis is done, there is an insufficient basis for judging whether the potential arms-control gains of a CTB outweigh the real losses from both a halt to new developments and an ultimately weakened confidence in weapons reliability.

This article discusses only two of many operational areas where advanced nuclear weapons technology might bring about major improvements in our security posture. I hope that it will encourage others to examine equally fruitful areas. The first area involves improving the security and survivability of American nuclear weapons deployed overseas in support of allies. The second relates to developing a presently unavailable strategic capability to counter the Soviet Union's recent hardening of its

critical command and control centers, missile launch sites, submarine pens, and other essential military and industrial facilities. These two areas show the need to view advanced nuclear weapons technology in the light of its ability to solve existing political and military problems posed by present US weapons. They also demonstrate a need to continue advancing nuclear weapons technology in order to maintain a satisfactory strategic balance by countering continuing Soviet progress in their overall strategic capability.

Security and Survivability

Our deployed nuclear weapons have created formidable security and survivability problems for both the Air Force and the Army. Several thousand nuclear weapons are on or around overseas air bases, on quick-reaction-alert (QRA), in many separate storage sites, and, under some alert conditions, with Army units moving on the highways and across country. These weapons must be protected against unauthorized access, seizure by terrorists, and enemy action including sabotage.

The physical security costs are high. All storage locations must have a network of fences, lighting, electronic intrusion detection sensors, guard dogs, and a large number of trained security personnel. There are enough security guards protecting Air Force and Army nuclear weapons in Europe to form at least two more combat divisions.

The special procedures associated with nuclear weapons place a heavy burden on nuclear-capable forces. Units are inspected periodically to ensure that they are handling and safeguarding the weapons properly. Duty with a nuclear-capable unit is unpopular largely because of the frequency of inspections. One commander of a nuclear unit told me that he spent his entire three-year tour in Europe preparing for, undergoing, and recovering from nuclear weapons inspections. Any technological solution that would reduce the security problems for units in the field could save millions of dollars in personnel spaces, construction money, and transportation requirements, and would be viewed by unit commanders as manna from heaven.

Survivability is a second problem associated with nuclear weapons deployed in NATO Europe. No nuclear weapon can be fired without the approval of the President of the United States and the NATO political authority. If Warsaw Pact forces were to attack without warning, our deployed nuclear weapons could be overrun by fast-moving Soviet tank forces before the political authority to use the weapons could be granted. This is a particular danger for nuclear weapons with Army forward artillery units. It also poses a major problem for nuclear weapons loaded aboard aircraft fixed on QRA. They are sitting ducks until the release message arrives.

The United States and our NATO partners have spent a great deal of money to develop and install a complex command and control communications system just to pass on nuclear release messages. Congressional concern over the deployment of the weapons to Europe and other locations centers to a major degree on the overrun possibility. Some legislators advocate moving our weapons farther to the rear; others want them completely withdrawn from the theater.

Most Army nuclear weapons in Europe have been concentrated in a relatively few storage sites. The weapons are then dispersed to the delivery units under NATO alert procedures. These weapons are most vulnerable during the dispersal phase. The present nuclear deployment policy, therefore, puts a premium on early warning of a possible Warsaw Pact attack. NATO and the Department of Defense are studying how to reduce this vulnerability to a minimum. (Air Force weapons are less affected since the weapons usually are stored on or near the bases where the delivery aircraft are stationed.)

The Insertable Solution

How might advanced nuclear weapons technology help solve these security and survivability problems and at the same time improve both readiness and credibility of our NATO nuclear forces? One way may be a new look at an old idea—insertable nuclear components. Our early

"There are enough security guards protecting Air Force and Army nuclear weapons in Europe to form at least two more combat divisions."

nuclear weapons were designed, for safety reasons, to have the nuclear components stored apart from the rest of the weapon. These components were to be inserted into the weapon at the last minute before using.

Nuclear weapons were redesigned in the late 1950s and early 1960s with improved safety features that allowed storage of the weapons with the nuclear components sealed inside. Although this improved weapons readiness and made possible the high readiness posture of our strategic nuclear forces, it created the present security problem, since all critical components are now together during storage, under alert conditions, and in preparation for firing. If a weapon were seized by unauthorized personnel, all components needed to detonate it are present. This was countered by special security features such as the permissive action link (PAL), which locks the weapon until a closely held code is inserted. A return to the old insertable nuclear component concept would solve some of the security and survivability problems of deployed nuclear weapons.

How might such a concept help the Air Force? A new tactical nuclear bomb, using the insertable nuclear com-

"A return to the old insertable nuclear component concept would solve some of the security and survivability problems of deployed nuclear weapons."

Brig. Gen. Albion W. Knight spent many of his active-duty years in the nuclear weapons program. On his retirement from the Army in 1973, he became a professional staff member of the Joint Committee on Atomic Energy of the Congress. In 1976, he was named Technical Assistant to the Assistant Administrator of ERDA. Since February 1977, he has been a consultant and lecturer on national security and energy policy. General Knight's article, "The Nuclear Weapons Labs: An Endangered Species," appeared in the August 1977 issue of AIR FORCE Magazine.

ponent concept, could be hung aboard an alert aircraft without the need for a two-man team now required to ensure physical security of the bomb. Aircraft readiness could be enhanced if the bomb were designed also to be an effective "iron bomb" without the nuclear component. The nuclear weapon scientists say this "convertible" bomb is technically possible. QRA aircraft now tied down to a nuclear mission could be freed for immediate conventional missions in the critical early phases of a Warsaw Pact attack. This alone would be equivalent to increasing the number of NATO aircraft by several squadrons. In the event of a strike mission, the nuclear component could be inserted into the bomb in a matter of seconds once release authority had been received.

My experience as an Army officer is not such that I can see all the possible benefits to the Air Force of the insertable nuclear weapons concept. Enough advantages are evident to make it prudent for the Air Force to join the nuclear weapons laboratories in a major study of operational possibilities inherent in the insertable/convertible tactical bomb. I am firmly convinced that there are major dividends from such a program.

The insertable concept would be even more helpful to the Army. Many of the Army's deployed nuclear weapons are now kept in a few special storage sites, disassociated from their delivery units until the order to disperse them has been received. The firing units must travel to the special storage sites and pick up their weapons when confusion would be at its peak—when the roads would be filled with troops moving from their normal peacetime locations to emergency positions, and when refugees might begin to clog the roads.

Using an insertable design, the weapons, less their nuclear components, could be stored with the nuclear delivery units. They could be readied for a nuclear fire mission within seconds after receiving the release to fire and, of course, after the nuclear components had been brought forward following the political decision to use nuclear weapons.

The insertable concept also would improve control of theater nuclear weapons. Nuclear components could be stored at a location that would provide a satisfactory compromise between ready availability and firm national control. Components would require only a small storage space and could be moved rapidly to firing units by light vehicles, aircraft, or helicopters. They could even be stored with the delivery unit if alert conditions required it.

The Navy might also gain significant advantages from insertable nuclear weapons, although the advantages could be more in simplifying logistic procedures than in security and survivability.

Can the nuclear weapons laboratories develop new nuclear weapons with the insertable concept? Yes, but not without further nuclear testing. The design concept is well enough proved to give confidence that reliable weapons could be produced with a vigorous development program. It is certain, however, that a Comprehensive Test Ban Treaty would bar these weapons from entering the stockpile.

CTB and Strategic Weapons

There is a second area—strategic weapons—where national security can be improved substantially through nuclear development projects that now languish on the shelf. American strategic nuclear weapons are designed primarily to implement the countervalue or mutual assured destruction (MAD) doctrine. As a result, they are of much lower yield than Soviet strategic weapons, which apparently are meant for the counterforce role. Our weapons are not designed to strike hard targets with much efficiency. They are city-busters.

There is strong evidence that the Soviet Union is now engaged in a major hardening program for its critical command and control centers, many missile launch sites, and submarine pens. Many of their military and industrial facilities are underground. Our weapons are not optimized to attack these hardened targets.

I believe that the change in the strategic balance, along with a growing awareness that the Soviet Union is not playing the MAD game along with us, will require the United States to soon develop the capability of fighting a counterforce strategic war. If we do that, we shall either have to go to higher yields and improved accuracy, or develop some other capability to dig out the hardened sites, or both.

Can the advanced development program of the nuclear weapons laboratories help achieve this capability? I believe it can. One of our earliest bombs was designed to penetrate the earth and, possibly, to attack hardened submarine pens. That bomb was retired many years ago. Since then, the laboratories have studied the possibility of developing future penetrator weapons. Although the services have considered several applications for penetrators, they have never asked the laboratories to develop an operational weapon.

The Department of Defense should study the strategic application of penetrator weapons with the objective of developing at least one such strategic weapon. However, a penetrator for either strategic or theater use cannot be developed if there is a Comprehensive Test Ban Treaty.

This brief examination of two nuclear weapon operations areas demonstrates the essential military utility of advanced development projects that are within the state of the art for our nuclear weapons laboratories. There are other projects that may have equally beneficial applications. Further steps are possible in clean weapons, miniaturization, and in making nuclear weapons less costly. These possibilities are important to our future defense posture. However, they cannot be pursued if a Comprehensive Test Ban becomes effective. Their potential value is so strong that the Congress should insist on an immediate and thorough study by the Department of Defense and the Department of Energy of all the nuclear weapons laboratories' advanced development projects. The study

"The Department of Defense should study . . . penetrator weapons with the objective of developing at least one such strategic weapon."

should assess how far these projects can go in solving the serious problems associated with nuclear weapons operations, and it should be made available to the Senate before ratification of a test ban treaty is considered.

If we proceed into a CTB treaty without understanding what we sacrifice by not pursuing advanced nuclear weapons technology, we may lose our remaining qualitative edge in the increasingly precarious strategic balance with the Soviet Union. We then would enter the CTB era with the prospect of both a deteriorating nuclear weapons stockpile and of having no capability of protecting ourselves against the gains the Soviet Union is making through its massive research and development effort in strategic nuclear weapons technology.

President Carter said in his March 17, 1978, speech at Wake Forest, "We will not allow any other nation to gain military superiority over us." If he proceeds with a Comprehensive Test Ban Treaty, he may not be able to carry out that promise. ■

Boom or bust? The future of the US aerospace industry rests on its response to competition from overseas and benign neglect in Washington.

New Threats Confront Aerospace Industry

BY BONNER DAY, SENIOR EDITOR

THE US aerospace industry, key to military strength and a strong position in foreign trade, is at a major crossroads.

America's long dominant position in aircraft production is threatened abroad by government-backed European companies and at home by US government policies.

At the same time, the potential market for civilian and military aircraft and other aerospace sales over the next decade alone point to a boom estimated at more than \$300 billion.

At stake is the future shape of US aerospace, thousands of jobs, and the ability of the industry to respond to the nation's military needs.

Market Recovery

The US industry is in the midst of a major recovery following the recession of the early 1970s. Aerospace sales are expected to increase to \$34.9 billion in 1978, an increase of \$2.5 billion that represents five years of consecutive growth. Sales totaled \$32.4 billion in 1977, an increase of \$2.4 billion.

Aerospace exports are predicted to soar to a record \$9 billion or higher in 1978, from \$7.2 billion in 1977. This would mark the fifth straight year aerospace exports have risen above the \$7 billion level. The foreign sales backlog was more than \$8 billion at the start of 1978, compared to \$5 billion for 1977.

Industry experts also say the decline in US aerospace jobs will be interrupted this year. Employment is expected to rise to 930,000 from 894,000 by December 1978, following three years of job losses.

Over the long run, industry offi-

cialists see a growing world aerospace market extending into the 1980s.

Airline traffic continues to grow, fueling a demand for more commercial jets. US and foreign airlines also face the problem of replacing aging fleets. It is estimated that a third or more of the aircraft in the fleets of the commercial carriers must be replaced because of age or inability to meet US noise regulations.

The military forces face the problem of modernization too, but with a greater sense of urgency. In the case of the US Air Force, a number of new aircraft, including the McDonnell Douglas F-15 Eagle, the General Dynamics F-16 lightweight fighter, and the Fairchild A-10 Thunderbolt, are in production. US military aircraft sales overall are expected to total \$11.5 billion this year, a \$1.5 billion gain over 1977.

Abroad, the market for Northrop F-5 Tigers and Grumman F-14 Tomcats, as well as F-16s and F-15s, remains strong.

Private and business jet sales continue to grow. In 1978, sales are predicted to rise to \$1.7 billion, from \$1.5 billion last year.

Crisis in Aerospace

Despite the promising outlook, however, industry leaders are concerned about long-term trends.

Says Karl G. Harr, Jr., president of the Aerospace Industries Association: "Decisions Congress and the Executive Branch make this year will determine the course and nature of our position in the world for many years to come."

What concerns the industry is the increasing competition of European companies, aided by their govern-



ments. Tied to this concern is the feeling that the US government is unable or unwilling to react quickly and effectively enough to ensure fair practices in international trade.

The consensus among most US industrialists is that European governments have been much more sensitive than Washington to the importance of the aerospace industry in providing export dollars, jobs, technology, and national prestige.

The development of a supersonic transport still is cited as a prime



A new generation of planes, including the A-10 shown above, could help strengthen US exports.

example. While the US withdrew its support of an American version for cost, environmental, and other reasons, France and Britain continued their program, the Concorde, even though losses are predicted for the foreseeable future. Total development costs for Concorde, excluding costs of actual production, amount to more than \$2 billion.

The Concorde, which demonstrated that European technology could make aerospace breakthroughs, symbolizes European determination.

Rather than let their domestic companies rise or fall with free competition, European governments are taking an increasingly stronger hand.

This influence takes several forms. In some cases, airlines, partly owned by the government, are directed to buy a native-built transport. When a US firm is favored, the government will insist that a portion be built in Europe or contract for engines or other components to be built in Europe. European governments also are offering subsidies and

favorable financing to win overseas sales for their domestic firms.

Some recent examples:

- The British government's export credit department provided 100 percent financing for the Pan American World Airways purchase of twelve Lockheed L-1011-500 transports, provided they were powered with British-made Rolls-Royce engines. Rivals for the contract were Boeing and McDonnell Douglas, but they couldn't obtain competitive financing.

- The French-West German government consortium of Aerospatiale and Deutsche Airbus sold Eastern Airlines four A-300 Airbus transports on terms that included free leasing, government financing, and a subsidized price estimated at \$10 million per plane. Eastern later ordered nineteen more, for a total of twenty-three.

- Marketing teams for a four-country European consortium have begun talks with US and European airlines for the adoption of a new family of European transports for the 1980s. The consortium members, Aerospatiale of France, British Aerospace, Fokker-VFW of Holland, and Messerschmitt-Boelkow-Blohm of West Germany, hope to sell to regional carriers that now use the Boeing 737 and McDonnell Douglas DC-9, a potential market of about 1,200 aircraft.

- In a military sale, General Dy-

namics F-16 lightweight fighters were sold to Belgium, Denmark, the Netherlands, and Norway, after it was agreed the plane would be co-produced on assembly lines in Belgium and the Netherlands, using components from the US and the four European purchasers. Because some parts in USAF F-16s must be built in Europe, and European production costs are higher than in the US, this has caused problems in holding down costs.

- Negotiations for the sale of the high-performance McDonnell Douglas F-15 Eagle to Japan include a proposal that the entire plane be built overseas. Japan has offered to buy some US-produced F-15s, but wants to build the rest in Japan.

Government Obstruction

The European governments have always stressed buying native aircraft whenever possible. But in the

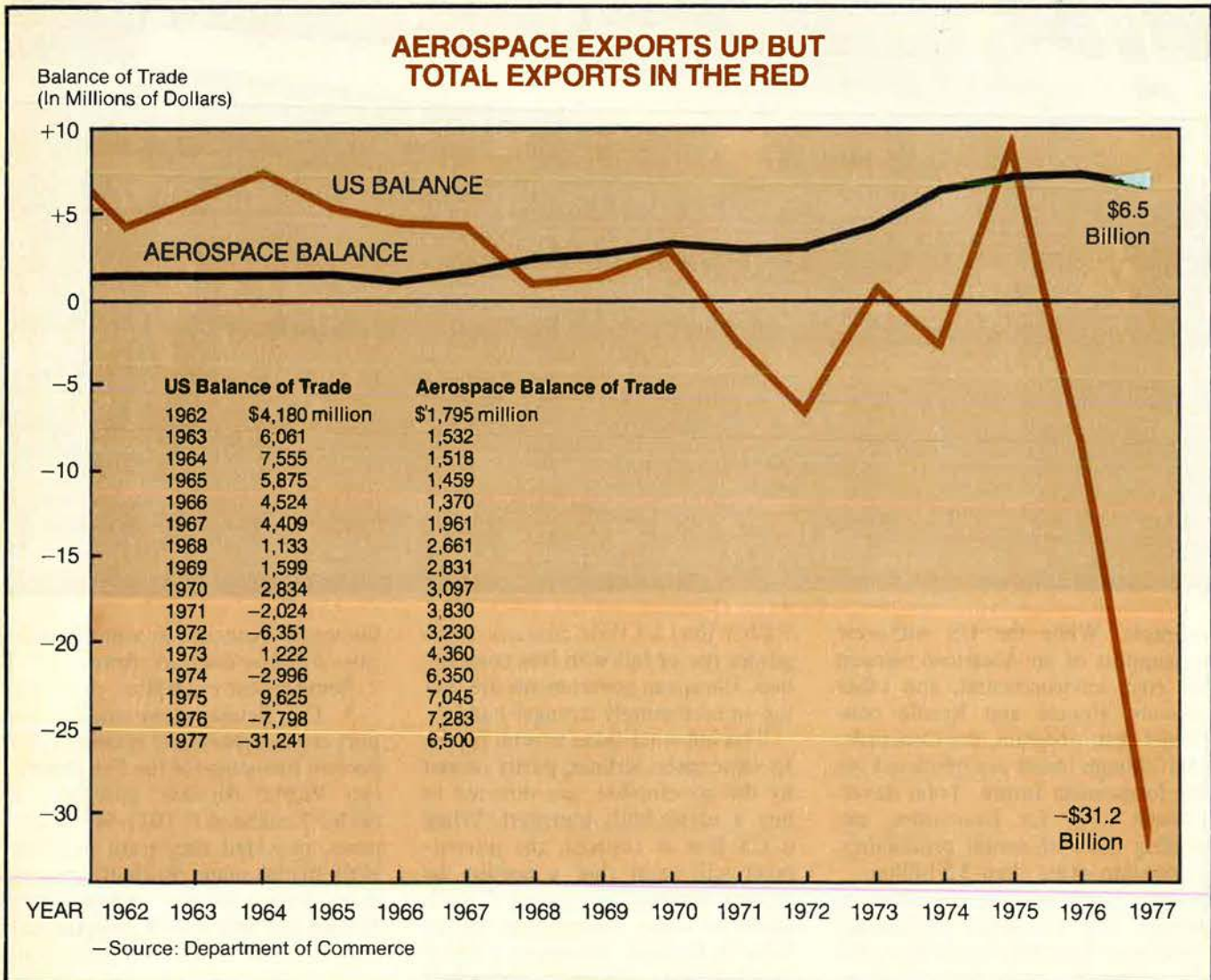
past, US companies were confident they could compete successfully by offering a superior product, at a low price. Now aerospace officials are not as sure.

Part of the problem, say industry experts, is the US government.

In one of the latest in a series of obstructive moves, the US blocked the sale to Ecuador of Israeli Kfir jets that were equipped with some US engines. That action did not keep jets out of Ecuador, industry officials point out, but it permitted France late last year to win the sale, with twenty-four F-1 Mirages.

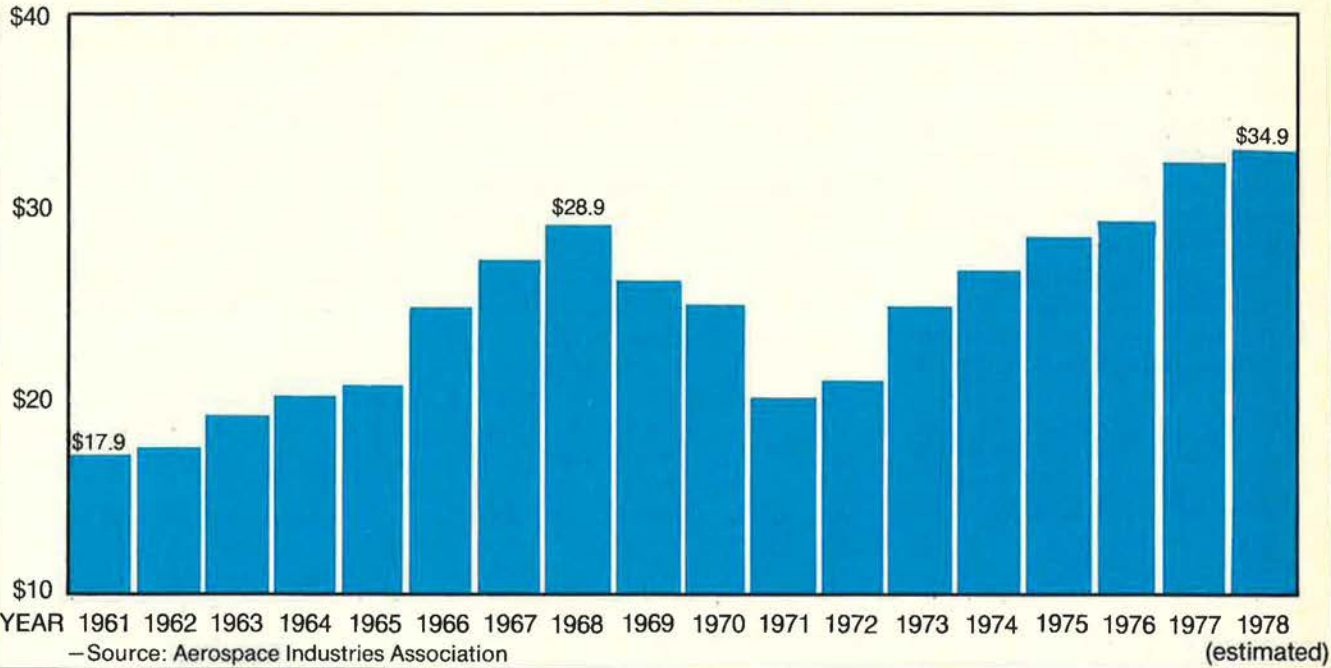
President Carter has announced an annual \$8.5 billion ceiling on US foreign military sales. He has indicated there will be exceptions to the ceiling for Israel and others, but his pledge is expected to slow growth in US aerospace exports.

In April this year, Mexico reportedly canceled a bid for the pur-



AEROSPACE SALES
(billions of dollars)

AEROSPACE SALES— ON THE RISE



chase of twenty-six Northrop F-5 jet fighters worth about \$150 million, due to US government delays. The Mexican government wants to replace its fleet, now numbering about 100 subsonic jets, helicopters, and other warplanes.

Industry officials also feel Congress and the Administration have been unrealistic in the passage and interpretation of US laws governing foreign sales, making it difficult for US firms to compete against foreign companies.

Many of the leading aerospace exporters are under investigation for foreign sales and marketing activities by various government agencies, including the Securities and Exchange Commission, the Internal Revenue Service, the Federal Trade Commission, and the Department of Justice.

Aerospace officials insist the US government in its investigations is trying to apply standards that fail to recognize traditional practices in international trade.

Boeing, after reviewing practices under federal investigation, announced this year:

"The company believes that it will be advisable for it to continue to engage consultants and pay commissions and financing and consulting fees in certain countries for assis-

tance in selling its products in those countries."

The government move to deregulate airline routes is another action expected to affect aerospace sales. Some airlines have delayed transport purchases to see how deregulation would affect the industry. Other industry experts predict deregulation will cause smaller lines to buy new aircraft to compete on new routes, creating a short-term boom in transport sales, but a long-term glut on the market as weaker airlines fail.

Seriously handicapping US companies are present antitrust laws that forbid two US companies from getting together as a consortium for international sales, but have no force on foreign companies bidding on US sales. European governments, in fact, have been encouraging, and even participating, in aerospace consortiums.

What Industry Wants

Despite the potential consequences of continued losses to foreign firms, US industry leaders have been reluctant to see the federal government take major steps to correct current inequities in the international market.

The US has traditionally held up to ninety percent of the free world

market, they point out, so Europe is justified in its efforts to increase its share of the world market. Also, with US companies presently holding most of the market, they risk greater losses if a protectionist trade war were set off.

But aerospace firms have asked that in tariff conferences the US work to reduce or eliminate tariff and nontariff barriers, and that federal reporting and approval requirements for exporters be cut.

Industry officials generally are also opposed to legislative efforts to eliminate the Arab boycott of Israel. Advocating diplomacy rather than law, industry officials say that legislation so far has backfired, resulting in increased Arab purchases from non-US firms, without helping Israel.

There is concern also in the industry that the Defense Department's push for standardization in NATO arms will open the US aerospace market to sales by NATO allies, without a corresponding improvement for US companies in NATO countries.

Europe has already become an increasingly successful challenger in the sales of aerospace products. France in 1977 took \$5 billion in export orders, two and a half times the 1976 figure. European aerospace revenues rose from 16.9 percent of

the free world total in 1971 to 27.5 percent by 1975.

Federal Reaction

The Carter Administration and Congress have begun to respond to the new rules of international competition.

In diplomatic negotiations, US representatives are stressing the importance of reciprocal trade, and appealing for help in solving the nation's widening trade deficit.

The Federal Export-Import Bank has cut interest rates and increased the portion of a sale a loan can cover, though still short of European offers.

The Carter Administration has asked Congress not only to renew the Export-Import Bank's charter, but to boost its loan ceiling from \$25 billion to \$40 billion.

But critics say the Carter Administration is mostly concerned about the adverse effects of a large deficit in the international balance of payments caused by the rising cost of oil imports, and has focused its attention, like earlier administrations, on cutting imports rather than increasing exports.

The result is that while the US remains the world's biggest exporter, other countries have a more favorable balance when both exports and imports are compared.

Last year, \$120 billion worth of US goods was sold to foreign customers, compared to \$118 billion for Germany and \$81 billion for

Japan. But US imports rose to \$147 billion, leaving a \$27 billion trade deficit. West Germany and Japan piled up surpluses of \$18 billion and \$10 billion respectively.

The picture for the US would have been even worse if the US aerospace industry had not recorded a \$7.2 billion export surplus.

Aerospace Company Response

While the federal government ponders what to do, US firms are attempting to maintain a competitive edge, compensating for foreign government-directed purchases by uniting with foreign companies.

Boeing, long the world leader in commercial transports, is negotiating with Japan and Canada to develop and build three new transports in the successful 700 series. Italy already is a partner.

Lockheed L-1011 and McDonnell Douglas DC-10 transports are being built with foreign components.

Other aerospace firms have already followed suit, or are negotiating arrangements with foreign firms and governments.

Burton Stern, senior vice president of Grumman International, says: "Offset is the name of the game today in most foreign military sales."

Long-Range Impact

Industry officials emphasize that they see no quick reversal of the long US domination of aerospace sales. But they also see a steady

drain of business to European companies, based on the strong moves European governments have made in the last year.

"We may see more aircraft built abroad, with only the research and development and part of the investment remaining in the US," says one industry economist.

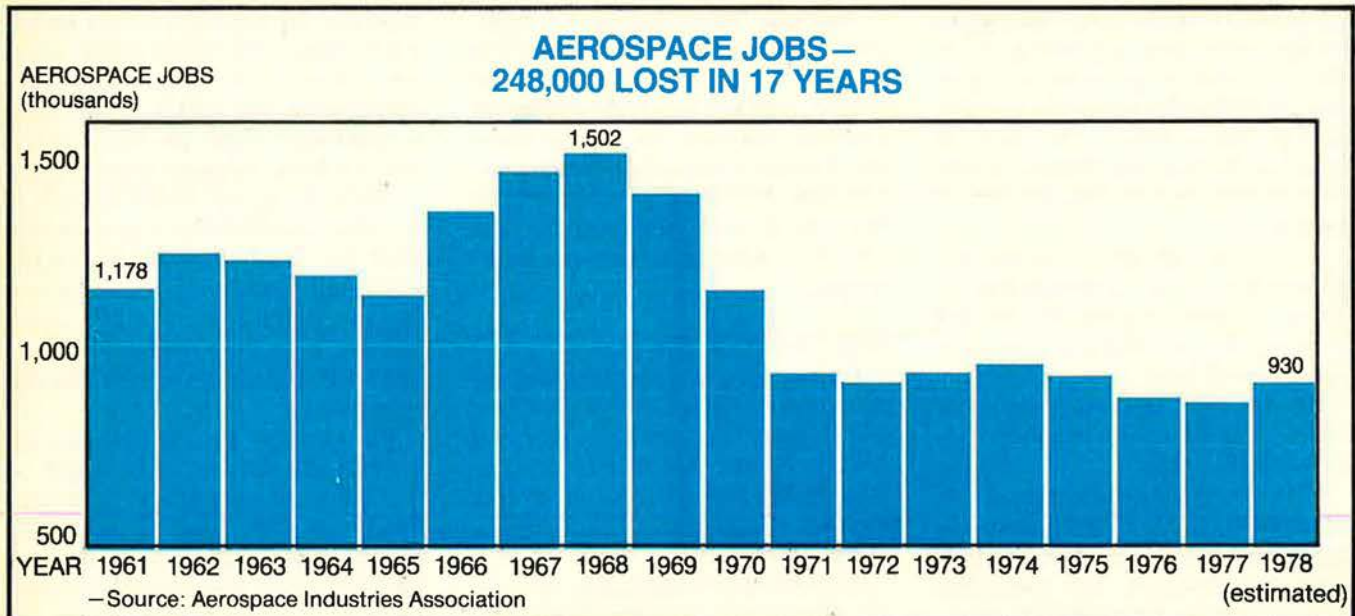
Using offset arrangements, companies will be able to preserve sales and profits, but, over the long term, US aerospace employment and the aerospace industrial base, a part of the nation's military strength, will be hurt.

Already, the number of US aerospace jobs has declined from 1,500,000 in 1968 to 894,000 at the start of this year, a loss of more than 600,000 jobs.

From the point of view of the individual companies, there seems no alternative. Says one executive: "We must either share contracts and jobs with European companies or risk losing the whole contract and all the jobs."

Military readiness, though much harder to measure, is also affected. As Europe wins an increasing portion of the aerospace business, the US base of aerospace plants and experienced workers will decline.

Much depends on how Congress and the Carter Administration react. Says Mr. Harr, a principal spokesman for the industry: "To a degree unmatched at any time since the late 1950s, the aerospace future of this country is at a crossroads." ■





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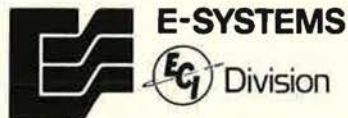
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Thanks to a new electronic "sales tool," today's USAF recruiter can guarantee an applicant the job of his choice—in writing and before the enlistment oath.

Getting What Your Recruiter PROMIS'ed

BY CAPT. ANTHONY LYNN BATEZEL, USAF
CONTRIBUTING EDITOR

—USAF Photo by Mickey W. Sanborn

AS THE saying goes, you can't please everybody. But optimistic USAF recruiters are today claiming they can at least please most of the people most of the time.

"People," in this case, are the thousands of men and women the recruiters must enlist annually (71,000 this fiscal year, not counting physicians, Officer Training School students, and other smaller categories). And not merely enlist, but satisfy them with the good training and jobs needed to retain today's volunteer armed forces.

The recruiters say they have a second group of customers to please as well, from senior defense officials to unit commanders and supervisors who, strapped by low budgets, cry for top-notch people to accomplish literally "more with less."

Finding such people has been hard, say recruiters. In the past four years, the number of enlistment-eligible

candidates has shrunk. And of the eligibles, more and more are choosing civilian jobs or college over military service.

Whence, as recruiting statisticians put it, the bottom line: How can USAF attract qualified eligibles (when there are fewer to choose from) and maintain their desire to serve once on active duty? USAF recruiters are choosy, but today, more than ever, so are the recruits. Which brings us to the recruiters' assertion of pleasing most of the recruits most of the time. How do recruiters—and USAF—live up to this claim?

Choice—Before the Oath

USAF's avowed assignment policy has long been to match a recruit's training and job with his aptitudes and interests. For many applicants attracted by USAF education and training opportunities, this policy has

proved the final inducement to join, seeming practically to guarantee future satisfaction on the job. But in view of the large number of recruits, such job matches were seldom made with precision until November 1976, when the voluminous task and related management controls were largely taken over by a computer system called PROMIS (Procurement Management Information System).

Today, as only one of several procedural innovations, the system reportedly makes accurate job matches for virtually all nonprior service recruits. USAF Recruiting Service believes the matches assure the greatest possible job satisfaction for the majority of recruits and optimum productivity for the Air Force.

After passing mental, physical, and moral tests, but *before* taking the enlistment oath, each applicant, with the help of a recruiter, "talks" to a

regional computer terminal (sixty-six locations in the US and Europe) linked to a Burroughs 6700 system which Recruiting Service shares with the USAF Military Personnel Center (MPC), Randolph AFB, Tex. The computer snappily prints on a TV screen as many as sixteen job choices available up to seven months into the future.

The jobs are listed in descending "appropriateness," matched to the applicant's aptitude test scores, general job preferences, and Air Force requirements (*see box, "Finding the Right Person for the Right Job"*). Half the applicants pick from the first three choices, but as many as ten percent hold out for as low as the sixteenth option. In any case, USAF agrees in writing to honor the applicant's selection, and must offer immediate discharge if for some reason the agreement cannot be met.

Thirty-five percent of the NPS recruits postpone choosing other than a general job category until the six-week Basic Military Training School at Lackland AFB, Tex. Some hope the wait will mean better choices; others leave the choice entirely to USAF.

Growing Pains

With PROMIS, USAF has come relievedly far from the Dark Ages of the recruiting business. Until the early 1970s, recruiters of all the military services often got their enlistments goal the same month it was due and so were forced to hunt recruits who could "ship" fast.

The Air Force, anxious for higher recruiting standards to boost productivity and retention, was the first service to alleviate "current month recruiting" by instituting, in December 1971, the Delayed Enlistment Program, which let recruiters fill jobs up to three (later six) months into the future. Without the same pressure to find "quick shippers," recruiters spent more time finding superior applicants and arranging better job matches—as best allowed by the manual processing then in use.

Then, in 1976, PROMIS relieved the field recruiter of the job-search responsibility entirely. This duty was transferred to a special recruiter trained to operate the computer terminal, leaving another recruiter to search for quality applicants and pro-

mote general Air Force opportunities, not specific jobs. Thus, today an applicant encounters two different recruiters instead of one—the "generalist" and the job match specialist.

With PROMIS, recruiters can also get enlistment statistics and other management information faster than

ever. Among other calculations, the system can compare—in seconds—actual and projected enlistments for each of the thirty-two recruiting squadrons across the country, alerting officials to potential "shortfalls" in all or specific Air Force specialties.

PROMIS has also had its share of

Finding the Right Person for the Right Job

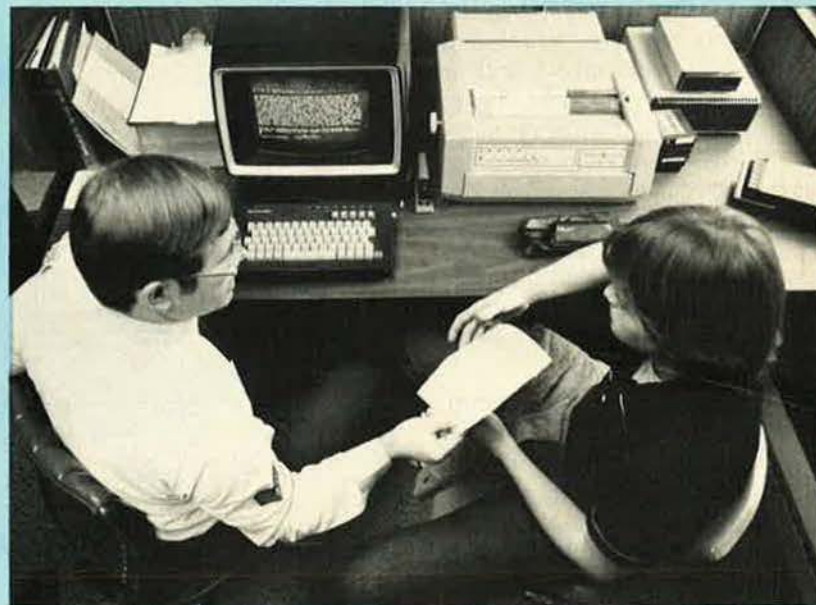
The most distinctive innovation of the Procurement Management Information System (PROMIS) is the "Person-Job Match" (PJM), a formula that calculates an applicant's best job options for as far as seven months into the future by comparing his interests, abilities—and those of his contemporaries—and Air Force needs. PJM first identifies the jobs most closely matching the applicant's tested vocational aptitude. Recruiters say such matches keep training costs down and promise the highest job satisfaction and retention.

PJM next determines the technical schools corresponding to the applicant's aptitude range as computed mainly from his aptitude tests and courses taken in high school. Together, these first two PJM steps weigh about thirty-three percent in the total job search computation. (Weight percentages, here given as of early 1978, may shift as researchers continue to refine the PJM formula.)

PJM then takes into account the applicant's own vocational preferences (on a rating of zero to nine) in each of four broad job areas—mechanical, administrative, general, and electronic. Other than his test performance, this rating is the applicant's most direct way of influencing the range of job choices calculated by PJM, and weighs roughly twenty percent in the overall computation. Officials are studying a more detailed preference test as a replacement for the rating.

Next, as the computer continually scans the projected job vacancies for all career fields, extra weight is automatically assigned to slow-filling jobs—provided they're already among those computed in the earlier PJM steps. This adjustment could weigh as much as thirty-nine percent.

These and other PJM factors produce for each applicant up to sixteen job choices in descending suitability—all tailored to his abilities, interests, and Air Force needs. Recruiters claim the process virtually guarantees placing "the right person into the right job."



Each applicant gets up to sixteen job choices matching his abilities and USAF's needs.

—USAF Photo by Mickey W. Sanborn

growing pains. During its second six months of operation, the system malfunctioned intermittently—usually between 10:00 a.m. and 2:00 p.m. when half of Recruiting Service's daily transactions take place. Officials attributed the failures to a major redesign of the MPC computer complex. The malfunctions meant extra effort and time—manually processing information during repairs and later feeding the same data to the repaired computer so it could "catch up." Officials say the system is now operating "better than ever."

But even with its early mechanical problems cleared up, is PROMIS living up to expectations? During PROMIS's first year (FY '77), involuntary separations of first-term enlisted members fell from 17.6 percent to 16.5 percent, perhaps indicating fewer disciplinary or personal adjustment problems and, concomitantly, higher recruit job satisfaction and productivity. But one official told AIR FORCE Magazine these statistics are a questionable measurement of the system's performance since they reflect persons recruited before PROMIS began. Criteria for involuntary enlisted separations, furthermore, change often enough to make even future comparisons unreliable. Recruiters thus must wait until after October 1980, PROMIS's fourth anniversary, for an accurate yardstick—the number of reenlistments of system-processed recruits then completing their first four-year term.

In the meantime, recruiters say the improved job matches, processing speed (most matches take less than fifteen seconds), and other benefits throughout the "training pipeline" are reasons enough to keep PROMIS. Recruiters also claim the system's ability to "please most of the recruits most of the time" is buoyed by other methods—like authority to grant limited choice of first duty bases to recruits in certain "hard-to-fill" jobs.

Whether the recruiters' enthusiasm for PROMIS is equaled by that of system-processed recruits completing their first four-year term in 1980 or 1981 will be the ultimate litmus test for the job match system. Only time will tell how well it will please recruiting "customers"—whether recruits or commanders—and live up to its touted promise. ■

A Better Way to Fly

The Procurement Management Information System (PROMIS), part of the USAF Military Personnel Center's (MPC) Burroughs 6700 system, is not entirely the product of conventional USAF research and development. It is, instead, mainly the result of some off-duty brainstorming by two junior officers assigned to Recruiting Service headquarters, Randolph AFB, Tex.

In the spring of 1973, Capt. Harry P. Haltman and Thomas C. Van Sweringen (now with MPC), dismayed by the cumbersome manual job processing then in use, determined to find a "better way to fly." They first spent several months of off-duty time devising theoretical computer solutions, then approached senior recruiting officials for some duty time to develop the best one. Their request came just as the drive for quality recruitment was shifting into higher gear, and approval came quickly.

The captains were joined by Robert J. Cantu, a civilian computer specialist also assigned at recruiting headquarters. Not surprisingly, the project started to resemble an airline reservation system, a version of which Cantu had helped develop for American Airlines in the mid-1950s. The new system would reserve training and jobs instead of airline seats; the

"customers" would be USAF applicants rather than air passengers.

But the project would have to sort other factors besides job vacancies—like applicant aptitudes—so the designers turned to the Human Resources Laboratory (HRL), a think tank run by Air Force Systems Command at Brooks AFB, Tex. Dr. Joe H. Ward, Jr., a research psychologist at the laboratory, set about matching aptitude ranges with various Air Force jobs so the computer could find the best choices for each applicant.

Ward found he couldn't determine the best matches empirically since no *quantifiable* criteria existed for any USAF job. He was, instead, forced to hypothesize *qualifiable* standards based on the opinions and policies of job supervisors (a procedure developed in previous HRL studies). This technique, known as "policy specifying," became the "logic" for the job matching system.

By the late summer of 1973, a system prototype was approved, and some three years later PROMIS, begun as the brainstorm of two junior officers, was installed and computing jobs for USAF applicants—with precision recruiters say is unrivaled by any other military service or civilian job agency.



From left, PROMIS designers Cantu, Haltman, and Van Sweringen.

—USAF Photo by Walt Weible

In 1951, the Korean War was raging, NATO was still building, the Soviets had become a nuclear power, and SAC was overextended in its nuclear deterrent role.

Thus TAC was brought into the deterrent mission, as the 20th Fighter-Bomber Wing became...

THE FIRST ATOMIC FIGHTER WING

BY COL. GEORGE M. (MORT) LUNSFORD, USAF (RET.)

EARLY in 1951, an F-84 pilot on an experimental mission landed for refueling at a midwestern Air Force training base. Eager student pilots, crowding around the first-line fighter, noticed what seemed to be an external wing tank with no fuel cap. The pilot, in answer to their question, said: "Hell, that's an atomic bomb." Of course the students didn't believe him, and his statement was not quite accurate. The "tank" they were looking at was a dummy shape of the first atomic bomb to be carried by fighter aircraft.

The proposal to build a tactical atomic bomb—particularly one carried by fighters—met some opposition in those early days when SAC still had its hands full dealing with strategic nuclear weapons. But Col. John Stevenson (now a retired major general) and other proponents stumped the halls of the Pentagon and sold the idea. The Atomic Energy Commission (AEC) said that a tactical atomic bomb could be built. It would have something more than the yield of the Hiroshima bomb, and could be carried on the wing of a fighter or shaped to fit the bomb bay of a tactical bomber. The signal was given to go ahead; along with it came the order to form the 49th Air Division, composed of the B-45-equipped 47th Bomb Wing and the 20th Fighter-Bomber Wing.

Few of us in the 20th that spring of '51 had any idea what was about to happen to us. The 20th began its

post-World War II history at Shaw AFB, S. C., and was the second Air Force wing to be equipped with the Republic F-84. In July 1950, Col. John Dunning, then a group commander, led us in the first mass jet flight across the North Atlantic, for temporary duty in England. (John Dunning was promoted to brigadier general in 1959 and died in 1962 while on active duty.) That flight proved the feasibility of such "group size" flights. Later that year, two additional wings in Europe were provided new F-84 aircraft through the same island-hopping method.

In December 1950, we flew home again, bucking unexpected head winds out of Iceland, which almost led to disaster. We all made Greenland safely—but some of the fuel gauges had "counted" through zero when the aircraft landed. Then it was home in time for Christmas; and now, with about half our pilots and crews just joined from a Korean tour, we were all ready for a period of normal existence.

Our first clue of something un-

usual came that spring when several of our pilots were detached to Langley AFB, Va., to a unit and a mission they couldn't talk about. By this time, AEC had demonstrated that the bomb could be built. The "shape" had been successfully tested on an F-84, in terms both of cruise and bomb release. Now it was time to test the overall operational concept, and this was the job of the Langley detachment.

Few of the techniques developed by that Langley unit twenty years ago would seem unusual to the fighter pilot of today. But they involved precision skills that few of us had then practiced.

First, there was navigation to and from the target. Our mission in Europe would require each pilot to fly, alone, some 700 miles to find his target—without navigation aids of any kind except his compass. This called for more careful pre-flight planning and in-flight cruise control than most of us were used to—even the Korean War returnees.

In those early atomic fighter days, dive bombing was the only way to deliver the bomb successfully. But the typical entry altitude we had been using—10,000 to 12,000 feet—would not do with the atom bomb. A pilot bombing from that altitude would be killed by blast and heat from the bomb explosion. The new technique required entry into the bomb run between 17,000 and 21,000 feet, depending on the yield of the bomb. Bomb release could

then be made above 12,000 feet, to permit a safe escape.

The Langley detachment proved that the mission could be flown consistently and safely. A fighter pilot could navigate unaided for 700 miles, drop the bomb with acceptable accuracy, escape its destruction, and return home. The green light was on, and the 20th was committed.

Nine Hectic Months

Colonel Dunning, by then the wing commander, told us about the mission with his characteristic directness:

We would be the world's first atomic fighter outfit. We'd move up to Langley in the autumn of '51, pick up more than a hundred new airplanes, and reorganize completely. We'd learn to drop that damned bomb and get away. And we would do it all by the spring of '52, because we were going back to England again.

For most of us in that lazy South Carolina summer, it seemed an impossible job. We didn't know anything about atomic bombs, or how you could drop them from a fighter; we did know what a mess it is to convert to new airplanes. Add to that the double move and the reor-

Col. George M. Lunsford served as a combat pilot in China during World War II. After the war, he was stationed in Panama, Germany, and the UK, and was assigned for more than six years to the 20th Fighter-Bomber Wing, where he was Director of Materiel during the period covered in this article. Colonel Lunsford retired in 1969 and now lives in Prattville, Ala.

ganization—and it all seemed more than we could manage in time. And, to make it worse, we couldn't tell our families what we were doing, why we were going to Langley, or that we were eventually moving to England.

Our first hurdle was the move to Langley, where we would join the 47th Bomb Wing and the newly created 49th Air Division. The base already housed the bomb wing, a combat crew training unit, and Hq. Tactical Air Command. Space was at a premium, from the aircraft parking ramp, to the barracks, to rental housing in the Hampton area. Somehow, we squeezed in by November of '51, and began the larger jobs ahead: accepting new aircraft, training pilots and ground crew, and reorganizing.

Our 107 new Republic F-84Gs were equipped with a special pylon to carry the bomb, revised electrical circuitry, and the atomic weapon control box. These aircraft were

already being delivered to Langley when we got there, faster than we could properly accept them in the midst of other confusion.

As future atomic "bomb commanders," we pilots had to go through school, to learn the mechanics of the bomb, and its handling on the ground and in the air. Some of us had to get lost at least once before we realized the true demands of the longer range navigation. And many a practice bomb was thrown wild as we learned the precision of the high-altitude entry, the dive angle, the exact release point for the bomb. Armorers too had a new job to learn, beginning at school and continuing through months of bomb handling and loading practice.

In my job, the most urgent questions were reorganization and logistics. Our full wing strength at Shaw AFB had been about 1,600; we were to grow at Langley to a complement of more than 2,400. More armorers were needed to handle the atomic weapons; some 400 additional security police were also required. With 107 aircraft (instead of the normal seventy-five) we needed more pilots and maintenance men. The housekeeping units of the wing had to be built up to accommodate the operational increases. There had never been a wing like it, in my experience or that of anyone else.

Supplies and equipment for the new organization and new aircraft came in daily, sometimes by the ton. The atomic bomb dolly—designed in haste and mated to an F-84E—wouldn't fit under a fuel-loaded F-84G and had to be redesigned. Aircraft spares were critically short, just enough to support the daily pace of our stepped-up operational training.

On to England

Well before we were settled at Langley, it was time to get ready to



Some of the 20th Fighter-Bomber Wing's Republic F-84G Thunderjets being serviced at Goose Air Base, Labrador, en route to their new home, RAF Wethersfield.

move again. The question, even six weeks before takeoff, was: Where to? Finally, in early March 1952, the decision as to new bases was made. We would settle at two bases in southeastern England—RAF Stations Wethersfield and Woodbridge. Wethersfield had been used by an American combat unit during World War II and had, literally, not been touched since then. Our advance party to Wethersfield found one mission blackboard still filled out with the aircraft numbers and pilots' names for "tomorrow's" mission. Across the board was scrawled the word "Cancelled." The date on the board was May 7, 1945.

During March and April 1952, while our bases in England were being readied, preparations for the move from Langley varied between frantic and frenzied. Everything was first priority, and that priority had to be shared with the 47th Bomb Wing, which had much the same problems and almost our same movement schedule. Colonel Dunning was everywhere—deciding, directing, mediating—with that combination of urgency, confidence, and steadiness that made everything somehow happen, and also marked him as the finest commander I have ever known.

It was not until about the first of May that we could look at the mass of detail we had been working with and find some satisfaction in the general shape our move was to take. Most of the men and equipment would, of course, go by ship. But the operational segment of the wing—aircraft, pilots, ground crews, equipment, and en route supplies—would fly across the North Atlantic.

On the morning of May 16, 1952, Colonel Dunning lifted the nose of his F-84 off the runway at Langley, and we were on our way.

Again over dull Canadian tundra and the gray-blue of the North Atlantic sprinkled with iceberg tips. Up that narrow fjord where green spring ice clustered around the half-sunken ship marking the way to the small uphill runway at Bluie West One, Greenland. On across a Greenland snowbound as if there were no summer to Iceland and the mist of hot springs on the horizon, then



Pilots of the 20th get a time hack before leaving Keflavik, Iceland, for the UK, where they were to add a tactical nuclear capability to NATO's air forces.

down by the harsh brown cliffs of northern Scotland, to a final landing amid the gentle hills of southeastern England.

But this time there was a big difference. This time, each of us flew an aircraft that could carry under its wing more explosive power than the Hiroshima bomb. From our English bases, we were to augment and relieve the heavily committed SAC bomber force in the deterrent role.

The fact that we had a nuclear capability and knew how to use it was both disquieting and comforting. It was disquieting because we had some idea of the frightening

destruction each of us might deal with the push of a button on a stick. And we were comforted with the hope that our being there in England would preclude any need for going further.

Today, the 20th Tactical Fighter Wing is still in England, now flying the F-111 with its increased range, supersonic low-level speed, and two-man crew. Their automatic equipment provides navigation and bombing accuracies that would have been pure luck for most of us twenty-five years ago. But we share one thing in common—the pride of being part of the world's first atomic fighter wing. ■

Airman's Bookshelf

Of Military and Diplomatic Fronts

On to Berlin, Battles of an Airborne Commander, 1943-1946, by James M. Gavin. The Viking Press, New York, N. Y., 1978. 352 pages. \$12.50.

From Sicily to Berlin, James M. Gavin led and fought with the 82d Airborne Division. In this book, Gavin recalls those eventful years. But the book is not limited to a description of the battles he fought. Gavin expresses his views and criticisms of how a commander should lead troops in battle, of other military leaders of the war, and of US military domination of foreign policy.

Gavin speaks from experience, having advanced to the rank of major general during World War II and later having served as US ambassador to France.

Gavin says that military commanders should stay close to the front lines, regardless of their rank or responsibility. He blames Gen. Dwight D. Eisenhower for the successful evacuation of German and Italian forces from Sicily. From August 11 to August 16, 1943, some 40,000 Germans and 62,000 Italians moved across the Strait of Messina.

Gavin argues that Eisenhower could have trapped them on the island: "Eisenhower's insistence on commanding the battle and not turning it over to subordinates was entirely proper, but having assumed command, he had to place himself closer to the scene of action in order to maneuver the forces available to him in a decisive manner."

The theme of being at the scene of action shows up repeatedly: Gavin, discussing the value of an airborne division, attributes senior command skepticism to "a peculiar astigmatism associated with those remote from the battle itself."

Eisenhower also comes in for

criticism for choosing Britain's Field Marshal Sir Bernard Law Montgomery over the US Third Army Commander, Gen. George S. Patton, for the final offensive to end the war in Europe.

It is easy, of course, to look back on past battles and to offer alternate strategies. Soldiers and civilians alike indulge in this pastime. The difficult but grand achievement, one that was uniquely Eisenhower's, was to deal with foreign allies, impatient politicians, and ambitious generals, and still bring a war to an unconditional victory. For many reasons, Eisenhower's accomplishment, after more than thirty years, is still appreciated abroad more than at home.

About airborne operations, Gavin seems to be of two minds. He is confident of their success in the years he speaks about. But he makes no appeal for them in today's Army. Further, he notes that airborne troops in World War II did not have enough firepower to handle German tanks, that airdropped units were scattered too widely to be effective, and that airdrops resulted in high losses. Repeatedly, in fact, Gavin demonstrates that the success of the 82d Airborne rested less in the way it arrived and more in the manner it fought.

The role of the Air Force, in the war generally and in airborne operations, is touched on briefly. A German report is cited that credits Allied success in the Normandy invasion to "the superior navy and air force."

In his analysis of relations between soldiers and diplomats, Gavin warns about State Department acquiescence, first to the War Department and later to the Defense Department.

Blaming US problems in Southeast Asia on military domination of diplomatic advice, Gavin writes:

"Ultimately this proved to be one of the greatest foreign policy and military disasters in our nation's history." He also blames State Department acquiescence for the Soviet, rather than Allied, capture of Berlin in World War II, a conclusion many will dispute. Gavin concludes that the State Department needs more foreign service officers and that they need to be given advanced training so they will be able to push their advice more strongly.

Gavin, in his first-hand account of the war, makes the battles come alive. He was in the middle of the battle, and the book makes that point clear. His sketches of General Patton and others will entertain some and enrage others. Finally, his frank views on war and national policy add to the still-smoldering controversy over Southeast Asia and the role of the military in today's society.

—Reviewed by Bonner Day,
Senior Editor.

Old Wine—Dry Cork

Summer, 1940: The Battle of Britain, by Roger Parkinson. David McKay Co., Inc., New York, N. Y., 1977. 236 pages with maps, photos, and index. \$12.95.

Roger Parkinson, a busy military historian who has produced in recent years, among other books, a biography of Karl von Clausewitz and four volumes on World War II, has newly bottled the old wine of the Battle of Britain. Although he promises conclusions that differ from "many usual versions," he adds little to the already large body of material on this subject. His major discovery seems to be that the British margin of victory in the summer of 1940 was not narrow, but, in fact, was comfortable.

Professional military historians for at least the last fifteen years have known that, and have concluded that the British were much further from defeat and the Luftwaffe from victory than Winston Churchill thought in 1940, and continued to believe when he wrote *Their Finest Hour* shortly after the war. Few who have read F. K. Mason's carefully written *Battle Over Britain* (curiously missing from Parkinson's bibliography) or Telford Taylor's *The Breaking Wave* will argue with Parkinson on that score.

Parkinson is more likely to pick a fight with his assertion that the Germans, even before July 1940, had no chance for victory: "Goering had no real chance of success in the limited weeks of summer 1940, however differently he might have directed the Battle of Britain campaign. His many mistakes were irrelevant to the outcome. . . ." Parkinson believes that Adolf Hitler's only chance to defeat Britain was to invade "in the immediate aftermath of Dunkirk. . . ."

Beyond the fact that Hitler had no plan for doing that, one would have to contemplate a German invasion with an already tired Luftwaffe and army, no air superiority over the English Channel or the southeast coast of England, a British navy full of fight, and a German navy still licking its manifold wounds from the Norwegian campaign in April and May. How could Hitler turn on Britain in the face of all these problems and with the bulk of the French army and air force still in the field?

All historians will acknowledge that it is wise to detach oneself from the topic at hand if objectivity is the goal. There is danger, however, of becoming so removed as to entirely lose the turbulent milieu in the dust of the archives and in the orderly marshaling of note cards. Parkinson has lost the atmosphere and from reading him one has to wonder what all the noise was ever all about in the first place.

Beyond the missing excitement, furthermore, Parkinson's treatment teaches nothing. More than a British victory, the Battle of Britain was a German defeat—a tactical, strategical failure—and exploring the German mistakes, which Parkinson refuses to do because of their "irrelevance," could have produced a valuable book.

—Reviewed by Lt. Col. Alan Gropman, Air War College.

A Comprehensive View

Soviet Aviation and Air Power: A Historical Review, Robin Higham and Jacob W. Kipp, editors. Westview Press, Boulder, Colo., 1977. 328 pages with index. \$25.

This collection of articles on Soviet aviation suffers from the usual problems of collections, *i.e.*, some overlap among the various articles

and no clear hypothesis tested rigorously throughout the work. But these deficiencies are overshadowed by a methodical approach and internal coherence in the dozen separate essays that comprise the book.

Perhaps the most important feature of this book is its recognition that airpower includes both civil and military elements. This is particularly true in the Soviet Union where a command economy is combined with a militarized society. The two articles on Soviet civil aviation and on the Soviet aircraft industry are vital to a full understanding of airpower, Soviet style.

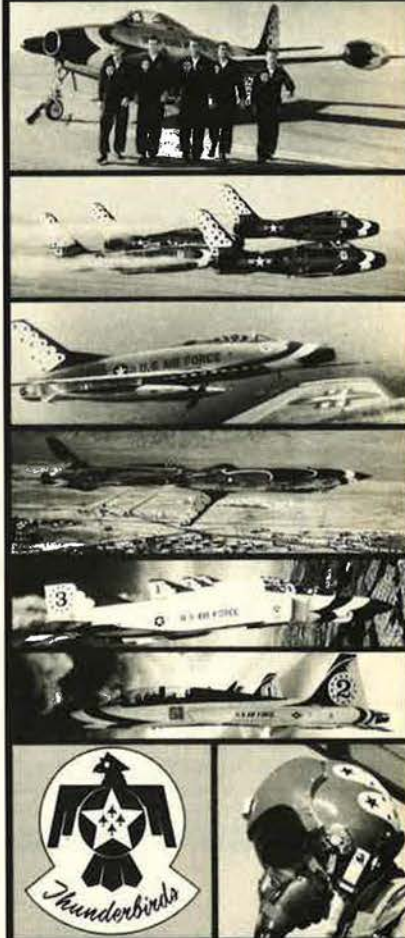
Another major strength of *Soviet Aviation and Air Power* is its historical approach. History weighs heavily on current Soviet military power, and in the book's introduction there is discussion of Soviet air doctrine in terms of de Seversky, Douhet, and the lessons of war. There is not space in a short review to recount the numerous interesting facts and vignettes sprinkled throughout the book. Suffice it here to say that knowledgeable writers take the reader on an interesting historical trek from 1831, when the Governor of Riazan viewed Russia's first recorded balloon flight, to contemporary times. And, appropriately for any work on the Soviet military, about twenty percent of the book deals with aviation in the "Great Patriotic War" of 1941-45.

For the Soviet military specialist, but also for Western students of airpower, each chapter is followed by research notes that guide the reader to a wealth of both Russian and English language sources, making the book a valuable research tool.

Whatever the reader's specific interest in airpower, he will find something of note, and perhaps something new to him. Doctrinal considerations are taken interestingly from Stalin's "adulation of artillery" through Khrushchev's fascination with rocketry to the current calculations in an era of "détente" and SALT. Naval aviation gets its share of attention, and so do civil and air defense, cosmic research, and the Strategic Rocket Forces. For a book of only a little more than 300 pages, it is surprisingly comprehensive.

Every specialist on Soviet military matters should read this book. So should every Air Force officer and Naval aviator, whether or not he follows Soviet military matters

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Airman's Bookshelf

closely. *Soviet Aviation and Air Power* offers an opportunity to learn a great deal about the airpower of our potential adversary. In the bargain, the reader will enjoy a very readable book.

—Reviewed by *Cmdr. Steve F. Kime, USN, Director of Soviet Studies, The National War College.*

New Books in Brief

Fly For Your Life, by Larry Forrester. First in the Bantam War Book Series, this volume captures the excitement of one of England's top World War II aces, Robert Stanford Tuck, credited with twenty-nine enemy aircraft destroyed. The book opens with an original painting of air combat when Tuck met the German ace Adolf Galland over the French coast in 1941. 368 pages, \$1.95; *The First and the Last*, by Adolf Galland. Second in the series, this is Galland's unique view of the German air war. Galland was a top German fighter ace, credited with more than seventy kills, who became commander of all fighter forces in the Luftwaffe. Today he enjoys a close friendship with one of the Luftwaffe's wartime prisoners, British ace Robert Tuck. Bantam Books, New York, N. Y., 1978. 302 pages. \$1.95.

A House in Space, by Henry S. F. Cooper, Jr. The last Skylab crew lived in space for eighty-four days, and proved to be the most independent of its crews, causing differences with ground controllers. The author, a staff writer for *The New Yorker*, vividly reconstructs Skylab's workday regimen and the problems and frustrations of men living and working in weightlessness. Photos. Bantam Books, New York, N. Y., 1978. 183 pages. \$1.95.

The Kaiser: Warlord of the Second Reich, by Alan Palmer. Adored at birth by the British people, Queen Victoria's firstborn grandson, later to be Kaiser William II, became the most hated man in England. The author details the

extraordinary life of this temperamentally insecure man, whose swagger and bombast epitomized the new, self-confident Germany. Index, bibliography, photos. Charles Scribner's Sons, New York, N. Y., 1978. 276 pages. \$14.95.

The Role of the Bomber, by Ronald W. Clark. Illustrated with color and black-and-white photos, this volume describes the changing strategic and tactical operations of the bomber, from ballooning to the present. Notes, bibliography. Thomas Y. Crowell Co., New York, N. Y., 1978. 160 pages. \$14.95.

Thundering Peacemaker, by Frederick A. Johnsen. This is the story in words and pictures of the B-36 intercontinental bomber. Includes technical data as well as interviews with B-36 crews. Bomber Books, P. O. Box 98231, Tacoma, Wash. 98499. 29 pages. \$3.75 postpaid.

Webster's American Military Biographies, edited by Robert McHenry. Here are 1,033 biographies of military men and women spanning some 366 years of American history—from 1607 to the end of Vietnam. In addition to the A-Z biographical section, the book includes a chronological list of important military campaigns, along with places and names associated with them. G. & C. Merriam Co., 47 Federal St., Springfield, Mass. 01101. 548 pages. \$12.95.

Writing with Precision, by Jefferson D. Bates. All too often, the author notes, we wonder "What does he mean?" This author explains clearly and directly how anyone can write with clarity and precision. His approach is practical and systematic, with vivid examples from twenty-five years' experience as a working writer in government and industry. Index, bibliography. Acropolis Books, 2400 17th St., N. W., Washington, D. C. 20009, 1978. 212 pages. \$5.95.

The Zeppelin Story, by W. Robert Nitske. The carefully detailed story of the lighter-than-air transportation era from Count Zeppelin's first balloon ascension to the *Hindenburg*. Photos, index, bibliography, appendices. A. S. Barnes & Co., Inc., P. O. Box 420, Cranbury, N. J. 08512, 1978. 191 pages. \$17.50.

—Reviewed by *Robin Whittle*

A few days in the Mojave Desert with the 4th Mechanized Division during Brave Shield XVII convinced the author that things are looking up for . . .

This New Army of Ours

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

FORT Irwin, Calif., sits forlornly in the wild and rocky scenery of the Mojave Desert. Except for a few National Guard caretakers, the place is deserted these days, the hundreds of family quarters, the modern school and hospital, the barracks slowly giving in to the desert. Nevertheless, Fort Irwin is taking on importance for the new Army that is emerging from the Vietnam ashes. The vast Mojave fanning out from Irwin is ideal for realistic combat training, especially if we have any North African and Middle East contingencies in mind. It is the perfect location to make a movie about Rommel. More to the point, the maneuver area is convenient to Nellis AFB and the Red Flag exercises of the Tactical Air Command.

Maj. Gen. Jack Forrest, one of old Nathan Bedford's descendants and presently commanding the 4th Mechanized Division, invited me to tag along on a visit to Exercise Brave Shield XVII. The last time I had watched the US Army perform there was reason to be discouraged about our prospects in any future ground wars. The occasion was a NATO exercise in Greece, and the US Army contingent did not give even casual observers the impression of a disciplined and motivated outfit. During those final years of Vietnam, the US Army in Europe was so troubled with drug problems, race problems, and generally low morale as to leave little time for worry about combat readiness. Thus it was with some skepticism that I accepted the invitation to see the troops in action.

From the moment we lifted off the George AFB, Calif., ramp in a chopper piloted by a very cool young lady in combat dress, it was obvious there had been some changes made. These fellows—all right, persons—in the desert knew their jobs, they

knew how to use their equipment, and they went at the tough and dusty work of simulating war with enthusiasm and, what is more important, intelligence. If you wanted an explanation of the situation—where were the enemy tanks, what was the tactical plan—you didn't need a briefing officer. Just ask that noncom over there. The field discipline was evident in the careful siting, camouflaging, and dispersal of positions. Even down to forward observation posts of two men and a jeep, everyone seemed to be playing the game. If the troops at Exercise Brave Shield were a fair cross section of the regular Army, things are looking up for the ground-pounding business.

A pleasant experience in this two-day visit was the Army-Air Force relationship. It is clearly past the awkward stage of a few years back when the doctrinaires kept getting in the way. This is, of course, still an army that has never been troubled by an enemy air force or has even, for the most part, seen an enemy airplane. Thus, it is sometimes difficult to divert the soldiers' attention from tanks, artillery, and other gadgets to the matter of air strikes, but things are coming along. The air liaison officers, together with their inseparable and skilled companions, the noncommissioned radio operator, jeep driver, mechanic, and alter ego, are seeing to that. It is a nice working relationship, one of the positive things that came out of Vietnam.

Another Vietnam bonus is the number of Army officers and senior noncommissioned officers who have seen combat. And while Vietnam might have been a one-of-a-kind war, the fact remains that it was a hard and dangerous one. People who could lead in that miserable environment are good bets to do it well in Europe or Africa or wherever.

There are, of course, a few ailments afflicting this new Army of ours. In the first place, there is little behind it in the way of reserves, and that little is shrinking fast. With no draft and a shaky reserve base, the Army has little staying power. It must, like all the services, depend on an uncertain trickle of volunteers. The volunteers are themselves the source of some controversy. We hear of their low reading skills, their high dropout rate, and the large influx of blacks.

To some extent these criticisms are true. The Army is not competing with Princeton for its recruits. Some drop out in training because the Army, by making things tough, wants to find out early who the losers are. There are a lot of blacks joining up for obvious reasons, and there appears to be no reason for anyone to worry about it. The elite airborne divisions, where every soldier is a volunteer, have the highest percentage of blacks.

Airlift is another problem. It takes about 400 C-5 sorties, together with more than 1,200 C-141 sorties, to lift a mechanized division across the Atlantic. Prepositioned equipment does reduce the airlift requirement, but it also raises a few questions. The equipment dumps in Europe, for instance, are likely targets either for Soviet attack or sabotage. Even without that hazard, access to these dumps depends on the roads being clear at a time when there might well be great confusion. Besides, the equipment might not be where the trouble is. All in all, it seems far better to keep the troops and their gear together, and this in turn means airlift. Lots of airlift, for it seems apparent that the Soviet submarine threat makes sea lift too uncertain a proposition.

And so, until the airlift capacity comes up to the requirement, our ability to deploy this new Army of ours is going to be very limited. Defense Department plans for increasing the airlift, if they stay on track, will give us in four or five years a capability to move divisions and tactical squadrons in a matter of days. The concept is designed for European reinforcement, but it will work elsewhere. At that point, the idea of a strong conventional capability, an Army/Air Force team ready for trouble anywhere, makes sense. Meanwhile, we can note with pleasure the Army's evident improvement. ■

The Bulletin Board

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

The Junior EM Money Crunch—New Initiatives Near

The military's most troublesome personnel problem of the day? It's probably the financial crunch junior enlisted members overseas, particularly in Germany, are experiencing as a result of the decline of the dollar. As the Defense Department's personnel policy chief, Maj. Gen. Stanley M. Umstead, Jr., and other officials are telling members of Congress, it's creating serious morale and disciplinary problems, damaging combat readiness, and undermining marital stability among those young families.

The Defense Department has taken several steps to ease the young marrieds' plight and is pushing for more relief on other fronts. Extending full travel-transportation benefits is the major thrust, but that's encountering resistance; some opponents hold that if it goes through, the dependent population overseas will soar, thus jeopardizing evacuation plans and hiking costs for dependent medical care, schools, housing, commissaries, and related programs.

Not so, Defense leaders said after consultation with service officials. They estimate that the junior EM dependent population in Germany, now numbering about 20,000 in non-command-sponsored status, would increase by only 4,000 if full travel benefits are granted. And nearly two-thirds of those in other overseas areas are "similarly in place," so few additional dependents would show up.

The result, General Umstead says, would be an almost negligible impact on health, recreation, and other military facilities abroad. He adds that the small extra costs would probably be more than offset by increased morale, more stability from people serving longer tours,

and better retention. In related moves to ease family overseas financial strains:

- Defense said it is examining plans to extend food stamp and school lunch program eligibility to members abroad who would otherwise be eligible if they were in the states. This would be done through a supplemental cost-of-living adjustment (COLA). Implementing procedures, costs, and legal factors are being evaluated, officials said.

- The Department is preparing a legislative proposal permitting advance payment of the overseas Housing Allowance (HA). This will help families pay advance lease and utility deposits; they're payable now only after a member incurs the expense.

- Officials are considering a COLA for single members living in



John Gray, AFA's Assistant Executive Director, presents an AFA citation to Maj. Gen. David Waxman honoring the pilot and physician for his more than thirty-six years of active and Reserve service. Dr. Waxman is now Chancellor of the University of Kansas Medical Center.

barracks overseas. A typical amount would be \$30 a month, General Umstead said.

- The Army-Air Force Exchange Service has approved budget-priced clothing for adults and children for sale in exchanges in Europe. They'll appear there and in the Pacific, Alaska, and CONUS stores soon.

Officials, meanwhile, noted that the COLA and HA in Europe have risen sharply the past two years. From April 1, 1976, through March 1, 1978, for example, the monthly COLA for an E-3 with one year of service and two dependents, living in the Frankfurt, Germany, area, rose from \$15 to \$58.50, and the HA jumped from \$40.50 to \$114.

Much of the HA hike occurred March 1 when Defense switched the junior marrieds from "without dependent" to the larger "with dependent" rates. The E-3's total monthly pay during the two-year period rose from \$665.70 to \$860.40.

AFA Backs Vet Job Preference

"We support the current system of veteran's preference for veterans employed by—or seeking employment with—the Federal Civil Service," said AFA President Gerald V. Hasler in a recent letter to Rep. Robert Nix (D-Pa.). Mr. Nix is chairman of the House Post Office and Civil Service Committee, which has been conducting extended hearings on the Administration's Civil Service "reform" package. The measure would strengthen federal hiring programs for disabled and Vietnam-era vets but end the lifetime nature of preference for nondisabled veterans (see last month's "Bulletin Board" for details).

In his letter to Mr. Nix, President Hasler noted that "veteran's preference in federal employment predates the Civil Service Merit System and has worked well for almost 100 years." It was laid on for "a very good reason—to help those who served when called."

Retiree Involvement

USAF's Retiree Involvement Program is picking up steam. The aim is to get retirees more involved with base activities. A new AFRIP regulation, AFR 211-13, is due out soon, and bases are coming up with ideas that the Hq. USAF retired activities office is sharing with other bases. The suggestions include: establishing a "Welcome Wagon" type greeting program for new retirees in the

area, a base commander's retiree hot line to provide an answering service to retirees, and publishing a special retiree issue of the base newspaper.

NCESGR Expanding Operations

The National Committee for Employer Support of the Guard and Reserve (NCESGR) is expanding its efforts through the establishment of state and, in some cases, area committees. This "grass-roots" approach of the five-year-old NCESGR activity is designed to increase the number of employers signing formal statements of support of the Reserve Forces. A NCESGR spokesman said that about 320,000 employers representing 52,000,000 employees, better

than half the nation's work force, have signed such statements.

State committee membership will include the senior reserve component commanders and local civilian leaders named by James M. Roche, NCESGR's national chairman. The first such committees were organized in Michigan, Indiana, Oklahoma, Massachusetts, and Oregon. The NCESGR spokesman said remaining state committees should be operational by mid-year.

NCESGR, staffed by members of the different services, is located about four blocks from the Pentagon, in an office building at 1117 N. 19th St., Arlington, Va. 22209 (phone [202] 697-6902). AFA, which strongly backs the NCESGR effort, urges

any members who are also employers but who have not signed statements of support to contact the activity.

Dual Comp, 'Dipper Rules Hit

April was not a great month for retired Regular officers working for Uncle Sam. Nor for near-retirees eyeing employment with him.

First, the Supreme Court let stand a suit by 874 retired Regular officers working for the government. They contended the Dual Compensation law, which currently limits their military pensions to \$4,045.16, plus one-half the remainder, is unconstitutional. A lower court last year disagreed; the Supreme Court's action leaves that ruling intact.

AFA Believes . . .

Too Little—But Maybe Not Too Late

Is President Carter—by design or oversight—underfunding the Veterans Administration budget for FY '79? Is he asking for too little to "care for him who shall have borne the battle?" Indeed, there is evidence that—for whatever reason—the Administration's proposed VA budget just won't do the job.

In a formal report to the US Senate Committee on the Budget, both Sen. Alan Cranston (D-Calif.), Chairman of the Senate Veterans' Affairs Committee, and Sen. Strom Thurmond (R-S.C.), ranking minority member, raised the issue of underfunding.

These are highlights of the Committee report:

- The budget authority estimate falls short of the mark by some \$2 billion (see "Capitol Hill," May '78 issue, p. 23).
- The Administration has underestimated GI Bill costs for FY '79 by some \$500 million.
- Needed health care improvements costing some \$213 million are not funded at all.

The Committee believes that, overall, about \$21 billion is needed (compared to the President's recommendation of a little more than \$19 billion) to fund an adequate program. The Committee says the President's budget "does not reflect realistic costs of pension reform," a fact acknowledged by VA spokesmen. In their view, the Administration's budget request for the VA hospital and medical system also is far too stringent. As an example, the report notes that the budget requests only an \$800,000 increase over FY '78 (less than one percent) for VA medical research—an amount far below what is needed merely to keep pace with inflation.

If the President's budget were adopted, they say it would mean eliminating all research at as many as sixty VA hospitals, reducing research at the remaining sixty-three, and making other cutbacks in the VA research program. Ironically, two of the VA's health-care researchers were honored in 1977 by the award of Nobel Prizes in medicine. In addition, a 1977 National Academy of Sciences study was "enthusiastic" about the VA's biomedical research program.

The Committee, understandably, finds these proposed cutbacks "intolerable." AFA is equally concerned, in view of the growing requirement for VA health care in the mostly uncharted area of care for the elderly.

Citing other budget-directed cuts in hospital building and growth, the Committee "is deeply concerned that funding of

VA health-care services and programs at the Administration-requested levels would threaten serious reductions in the quality of care provided veteran-patients in Fiscal Year 1979 and thereafter."

These sobering words are underscored by comments from the other house of Congress. In a mid-April *Congressional Record* insertion, Rep. Ray Roberts (D-Tex.), Chairman of the House Veterans' Affairs Committee, said:

When the President submitted his budget in January, I expressed the view that the recommended budget for hospital and medical care for veterans was deficient. . . . Because of lack of funds veterans, especially nonservice-connected veterans, are currently being told they must seek hospitalization elsewhere. We have found that even service-connected veterans are being required to wait for extended periods of time in VA hospitals and outpatient clinics throughout the country before being able to see a physician. . . . The reason for these delays is very simple. The agency does not have the funds necessary. . . .

Noting that his Committee had recommended a proposed budget increase of some \$400 million for hospital and medical care funding, Congressman Roberts commented, "Obviously, we have a difference of opinion as to what constitutes proper care for veterans."

While informed people may differ on the exact funding needed for proper care for America's veterans, and while the VA budget, like that of any other government agency, should be scrutinized for waste, the difference between the recommendations of the Administration and Congress raises serious concerns. AFA believes, as enunciated in our Statement of Policy, that, along with other essential veterans benefits, we must have "a continuing network of Veterans Administration Hospitals, fully funded and adequately staffed."

These FY '79 budget skirmishes are preliminaries; nothing is set in concrete yet. As the budget process moves towards completion, we trust that the Administration will reexamine its recommendations and that informed debate in the Congress will identify what really is needed. The subject is too vital for guesswork.

—JAMES A. McDONNELL, JR.

The Bulletin Board

Second, the House Civil Service Investigating Subcommittee recommended that all retired officers taking federal jobs in the future—Regulars and non-Regulars—surrender all their retired pay. The subcommittee's report, while denouncing double-dipping generally, advanced five alternative plans for consideration. One would limit retired pay of all federally employed retirees to \$10,000 a year. Another would limit total government compensation—Civil Service and retired pay—to \$57,500.

The subcommittee was particularly unhappy that the government pays some 200 retired admirals and generals more, in combined Civil Service and retirement pay, than cabinet officers. At least forty out-draw the \$75,000 salary of the Vice President, the report said.

Another blow aimed at double-dipping came from a recommendation in the report of the President's pay commission (see "Speaking of People").

Vets Abroad Rate Benefits

Nearly 60,000 US veterans living abroad receive VA benefits of various kinds. For still others overseas who are not receiving them and for veterans planning trips abroad, the VA has some important reminders.

Educational assistance allowances are available overseas and in the same amounts as paid Stateside students. However, VA warns that the law prevents it paying those attending foreign schools unless the institution and the course of study have specific VA approval. Interested veterans can secure applications through US embassies overseas, Stateside VA offices, or from US military bases overseas or in the CONUS. Some VA education benefits also are available overseas to veterans' wives and children.

Not available overseas are certain benefits such as loan guarantees. However, the agency will mail compensation and pension checks to most foreign locations.

Veterans with service-connected disabilities can secure medical care in many foreign cities, provided they

have a disability statement from the VA office maintaining their medical records. Present the statement to a US embassy or consular office abroad and veterans will receive emergency hospitalization, paid for by Uncle Sam, the VA says. It adds that the VA hospital in Manila is the only overseas hospital where VA-paid care is available to vets with nonservice-connected disabilities. In related developments:

- The VA asked Congress to extend its one-year authority to make special pay agreements with physicians and dentists it employs. The current authority ends September 30. Without it, the VA's health professionals would depart for private practice where the pay is greater, VA said.

- The VA is contacting a million of its insurance policyholders this year. The message: Pay your insurance premiums other than on a monthly basis—preferably just once a year—and save money, time, and effort. To the million GI Bill check recipients it has another message: If you move, send in a change-of-address card promptly. Many who don't are courting financial disaster, the VA said.

- Rep. John P. Hammerschmidt (R-Ark.) has introduced a bill benefiting veterans with service-connected disabilities rated thirty percent or more but less than total. Their ratings would automatically jump ten percent when they become sixty-five.

- Rep. G. V. Montgomery (D-Miss.), one of the most vigorous supporters of veterans' benefits on Capitol Hill, has introduced a series of bills increasing disability compensation, dependency-indemnity

compensation, and other programs. One would double the present \$100 per month now awarded Medal of Honor winners.

- The VA has appointed Rosa Maria Fontanez-Marques deputy assistant administrator of its Office of Human Goals. VA was the first federal agency to establish an OHG. Miss Fontanez-Marquez, a University of Puerto Rico graduate and a former US Army major, will help shape policy for OHG, which deals with matters relating to civil rights, equal employment opportunities, and affirmative action.

Commissary Merger Near?

The Defense Department has launched an intensive study to determine whether the separate service commissary systems should become one. The study will last several months, said Maj. Gen. Stanley M. Umstead, Jr., Defense's deputy assistant secretary for personnel policy. If the probe indicates solid savings can be obtained by a single system, without compromising services, "I see no reason why we shouldn't go ahead and consolidate," General Umstead told AIR FORCE Magazine.

The new study is a follow-on to the 1975 commissary probe triggered by the flap over the Administration's unsuccessful attempt to withdraw commissary subsidies. As that study recommended, the services have tightened their commissary operations. Now it's time to seriously examine the oft-called-for overall consolidation idea, General Umstead said.

New Almanac for Retirees

The Uniformed Services Almanac,



Two of the forty-six USAF chief master sergeants recently chosen to serve thirty-three years are James R. Corey, left, and Jim Economy, both with ADCOM/NORAD at Peterson AFB, Colo. Chief Corey heads the personnel data systems office, and Economy the command section administrative office. More than 800 chiefs Air Force-wide competed for the extra-tenure billets (see March '78 "Bulletin Board").

In Prospect for the Military Pay System

If the recommendations of the President's Commission on Military Compensation become the law of the land, much of the existing pay system is likely to be revamped beyond recognition. The impact on retention, tenure, promotions, and other people programs also could be substantial.

One recommendation, for instance, would invoke vesting after ten years of service. So there is a strong feeling that many persons who normally would depart after their first enlistment or obligated tour would hang on for the full decade. That way they would qualify for a deferred annuity and immediate payments from a trust fund.

Their early departure after qualifying would, officials hold, deplete the number of experienced middle managers. Losses of top-quality USAF members would be especially high, thus leading to more problems. As retention falters, recruiting quotas may have to go up, and training and PCS costs could rise.

These are just some of the possible pitfalls Air Staffers at the Pentagon have unearthed in their analysis of the Commission's 205-page report. Staffs of all the services have spent weeks scrutinizing the likely impact of the recommendations. They and Defense Department personnel experts are laboring under a timetable designed to produce proposed legislation to implement some or all of the recommendations. The plan is to hammer out a package, complete with all the required clearances, and move it to Congress late this year or early next.

Reaching Defense-wide agreement, however, will take some doing, for views on the proposals vary widely. Army, according to early indications, will try to stand foursquare against almost the entire Committee report. But Navy is expected to support it, in large measure at least. The Air Staff, though citing booby traps throughout the proposals, had not established an official position at mid-April. However, it seemed clear that USAF would be willing to compromise on certain portions of the report.

And the Defense Department? This is where the report's main support seems to lie, and that's significant. For it is DoD, not the individual services, that exercises the muscle and calls the final shots within the military establishment. After Defense clearance, or in conjunction with it, the Administration's Office of Management and Budget will get in its licks, followed by Congress, if it is inclined to take up the package.

Basically, in the pay area, the Commission urged the government to axe the twenty-year retirement system and adopt the following two principal new planks: (1) a differential pay system for the active force, and (2) a civilianized annuity-trust fund combination for retirees.

The changes would give the Defense Secretary unlimited power to rearrange annual pay raises, bonuses, and incentive pays to lure people into short skill areas. He could distribute general pay raises almost exclusively to specified AFSCs, leaving sharply reduced amounts to the others. He could consolidate such existing officer incentives as flight, submarine, and physician's pay into one bonus system, to be adjusted on the basis of supply and demand. Existing flight pay, now felt by Air Force officials to be working well, apparently would be eliminated.

The report, time after time, underscores the Commission's infatuation with the "differential pay" concept, as a way of attracting and keeping needed people, saving Uncle Sam money, and increasing efficiency. Air Staffers, however, disagree with going overboard on "differentials." They cite the obvious drawbacks: damaged morale among run-of-the-mill career field members, a proliferation of different pay tables, confusion over who gets what, and (for those getting only

part of normal pay increases) a reduction in their annuity and trust fund payments.

Instead of stabilizing the compensation system and improving members' understanding of it, the differential pay scheme would introduce "inherent instability" into it, critics declare.

In civilianizing the retirement system along the lines of the Civil Service arrangement, the Commission would base payments on an individual's three highest years of basic pay. The old age annuity would begin payoffs at age fifty-five, sixty, or sixty-two, depending on length of military service. Persons with ten to nineteen years of service would wait until age sixty-two.

While there are varying years-of-service multipliers for annuity computation, one basic fact emerges: Compared with the present system, pensions and total lifetime retirement pay would take a severe plunge. Another feature service members won't appreciate is the Social Security offset recommendation. The retirement paycheck would be reduced, but by no more than fifty percent, starting at age sixty-two or sixty-five.

Vesting, under the Commission plan, begins at the ten-year service point, which explains why the proposed trust fund holds some attractions. After just five years in uniform, members would start accumulating annual government contributions, with interest, which they could collect (after a total of ten years of service) under a variety of withdrawal conditions.

The trust fund of an enlisted member leaving service with ten years would have accrued \$8,610; an officer \$18,320. These figures would surge to \$66,210 for the EM and a whopping \$140,890 for the officer, if they remain in service for thirty years. These payments are in addition to the old age annuity. Tax bites, of course, would be substantial.

Members with more than four years of service at the time of enactment would remain under the current retirement system. But this proposal seems bound to provoke controversy among service newcomers. It's the type of irritation that Congress, if it decides to seriously consider the Commission report, may well erase and "grandfather in" everyone on the effective date of the overhaul.

Because of the grandfathering, retirement pay savings under the Commission's plan would not emerge until after the turn of the century. But by the year 2010, nearly \$10 billion a year would be shaved off, according to estimates. In other words, retirement outlays that year would reach \$36.9 billion, instead of the \$46.7 billion projected under the present system.

In related areas, the report recommends a modest severance pay program—a maximum of one year's basic pay—for both EM and officers who are forced out after five years of service, an end to double-dipping through forfeiture of the retirement annuity during Civil Service employment, a variable quarters allowance, and full travel benefits for junior enlisted people.

The compensation aspects of the Commission's report are responsible for only part of the anxiety personnel officials are experiencing. Looking down the road a few years, they are concerned about the probable loss of larger numbers of quality people after ten years of service. They foresee force structure woes such as the likely removal of the up-or-out and high-year-of-tenure systems, overcrowding in the high EM and officer grades, promotion slowdowns, and a general aging of the force.

These problems will be examined later in these pages as the Commission's recommendations are massaged further by the Defense Department, the White House, and possibly Congress. ■

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Inc., has introduced, along with the 1978 editions of its other publications, the Retired Military Almanac. Its 160 pages are filled with data on retired pay, taxes, health care, VA benefits, etc. It, the Uniformed Services Almanac (for active-duty members), and the separate Almanacs for the Guard and Reserve each retails for \$2 a copy at exchanges.

Only 1,200 in VEAP

VEAP, the Veterans Education Assistance Program that is replacing the Vietnam-era GI Bill, got the cold shoulder from all but 600 new Air Force members last year. However, another 600 signed up the first quarter of this year, and Hq. USAF officials expect larger gains in the months ahead.

But Air Force has a long way to go to catch up with the other services. According to the Defense Department, the other services attained the following enrollment figures the first of this year: Army 24,050; Navy 13,415; Marine Corps 2,422.

VEAP participants contribute \$50-

\$75 per month—up to a total of \$2,700—to an educational fund that Uncle Sam later matches two for one. The maximum kitty is \$8,100. This compares with up to \$19,000 the Viet-era GI Bill provides its participants, and no contribution is required by the individual. GI Bill eligibility ended for persons entering service after December 31, 1976.

Starting October 1, the Defense Department, in a test with the Army, will provide an added monetary contribution as authorized by the VEAP law for certain VEAP enrollees. It's designed to fill hard-to-fill jobs.

The other services "are carefully watching the Army test effort" but haven't yet asked to participate, a DoD spokesman said. The President's Commission on Military Compensation has recommended that the Defense Secretary be given broad flexibility in maneuvering various kinds of pays and incentives to meet marketplace needs. The VEAP test appears to fit snugly into that pattern.

Dean Gives His School High Marks

The controversial armed forces medical school, which the Administration tried unsuccessfully to close last year, is moving along in great shape. The youthful institution—

officially the Uniformed Services University of the Health Sciences—has ninety-nine "truly outstanding" medical students enrolled and has just chosen 108 more from 3,500 applicants for the next class starting in the fall. Furthermore, the school's construction costs will be \$10 million *under*—repeat, *under*—the \$85 million appropriated.

So says the school's dean, Dr. Jay P. Sanford, in recent congressional testimony. He especially lauded the curriculum, faculty members, and department heads.

When fully operational, the Bethesda, Md., institution will have 150-175 students in each of its four classes. The first class, of thirty-one students, is scheduled to graduate in June 1980. With long service commitments, USUHS grads should become the hard core of the military medical services in a few years.

The Administration early last year tried to halt the fledgling school, claiming that civilian medical schools could provide ample physicians at much less cost. Congress blocked the closure threat and the Administration hasn't renewed it.

Civilians Held Fireable

"It's impossible to fire civilians" from government posts, federal officials have been saying for years. And Administration leaders are

Senior Staff Changes

RETIREMENTS: L/G Charles E. Buckingham; B/G Harold E. Confer; B/G Robert A. Foster; M/G Howard E. McCormick; L/G Thomas W. Morgan; B/G David W. Winn.

CHANGES: M/G (L/G selectee) Randal T. Adams, Jr., from Dir., Inter-American Defense College, Ft. McNair, Washington, D. C., to Chairman, Inter-American Defense Board, Washington, D. C. . . . B/G Donald W. Bennett, from Asst. DCS/Log., Hq. MAC, Scott AFB, Ill., to Insp. Gen., Hq. MAC, Scott AFB, Ill. . . . B/G John R. Budner, from Dep. Dir., NMCC (#3), J-3, JCS, Washington, D. C., to Cmdr., NORAD Cmbt. Ops. Cen., Cheyenne Mt. Complex, Colo. . . . Col. (B/G selectee) Robert E. Chapman, from Cmdr., Leadership & Mgmt. Dev. Ctr., AU, Maxwell AFB, Ala., to Dep. Dir., Data Automation, ACS/KR, Hq. USAF, Washington, D. C. . . . M/G Gerald E. Cooke, from Dep. Dir. for Ops. (Recon. & Elect. Warfare), J-3, JCS, Washington, D. C., to Comdt., AFIT, AU, Wright-Patterson AFB, Ohio . . . B/G Theodore P. Crichton, from Cmdr., 435th TAW, MAC, Rhein-Main AB, Germany, to Dep. for Surveillance & Navigation, ESD, AFSC, Hanscom AFB, Mass.

Col. (B/G selectee) Lawrence D. Garrison, from Asst. Dep. C/S, Log., Hq. ATC, Randolph AFB, Tex., to Dep. C/S,

Log., Hq. ATC, Randolph AFB, Tex., replacing retiring B/G Harold E. Confer . . . M/G Gerald K. Hendricks, from Dir. of Science & Tech., Hq. AFSC, Andrews AFB, Md., to V/C, SAMSO, AFSC, Los Angeles, Calif., replacing retiring M/G Howard E. McCormick . . . M/G (L/G selectee) Richard C.

Henry, from Dir., Dev. & Acquisition, DCS/R&D, Hq. USAF, Washington, D. C., to Cmdr., SAMSO, AFSC, Los Angeles, Calif., replacing retiring L/G Thomas W. Morgan . . . Col. (B/G selectee) William E. Lindeman, from C/S, NORAD/ADCOM, Peterson AFB, Colo., to DCS/Plans & Pgms., ADCOM, & Asst. DCS/Plans & Pgms., J-5, NORAD, Peterson AFB, Colo.

Col. (B/G selectee) Leo Marquez, from Dep. Dir., Maint., Engrg. & Supply, DCS/S&L, Hq. USAF, to Dep. Dir., Log. Plans & Pgms., DCS/S&L, Hq. USAF, Washington, D. C. . . . M/G William B. Maxson, from Dep. Dir., Dev. & Acquisition,

DCS/R&D, Hq. USAF, Washington, D. C., to Dir., Dev. & Acquisition, DCS/R&D, Hq. USAF, Washington, D. C. . . . B/G Click D. Smith, Jr., from Cmdr., 436th MAW, MAC, Dover AFB, Del., to Cmdr., 435th TAW, MAC, Rhein-Main AB, Germany, replacing B/G Theodore P. Crichton . . . B/G

Brien D. Ward, from Asst. DCS/Sys., Hq. AFSC, Andrews AFB, Md., to Dir. of Science & Tech., Hq. AFSC, Andrews AFB, Md., replacing M/G Gerald K. Hendricks. ■

currently telling Congress much the same thing in testimony on the President's Civil Service reform package. It's being advertised as a vehicle to speed dismissals of unsatisfactory workers.

USAF, however, says the "impossible-to-fire charge" is a myth. USAF Civilian Personnel headquarters in Washington reports that in FY '77, 1,230 Air Force civilians were fired for cause. Dismissals for calendar years 1974 through 1976 numbered 1,823, 1,495, and 1,433, respectively. Included were forced exits for unsuitability, inefficiency, misconduct, etc.

The Civilian Personnel item appeared in a recent *TIG Brief*. The *Brief* acknowledged that it takes a lot of time and effort to remove a "bad apple." However, it added it is unfair to good employees to let the ineffective and those who misbehave "get away with it."

Recruiting Enticement?

An AFA member living near a large USAF base out west took note of a recent Air Force policy change that allows junior EM families to

apply for inadequate on-base quarters. His rather bitter comment, all too true, went like this:

"How's this for a recruiting enticement? Join the Air Force and occupy inadequate quarters if they are available! Oh, well, I guess it's better than paying \$200 a month out of a \$140 allowance for inadequate off-base quarters!"

Short Bursts

Pay Commission notes: The 205-page report barely touched on the "X factor" in military life, an omission duly noted by just one of the Commissioners, **Lt. Gen. Benjamin O. Davis, Jr., USAF (Ret.)**. Also significant: the Commission report brushed off USAF's strong endorsement of the "youth-and-vigor" philosophy, terming it a "vague concept" that "has not been carefully analyzed or adequately defined."

The Air Staff at the Pentagon, meanwhile, reports that it "has been inundated with suggestions to modify the current compensation system."

The Office of Special Investigations says that attempts by **Eastern**

European countries to "induce or coerce" USAF members and spouses traveling in those countries into revealing information about the Air Force "are common." Threats to relatives is one method used, OSI says. Its message: On return from Communist countries, travelers must report to their local OSI office, as per AFR 205-57.

Air Force physicians are being urged to help recruit other docs. And an ambitious advertising program, featuring ads in national medical magazines and letters from the Air Force to likely candidates, is in high gear. It's all part of a **campaign to recruit 430 physicians** by the end of September.

Sen. Warren Magnuson (D-Wash.) has introduced a bill that would exclude any prohibitions on the performance of abortions under the CHAMPUS program or at any military installation.

Going to **Lakenheath-Mildenhall, UK**, next year? If so, you should find the family housing situation improved. Six hundred new units, recently okayed, are expected to materialize starting in March 1979. ■

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AFA's Committees and Councils and Policy Advisors for 1978

AFA Committees and Councils, comprised of volunteers, carry out Association business and advise the National President. AFA Policy Advisors are selected by the National President for their experience and professional knowledge in areas of concern to AFA. They counsel the President on developments in their fields.

Executive Committee



Hasler



Douglas



Price



Gross



Harris



Keith

The Executive Committee acts in behalf of the Board of Directors between Board meetings. It is chaired by National President **Gerald V. Hasler**, President and Chief Executive Officer of an architectural design and remodeling



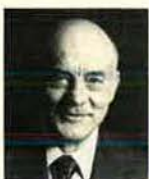
Rapp



Shosid



Wilkins



Straubel

corporation in Endicott, N.Y. The Committee includes AFA Board Chairman **George M. Douglas**, Assistant Vice President/Marketing, Mountain Bell Telephone Co., Denver, Colo.; AFA National Secretary **Jack C. Price**, Air Force civilian executive, Ogden Air Logistics Center, Hill AFB, Utah; National Treasurer **Jack B. Gross**, businessman and civic leader, Hershey, Pa.; **Martin H. Harris**, permanent AFA National Director and senior member of Martin Marietta Corp.'s professional staff, Winter Park, Fla.; **Sam E. Keith, Jr.**, permanent AFA National Director and Plant Engineering

Manager, Fort Worth Division, General Dynamics, Tex.; **William C. Rapp**, Vice President for AFA's Northeast Region and District Manager of Toll Services, New York Telephone, Buffalo, N.Y.; **Joe L. Shosid**, permanent AFA National Director and Assistant to Rep. Jim Wright (D-Tex.), Fort Worth, Tex.; and **Sherman W. Wilkins**, AFA National Director, ATCA Planning Manager, Boeing Aerospace, Bellevue, Wash. **James H. Straubel**, AFA Executive Director, is an ex officio, non-voting member of the Committee.

Finance Committee



Gross



Church



Copeland



Dean



Devoucoux

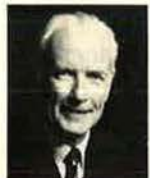
Chaired by AFA Treasurer **Jack B. Gross**, business and civic leader from Hershey, Pa., this Committee reviews AFA's fiscal policy and makes appropriate recommendations to AFA National President **Gerald V. Hasler**, who is an ex officio member of the Committee. Members are: **Charles H. Church, Jr.**, Overland Park, Kan., former President of AFA's Harry S. Truman Chapter and President of the United Missouri Bank of Hickman Mills, Kansas City, Mo.; **William L. Copeland**, Atlanta, Ga., Georgia State AFA President and President of CICI, Inc. (financial); **Hoadley Dean**, Rapid City, S.D., Vice President for AFA's North Central Region and President of Western South Dakota Development Co.; **R. L. Devoucoux**, Portsmouth, N.H., Vice President for AFA's New England Region and Account Executive with Dean Witter Reynolds, Inc.;



Ewing



Gisel



Nettleton



Hasler



Douglas

Dwight M. Ewing, Merced, Calif., California State AFA President, Realtor, and Property Manager; **William G. Gisel**, Buffalo, N.Y., founder and first President of AFA's Lawrence D. Bell Chapter and President of Bell Aerospace Textron; and **J. Gilbert Nettleton, Jr.**, Washington, D.C., AFA National Director and Vice President/Government Marketing, The Singer Co., Aerospace and Marine Systems. AFA Board Chairman **George M. Douglas** is an ex officio, non-voting member.

Convention Site Committee



Hasler



Douglas



Gross

This Committee recommends suitable sites for AFA National Conventions. It is chaired by AFA National President **Gerald V. Hasler**, President and Chief Executive Officer of an architectural design and remodeling corporation in Endicott, N.Y. Members are AFA Board Chairman **George M. Douglas**, Assistant Vice President/Marketing, Mountain Bell Telephone Co., Denver, Colo.; and AFA Treasurer **Jack B. Gross**, businessman and civic leader, Hershey, Pa.

Constitution Committee



Harris



Brosky



Kregel

Chaired by **Martin H. Harris**, permanent AFA National Director and senior member of Martin Marietta Corp.'s professional staff, Winter Park, Fla., this Committee reviews AFA's National Constitution and By-Laws and recommends amendments. Members are **Judge John G. Brosky**, permanent AFA National Director, Pittsburgh, Pa.; and **Vic R. Kregel**, AFA National Director and an executive with Vought Corp., Dallas, Tex.

Constitution Review Task Committee



Harris



Brosky



Cleland



Kregel



Thayer

Created this year, this Committee is charged to draft samples of AFA State and Chapter Constitutions. Chairman is **Martin H. Harris**, permanent National Director and senior member of Martin Marietta Corp.'s professional staff, Winter Park, Fla. Members are **Judge John G. Brosky**, permanent AFA National Director, Pittsburgh, Pa.; **Shirley Cleland**, Colorado State AFA Vice President and Staff

Representative for Mountain Bell Telephone, Denver, Colo.; **Vic R. Kregel**, AFA National Director and an executive with Vought Corp., Dallas, Tex.; and **Kenneth C. Thayer**, New York State AFA President, retired Air Force civilian employee, Ava, N.Y.

Junior Officer Advisory Council



Downey



Head



Barrick



Chang



Collins



Kolp



Lindberg



Malone



Noeller



Sanders



Sconyers



Scott



Smith



Stallworth



Morris

This Council advises the National President on matters affecting junior officers and includes at least one representative from each Air Force major command and separate operating agency. The Council's Executive Committee is chaired by **Capt. C. Jack Downey II**, Hq. USAF. **Capt. Raymond L. Head, Jr.**, Langley AFB, Va., is Vice Chairman. Members are **Capt. Samuel L. Barrick, Jr.**, Scott AFB, Ill.; **2d Lt. Randy Y. U. Chang**, Little Rock AFB, Ark.; **Capt. Fredric R. Collins**, Hickam AFB, Hawaii; **Capt. Terry J. Kolp**, USAFR, Washington, D.C.; **Capt. Craig Lindberg**, Maxwell AFB, Ala.; **2d Lt. Dennis R. Malone**, ANG, Racine, Wis.; **Capt. Mary C. Noeller**, Peterson AFB, Colo.; **Capt. Cindy Sanders**, Lowry AFB, Colo.; **Capt. Ronald Sconyers**, Randolph AFB, Tex.; **1st Lt. Donald H. Scott**, Grand Forks AFB, N.D.; **Capt. Robert P. Smith**, Offutt AFB, Neb.; and **2d Lt. James Stallworth**, McGuire AFB, N.J. Council Advisor is **Maj. Gen. Harry A. Morris**, USAF Director of Personnel Plans.

Enlisted Council



Scott



Farrar



Roberts



Bollinger



Booney



Burnett



Carter



Coronado



Day



Gallegos



Houk



Lucas



Piper



Taylor



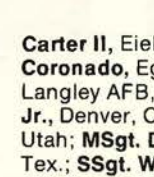
Timm



Gaylor



Woods



Carter II

Coronado

Day

Gallegos, Jr.

Houk

Lucas

Piper

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Gaylor

Woods

Carter II

Coronado

Day

Gallegos, Jr.

Houk

Lucas

Piper

Taylor

Timm, Jr.

Gaylor

Woods

This Council, which includes Air Force's Outstanding Airmen for 1977, advises the AFA National President on matters concerning the enlisted force. **CMSgt. Walter Scott**, Travis AFB, Calif., is Council Chairman; **Sgt. Diana C. B. Farrar**, Williams AFB, Ariz., is Vice Chairman; and **SSgt. Michael C. Roberts**, Arlington, Va., is Recorder. Other members are **SSgt. Ronald A. Bollinger**, Barksdale AFB, La. **SMSgt. Stanley C. Booney**, USAFR, Lancaster, Calif.; **CMSgt. Willie H. Burnett**, Tinker AFB, Okla.; **SSgt. James M. Carter II**, Eielson AFB, Alaska; **Sgt. Sabina F. Coronado**, Eglin AFB, Fla.; **Sgt. Kevin D. Day**, Langley AFB, Va.; **TSgt. Ralph J. Gallegos, Jr.**, Denver, Colo.; **Sgt. Carl E. Houk**, Hill AFB, Utah; **MSgt. Dale A. Lucas**, Randolph AFB, Tex.; **SSgt. William D. Piper**, Offutt AFB, Neb.; **MSgt. Nancy L. Taylor**, Gunter AFS, Ala.; and **SSgt. Lloyd E. Timm, Jr.**, Hickam AFB, Hawaii. Council advisor is **CMSAF Robert D. Gaylor**. USAF Deputy Chief of Staff, Personnel, liaison is **CMSgt. J. B. Woods**.

Policy Advisors



Diab



Schroeder



Zipp



Rowe



Farr



Morley



Skowron



Kisling



Stearn



Downey



Scott

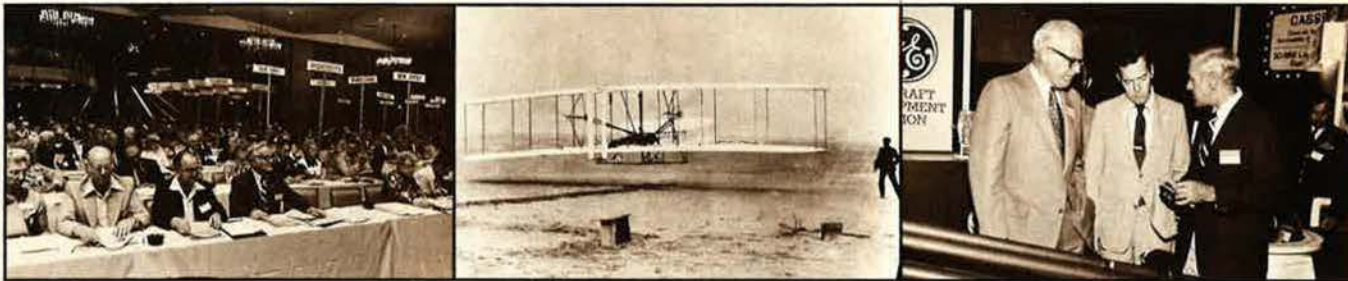
The following Policy Advisors were selected by the National President to serve during 1978 because of their expertise in areas vital to AFA's mission: **Maj. Gen. Thomas A. Diab**, USAFR, Boston, Mass., Air Force Reserve Advisor; **Brig. Gen. Darrol G. Schroeder**, Chief of Staff, North Dakota Air National Guard, Davenport, N.D., Air National Guard Advisor; **John Zipp**, senior civilian executive with the Air Force Accounting and Finance Center, Denver, Colo., Civilian Personnel Advisor; **Kenneth A. Rowe**, Assistant Director, Virginia State Aeronautics Division, Richmond, Va., Civil Air Patrol Advisor; **Col. John W. Farr**, USAF (Ret.), Aerospace Education Instructor, Forest Park Senior High School, Forest Park, Ga., Air Force Junior ROTC Advisor; **Lt. Col. William G. Morley**, USAF (Ret.), Executive Administrator, Arnold Air Society and Angel Flight, Washington, D.C., Senior ROTC Advisor; **Brig. Gen. (Dr.) Ralph A. Skowron**, Delaware Air National Guard, South Jersey Medical Center, Cherry Hill, N.J., Medical Advisor; **CMSAF Richard D. Kisling**, USAF (Ret.), a civilian employee of the Air Force Deputy Chief of Staff, Personnel, Oxon Hill, Md., Retiree Advisor; **Edward A. Stearn**, aerospace industry executive, San Bernardino, Calif., Research and Development Advisor; **Capt. C. Jack Downey II**, AFA Junior Officer Advisory Council Chairman, Hq. USAF, Junior Officer Advisor; and **CMSgt. Walter Scott**, AFA Enlisted Council Chairman, Travis AFB, Calif., Enlisted Advisor.

Plan Now To Attend...

AFA's 1978 National Convention and Aerospace Development Briefings and Displays

Saluting the 75th Anniversary of Powered Flight

September 17-21 • Washington, D. C.



AFA's 1978 National Convention and Aerospace Development Briefings and Displays will be held at the Sheraton-Park Hotel, Washington, D. C., September 17-21. Hotel accommodations are available at the Sheraton-Park, and a limited number of rooms are available at the nearby Shoreham-Americana Hotel.

All reservation requests for rooms and suites at the Sheraton-Park should be sent to: Reservations Office, Sheraton-Park Hotel, 2660 Woodley Road, N.W., Washington, D. C. 20008. The Shoreham-Americana Hotel's address is: 2500 Calvert St., N.W., Washington, D. C. 20008.

We urge you to make your reservations as soon as possible. To assure acceptance of your reservation request, refer to the AFA National Convention. Arrivals after 6:00 p.m. require a one-night deposit or written guarantee for the night of arrival. Convention activities will include AFA business ses-

sions, luncheons honoring the Secretary of the Air Force and the Air Force Chief of Staff, JROTC Award Luncheon, the annual Salute to Congress, the AFA Delegates' Reception, and the Air Force Anniversary Reception and Dinner Dance. Program details will be presented in forthcoming issues of this magazine.

Advance Registration Form

Air Force Association National Convention & Aerospace Briefings & Displays

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Reserve the following for me:

- Advance Registrations @ \$70 per person (includes credentials and tickets to the following Convention functions. Value \$90).
 - Aerospace Education Foundation Luncheon
 - Delegate's Reception
 - AF Chief of Staff Luncheon
 - Annual Reception or Salute to Congress*
 - AF Secretary's Luncheon
 - AF 31st Anniversary Reception & Dinner Dance Tickets @ \$45 per person
- Total Amount Enclosed \$ _____

Note: Advance Registration must be accompanied by a check made payable to AFA. Mail to AFA, 1750 Pennsylvania., N. W., Washington, D. C. 20006

Current Registration Fee (After Sept. 8) \$80.00

* Tickets to Salute to Congress available only to AFA Convention Delegates accompanied by their Congressman.

AFA News

By Don Steele, AFA AFFAIRS EDITOR

Unit of the Month

THE CENTRAL INDIANA CHAPTER . . . cited for effective programming in support of the missions of the Air Force and AFA.



AFA's Central Indiana Chapter and the Air Force Recruiting Squadron in Indianapolis recently cosponsored a twenty-five-day exhibit of Air Force Art in the atrium of the Indianapolis Hyatt Regency Hotel. Air Force Secretary John C. Stetson opened the exhibit and was the guest of honor at a reception cosponsored by the two organizations. Shown participating in the traditional ribbon-cutting ceremony are, from left, Indianapolis Deputy Mayor Joe Slash; Secretary Stetson; Chapter President Tom Correll; and Maj. Sterling Cruger, Air Force Recruiting Squadron Commander. In recognition of the Chapter's cosponsorship of this event, AFA President Gerald V. Hasler names the Central Indiana Chapter as the "Unit of the Month" for June.



During a recent visit to Washington, D. C., AFA President Gerald V. Hasler, right, presented Brig. Gen. H. J. Dalton, left, Director, Office of Information, Office of the Secretary of the Air Force, his Life Membership Certificate. General Dalton is one of a number of active-duty military people who have become Life Members of AFA in the past few months.



John F. Loosbrock, Publisher and Editor in Chief of AIR FORCE Magazine, was the guest speaker at a luncheon meeting in the Wright-Patterson AFB Officers' Club, cosponsored by AFA's Wright Memorial Chapter and the Wright Brothers Chapter of the American Defense Preparedness Association. In the photo, Wright Memorial Chapter President Norman C. "Dutch" Hellman, left, is shown presenting Ellen Hertlein an honorary membership in the Chapter for her outstanding support for all local AFA Chapter activities. Mr. Loosbrock is at the right.



Rep. Patricia Schroeder (D-Colo.) joined a group of AFA leaders in honoring the Silver and Gold Chapter's ten Community Partners at the Chapter's March dinner meeting. Shown are, from left, James Hall, Vice President for AFA's Rocky Mountain Region; Colorado State AFA President Ed Marriott; Silver and Gold Chapter President Steve Brantley; Congresswoman Schroeder; AFA Board Chairman George M. Douglas; State AFA Treasurer Edwin S. Wittbrodt; and AFA National Director Roy Haug.

chapter and state photo gallery



Head-table guests at the Central Oklahoma (Gerrity) Chapter's March meeting included, from left, Oklahoma State AFA President Dave Blankenship; Maj. Pat McCaslin, Commander, 3549th Air Force Recruiting Squadron; Brig. Gen. Earl O'Laughlin, Vice Commander, Oklahoma City Air Logistics Center (OCALC); Chief Master Sergeant of the Air Force Robert D. Gaylor, the guest speaker; CMSgt. Willie H. Burnett, OCALC Senior Enlisted Advisor; and Chapter President Gaylord Giles.

The H. H. Arnold Memorial Chapter's March dinner meeting was held in the Arnold Engineering Development Center (AEDC) Officers' Club at Arnold AFS, Tenn., and featured an address by Lt. Gen. Robert C. Mathis (third from left), Vice Commander, Air Force Systems Command. Other head-table guests included, from left, Col. O. H. Tallman II, AEDC Commander; Edward M. Dougherty, President, ARO, Inc., AEDC's operating contractor; and Chapter President Jessup D. Lowe, Maj. Gen. USAF (Ret.).



—USAF-AEDC Photo

COMING EVENTS . . .

Alabama State AFA Convention, Guntersville State Park, June 16-17 . . . **Oklahoma State AFA Convention**, Vance AFB, June 16-17 . . . **Oregon State AFA Convention**, Eugene, June 16-17 . . . **Georgia State AFA Convention**, Savannah, June 17 . . . **Illinois State AFA Convention**, Continental Regency Hotel, Peoria, June 17 . . . **Kansas State AFA Convention**, McConnell AFB, June 17 . . . **Louisiana State AFA Convention**, Hilton Inn, Bossier City, June 17 . . . **Pennsylvania State AFA Convention**, Penn State Sheraton Inn, State College, June 23-25 . . . **Michigan State AFA Convention**, Battle Creek, June 25 . . . **Texas State AFA Convention**, Kahler Green Oaks Inn, Fort Worth, July 28-30 . . . **AFA's 32d Annual National Convention**, Sheraton-Park Hotel, Washington, D. C., September 17-20 . . . **AFA's Aerospace Development Briefings and Displays**, Sheraton-Park Hotel, Washington, D. C., September 19-21 . . . **AFA National Symposium**, Los Angeles, Calif., October 26-27 . . . **Seventh Annual Air Force Ball**, Century Plaza Hotel, Century City, Calif., October 27.



Jacob Kessler, right, Montgomery-Delaware Valley Chapter President, is shown presenting Frank Murry, left, the Civilian of the Quarter at the Willow Grove Air Reserve Facility, Pa., a \$25 savings bond. Mr. Murry, Maintenance Officer for the 913th Motor Pool, was the first recipient of the Chapter's recently established quarterly award.

AFA News



During the recent change-of-command ceremonies for the 9010th Air Reserve Information Squadron at McGuire AFB, N. J., New Jersey State AFA President Leonard Schilt, left, presented Lt. Col. Leonard R. Will, right, 9010th Commander and a New Jersey State AFA Vice President, the State AFA's Distinguished Service Trophy. Colonel Will is retiring after twenty-eight years of active and Reserve duty.



Chief Master Sergeant of the Air Force Robert D. Gaylor was the speaker at a dinner meeting sponsored by AFA's Langley, Va., Chapter in the Langley AFB NCO Club. During the program a Chapter-sponsored Jimmy Doolittle Fellow Plaque was presented to CMSgt. Robert N. Shank. In the photo, Chapter President Rex Frey, left, congratulates Chief Shank as the first NCO to become a Jimmy Doolittle Fellow.



Maj. Gen. Andrew P. Iosue, left, Commander, Air Force Military Training Center, Lackland AFB, Tex., and the speaker at the Alamo Chapter's recent Awards Banquet, accepts a Chapter check for \$1,500 on behalf of the Air Force Assistance Fund from Chapter President Jim Williams, right.



Rep. Thomas B. Evans, Jr. (R-Del.), was the guest speaker at the Delaware Galaxy Chapter's recent dinner meeting in Dover. During the program, Chapter President Jack Strickland, right, presented Congressman Evans, left, an AFA membership and is shown fastening the AFA membership pin to his lapel. The Chapter also presented an AFA membership to Gary Patterson, an executive assistant to Sen. William V. Roth, Jr. (R-Del.). Distinguished guests included Delaware Gov. Pierre S. duPont IV; Dover Mayor Charles A. LeGates; and Chaplain Charles I. Carpenter, Maj. Gen. USAF (Ret.), former Chief of Air Force Chaplains.

photo gallery



Sen. Thomas J. McIntyre (D-N. H.) was the guest speaker at the Pease, N. H., Chapter's recent dinner meeting in the Pease AFB Officers' Club. During the evening, Lt. Col. Charles J. Searock, Jr., and Capt. Thomas Ostermann, Military Liaison Officers for the Chapter, each received a Certificate of Appreciation for his outstanding service to the Chapter. Program principals included, from left, R. L. "Dev" Devoucoux, Vice President for AFA's New England Region; Senator McIntyre; Col. (Brig. Gen. selectee) Guy L. Hecker, Jr., Commander, 45th Air Division (SAC); and Chapter President Charles J. Sattan.



The highlight of the 1978 Tiger Drill Meet, sponsored recently by the Air Force and Army ROTC Units at Clemson University, S. C., was the presentation of the South Carolina State AFA's trophy to the AFJROTC unit from the Orangeburg-Wilkinson High School of Orangeburg, S. C. The unit was first among the ten AF units and third among the twenty-five units representing all branches of service. In the photo, Col. Charles R. Lakins, Commander of the AFROTC Detachment at Clemson, presents Cadet Lt. Col. Moultrie Glover the trophy. The trophy is sponsored annually by the South Carolina State AFA.



The guest speaker at a recent meeting of AFA's Scott Berkeley Chapter in the Seymour Johnson AFB Officers' Club, N. C., was Rep. Charles O. Whitley, Sr. (D-N. C.). Chapter President Bob Hill, left, is shown presenting Congressman Whitley an Honorary Membership in the Chapter, as North Carolina State AFA President Bill Bowden, second from right, and Col. Bob Beale, right, 4th Tactical Fighter Wing Commander, look on.

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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 (20% for 1976) to insured members in twelve of the past fifteen years, and has increased the basic amount of coverage on four separate occasions.

Additional Information

Effective Date of Your Coverage. All certificates are dated and take effect on the last day of the month in which your application for coverage is approved, and coverage runs concurrently with AFA membership. AFA Military Group Life Insurance is written in conformity with the insurance regulations of the State of Minnesota. The insurance will be provided under the group insurance policy issued by United of Omaha to the First National Bank of Minnesota as trustees of the Air Force Association Group Insurance Trust.

EXCEPTIONS: There are a few logical exceptions to this coverage. They are:
Group Life Insurance: Benefits for suicide or death from injuries intentionally self-inflicted while sane or insane will not be effective until your coverage has been in force for 12 months.

The Accidental Death Benefit and Aviation Death Benefit shall not be effective if death results: (1) From injuries intentionally self-inflicted while sane or insane, or (2) From injuries sustained while committing a felony, or (3) Either directly or indirectly from bodily or mental infirmity, poisoning or asphyxiation from carbon monoxide, or (4) During any period a member's coverage is being continued under the waiver of premium provision, or (5) From an aviation accident, either military or civilian, in which the insured was acting as pilot or crew member of the aircraft involved, except as provided under AVIATION DEATH BENEFIT.

Eligibility

All active duty personnel of the Armed Forces of the United States and members of the Ready Reserve* and National Guard* (under age 60), Armed Forces Academy cadets*, and college or university ROTC cadets* are eligible to apply for this coverage provided they are now, or become, members of the Air Force Association.

*Because of restrictions on the issuance of group insurance coverage, applications for coverage under the group program cannot be accepted from cadets or Reserve or Guard personnel residing in Florida, New York, Ohio or Texas. Members in these states may request special application forms from AFA for individual policies which provide coverage quite similar to the group program.

Please Retain This Medical Bureau Prenotification For Your Records

Information regarding your insurability will be treated as confidential. United Benefit Life Insurance Company may, however, make a brief report thereon to the Medical Information Bureau, a nonprofit membership organization of life insurance companies, which operates an information exchange on behalf of its members. If you apply to another bureau member company for life or health insurance coverage, or a claim for benefits is submitted to such a company, the Bureau, upon request, will supply such company with the information in its file.

Upon receipt of a request from you, the Bureau will arrange disclosure of any information it may have in your file. (Medical information will be disclosed only to your attending physician.) If you question the accuracy of information in the Bureau's file, you may contact the Bureau and seek a correction in accordance with the procedures set forth in the Federal Fair Credit Reporting Act. The address of the Bureau's information office is P.O. Box 105, Essex Station, Boston, Mass. 02112. Phone (617) 426-3660.

United Benefit Life Insurance Company may also release information in its file to other life insurance companies to whom you may apply for life or health insurance, or to whom a claim for benefits may be submitted.

CURRENT BENEFIT TABLES

AFA STANDARD PLAN		PREMIUM: \$10 per month	
Insured's Attained Age	Basic Benefit*	Extra Accidental Death Benefit*	Total Benefit
20-24	\$75,000	\$12,500	\$87,500
25-29	70,000	12,500	82,500
30-34	65,000	12,500	77,500
35-39	50,000	12,500	62,500
40-44	35,000	12,500	47,500
45-49	20,000	12,500	32,500
50-54	12,500	12,500	25,000
55-59	10,000	12,500	22,500
60-64	7,500	12,500	20,000
65-69	4,000	12,500	16,500
70-74	2,500	12,500	15,000

Aviation Death Benefit*:
Non-war related \$25,000
War related \$15,000

AFA HIGH OPTION PLAN

AFA HIGH OPTION PLAN		PREMIUM: \$15 per month	
Insured's Attained Age	Basic Benefit*	Extra Accidental Death Benefit*	Total Benefit
20-24	\$112,500	\$12,500	\$125,000
25-29	105,000	12,500	112,500
30-34	97,500	12,500	110,000
35-39	75,000	12,500	87,500
40-44	52,500	12,500	65,000
45-49	30,000	12,500	42,500
50-54	18,750	12,500	31,250
55-59	15,000	12,500	27,500
60-64	11,250	12,500	23,750
65-69	6,000	12,500	18,500
70-74	3,750	12,500	16,250

Aviation Death Benefit*:
Non-war related \$37,500
War related \$22,500

*The Extra Accidental Death Benefit is payable in the event an accidental death occurs within 13 weeks of the accident, except as noted under **Aviation Death Benefit** (below).

***AVIATION DEATH BENEFIT:** The coverage provided under the Aviation Death Benefit is paid for death which is caused by an aviation accident in which the insured is serving as pilot or crew member of the aircraft involved. Under this condition, the Aviation Death Benefit is paid in lieu of all other benefits of this coverage. Furthermore the non-war related benefit will be paid in all cases where the death does not result from war or an act of war, whether declared or undeclared.

OPTIONAL FAMILY COVERAGE

(may be added to either Standard or High Option Plan)
PREMIUM: \$2.50 per month

Insured's Attained Age	Life Insurance Coverage for Spouse	Life Insurance Coverage for each Child*
20-39	\$10,000	\$2,000
40-44	7,500	2,000
45-49	5,000	2,000
50-54	4,000	2,000
55-59	3,000	2,000
60-64	2,500	2,000
65-69	1,500	2,000
70-74	750	2,000

*Between the ages of six months and 21 years, each child is provided \$2,000 coverage. Children under 6 months are provided with \$250 coverage once they are 15 days old and discharged from hospital.

Professional Association! Apply Now!

Military Group Life Insurance



APPLICATION FOR
AFA MILITARY GROUP LIFE INSURANCE



Group Policy GLG-2625
United Benefit Life Insurance Company
Home Office Omaha Nebraska

Full name of member _____
Rank Last First Middle

Address _____
Number and Street City State ZIP Code

Date of birth Mo. Day Yr.	Height	Weight	Social Security Number	Name and relationship of primary beneficiary
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Please indicate category of eligibility and branch of service.

Extended Active Duty Air Force
 Ready Reserve or National Guard Other _____
(Branch of service)
 Air Force Academy _____ Academy
 ROTC Cadet _____
Name of college or university

Name and relationship of contingent beneficiary

This insurance is available only to AFA members

- I enclose \$13 for annual AFA membership dues (includes subscription (\$9) to AIR FORCE Magazine).
 I am an AFA member.

Please indicate below the Mode of Payment and the Plan you elect.

HIGH OPTION PLAN

Members Only	Members and Dependents
<input type="checkbox"/> \$ 15.00	<input type="checkbox"/> \$ 17.50
<input type="checkbox"/> \$ 45.00	<input type="checkbox"/> \$ 52.50
<input type="checkbox"/> \$ 90.00	<input type="checkbox"/> \$105.00
<input type="checkbox"/> \$180.00	<input type="checkbox"/> \$210.00

Mode of Payment

- Monthly** government allotment. I enclose 2 months' premium to cover the period necessary for my allotment (payable to Air Force Association) to be established.
 Quarterly. I enclose amount checked.
 Semiannually. I enclose amount checked.
 Annually. I enclose amount checked.

STANDARD PLAN

Members Only	Members and Dependents
<input type="checkbox"/> \$ 10.00	<input type="checkbox"/> \$ 12.50
<input type="checkbox"/> \$ 30.00	<input type="checkbox"/> \$ 37.50
<input type="checkbox"/> \$ 60.00	<input type="checkbox"/> \$ 75.00
<input type="checkbox"/> \$120.00	<input type="checkbox"/> \$150.00

Names of Dependents To Be Insured	Relationship to Member	Dates of Birth			Height	Weight
		Mo	Day	Yr.		

Have you or any dependents for whom you are requesting insurance ever had or received advice or treatment for: kidney disease, cancer, diabetes, respiratory disease, epilepsy, arteriosclerosis, high blood pressure, heart disease or disorder, stroke, venereal disease or tuberculosis? Yes No

Have you or any dependents for whom you are requesting insurance been confined to any hospital, sanitarium, asylum or similar institution in the past 5 years? Yes No

Have you or any dependents for whom you are requesting insurance received medical attention or surgical advice or treatment in the past 5 years or are now under treatment or using medications for any disease or disorder? Yes No

IF YOU ANSWERED "YES" TO ANY OF THE ABOVE QUESTIONS, EXPLAIN FULLY including date, name, degree of recovery and name and address of doctor. (Use additional sheet of paper if necessary.)

I apply to United Benefit Life Insurance Company for insurance under the group plan issued to the First National Bank of Minneapolis as Trustee of the Air Force Association Group Insurance Trust. Information in this application, a copy of which shall be attached to and made a part of my certificate when issued, is given to obtain the plan requested and is true and complete to the best of my knowledge and belief. I agree that no insurance will be effective until a certificate has been issued and the initial premium paid.

I hereby authorize any licensed physician, medical practitioner, hospital, clinic or other medical or medically related facility, insurance company, the Medical Information Bureau or other organization, institution or person, that has any records or knowledge of me or my health, to give to the United Benefit Life Insurance Company any such information. A photographic copy of this authorization shall be as valid as the original. I hereby acknowledge that I have a copy of the Medical Information Bureau's prenotification information.

Date _____ 19 _____ Member's Signature _____



Bob Stevens'

"There I was..."

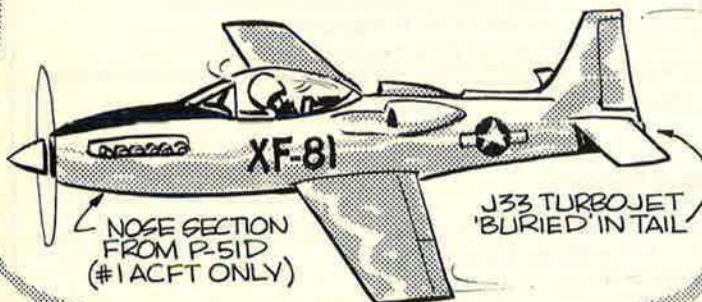
FLYING AROUND MUROCCAAB (LATER TO BECOME EDWARDS AFB FLIGHT TEST CENTER) ONE COULD COME ACROSS VERY STRANGE FLYING MACHINES IN THE '40s and '50s. AS A MATTER OF FACT, YOU CAN *STILL* SEE SOME PRETTY WEIRD BIRDS OVER THAT CALIFORNIA LAKE BED...

EARLY 1945

WATCH ME DAZZLE THIS WEIRDO BY PASSIN' HIM WITH ONE FEATHERED



P-38 FROM WESTERN ADF



NOSE SECTION FROM P-51D (#1 ACFT ONLY)

J33 TURBOJET 'BURIED' IN TAIL

WHEREUPON THE '81 JOCK FEATHERS THE MERLIN UP FRONT and...



ANOTHER ABERRATION WAS THE "GOBLIN"—A MINI PARASITE FIGHTER DESIGNED TO FIT IN THE BOMB BAY OF LONG-RANGE BOMBERS.



I WISH THEY'D STOP SINGIN' "THE DARING YOUNG MAN ON THE FLYING TRAPEZE!"

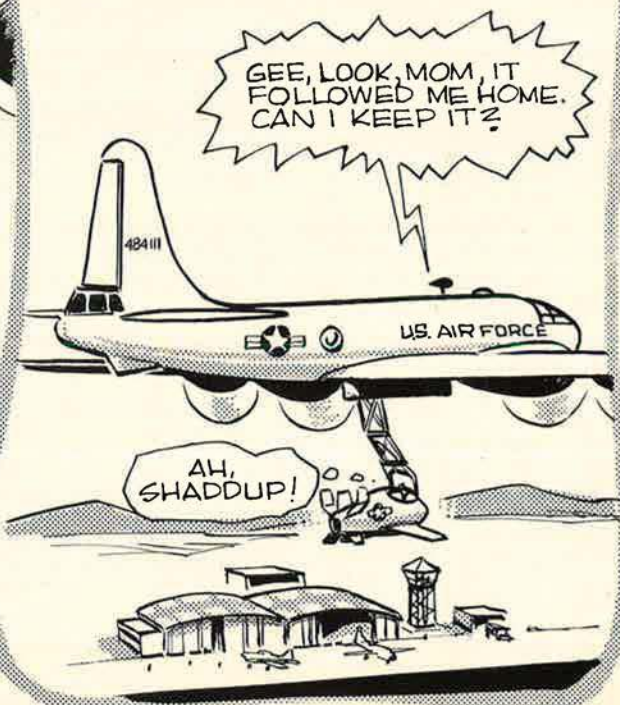


FOLDABLE WINGS (HOPEFULLY NOT IN FLIGHT)

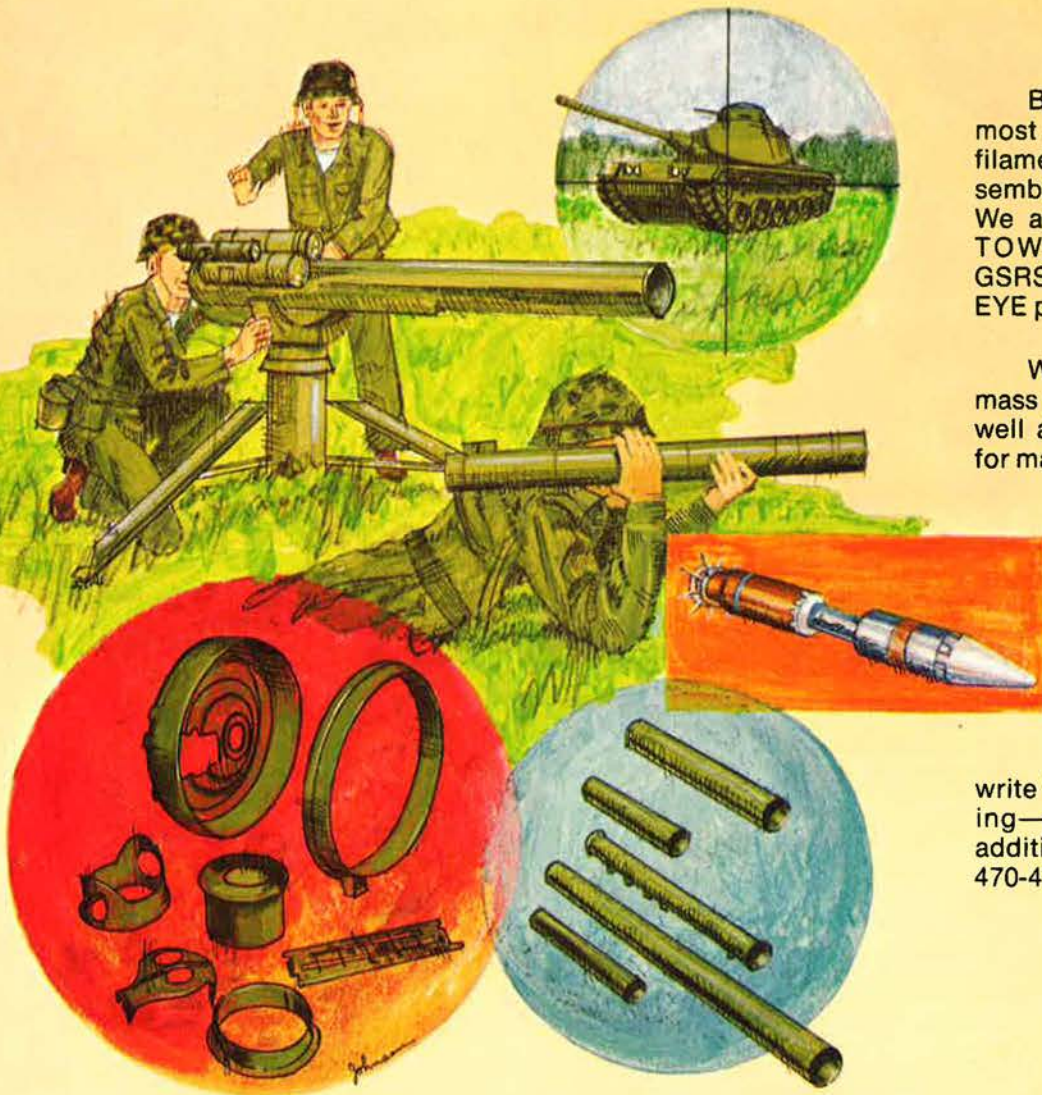
J34 3000# THRUST ENGINE

Bob Stevens

ONLY 3 SUCCESSFUL HOOKUPS WERE MADE, BUT TEST PILOT SCHOCH GOT PRETTY SHARP AT BELLY LANDINGS



BRUNSWICK—the major source for composite weapon system components



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BRUNSWICK CORPORATION

DEFENSE DIVISION, ONE BRUNSWICK PLAZA, SKOKIE, ILLINOIS 60077



Penny Pinchers

Make no mistake about it. The F-15 Eagle is the best fighter plane in the world.

But who says you can't save money building the best there is! Which is precisely what we've been doing for the past eight years, through our F-15 cost reduction efforts.

As of December 31, 1977, 11,467 separate documented cost reduction steps saved more than \$274 million. Understand, these are savings for just the first year after each step was taken. Projected over the life of the F-15 program, savings climb far, far higher.

We've made changes in materials, and design modifications; revisions in manufacturing, inspection, testing, and buying procedures. All of which saved tax dollars. None of which in any way reduced the performance of the F-15.

It is the best fighter plane in the world. And now it's an even better value.

Penny Pinchers. The F-15 Eagle. And the people who built it.

MCDONNELL DOUGLAS

