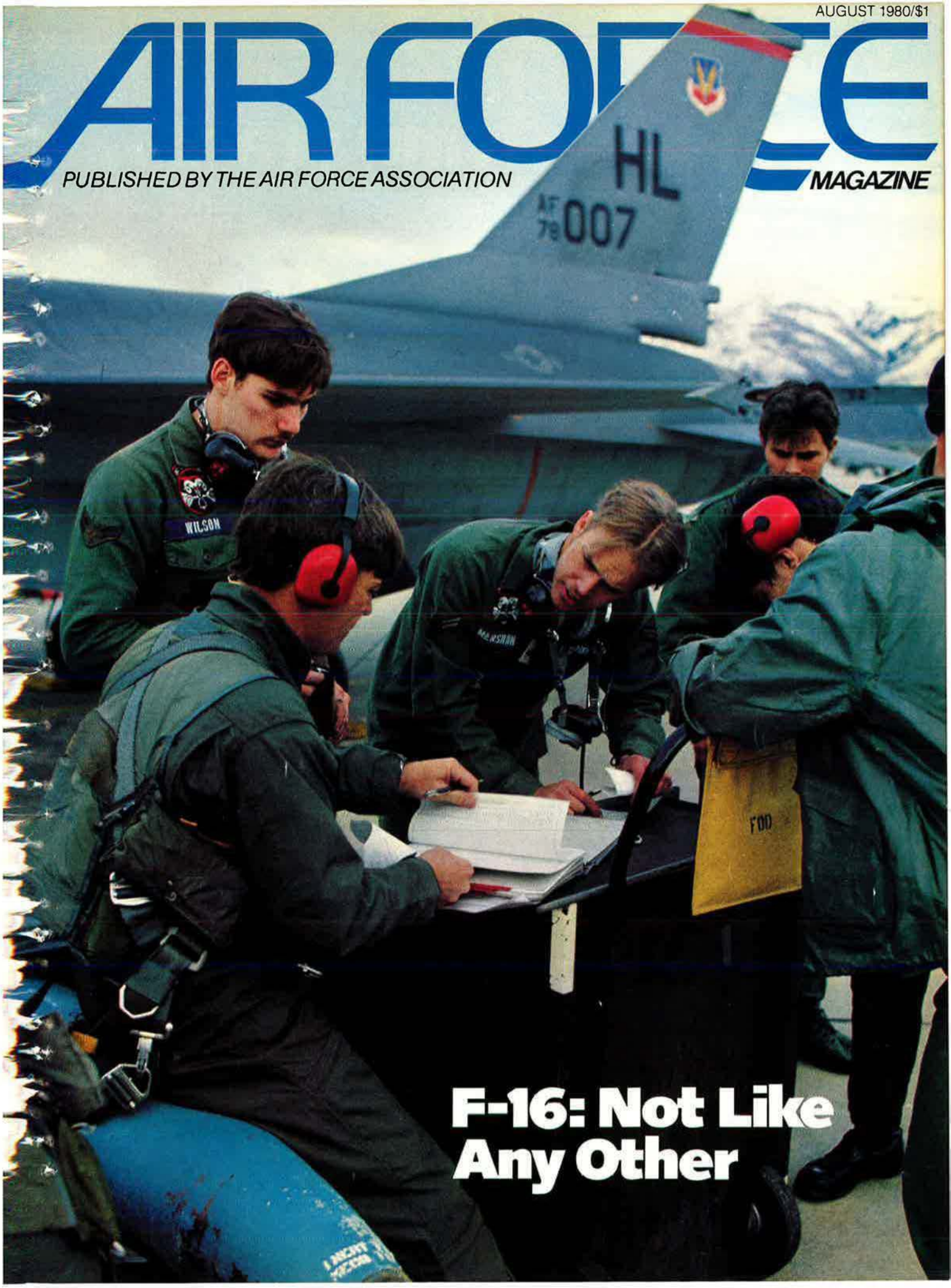
AUGUST 1980/$1

AIR FORCE MAGAZINE

PUBLISHED BY THE AIR FORCE ASSOCIATION



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This Month

AUGUST 1980 • VOLUME 63, NUMBER 8

ABOUT THE COVER

Teamwork between pilots and ground crew is the secret to quick-turn F-16 sortie generation at the 388th Tactical Fighter Wing. See cover story beginning on p. 34. (Photo by TSgt. Michael Cleveland)

Departments

The Raytheon-developed GPN-22... guiding the F-15 Eagle through final approach to a safe touchdown. It's a scene that dramatically illustrates Raytheon's leadership in developing and producing precision approach radar (PAR) landing systems. To date, the GPN-22 has been delivered to 32 U.S. air bases in 12 nations.

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Many happy returns...with the GPN-22 landin

ments throughout the world. Many of these systems—both fixed-base and mobile—are now being installed or are in operation in Australia, Austria, the Federal Republic of Germany, and the Netherlands. Raytheon's production of such systems is international, too. Cossor Electronics Limited, Raytheon's British subsidiary, is currently producing 40 precision approach radars for the Royal Air Force.

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AN EDITORIAL

Matching Contents to Objectives

THE other day, we were prompted to step back from the daily routine to examine AIR FORCE Magazine's content for July, August, and September. This was to make editiorial plans for the year to come. The yardstick was Article II of the National Constitution of the Air Force Association, "Objectives."

Article II begins by saying, "The Association provides an organization through which free men may unite . . ." and then states four objectives. The first: **"To fulfill the responsibilities imposed by the impact of aerospace technology on modern society."** An entire section of the July issue—the annual electronics issue—was devoted to the impact of electronics on the Air Force of today and tomorrow. In every other issue, John W. R. Taylor provides advance information on worldwide aircraft development via the "Jane's Supplement." This August issue contains an especially extensive "Supplement." For September, the magazine will discuss USAF in space and applications of technology to aerospace missions outside the atmosphere. In future, count on at least one article per issue devoted to a technological topic.

The second objective is: **"To support armed strength adequate to maintain the security and peace of the United States and the Free World."** In this issue, Gen. Lew Allen, Jr., Air Force Chief of Staff, discusses the challenges of the eighties as he sees them, in an exclusive interview with Senior Editor Edgar Ulsamer. Also in this issue, Capt. Wayne Edwards, an F-16 instructor pilot, tells about flying and training in the airplane; his first-person account is buttressed by Capt. Michael Perini's exposition of the 388th Tactical Fighter Wing's on-schedule progress toward operational readiness with the F-16 fighter. The article titles tell the tale: The F-16 is "Not Like Any Other," and the 388th is "Coming On Strong" as an important element of USAF armed strength. Coming in September: a feature article by Assistant Managing Editor William P. Schlitz on Army-Air Force cooperation to defeat enemy ground forces. It depicts the air-ground team in action, with USAF A-10s and Army helicopters working together in Joint Air Attack Team Tactics.

A fundamental element of armed strength is its people. In this issue, Maj. Gene Townsend, former Contributing Editor, opens the door on Officer Training School in "Lead, Motivate, Then Evaluate," telling how a primary source of USAF officers works. (Last month, he bared the inner workings of a promotion board.) Still on the people side, in this issue the Air Force Academy's outstanding Fourth Squadron is honored and featured for the second consecutive year; the USAF Recruiting Team of the Year is highlighted, and the magazine notes the fiftieth anniversary of the Veterans Administration's service to "him who shall have borne the burden, and to his widow and orphan."

This issue and September are rich in articles contributing to the third objective: **"To educate themselves and the public at large in the development of aerospace power for the betterment of all mankind."** In "The Last Mission of the *Eddie Allen*," Eino E. Jenstrom tells the exciting story of an exceptional B-29 and its indomitable crew, typical of the courageous airmen whose application of strategic airpower hastened the end of the war in the Pacific. Coming in September, Herman Wolk uses the same period to connect prewar airpower planning with its application during the war and leading into "The New Era" of the postwar years. Also in September, Lt. Col. David MacIsaac complements Wolk's work with an overview of the various combatant nations' airpower concepts during World War II, and Col. Lester J. Johnsen gives a first-person account of P-40 operations in Java in early 1942, when the Japanese advance still seemed inexorable. These articles provide conceptual foundations and personal examples upon which to build understanding of the development of aerospace power. Expect at least one article of this nature in each forthcoming issue, either an "I was there" account or a continuation of the "Airpower Pioneer" series, which now has portrayed thirteen noteworthy developers of aerospace power.

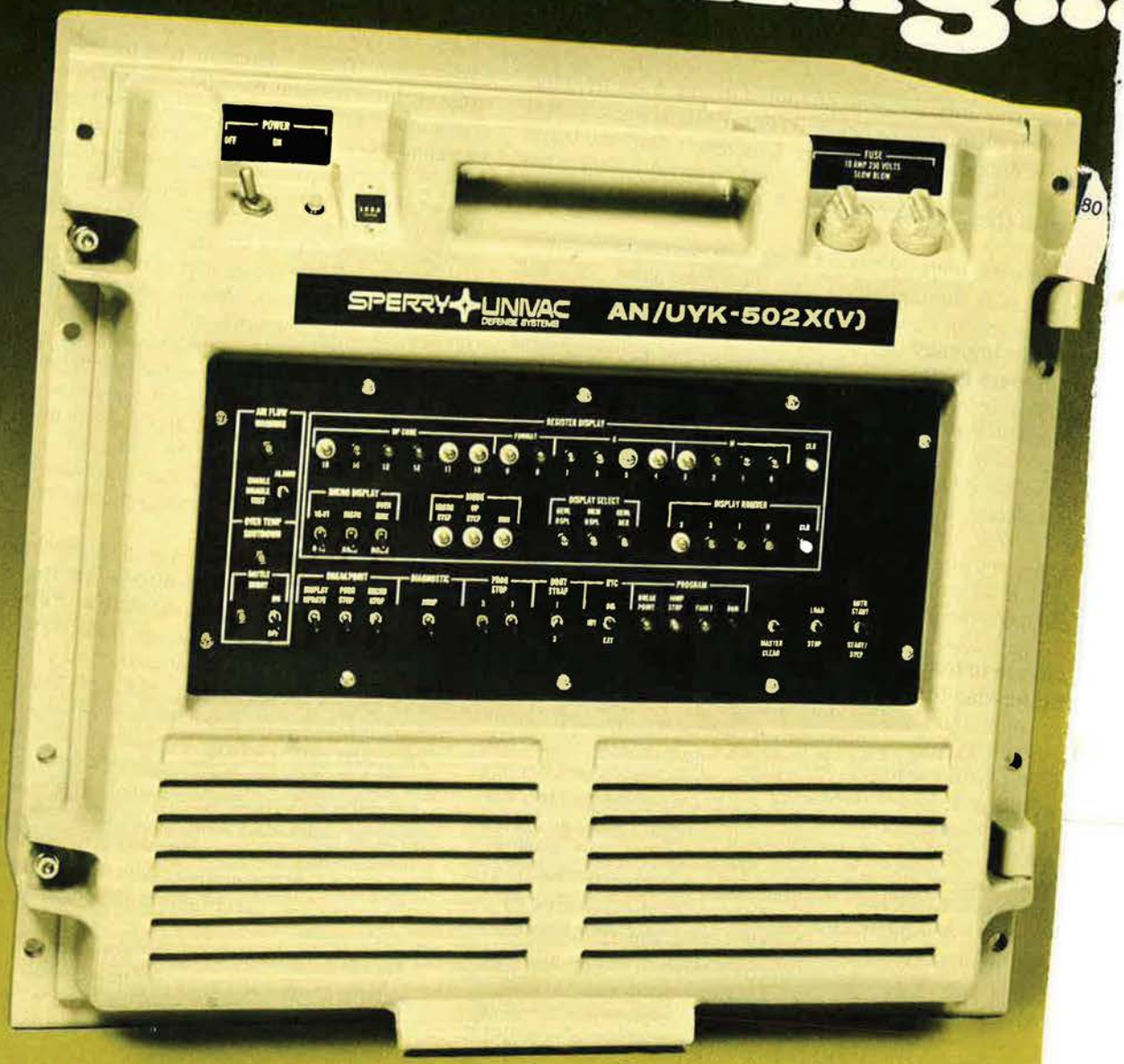
The AFA Constitution's fourth and final objective is **"To help develop friendly relations among free nations, based on respect for the principle of freedom and equal rights to all mankind."** This includes knowing more about aerospace activities of all nations, friend or foe. In this August issue, Gen. T. R. Milton presents a perceptive report on his recent trip to Egypt, Israel, and Jordan. He will follow up in September with a similar account of the situation in Greece and Turkey. This issue also carries a survey of European aircraft collaborative projects—an accelerating trend—and forecasts more transatlantic development participation by American aerospace companies. The September issue will survey current US-European collaborative programs, and describe how they contribute to development of US and free world power.

The AFA Constitution does not mention having fun while reaching for its objectives, but that can be done, too. It's particularly evident in Bob Stevens's "There I Was" cartoon feature each month. We believe most readers turn to his page first. They are never disappointed. We are proud to have launched Bob on his cartooning career, back in our January 1964 issue, and he's been a fixture of the magazine since then. Staff writer Hugh Winkler is preparing a profile of Stevens, which will appear in the September issue.

The "Airmail" section continues livelier than ever in this issue, with an interesting and humorous contribution by Dr. Paul Garber of the Smithsonian and an informative CX letter from the Scott Memorial Chapter of AFA. That's one way readers can contribute to the strength of AIR FORCE Magazine and its contribution to achieving AFA's objectives—by writing to "Airmail." You can help in other ways: by telling us when you believe we have fallen short of an objective, or have overlooked an important topic. We will listen to your views, and welcome your assistance in making the magazine work for the Association.

—F. CLIFTON BERRY, JR.

Free standing...



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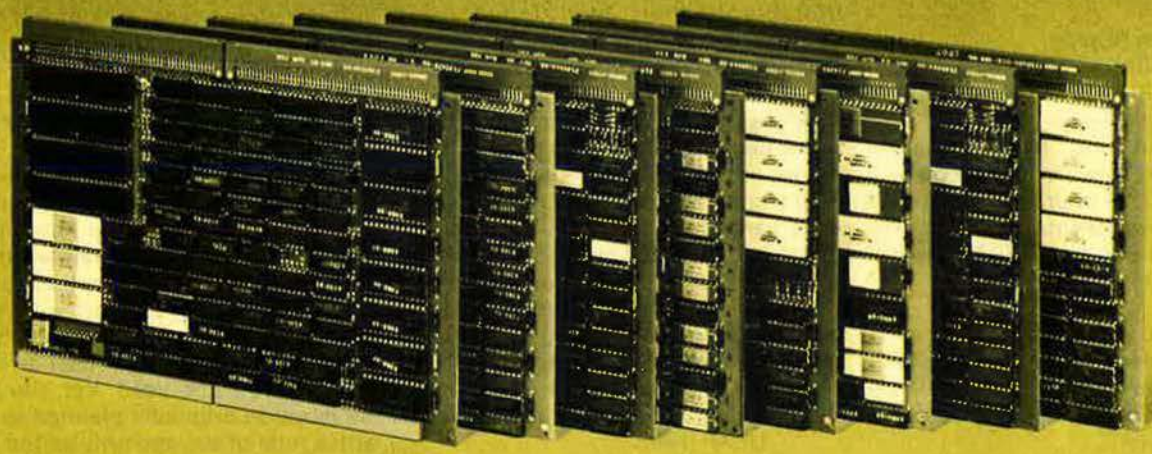

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AIRMAIL

Peace in NEA

Thank you for the article "Northeast Asia: The Shifting Balance" [by F. Clifton Berry, Jr., June issue]. Events continue to give better focus to the importance of United States interests in Northeast Asia. Peace and stability in the Republic of Korea remain key elements of the delicate balance in this part of the world.

In this regard, your article is particularly timely.

Gen. John A. Wickham, Jr., USA
Commander in Chief
United Nations Command
ROK/US Combined
Forces Command
APO San Francisco

Failed Mission Replay

I think your editorial "Reflections on a Failed Mission" will elicit many letters.

You are too kind. Most military leaders do not believe in luck, good or bad—they believe in proper preparation for whatever eventuality.

Col. F. V. Sohle, Jr., USAF (Ret.)
Austin, Tex.

With regard to your editorial:

If lack of adequate backup can be called "bad luck";

If poor weather forecasting can be called "bad luck";

If elementary security precautions, such as making sure that members of the raiding force did not carry losable wallets with drivers' licenses, etc., can be called "bad luck";

If a panic evacuation of an area leaving behind classified documents, good aircraft, and, worse still, the bodies of dead comrades can be called "bad luck";

If poor intelligence leading to choice of a landing area adjacent to a regularly traveled bus road can be called "bad luck";

Then I wonder what dictionary is being used by our armed services?

Alvin Allen
Little Neck, N. Y.

I have read and reread your editorial. . . . I agree with the general thesis regarding the complex nature of such an operation, factors affecting timing, planning, witch-hunting, etc., and that no amount of planning can eliminate bad luck entirely. I would make the following observation, however, regarding your concluding judgment that the aborted mission was just "a piece of bad luck."

It certainly was that. However, it has been my experience that bad luck is a close companion of poor planning and, conversely, good planning and good luck are good bedfellows. From what one reads about this mission regarding the number of agencies in the act, the command structure, authority, aircraft maintenance, people getting lost, aircraft accidents, unpredictable weather, insufficient resources, on, as you say, what should have been the strongest link of the chain, one might conclude that bad luck was predictable. Bad luck has never been an acceptable excuse for failure in the Air Force.

I am convinced that the USAF could have carried off successfully the airborne portion of the mission given the job and the authority. It appears to me that to write off a national disgrace as a piece of bad luck is a gross oversimplification, even if it pours some oil on troubled waters.

Maj. Gen. Thomas S. Jeffrey, Jr.,
USAF (Ret.)
Arvonia, Va.

After reading the editorial on the hostage mission I am still in the dark on several points.

1. Why would such an important mission fly vulnerable, slow-moving helicopters hundreds of miles through desert areas plagued by sandstorms? And why no sufficient backup?

2. Why rendezvous in an open area beside a well-used highway?

3. Why did personnel both carry to and leave secret documents at the rendezvous?

4. Why leave perfect equipment and dead bodies at the site with no enemy opposition?

5. Why weren't commando-experienced combat veterans used on the mission?

I think the mission was a disgrace to the Air Force and gave enormous comfort and encouragement to our enemies.

Whitney Cushing
Palm Beach, Fla.

Although I highly respect your magazine, I cannot accept the June editorial "Reflections on a Failed Mission." Although I realize it was written quite soon after the event, I feel it does a disservice to those who performed the mission. The mission *was* possible. I don't feel it was "bad luck" that caused the abort, although the tragic collision was bad luck. It appears that the failure was due to an unfortunately typical lack of will that has characterized the current Administration.

It was the Administration that determined the number of helicopters to be used, and the type. Further, the Administration limited the number of men to be used. Based on publicly available information, we know that RH-53 reliability and maintenance would require ten helicopters to fly this mission and end up with six. Further, past missions of this type would indicate that at least twelve would have to be used. Yet, the Administration originally planned to go with a total of six, and only added the two spares after strong persuasion from the fleet.

All successful commando missions have had one factor in common: The commandos have overwhelmingly outnumbered the defenders expected to be encountered. Both these facts were ignored [in Iran] because to really pull this mission off would have required a courage, a commitment to success, and a willingness to take risks that this Administration has never demonstrated. This is an Administration of gestures, not resolve. . . .

Even good and dedicated men, and there's no doubt that these men were, cannot perform a mission without the proper support and commitment from the top. It would have taken fantastic good luck for the mission to have succeeded with what Carter and

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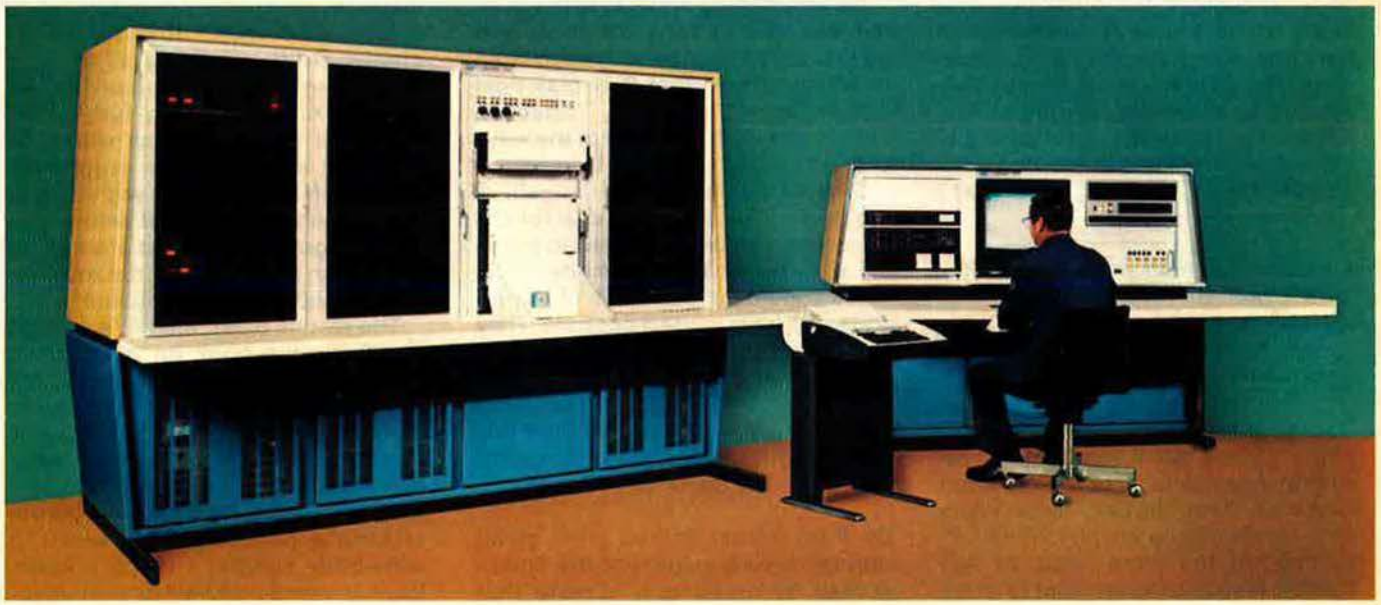

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his people were willing to allow. The mission should have been allowed to go with sufficient force to preclude failure, but with the current Washington leadership, that's an impossible dream. Gestures don't save people's lives, or accomplish objectives, but that's all this Administration is: a series of gestures.

Art Hanley
Hayward, Calif.

A Man of Vision

That was a fine tribute to Gen. L. S. Kuter by Maj. Gen. H. S. Hansell, Jr., in the June issue. That he was a "long-looker" is well established, but I participated in two instances that have always stuck in my mind:

When Sputnik lofted October 4, 1957, press inquiries came thick and fast to me at NORAD, where General Kuter was then Commander in Chief, as to its military implications. Our answer was: "If they have the propulsion that can put such things in precise orbit over our heads today, why not *on* our heads tomorrow?" And when Maj. Gherman Titov did his seventeen orbits of the earth on August 6–7, 1961, and was down, General Kuter authorized release of the statement that " . . . we have now entered the era of a requirement for an antisatellite satellite, one which can detect, intercept, and, if need be, destroy an armed enemy satellite."

In both instances, after several hours, DoD came down with a "cease-and-desist" order, saying neither had any military significance in the then-prevailing White House view. Since all of them are now in another medium, Eisenhower, Kennedy, and Kuter, the other two owe him a round apiece of that nectar of the gods, for giving the right assessment and advice when it was pucker time—they puckered, we might say, while he prophesied! Thanks for giving a great professional his due.

Col. Barney Oldfield, USAF (Ret.)
Beverly Hills, Calif.

• *Colonel Oldfield was General Kuter's Chief of Information at Hq. NORAD in Colorado Springs, Colo., at the time of both Sputnik and Titov.*—THE EDITORS

Garber of the Smithsonian

I have had so many compliments resulting from your article ["Aviation Historian Paul Garber: Sixty Years With the Smithsonian," by William P. Schlitz] in the June issue of AIR FORCE Magazine that I want to share the pleasure with you.

[Mr. Schlitz's] accuracy as a writer is exceptionally good. I noted only a few places that differed from precise facts, and those may have been due to my own failure to make myself clear during your interview. At least a dozen of my friends have read your story and then phoned me to offer their congratulations on this high honor that I have received. This afternoon I phoned a request for some information, and when I gave my name the person not only recognized who I am but also came across with what I wanted.

I will offer comments on two of the pictures. The one of me at the start of the article was shot during a rather glum moment. I am not usually so sour-pussed—the other likenesses help to offset that beginning. My other comment refers to the large biplane kite. It is not "Garber-designed." It is Wright brothers-designed. I made it from copies of Orville's own drawings and the two dimensions he named: five-foot span and thirteen-inch chord. I flew it as Wilbur did with four lines, one at each outer corner, the lines attached to two sticks. Wilbur held a stick in each hand. By moving the sticks back and forth and varying their angles to each other, he could control the kite for pitch, yaw, and roll. It was the first aircraft in the world to be controlled in all three axes. The original, made in 1899, does not exist.

So kite making and kite flying, with me, can have its serious side, as well as fun. Like the chap who suggested to his girl friend that they play Post Office. When she said, "That's a child's game," he said, "Not the way I play it."

Thanks again for your excellent story on the Museum's aircraft-restoration facility. As I tried to say in my remarks at the ceremony, "The name should include those of all persons who have made it possible. They have made it possible. They have produced what it is today. I only got it started."

Paul Garber, Historian Emeritus
National Air and Space Museum
Washington, D. C.

Dr. Paul Garber earned great credit during his sixty years with the Smithsonian by creating a climate that saved our early aviation heritage. I give him particular thanks for any influence he exerted on Secretary Abbot of the Smithsonian in September 1942, which led to the return of the Wright Flyer from Britain.

Dr. Samuel Langley, while Secretary of the Smithsonian in 1903, had attempted flight in a heavier-than-air machine. Glenn Curtiss modified the aircraft in 1914 on the current aeronautical knowledge of the day, but was unsuccessful in obtaining full flight. However, based on Curtiss's tests, the Smithsonian gave Langley credit for the "first aeroplane capable of sustained free flight with a man."

Orville Wright sent their Flyer to Britain in 1928 after concluding that the Smithsonian did not want the plane in its correct place in history. Dr. Garber was not yet a member of the Smithsonian staff during the Curtiss tests and was probably not influential during the negotiations with the Wrights prior to 1928.

The stage was set for the return of the Flyer to the Smithsonian on October 24, 1942, when Secretary Abbot expressed his regret that the Smithsonian had denied the Wright brothers their proper credit.

Fred C. Kelly, in his book *The Wright Brothers,* has a final chapter which details the embarrassing facts of the Smithsonian's rejection of the Wright Flyer.

Maj. Charles W. Hinton,
USAF (Ret.)
Satellite Beach, Fla.

CX Rebuttal

R. H. Melton's letter, "Is It Really Needed?", May issue, warrants a few comments on the Air Force's airlift problem and the new CX program.

Mr. Melton argues for an "immediate production program on a C-5X and C-130X" that would increase airlift capability as a "less costly" solution to the current Air Force CX program. He further argues that these solutions would be achieved earlier. These arguments have been advanced by segments of industry and government before. But those in government who are well informed on all aspects of the topic do not see such a simple solution.

The results of Mr. Melton's notions to "throw the book on competitive procurement out the window" for savings and expediting the program are speculative. Further, sole source procurement as an expedient solution is highly questionable. The current acquisition planning will permit alternate proposals for existing wide-body solutions to be offered. Each one presented will be evaluated.

Assuming (as Mr. Melton proposes) that a C-5X sole source procurement was the solution, a requirements

statement would still have to be devised and issued by the Air Force. In detailing the need, it would probably resemble an RFP in content. Also, an evaluation of that C-5X proposal would have to take place, for it is doubtful that the Air Force would give a go-ahead to build airplanes on faith. Test and evaluation would be necessary, because C-5s have not been built in many years, and the requirement for the C-5X would surely result in concept and design changes requiring verification. With all these steps in the process, could much, if any, time be saved? More important: if the only changes made to C-5 (for expeditious purposes) were the wing redesign and the landing gear, the new (late 1980s IOC) airlift airplane would be of early 1960s technology. Would it be cost effective to commit to sole source an early 1960s design in view of technology advances since? This would truly be a regressive decision.

Elimination of competition is unwise for another reason: competition breeds thinking which, in turn, results in new ideas and technology breakthroughs. The CX program has these advantages in a new program.

Mr. Melton ignores the C-5's inability to take advantage of the flexibility offered by the many smaller, less sophisticated airfields in the world. Under existing procedures, the C-5 requires at least a 5,000 by ninety-foot runway to land and take off if a sixty-foot wide parallel taxiway joining the parking area to the runway end is available. If no parallel taxiway is present, the plane needs a 150-foot-wide runway to turn about and reach an existing sixty-foot taxiway. If a taxiway is narrower or absent, the C-5 closes the runway while unloading. Airfields meeting the above criteria are scarce compared with smaller fields, and will certainly be denied use in a major conflict. The CX specification lays the groundwork for an aircraft that exploits smaller airfields after carrying substantial payloads over intercontinental distances.

Mr. Melton is mistaken in believing the Air Force specification "calls for the gear to [traverse] a ten-inch stump, which makes me wonder if they have never heard of a fine little device called a chain saw." Nowhere is there a requirement for CX to traverse tree stumps, ten inches or otherwise.

The CX aerial delivery requirement stems from the need to provide the decisionmaker with options on the battlefield. It makes sense from that perspective. If an aircraft has a rear loading door, airdrop does not cost much more. Mr. Melton's allusion to airdropping the XM-1 is not contemplated for the CX by Army and Air Force planners.

The nation's ability to airlift and sustain our armed forces worldwide is seriously deficient. The Army and Marines are building equipment that cannot be carried in the C-130, C-141, or CRAF. In addition, there is no capability to move heavy units within the theater of operations. The C-5 carries a good load, but not forward into the smaller airfields. We need the CX as it is specified today.

Further delays caused by mythical arguments for expeditious solutions are obstacles to proceeding with an already long-delayed procurement of an urgently needed weapon system, obstacles which US military posture can ill afford any longer.

Robert D. Eisenhart, President
Scott Memorial Chapter, AFA
O'Fallon, Ill.

Now We Know for Sure!

Was somewhat amused by the letters [June '80] you published about my picture (April '80 cover). Lt. Col. Thomas D. Miller's came closest to explaining the picture, by the way.

I don't understand *your* reply to the letters, noting that the picture was taken on "terra firma." I haven't flown high-performance aircraft since the B-29, but have flown small singles and twins (propeller, of course), but the gear lever looks about the same on a T-37 as it does on a Piper Twin Comanche or Navajo. When it is red it usually means the gear is up, rather embarrassing on terra firma.

The IP wasn't aware that I was taking his picture, and we were below 10,000 feet, letting down for landing after completing a three-ship formation in which I shot pics (air-to-air) . . . of IP training at Randolph AFB, Tex. . . .

If readers looked more closely they would have noted "another" violation. The right seater didn't have his visor down. Me.

David N. Stead
Kelly AFB, Tex.

I feel it is my duty as a proud member of the 559th Flying Training Squadron to fend off the possibly well-meant but poorly aimed barbs directed at your April cover pilot.

To begin, Captain Haenel is not on terra firma (neither is he on the ground). As the picture was taken he was descending from about 13,000 feet with his throttles below approximately seventy percent rpm, which explains why the gear warning light is on. Parachutes used in the T-37 do not have emergency bailout bottles due to the short time a Tweet pilot could expect to spend (breathing?) during a nylon letdown.

Now, the following is the ungarbled truth regarding the use of the throttle hand by T-37 pilots during flight: They may rest their left hand on their left knee for fifteen seconds four times during any particular flight, not to exceed thirty seconds at any one time.

I feel obligated to point out in closing that if we in the 559th FTS approached flying as casually as some of your readers believe, we would not have the enviable safety record of over 355,000 hours of accident-free flying.

Capt. Richard B. Keller, USAF
Ass't Flight Commander, A Flight
559th FTS
Randolph AFB, Tex.

• *The trouble with research is knowing when to stop. The letters of criticism we published in June caused us to reexamine the caption material that accompanied the picture. The material clearly said "Prepares" for takeoff. We made two checkout phone calls, just to be sure. Both elicited the same answer: "It was on the ground" (names withheld to protect the guilty).*

Our apologies to photographer Stead, to pilot Captain Haenel, to the many doughty pilots of the 559th FTS, and to a dozen other sharp-eyed pilots who have gigged us so eloquently.—THE EDITORS

Not This One

Chuck Yeager flew just about every other airplane in the inventory at the time, but he never piloted the X-15, as you say in "The Thirteen Most Important Planes" (p. 80, June 1980).

Ted Bear
Historian
Edwards AFB, Calif.

• *General Yeager confirms that he did not fly the X-15.*—THE EDITORS

How About Starting With the POWs?

As time goes on and the President's canny policy of restraint "acts" upon the situation in the American embassy in Tehran, I get the impression that the State Department hostages are taking on some sort of heroic status. The legal action, for example, just brought by Mrs. Belk, wife of one of the hostages, would imply that her husband's value to all concerned for twenty-three weeks of unconfined operation would be at least a billion dollars.

These hostages have had a stroke

of bad luck by being in the wrong place at the wrong time under the wrong Administration. But, by no stretch of the imagination does their condition compare, in terms of severity of confinement—let alone brutality of treatment and duration of confinement—with the hundreds of all too recently returned prisoners of war.

In all candor, the hostages might well consider this as an unexpected patriotic opportunity for them to produce a little mildly hazardous duty for their country. In this connection, it is worthy of note that our society has never faced up to the element of risk, nor the value it represents to the risker.

But, if anyone's sacrifice, risk, or ordeal is to be considered worth a billion, let common horse-sense prevail for a change and start the whole consideration with the POWs.

Col. Marvin S. Zipp, USAF (Ret.)
San Antonio, Tex.

500th Bomb Squadron

Any former member of the 500th Bomb Squadron, 345th Bomb Group, WW II, who is not already on our mailing list, please contact me for important information about our reunion in September 1981.

Col. William J. Cavoli, USAF (Ret.)
4314 Planters Court
Annandale, Va. 22003

B-52 History

I am writing a book for McDonald's of London (publisher of *Jane's*) entitled *The Legendary Bomber—A Documentary History of the B-52,* and would like to receive personal stories from current and former B-52 air- and ground-crew members. I particularly need good photos showing typical activities like refueling, loading armament, combat scenes, etc. All material would be copied and returned.

Walter J. Boyne
Assistant Director
National Air and Space Museum
Smithsonian Institution
Washington, D. C. 20560

American Spitfire Groups

I am gathering material for a book about American-flown Spitfires. The USAAF used the British fighter plane during World War II in three fighter groups, one photo-recon group, and one observation group. In addition, there were other restricted and testing uses of the Spitfire within the confines of the United States and its armed forces. I believe an illustrated narrative of this history will serve the efforts of the men who maintained and flew this fine aircraft as much as it will remember those who gave their lives in the defense of freedom.

The 4th, 31st, and 52d Fighter Groups, the 7th Photo Group, and the 67th Observation Group operated with Spitfires. There is some evidence that the 350th Fighter Group operated with Spitfires for a very short time, although no known photos or written history of 350th FG Spitfire operations exists.

Whether you are an enlisted man, pilot, or relative of an American Spitfire groups' membership, you can help establish the record of achievement with photos or remembrances or other details of history; all of it will be gratefully received. All photos will be returned via certified mail after consideration for use.

As regards the 4th Fighter Group, it used Spitfires in American markings from entry into the USAAF until it got P-47s in early 1943. I would be honored to be able to research the eight or so months of 4th FG history.

In addition to careful handling and return of photos, I will pay for all postage, including parcel post of diaries, albums, etc.

Paul A. Ludwig
P. O. Box 9844
Queen Anne Hill
Seattle, Wash. 98109

AIRMAIL

49th Fighter Bomber Group

I would like to hear from anyone associated with the 49th FBG, 7th, 8th, and 9th Squadrons in Korea (F-80 and F-84 era). Purpose is to collect material for a future article and to compile a current address list to put many old friends back in touch.

Warren E. Thompson
7201 Stamford Cove
Germantown, Tenn. 39138

Data on the '105

The AFA Air Capital Chapter, Wichita, Kan., together with other civic organizations, is raising funds and planning to construct an F-105F pedestal at McConnell AFB. As this was a key Vietnam training base, the interest in this project is high. An F-105F has been made available by the Kansas Air National Guard. The number of the aircraft is 366. It was the last F-105F training aircraft produced, later modified to a "Wild Weasel" strike aircraft. It has considerable North Vietnam history.

We are inviting anyone who served with F-105s to help us gather historical data, such as significant strikes, etc. Please send all data to:

Air Capital Chapter
Attn: Cletus J. Pottebaum
6503 East Murdock
Wichita, Kan. 67206
Phone: (316) 683-3963

SPS Unit Emblem Display

The 436th Security Police Squadron, Dover AFB, Del., is establishing a display board of the various unit emblems that Air Force Security Police Squadrons have adopted. This display is to recognize the outstanding service provided by all security police squadrons and to promote *esprit de corps* among fellow security police personnel.

The 436th SPS would like to have as many different units displayed as possible. If your squadron has any type of replica, either a patch, decal, or photo, we would greatly appreciate having a copy for display. This item, if available, can be mailed to:

Lt. Peter Zwally
436th SPS
Dover AFB, Del. 19901

Observer Class 52B

Class 52B-AOB29N graduated from USAF Observer School on August 27, 1952. The class consisted of twenty-five Aviation Cadets from the United States Air Force and six cadets from France. Where are they now? Please contact:

Maj. Saul Dulberg, USAF (Ret.)
818 S. Grape St.
Denver, Colo. 80222

Aircraft Artwork and Nicknames

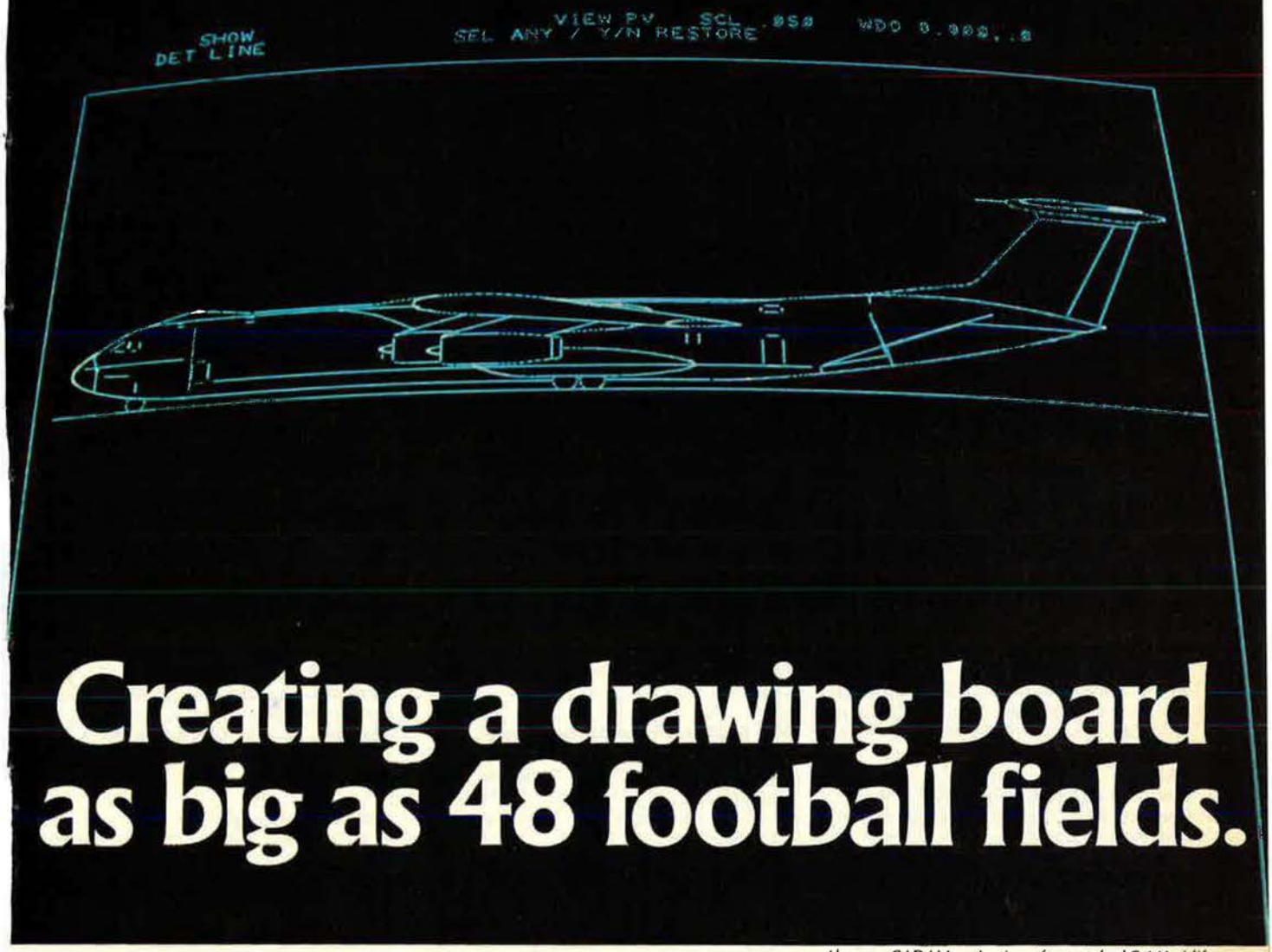
The subject of my next book will be the artwork and nicknames that adorned hundreds of B-17s, B-24s, and B-29s. The underlying theme will be "what's in a name?" and I hope to show this richly varied, genuine art form in all its aspects, from the Vargas beauties to Al Capp's Dogpatch characters.

In addition to showing the actual artwork, whether highly professional or enthusiastically amateurish, I intend to tell the stories of the individual planes and crews, and the artists, usually long-forgotten.

If the book is to be truly representative, I need the help of AIR FORCE readers who were associated with these airplanes and can share their stories with me. I also need photos of

We suggest that readers keep their letters to a maximum of 500 words. The Editors reserve the right to excerpt or condense as required in the interest of space or good taste. Names will be withheld on request, but unsigned letters are not acceptable.

Shaping Airlifter Technology



Creating a drawing board as big as 48 football fields.

Above, a CADAM projection of a stretched C-141 airlifter.

A revolution in the design and manufacture of airlifters has been taking place at Lockheed-Georgia Company. In semi-darkened scope rooms, engineers are designing advanced airlifters, using a copyrighted Lockheed software system that has freed them from the confines of drawing boards.

CADAM projection of a complex aileron hinge fitting.

The system is CADAM—Computer-Graphics Augmented Design and Manufacturing. Using electronic pencils, engineers design airlifters on computer screens—the parts, the systems, the tooling.

In effect, the CADAM system gives them a drawing board 20,000 inches by 20,000 inches in size, more than enough to accommodate any airlifter ever built. The engineers no longer have to design to a small 1/8 or 1/4 scale with all the problems that go with reduced scale designs. They can blow up designs 100 or more times with the CADAM system. In an instant, they can see the smallest detail—or the whole airlifter.

Just as important, the CADAM system helps link airframe technologies together. It provides a huge and common data base instantly available to engineers in all the myriad disciplines involved in design and production of an airlifter. The production designer can call up on the screen the work of those in advanced design. Tool designers have instant access to the work of design engineers. Numerical control programmers, quality assurance engineers, facility engineers—they all use the CADAM system to speed their work, eliminate mistakes, design parts and tools with an accuracy impossible under old methods.

All theoretical benefits? Not at all. The CADAM system played an important role in the highly successful stretch of the C-141 airlifter, in which the cargo compartment has been increased 33% in length. That program is running under budget and ahead of schedule, and the CADAM system has been used in it from the start.

When it comes to airlifters, the engineers at Lockheed-Georgia know how. They have more experience, by far, in designing and building airlifters than anyone else in the world.

Lockheed-Georgia

the airplanes' artwork (naturally these will be returned in original condition).

Whether named after movies, songs, comic strips, hometowns, or whatever, the heavy bombers' nose art was a mirror of the times, and an "art gallery" for it is long overdue. Please contact me at the address below.

Steve Birdsall
31 Parkland Rd.
Mona Vale 2103
Sydney, Australia

Operation CACTUS
I am writing a book about the 67th Fighter Squadron. Central emphasis is on the original contingent that went to CACTUS, Guadalcanal, with the 1st Marine Division, in August of 1942. As a member of that unit I followed the action in my diary, took lots of pictures, and have been collecting material for many years.

I would like information on research sources where I might see copies of USAFISPA General and Special Orders bearing directly on the unit and personnel as it pertains to that operation.

Lt. Col. Robert Ferguson,
USAF (Ret.)
4420 Beechwood Lake Dr.
Naples, Fla. 33942

325th Bomb Squadron Memorabilia
I'm interested in contacting former members of the 325th Bomb Squadron, 92d Bombardment Group, particularly those members who served

AIRMAIL

UNIT REUNIONS

Graham AB, Marianna, Fla.
20th reunion. All students, permanent party, and civilian personnel stationed at this Primary Flight Training base. August 14–16. **Contact:** Martin Gracey, P. O. Box 668, Langley AFB, Va. 23665.

Ordre Pour le Mérite
West Coast minimuster, September 26–28, Vandenberg AFB, Calif. **Contact:** Ted Suchecki, 607 Beech St., Vandenberg AFB, Calif. 93437. Phone: (805) 866-9824.

BAD 2
Warton Air Depot planning 4th reunion. **Contact:** BAD 2 Association, 811 E. 16th Ave., New Smyrna Beach, Fla. 32069.

4th Strategic Air Depot
An association has been formed and 2d annual minireunion will be held in conjunction with 8th AFHS, October 29–November 2, Orlando, Fla. **Contact:** Col. Paul P. Gerhardt, USAFR (Ret.), 2602 S. Union, Apt. B-307, Tacoma, Wash. 98405.

7th Photo Group, 8th AF
October 30–November 2, Orlando, Fla. **Contact:** Claude Murray, 1933 E. Marshall, Phoenix, Ariz. 85016.

8th Air Force
8th Air Force Historical Society's 6th annual reunion. All 8th AF vets, families, and friends invited. Please identify your 8th AF unit, dates of service, and unit location. October 30–November 2, Orlando, Fla. **Contact:** 8th AF Reunion, Box 1304, Hallandale, Fla. 33009.

22d Mobile Repair & Reclamation Sqdn.
3d reunion, September 7–10, Wilderness Lodge, Lesterville, Mo. Former members wishing to attend or get on mailing list, **Contact:** Bernard U. Samuel, 2596 Bay Rd., Redwood City, Calif. 94063. Phone: (415) 365-8585.

34th Bomb Group
Searching for all former members. Unit rendezvous with 8th AF reunion, October 30–November 2, Orlando, Fla. **Contact:** Ray L. Summa, 2910 Bittersweet Lane, Anderson, Ind. 46011. Phone: (317) 644-6027.

Pilot Training Class 60-F
1st reunion, September 12–14, Maxim Hotel, Las Vegas, Nev. **Contact:** Bill Robertson (404) 992-6461; Lew Bevan at (201) 729-7370; or Tom Costello at (315) 638-1457.

68th Fighter Interceptor Squadron
October 20–22, Harvey's Hotel & Inn Complex, South Lake Tahoe, Stateline, Nev. **Contact:** Maj. Bill L. Disbrow, USAF (Ret.), Box 2337, Stateline, Nev. 89449. Phone: (702) 588-4994.

90th Bomb Group (H)
"Jolly Rogers," September 18–20, at Howard Johnson Motor Lodge, Bloomington (Minneapolis), Minn. **Contact:** Gil Schultz, 3208 W. 87th St., Bloomington, Minn. 55431. Phone: (612) 831-3830.

98th Bomb Group (H)
"Pyramidiers" reunion, October 20–23, Ramada Inn Airport, Miami, Fla. **Contact:** W. H. Bolling, Jr., Rt. 3, Box 67, Gonzales, La. 70737.

112th Observation Sqdn., 37th Div.
Cleveland's elite Ohio National Guard, 1st reunion since 1940, August 23, Cleveland, Ohio. Squadron members prior to, during, and post-WW II years included. **Contact:** Bill Robertson, 18816 Alexander Rd., Walton Hills, Ohio 44146. Phone: (216) 232-0818.

303d Bomb Group (H)
Minireunion in conjunction with 8th AF reunion, October 29–November 2, Orlando, Fla. Please send 4" × 9½" stamped, self-addressed envelope. **Contact:** Joseph Vieira, 6400 Park St., Hollywood, Fla. 33024.

304th Fighter Squadron
October 2–4, Sheraton Inn, Bossier City, La. **Contact:** Joe C. Buttry, Rt. 2, Box 7, Pea Ridge, Ark. 72751. Phone: (501) 451-1517.

351st Bomb Group (H)
Includes 508th, 509th, 510th, and 511th Bomb Squadrons. Reunion in conjunction with 8th AF reunion, Orlando, Fla., October 29–November 2. **Contact:** Ben Schohan, 398 Catawba Ave., Westerville, Ohio 43081.

353d Fighter Group, 8th AF
Minireunion, October 30–November 2, Sheraton Twin Towers, Orlando, Fla. **Contact:** Charles Graham, Army & Navy Club, 1627 Eye St., N. W., Washington, D. C. 20006.

392d Bomb Group
October 30–November 2, in conjunction with 8th AF Historical Society, Sheraton Twin Towers, Orlando, Fla. **Contact:** Gil Bambauer, 2032 E. La Madera Dr., Tucson, Ariz. 85719.

452d Bomb Group (H)
October 29–November 2, Orlando, Fla. **Contact:** Rom Blaylock, P. O. Box 2536, New Bern, N. C. 28560.

466th Bomb Group
October 30–November 2, Orlando, Fla., in conjunction with 8th AFHS reunion. **Contact:** John Woolnough, 466th BG Historian, Box 4738, Hollywood, Fla. 33023.

486th Bomb Group Ass'n
October 30–November 2, Orlando, Fla., in conjunction with 8th AF reunion. **Contact:** Ben W. Williams, 5333 Walser Rd. Ext., Jacksonville, Fla. 32205. Phone: (1-904) 358-1117.

610th Aircraft Control & Warning Sqdn.
October 10–12, Quality Inn South, Austin, Tex. **Contact:** Al Tally, Rt. 1, Box 66T, Lockhart, Tex. 78644. Phone: (512) 398-2716.

868th Bomb Squadron (H)
"Snoopers" reunion October 30–November 2, Lago Mar Hotel, Fort Lauderdale, Fla. **Contact:** Dr. Vince Splane, 2676 Blanding Blvd., Middleburg, Fla. 32068. Phone: (904) 282-9371.

with the unit during World War II, Korean War, and/or the Cold War era. The squadron is in the process of organizing a collection of 325th Bomb Squadron memorabilia and is in need of such items as old combat logs, photographs, an original squadron patch, old flying equipment, and any other items of interest.

Also, we're in the process of writing a history of this bomb squadron and would appreciate hearing from any former members who wish to contribute to this historical document.

Lt. Kevin P. McCann, USAF
325th Bomb Squadron Historian
6042 Oak St.
Fairchild AFB, Wash. 99011

Heritage of Valour

I am Secretary of the 355th Fighter Group Association and am looking for the book *Heritage of Valour—8th Air Force in WW II,* by Peaslee, published by J. P. Lippincott in 1964.

Gordon H. Hunsberger
75 Congo Road, Box 71
Gilbertsville, Pa. 19525

510th Fighter Squadron

I would like to get in touch with former members of the 510th FS, 405th Fighter Group of the Ninth Air Force. Maybe we can arrange a get-together sometime in the near future. I was with the outfit from December '44 through October '45.

Robert E. Wagner
604 St. Stephen Lane
St. Charles, Mo. 63301

Rescue Squadron History

For a history of the Eighth Air Force's air/sea rescue squadron during World War II, I would like to contact former officers and men of both Detachment B, 65th Fighter Wing, and the 5th Emergency Rescue Squadron.

I would also like to hear from relatives or any person who could supply information on this unit while it was stationed at either Boxted Field or Halesworth Field, England, from May 1944 to May 1945.

James F. Aicardi
P. O. Box 701
FDR Station
New York, N. Y. 10022

Weapon Systems Buffs

I am an AFROTC cadet at present studying the survivability of the A-10 and its overall effectiveness in a central European front environment. I have already done considerable research and have found the ZSU-23-4 Shilka to be an extremely serious threat due to its excellent primary and secondary fire-control systems, along with a number of other capabilities.

It would be very helpful to receive any facts or opinions about the A-10 vs. the Shilka or about A-10 survivability/effectiveness in general. I would especially like to hear the views of those involved in A-10 operations, intelligence, and those involved in Army SPAA and Huey Cobra operations. Please remember the security status of any information you intend to release.

C/Lt. Col. M. A. Smith
Col. Charles L. Vacanti Sqdn.
Det. 345, AFROTC
University of Lowell
Lowell, Mass. 01854

C-Flight Patches

C-Flight T-37s at Reese AFB, Tex., is collecting class patches from all former UPT classes graduating from C-Flight. If you have any information concerning class patches prior to 76-01, please contact me.

Lt. Frank A. Yerkes, USAF
4505 58th St.
Lubbock, Tex. 79414
AUTOVON: 838-3857

XB-70 Material

I have started a collection of material on the North American XB-70 high-speed research aircraft. I have a considerable amount of material, but am seeking more photographs and any unclassified reports or personal accounts from people associated with the aircraft.

Bruce D'Arcus
2666 31st St., #1
Santa Monica, Calif. 90405

Dirigible Pilot Wings

Can anyone tell me where to buy a set of Army Air Service Dirigible Pilot Wings, as we were issued in the 1920s?

H. B. Blanchard, Jr.
1004 Dead Run Dr.
McLean, Va. 22101
Phone: (703) 821-6618

95th FIS Memorabilia

The 95th Fighter Interceptor Squadron is now located at Tyndall AFB, Fla. It is primarily responsible for qualifying T-33 pilots and preparing students for entry into the F-106.

We ask for the help of all previous 95th personnel in donating or lending us any pictures or memorabilia you may have. We are especially interested in WW I or WW II material.

Capt. Scott Wilson, USAF
95th FITS
Tyndall AFB, Fla. 32403
Phone: (904) 283-5244
AUTOVON: 970-5244

Last Chance...
to "See Britain the Exciting Way"!

October 12 of this year will be just another Sunday for most people, but for AFA members and their families who have registered, it will be a great day as they board their transatlantic jet for London, England, to take part in our special Thirty-fifth Anniversary of V-E Day tour.

Ten glorious days await them in England, filled with fun and excitement that visits to World War II airfields and the beautiful rural areas of Britain stimulate. Combine London and its treasure of historic and fascinating places with it, and it becomes a trip that will be remembered for a lifetime.

Fun is the keynote of this first European trip sponsored by your Air Force Association. But receptions with government officials and the local people; special memorial services at the US Military Cemetery in Cambridge; "Hospitality Day" when local citizens provide cars to take individual Yank families for a day's outing; party-time with old and new British friends; and an evening of World War II music and entertainment styled after the Big Band era will all contribute to make this a "great time for everyone," regardless of age.

JOIN US! Whether you served in England (or even in World War II) or not, this is your chance to see where it all happened and to share in the honors bestowed on the US Air Force. It's probably the *only chance* you'll have to see and enjoy major commemorative events, which officials of Britain are supporting to honor this special year of celebrations. Be part of them.

For complete details, write AFA Tour, c/o Galaxy Tours, P.O. Box 45, King of Prussia, Pa. 19406. Telephone: (Toll-free outside Pa. — 800-523-7287) or 215-265-2778.

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IN FOCUS...

By Edgar Ulsamer, SENIOR EDITOR

Washington, D. C., July 8

Reagan's Defense Plans

The chairman of Ronald Reagan's team of defense and foreign policy advisors, Richard V. Allen, says that if elected, the Republicans' first priority in the defense sector will be to remedy the military manpower problem. He told this column, "The thought that many military people in order to serve their country have to work on other, second, jobs for long hard hours in order to feed their families and educate their kids while [other soldiers, sailors, and airmen] have to rely on food stamps is appalling."

He added that Governor Reagan believes that about $6 billion should be added to the Defense budget to correct the current pay and benefit deficiencies and to "alleviate the human problem." Mr. Allen stressed that without "good, properly motivated people" all the military equipment and weapon systems in the world are for naught. The defense and foreign policy expert, who is expected to head up the National Security Council staff if Governor Reagan wins the election, declined to affix any other priorities to solving current military weaknesses "at this early stage" on grounds that "there simply are too many and they loom so large across a wide spectrum" that extends from spare parts to the need to resurrect or accelerate a number of major weapon systems.

Mr. Allen heads a team of about one hundred defense and foreign policy experts—known as the "Gang of One Hundred"—that provides guidance for the Republican election campaign and is to frame initial policy in case a Reagan Administration takes over next January. He said the Republicans have not yet costed out what they deem a lean but adequate Defense budget. Under Reagan, an increase in "defense spending, compared to the current levels, is likely but not inevitable," he said. The Reagan camp, he said, contrary to some press allegations, is not for "unbridled defense spending," although acutely aware of the fact that "quick remedies" are needed.

Mr. Allen declined to speculate on who might be picked as Secretary of Defense in case of a Republican victory in November, other than to say that he or she most likely would be intimately familiar with the inner workings of the Defense Department and the individual services and be accustomed to delegating authority. He stressed that a Reagan Administration would "leave micromanagement" of defense issues to the admirals and generals. This column learned from other highly placed sources, however, that while no firm decision concerning candidates for the post of Secretary of Defense has been made, former Secretary Donald Rumsfeld, Gen. Alexander Haig (the latter also a candidate for Secretary of State), and Sens. Henry Jackson (D-Wash.) and Sam Nunn (D-Ga.) are under consideration. These Republican sources point out that the choice of a Democrat for the job of Secretary of Defense in a Reagan Administration is a distinct possibility. Under present law, General Haig is ineligible for the Secretary of Defense job, having been on active duty in the Regular Army within the past ten years.

The first order of business for Reagan's defense advisors is to review and cost out in current dollars a "baseline" Defense budget consisting of the programs provided for by the last Five-Year Defense Plan (FYDP) of the Ford Administration, drawn up in January 1977. Mr. Allen said the Reagan camp views this set of programs as the essential minimum needed to continue realistic, equitable arms-control negotiations with the Soviets and to provide adequate levels of security for the decade of the 1980s.

He claimed that the Carter Administration's cancellation of the B-1 program and stretchout of the MX ICBM, along with reneging on other programs of the Ford defense plan, are the principal reasons for the US Senate's opposition to SALT II. Mr. Allen added, however, that Governor Reagan has criticized SALT II for a range of other reasons: "Reagan has stated time and again that he favors continued arms-control talks with the Soviets, but that he opposes this particular treaty for reasons of merit rather than ideology. We don't plan to be truculent concerning arms control in the election campaign."

Ronald Reagan differs from Jimmy Carter on the issue of arms control, Mr. Allen claimed, because the Republicans believe that the Soviets are spending as much on defense as their economy permits, whereas this country, if necessary, could increase greatly its investments in national security. Hence, the Republicans reason that if the Kremlin decided against continuation of negotiations toward realistic and balanced arms control, thus, inevitably, accelerating the arms race, it would place the Soviet Union at a disadvantage. The Republicans think that if the Soviets were to start an arms race against a Reagan Administration, they would lose and, therefore, "see that there is an incentive to return to the negotiating table and resume reasonable, realistic arms-control negotiations."

Mr. Allen stressed that this assessment of US leverage for fair and equitable arms control should not be construed to mean that the Reagan camp plans "to spend the Russians into the poor house." So far as overall budgetary and fiscal policies are concerned, the Reagan camp remains ideologically but not slavishly committed to a balanced Federal budget. Confronted with clear and present dangers in terms of national security, Reagan would accept an unbalancing of the budget in order to correct defense deficiencies, Mr. Allen said.

In the crucial strategic sector, Mr. Allen acknowledged that the opportunity for quick remedies is limited. The Reagan defense advisors recognize, he said, that "for example, the MX, if it goes through in its present form, is a system that is of no value to us until the end of the decade. It addresses the counterforce problem, but it does not solve a whole host of other problems." Governor Reagan, to date, has not taken a definitive po-

sition concerning MX, but "we are well aware of it and are debating it," Mr. Allen said.

He added that while most of the advisory team favors MX in principle—even though the question of basing mode is not considered fully resolved—"we have some people who don't think MX is worth very much itself." The Reagan advisors who hold this view do recognize, however, that the MX program "is the only thing we have on the boards" in the strategic sector at this time. Asked if the Reagan team would be willing to abrogate the SALT I ABM Treaty in order to back up MX with its own preferential (mobile and concealed) ballistic missile point defense, the Republican spokesman cautioned that "the abrogation of a treaty has large consequences, and one doesn't take such a step lightly."

The Reagan defense advisors as yet have no solid position on a follow-on strategic bomber or USAF's related Long-Range Combat Aircraft (LRCA): "Governor Reagan favors development and deployment of a bomber based on B-1 technology. Whether this should actually be the B-1 or something else has not yet been decided. We are concerned, however, over the fact that, if the country were to go ahead [with development of a new manned strategic weapon system now, operational status could not be achieved] until the end of the decade." The Reagan team is looking in this context at the FB-111B/C program recommended by the Strategic Air Command, but has not yet decided whether it should be implemented or not, he said.

The "Hollow" Status of the US Army

In a recent discussion with defense writers, Gen. E. C. Meyer, the US Army Chief of Staff, explained what he meant when he told Congress last month that he had a "hollow army." Strength of the CONUS-based forces—that sector of his service that would have to provide the reinforcements in case of a NATO war and which also represents the Army component of the vaunted Rapid Deployment Force (RDF)—ranges from the "seventy-five percent to eighty-five percent level," meaning that the manpower shortfalls vary between twenty-five and fifteen percent.

These shortfall variances are functions of the priorities assigned to US Army divisions stationed in the CONUS and lead to the "zeroing out" of whole platoons, squads, and fireteams, he told this column. Additionally, the CONUS Army is plagued by

IN FOCUS...

serious shortfalls in noncommissioned officers. Exacerbating the latter condition is the fact that "we keep our forces in Europe at about 105 percent of NCO strength and had to assign additional numbers of them to recruiting duty and to the Reserve Forces," General Meyer said.

The Army's condition, however, is not unrelievedly bleak, General Meyer asserted: "The strength of today's Army is in its officers, in its senior noncoms, in its forward deployed forces, and in the steps we are taking" in training and force modernization. The forward deployed force in Europe, he averred, "probably is in as good a shape as it ever has been in since World War II, so far as manning, training, and equipment go."

Next to the paramount manpower problem, General Meyer said, the top-priority challenge of the Army is the lagging rate of equipment and weapons modernization. Both the Air Force and the Navy were able to modernize essential weapon systems, especially aircraft, during the past decade. The Army's turn at modernization is *now*, "during this decade," General Meyer said. The delayed Army modernization, he admitted, is probably a blessing in disguise since "the Army we were headed for in our planning [until recently] was almost exclusively a mechanized Army [tailored] for Central Europe."

Following guidance from the Defense Department, this orientation toward Central European scenarios introduced an almost total bias toward "heavy" divisions and a downplaying of capabilities needed to operate in the Middle East, Africa, and other Third World areas, General Meyer said. This "Fulda Gap" syndrome overlooked the utility of "light" forces even in Europe, he said, adding that "I happen to believe that light divisions are absolutely essential in Central Europe." The reason is that a mix between infantry and mechanized forces promotes operational flexibility. Also, the Army Chief of Staff pointed out, the potency of light forces is boosted by the advent of precision-guided munitions and the ability to link them with prepositioned material. In the context of the modern Army, "light" means soldiers who can be moved around rapidly by helicopter or light ground vehicles, not "walking" soldiers, General Meyer stressed.

The Army's shift in emphasis already has caused significant changes, including a planned increase in the number of "light" divisions from two to five. Initially, General Meyer said, the Army was to build up a force of fourteen heavy divisions, out of a total of sixteen. Only the Airborne and Air Assault Divisions were to remain in the light category. In light of recent developments and extensive reevaluation of what the Army of the future should look like, this plan was dropped. Instead, five divisions will be light, and only eleven will be in the heavy, mechanized category. In addition, General Meyer pointed out, there are three light Marine Corps divisions, which "by logic" should remain in the light to medium range.

He defined a heavy division as one that will be equipped with 324 XM-1 tanks, as well as infantry fighting vehicles, mechanized artillery, mechanized engineers, and mechanized air defense weapons. He termed air defense an "uncertain area," subject to tradeoffs between the Patriot medium/high altitude surface-to-air missile system, the US Roland all-weather short-range air defense system, and DIVAD, the Division Air Defense gun, all of which are costly. Further, General Meyer said, there also are pending "tradeoffs between what the Air Force does and what we do in this area that will be very critical" in terms of what ground-based air defense systems the Army should field in future.

The equipment makeup of a light division is not nailed down fully at this time, but probably will involve a light, lightly armored carrier of some kind, Dragon lightweight antitank/assault wire-guided missiles, TOW heavy antitank/assault missiles mounted on both combat vehicles and Cobra helicopters, advanced electronic warfare capabilities, armor-fighting helicopters, and lightweight artillery transportable by helicopters, General Meyer predicted. A key influence on the makeup of the Army's future light division, the Army Chief of Staff acknowledged, is Soviet emphasis on attack helicopters. Terming this development the "latest change in the FEBA [forward edge of the battle area]," he said the US Army was watching very closely how the Soviets use attack helicopters in Afghanistan, especially as they learn how to adjust the operation of these weapons to ground-based threats. The Soviets, he stressed, are outproducing the US in attack helicopters.

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Accompanying the Army's shifting concern from essentially Central European scenarios to more versatile contingencies is increased stress on EW capabilities. EW, he said, can provide the Army with broad opportunities that we "haven't appreciated sufficiently in the past." As long as the focus was confined narrowly to a Soviet attack in Central Europe, the underlying, obvious assumption was that the Warsaw Pact forces would engage mainly in preplanned, centrally controlled operations, meaning that at least for the first seventy-two hours of the attack they would maintain communications silence. This factor, combined with the Pact forces' access to redundant communications nets and landlines, kept the US Army from investing scarce resources in EW, General Meyer pointed out.

But the picture was reversed with the Soviet invasion of Afghanistan and the attendant prospect that the Kremlin's adventurism might have to be met elsewhere in Third World areas. In case of such power projections "for which they are not preprogrammed and where they haven't drilled their people for the past twenty years, the Soviets will face situations that demand flexibility," General Meyer asserted. Flexibility, however, depends on communications, which will no longer be redundant and thus become vulnerable. The "new" Army plans to exploit Soviet vulnerability to EW in Third World scenarios to the hilt, General Meyer promised. EW systems that the Army plans to bring into its inventory will include air- and ground-based jammers, remotely piloted vehicles (RPVs), and a variety of weapons that can paralyze the enemy's command and control system, General Meyer said.

CNO Favors Draft, Across-the-Board Pay Hike

Adm. Thomas B. Hayward, the Chief of Naval Operations, told this column recently that an "across-the-board pay increase, probably in the range of twenty-five percent" is needed to cure the worsening manpower problem that is afflicting the armed forces. Such a pay hike, he suggested, should be granted incrementally over the next three years. Overall cost would be $6 billion, he estimated. Dramatizing his commitment to this measure, he said, "I would be willing to cut [monies for] weapon systems if that is needed to get this pay raise." While the Nunn-Warner amendment providing for a broad pay and benefits package represents progress and signals an attitude of support for military people by the "Washington leadership," it is "not enough" by itself to assuage current personnel problems. The Navy at this time, he said, is about 21,000 petty officers below its programmed strength.

In the CNO's view, the All-Volunteer Force "is gradually slipping into a failure mode." Asserting that he is now "philosophically in favor of a draft," Admiral Hayward explained that return to the draft is needed "to pull us together" as a nation. Acknowledging that the draft would not solve the retention problem, he said the merit of returning to conscription is psychological in that it would demonstrate a palpable commitment to national defense on the part of the US.

IN FOCUS...

Washington Observations

★ Burning the midnight oil, the US Senate worked its way through a maze of amendments to take an important step toward the development and acquisition of a new manned strategic weapon system that could achieve Initial Operational Capability (IOC) in 1987. In adding $91 million to USAF's RDT&E authorization "for an advanced technology strategic bomber," the Senate specified that "such designs and advanced and engineering development shall include but not be limited to the FB-111B/C; a multirole bomber aircraft, a variant of the B-1 bomber aircraft; an advanced technology aircraft, or an appropriate mix of such aircraft, so long as such aircraft have the capability of performing the missions of conventional bomber, cruise missile launch platform, and nuclear weapons delivery systems."

The Senate further instructed the Secretary of Defense to report by February 15, 1981, to the Armed Services Committees for both houses of Congress "the results of this effort, including comparisons of advanced technology aircraft with the B-1 and the FB-111B/C in terms of cost and military effectiveness." In addition, the Senate instructed the Secretary to pursue vigorously the development of a strategic bomber that "maximizes range, payload, and ability to perform the missions of conventional bomber, cruise missile launch platform, and nuclear weapons delivery in both the tactical and strategic role."

The Senate language will have to be reconciled with an earlier House measure that authorized only development of a strategic weapons launcher (SWL), a B-1 derivative. The betting is that the House will accede to the more flexible Senate approach. A joint conference was slated to take up this matter late in July.

★ US intelligence systems produced evidence of two new Soviet ICBM silos at the Semipalatinsk nuclear test site. Larger than the SS-18 silo, the new silos, whose construction got under way this spring, appear to differ from one another slightly. Also, three new silos are being built at Tyuratam in Kazakhstan. Over the past year, the Soviets built five new silos at Plesetsk, north of Moscow. These silos are slightly smaller than the SS-17/SS-19 shelters. The silos at Tyuratam and Plesetsk appear to be test facilities for the so-called fifth generation of Soviet ICBMs.

★ The Los Alamos Scientific Laboratory recently completed an intensive study of ballistic missile defense (BMD) technology at the behest of Sen. Pete Domenici (R-N. M.). It concluded that over the long term, directed energy weapons, either lasers or a particle-beam system, show a potential for intercepting ICBMs and SLBMs in their boost phase, before the missiles can dispense their individual MIRVs. At the same time, the study found that "this high-risk, high-payoff technology cannot affect the strategic balance this decade but justifies a sustained research effort." Soviet investment in BMD runs at a rate of about $1 billion a year, according to the study. Overall, the study concluded that a layered BMD system, designed for both exo- and endoatmospheric interceptions, provides the most cost-effective protection for ICBMs and is now technically feasible.

★ Pentagon analysts tend to look upon the Marine Corps's infatuation with the AV-8B V/STOL aircraft with a jaundiced eye. As a senior Defense official recently put it, the AV-8B's ability "to take off from tennis courts becomes meaningless" since, without fighter cover, the V/STOL aircraft "will get shot down." The V/STOL qualities of the aircraft, thus, are negated in an operational environment, he argued, since the normal constraints of the fighter aircraft, such as the F-18, will apply in effect also to the AV-8B's utility. ■

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AEROSPACE WORLD
News, Views & Comments

By William P. Schlitz, ASSISTANT MANAGING EDITOR

Washington, D. C., July 7

★ Punching out of jet aircraft at high speeds is a hazardous activity by its very nature. But USAF is continuing the effort to make bailouts safer.

Concluded recently was a series of wind-tunnel tests meant to aid in the design of aircraft ejection seats.

The tests were sponsored by Flight Dynamics Lab, Wright-Patterson AFB, Ohio, using a fifty percent scale model manikin and ejection-seat systems equipped with new devices designed by the Boeing Co. to provide blast protection, reduced drag, and improved stability.

Testing was conducted in the transonic wind tunnel at Arnold Engineering Development Center, Arnold AFS, Tenn. Twelve different configurations of the crewman-seat models were subjected to conditions simulating likely ejection situations. The conditions included airflow velocities that ranged from 456 to 1,216 mph.

The new safety devices attached to the seat system and manikin included a shield to protect the crewman from wind blast, a horizontal stabilizer, and an airflow diverter to lessen wind blast throughout the ejection trajectory. Test results are being studied for potential ejection-seat design improvements.

★ AFSC's Space Division has announced that the Navstar global positioning system—being created for worldwide use by US and allied military forces in the decade to come—is being trimmed from a network of twenty-four satellites to eighteen. The move is the result of budgetary reductions.

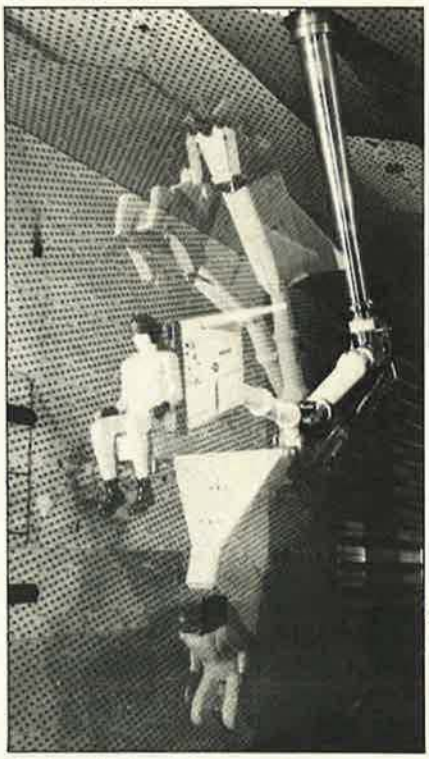
The reduced number of satellites will also mean capability degradation in terms of the system's accuracy and availability. The once planned ten-meter positioning accuracy will increase to sixteen meters for some users.

Unchanged will be the system's capacity for an unlimited number of users on land, sea, and in the air, as well as its all-weather, day-or-night positioning data including longitude, latitude, altitude, velocity, and time.

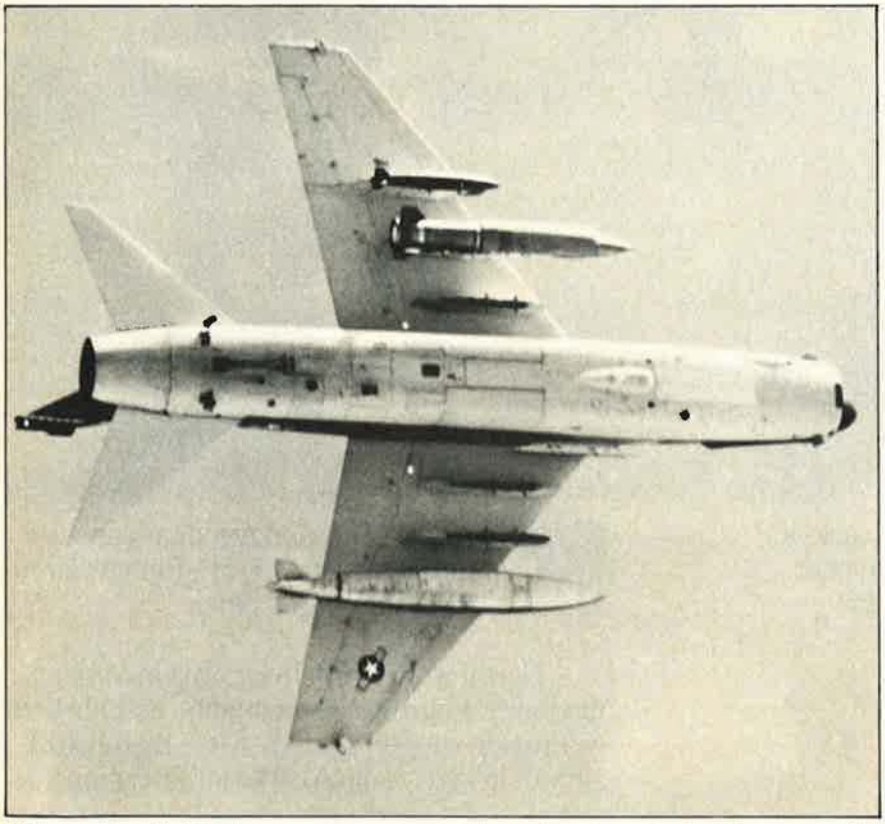
While Navstar is being designed for military use, there is great potential for application among such civil beneficiaries as the maritime and aviation communities.

In full-scale engineering development by aerospace companies are Navstar receiver sets for ships, planes, vehicles, and even backpacks.

Six Navstar satellites are currently in orbit.



Testing ejection devices at the Arnold Engineering Development Center in Tennessee. See lead item.



A-7D used in a flight-test program to demonstrate integral ramjet technology in support of the Advanced Strategic Air-Launched Missile program. Seven out of seven test firings conducted this past spring were successful. See p. 26.

★ Following reports of damage to commercial aircraft flying through volcanic ash clouds from Mount St. Helens, Air Force Logistics Command has alerted all major commands to the situation and has issued instructions on aircraft operation and maintenance.

Commercial aircraft flying through the gritty ash at high altitudes are said to have suffered abrasion damage to wings and control surfaces, windshields and canopies, and some engine damage.

AFLC is concerned not only with the flight safety of aircraft encountering the ash clouds but the costs of potential damage and the impact on force readiness.

Air Force equipment operators are urged to use protective covers on equipment and tech order procedures for desert maintenance in areas where the ash is present. Flight crews are cautioned to use desert operating procedures on the ground and also in flight.

★ In an action that had originally been scheduled for July but was moved up by about a month because of the civil unrest in South Korea—and an implied threat from the North—two E-3A airborne warning and control aircraft have deployed to Kadena AB, Okinawa, Japan.

Capt. Thomas E. Daniell, of AFRES's 45th Tactical Fighter Squadron, Grissom AFB, Ind., rolls in on target at bombing and gunnery range near Volk Field, Wis. The A-37 Dragonfly pilot was one of more than 2,000 Air Force Reservists who participated in Paid Redoubt '80 this past summer, the largest and most comprehensive readiness exercise conducted by the Air Force Reserve to date. It stressed planning, mobilization, and deployment of forces. (Photo by Norris J. Klesman)

The E-3As made the 6,400-mile nonstop flight (two aerial refuelings) from Tinker AFB, Okla., in sixteen hours, thirty minutes.

Two C-141s carrying support personnel and equipment followed them; about 150 members of the 552d Airborne Warning and Control Wing

Signed lithographic prints of the Keith Ferris painting "Forget Me Not" are being offered by the Red River Valley Scholarship Fund to benefit the children of those who flew in SEA and were killed or MIA there. *See p. 29.*

Maj. Thomas L. Sack Joins Magazine Staff As EWI Trainee

Maj. Thomas L. Sack, USAF, has joined AIR FORCE Magazine as a Contributing Editor, succeeding Maj. Gene E. Townsend under USAF's Education With Industry (EWI) program. This issue contains (p. 72) Major Townsend's eighth article written during his year as Contributing Editor. He has assumed the editorship of *Airman* Magazine at Kelly AFB, Tex.

Major Sack's most recent assignment was at Hq. Military Airlift Command as Chief, Materials Division, culminating more than three years in the MAC Public Affairs office. He earned a B.S. in English Literature from St. Joseph's College in Philadelphia in 1966, and an M.S. in Mass Communication from Iowa State University in 1974. He received his Air Force commission through ROTC in 1966 and entered active duty in April 1968. His assignments have included duties as information officer at the 479th Tactical Fighter Wing, George AFB, Calif., and the 314th Tactical Airlift Wing on Taiwan, plus six years as an Air Force Recruiting Advertising Officer in Iowa and Missouri.

Maj. Gene Townsend (left) welcomes Maj. Tom Sack to AIR FORCE *Magazine.*

AEROSPACE WORLD

from Tinker already had arrived at Kadena in anticipation of the planned deployment of the aircraft. They'll remain at Okinawa "to increase the US readiness posture in that region and to demonstrate US resolve to support" South Korea, USAF said.

The 552d now has two E-3As also in Europe and two in Iceland.

★ This past spring, USAF concluded a flight-test program demonstrating integral rocket ramjet technology with the seventh successful launch of a missile.

Launched from an A-7D at 26,000 feet over southeast Utah, the supersonic propulsion technology vehicle was powered first by a conventional rocket engine before transitioning to ramjet operation. The missile climbed to 60,000 feet for the 300-mile sprint to the Army's White Sands Missile Range in New Mexico, where it impacted as planned.

The ramjet technology demonstration is in support of the Advanced Strategic Air-Launched Missile (ASALM) program, directed by AFSC's Aeronautical Systems Division, Wright-Patterson AFB, Ohio.

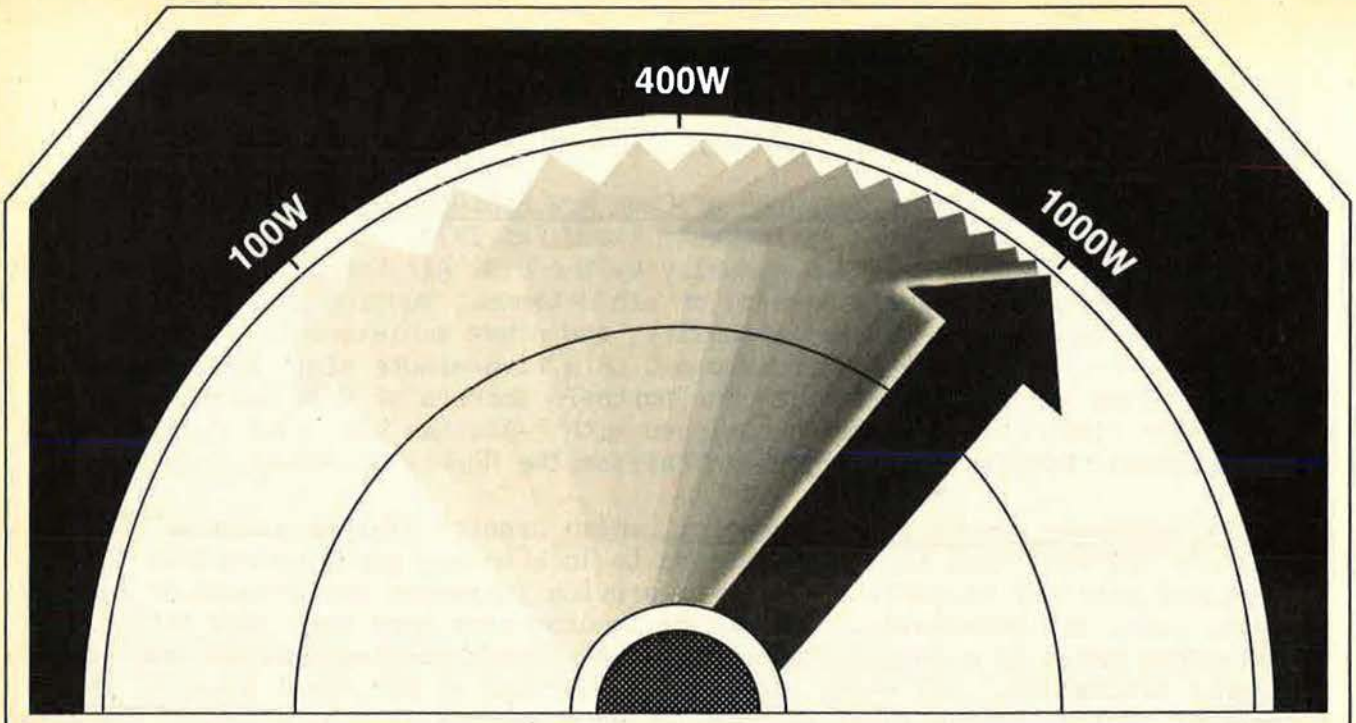
Prime contractor for the propulsion program was Martin Marietta Aerospace, Orlando, Fla.

★ Tests recently completed at the Rome Air Development Center, Griffiss AFB, N. Y., are aiding in the development of an airborne system that uses a radiating target's signals to pinpoint it.

Three T-39 twin-jet aircraft equipped with the new system were needed to locate targets exactly. These intercepted signals from radiating targets and relayed them to a ground processing station. By making precise timing measurements and knowing the positions of all three aircraft, a target's location can be determined.

The flight tests were conducted over RADC's Verona and Stockbridge sites by aircraft and crews of the 4950th Test Wing, Wright-Patterson AFB, Ohio, at various altitudes up to

TOP, one of the first two Panavia Tornado all-weather combat aircraft designed for multinational training delivered in July to the Tri-national Tornado Training Establishment at RAF Cottesmore from British Aerospace's assembly site at Warton Aerodrome. Training of RAF, German, and Italian crews will be at Cottesmore. ABOVE, the first of eleven airborne early warning (AEW) Nimrod aircraft was rolled out recently at British Aerospace's factory in Cheshire. The new Nimrods will warn against low-flying aircraft ground radars can't see. The AEW Nimrod squadron, to be operational in the mid-1980s, will form part of NATO's AEW force.



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SCIENCE/SCOPE

The 32nd Tactical Fighter Squadron of Camp New Amsterdam, Soesterberg, The Netherlands, has won the Hughes Achievement Award for 1979. The award, also known as the Hughes Trophy, is given annually by the U.S. Air Force to the outstanding squadron assigned a primary mission of air defense. Judging is based on operational performance, readiness capability, and other achievements. The 32nd TFS keeps two F-15s with air-to-air armament on a five-minute alert to intercept unidentified aircraft penetrating the northern borders of West German airspace. It is the first time a squadron equipped with F-15s has won. The F-15 is built by McDonnell Douglas Corporation and carries the Hughes AN/APG-63 radar.

A revolutionary mosaic infrared seeker, which creates TV-like pictures of a scene's radiated heat to allow missiles to lock on and guide themselves to tactical military targets, promises to provide increased performance at reduced size, cost, and complexity. The seeker incorporates more than 1000 infrared detectors mated to a corresponding number of charge-coupled devices used for signal processing. All these elements are located at the focal plane of the seeker. Unlike conventional sensors, which mechanically scan a scene, the focal plane array "stares" at an entire scene to provide extremely high sensitivity. The seeker, only four inches in diameter, is being developed for the U.S. Army and the Defense Advanced Research Projects Agency (DARPA) for a man-portable "fire-and-forget" missile for day and night operations.

The U.S. Army will boost its electronic warfare capability with new equipment to be developed by Hughes. Under the Non-Communication Frequency Extension Program, also known as the FX Kit System, Hughes will build three kits to work with the airborne Quick Look and the ground-based Team Pack and Agtelis systems. These systems are signal intelligence (SIGINT) receiving devices that collect and identify radio frequency signals from missiles, enemy communications, and similar sources. The kits will raise the equipment's operational frequency and increase the number of threats that can be detected.

U.S. Army XM1 tank crews will be able to fire accurately on the first round with the aid of an advanced laser rangefinder. The unit, which calculates distances based on how long it takes a laser burst to reach a target and bounce back, introduces mini-laser technology to combat vehicles. Its heart is a low-power neodymium-yag laser that's significantly smaller and lighter than the pink ruby lasers of previous systems. The device fires as fast as 30 pulses per minute and covers ranges from 200 to 7990 meters. Hughes delivered the first of 110 rangefinders ahead of schedule to Chrysler Corporation, builder of the XM1.

The F/A-18 Hornet strike fighter has passed an important milestone, scoring a direct hit on a BQM-34 drone target with a radar-guided AIM-7F Sparrow missile. The test verified the compatibility of the missile with the Hornet's AN/APG-65 radar. In a previous demonstration at the Naval Air Test Center at Patuxent River, Maryland, the aircraft had fired an infrared-guided Sidewinder missile. Hughes builds the radar system under contract to McDonnell Aircraft Company for the U.S. Navy and Marine Corps.

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AEROSPACE WORLD

35,000 feet. RADC personnel on the ground verified the data.

Follow-on testing is now being undertaken at the Army's Fort Huachuca test site in Arizona.

★ Ogden Air Logistics Center technicians have completed Project Rivet Hawk, a Titan II ICBM modernization program that replaced the missiles' 1950s guidance technology with 1980s solid-state circuitry.

Besides extending the Titan IIs' operational life into the next decade, the move is projected as saving USAF $97 million in support costs.

The outdated guidance system was replaced with an adaptation of the Universal Space Guidance System used on Titan III, the Apollo manned space program, and aboard many jetliners.

In June 1976, within nine months of go-ahead, first test flight of the new system took place and was successful beyond expectation. A second test flight was canceled and system manufacturing began.

During installation at the fifty-four Titan II sites at Little Rock AFB, Ark.; Davis-Monthan AFB, Ariz.; and McConnell AFB, Kan., Rivet Hawk technician teams also changed all the missiles' motor-driven switches in the airborne electrical systems and redesigned twenty-two major electronic modules into four.

The project also included the revision of 1,000,000 pages of technical data and the modification of launch procedures. The program was completed 105 days ahead of schedule. Another saving: SAC was able to eliminate thirty manning slots.

★ The Red River Valley Scholarship Foundation is offering a signed lithographic print of the Keith Ferris painting "Forget Me Not" (*see p. 25*) to benefit the scholarship fund set up for children of men who flew in Southeast Asia and were killed or are still missing. The price of each print is $100, tax-deductible.

"Forget Me Not" depicts a returning flight of F-105 fighter aircraft in the "Missing Man" formation, signaling the loss of a member of the flight. The aircraft are shown against the background of a faded fifty-star American flag. The original painting, which Keith Ferris donated to the Air Force Art Collection, hangs in the office of the Chairman of the Joint Chiefs of Staff.

Print size is 19.25 by twenty-eight inches; image size is 13.8 by twenty-three inches. Only 1,000 prints have been produced. Each is numbered and signed by Keith Ferris, and accompanied by a certificate of authenticity and a message from the artist. To order, send a check for $100 payable to RRVA Scholarship Fund, c/o Frank A. Sheridan, 8612 Tamarac Lane, Wichita, Kan. 67206.

★ The late Maj. Gen. Benjamin D. Foulois (1879–1967), former Chief of the Army Air Corps, has been selected

Why Doug Utley Is Flying A-10s—Again

RAF Bentwaters, England

Capt. Doug Utley thought he hung up his flight suit for the last time when he left the Air Force for a new job and a new career with industry as a mechanical engineer. That was on May 14, 1979.

Today he is back flying in the Air Force as a member of the newest A-10 squadron in Europe—the 511th Tactical Fighter Squadron.

Captain Utley is considered to be one of the more experienced A-10 pilots. During his first six years in the Air Force, he flew A-7s at Myrtle Beach AFB, S. C., made the transition to A-10s, and was a member of the first operational A-10 squadron.

With 605 hours behind the stick of the Thunderbolt II and working as an instructor pilot, he was selected to join the then new A-10 wing building in Europe. It would have been a great challenge.

But he did have a degree in mechanical engineering from North Carolina State University and thought he would check out the civilian world to see what kind of job opportunities were available. To his delight, his résumés netted several job offers.

Captain Utley took terminal leave on May 14 and officially departed the Air Force on June 27. A week after he left the Air Force, he was working as a mechanical engineer for a Dallas, Tex., firm. The pay was about the same as his Air Force job.

However, after three months, he began to realize that something was missing in his new career.

"I missed the changes and challenges I was used to in the Air Force," he said. "My new job kept me in the same building, doing the same thing."

He also learned something about management. "Industry had the same problems as the US military," said Captain Utley. "For example, the firm's personnel system lost me in the computers, and it took two weeks to find where I was supposed to be working.

"I think I gained a better understanding of why the Air Force runs its management system the way it does," Captain Utley said. "And the Air Force looked better than I once thought.

"Another factor in the decision to return was the enthusiasm my coworkers had in talking about my previous job," he said. "They couldn't grasp why I left flying fighters. That made me take a step back on the job I had. I always enjoyed flying airplanes. So I called Col. Mike Carnes, the 354th Tactical Fighter Wing Commander, and asked him whether the Air Force would be interested in an experienced A-10 pilot and the possibility of streamlining his return to the active Air Force."

Thirty days later, a record time for paperwork of this type to pass through the Air Force Manpower and Personnel Center, he was accepted and had orders to return to Myrtle Beach for A-10 requalification training and an eventual assignment to RAF Bentwaters in England.

Coming to England was fine for the Captain since it was his first choice and because "I consider the A-10 to be the best assignment in the Air Force." He became the first A-10 pilot to join the new 511th TFS from outside the wing.

—BY SGT. MARVIN KUSUMOTO, USAF

Captain Utley preflights an A-10 at RAF Bentwaters, UK.

by the First Flight Society for induction into its First Flight Shrine at the Wright Brothers National Memorial, Kill Devil Hills, N. C. A portrait of General Foulois will be placed alongside others who have made important contributions to the development of aviation.

Foulois was detailed to aviation duty by the US Army in 1908. He was a passenger with Orville Wright on the first cross-country flight in the nation, Fort Myer to Alexandria, Va., and return, on July 30, 1909. He was the first Army officer assigned to aviation service with troops, and was commanding officer of the 1st Aero Squadron. He had the distinction, with Lieutenants Lahm and Selfridge, of operating the Army's first dirigible and its first military airplane. *(For an "Airpower Pioneer" profile on General Foulois, see April 1979 issue, p. 86.)*

AEROSPACE WORLD

Rescue and Recovery Units Compete in SAREX '80

Six teams each from the US and Canada vied for top honors in parajumps, search and rescue, and medical exercises, as well as best overall, during the fixed-wing search-and-rescue competition, SAREX '80, held in mid-May at March AFB, Calif.

Canada's 413th Transport and Rescue Squadron, CFB Summerside, Prince Edward Island, scored highest overall to take home the championship in the form of the Saunders-Mackenzie Award.

The Sullivan Cup for the best medical exercise went to the 1550th Aircrew Training and Test Wing, Kirtland AFB, N. M.

The best team parajump performance was turned in by the Air Reserve's 303d Aerospace Rescue and Recovery Squadron, March AFB, to garner the Allison Trophy.

Winning the Pararescue Memorial Trophy was Master Corporal Robert P. Beattie of the 442d Transport and Rescue Squadron, CFB Comox, British Columbia.

A SAREX team is composed of three pararescuemen and an aircrew. The pararescuemen are judged on how close they land to a ground target in jumps from 1,500 feet. The medical competition is judged on skill in aiding the injured at a simulated aircraft accident. The search and rescue segment is based on speed and thoroughness in combing a designated area.

Said Col. Richard L. Hall, Commander of the AFRES 403d Rescue and Weather Reconnaissance Wing from Selfridge ANGB, Mich., which acted as SAREX '80 national host: "The purpose of the exercise is to get some standardization of procedures among US and Canadian rescue units. The competition gives some interface and exchange of ideas that are valuable to military rescue units."

At SAREX '80, the Pitsenbarger Memorial Trophy was presented by Maj. Gen. Cornelius Nugteren, Commander of MAC's Aerospace Rescue and Recovery Service, to the 303d ARRS. The award recognized the 303d pararescue section as the best among all active, ANG, and Reserve rescue units in 1979. During that year, the 303d saved eleven lives, totaled 556 injury-free jumps, and won four of the five awards at SAREX '79.

The trophy is named for A1C William H. Pitsenbarger, the first pararescueman killed in Vietnam and the first airman to be awarded the Air Force Cross for heroism under enemy fire.

US and Canadian search and rescue units are committed to rendering emergency medical and survival assistance to civilians and military personnel at sea and on land. To keep sharp, pararescue teams undergo vigorous special training. Members of US teams, called PJs for pararescue jumpers, are a rare breed, since only one in 1,000 prospective volunteers has what it takes in physical and skill qualifications to earn the distinctive maroon beret.

Because of these factors and job diversity and adventure, there are few openings for PJs, who have one of the highest retention rates among Air Force specialties.

Next year's SAREX is being planned for Trenton, Ontario.

Hitting the silk during this year's SAREX '80.

The 91st Bomb Group Memorial Assn. is raising funds to restore B-17 Shoo Shoo Baby. Proceeds go to 512th Antique Aircraft Restoration Group, Dover AFB, Del. Send $10 (and earn a T-shirt) to W. Warren Hill, 4002 Braddock Rd., Alexandria, Va. 22312. Include size and return address.

The seventy-seventh anniversary of the Wright brothers' first flight will be celebrated by the First Flight Society in conjunction with the National Park Service on December 17 at the Wright Brothers National Memorial in Kitty Hawk, N. C. The portrait of General Foulois will be unveiled at the luncheon sponsored by the Society, P. O. Box 1903, Kitty Hawk, N. C. 27949.

★ **NEWS NOTES**—In June, the Senate **confirmed the nomination** of Air Force **Gen. David C. Jones** to a second term as Chairman of the Joint Chiefs of Staff.

With NASA's announcement of the selection of nineteen new astronaut candidates, a **husband-and-wife space team** became a possibility. Included is **Dr. William E. Fisher,** whose wife, **Dr. Anna Fisher,** graduated from astronaut school last year. Both are MDs from Seabrook, Tex., near the Johnson Space Center. Of the nineteen, eight are Shuttle pilot candidates and eleven are mission specialist candidates. Of the latter, two are women and one is Hispanic. One pilot candidate, a Marine Corps major, is black. The pilot candidates also include USAF **Lt. Col. John E. Blaha; Lt. Col. Roy D. Bridges, Jr.; Maj. Guy S. Gardner;** and **Maj. Ronald J. Grabe.** A mission specialist is USAF **Capt. Jerry L. Ross.** Mission specialists will be responsible for the

A McDonnell Douglas F-18 Hornet strike fighter on a test flight near the Naval Air Test Center, Patuxent River, Md. Company test pilot D. D. Behm flew the thousandth Hornet flight hour in aircraft numbered "8." The Navy and Marine Corps intend to procure 1,377 of the aircraft, while Canada has ordered 137.

management of all Space Shuttle resources supporting payloads during flight.

Air Force **Maj. Gen. Robert B. Tanguy,** a USMA graduate, Vietnam combat pilot, and former Deputy Commander of US Southern Command, has become **Commandant of the Armed Forces Staff College,** Norfolk, Va., where he will be replacing retiring Army Maj. Gen. L. Gordon Hill, Jr.

Air Force **Maj. Gen. John E. Kulpa, Jr.,** who guided many USAF space programs from design to launch, was awarded the **1979 General Thomas D. White Space Trophy,** sponsored by the National Geographic Society. Named for the former Chief of Staff who died in 1965, the award is presented to a USAF military or civilian member for the most significant contribution to US aerospace progress.

Lockheed-Georgia Co. announced the sale of **three C-130H(S) stretched Hercules** transports to the **Indonesian Air Force,** adding to the two IAF bought last year. (Britain's Royal Air Force is currently stretching thirty of its C-130Ks.)

June/July saw the initial tests at **Manassas Airport, Va.,** of an **experimental NASA computer system** that automatically broadcasts weather and other pilot advisories. Such equipment might find widespread use at smaller airports lacking air control systems.

According to Moscow news reports, **two French pilots**—Wing Commander Jean-Loup Chretien and Squadron Leader Patrick Baudry—**are currently training in the USSR as candidates for a Soyuz/Salyut-6 mission** with Soviet cosmonauts in 1982. One will fly the mission, the other will provide backup.

Died: William A. Patterson, who as head of United Airlines built it into the world's largest civil carrier over a span of thirty-two years, in June in Glenville, Ill., following a long illness. He was eighty. ■

INDEX TO ADVERTISERS

CAPITOL HILL

By Kathleen G. McAuliffe, AFA DIRECTOR OF LEGISLATIVE RESEARCH

Washington, D. C., July 8

JCS Endorse Added Funds

The Joint Chiefs of Staff, appearing before a House Armed Services panel, uniformly responded that added defense funds in the Budget and Authorization Bill would not adversely affect military readiness.

This was in response to questions on whether or not the JCS were consulted on letters sent by President Carter and Defense Secretary Harold Brown to the Senate Armed Services Committee stating that the additions might jeopardize national defense. In an unusual letter, the President wrote: ". . . with anticipated defense budget totals, unrequested increases in R&D and procurement could adversely affect today's military readiness. . . ."

Gen. Lew Allen, Jr., USAF Chief of Staff, stated: "There is a shortage in the [President's] budget. . . . I have recommended to the Secretary of Defense since Afghanistan . . . that a substantial increase in spending is needed."

JCS Chairman Gen. David Jones, USAF, said: ". . . all of us have deep reservations about where this country is going and as to the adequacy of the Defense budget." He added that six or seven percent of GNP should go for defense.

Low Fuel Readiness

A House Armed Services subcommittee has released a report showing that during most of 1979 the services had to use war reserve stocks of fuel to carry out training. According to the Deputy Secretary of Defense, DoD had to trade "wartime sustainability for current readiness."

To meet wartime fuel requirements, the panel, headed by Rep. Samuel Stratton (D-N. Y.), suggested changing current law to allow use of Naval Petroleum Reserves if needed, and fuel stored in the Strategic Petroleum Reserve.

COLA Change

According to reconciliation provisions in the Budget Resolution, the Armed Services Committees have to come up with a savings of $400 million in FY '81. Expect the committees to look to military retirees for savings. The method is a proposed change in the current semiannual cost-of-living adjustments (COLA) to only once a year, thereby saving $460 million.

AFA opposes targeting retired personnel for savings. With experienced manpower retention the number-one military problem, shaving funds from retirees' checks can only adversely affect the situation.

Some measures are currently under way to spare military retirees from the COLA change. Proposals by Reps. Herbert Harris (D-Va.) and Clarence Long (D-Md.) would keep current COLA provisions intact.

Since any legislation to change the *status quo* will have to be approved by House and Senate floor votes, retirees and career personnel should express their concerns to their representatives in Congress.

Profit Curbs Review

A House Armed Services panel held a hearing to consider suspension of a 1934 statute, the Vinson-Trammell Act, which strictly limits profits on defense contracts in excess of $10,000.

A bill offered by Rep. Melvin Price (D-Ill.) would temporarily suspend Vinson-Trammell to provide for a review of its outdated provisions. The Senate Armed Services Committee adopted a similar measure introduced by Sen. Robert Morgan (D-N. C.), which suspends all curbs on contracts entered into between October 1976 and September 1981.

Under consideration are other proposals to repeal the statute or amend it to apply only to nonnegotiable contracts exceeding $5 million.

The hearing ended with no decision on changing the current law.

Reserve Incentive

The Senate will consider another proposal by Sen. William Armstrong (R-Colo.) to increase manpower quality and readiness. Accompanying his pay proposal and GI bill changes is the Strength in Reserve Act. This puts members of the Guard and Reserve at the head of the line for higher education loans administered by the government. Also, the bill provides loan forgiveness up to $2,000 a year for each year served. Guardsmen and Reservists would further receive preference in hiring by the Federal government as is currently done for newly discharged vets.

Senate Authorization for DoD

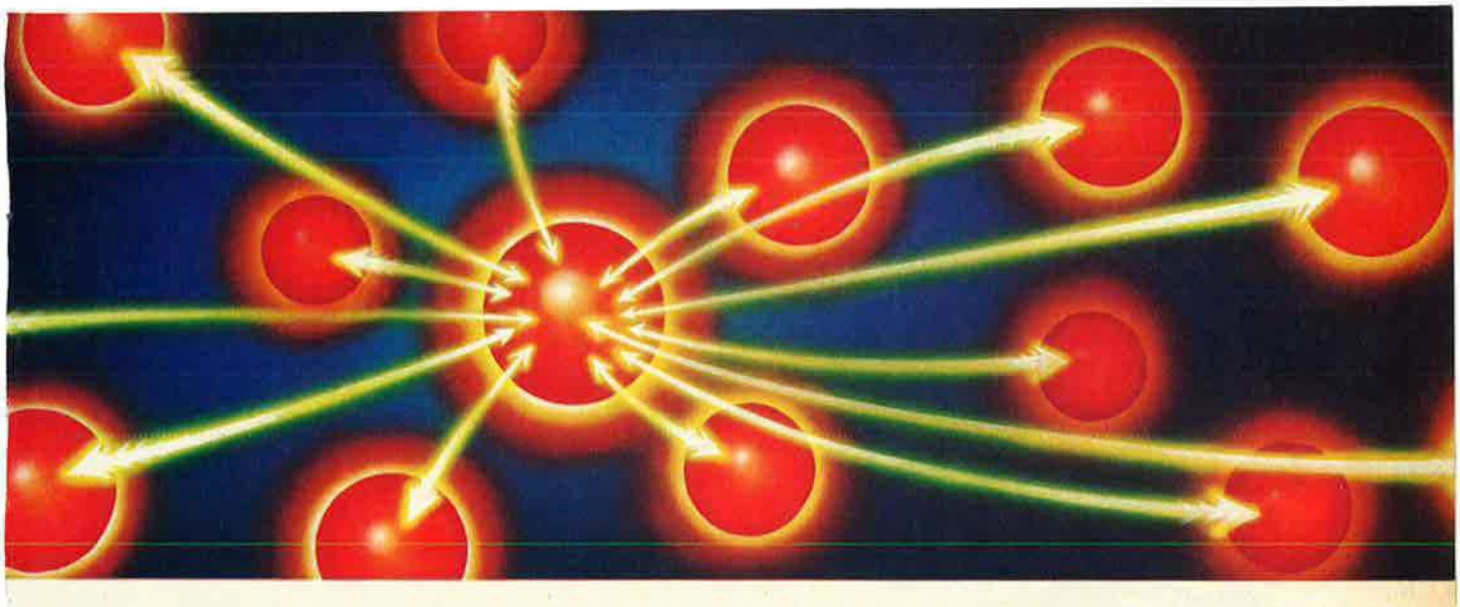
Despite appeals from President Carter and Defense Secretary Brown not to follow the whopping increase in DoD authorization passed by the House, the Senate Armed Services passed a $51.9 billion procurement and R&D package for FY '81. This is $5.88 billion over the President's request.

Earlier, the House passed a $53 billion procurement bill. The two versions have major differences in their provisions. A difficult time is expected in reaching a compromise.

The Air Force was conditionally provided $50 million for R&D of the CX airlifter by the Senate; the House deleted the entire $81 million request. The Senate committee added to USAF requests: $887 million for more aircraft procurement, $512 million to the spare parts account, $91 million for conversion of 155 FB-111s to FB-111B/Cs, $60 million to KC-135 reengining modification, $50 million to start the Rapier air defense missile system and for eighteen more F-15s. However, the Senate committee did not follow the House's lead in providing funds for a new cruise missile carrier.

The full $1.6 billion was provided for MX, but initial deployment is limited to 100 missiles and 2,300 shelters in Nevada and Utah. Plans are to be developed for deployment of the remaining 100 missiles in other areas.

Several manpower initiatives are included. Among them: an 11.7 percent pay and benefits increase; denial of VA benefits to those not completing twenty-four months of service; restriction to twenty percent of enlistees in mental category IV; and a controversial 25,000 reduction in Army end strength. The impact of these changes is a $1.2 billion increase in the overall request. ■



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The knowledge business

AIR FORCE | AUGUST 1980

An F-16 Instructor Pilot tells about flying the F-16, why he likes it, what the training consists of, and what the new pilots are like.

THE F-16: NOT LIKE ANY OTHER

BY CAPT. WAYNE C. EDWARDS, USAF
Photos by TSgt. Mike Cleveland, USAF

THERE were a lot of reasons not to be excited when I heard about my impending assignment to the F-16. At the time, I was flying as an F-5 instructor pilot at one of the earth's most remote locations: Khamis Mushayt Air Base near the "Rub al Khali" or Empty Quarter of southern Saudi Arabia. Although the flying was reasonably enjoyable, other factors typical of remote assignments were holding the normally happy attitudes of a fighter pilot at bay.

The prospect of flying the F-16 injected some vitality into the situation in spite of logical reasons why it should not: the grueling job of an RTU (Replacement Training Unit) instructor, a task I'd done in A-7s for two years; and dealing with a new airplane, with probably lots of groundings and time spent standing around.

Then I remembered the day, as a second lieutenant, when I saw my first picture of the beautiful red, white, and blue F-16 prototype. What a magnificent machine it appeared to be! I cut that picture out, and for years it hung inside my personal equipment locker and caused me to think each day of eventually flying it. Naturally, by the time I got my chance, the lieutenant's enthusiasm of six years earlier had partially waned, but the airplane still intrigued me.

With a more practiced eye, I now viewed the F-16 as possibly the "fighter pilot's fighter" and knew I had to try it on for size. It's a good thing, for now I realize that the F-16 is the finest machine I've ever flown and probably will ever fly.

Into the Air

I arrived at Hill AFB, Utah, on the last day of August 1979. An earlier phone conversation with the commander of the 16th Tactical Fighter Training Squadron had dispelled my concerns. Apparently the pilots of the 16th, in addition to teaching academics, running a continual open house, and generally setting up a new squadron, were flying as much as they could. I was anxious to join them.

As soon as possible, I went out to the line to see this bird that had called me from halfway around the world. Oddly enough, I had never seen an F-16 "in the flesh." The machine, now wearing its operational colors of mottled gray, looked devastatingly effective. Its lines spoke of unparalleled performance. Its small size spelled "advantage." The cockpit meant visibility and comfort. I found myself thinking that if the airplane could do half of what it looked capable of, it would be unreal. As I walked away, visions of fast sailing ships, beautiful sports cars, and great thoroughbred horses crossed my mind. This airplane was a thoroughbred, undoubtedly. I had to get airborne.

The opportunity arose on the afternoon of September 12. Lt. Col. "Ace" Rawlins, fellow Texan and assistant operations officer of the 16th TFTS, took me along on a local area orientation sortie. Just another in a long series of flights, I told myself. Nothing to get thrilled about, I reasoned, but to no avail. Though I was confined to the backseat of a "B" model or "family model," as

The machine, now wearing its operational colors of mottled gray, looked devastatingly effective.

we now call it, and never having been fond of two-seat fighters, still it was great! The novelty of strapping on this new airplane with all its interesting and distinct technological advances proved exciting.

My first impressions were of tremendous acceleration (even without afterburner) and the unusual visibility from the cockpit. On the turn out of traffic, it was like looking directly over the edge of a reclining chair at the ground several hundred feet below. Nice to be strapped in, I remarked to myself. Also, the absolute absence of any airframe buffet, regardless of speed, and the sensitive response of the aircraft to its much publicized fly-by-wire flight-control system remain as my major first impressions.

Shortly thereafter, formal training began in earnest. Academics and flying instruction then were taught by the initial cadre of ten Air Force pilots chosen to fly the multirole fighter, along with some members of the joint test force who had been with the program since prototype days. I was pleased to be among the first pilots checked out during the F-16's first operational months in the Air Force. We completed two courses totaling thirty-two sorties: the Special Transition Training Course and the Special Instructor Pilot Upgrade Training Course. Included in my class were commanders of the first Danish and Norwegian F-16 squadrons, Maj. Chris Hvidt and Maj. Einar Smedsvig respectively. Two other Norwegian pilots and one Dane rounded out the cadre of five Europeans in my class of eleven. A good time was had by all.

Opposite page: Seeming to stretch into the foothills of the Wasatch Range, F-16s of the 388th Tactical Fighter Wing stand ready on the ramp at Hill AFB, Utah. Above: an early F-16A taxis back to the ramp area after a rainy-day mission.

F-16 Instructor Pilot

To my prejudiced mind, the RTU instructor pilot is the unheralded hero of the fighter world. If I were asked to characterize the job, two points would come immediately to mind: consistently long work days and the ultimate responsibility for each mission, all of its members, and all of its aircraft.

But the instructor pilots' job is rewarding, especially in the "B" course we are conducting. It is for newly graduated pilots (all second lieutenants), along with a few non-fighter background but experienced aviators. The students, particularly the lieutenants, are unprejudiced by previous experience and are very malleable. They have no old habits to overcome and no backgrounds against which to weigh every word. This, however, increases the responsibility of the IP beyond the mechanics of the syllabus requirements. Attitudes are being formed and basic do's and don'ts are reinforced that will influence each student for the remainder of his flying career, regardless of the machine he eventually flies. Thus, we teach things like being attentive in flight briefings, always being on time, constructively participating in debriefings, keeping quiet on the radio, other forms of flight discipline, and generally what it means to be a good wingman. These fundamentals are like basic blocking and tackling to a football player. They are essential elements of the student's training if he is to transition successfully to operational flying at the end of the course, a point where some say the learning really begins.

For the IP, a typical training mission may begin two and a half to three hours prior to takeoff. The mission must be planned based upon the syllabus requirements and the instructor's assessment of the student's previous progress, plus areas where emphasis is needed. Because an IP could fly with any student of the class any given day, a review of each student's gradebook and the previous IP's narrative about him is required.

An F-16B with instructor pilot and student aboard reaches for the runway as it returns to land at Hill AFB.

Two hours before takeoff, flight members gather in a briefing room to receive the word from the IP. Standard items are reviewed, along with an explanation of how to perform the required tasks and the sequence in which they will be done. As missions become more complex in the later stages of training, less emphasis is placed on the "standards" and the mechanics of how to do things. Then the discussions center more around tactics and techniques.

About one hour prior to takeoff, each flight member dons his personal equipment and goes to the aircraft. Engine start and taxi times are established to increase the probability of an on-time takeoff. Alternate missions are briefed in case the weather changes or a flight member drops out for any reason. The objective is to realize the maximum training value per sortie flown.

Flight activities during training sorties depend on the stage of training, and whether we are instructing air-to-air or air-to-ground flying.

The average air-to-ground sortie lasts about an hour and a half without air refueling. In the early stages, we concentrate on qualifying students in weapons delivery techniques. The maneuvers are done on controlled ranges, and begin with lay-down deliveries, then progress to various angles of dive-bombing, and then into strafing. The students' training on air-to-ground tactics is then done at uncontrolled ranges, where tactics can be employed and skills built up.

> There is a lot of satisfaction in teaching, especially in the F-16, because of its great qualities as a fighter.

In air-to-air work, the average unrefueled sortie lasts about one hour. We start with one-vs.-one canned maneuvers to build student proficiency, and progress into two-vs.-one or one-vs.-two engagements. Those are conducted within visual range. As student skills build, we move them into air-to-air setups beyond visual range. Where possible, the flying is against dissimilar aircraft. For our students, that could include F-4s, A-4s, F-5s, F-14s, and F-15s, to name a few. They might be USAF, but are equally likely to be Navy or Marine fighters seeking dissimilar air combat.

After the airwork, we land and taxi in. Maintenance is debriefed on aircraft discrepancies found during the flight. Then pilot debriefing begins. Normally, the pilots gather back in the squadron briefing room to debrief the flight about thirty to forty-five minutes after touchdown. Debriefing can take forty-five minutes to an hour, depending on how things went during the flight. A large portion of the learning achieved on any given mission is accomplished in the debriefing. Further discussion of tactics or philosphy occur here as well.

Finally, after the student is released, the instructor must communicate, via the grade slip, what took place during the flight and how the student performed. Squadron supervisors and other instructors stay apprised of student progress in this manner. Roughly five to six hours are required to complete each mission professionally. Two sorties mean a very full day. The work is hard, but the rewards are great. There is a lot of satisfaction in teaching, especially in the F-16, because of its great qualities as a fighter.

Flying the F-16

The F-16 is forty-nine feet six inches by thirty-two feet ten inches of absolutely dynamic energy waiting to be released. Fully fueled and with two wingtip missiles, the F-16A weighs only 23,600 pounds, 6,900 pounds of which is internal fuel. External stores can bring the maximum gross weight up to 35,400 pounds. The F100-PW-200 engine, built by Pratt & Whitney, is a 25,000-pound-thrust-class engine. It gives the F-16 a thrust-to-weight ratio of better than one to one when in air-to-air configuration. When you put that kind of power in a light, high-lift airframe, and harness it all with extremely responsive flight controls, it unconditionally means performance.

Fighter pilots want their planes to have the ability to sustain a high energy state throughout hard maneuvering. The F-16 is the first production fighter to have a placard limit of nine positive Gs. It can sustain more than seven Gs at low altitudes with an entry airspeed of only 300 knots. At sea level, and with an entry airspeed of 375 to 400 knots, nine Gs can be sustained indefinitely, and the aircraft will actually accelerate during this turn. This excess energy translates into very rapid acceleration during one G or less than one G flight. The ability to accelerate to 800 knots indicated airspeed while in level, low-altitude flight is a definite tactical plus.

To help the pilot cope with these stresses, numerous physiological design features have been built into the cockpit. Most noticeable is the thirty-degree tilt-back seat. Although this angle of recline does not in itself increase G tolerance by helping the cardiovascular system sustain a supply of blood to the head during high G maneuvering, it does allow the pilot's weight to be distributed over a larger portion of the body and tremendously reduces fatigue, discomfort, and outright pain. This is a great plus that pilots literally "feel" on each mission. Most pilots in the F-16 program are concerned with physical conditioning in order to improve G tolerance, reduce the number of strained necks, and to use the airplane to its maximum capability. If your head weighs fifteen pounds normally,

Capt. Wayne C. Edwards is an F-16 instructor pilot with the 16th Tactical Fighter Training Squadron at Hill AFB, Utah. He is a Distinguished Military Graduate of the Texas A&M class of 1972. He holds a master's degree from the University of Northern Colorado and has completed Squadron Officers School and Air Command and Staff College. With more than eight years of Air Force service, Captain Edwards has flown the A-7D, F-5B/E/F, and the F-16A/B, totaling more than 1,900 hours of flying time.

Preflight check of their F-16B is performed by 2d Lt. Mike McDonald (left) and Capt. Wayne Edwards, the instructor pilot.

Specks on the canopy aren't tolerated, and Amn. Dennis D. Faber cleans off loose dust that might cause trouble.

under nine Gs it will weigh 135. Try moving that around with those long thin neck muscles! Happily, one grows accustomed to the reclined position very easily, and it doesn't affect visual perception during landing or instrument flying.

The unrestricted visibility provided by low canopy rails and a bubble canopy is a tremendous tactical advantage. After only one or two flights, the feeling of exposure is replaced by the pleasure of being able to see everything around you so easily. I personally don't feel that having the upper body surrounded by glass contributes at all to spatial disorientation during instrument conditions. A bit of distortion is present at the double curve portions of the canopy, especially when looking at night runway lighting through raindrops, but I'll gladly accept that for the tactical advantage.

Another distinct cockpit feature is the side stick controller. Its location, on the right rather than in the center, is almost insignificant from a transition point of view. While flying, it isn't even noticed. Some of the instruments on the right console are a bit difficult to see but the more important ones between the knees are easier, so there's an even trade-off! The significant thing about the side stick controller is that it's hooked up to the fly-by-wire flight control system.

Basically, in order to achieve such unparalleled performance, the F-16 airframe is unconventional and inherently unstable by design. So, a quad-redundant computer was installed to translate pilot inputs from the nonmovable stick to the servo-actuators on each flight control surface and to keep the pointed end of the aircraft going forward at all times. The result is tremendous re-

F-16 Courses at Hill AFB

The two instructor pilot courses taught up to mid-1980 are designed for fighter pilots with extensive previous experience and instructor time. Formal title of the conversion, or "short" course, is USAF Special Transition Training Course F-1600TXX. It consists of twenty-two sorties, 113.5 hours of academics, and 23.5 hours in cockpit trainers. The sorties total 27.6 hours of flying time. They are divided among conversion, surface attack, and air combat training. Tremendous quantities of new information are absorbed in a short time. "Like drinking out of a fire hose," one friend remarked.

The instructor upgrade course is next. It is the Special Instructor Pilot Upgrade Training Course F-1600IXO. It consists of ten additional sorties also divided among conversion, surface attack, and air combat training, plus thirty-six additional hours of academics. As is typical of other "I" courses, students and IPs switch roles to allow the upgrading IPs to brief and lead missions and otherwise qualify to be dubbed K1115Q, or Instructor Pilot F-16.

(By spring 1980, the 388th Tactical Fighter Wing had graduated eleven F-16 IP classes totaling seventy-four students, including four Danes, five Norwegians, five Dutch, and four Israelis.)

The course we teach new pilots is called USAF Operational Training Course F-16000B, nicknamed the "B" course. By necessity, it is more extensive and lengthy, since we are training newly graduated pilots or those with nonfighter backgrounds. It lasts almost six months and consists of 172.4 hours of academics, 32.5 hours on cockpit trainers, and sixty sorties totaling 82.6 flying hours.

sponsiveness that allows the pilot to fight an opponent without fear of exceeding the limits of aerodynamic stability when in a clean or air-to-air configuration. In the air-to-ground role, the pilot must adhere to slightly more restrictive flight parameters because of the aerodynamic realities of hanging external ordnance on a small, light airframe. The nonmovable stick initially causes some problems in close formation and during landing but the tendency to overcontrol is soon overcome. Models now being produced are equipped with a slightly movable stick.

Among the finer qualities of the F-16, in terms of tactical utilization, is the excellent specific fuel consumption of the F100 engine. This translates into longer range and more station time. During a recent exercise, a clean F-16A from Hill AFB flew 125 to 150 miles into exercise airspace, stayed on station twenty-five to thirty minutes, entered several engagements requiring the use of afterburner, returned to base and landed with 1,000 pounds of the 6,900-pound fuel load remaining!

The F-16 undoubtedly belongs to a new generation. However, in terms of great fighters, most F-16 pilots believe that over the long run it will carve out its own place in the annals of fighter aviation. I envision it becoming like the P-51, F-86, or F-100 of previous generations—very prolific, well utilized because of its tremendous capabilities, and highly respected by the pilots lucky enough to fly it. There is, in my mind, simply no other airplane in the world today I would rather take into combat if it became necessary. Like every pilot, I wish for small changes in cockpit design (some of which are being implemented now), such as relocation of the inertial navigation set control panel, installation of a VHF/FM radio, small changes in avionics software, etc. If you asked 100 F-16 pilots, you might receive 100 different opinions. However, I am sure that this airplane, even in its infancy, is the greatest I have ever flown and probably ever will fly.

Most F-16 pilots believe that over the long run it will carve out its own place in the annals of fighter aviation.

Ernest Hemingway once wrote of fighter pilots and their planes:

> You love a lot of things if you live around them. But there isn't any woman and there isn't any horse, not any before nor any after, that is as lovely as a great airplane. And men who love them are faithful to them even though they leave them for others. Man has one virginity to lose in fighters, and if it is a lovely airplane he loses it to, there is where his heart will forever be.

Sure, I feel that way about my first fighter. But now, much more so than the infatuation of a first love, the F-16 has captured my imagination and deep respect.

This is the airplane I want to be teamed up with for the rest of my flying days. ■

Fighter pilots like the tactical advantage of the unrestricted visibility provided by the F-16's low canopy rails and bubble canopy itself.

Tactical Air Command's 388th Tactical Fighter Wing is the first in USAF to be equipped with the F-16. As the Wing approaches operational readiness, it is clear the program is . . .

COMING ON STRONG IN THE F-16

BY CAPT. MICHAEL B. PERINI, USAF

AFTER almost two years of flying and maintaining the newest aircraft in the Air Force inventory, the 388th Tactical Fighter Wing (TFW) is nearing its goal—operational readiness in the F-16 multirole fighter.

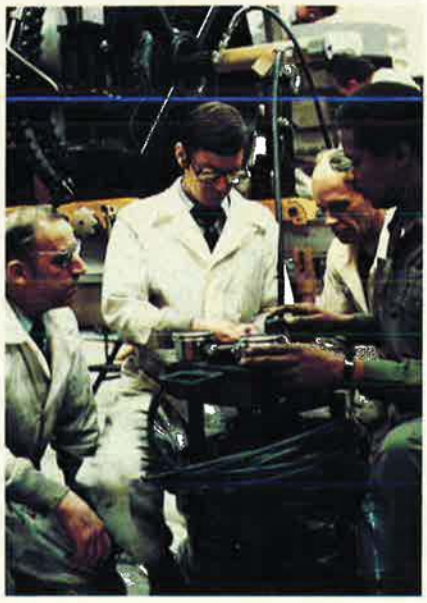
Formal arrival of the first aircraft in January 1979 made the 388th the first F-16 tactical fighter unit in the world. Since then, aircraft delivery, associated aircrew and maintenance training, and flying programs have been ahead of schedule.

Four units assigned to the 388th TFW fly the F-16: The 16th Tactical Fighter Training Squadron has been training the initial cadre of line and instructor pilots; the 34th Tactical Fighter Squadron also has training responsibilities; and there are two operational squadrons, the 4th and the 421st Tactical Fighter Squadrons.

The transition of the 388th from the veteran F-4D Phantom to the internationally coproduced F-16 went smoothly. By the end of this year, the 388th TFW will have received its 102 aircraft and plans to be operationally ready. Already, in less than two years, Hill AFB, Utah, aircrews have flown nearly 9,000 F-16 missions, accumulating more than 11,000 flying hours.

International Training

During the past nineteen months, training has been the watchword at the base. Both maintenance and pilot training programs have been in full swing preparing American and foreign military personnel to fly and maintain the aircraft. Performing the training for the initial cadre of pilots for the Air Forces of the US, Denmark, the Netherlands, Norway, and Israel has been a unique challenge, met on schedule by first training instructors and line pilots and then beginning to train newly graduated pilots. By May 1980, the 16th TFTS had soloed the first Air



Opposite page: Instructor and student ready to launch an F-16B for flight training at Hill AFB. This page, top: checking a ready F-16; center left: Belgian Air Force students review torque wrench operation and procedures with TSgt. Horace Barnes; center right: SrA. K. T. Hendricks checks an AIM-9L missile; bottom: Amn. Barry L. Bates and SSgt. Carl L. Rice (background) prepare to load a 2,000-pound bomb under the wing of a 388th TFW F-16.

Force second lieutenant. (Two Belgian instructor pilots were trained at Edwards AFB, Calif., before the 388th program began.)

A part of the training is Dissimilar Air Combat Training (DACT) between fighters of different makes and models. One Air Force F-16 instructor pilot says:

"Training against other fighters enhances a pilot's knowledge about air combat much more than fighting against his own type of fighter each time."

The formal maintenance training curriculum is designed to teach aircraft technicians the knowledge and skills required to operate, maintain, and control the F-16 as it becomes part of the inventories of USAF and foreign air forces.

By the spring of 1980, more than 2,650 Air Force military, civilian, and Reserve personnel and some 700 military trainees from the Air Forces of Belgium, Denmark, the Netherlands, Norway, and Israel had graduated from the maintenance courses. The training is conducted by the 533d Field Training Detachment, Air Training Command, together with the 388th TFW's own Maintenance Training Division. Experienced instructors are providing expertise in assuring realistic training for those who must maintain this complex weapon system. Highlights of the forty courses being taught include electrical, engine, pneudraulics, environmental, communications, navigation, weapons maintenance, and airframe specialist. In January 1981, an aircraft battle damage repair course will be added.

Maintenance training includes "hands-on" work on real aircraft when available, and also on Simulated Aircraft Maintenance Trainers (SAMT). The 388th TFW has devoted as many as seventeen aircraft a day for maintenance training. Currently, seven SAMTs are in use, with two more in development. Each SAMT covers a different aircraft subsystem: electrical, pneudraulic, engine diagnostic, engine

Top, left to right: SSgt. Carl L. Rice, Amn. Barry L. Bates, and SrA. Gary G. Horsewood load a 2,000-pound bomb onto a pylon under an F-16 wing at Hill AFB. Right: Everything but the kitchen sink is hung under the wings of an F-16 ready for takeoff.

start system trainer, engine run, communications-navigation and electronic countermeasures, and flight controls. The SAMTs duplicate malfunctions through simulation. They can create problems impractical to inflict on actual equipment solely for malfunction purposes.

Exercises and Deployments

Pilot and maintenance training create the foundation for a bigger and more critical goal—combat readiness.

The wing has used realistic exercises to prove the combat effectiveness and long-range capability of the F-16. Col. W. Troy Tolbert, Commander of the 388th TFW, describes the rationale for realistic training: "It doesn't pay or prove anything to anyone just to take off and land an aircraft. Everything we're trying to do in our exercises must be as credible as we can possibly make it."

The first real test for the F-16 came as a result of a wing-organized exercise named "Red Max Alpha." (*See* AIR FORCE, *June 1980, p. 29.*) The three-day exercise started with a rugged check. This was a nonstop flight across the central, eastern, and southern sections of the US. As a result of that flight, a new ten-hour nonstop record for the F-16 was established. Only three aerial refuelings were needed during the 4,300-mile flight, which simulated distance and time involved in a deployment to Central Europe.

After returning to Utah, the aircraft were refueled and readied for additional missions. Pilots concentrated on close air support missions during the remainder of Red Max Alpha. Twelve F-16s flew 101 missions with an average "quick-turn" time of sixteen minutes. Gunnery ranges in Utah, Nevada, and Idaho were used for attacks on simulated targets "deep inside enemy territory."

During the attacks, inert general-purpose 500-pound bombs (MK-82s) were delivered. A majority of the bombs hit either on or within thirty feet of the intended targets. "That is phenomenal bomb delivery accuracy," Colonel Tolbert says.

Participation by F-16 aircrews and maintenance technicians in realistic exercises continues to expand. Instructor pilots of the 16th TFTS, for example, participated in Red Flag 80-3 at Nellis AFB, Nev. The squadron also participated in Exercise Sea Strike 80-2, run by Hq., Twelfth Air Force (TAC). Both exercises allowed aircrews to refine their skills in air-to-air and air-to-ground tactics. Lt. Col. Lawrence E. Boese, Commander of the 16th TFTS, says the exercises were "an extraordinary opportunity for instructors to get out of the training environment and be part of a program that enhances their combat skills."

Maintenance people also rise to the occasion during exercises, and Colonel Tolbert explains why: "Exercises allow technicians to practice their art. I have never seen maintenance personnel fail once they have been challenged. . . . They always come through. The tougher the job and the bigger the challenge, the more professional they become."

Multinational Operational Test and Evaluation

A combined cooperative effort among the Air Forces of Belgium, Denmark, the Netherlands, Norway, and the US makes up the F-16 Multinational Operational Test and Evaluation team. Commonly known as MOT&E, the group was formed in September 1978 and based at Hill along with the 388th TFW. Its USAF nucleus is Det. 16, 57th Fighter Weapons Wing. The MOT&E evaluates the capabilities, maintainability, and supportability of the F-16 when deployed in actual operations and performing realistic operational scenarios.

Each country contributes aircraft and manpower assets to the overall effort. In addition to analytic and support personnel, ten aircraft and eighteen pilots are involved. Ten pilots are US; each of the European countries has two pilots committed. The team conducted its tests at Hill AFB until June 1980, when it deployed four aircraft and more than 120 air and maintenance crews to Europe for a six-month testing period in the operational environment. (*See box for schedule.*)

At the end of the European phase, the analysts' conclusions and recommendations will be compiled in a final report to Tactical Air Command and the air staffs of the four participating European countries.

In less than two years, the F-16 program at Hill AFB has grown beyond the initial training phase associated with a new weapon system. To observers, the aircraft is beginning to demonstrate its superb reliability and maintainability. In the air it continues to accumulate flying hours as it edges toward maturity. Though untried as yet in combat, aircrews and maintenance technicians are gaining valuable experience and respect for the aircraft.

Colonel Tolbert sums it up: "All our efforts now are aimed at increasing the Wing's ability to respond with the F-16 and support the Air Force's worldwide commitment to our nation's security. We will soon be ready." ■

Capt. Michael B. Perini is Public Affairs Officer of the 388th Tactical Fighter Wing. He joined the Air Force in 1972 after receiving his commission through the AFROTC program at Washington State University. He holds a master's degree from the University of Southern Mississippi and has completed Squadron Officers School. He received Air Training Command's Feature Writer Award for 1977. Further, he was a TAC representative for the 1980 Young Men of America Award.

Multinational Operational Test and Evaluation (MOT&E)

The final six months of 1980 find the Multinational Operational Test and Evaluation (MOT&E) team shifting its focus to actual operational testing in the airspace and with the forces of the European partners on the F-16. Six weeks of testing will be spent in each of the four countries, according to this schedule:

June 20–Aug. 7	Netherlands	Leeuwarden Air Base
Aug. 7–Sept. 18	Denmark	Skrydstrup Air Base
Sept. 18–Oct. 30	Belgium	Beauvechain Air Base
Oct. 30–Dec. 15	Norway	Rygge and Bodö Air Stations

The impact of Soviet Russia's invasion of Afghanistan on USAF's doctrine and long-range plans was pervasive. In an exclusive interview with AIR FORCE Magazine, the Air Force's Chief of Staff looks probingly at . . .

USAF's Goals in the 1980s

BY EDGAR ULSAMER, SENIOR EDITOR

THE SOVIET invasion of Afghanistan, and Moscow's willingness to commit large numbers of its own forces to that task, prompted the Air Force—and the other services—to critically reexamine their program priorities, especially within the areas of conventional warfare and mobility, according to USAF Chief of Staff Gen. Lew Allen, Jr.

Within the Air Force, this reassessment has led to an important shift in focus, a shift General Allen sees as essential regardless of how the Soviet Union, over the long term, plans to capitalize on the geostrategic advantage of having large military forces in and political control over Afghanistan. The importance to Western civilization of the Persian Gulf region—now within easy grasp of the USSR—is pervasive and historically unprecedented. Whether the Soviet objectives in invading that country are the encirclement of China and pan-Asian hegemony or a step toward seizing the oil resources of the Persian Gulf region—or both—is not clear. What is clear, in General Allen's view, is that, as President Carter pointed out in his State of the Union address, this country's first concern must be preventing Soviet control of the Persian Gulf region. For the Air Force, this translates into the ability to deploy, logistically support, and sustain in combat forces of sufficient size and stamina to achieve that objective in such a remote area. "In this regard we clearly have deficiencies and we therefore must act quickly," he conceded.

In structuring and modernizing tactical air capabilities and the ability to project these forces, the Air Force, over the past decade but especially since the end of the war in Southeast Asia, had paid primary attention to requirements associated with conflict in NATO's Central Region, he told AIR FORCE Magazine. Since a NATO war of this type is both the most demanding and highest-priority scenario, USAF had to strike a balance among a variety of factors. Key among them were the numbers and capabilities of combat aircraft needed to match the large and sophisticated Soviet tactical air forces, as well as the ability to get US tactical airpower to Europe quickly and ready to fight on arrival. Concomitantly, the emphasis was on quick force modernization coupled with high readiness and the ability to deploy tactical airpower rapidly. These qualities are needed to cope with the short warning that is associated with the Warsaw Pact's blitzkrieg doctrine for attacks in the Central Region. This set of USAF priorities, and the attendant costs, unavoidably led to economizing elsewhere, principally in what can be categorized as "sustainability of combat," General Allen said. "While we had to let sustainability slide, we didn't do so carelessly." Essential provisions were made for fighting a NATO war on a protracted scale in concert with the other members of the alliance, he explained. Nevertheless, deficiencies persist for both US and allied forces: "Our munitions stocks aren't what they should be; our supply of parts isn't what it should be; and our maintenance capabilities aren't what they should be."

But Afghanistan was a turning point, prompting the Air Force to reorient its general-purpose forces toward situations where it would be far more difficult to move and support combat forces than in NATO's Central Region.

The FY '81 Air Force budget—which General Allen terms "very good at the time"—and the associated Five-Year Defense Plan were designed to counter the growing military strength of the Soviet Union mainly in the strategic nuclear area through such Air Force weapons programs as MX and the air-launched cruise missile. That categoric need plus the time lag between budget formulation and implementation precluded the FY '81 budget from responding "sufficiently" to the requirements brought on by the Soviet actions in Afghanistan, according to USAF's Chief of Staff. The Air Force, however, is meeting the new demands "as best we can" through reallocation and other adjustments of available funds and resources. But in adjusting to new priorities, something has to give, to wit "our ability to reinforce NATO." With forces slated for NATO reinforcement now allocated to contingency operations in the Middle East—and because "it certainly isn't possible to do both at once"—the slack has to be taken up by NATO's European members, General Allen pointed out.

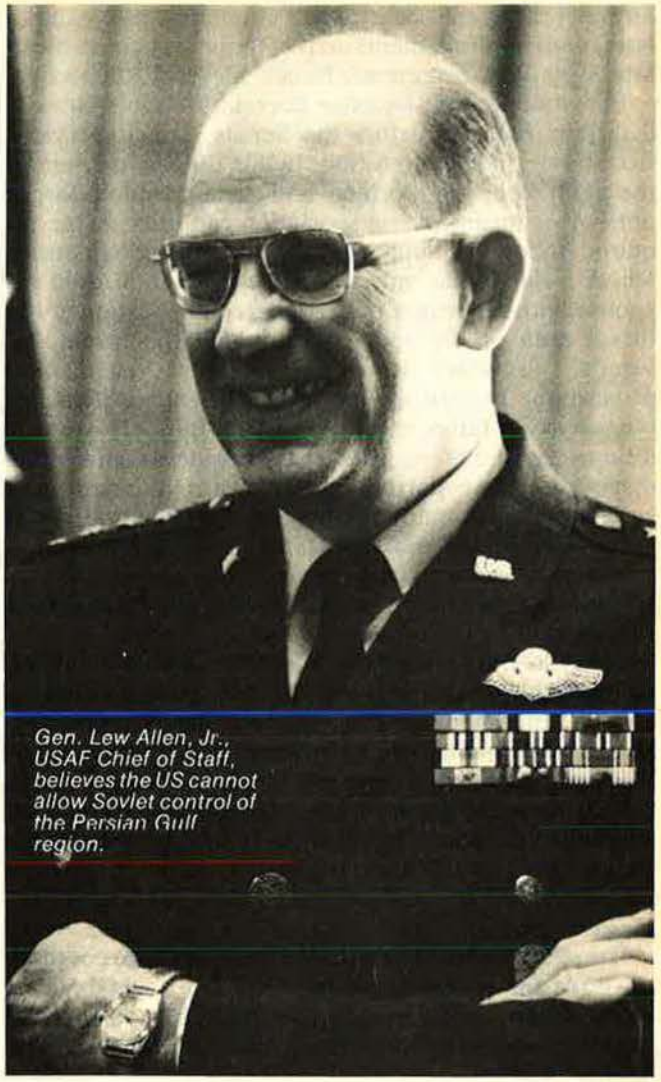
Congress, Afghanistan, and the Defense Budget

On May 29 of this year, the Investigations Subcommittee of the House Armed Services Committee, with its

chairman Rep. Samuel S. Stratton (D-N. Y.) presiding, interrogated the Joint Chiefs of Staff about the FY '81 Defense Budget. The JCS testimony represented the professional views of the Chiefs on military needs, rather than on the overall federal budget and the funding available within that broader framework for defense. Not surprisingly, the nation's top military leaders agreed that additional funds, above the President's amended FY '81 budget request, are needed. Asked by Representative Stratton whether the growing Soviet threat to the Indian Ocean area warranted boosts in the Defense Budget, General Allen replied, "I believe that increased defense funding is required to adequately match the increased danger represented by that situation." He further told the subcommittee that "there is a shortage in the budget as it is presently proposed and an increase is needed. Therefore, I have recommended to the Secretary of Defense [following the Soviet invasion of Afghanistan]—and my views have been heard and considered on this matter—that a substantial increase in spending is needed. Increased investments in force projection capabilities and near-term readiness are needed to cope with the Soviet threat to the Persian Gulf area," he testified.

The hearings generated a tide of headlines suggesting that the Joint Chiefs of Staff had broken ranks with their Commander in Chief. General Allen told AIR FORCE Magazine that following the invasion of Afghanistan the Chiefs were given the opportunity to recommend to the President increased investments in defense, especially in readiness measures. The President, because of economic concerns and his belief that NATO should "do more, did not accept our position and instead requested that we respond to the Persian Gulf threat through rearranging priorities. I understand this, but still disagree."

He added that the disagreement of the Chiefs was "proper" within the US system of government and that "no disloyalty to the Commander in Chief is implied, nor any failure to recognize his responsibilities and right to expect obedience." General Allen was visibly angered by "the unfortunate tendency in the military services at present to be critical of the President—a tendency that is being fanned by the political circumstances of an election year. It is alarming that a number of military people are going too far in this regard," he said. For this reason, he explained, the Joint Chiefs were careful to bring out the fact that even though they believe the country should increase defense spending, it is the President's responsibility to make the final trade-offs among a host of national needs.



Gen. Lew Allen, Jr., USAF Chief of Staff, believes the US cannot allow Soviet control of the Persian Gulf region.

Bolstering Readiness and Sustainability

Sustainability of combat forces that can operate autonomously in remote areas obviously begins with the ability to get people, weapons, and logistical support to the conflict site rapidly, reliably, and ready to fight. Thus, the primary need is to boost mobility by enhancing the capabilities of the transport planes currently in USAF's inventory, as well as of the CRAF (Civil Reserve Air Fleet) aircraft, according to General Allen. In the case of contingency operations in or near the Persian Gulf region, the Chief of Staff points out, prepositioning equipment aboard ships and on bases of allies and the use of fast ships become essential. But once those actions have been taken "there still is a need for additional airlift to close forces quickly, to lessen Soviet ability to move rapidly into the oil field area, and to have the flexibility to move our forces to a number of places," he said.

Even extensive prepositioning of equipment and supplies does not eliminate the need for increased airlift, according to General Allen. Detailed studies by the Defense Department show that prepositioning certain items is cheaper than hauling them halfway around the world. This technique is used in Europe and is about to be applied to the Persian Gulf area, General Allen said. In the view of the Joint Chiefs, a number of disadvantages attend prepositioning, however. "The equipment is tied to one spot and unavailable elsewhere, and it can't be used for training. Also, the material is vulnerable as it sits in storage depots or on ships and it may not be easy to deliver to the points where it might be needed," he said.

Fast sealift, General Allen said, provides a number of pluses and makes it possible to keep equipment in the US. Still, even the fastest sealift forces are far slower than airlift. Thus, under almost any scenario, airlift will be called upon to rush the forces needed initially to

interdict the aggressor's lines of communications and to hold, until reinforcements arrive, the areas vulnerable to attack by light, fast enemy forces, General Allen said.

In a similar vein, Defense Secretary Harold Brown, testifying recently before the Senate Armed Services Committee, pointed out that "while the key mission of the airlift forces is to project and sustain combat forces until other means of transportation can provide the required follow-on support, there are many situations where airlift is the only means to provide a rapid response, either because of the geographic location of the threat area or the speed with which the threat develops." Secretary Brown added that the "acquisition of maritime prepositioning ships and fast sealift is important to our future mobility posture. But only with additional airlift can we provide the required rapid initial response by transporting people, their equipment, and equipment that cannot be effectively prepositioned—in order to project a complete and balanced force."

Present organic airlift capabilities amount to approximately one-half of what the Defense Department considers essential for simultaneous response to a contingency in Europe and one in another area such as the Persian Gulf region. The shortage of strategic airlift for outsize equipment such as infantry fighting vehicles, tanks, and mechanized artillery is especially pronounced. These shortages are bound to become more critical as warning times grow shorter and as combat equipment becomes larger and heavier. By 1986, for instance, the majority of US Army heavy firepower equipment will be too large for any current aircraft except the C-5.

The strategic airlift shortfall for outsize cargo could be solved in one of two ways. The Air Force could develop a wide-body airlifter of a new design or buy an existing aircraft or a modified version of one, such as the C-5 or Boeing 747.

A significant advantage of a new design, known as the CX, would be better adaptability to operating in and out of small, austere airfields. The Defense Department believes that the CX, compared to a C-5 or 747, would increase the number of air bases open to US airlift and reduce crowding on larger bases. The CX, also, would improve the intratheater airlift capabilities, an ancillary mission of the CX that has proved somewhat controversial. Senior Administration officials, in the Defense Department and elsewhere, have criticized the Air Force in "background" discussion with the press, alleging that the service is compromising the principal requirement, strategic airlift, by adding to the design intratheater features that drive up cost and delay the program. General Allen told AIR FORCE Magazine that the extent of the disagreement between the Air Force and other elements of the executive branch is "exaggerated. First off, so far as I am concerned, the most important requirement is strategic lift. There is no disagreement on that score nor concerning the need for outsize cargo-carrying capability." The only contentious question, in General Allen's view, is whether the added airlift capacity should be obtained by building a new aircraft or through adapting an existing aircraft, most likely the C-5 but perhaps also the 747. Advocates of the latter course claim that its large size make it an efficient airlifter and assume that a design in-being could be acquired more expeditiously and economically than a new design.

General Allen holds that a modified C-5 or 747 probably can't be brought into the inventory more quickly or for less cost than a new, competitively designed aircraft. The latter, he said, would be smaller and hence able to operate from far more airfields, usable in the later stages of an engagement, and far more capable of operating within the Persian Gulf region.

These differing views about the CX, General Allen

The shortage of strategic airlift for outsize equipment such as infantry fighting vehicles, tanks, and mechanized artillery is especially pronounced. These shortages are bound to become more critical as warning times grow shorter and as combat equipment becomes larger and heavier.

stressed, clearly entail trade-offs between schedule, cost, and operational flexibility. The Air Force plans to solve the problem the "traditional, proper way, which means through competition. Our plan, therefore, is to request competitive proposals from industry involving both kinds of approaches [existing vs. new designs] and on that basis determine the best solution in terms of cost, schedule, and utility. The Air Force is not locked in on any given design and plans to evaluate rigorously all alternatives."

USAF's position appears to be similar to that of Secretary Brown, who told Congress in June: "We have not made the choice between these two alternatives—nor should we at this stage. Rather, we are soliciting detailed proposals from industry for both alternatives, and will make the choice after we receive and evaluate them, at which time we will have a much better handle on systems costs and capabilities. In the interim, we will continue our operational evaluation of the ability of the C-5 to operate on small, austere air bases." So far as intratheater airlift needs are concerned, Dr. Brown said there is less of a shortfall and less urgency than in the case of strategic lift. He acknowledged, however, that "our current fleet of intratheater C-130s is not only aging, but cannot carry outsize cargo."

Congress, early this year, denied the Administration's request for $81.3 million to launch the CX program, but on June 13, 1980, the Senate Armed Services Committee

voted $50 million for the program. Whether or not the committee's action will be sustained on the floor of the Senate and House is uncertain.

Long-Term Emphasis on Sustainability

The demand for increased combat sustainability that arises from the Persian Gulf threat requires more than the impromptu response to which the Air Force was held in the FY '80/'81 budget period. In its just completed POM (Program Objectives Memorandum, which outlines each service's overall goals and objectives for the fiscal year starting on October 1 of the following calendar year), General Allen said, "We have allocated a very large amount of money to near-term readiness items and correspondingly curtailed procurement for FY '82." He added that in transmitting the POM to Secretary Brown, the Air Force pointed out a dilemma that is unavoidable whenever readiness takes precedence over procurement: "The production rate of aircraft and other equipment inescapably goes down while, equally inescapably, the unit cost of the affected equipment goes up. Yet within the fiscal constraints confronting the Air Force we can only accommodate to the shifting priorities by cutting production. Congress won't like it and neither will anybody else, but we had to bite the bullet."

General Allen, who is about to complete the first two years of his four-year term as USAF's Chief of Staff, readily admits "serious" deficiencies in sustainability, especially in O&M and the procurement of spares, but he vehemently denies claims by Congress and the press that US tactical airpower is incapable of deploying its forces and is lagging in basic readiness. These statements, he said, "are simply incorrect. We can deploy these forces quickly and effectively." The tendency among some news media to portray USAF's F-15 units as being unable to fight and to describe the F-111s as being unmaintainable, General Allen noted, gives "our younger people the impression that they are with a losing organization. This is both bad and incorrect. The Air Force is in a state of high readiness. Our crews are well trained. We are able to deploy very fast and fight very effectively. We have deficiencies in sustainability, but they are being corrected."

Although the Defense Department and Congress point with concern at the massive growth in Soviet military forces, General Allen warned that this should not be misconstrued to mean that in case of conflict the US automatically would be outnumbered: "Obviously, we plan to fight in a way with crews and weapons that gives us an advantage over the Soviets. If conflict were to arise in the Persian Gulf region, we clearly would be hard pressed to meet the Soviets with as much force as they could bring to bear, simply for reasons of geography. There is no good reason, however, why we would confine such a conflict to the immediate region. Quite possibly we might decide to hold the ground in the Persian Gulf region defensively while going on the offensive in an area where we have a geographic or other military advantage. The rapid deployment capabilities of our forces are designed to give this option."

As important as Soviet uncertainty about how and where the US would respond to Moscow's aggression, General Allen suggested, is the certainty of a resolute American response. The firmness with which President Carter outlined the categoric US interest in the Persian Gulf region is as vital to the effectiveness of this country's and the free world's deterrence of Soviet adventurism as is military force, General Allen believes: "Credibility is a by-product of dealing with international crises and challenges in a steadfast, firm way. We have no choice in the case of the Persian Gulf threat but to show resolve and leadership. We also have no choice but to demand greater cooperation from our allies and the way to get this is through a high degree of leadership and by acting positively and unambiguously," he said.

Paramount Strategic Requirements

One of the preeminent concerns among the traditionally pro-defense elements in Congress is the so-called "window of vulnerability" in the strategic sector. The window results from the burgeoning growth in Soviet ICBM capability and Moscow's presumed capability to launch a successful first strike against USAF's silo-based ICBMs, beginning within a year or so. While such Soviet advantage may well be tempered by Moscow's inability to prevent retaliatory strikes by the air-breathing and sea-based components of this country's strategic triad, it is, nevertheless, destabilizing, in General Allen's view.

USAF, therefore, along with other elements of the Defense Department, has examined a range of options for closing this threat window by rapid, extemporaneous means. Included here is the option to replace some of the single warhead Minuteman II missiles with additional three-MIRV Minuteman IIIs, General Allen said. In a similar manner, the possibility of increasing the number of warheads carried by Minuteman III ICBMs has been considered. The trouble with either approach, in General Allen's view, is that such steps are in conflict with the provisions of the as yet unratified but generally observed SALT II accord, and the recognition that "neither step is very effective." (Nevertheless, the Senate Armed Services Committee has just authorized deploying an additional 100 Minuteman III missiles in upgraded Minuteman II silos. If upheld by both houses of Congress, this action might impair USAF's ability to conduct test launches of ICBMs in the years ahead. The current inventory of Minuteman III spares is 128. With the Minuteman production line closed down two years ago, there is no realistic chance that additional spare missiles could be produced.)

The possibility of stepping up the air-launched cruise missile (ALCM) program, General Allen said, also has been examined and shows "some potential," even though the actual deployment rate is limited by USAF's ability to modify additional B-52s as cruise missile carriers. The Air Force is maintaining this option as a hedge against greater than anticipated Soviet threat expansions in the years ahead.

The Strategic Air Command has been a consistent advocate of the FB-111B/C penetrating strategic bomber, an extensively modified version of the FB-111 currently in the command's inventory. USAF agrees with SAC "in general" that among the various options for boarding up the threat window, the FB-111B/C approach promises the best near-term boost in strategic capabil-

ity, according to General Allen. Militating against the proposal, in his view, is the fact that the cost of the program most likely would have to be borne at the expense of conventional warfare investments, which are at least as pressing. Short of a substantial increase in budgetary authority, the Air Force, therefore, cannot support the FB-111B/C program, General Allen said.

Pressure is building up in Congress to procure a derivative of the B-1 as a cruise missile carrier aircraft (CMCA). The Air Force had planned to modify one existing B-1 test aircraft to provide the option for a CMCA later on. General Allen points out that the B-52 can serve adequately as CMCA provided its safe escape (nuclear blast/electromagnetic pulse resistance) characteristics are adequate. "If we can work out this matter, then I think the B-52 will be able to serve as a standoff ALCM launcher for some time to come," General Allen said. While a B-1 derivative could be made an efficient cruise missile launcher, often referred to as SWL, for strategic weapons launcher, there is neither the need nor the money to do so at the moment, in the Air Force's view.

The Air Force, however, is interested in getting on as soon as possible with concept definition, and subsequently development and acquisition, of a follow-on to the B-52. Envisioned as a versatile weapon system equally suited to strategic nuclear as well as conventional warfare, the proposed new aircraft probably will turn out to be a large, long-range combat aircraft (LRCA) that can function as a conventional bomber, and a standoff weapons launcher as well as a penetrator. The LRCA concept is still in an inchoate state. An intensive study by the Air Force's Scientific Advisory Board (SAB) of the various options is scheduled for July 1980 and can be expected to make definitive recommendation on how to proceed. A fundamental, open question is whether or not the aircraft should be optimized for penetration of the densest, most lethal Soviet air defenses imaginable, according to General Allen. Such a trait is attainable only by reducing the weapon system's standoff and conventional warfare capabilities.

Strategic Warfare Capabilities

The Air Force, General Allen points out, is confident that deployment of MX and ALCM—in addition to the Navy's Trident—is essential for the nation's offensive strategic forces to be able to cope with the presently projected Soviet threats. "With the MX, we will be strong in the land-based ICBM arena, and the ALCM/B-52 combination assures the continued viability of the air-breathing leg of the strategic triad," he stated. But an area that clearly needs attention is strategic C^3 (command control and communications). Improvements in strategic C^3 are imperative in order to provide the endurance and flexibility that are required by the so-called countervailing strategy. The latter is the central defense doctrine of the United States at this time and is anchored in flexible, sustainable responses to various attack scenarios. "We are deficient in regard to enduring, flexible command and control at this time. Major improvements will be undertaken beginning with FY '82," according to General Allen. Specific needs include better attack assessment and the ability to exercise command and control in a redundant, enduring fashion in both the transattack and postattack phases of nuclear war. Equally important is improved "connectivity" with all strategic forces in the field, including SSBNs, General Allen pointed out. The E-4B Advanced Airborne Command Post, he added, is a cardinal element for attaining survivable, enduring command and control.

The Air Force lacks the capability to intercept and shoot down Soviet bombers penetrating at low altitude, in the view of USAF's Chief of Staff. Yet he believes that the US must have a demonstrated capability to inflict "very substantial" losses on at least small-scale Soviet bomber raids against this country. The Air Force, therefore, plans to augment and improve its rather limited air defense capability. Failure to do so, General Allen predicted, may encourage the Soviets to make massive investments in their bomber force in the near future, on the assumption that such a force would be assured a free ride and high effectiveness.

The US is not yet inclined to make major investments in systems dedicated exclusively to strategic air defense, General Allen surmised. The prudent course of action, therefore, is for the Air Force to build its improved strategic air defenses around a force of "dual-assigned aircraft," meaning air-superiority aircraft and crews that can double up as air defense interceptors. Candidate aircraft for the dual mission include the F-15, F-14, and possibly the F-18. Backing up these aircraft will be E-3A AWACS to provide a comprehensive capability against Soviet bombers penetrating at low altitude, according to General Allen. He added that the crews of dual-assigned aircraft will be trained for and equally proficient in both the air superiority and air defense missions.

USAF's People Challenge

Gen. E. C. Meyer, Chief of Staff of the US Army, shocked Congress this spring when he testified that he had a "hollow army," meaning, as he told this writer, that his CONUS-based forces were precariously understrength because of recruiting and retention problems. The US Navy is plagued with a severe retention problem, especially in the petty officer corps, that impairs that service's readiness and keeps some ships from putting to sea.

By contrast, the Air Force is generally "in somewhat better shape than the other services so far as people are concerned. We have met our recruiting objectives, and the quality of our people continues to be good," according to General Allen. Serious problems do exist, however, in the main induced by "our inability to retain midcareer specialists who are attracted to the opportunities offered by the civilian sector," General Allen acknowledged.

Improved pay and benefits are essential in order to restore comparability with the civilian sector, he explained. Referring to President Carter's widely publicized statement aboard the aircraft carrier *Nimitz* in support of the Nunn-Warner pay and benefit package, General Allen termed this action "constructive in a number of ways. It was a statement—as best I understand it—that indicated more positive measures than at

present are called for in the Nunn-Warner amendment. These provisions—such as dental care for dependents—are significant. Further, in addition to the actual financial burdens our people endure there is a serious morale issue that weighs heavily on many of them. The problem is that many military people are under the perception that the President and the American people simply don't appreciate their service and sacrifices. The President's statement, and actions under way in Congress, will go a long way toward correcting this impression. I believe that significant improvements in retention will result. Of course, the American people must follow through by showing continued concern for those who serve their country in uniform and move toward restoring comparability."

The manpower challenge confronting the Air Force, General Allen believes, is largely a problem of "adequate compensation and benefits that, like adequate training and equipment, must be resolved by the nation's civilian leadership with the solid support of the American public."

The provisions of Nunn-Warner, as presently formulated, should be improved further in terms of pay increases in order to cure the problems afflicting the All-Volunteer Force, according to a recent study by the Congressional Budget Office. General Allen agrees: "In order to restore comparability to the 1972 formula, there must be more of a pay increase than provided for by the present set of actions. Of course none of us imagines that all of these corrections can be done at once or that it will be an easy task to get government approval for restoring full comparability. No doubt, it will take a series of steps to restore comparability."

Pilot and Engineering Officer Shortfalls

The retention rates of pilots at present are "very bad," but measures like the Nunn-Warner amendment are bound to ameliorate the problem somewhat, General Allen believes. In some age groups the loss rates reach about seventy percent and thus reduce readiness. "We are not only losing highly skilled pilots but also technical people, mechanics, and other specialists who form the core of our effectiveness. Each of them represents an enormous investment in training and possesses irreplaceable skills," General Allen pointed out.

The Air Force's increased emphasis on readiness might help pilot retention because it corrects "what many of them have seen as a degradation of their combat capability." Over the long term General Allen believes that the pilot retention problem will ease: "Pilots see a great need for their services and understand better than most people the dangers that our country faces. They are anxious to serve as long as they can do so without excessive financial sacrifices."

So far, many of the pilots leaving the Air Force for airline or other civilian jobs were not lost to USAF in a larger sense since some eighteen to twenty percent have joined and are active in Guard or Reserve units. But this fortuitous circumstance can't last indefinitely, General Allen pointed out, because there is only a limited number of slots available in the Guard and Reserve. The problem, he explained, is that "we can't use the great strength of our Reserve components as a rationalization for losing high numbers of pilots from the active-duty ranks." For practical and political reasons, it is not possible to have Reserve units in peacetime assigned to overseas duty. Hence, the ratio between active-duty and Reserve forces is reasonably fixed, he said, adding that although it might be operationally sound to pull back from Europe some active-duty units and replace them with Reserve units assigned to NATO in case of war, such a step would create serious problems within NATO.

One of the things that "I am proudest of about the Air Force," the Chief of Staff told AIR FORCE Magazine, "is the great and increasing contribution of the Reserve Forces. For the most part, the Air Guard and Air Force Reserve are organized into combat units that perform important peacetime tasks and have a real wartime role." Most of these units have a high degree of combat readiness, "often higher than the active-duty force, owing to the large number of Vietnam veterans in their ranks and the fact that generally they are equipped with more mature equipment, and their logistics support is up to snuff," according to General Allen.

As a consequence, the Reserve Forces are "a very important part of the warfighting capability of the United States and serve as a vital buffer at a time when we are losing so many pilots from the active-duty ranks," he stressed.

Another major problem area in the personnel sector, General Allen said, involves uniformed scientists and engineers. The difficulty of getting and retaining science and engineering graduates lies in the fact that nationwide the supply and demand picture is badly skewed. Measures that can ease but not cure the problem—as long as massive national shortages exist—include ROTC scholarships, increasing the Air Force Academy's production of scientists and engineers, and greater incentives for science and engineering majors to enter OTS, General Allen said.

The manpower challenge confronting the Air Force, General Allen believes, is largely a problem of "adequate compensation and benefits that, like adequate training and equipment, must be resolved by the nation's civilian leadership with the solid support of the American public." The latest indications in Congress and elsewhere are that this support is forthcoming. ■

AFA Salutes . . .

The USAF Recruiting Team of the Year

By SSgt. Douglas J. Gillert, USAF
USAF RECRUITING SERVICE

SEVEN US Air Force, Air National Guard, and Air Force Reserve recruiters will long remember the "special salute" they and their spouses received during a seven-day trip to Washington, D. C., and New York City as guests of the Air Force Association. These recruiters had been selected as the AFA-sponsored US Air Force Recruiting Team of the Year for 1979.

Top recruiters from each Air Force Recruiting Region were: TSgt. Thomas D. Fluent, Kansas City, Mo.; TSgt. George W. Richards, Pensacola, Fla.; TSgt. James B. Mamone, Parkersburg, W. Va.; SSgt. Henry R. Daniels, Sacramento, Calif.; and Sgt. Clark E. Jarrett, Granite City, Ill. MSgt. Ruth Webb-Fuchs, Travis AFB, Calif., was the number-one recruiter from the Air Force Reserve, while MSgt. Klaus D. Siebert, Swanton, Ohio, was honored as the top recruiter in the Air National Guard.

The winning recruiters distinguished themselves in a particularly difficult period; 1979 was the first year since 1973 that the Air Force missed its annual nonprior-service enlistment objective. When a shortfall was foreseen, Air Force leaders urged airmen, their families, and friends to assist in recruiting. Other groups, such as military associations, also were asked to help.

The Air Force Association's state and local chapters worked side by side with Air Force recruiters to spread the word about the Air Force's "Great Way of Life." In addition, AFA joined the Air Force in cosponsoring a program honoring the top recruiters for 1979.

The Recruiting Team of the Year idea resulted from meetings between Air Force Recruiting, Personnel, and Public Affairs people, and staff members of AFA. A two-city, seven-day trip was finally decided upon as an appropriate tribute to the top recruiters.

"During the entire period, we were treated like VIPs," recalls Sergeant Siebert. "Everything worked out beautifully. We met a lot of important people, and the tours were tremendous. The National Air Force Salute sponsored by AFA's Iron Gate Chapter in New York was the most fantastic event I've ever attended," he said.

The Salute *(see June '80 issue, p. 108)* was the crowning event of a trip that began in the nation's capital, where team members met with senior Air Force officials, including Dr. Hans Mark, Secretary of the Air Force; Gen. Lew Allen, Jr., Air Force Chief of Staff; Lt. Gen. Andrew Iosue, Deputy Chief of Staff, Manpower and Personnel; and Chief Master Sergeant of the Air Force James M. McCoy.

The group toured several Washington landmarks, including the National Air and Space Museum, the Pentagon, the Capitol, and the White House.

The first leg of the tour was "most impressive" to Sergeant Fluent. "Not many people in the Air Force get a chance to meet with the Secretary of the Air Force or the Chief of Staff," he said. "The entire experience was great. I hope other recruiters will have a chance to do it in future years."

Following the visit to Washington, the group left by train for New York City, where their arrival at Pennsylvania Station was announced over the public address system. Among other events, they were welcomed to the city by Deputy Mayor Robert Wagner, Jr., and given a behind-the-scenes tour of the United Nations. On the eve of their return home, they were introduced to more than 1,000 military and civilian dignitaries at the Iron Gate Chapter's annual National Air Force Salute.

Summarizing the program, Brig. Gen. Keith D. McCartney, Commander of the USAF Recruiting Service, said: "It emphasizes the importance that the Air Force community and AFA place on recruiting. We are grateful to have this as an annual affair. These people are symbolic of all recruiters and the tremendous job they are doing." ■

Congressman G. V. "Sonny" Montgomery (D-Miss.), member of the House Armed Services Committee, discussed issues of interest with the team. Here the Congressman greets SSgt. Henry R. Daniels, Jr., one of the seven Recruiting Team of the Year members for 1979.

While visiting Washington, D. C., members of the recruiting team met with Gen. Lew Allen, Jr., Chief of Staff, USAF. Shown left to right: TSgt. Thomas D. Fluent; SSgt. Henry R. Daniels, Jr.; TSgt. George W. Richards; General Allen; MSgt. Ruth Webb-Fuchs; TSgt. James B. Mamone; Sgt. Clark E. Jarrett; and MSgt. Klaus D. Siebert.

Chief Master Sergeant of the Air Force James M. McCoy welcomes Sgt. and Mrs. Clark Jarrett to the Pentagon. CMSAF McCoy praised the team members for their professionalism.

The Honorable Hans M. Mark, Secretary of the Air Force, greets TSgt. James B. Mamone and wife Elaine during their visit to the Pentagon.

Col. Don Van Eynde, USA, Office of the US Mission to the United Nations, conducted a tour of the United Nations building for the recruiting team and spouses.

The seven top Air Force, Air National Guard, and Air Force Reserve recruiters and spouses during their visit to Arlington National Cemetery. Shown from left to right (spouses in parentheses) are: TSgt. George W. Richards (Edee); SSgt. Henry R. Daniels, Jr. (Barbara); TSgt. Thomas D. Fluent (Janet); Sgt. Clark E. Jarrett (Patti); MSgt. Klaus Siebert (Wanda); TSgt. James B. Mamone (Elaine); MSgt. Ruth L. Webb-Fuchs (Robert).

During the visit to the White House, guests had an opportunity to discuss current issues with two members of the White House staff—William Lawson, Executive Director of the White House Veterans Federal Coordinating Committee (right center); and Michael Chanin, Deputy Assistant to the Assistant to the President, not shown.

AFA President Vic Kregel and Mrs. Kregel share a bus ride with the recruiting team on their way to the special White House briefing.

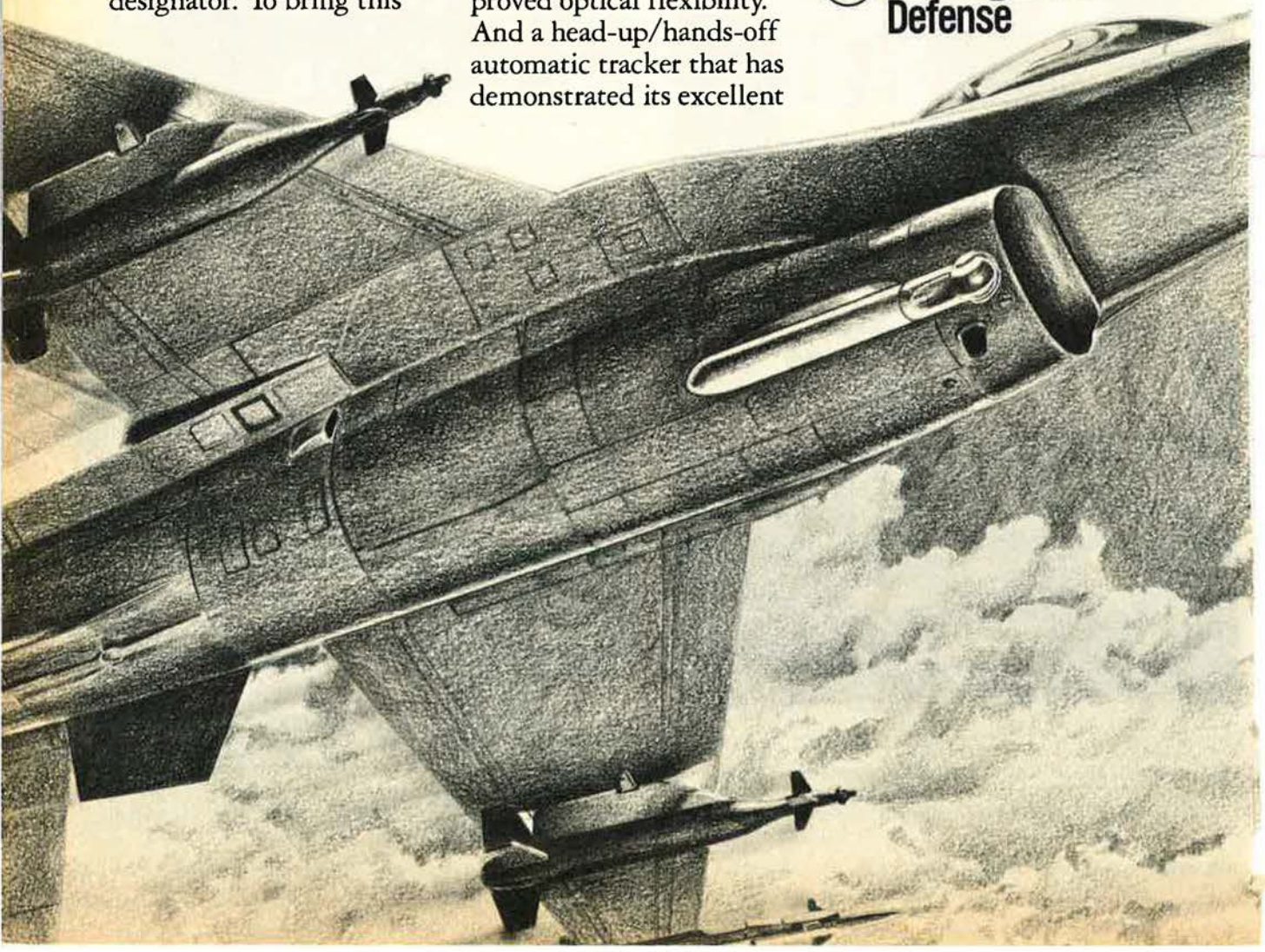
Locked on!

"Locked On"... some very special words to a pilot. They mean the target attack process is underway. To further improve the accuracy of the F-16's strike capability, a Single Seat Laser Designator (SSLD) will be developed by USAF. In the past, laser guided weaponry has demonstrated its unparalleled precision with a high degree of aircraft survivability, but in a two-seat aircraft with a dedicated "backseater" operating the designator. To bring this pinpoint delivery capability to the single seat F-16, some significant improvements have to be made.

And they have been made — by Westinghouse — in a 5 year company-funded effort. Using its highly successful Pave Spike designator as a baseline, Westinghouse has evolved a system called "Short Spike" as its candidate for the single seat designator. The system offers all the accuracy of laser guided munitions with improved optical flexibility. And a head-up/hands-off automatic tracker that has demonstrated its excellent tracking in a series of flight tests monitored by USAF and RAF.

As one of the first producers of a fully qualified laser designator to enter Air Force inventory, Westinghouse has the design experience for the single seat designator and the established production base and worldwide designator support organization to make it an operational reality. We're locked on!

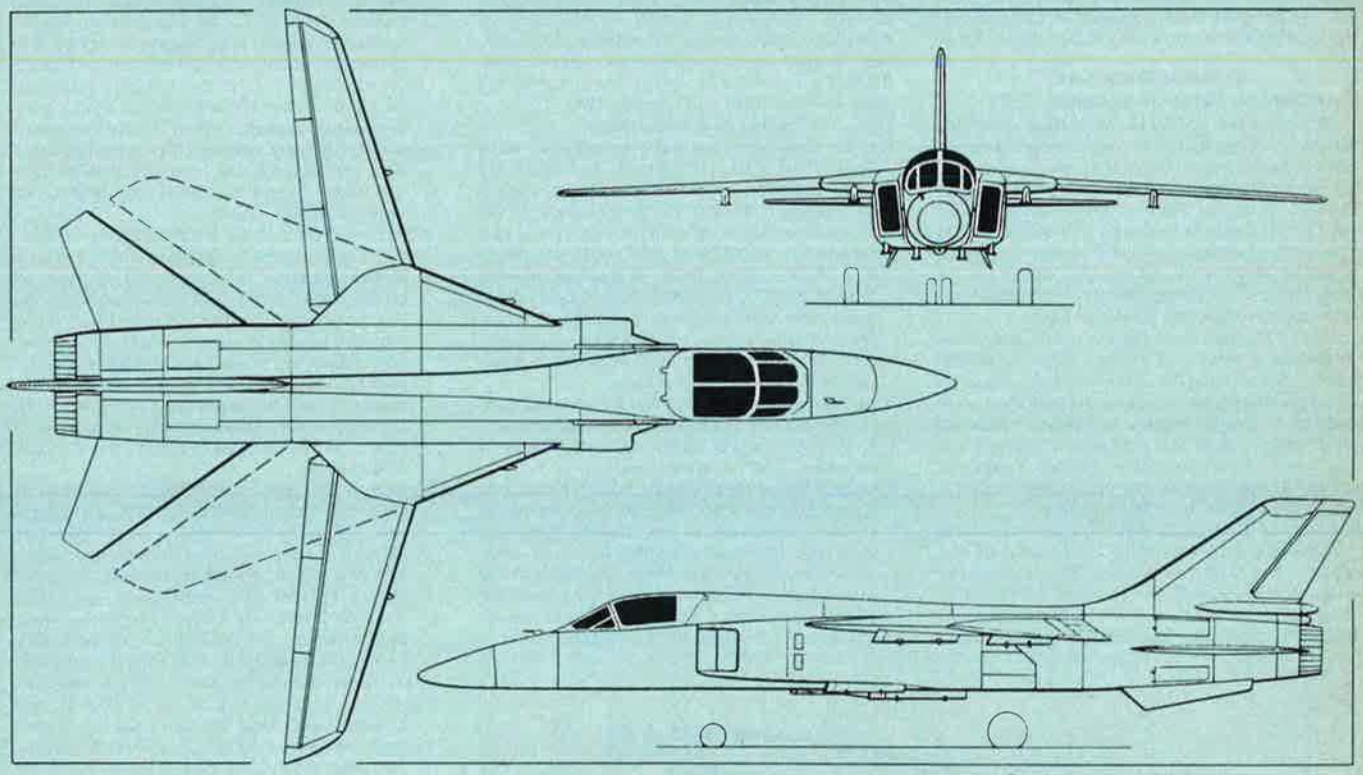
Westinghouse Defense



JANE'S

ALL THE WORLD'S AIRCRAFT SUPPLEMENT

AUGUST 1980



Three-view drawing of the Sukhoi Su-24 (NATO 'Fencer'), updated in accordance with new information *(Pilot Press)*

SUKHOI

SUKHOI DESIGN BUREAU: USSR

SUKHOI Su-24
NATO reporting name: Fencer

Two more distant, silhouette-like, telephoto pictures of 'Fencer' have appeared in the press in recent weeks. Although their quality is too poor to reveal additional detail, they have permitted some refinement of the basic form of the aircraft shown on the *Jane's* three-view drawing, the latest version of which accompanies this updated entry. It is believed to be the most accurate yet published anywhere.

'Fencer' entered service with the Soviet Air Force more than five years ago, in December 1974, and more than 250 are now operational with first-line squadrons in the European theatre, including units in Lusatia and a regiment at Chernyakhovsk, near Kaliningrad on the Soviet Baltic coast. Reported sightings over East Germany have never been confirmed, and there is reason to believe that the USSR is so anxious to maintain secrecy that no 'Fencer' has yet been permitted to enter airspace outside the Soviet Union or its home waters.

Among the earliest references to a major new variable-geometry attack aircraft appearing in Soviet service was a statement by Admiral Thomas H. Moorer, then Chairman of the US Joint Chiefs of Staff, in early 1974. He described 'Fencer' as "the first modern Soviet fighter to be developed specifically as a fighter-bomber for the ground attack mission". In the same class as the USAF's F-111, it was believed initially to be designated Su-19 in the Soviet Union, but the FY 1981 US Department of Defense Annual Report referred to it as the Su-24.

The drawing shows side by side seating for the two-man crew (pilot and weapon systems operator) in a slim and clean fuselage typical of designs by the Sukhoi bureau. The wings are pivoted much further inboard than on the Su-17/20 or Tupolev 'Backfire', and have much simpler flying control surfaces than those of the F-111 or the MiG-23/27. Full-span leading- and trailing-edge flaps are shown. It can be assumed that the outboard trailing-edge flaps also function differentially as ailerons, and that the all-moving horizontal tail surfaces operate both differentially and symmetrically to provide aileron and elevator functions.

Wing leading-edge sweep appears to be approximately 23° in the fully-spread position, and 70° fully swept. The wings are now shown with slight anhedral.

Except for the two-seat cockpit, the overall lines

of the fuselage, air intake trunks, and vertical tail surfaces are reminiscent of those of the Su-15. It is further suggested that 'Fencer' may be powered by two Lyulka AL-21F turbojets of the kind fitted to the single-engined Su-17. Armament includes more than 4,535 kg (10,000 lb) of guided and unguided air-to-surface weapons on six pylons under the fuselage, wing-root gloves, and outer wings, in addition to a GSh-23 twin-barrel 23 mm gun. The pivoting pylons under the outer wings are the first observed on a Soviet aircraft.

Lt Gen Donald R. Keith, US Army Deputy Chief of Staff for Research, Development and Acquisition, has said that 'Fencer' is credited with having terrain-avoidance radar, and "has the capability to deliver ordnance in all weather within 55 m (180 ft) of its target."

DIMENSIONS, EXTERNAL (estimated):

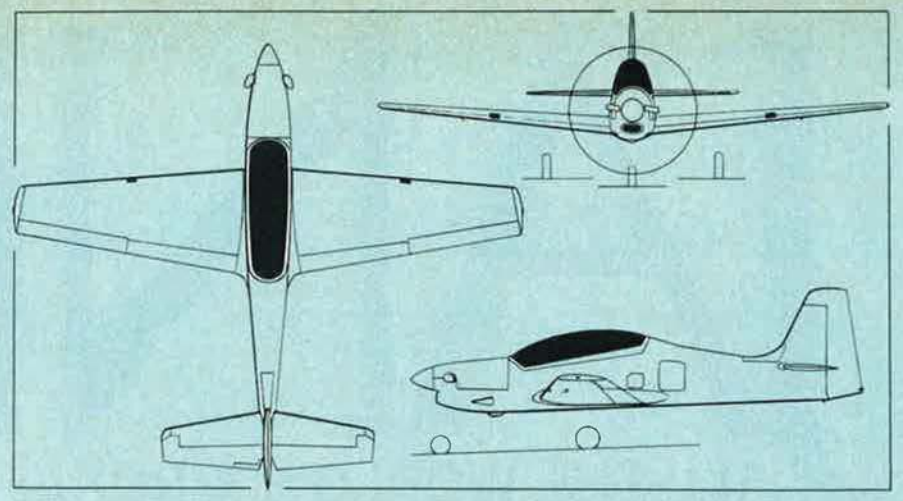
Wing span: spread	17.15 m (56 ft 3 in)
swept	9.53 m (31 ft 3 in)
Length overall	21.29 m (69 ft 10 in)

WEIGHT (estimated):

Max T-O weight	30,850 kg (68,000 lb)

PERFORMANCE (estimated):

Max speed at height	above Mach 2
Combat radius, lo-lo-lo	over 174 nm (322 km; 200 miles)



Three-view drawing of the EMB-312 (Pratt & Whitney Aircraft of Canada PT6A-25C turboprop engine)
(Pilot Press)

EMBRAER

EMPRESA BRASILEIRA DE AERONÁUTICA SA: Address: Av Faria Lima 2170, Caixa Postal 343, 12200 São José dos Campos, São Paulo, Brazil

EMBRAER EMB-312
Brazilian Air Force designation: T-27

Design of the EMB-312, by a team under the leadership of Ing Joseph Kovacs, began in January 1978 as part of a programme to develop a new basic trainer for the Brazilian Air Force. On 6 December that year a contract was awarded to EMBRAER by the Departamento de Pesquisas e Desenvolvimento (Department of Research and Development) of the Brazilian Ministry of Aeronautics, calling for the completion of two flying prototypes plus additional airframes for static and fatigue testing.

During the past year the EMB-312 design has undergone a number of changes from the configuration described in the 1979–80 *Jane's*. These include slightly greater wing and tailplane span, a reduction in overall length, non-swept instead of sweptback vertical tail surfaces, a wider wheel track and longer wheelbase. A radio-controlled model has been used to investigate some of the flying characteristics, including spinning.

Characteristics of the EMB-312 are intended to include high manoeuvrability, short take-off and landing, the ability to operate from unprepared runways, and a high degree of stability. Intended to meet the requirements of FAR Pt 23 Appendix A, its construction embodies such modern techniques as integral machining by numerical control machinery, chemical milling, and metal-to-metal bonding.

The EMB-312 has been allocated the Brazilian Air Force designation T-27, and is scheduled to enter service in late 1982 or early 1983, initially to replace the Cessna T-37C. A Ministry of Aeronautics source has said that about 100 production aircraft are expected to be ordered. EMBRAER has announced that the first prototype will make its initial flight on 19 August 1980.

TYPE: Tandem two-seat basic trainer.

WINGS: Cantilever low-wing monoplane. Wing section NACA 63_2A-415 at root, NACA 63A-212 at tip. Dihedral 5° 30' at 30% chord. Incidence 1° 25'. Geometric twist 2° 12'. Sweepback 0° 43' 26" at quarter-chord. Aluminium alloy two-spar torsion-box structure of 2024T-3511 extrusions and 2024T-3 sheet. Single-slotted trailing-edge flaps of 2024T-3, supported on 4130 steel tracks. Frise-type constant-chord balanced ailerons. Mechanically actuated spring tab in each aileron.

FUSELAGE: Conventional semi-monocoque structure of 2024T-3 aluminium alloy.

TAIL UNIT: Cantilever all-metal structure, of similar construction to wings. Horn-balanced rudder. Fixed-incidence tailplane and balanced elevators. Trim tab in port elevator.

LANDING GEAR: Hydraulically retractable tricycle type, with single wheel and Piper oleo-pneumatic shock-absorber on each unit. Shimmy damper on nose unit. Rearward-retracting nose unit; main units retract inward into wings. Cleveland 40-130 main wheels, 40-76B nosewheel. Tyre sizes 508 × 165 mm on main wheels, 305 × 152 mm on nosewheel. Cleveland 30-95A brakes.

POWER PLANT: One 559 kW (750 shp) Pratt & Whitney Aircraft of Canada PT6A-25C turboprop engine, flat rated to 432.5 kW (580 shp) and driving a Hartzell HC-B3TN-3C/T10178H-8R three-blade constant-speed propeller with spinner. Two integral fuel tanks in each wing, total capacity 1,400 litres (308 Imp gallons). Gravity refuelling point in each wing upper surface. Fuel system allows for up to 35 s of inverted flight.

ACCOMMODATION: Instructor and pupil in tandem, on Martin-Baker Mk 04B ejection seats, in air-conditioned cockpit. One-piece fully-transparent moulded canopy, opening sideways to starboard. Rear seat elevated. Dual controls standard. Baggage compartment in rear fuselage, with access via door on port side.

SYSTEMS: Freon cycle air-conditioning system, with engine-driven compressor. Single hydraulic system, pressure 131 bars (1,900 lb/sq in), for landing gear extension and retraction. No pneumatic system. 28V DC electrical power provided by a 6kW starter/generator, 22Ah battery and, for AC power at 115V 400Hz, a 250VA inverter. Oxygen system for occupants conforms to MIL-C-5887 and is supplied by six MS 21227 D2 type bottles (total capacity approx 1,200 litres; 264 Imp gallons) at a pressure of 31 bars (450 lb/sq in).

AVIONICS AND EQUIPMENT: Standard avionics include two Collins VHF-20A VHF transceivers; two Collins 387C-4 audio systems; one EMBRAER radio transferring system; one Collins VIR-31A VOR/ILS/marker beacon receiver; one Collins TRD-90 ATC transponder; one Collins DME-40 DME; one Collins PN-101 gyromagnetic compass; and one Collins ADF-60A ADF. Landing/taxying light in each wing leading-edge.

ARMAMENT: Two hardpoints under each wing, each stressed for a max load of 150 kg (330 lb). Max external stores load 560 kg (1,234 lb). Typical loads, on Aermacchi MA-4A pylons, include two 7.62 mm MS10-21/22-10A machine-gun pods, each with 350 rds; four 25 lb Mk 76 practice bombs; four 250 lb Mk 81 general-purpose bombs; or four LM-37/7A or LM-70/7 launchers, each with seven rockets (Avibras SBAT-37 and SBAT-70 respectively). D.F. Vasconcelos RFR-01 fixed reflex-type gunsight for use with machine-gun pods.

DIMENSIONS, EXTERNAL:

Wing span	11.14 m (36 ft 6½ in)
Wing chord at root	2.30 m (7 ft 6½ in)
Wing chord at tip	1.07 m (3 ft 6¼ in)
Wing aspect ratio	6.4
Length overall	9.94 m (32 ft 7¼ in)
Fuselage: Max width	1.00 m (3 ft 3¼ in)
Max depth	1.55 m (5 ft 1 in)
Height overall (static)	3.15 m (10 ft 4 in)
Tailplane span	4.66 m (15 ft 3½ in)
Wheel track	3.76 m (12 ft 4 in)
Wheelbase	3.16 m (10 ft 4½ in)
Propeller diameter	2.36 m (7 ft 9 in)

Wooden mockup of the EMBRAER EMB-312, under development as the Brazilian Air Force's new T-27 basic trainer

Propeller ground clearance (static)
0.25 m (9¾ in)
Baggage compartment door:
Height 0.60 m (1 ft 11½ in)
Width 0.54 m (1 ft 9¼ in)
Height to sill 1.25 m (4 ft 1¼ in)
DIMENSIONS, INTERNAL:
Cockpits: Combined length 2.90 m (9 ft 6¼ in)
Max height 1.43 m (4 ft 8¼ in)
Max width 0.85 m (2 ft 9½ in)
Baggage compartment volume
0.20 m³ (7.1 cu ft)
AREAS:
Wings, gross 19.40 m² (208.82 sq ft)
Ailerons (total) 1.97 m² (21.20 sq ft)
Trailing-edge flaps (total) 2.58 m² (27.77 sq ft)
Fin 2.08 m² (22.39 sq ft)
Rudder 1.46 m² (15.72 sq ft)
Tailplane 4.57 m² (49.19 sq ft)
Elevators, incl tab 2.00 m² (21.53 sq ft)
WEIGHTS AND LOADINGS:
Basic weight empty 1,582 kg (3,487 lb)
Max fuel load (usable) 587 kg (1,294 lb)
Max T-O and landing weight 2,350 kg (5,180 lb)
Max ramp weight 2,368 kg (5,220 lb)
Max zero-fuel weight 1,900 kg (4,188 lb)
Max wing loading 121 kg/m² (24.8 lb/sq ft)
Max power loading 4.2 kg/kW (6.9 lb/shp)

will be responsible for marketing the aircraft in all parts of the world except North America.

SAAB-FAIRCHILD COMMUTER AIRLINER

This new transport aircraft, the first collaborative venture of its kind between members of the European and US aerospace industries, is being developed jointly by Saab-Scania and Fairchild Industries for entry into service in 1984. First flight is scheduled to take place in late 1982 or early 1983.

Design emphasis is being placed on simplicity of systems, operation, and maintenance, with quick turnarounds made possible by a number of built-in features which will make the aircraft independent of ground handling equipment. The airliner is designed specially for short-haul, low-density routes and will have two new-generation turboprop engines offering low fuel consumption, low operating costs, and low operating noise levels. It is also expected to appeal to corporate aviation and other non-airline markets.

Joint technical and market studies by the two companies began in mid-1979. Final assembly of the aircraft will take place in Sweden.

TYPE: Twin-turboprop commuter transport aircraft.

WINGS: Cantilever low-wing monoplane, with dihedral from roots. Tapered, non-swept wings

Model of the Saab-Fairchild Commuter airliner, for service in 1984

PERFORMANCE (estimated, at max T-O weight):
Never-exceed speed
292 knots (541 km/h; 336 mph) EAS
Max level speed at 4,115 m (13,500 ft)
247 knots (458 km/h; 284 mph)
Max cruising speed at 4,570 m (15,000 ft)
236 knots (437 km/h; 272 mph)
Econ cruising speed at 3,050 m (10,000 ft)
185 knots (343 km/h; 213 mph)
Stalling speed, flaps up, power off
73 knots (135.5 km/h; 84.5 mph) EAS
Stalling speed, flaps down, power off
68 knots (126 km/h; 78.5 mph) EAS
Max rate of climb at S/L 649 m (2,130 ft)/min
Service ceiling 9,935 m (32,600 ft)
T-O run 290 m (951 ft)
T-O to 15 m (50 ft) 510 m (1,673 ft)
Landing from 15 m (50 ft) 505 m (1,657 ft)
Landing run 240 m (787 ft)
Range with max fuel, 30 min reserves
1,140 nm (2,112 km; 1,313 miles)
Endurance with max fuel 4 h
g limits (Aerobatic) +6.0; −3.0

SAAB/FAIRCHILD

SAAB-SCANIA AKTIEBOLAG: Head Office: S-581 88 Linköping, Sweden; and FAIRCHILD INDUSTRIES INC: Corporate Offices: 20301 Century Boulevard, Germantown, Maryland 20767, USA

Saab-Scania and Fairchild Industries announced in January 1980 that the two companies had signed an agreement jointly to develop, produce, and market a new commuter transport aircraft. A jointly-owned Swedish company, with an office in Paris,

embodying fail-safe and safe-life design principles. Single-slotted trailing-edge flaps. Tab in each aileron.

FUSELAGE: Conventional fail-safe/safe-life semi-monocoque pressurised structure, of circular cross-section.

TAIL UNIT: Cantilever cruciform structure, with sweptback vertical and non-swept horizontal surfaces. Construction similar to that of wings. Tab in rudder and each elevator.

LANDING GEAR: Retractable tricycle type, with twin wheels on each unit. All units retract forward, main units into engine nacelles. Steerable nosewheels.

POWER PLANT: Two General Electric CT7 turboprop engines, each rated at over 1,118 kW (1,500 shp). Fuel in two integral tanks in wings, combined capacity 3,407 litres (749 Imp gallons; 900 US gallons). Single pressure refuelling point, permitting complete refuelling of empty tanks in 12 min.

ACCOMMODATION: Crew of two on flight deck; seat for attendant at front of passenger cabin on port side. Main cabin accommodates up to 34 passengers, in 10 rows of three, with aisle, and a final row of four. Seat pitch 76 cm (30 in). Movable bulkhead aft of last row of seats. Toilet (starboard) and wardrobe (port) at forward end of cabin; provision for optional galley installation. Passenger door at front of cabin on port side. Opposite this on starboard side, and on each side aft of wing trailing-edge, is a service door. Baggage space under each passenger seat. Main baggage/cargo compartment aft of passenger cabin, with large access door on port side.

SYSTEM: Pressurisation system (max differential 0.48 bars; 7 lb/sq in) maintains a S/L cabin environment up to an altitude of 3,660 m (12,000 ft).

DIMENSIONS, EXTERNAL:
Wing span 21.44 m (70 ft 4 in)
Length overall 19.43 m (63 ft 9 in)
Height overall 6.61 m (21 ft 8¼ in)
Wheel track 6.71 m (22 ft 0 in)
Wheelbase 7.10 m (23 ft 3½ in)
DIMENSIONS, INTERNAL:
Cabin: Length 10.26 m (33 ft 8 in)
Width 2.16 m (7 ft 1 in)
Height 1.83 m (6 ft 0 in)
Baggage/cargo compartment volume
6.4 m³ (225.0 cu ft)
WEIGHTS (typical, for multi-stop operations of four 108 nm; 200 km; 124 mile stage lengths):
Operating weight empty 6,600 kg (14,550 lb)
Payload 3,400 kg (7,495 lb)
Fuel 1,350 kg (2,975 lb)
T-O weight 11,350 kg (25,020 lb)
Zero-fuel weight 10,000 kg (22,045 lb)
Landing weight 11,110 kg (24,495 lb)
PERFORMANCE (ISA, estimated):
Max cruising speed
296 knots (550 km/h; 341 mph)
Max rate of climb at S/L 610 m (2,000 ft)/min
Rate of climb at S/L, one engine out
228 m (750 ft)/min
Balanced field length
less than 1,200 m (3,940 ft)
Design range (commuter operations)
4 × 108 nm (4 × 200 km; 4 × 124 miles)

US AIR FORCE

UNITED STATES AIR FORCE, AERONAUTICAL SYSTEMS DIVISION; Address: Wright-Patterson AFB, Ohio 45433, USA

USAF FDL XBQM-106

This experimental mini-RPV was designed and is built by the USAF Flight Dynamics Laboratory, and was first flown in 1975. It is designed for easily-obtainable flexibility, and up to early 1980 ten variants had flown (of 18 built), incorporating various alternative wing, nose, tail, and engine configurations, and with payloads ranging from 11.3 to 59 kg (25 to 130 lb).

Launch has been demonstrated from a Fairchild catapult. Flight tests with a fluidic autopilot were completed successfully in 1979. The XBQM-106 has also been used to demonstrate several seeker/warhead combinations for a variety of expendable strike mini-RPV missions, including the USAF's own Locust defence suppression mini-RPV.

The following description applies to the current (early 1980) configuration:

AIRFRAME: Cantilever high-wing monoplane. Slightly-sweptback wings, of NACA 2512/2515 root/tip section, with glassfibre skins and foam core. Pod-and-boom fuselage of glassfibre cloth and resin, with moulded polyurethane foam bulkheads; Kevlar and graphite composites in highly-stressed areas. Sweptback single fin, integral with rear fuselage; rudder and all-moving tailplane of glassfibre or balsa skin with foam core. Modified Futaba FP-S14 electrical trim and servo actuators for ailerons, rudder, and tailplane. Side-force panels above and below wings. Twin, dependent endplate fins and rudders have also been flight tested.

POWER PLANT: One 13.5 kW (18 hp) D.H. Enterprises (Herbrandsen) Dyad 220 two-cylinder two-stroke piston engine, mounted above wing centre-section and driving a two-blade fixed-pitch wooden pusher propeller. Single fuel tank in fuselage, capacity 11.5 litres (2.5 Imp gallons; 3 US gallons). Fuel is a petrol/oil mixture.

LAUNCH AND RECOVERY: Launched pneumatically by catapult. 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 standard. Real-time ground-based control system; USAF-developed autopilot or manual control optional. Aerodynamic control by ailerons, rudder, and all-moving tailplane. Special wings-level steering

USAF FDL XBQM-106 experimental mini-RPV, with wing side-force panels

available via wing-mounted side-force control surfaces for accurate target strike experiments.

SYSTEMS AND EQUIPMENT: Bosch 28V 17A engine-driven alternator for electrical power. Air-to-ground uplink and downlink telemetry; tracking sensors; downlinked video from nose-mounted camera standard. Variable military payloads, up to 13.6 kg (30 lb) in weight, accommodated in nose sections of standard or modified shape.

DIMENSIONS, EXTERNAL:

Wing span	3.63 m (11 ft 11 in)
Wing area, gross	1.80 m² (19.4 sq ft)
Length overall	3.07 m (10 ft 1 in)
Height overall	0.84 m (2 ft 9 in)
Propeller diameter	0.71 m (2 ft 4 in)

WEIGHTS:

Weight empty	47.5 kg (105 lb)
Max payload	51 kg (112 lb)
Max fuel load	8.2 kg (18 lb)
Max launching weight	106.7 kg (235 lb)

PERFORMANCE (at max launching weight):

Max level speed at S/L	100 knots (185 km/h; 115 mph)
Max cruising speed at S/L	90 knots (167 km/h; 104 mph)
Econ cruising speed at S/L	75 knots (139 km/h; 86 mph)
Stalling speed, power on	55 knots (102 km/h; 64 mph)
Max rate of climb at S/L	305 m (1,000 ft)/min
Service ceiling	3,050 m (10,000 ft)
Landing from 15 m (50 ft)	244 m (800 ft)
Landing run	122 m (400 ft)
Range with max fuel	675 nm (1,250 km; 777 miles)
Range with max payload	112 nm (207 km; 129 miles)
Max endurance	5 h

HARBIN

CHINESE STATE AIRCRAFT FACTORIES; Works: Shenyang, Liaoning Province; Sian, Shensi Province; Harbin, Heilungkiang Province; Shanghai, Chekiang Province; Peking, Hopei Province; and elsewhere

HARBIN (ILYUSHIN) B-5
Chinese name: Sinshi-wu Houng-chai Chi (Type 5 Bombing Aeroplane)
NATO reporting names: Beagle and Mascot

Believed to equip about a dozen air regiments of the People's Liberation Army, with about 100 more in service with the Aviation of the People's Navy, the B-5 is the Chinese-built equivalent of the Soviet Ilyushin Il-28 three-seat tactical light bomber.

According to the US FY 1979 Military Posture statement, Chinese planners "still appear to consider it an important weapon system. Four hundred Il-28s are now operational (in China); the number, if any, configured for nuclear weapons delivery is unknown". To this, the Military Posture statement for FY 1981 added that "China's capability to conduct strategic air operations is limited by obsolescent aircraft and inadequate crew training. The force consists primarily of Tu-16 'Badger' intermediate-range bombers. In addition, a few Il-28 'Beagle' medium-range bombers may be configured for nuclear weapon delivery. Both the 'Badger' and the 'Beagle' are still in production. The limited range of the 'Beagle' makes it only marginally suitable for long-range operations". The latter statement is the first recent official indication that production of the Il-28 is still undertaken in China.

Designed in the USSR by the Ilyushin bureau, the Il-28 was developed to meet a 1946 requirement for which prototypes were also built by the Sukhoi and Tupolev design teams. Sukhoi's Su-10, powered by four 14.7 kN (3,306 lb st) Lyulka TR-1A turbojet engines, was abandoned in early 1948 when the prototype was almost completed; a series of Tupolev prototypes led eventually to the Tu-14 twin-jet light bomber which was built in comparatively small numbers for Soviet Naval Aviation. The clear leader among the three competing designs was the Il-28, which was given a high development priority following a personal order from the Soviet leader, Josef Stalin, in the Spring of 1947.

Three Il-28 prototypes were completed, the first of these making its initial flight on 8 August 1948, flown by the veteran test pilot Vladimir K. Kokkinaki. Powered at first by two 22.3 kN (5,004 lb st) RD-45 centrifugal-flow turbojet engines, a Soviet derivative of the Rolls-Royce Nene, the prototype Il-28 registered a maximum speed of 493 knots (913 km/h; 567 mph) during early test flying. This was before armament and full military equipment had been installed; after those had been added, a max level speed of 449 knots (833 km/h; 518 mph) at 5,000 m (16,400 ft) was recorded.

State acceptance trials were completed in the Spring of 1949, and—again under direct order from Stalin—a total of 25 Il-28s was available in time to take part in the 1950 May Day flypast, led by Lt Col A. A. Anpilov. Most or all of these are believed to have been pre-production aircraft, possibly powered by RD-45FA engines, an improved version of the RD-45 rated at 26.9 kN (6,040 lb st).

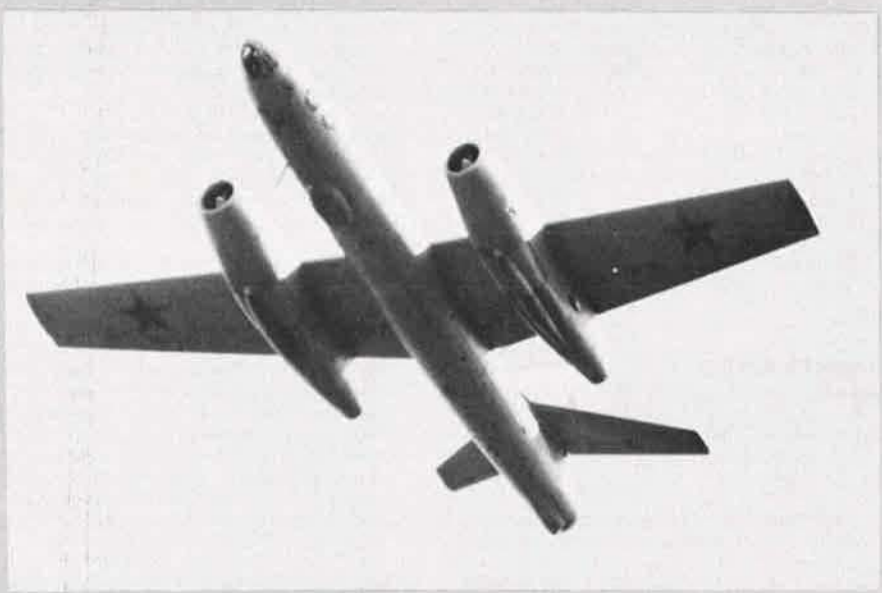
The first V-VS (Soviet tactical aviation) units to be equipped with the Il-28 began working up in the late Summer of 1950, although major deliveries did not begin until the following year. From then until about 1960, several thousand Il-28s were built, in a number of Soviet factories and also for a time in Czechoslovakia, where the aircraft was known by the Czechoslovak designation B-228. Production aircraft have VK-1 engines, an improved development of the RD-45 produced by the Klimov design bureau.

About 500 Il-28s were supplied to other Communist and Socialist states, including Afghanistan, Algeria, Bulgaria, Cuba, Czechoslovakia, Egypt, Finland, Germany (Democratic Republic), Hungary, Indonesia, Korea (People's Republic), Nigeria, Poland, Romania, and Viet-Nam (People's Republic). A similar number was supplied to the People's Republic of China, where the Il-28 entered licence production after the political break with the Soviet Union. A dual-control version is also produced in China.

Five main versions of the Il-28 received Soviet type designations, as follows:

Il-28. Standard three-seat tactical light bomber. Detailed description applies to this version except where indicated.

Il-28U (*Uchebny*: instruction). Two-seat operational and pilot training version, which appeared in



Ilyushin Il-28 twin-jet bomber, still in production in China as the Harbin B-5

Standard bomber and (behind) tandem-cockpit training versions of the Il-28, in store in Indonesia *(K. E. Sissons)*

1951. NATO reporting name 'Mascot'. Armament and ventral ground-mapping radar fairing deleted; 'solid' nose; second, 'stepped' cockpit (with full dual controls) ahead of and below pilot's cockpit. Two or three supplied to each operational Il-28 unit.

Il-20. 'Demilitarised' version, with armament and some military equipment deleted. Several were acquired by Aeroflot, the Soviet state airline, in the mid-1950s. This 'squadron', based at Vnukovo Airport, was used for the high-speed transportation of newspaper matrices to such major cities as Sverdlovsk and Novosibirsk, to ensure publication simultaneously with that of Moscow editions. Cargo was loaded via the navigator's hatch in the forward fuselage.

Il-28R (*Razvedchik*: reconnaissance). Three-seat tactical reconnaissance version. Wingtip auxiliary fuel tanks standard; weapons bay occupied by alternative packs containing cameras or electronic sensors. Some examples fitted with second radome under centre of fuselage.

Il-28T (*Torpedonosets*: torpedo carrier). Three-seat torpedo-bomber version for AV-MF (Soviet Naval Aviation), contemporary with Il-28R. Modified avionics; one large or two smaller torpedoes, or mines or depth charges, in weapons bay.

In addition to the above, many Il-28s when obsolescent in their original roles were converted for target towing (with hook attachment under tailcone), meteorological reconnaissance, and other second-line duties.

The description which follows applies primarily to the standard Il-28 bomber, but is modified where possible to apply to other models, including the Chinese-built B-5:

TYPE: Three-seat tactical light bomber.

WINGS: Cantilever shoulder-wing monoplane, with non-swept leading-edges and tapered trailing-edges. TsAGI SR-5S wing section, with max thickness/chord ratio of 12%. Incidence of 0° 38'. Dihedral 3° from roots. Two-spar torsion-box structure, comprising integral centre-section (carrying straight through fuselage) and outer panels; built in upper and lower halves and riveted together. Construction mainly of D16-T duralumin, with skins varying from 2 to 4 mm in thickness. Hydraulically-actuated trailing-edge slotted flaps, inboard and outboard of each engine nacelle, with settings of 0°, 20°, and 50°. Plain ailerons, which deflect 15° up and 20° down. Trim tab in each aileron. Hot-air de-icing of leading-edges.

FUSELAGE: Conventional all-metal semi-monocoque structure, of circular cross-section. Construction mainly of D16-T duralumin, with flush-riveted skins varying in thickness from 0.8 to 2.0 mm. Glazed nose, with optically-flat bomb-aiming panel. 'Solid' fairing aft of pilot's cockpit is of ATIM-X and ANZM magnesium alloys and incorporates a dielectric panel. Single ventral radome standard, forward of weapons bay; some aircraft have two such radomes, others none. Compartment in rear of fuselage for radio, batteries, air-conditioning, and other equipment.

TAIL UNIT: All-swept cruciform structure, of similar construction to wings. Fin, on root platform built integrally with fuselage, has leading-edge sweep of 45°. Fixed-incidence tailplane has 33° sweepback on leading-edges and 7° dihedral. Trim tabs in rudder and each elevator. Hot-air de-icing of fin and tailplane leading-edges; de-icing air vents in fin and tailplane tips.

LANDING GEAR: Hydraulically-actuated retractable tricycle type, with pneumatic emergency extension. Oleo-pneumatic shock-absorber on each unit. Twin-wheel nose unit, with shimmy damper, retracts rearward into fuselage. Single-wheel main units retract forward and upward into engine nacelles, the legs rotating through 90° during retraction to enable the wheels to lie flat behind doors which form a bulge under the nacelle. Main-wheel tyres size 1,150 × 355 mm, pressure 6.86 bars (99.5 lb/sq in); nosewheel tyres size 600 × 180 mm, pressure 4.41 bars (64 lb/sq in).

POWER PLANT: Two Klimov VK-1A non-afterburning turbojet engines, each rated at 26.5 kN (5,952 lb st) and mounted in an underwing pod. Fuel in five flexible fuselage tanks (three forward and two aft of weapons bay), integral wing tanks, and (standard on Il-28R, optional on other models) wingtip auxiliary tanks. Total fuel capacity, incl tip-tanks, 7,908 litres (1,740 Imp gallons). Refuelling points in fuselage (four), wings, and each tip-tank. Bifurcated intakes, each with central 'bullet' fairing to facilitate distribution of airflow. Provision for assisted take-off using JATO rocket under fuselage on each side.

ACCOMMODATION: Flight crew of three (instructor and pupil only in Il-28U), all in pressurised and air-conditioned accommodation. Pilot on ejection seat in single 'fighter' type cockpit, under jettisonable canopy which opens sideways to starboard. Navigator/bomb-aimer, also on ejection seat, occupies a position forward, below and to starboard of pilot, access to which is via an upward-opening jettisonable hatch above the nose and offset to starboard. (In Il-28U, roof hatch of forward cockpit hinges sideways to starboard.) Access to radio operator/rear gunner's position is via a power-operated downward-opening hatch in underside of rear fuselage, which also serves as escape hatch for this member of the crew. Dual controls in Il-28U.

SYSTEMS: Pressurisation system (max differential 0.4 bars: 5.8 lb/sq in) maintains accommodation at a 2,500 m (8,200 ft) environment at altitudes up to 5,000 m (16,400 ft) and at 4,250 m (13,940 ft) up to 12,000 m (39,370 ft). MWP hydraulic system, pressure 110 bars (1,595 lb/sq in), actuates flaps and landing gear via an AK-150 engine-driven compressor. Pneumatic system, max pressure 150 bars (2,175 lb/sq in), with operating pressures of 55 bars (800 lb/sq in) and 25 bars (362 lb/sq in), for emergency landing gear extension, sealing of weapons bay doors and crew hatches, and gun charging. Electrical system incorporates a 9kW GSR-9000 starter/generator and two 28V 30Ah 12-A-30 batteries. PSR-1500-15 APU, rated at 14.7 kN (3,306 lb st) for 15 s, provides power for engine start via ST-2-48 starter motor in each air intake.

AVIONICS AND EQUIPMENT: HF and UHF radio (HF antenna on fairing aft of pilot's cockpit); radio compass; radio altimeter; IFF; PSB-N ground-mapping radar in underfuselage fairing forward of weapons bay; tail warning radar in fairing beneath tailcone; landing light in nosewheel leg door.

ARMAMENT AND OPERATIONAL EQUIPMENT: Two fixed, forward-firing Nudelman-Richter 23 mm NR-23 cannon (each with 100 rds) in lower forward fuselage, one each side of nosewheel bay; associated gyro gunsight in pilot's cockpit. Two similar guns, each with 225 rds, on Il-K6 ball-type movable mounting in tail turret. Internal weapons bay in mid-fuselage, with normal and max capacities of 1,000 kg (2,205 lb) and 3,000 kg (6,614 lb) respectively. Typical loads may include four 500 kg or eight 250 kg bombs, or (Il-28T) one large or two smaller torpedoes, mines, or depth charges. Some B-5s may be configured for nuclear weapon delivery. FAB-3000 primary bombsight is a modification of the US Norden M-9 of the second World War. Provision in standard Il-28 for single AFA 33/20, 33/75-50, or 33/100 vertical camera, installed beneath rearmost forward-fuselage fuel tank. Il-28R can carry from three to five cameras in the weapons bay, plus 12 to 18 flares or photoflash bombs.

DIMENSIONS, EXTERNAL:

Wing span (excl tip-tanks)	21.45 m (70 ft 4½ in)
Wing chord, mean	2.955 m (9 ft 8½ in)
Wing area, gross	60.80 m² (654.45 sq ft)
Wing aspect ratio	7.55
Length of fuselage (excl tail guns)	17.65 m (57 ft 11 in)
Fuselage: Max diameter	1.80 m (5 ft 10¾ in)
Distance between c/l of engine nacelles	6.80 m (22 ft 3¾ in)
Height overall	6.70 m (21 ft 11¾ in)
Tailplane span	7.10 m (23 ft 3½ in)
Wheel track	7.40 m (24 ft 3½ in)
Wheelbase	approx 8.10 m (26 ft 7 in)

WEIGHTS AND LOADINGS:

Weight empty, equipped	12,890 kg (28,417 lb)
Fuel load: normal	3,800 kg (8,377 lb)
max (incl 200 kg: 441 lb in tip-tanks)	6,600 kg (14,550 lb)
Internal weapon load:	
normal	1,000 kg (2,205 lb)
max	3,000 kg (6,614 lb)
Normal T-O weight	18,400 kg (40,565 lb)
Max T-O weight	21,200 kg (46,738 lb)
Wing loading:	
at normal T-O weight	approx 303 kg/m² (62 lb/sq ft)
at max T-O weight	approx 349 kg/m² (71.5 lb/sq ft)
Power loading:	
at normal T-O weight	approx 347.5 kg/kN (3.4 lb/lb st)
at max T-O weight	approx 400 kg/kN (3.9 lb/lb st)

PERFORMANCE (at normal T-O weight except where indicated):

Max level speed:	
at S/L	432 knots (800 km/h; 497 mph)
at 1,750 m (5,740 ft)	473 knots (876 km/h; 544 mph)

at 4,500 m (14,760 ft)
487 knots (902 km/h; 560 mph)
at 8,000 m (26,250 ft)
473 knots (876 km/h; 544 mph)
at 10,000 m (32,800 ft)
461 knots (855 km/h; 531 mph)
at 12,000 m (39,370 ft)
434 knots (805 km/h; 500 mph)
Typical cruising speed
415 knots (770 km/h; 478 mph)
Unstick speed: at normal T-O weight
119 knots (220 km/h; 137 mph)
at max T-O weight
126 knots (234 km/h; 145 mph)
Touchdown speed
100 knots (185 km/h; 115 mph)
Rate of climb:
max, at S/L 900 m (2,952 ft)/min
at 5,000 m (16,400 ft) 630 m (2,067 ft)/min
at 8,000 m (26,250 ft) 420 m (1,378 ft)/min
at 12,000 m (39,370 ft) 72 m (236 ft)/min
Time to 5,000 m (16,400 ft) 6 min 30 s
Time to 10,000 m (32,800 ft) 18 min 0 s
Service ceiling 12,300 m (40,350 ft)
T-O run: at normal T-O weight 875 m (2,870 ft)
at max T-O weight 1,150 m (3,773 ft)
Landing run at landing weight of 14,690 kg (32,385 lb) 1,170 m (3,838 ft)
Range with max fuel, at max T-O weight:
at 410 knots (760 km/h; 472 mph) at 1,000 m (3,280 ft) 612 nm (1,135 km; 705 miles)
at 415 knots (770 km/h; 478 mph) at 10,000 m (32,800 ft) 1,176 nm (2,180 km; 1,355 miles)
at 232 knots (430 km/h; 267 mph) at 10,000 m (32,800 ft) 1,295 nm (2,400 km; 1,490 miles)

AD

AIRSHIP DEVELOPMENTS LTD: Head Office: 2 York Street, London W1H 1FA, England

Airship Developments, which was known formerly as Aerospace Developments, designed and built the prototype of a semi-rigid airship under the designation AD-500. Flown successfully for the first time from RAF Cardington, Bedfordshire, on 3 February 1979, it was subsequently damaged severely when unexpected force 9 winds caught it at its moorings. Further details of its history, and a description, can be found in the 1979–80 *Jane's*. New interest in the AD-500 has now come from the government of Australia, and the prototype is being restored to airworthy condition in the UK, so that it can be used as a demonstrator and for evaluation.

AIRSHIP DEVELOPMENTS AD-600

Airship Developments has completed the design of what is basically a 'stretched' version of the AD-500. The increased volume of the envelope would provide approximately 1,016 kg (2,240 lb) more lift, and the lengthened gondola would have a usable floor area of 11.15 m² (120 sq ft). Evolved to meet the needs of operators who require greater payload and/or endurance than those provided by the AD-500, the new AD-600 is considered to be suited ideally to roles which require long endurance patrols or length of time on station. With the maximum fuel that can be carried, patrols of up to three days' duration would be possible, and the large cabin would permit a high degree of crew comfort and efficiency.

Airship Developments believes that the size and capability of the AD-600 would make it particularly suitable for deployment in a surveillance role, but other obvious military applications include minesweeping, ASW, and electronic warfare. It is understood that the Royal Navy is interested in evaluating such an aircraft for maritime applications, but suitable financial backing is needed before a prototype can be built. All available details follow:

ENVELOPE: Of ellipsoidal form with parallel midbody. Four load curtains and two ballonets. Envelope fabric comprises a terylene strength layer, with a weather protection coating of titanium oxide-loaded polyurethane, and an internal helium-retention layer of Saran film.

TAIL FINS: Of conventional cruciform layout. Each aerofoil section has ribs and spars constructed from Ciba Geigy fibrelam-bonded honeycomb structure panels. Control surfaces have set-back hinges, balance tabs, and adjustable gearing to minimise control forces.

GONDOLA: A one-piece shell, moulded from Kevlar. Fireproof bulkheads in engine bay are honeycomb panels, faced with stainless steel skins. For patrol, or associated military duties, accommodation can be provided for a crew of up to seven, with bunks, galley, mess, and toilet facilities. In a passenger-carrying role, up to 20 passenger seats can be installed at a seat pitch of 0.91 m (36 in). For use as a cargo carrier in an emergency, the gondola can be configured to provide a maximum disposable freight capacity of 28.32 m³ (1,000 cu ft).

POWER PLANT: Two 186.4 kW (250 hp) Porsche Turbo 930 turbocharged engines. Each drives, via a Westland bevel gearbox, a ducted propulsor designed by Airship Developments, which houses a Hoffmann five-blade variable-pitch fan. Each propulsor can be rotated about its pylon attachment to the gondola through an arc of 180°, thus simplifying the tasks of take-off and landing. A fuel tank, mounted at the rear of the engine compartment, has a maximum capacity of 2,273 litres (500 Imp gallons).

AVIONICS AND EQUIPMENT: Full equipment and instrumentation for IFR operation by day or night is standard. Optional avionics considered suitable for surveillance and patrol include Bendix RDR 1400 digital radar, Ferranti Sea Spray, or Mel Marec. Bendix radar and Omega VLF navigation are optional for civil versions of the AD-600, and are considered suitable also for a surveillance role.

DIMENSIONS, ENVELOPE:
Length overall 56.00 m (183 ft 8¾ in)
Max diameter 14.00 m (45 ft 11¼ in)
Height overall 18.65 m (61 ft 2¼ in)
Tail fin span 17.00 m (55 ft 9¼ in)
Volume, gross 6,055 m³ (213,830 cu ft)
Volume, ballonets 1,332.1 m³ (47,040 cu ft)
Helium volume, at 85% inflation 5,146 m³ (181,730 cu ft)
L/D ratio 4.0

DIMENSIONS, GONDOLA:
Length overall 12.10 m (39 ft 8¼ in)
Length between cabin bulkheads 7.00 m (22 ft 11½ in)
Height 1.96 m (6 ft 5¼ in)
Max width 2.41 m (7 ft 10¾ in)

WEIGHTS (estimated, A: patrol configuration; B: passenger configuration):
Weight empty, basic: A, B 3,331 kg (7,344 lb)
Fuel weight: A 1,633 kg (3,600 lb)
B 816 kg (1,799 lb)
Max T-O weight: A 6,220 kg (13,713 lb)
B 6,087 kg (13,420 lb)
Gross lift at 85% inflation, ISA, plus vectored thrust
A, B 6,270 kg (13,823 lb)

PERFORMANCE (estimated):
Max level speed 65 knots (120 km/h; 75 mph)
Max cruising speed 50 knots (93 km/h; 58 mph)
Cruising speed (43.3 kW: 58 hp rating per engine) 40 knots (74 km/h; 46 mph)
Cruising speed (26.1 kW: 39 hp rating per engine) 35 knots (64 km/h; 40 mph)
Max rate of climb at S/L 610 m (2,000 ft)/min
Rate of climb at S/L, at max cruising power 549 m (1,800 ft)/min
Cruising altitude 610 m (2,000 ft)
Pressure height (85% inflation at S/L) 1,675 m (5,500 ft)
Max altitude pressure height, with ballonets full at S/L 2,440 m (8,000 ft)

Airship Developments AD-500 prototype for the new AD-600 long-endurance semi-rigid airship

FUS

FLUGZEUG-UNION-SÜD GmbH (subsidiary of MBB): Light Aircraft Department: Otto-Hahn-Strasse 4, 8012 Ottobrunn (Riemerling), German Federal Republic

MBB FLAMINGO-TRAINER

Flugzeug-Union-Süd, a subsidiary of Messerschmitt-Bölkow-Blohm, is marketing a trainer derived from the MBB 223 Flamingo, last described in the 1971–72 *Jane's*. It is available in three versions:

Flamingo-Trainer A1. Standard version, with 149 kW (200 hp) Avco Lycoming IO-360 engine and Hartzell two-blade constant-speed metal propeller type HC-E2YR-1BF/F8467-7R.

Flamingo-Trainer K1. Aerobatic version, with 149 kW (200 hp) Avco Lycoming AIO-360 engine, and propeller as above.

Flamingo-Trainer T1. Turbocharged version, with 157 kW (210 hp) Avco Lycoming TO-360-C1A6D turbocharged engine, and two-blade propeller as above or, optionally, with a Hoffmann three-blade constant-speed composite propeller type HO-V123K/180 R+8.

A prototype of the Flamingo-Trainer (D-EFWC) flew for the first time on 25 April 1979. By comparison with the original Flamingo, it benefits from the improvements in construction, equipment, and materials which have been developed during the 16 years which separate these aircraft. It is being marketed as a multi-role trainer for both civil and military use.

TYPE: Two/three-seat light trainer.

WINGS: Cantilever low-wing monoplane. Wing section NACA 64_2-A215. Dihedral 3°. Incidence 3°. No sweepback. All-metal constant-chord two-spar structure. Main spars pass through the fuselage side walls and are bolted together on the aircraft's centreline. Rear spars are attached to the fuselage sides. Wingtip fairings of GRP are easily removable. Frise-type ailerons of metal construction. Trim tab in starboard aileron. Electrically-actuated plain trailing-edge flaps of similar construction to ailerons.

FUSELAGE: Conventional semi-monocoque struc-

MBB Flamingo-Trainer prototype (Avco Lycoming IO-360 engine)

Close-up of the three-seat cockpit of the Flamingo-Trainer

ture of light alloy, with riveted skins.

TAIL UNIT: Cantilever all-metal structure, with fixed-incidence tailplane. Shallow dorsal fin from canopy to fin. Horn-balanced elevators and rudder. Trim tab in rudder, and in port elevator.

LANDING GEAR: Non-retractable tricycle type, with single wheel on each unit. Shock-absorption of all units by rubber in compression, assisted by hydraulic dampers. Steerable and self-centering nosewheel. All three wheels have tyres size 6.00-6, pressure 2.15 bars (31 lb/sq in). Hydraulic disc brakes. Parking brake.

POWER PLANT: One Avco Lycoming flat-four engine as detailed in model listings, driving a two-blade, or optional three-blade, propeller with spinner. Integral fuel tank in each wing; total capacity 170 litres (37.4 Imp gallons). Refuelling point on upper surface of each wing.

ACCOMMODATION: Two seats side by side, with bench seat to rear for additional trainee, beneath rearward-sliding transparent canopy. Rear bench seat removable. Removal of starboard front seat permits the carriage of a litter or bulky cargo. Canopy is jettisonable, and incorporates a foul-weather window in the port side. Dual controls standard; starboard control column easily removed. Accommodation is air-conditioned.

SYSTEMS: Hydraulic system for brakes only. Electrical system includes a 28V engine-driven generator and two 24V 25Ah storage batteries.

AVIONICS AND EQUIPMENT: Avionics to customer's specific requirements. Standard equipment includes blind-flying instrumentation on port side, heated pitot, stall warning device, instrument lights; anti-collision, landing, navigation, and taxi lights; and external power socket. Blind-flying instrumentation for starboard side is optional.

DIMENSIONS, EXTERNAL:

Wing span	8.28 m (27 ft 2 in)
Wing chord, constant	1.40 m (4 ft 7 in)
Wing aspect ratio	6
Length overall	7.60 m (24 ft 11¼ in)
Height overall	2.70 m (8 ft 10¼ in)
Wheel track	2.72 m (8 ft 11 in)
Wheelbase	1.60 m (5 ft 3 in)
Propeller diameter:	
two-blade	1.95 m (6 ft 4¾ in)
optional three-blade	1.88 m (6 ft 2 in)

AREAS:

Wings, gross	11.5 m² (123.8 sq ft)
Ailerons (total)	0.77 m² (8.24 sq ft)
Trailing-edge flaps (total)	0.94 m² (10.12 sq ft)
Horizontal tail surfaces (total)	2.45 m² (26.37 sq ft)
Vertical tail surfaces (total)	1.84 m² (19.81 sq ft)

WEIGHTS AND LOADINGS (T1, A: Normal; B: Utility Category):

Weight empty: A, B	700 kg (1,543 lb)
Max fuel weight: A	122.4 kg (270 lb)
B	72 kg (159 lb)
Max payload: A	227.6 kg (502 lb)
B	208 kg (458 lb)
Max T-O weight: A	1,050 kg (2,315 lb)
B	980 kg (2,160 lb)
Max wing loading: A	91.3 kg/m² (18.70 lb/sq ft)
B	85.2 kg/m² (17.45 lb/sq ft)
Max power loading: A	6.69 kg/kW (11.02 lb/hp)
B	6.24 kg/kW (10.29 lb/hp)

PERFORMANCE (T1, at max T-O weight):

Max level speed at 4,570 m (15,000 ft)	150 knots (278 km/h; 173 mph)
Max cruising speed, 75% power at 3,050 m (10,000 ft)	130 knots (241 km/h; 150 mph)
Stalling speed, flaps up	65 knots (121 km/h; 75 mph) IAS
Stalling speed, flaps down	57 knots (106 km/h; 66 mph) IAS
Max rate of climb at S/L	323 m (1,060 ft)/min
Certificated ceiling	6,690 m (22,000 ft)
T-O to 15 m (50 ft)	365 m (1,200 ft)
Landing from 15 m (50 ft)	375 m (1,230 ft)
Range with max fuel, 65% power at 4,570 m (15,000 ft)	482 nm (893 km; 555 miles)

MIKE SMITH

MIKE SMITH AIRCRAFT INC: Head Office: PO Box 430, Johnson, Kansas 67855, USA

SMITH LIGHTNING MODEL 400

Mike Smith Aircraft has designed and is building the prototype of an advanced technology aircraft which has been given the name Lightning Model 400. Design began in July 1979, and construction of the prototype started in January 1980. It was planned that the first flight would be made in October 1980, with certification under FAR Part 23 anticipated by the Spring of 1982. A second prototype is also to be built.

TYPE: Five-seat cabin monoplane.

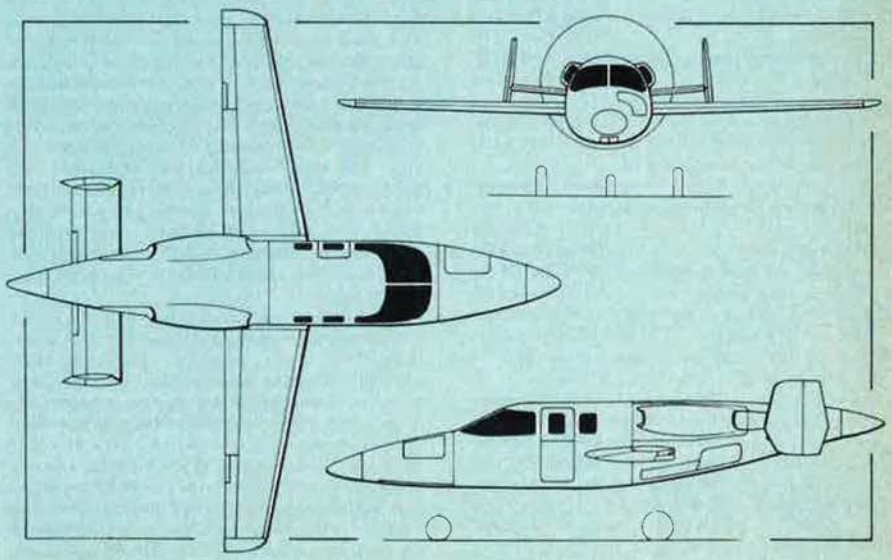
WINGS: Cantilever mid-wing monoplane. Supercritical GST wing section of 12% thickness/chord ratio. Dihedral 1° 48'. Incidence 3° 12'. Sweepback at quarter-chord 7°. Conventional structure of light alloy. Plain trailing-edge flaps. Plain ailerons, hinged at lower surface, and designed to droop with flaps. Servo tab on each aileron. Anti-icing of wing leading-edge by engine bleed air.

FUSELAGE: Semi-monocoque fail-safe structure of carbon fibre/epoxy. Cabin area and part of baggage compartment pressurised.

TAIL UNIT: Cantilever structure of light alloy, comprising fixed-incidence tailplane, and end-plate fins and rudders. Servo tabs on elevators. Anti-icing of tailplane leading-edge by engine bleed air.

LANDING GEAR: Hydraulically-retractable tricycle type, with single wheel on each unit. Nosewheel retracts forward, main units aft. Cleveland brakes and brake cooling system.

POWER PLANT: One 633 kW (850 shp) Pratt & Whitney Aircraft of Canada PT6A-42 turboprop engine mounted in the aft fuselage, and driving a



Smith Lightning Model 400 five-seat pusher-engined light transport *(Michael A. Badrocke)*

Prototype of the Gulfstream American Gulfstream III, of which a maritime patrol variant has been ordered for the Royal Danish Air Force *(Brian M. Service)*

Hartzell three-blade constant-speed metal pusher propeller with spinner. One 227 litre (60 US gallon) fuel tank in each wing and one 113.5 litre (30 US gallon) fuselage tank, providing a total capacity of 567.5 litres (150 US gallons).

ACCOMMODATION: Pilot and four passengers in enclosed cabin, which is pressurised, heated, and air-conditioned. Door of two-piece clamshell type on port side, forward of wing, with airstairs built into lower portion. Baggage compartments at rear of cabin and in nose.

SYSTEMS: Details not finalised. Air-conditioning and pressurisation system, with max differential of 0.59 bars (8.5 lb/sq in). Hydraulic system for landing gear operation. Electrical, oxygen, and anti-icing systems.

EQUIPMENT: Blind-flying instrumentation is standard.

DIMENSIONS, EXTERNAL:

Wing span	9.04 m (29 ft 8 in)
Wing chord at root	1.42 m (4 ft 8 in)
Wing chord at tip	0.76 m (2 ft 5¾ in)
Wing aspect ratio	8.0
Length overall	9.37 m (30 ft 9 in)
Height overall	2.98 m (9 ft 9½ in)
Tailplane span	3.48 m (11 ft 5 in)
Wheel track	2.29 m (7 ft 6 in)
Wheelbase	3.57 m (11 ft 8½ in)
Propeller diameter	2.29 m (7 ft 6 in)
Propeller ground clearance	0.68 m (2 ft 3 in)
Passenger door: Height	1.22 m (4 ft 0 in)
Width	0.61 m (2 ft 0 in)
Height to sill	0.92 m (3 ft 0 in)

DIMENSIONS, INTERNAL:

Cabin: Max width	1.33 m (4 ft 4½ in)
Max height	1.26 m (4 ft 1½ in)
Volume	3.96 m³ (140 cu ft)
Baggage compartments: aft	0.41 m³ (14.4 cu ft)
nose	0.42 m³ (14.8 cu ft)

AREAS:

Wings, gross	10.22 m² (110 sq ft)
Vertical tail surfaces (total)	0.94 m² (10.15 sq ft)
Horizontal tail surfaces (total)	2.94 m² (31.7 sq ft)

WEIGHTS AND LOADINGS (estimated):

Weight empty	1,063 kg (2,344 lb)
Max fuel weight	459 kg (1,011 lb)
Max T-O and landing weight	1,905 kg (4,200 lb)
Max zero-fuel weight	1,446 kg (3,189 lb)
Max wing loading	186.4 kg/m² (38.18 lb/sq ft)
Max power loading	3.01 kg/kW (4.94 lb/shp)

PERFORMANCE (estimated at max T-O weight):

Max level speed at 7,620 m (25,000 ft)	400 knots (741 km/h; 460 mph)
Max cruising speed at 12,200 m (40,000 ft)	380 knots (703 km/h; 437 mph)
Econ cruising speed at 12,200 m (40,000 ft)	280 knots (518 km/h; 322 mph)
Stalling speed, flaps and gear up	91.8 knots (170 km/h; 105 mph)
Stalling speed, flaps and gear down	78 knots (145 km/h; 90 mph)
Max rate of climb at S/L	1,615 m (5,300 ft)/min
Service ceiling	12,200 m (40,000 ft)
T-O to 15 m (50 ft)	443 m (1,451 ft)
Landing from 15 m (50 ft)	695 m (2,281 ft)
Range with max fuel	2,700 nm (5,000 km; 3,107 miles)
Range with max payload	2,100 nm (3,890 km; 2,416 miles)

GULFSTREAM AMERICAN

GULFSTREAM AMERICAN CORPORATION; Head Office and Works: PO Box 2206, Savannah, Georgia 31402, USA

GULFSTREAM AMERICAN GULFSTREAM III

Requiring a maritime patrol aircraft, with a primary role of fishery patrol, the Royal Danish Air Force (RDAF) carried out a detailed study of several contenders, including the Boeing 737, Canadair Challenger, Dassault-Breguet Falcon/Guardian, and the Grumman American Gulfstream III. The special needs posed by the RDAF's fishery patrols, covering some 160,000 nm² (549,500 km²; 212,155 sq miles) around Greenland, and 85,000 nm² (291,912 km²; 112,708 sq miles) around the Faröe Islands, had to take into consideration the factor that, in the event of bad weather prohibiting a landing at either of these places, an 800 nm (1,482 km; 921 mile) flight to an alternate landing field might be necessary: this emphasised the need for an aircraft able to fly high and fast. In addition to the primary role, the chosen vehicle was required to be suitable for airdrop, medevac, SAR, tactical air transport, and other special duties, and the RDAF decided that a specially equipped version of the Gulfstream III most nearly met its needs. This has resulted in a contract for the supply of three of these aircraft to replace eight Douglas C-47s currently in use, and to supplement the activities of three Lockheed C-130s. The first is scheduled for delivery to the RDAF's No. 721 Squadron in November 1981, the second in the following month, and the third in March 1982. It is anticipated that one of these aircraft will be operated from Sondrestrom AB, Greenland, the other two from Vaerloese, near Copenhagen.

In the primary role, for fishery patrol, the RDAF will operate the Gulfstream III with a crew of seven, comprising pilot, co-pilot, flight engineer, navigator, observer, photographer, and radio operator. The radio operator's station is on the port side of the cabin, immediately aft of the entrance door, and equipment will include dual HF, and dual VHF/UHF com systems. This equipment is removable easily, and the seat can be turned 90° to port, so that the position may be used alternatively by an observer. A purpose-built observer's position is provided on the starboard side, directly opposite to the radio operator's station. The standard Gulfstream III windows are retained, as evaluation of the field of view from these windows has shown that adequate vision is provided without recourse to special-purpose drag-inducing bubble windows. Aft of the radio operator's position, and also on the port side of the cabin, is the navigator's station. This is equipped with the master console for the Texas Instruments AN/APS-127 sea surveillance radar, dual control display units for the Litton 72R INS, a VHF navigation system, and basic flight instrumentation including rate of climb and airspeed indicators. Provision has been made for later installation of a VLF/Omega nav system if it is considered necessary.

Although the RDAF Gulfstream III is generally similar to the commercial version, as described in the 1979–80 *Jane's*, there are some structural differences to provide the essential multi-role capability. These include the installation of a 1.60 × 2.11 m (63 × 83 in) cargo door on the starboard side of the fuselage, forward of the wing; incorporation of a cargo roller conveyor system in the aft cabin floor; installation of an overhead cable system for the attachment of drop load parachute lanyards; and the provision of a flare launcher system in the aft fuselage, located on the port side just aft of the wing trailing-edge. This latter feature will permit the launch of a variety of pyrotechnic and/or signalling devices, including parachute flares as large as the LAU-2B. The existing 0.72 × 0.91 m (28.5 × 35.75 in) baggage door on the port side of the fuselage, aft of the wing, is to be used for the airdrop of emergency supplies and/or survival equipment, and a hydraulically-actuated air deflector will be mounted just forward of this door, opening automatically whenever the airdrop door is opened. It has not proved necessary to change the size of this baggage door, since the largest airdrop load for deployment by the RDAF will not exceed 0.60 × 0.60 × 0.90 m (23.5 × 23.5 × 35.4 in). The installation of an AN/APS-127 radar antenna in the fuselage nose represents little more than an alternative to the weather radar, but substitution of the radar display for the weather radar display in the instrument panel has necessitated some movement of the surrounding instruments and the inclusion of four sub-panels below the main pilot and co-pilot panels. Standby airspeed, altitude, and attitude indicators have been installed on the glareshield panel, and other non-standard instrumentation includes duplicated Sperry AD650 Series attitude and RD650 horizontal situation indicators, SPZ-800 autopilot, and a Teledyne angle of attack indicator.

Performance figures will be very similar to those of the commercial Gulfstream III: max cargo weight will be 2,064 kg (4,551 lb) with reduced fuel load, or 848 kg (1,870 lb) with max fuel load. With a crew of three, max fuel, max ramp weight of 31,162 kg (68,700 lb), payload of 726 kg (1,600 lb), and NBAA VFR reserves, RDAF Gulfstream IIIs will have an estimated range of 4,025 nm (7,459 km; 4,635 miles) at a cruising speed of Mach 0.775.

When the chips are down in the Middle East, as they are at present, American missions need the best people possible. The State and Defense Departments have placed deft professionals on the scene, in the ever-bubbling . . .

Middle East: Perpetual Hotspot

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

WE HAVE all shared a contempt at some point in our careers for the instant expert, whether it was the earnest young lady from the GAO on her first investigation, the junketeering politician, or the journalist on a fast sweep. Since I have taken on some of the feathers, if not the full plumage, of a journalist in my autumnal career, I run the risk of appearing an instant expert on the Middle East after a few short weeks on the run in that part of the world. Well, instant expert or not, a few valid conclusions seem worth airing.

Once upon a time, whether fairly or not, most of us in the military services had a low opinion of our fellow government employees in the Foreign Service. And, it may be said, vice versa. The diplomats were widely viewed, in the military, as cookie pushers who thought of work in terms of receptions, dinner parties, and gossipy little cables back to State. On their part, military attachés were often thought of by the Foreign Service as, at best, unnecessary appendages. In all fairness, the armed forces themselves seemed, at times, to take the assignment of attachés somewhat less seriously than the selection of people for jobs within the hierarchy. Evidently, there has been a remarkable change in the way attachés are selected, and an equally remarkable readjustment of attitudes between those of State Department persuasion and their colleagues in uniform.

The embassies in the hot and troubled Mideast are hard-working establishments, and the men and women doing the work give every evidence of both high competence and dedication. They may be, all things considered, better than we have deserved in recent years. There seems little doubt that the Mideast is going to remain both dangerous and important to our interests. The touchiness of our position in those various countries is extreme, and it would be short work for a few amateur and hamhanded diplomats or inept attachés to destroy that position. Happily for us, the Mideast posts appear to be filled with deft professionals.

It is very revealing, for instance, to see the genuine and easy friendship of Jordanian pilots for the young American captain who flies with them. Or the pleased and surprised look on the face of an Egyptian officer when the American colonel, his ribbons testimony to a lot of combat, speaks to him in Arabic. The naval attaché in Cairo is also highly regarded as the man who was in charge of mine clearing in the Suez. In Tel Aviv, the attachés have credentials that impress even the hypercritical Israelis.

They have a tough job these days convincing a growing number of skeptics that we are still a great power. The falling dollar, our failed Iranian rescue mission, occasional lurid news events like the Miami riots all cause doubts among those who want to believe that their security lies with us. An old friend of mine, a senior diplomat from an allied northern country, told me of an upsetting meeting he had with the foreign minister of an Arab country not on our side. The United States was finished, this foreign minister said. Sensible nations will accept this fact and adjust to the inevitability of Soviet dominance. This is a line that is being peddled fairly widely. It puts additional pressure on those charged with holding up our end. Our interminable election process, which often sees good sense overruled by political expediency, also makes the daily work of these professionals more difficult. That, however, is part of the job, although a part they hope will fade away after November.

The months before November look like hot ones in the Mideast. There is every prospect of more violence on the West Bank, a stalemate in the Egyptian-Israeli peace talks, and general unrest throughout the area. It is unrest that can quickly get out of hand, as it has threatened to do since the events in early June. Israel faces no serious military challenge from any Arab country, especially now that Egypt seems settled on a peaceful course. There are, however, other challenges that may prove even more dangerous. One is guerrilla warfare on a rising scale, with all the violence that accompanies warfare of that sort. Israel's answer would undoubtedly be equally violent and ruthless. And then we would possibly see, once again, the Arabs' only real response to Israel's military superiority—an oil embargo.

These are tough times to be working the Mideast problem. There is a widely held view, for instance, that the United States will do nothing substantive until Mr. Carter is or is not reelected. And then there are people, like the hostile foreign minister, who say we are through no matter how the election goes. All our representatives in those torrid capitals can do is what they are already doing very well. It may not be decisive, but it sure helps. ■

The trend in aircraft development is toward pooling of resources and sharing the risks. This can be seen by examining . . .

European Consortia: Evolving Cooperation at Work

BY F. CLIFTON BERRY, JR., EDITOR

"IN THE aircraft-building field, international cooperation is here to stay, and the United States somehow has to gird its loins and come into the action as soon as possible." That is the view of Mr. Alec Atkin, Managing Director/Military Aircraft, British Aerospace. He discussed the realities of international collaboration to develop and produce aircraft during an interview in Washington. His views are worth considering because his division participates in major consortia-produced aircraft programs considered successful models of the species: notably the Tornado and the Jaguar. *(A Tornado pilot report was featured in our June '80 issue, p. 48.)*

Atkin and other persons in consortia companies stress the view that US government and industry are coming late into international aircraft-building collaboration. However, the consensus among both US and European officials is that the transatlantic collaboration on aerospace projects has accelerated and broadened within the past two years. As the momentum builds, the possibilities appear high for meaningful collaborative projects to pay operations dividends for USAF in the 1980s and 1990s.

For now, however, the "two-way street" of true collaboration is regarded as a "1.05-way street," according to one European manufacturer. He, like colleagues at British Aerospace, Panavia, Airbus, and others, believes that if US-European cooperation is to work, it must meet certain conditions. First is basing upon valid requirements. Second is learning from the experience of existing consortia. Third is a clear feeling that the program is mutually beneficial.

Thus, the purpose of the survey of collaborative projects in this article: to highlight current major European fixed-wing aircraft consortia. It will provide a foundation for articles in succeeding issues about US-transatlantic efforts in progress or pending, and their impact upon the US Air Force.

Why Consortia at All?

It is no news to readers of AIR FORCE that weapon system costs have soared in the past two decades. This is especially true for first-line military aircraft. They have become so expensive that a single company aiming for a single national market can no longer foot the development costs. Indeed, even single armed services of defense establishments cannot command the treasure needed to get a new aircraft from the drawing board into the air. Thus, when development funds can be found, multiple foreign markets must also be tapped to increase the number of planes eventually produced.

Consider the Canberra bomber, a project started in 1949 in the UK. Its development cost about £25 million (about $100 million then). A lot of money for postwar Britain, but it turned into a sound investment. A total of 1,376 Canberras was built in the UK, and many more produced under license in Australia and the US. Now, more than thirty years after the Canberra program started, British Aerospace continues to book overhaul business on it, including about $80 million in 1979. Similar programs come to mind—ones developed for the home Air Force, which found widespread acceptance abroad and consequently long production runs: The English Electric Lightning, Lockheed F-104, McDonnell Douglas F-4, and Northrop T-38/F-5 are examples.

But in today's world the cost is too high and the risks too great for single-purpose, single-market aircraft. Collaborative programs share the costs, spread the risks, and broaden the markets. When the process works, proponents say the results are quality aircraft for requirements that might otherwise be unfilled. Military examples include Tornado, Jaguar, and Alpha Jet. Civil examples are Concorde and Airbus.

Consortia Benefits and Pitfalls

In a collaborative program, do you get a "committee solution"? A camel designed by a group trying to create a horse? "No," says Alec Atkin. "You get the best result of intercompany competition." He says the competitive spur of working with foreign teams stimulates the concentration of experience and expertise both technically and managerially. "The brains from participating companies hone against each other."

Officials of the Airbus Industrie consortium agree, adding another essential element: risk-sharing. Airbus considers that because full risk-sharing partners are directly involved in the program's success, they participate more keenly than subcontractors. That is because they share both risks and profits.

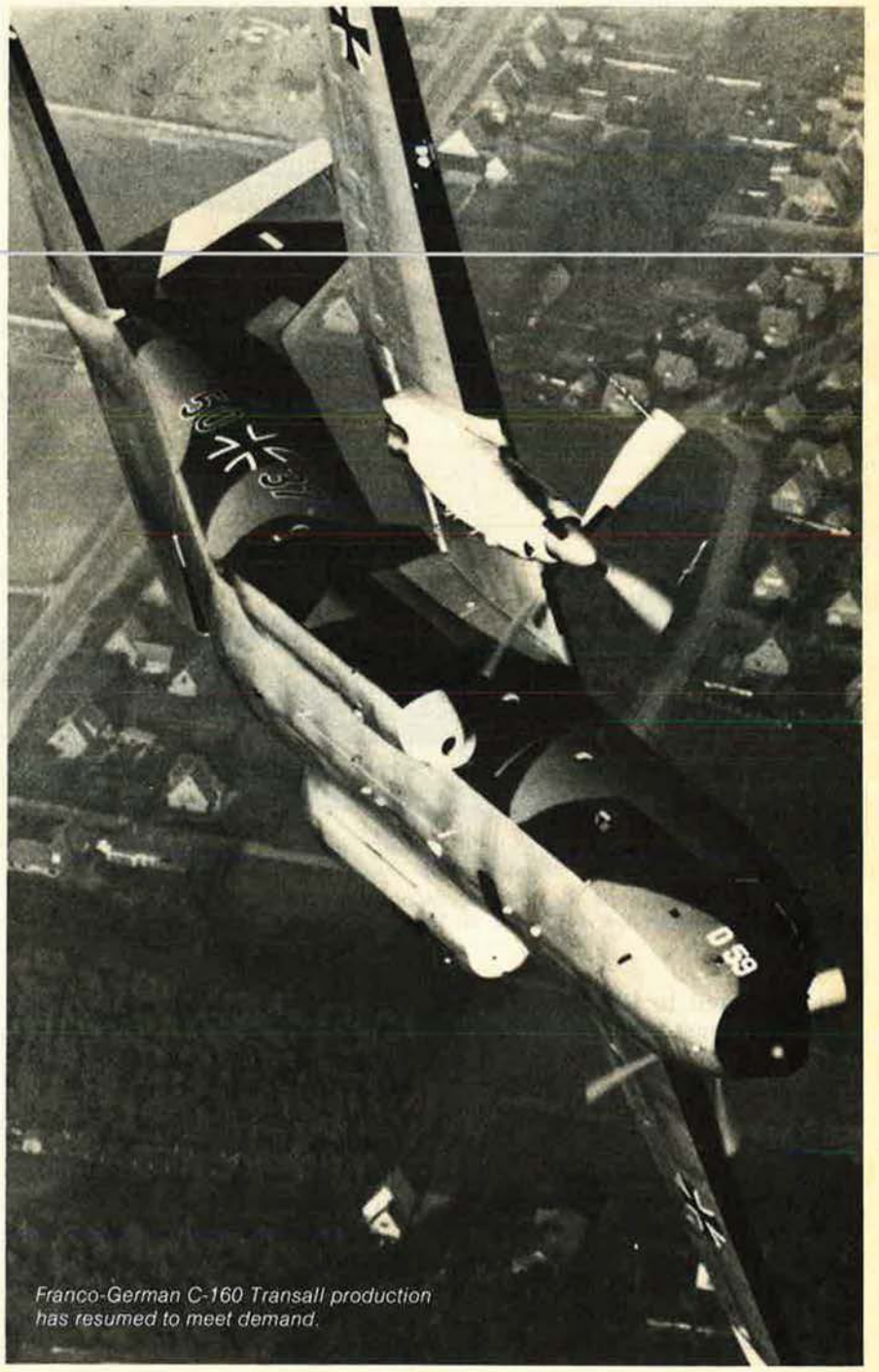
Other benefits include an interoperable aircraft (in fact, a common aircraft) and combined production and marketing resources. Pitfalls exist also, because collaborative programs are leaping across international boundaries and political differences as well as

varying operational requirements. For example, dividing the work can delay agreement unless all partners (and their legislatures and trade unions) consider it equitable. Until they do, program delays can occur. International legal arrangements must be devised to keep the partners out of court and parts flowing through the customs sheds to assembly plants. Financial arrangements have to be constructed to account for fluctuating exchange rates and equitable cost and profit-sharing. Finally, management structures must be designed and then staffed with the right people to make the program work.

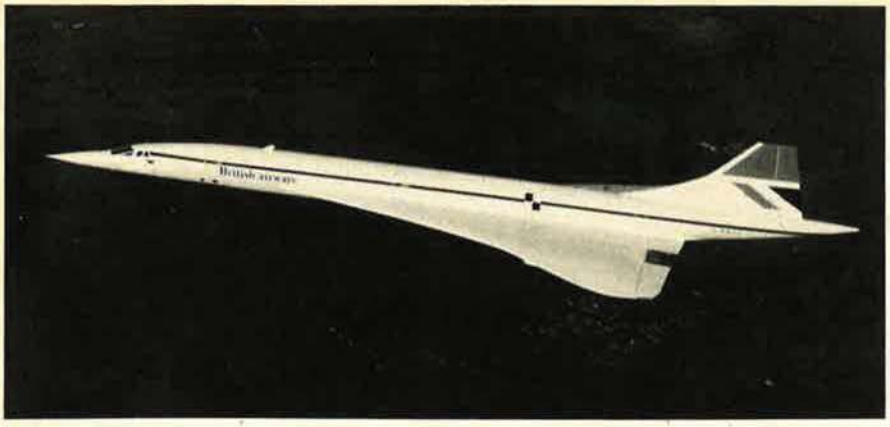
If US companies and USAF are to make the most of international collaborative programs, and it seems certain that they will have to do so, then a quick look at the evolution of the main European consortia is in order.

Transall C-160 Transport

In the military aircraft field, Transall is the current "Granddaddy" of European consortia. It stands for "Transporter Allianz" (Alliance). Transall began with 1957 decisions by the French and German ministries of defense to launch a joint military transport development program. By January 1959, a Transall Supervisory Committee was formed, composed of representatives of Aérospatiale, Messerschmitt-Bölkow-Blohm (MBB), and VFW. Under its supervision, a team of designers created the basic layout of the plane. Approved by the governments later that year, it led to development and construction of prototypes in both countries. First flight occurred on February 25, 1963. First production aircraft



Franco-German C-160 Transall production has resumed to meet demand.



Top to bottom are Concorde, the British Aerospace-Aérospatiale supersonic transport; Jaguar, in service with RAF and French Air Force; and Tornado trinational aircraft.

was delivered to the French Air Force in August 1967. According to *Jane's All the World's Aircraft*, a total of 179 Transalls was produced through 1972 when production ended.

Management structure for Transall involved the two ministries of defense coordinating requirements and orders through the participating companies. According to a Transall report of early 1968, VFW was given responsibility for overall planning and coordination of component forwarding among the primes and subcontractors. In addition to the French and German air forces, Transall aircraft from the first production run serve in the air forces of South Africa and Turkey, according to *Jane's*.

Transall production was reinstated in 1976 to meet French and foreign requirements. *Jane's* reports that under the resulting industrial agreement, work-sharing is fifty percent to Aérospatiale and fifty percent to the two German companies, with a single final assembly line at Toulouse. New-series production began in October 1977.

Concorde: The Commercial SST

In 1960, the British and French governments agreed on joint development of a supersonic airliner. They planned to share costs and technical effort equally. But realities of industry capabilities intervened. Consequently, engine work was divided two-thirds to Britain and one-third to France. To balance the effort, airframe work was divided sixty percent to France, forty percent to Britain. Major participating companies are British Aerospace and Aérospatiale (airframe primes) and Rolls-Royce and SNECMA (engine primes).

Concorde policy control and major direction was by a binational government body called Concorde Directing Committee. Day-to-day government supervision was by a management board. The work was coordinated by a committee of company directors, with chief executives of the primes overseeing day-to-day coordination. Similar arrangements applied both to engines and airframes.

Alec Atkin notes that this is a complex structure "looked upon with great misgivings in the early days of the project." But it seemed the only way to get the project started (remember, the US Supersonic Transport was considered potential competition), and it did. The two companies produced nineteen airplanes and introduced commercial supersonic airline service to the world. However, Concorde has been a drain on the two national treasuries instead of turning a profit. Escalating fuel costs are more responsible for that than technical shortcomings; Concorde did in fact meet demanding technical targets. However, the concept of management by collaboration among separate companies via committees was considered too cumbersome and complex for later projects. The logical next step was to form joint companies specifically for collaborative projects. That was the approach with Jaguar and Tornado.

Jaguar: A Separate SEPECAT

The agreement to start Jaguar was reached by the French and British ministries of defense in 1965. They aimed to produce a jointly developed supersonic strike fighter/trainer to meet a common operational requirement. It was for a dual-role aircraft usable both for advanced training and close support. The governments agreed to share costs and effort equally on airframe and engines by forming joint companies. The companies would be responsible for the project, and could take contracts from the governments.

The joint airframe company was set up by British Aerospace and Avions Marcel Dassault/Breguet Aviation. It is called SEPECAT. Similarly, Rolls-Royce and Turboméca formed a joint engine company. These companies can accept contracts from both governments, and subdivide the work on a fifty-fifty basis. They are given policy supervision by a joint Anglo-French Management Committee with technical, financial, and air force experts from both countries serving on it.

According to *Jane's*, 402 Jaguars have been ordered for the French and British forces. Export versions have been sold to Ecuador, Oman, and India. Major subassemblies are produced in Britain and France and transported to final assembly lines in both countries. Part of the Indian purchase will be assembled in that country, with eventual production there under license.

The Tornado MRCA

Development and production of the Tornado Multi-Role Combat Aircraft (MRCA) shows that the European partners learned from earlier collaborations. Even so, it illustrates the difficulties of trying to mesh the varying requirements of too many countries at once. Six nations were involved when the project began in 1967, but their requirements and support ability varied so much that three dropped out. The three remaining to bring Tornado along are Germany, Great Britain, and Italy.

Following the Jaguar example, a joint company called Panavia was set up in 1969 to receive contracts and manage the project. Its participants are British Aerospace (42.5 percent), MBB (42.5 percent), and Aeritalia (15 percent). The multinational government organization created to award all Tornado contracts has two levels. At the top is the policy group called the NATO MRCA Management Organization, or NAMMO. Detailed supervision is done by the NATO MRCA Management Agency (NAMMA), which has offices in the same building with Panavia in Munich.

The 809 Tornadoes to be produced are to meet multiple requirements of the three nations. They include close air support, interdiction, air superiority, air defense, naval strike, and reconnaissance. Panavia is aiming at the US Air Force market for an all-weather fighter by teaming with Grumman Aerospace. So far, no foreign sales of Tornado have been made.

German-French Alpha Jet.

Alpha Jet: Coordinated Production

The Alpha Jet is a subsonic trainer/strike and reconnaissance aircraft whose development began in response to a 1969 joint requirement of the German and French governments. They wanted an aircraft to replace the older T-33, Magister, and Mystère trainers then in service. The business was won by a Franco-German consortium of Avions Marcel Dassault/Breguet and Dornier GmbH.

Prototypes were built and flown in both countries. Production of subassemblies is by designated suppliers. Some subassemblies are made in Germany, others in France. They are shipped to final assembly lines in both countries.

Although the management structure operates by the individual companies' collaborating rather than setting up a separate company, it seems to be working for Alpha Jet. Foreign sales have been made to Belgium, Togo, Ivory Coast, Morocco, and Nigeria. A final assembly line has been established in Belgium. Alpha Jet orders total more than 500, and the companies expected to reach a production rate of thirteen aircraft per month at the end of 1979. The Alpha Jet will be in

Airbus A300 serves with seventeen airlines, including Eastern.

Major European Airplane Collaborative Programs

	Airbus	Alpha Jet	Concorde	Jaguar	Tornado	Transall
Belgium	x					
France	x	x	x	x		x
Germany	x	x			x	x
Italy					x	
Spain	x					
UK	x		x	x	x	

the US for a demonstration tour from September 8 for about three weeks, visiting Air Force and Navy bases.

Airbus: Climbing

Airbus Industrie officials point to sales of more than 200 aircraft in 1979 (taking up about one-third of the wide-body civil aviation market), and note that thirty-three airlines have now ordered or taken options for more than 400 Airbus A300/A310s.

The company is an example of the evolution from collaboration (as in Concorde and Alpha Jet) progressing through a multinational limited liability company (as with SEPECAT and Panavia), to a completely independent company called a "grouping of economic interest" (g.e.i.) under French law. In a g.e.i., all members have joint liability for all contractual commitments made. Thus, as a British Aerospace official says, "In this way every contract is guaranteed by the resources of all members." The result is the ability to compete better in the commercial sector by assuring customers that all partners are liable for all risks. (Of course, the partners also share in the profits.)

The sharing breaks out this way: Aérospatiale 37.9 percent; Deutsche Airbus 37.9 percent; British Aerospace 20.0 percent; and CASA of Spain 4.2 percent. "Associates" are also linked with the program, but their risks are limited to their own work; they have no financial involvement in the central organization. Present associates are Fokker in the Netherlands, and in Belgium the Belairbus group, composed of SABCA and SONACA.

American industry and some government officials claim that Airbus is winning orders by offering bargain-basement terms subsidized by the governments and central banks of the partner countries. Whatever the details of subsidization, Airbus Industrie has risen from a concept in December 1970 to a major force in the civil air transport field in 1980. More than 100 Airbus A300s have been delivered as of spring 1980 and are in service with seventeen airlines. According to Airbus President Bernard Lathiere, the current production rate of three per month will increase in steps to eight per month by 1984.

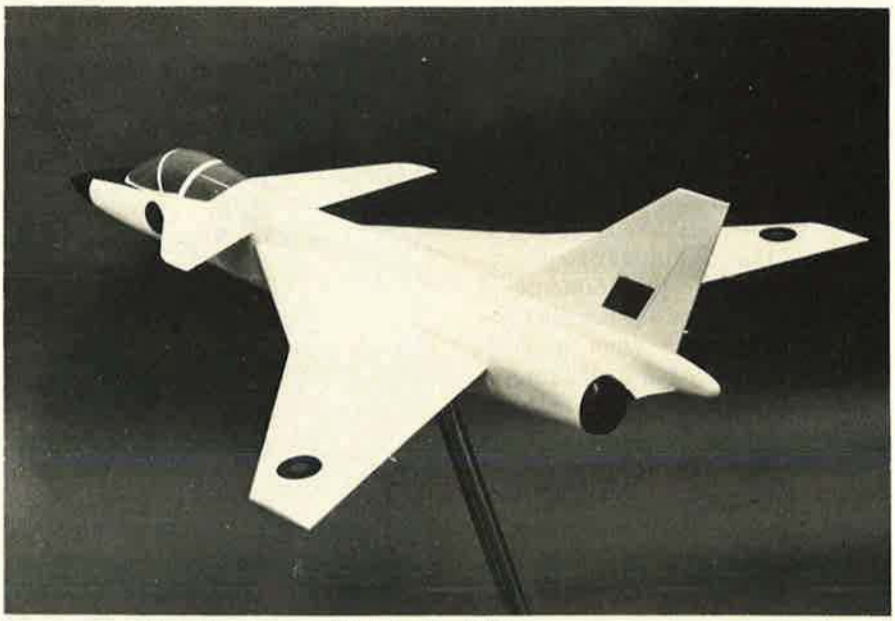
ECA: Future Fighter

Currently under study by the governments of Great Britain, Germany, and France are recommendations from a team of their major aircraft companies to develop jointly a European Combat Aircraft (ECA). The ECA would replace Jaguars currently used by the British and French air forces, and Phantoms of the Luftwaffe. The companies are British Aerospace, Avions Marcel Dassault/Breguet, and MBB. All are experienced in multinational aircraft development. Conceptual designs have been reduced to model form, and the companies claim an "encouraging degree of agreement" on ECA development possibilities. This program has potential for US companies' participation, but the extent depends on overcoming legal and political obstacles now in the way.

Collaborative Aircraft and People

The results of two decades of European collaborative aircraft projects are flying the skies worldwide, both in civil and military service. Not seen in the air but vital to the programs are the ever-expanding cadre of workers, engineers, and managers now long accustomed to thinking multinationally.

For the moment, that pool of talent is larger in Europe than in the US, where subcontracting is more the rule than pooling of interests. Coverage of US companies' transatlantic collaborative projects is the subject of next month's article. ■



European Combat Aircraft: a possibility for the 1990s.

Amid the shifting sands and constant tensions of the region, changes are in process that can yield opportunities for the US. At the same time, pitfalls abound, as shown in this . . .

MIDEAST SURVEY: Problems and Prospects

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

THE old iron gates on the British Embassy in Cairo still bear the seal of Victoria Regina. Since the gates are in fine working order, perhaps this just reflects an economy-minded British treasury approach to the replacement of iron gates. More likely, Queen Victoria has been left on the grillwork as a harmless little memorial to the great days of the British Empire, days when the Anglo-Egyptian Sudan was managed out of that old white building on the Nile. The British are mainly gone now, no longer a major factor in the Middle East they dominated for so long a time. The comings and goings at the British Embassy indicate a quiet and unhurried way of life, as befits an embassy with no great commitment in that part of the world.

Across the street at the American Embassy it is a different story. The bustle there reflects our status as Egypt's new superpower friend, after a hiatus of seven years, from 1967 to 1974, when we had no diplomatic relations. The rigid security surrounding the embassy is a reflection of another sort. There is a residual hostility in some parts of the Arab world toward an America that remains Israel's best friend and protector, a hostility not, however, evident among Egyptians. On the contrary, our recently acquired status as Egypt's principal benefactor seems to be generally welcomed. Still, there are a few psychological barriers to be overcome before we are on our accustomed easy basis with countries we support. There are a good many Egyptian officers on active duty with memories of the 1973 Yom Kippur War and the major role the United States played in that war against them. It will take awhile, maybe a long while, before the old memories die. That is not to infer hostility but rather a certain reserve on their part toward our military. For people who attended USSR military colleges and still fly Soviet airplanes and drive Soviet tanks, this standoffishness is understandable. As time goes on and we prove ourselves both reliable and capable, the attitude will change. As for now, it represents not a problem but a challenge.

Sailors from the Sixth Fleet on liberty in Egypt at the Great Pyramid.

There is more than one challenge in our new responsibilities toward Egypt. When the Soviets were there, all 30,000 or so of them, military hardware came in by the boatload. Whether it was a matter of replacement airplanes, tank parts, or new equipment, the Soviets operated from a plentiful source. To that extent, they are a hard act to follow for a United States short of everything for itself, let alone for its friends. The thirty-five F-4E Phantoms, for instance, that the Egyptian Air Force is now flying came literally out of the United States Air Force's hide.

Other aspects of the Soviet era, however, left less favorable recollections. There is no love for the Soviets in Egypt or, aside from a slight nostalgia, perhaps, for the quantities the Soviets produced, any admiration for the Soviet way of doing business. The fact that the Egyptians have little in the way of a logistic system to support their Russian weapons is a heritage from the Soviet insistence on controlling the logistics of the Egyptian military. A nation that accepts Soviet military aid becomes a supplicant and a dependent. And so, when President Anwar Sadat threw the Soviets out in 1972, he sent a good part of the logistic apparatus home to Russia as well. The People's Republic of China is supplying some help now in the way of F-6s—their version of the MiG-21—and aircraft engines, but Egypt's heavy reliance on Soviet equipment will obviously

USS Barnstable County *(LST-1197) in Suez Canal. Widening and deepening will permit aircraft carrier transits.*

become more of a problem as time goes by.

Meanwhile, our own programs are getting under way. The F-4Es were sort of earnest money of our intentions. It evidently did something for Egyptian pride to be able to fly the F-4, an airplane that had caused them so much grief, in the 1980 parade celebrating their version of the outcome of the Yom Kippur War. The real program, that of the F-16, is just beginning. When that one gets rolling, we will truly start our Egyptian military relationship.

The aid program is already in full swing, with $67.5 million earmarked this year for the Egyptian private sector. One out of every three loaves of bread comes from American aid, and yet it is doubtful the average Egyptian is much aware of our largesse. The Soviets spent their money on big things, the Aswan Dam and the steel mill being two of them, and so their economic aid is visible. They are still having difficulty with the generators at Aswan, and the steel mill is thus far a disaster. Nevertheless, these are big and visible monuments to the Soviet program.

The Case for Discretion

If a visitor could simply keep his eye on economic reports and not let it wander to the appalling poverty everywhere around him, the situation in Egypt is not discouraging. First of all, there is oil—in the Red Sea and on the Sinai Coast—about 180,000,000 barrels a year. It is good-quality oil, not the best, but good enough, and Egypt is now a net exporter. Since she does not belong to OPEC, the oil surplus to her needs is sold on the spot market for whatever it will bring. Egypt's reserves are presently estimated at more than 3,000,000,000 barrels. The problem, and this relates directly to the poverty, is a population of 41,000,000, growing at the rate of 1,000,000 a year. Even if birth-control measures were to take immediate effect, and there seems no likelihood of that, the base population is already too big.

It is an arid land except for the Nile valley, now freed by the Aswan Dam from its annual flooding. The desert outside Cairo is as bleak a landscape as you will see anywhere. It is all desert, except in the rare oases and in those spots reached by some form of irrigation. The drive to Ismailia, midpoint on the Suez Canal, is through that desert.

As you approach Ismailia, the country turns green, even lush, thanks to a branch of the Nile. The Suez Canal itself emerges from a forest north of Ismailia and thus creates the odd sight of funnels and masts passing through the trees. There have been long periods, of course, when no ships passed through that big ditch, the most recent being the years between the 1967 and 1973 wars. The Canal was reopened in 1975, after clearing operations by the US Navy, and it now brings in about $700 million a year in tolls. US-flag commercial traffic through the Canal in 1979 ranked seventeenth among using nations, standing at 4,583,000 net tons of cargo in 305 transits.

The Suez Canal Authority has been, since the nationalization of the Canal in 1956, an Egyptian enterprise and has confounded all those who thought it could not be run without European help. The convoys move up and down, from Port Said to Suez, with rarely a hitch, as smoothly as they ever did under French and British control. But the interesting fact about the Suez these days is that it will have, by October of this year, the capability of taking ships up to 150,000 tons. Not yet the giant supertankers, except in ballast—that is in the next phase of widening and deepening—but this fall the Suez will be able to take very large ships

indeed. Egypt willing, and with, perhaps, some interruption of normal shipping, the Canal will be able to handle an aircraft carrier. It is an interesting new possibility and one that may stretch our overcommitted carrier forces.

That, however, is just a possibility and should not be taken for granted. For that matter, nothing in Egypt or about our relationship with Egypt should be taken for granted. One of the dangers of this new and still tentative alliance is that we might somehow crowd the Egyptians a little too much, or otherwise make our presence too obvious and overwhelming. We cannot, for instance, begin to talk of base rights and the free use of Egyptian bases, now that there is a military sales program in that country. There seems no doubt that we will be given the use of these bases when there is a clear need in the common interests of both countries, and there may be other occasions as well. All that will develop as time goes on, but at this point we must not overplay our hand, as we have done here and there in times past. Egypt is in a tough position these days, isolated to some extent from its Arab neighbors—although the Saudis still flock into Cairo for shopping and other reasons—and engaged in negotiations with the Arab world's old enemy, Israel. At this moment any support, moral or otherwise, that Egypt may be getting from other Moslem nations is invisible.

Jordan's Complex of Complexities

The airline distance from Cairo to Amman, Jordan, is somewhat longer than the crow flies. In deference to the fact that the Thirty-Year War is still on with Israel, the El Alil airplane heads north into the Mediterranean, then northeast, well off the coast of Israel, before turning in over Syria and thence to Amman. The airplane that day was absolutely packed, as it apparently always is, with migrant labor heading somewhere to work. There is a basic incongruity about a Boeing 707 filled with men in Bedouin costume.

Amman itself, while not as interesting as Cairo with its pyramids and mysteries of the Nile, is refreshingly clean and orderly after the confusion of the Egyptian capital. Its altitude of 3,000 feet, and the comparatively mild climate, has something to do with this. A small Jordanian total population of about 3,000,000 is another factor. Unlike Cairo, there has not been a mass immigration from overpopulated villages to the city in search of a better life. About a third of Jordan's population—and not just incidentally—is Palestinian.

Still another factor contributing to the orderly and disciplined atmosphere in Jordan is the firm and enlightened rule of King Hussein. He is, without any question, the boss. While the constitution calls for a parliament, this body has been essentially dissolved since 1974. There is a cabinet that carries out the executive responsibilities, and the King also has the advice of a consultative council drawn from representative areas of the citizenry. But it is the King who has the final say on everything of any importance, and he enjoys the unquestioned support of the Jordanian military, the direct descendant of the famous Arab Legion. In an increasingly chaotic world, the Jordanian system of government seems to work very nicely without even an outcry from the human rights zealots. As nearly as a casual visitor can determine, Hussein is widely admired and respected.

Like its neighbor Israel, Jordan has no oil, and so it must depend to some extent on another neighbor to the south, Saudi Arabia, for financial help in buying weapons. The Jordanian authorities have no difficulty convincing themselves of the need for modern military equipment. On the northeast border there is Iraq, presently making friendly gestures but, with its erratic record, an uncertain quantity. On the northern border there is Syria, and no one is ever sure what to make of Syria. Currently, Jordan's relations with that socialist state are strained. Finally, on the western border there is Israel. Worse than that, Israel is occupying land captured in the 1967 war that Jordan considers its own. For all these reasons, then, Jordan wants modern weapons.

The United States has met the demand partway. Jordan has F-5As and is now receiving F-5Es, a capable fighter in the clear-air environment of that part of the world but with an elementary fire-control system. With, presumably, Israel in mind, and since we turned them down on the F-16, the Jordanians will buy thirty-five Mirage F-1s from France in order to have a more sophisticated air combat fighter. Whether or not it makes any sense for a small air force to so complicate its logistics and training by buying airplanes from both the United States and France is beside the point. Jordan wanted a sophisticated fighter, and we wouldn't sell them one. Better F-1s than MiG-23s. Britain is selling the King's Army 250 Chieftain tanks.

It is a strange world, this Middle East. Our relations in Jordan are cordial and even, on the working level, downright friendly. When I visited Hussein Air College at the invitation of Jordan's Air Chief, General Kurdi, the atmosphere was informal and warmly hospitable. The cadets had the same exuberance and clear-eyed healthiness of cadets in Colorado Springs, and the air show put on that day, in celebration of the College's twentieth anniversary, was professional. Yet, always in the background, is the fact that we are friends to both sides in this conflict over the West Bank, or as Israeli Prime Minister Begin insists it be called, Judea and Samaria. Being friends to both sides in a fight is a hard thing to carry off, especially when both sides appear to have some irreconcilable differences.

A conversation one evening with a group of prosperous and prominent Palestinians in Amman was an indication of how divisive the West Bank issue really is. These men, educated and generally reasonable enough, were absolutely rigid in their views on the occupied lands, and, most particularly, on Jerusalem. That ancient city, they maintained, was the key to any agreement. If the Israeli position is to keep Jerusalem undivided and under Israeli rule, then they would throw their lot in with Yassar Arafat and his PLO. Since Israel is apparently determined to keep Jerusalem undivided and completely under Israeli control, and Arafat represents the extremists of the other side, the future looks gloomy, if these Palestinians I talked with in Amman are at all representative.

King Hussein has the additional problem, no matter how reasonable his natural inclinations might be toward negotiating some compromise on the Palestinian issue, of staying friends with his benefactors, the Saudis. It is all very complicated. The Palestinians exist—more than 3,000,000 of them—and it seems obvious some solution must be found to their displaced-person status. Eight years ago, King Hussein made what, in retrospect, seems a sensible proposal for settlement of the West Bank impasse. It was spurned by all sides, by Israel because it asked too much, and by the other Arab states because it asked too little. Then, there was the violent uprising on the East Bank in September 1970, in which the Palestinians tried to create their own state by force and at Jordan's expense. When Hussein's military, with the somewhat ambiguous complicity of Syria, put down that rebellion, Jordan assumed full control of the East Bank. Palestinians in Jordan now enjoy full citizenship, but they are also expected to live quietly under Jordanian law.

The Israeli View of the West Bank

All of which brings the Mideast no closer to a peace settlement. The drive from Amman to Tel Aviv is an object lesson in just how tenuous the present situation is. Not war, maybe, but certainly not peace. To begin with, Jordan and Israel do not have diplomatic relations. Beyond that, since Jordan considers Israel to be in illegal possession of Jordanian territory on the West Bank, a traveler trying to get across the Jordan River must first realize that, in the eyes of Jordan officialdom, he is simply asking for a pass into enemy-occupied territory. There are, therefore, some drawn out and vexing formalities to be gone through in order to obtain this pass. One then walks from the Jordan military outpost to the center of the bridge across the Jordan River, disappointingly small to have been so celebrated in spirituals. There he is met by Israeli soldiers. After a question or two the traveler is passed into the security net where a most-thoroughgoing search of baggage and person takes place in what is plainly an armed camp surrounded by gun positions and bunkers.

Since I was not in a tour group, the second stage of the journey had to be made by taxi, a Palestinian Arab taxi, and the charge at the end of the trip should have kept the driver and his family of whatever size in shashlik and kebob for a comfortable period.

The drive through the occupied territories is clear enough proof that the people living there are predominantly Arab. The occasional Israeli Army checkpoints are equally clear proof as to who is in charge. Despite the fact that the West Bank has been in Israeli hands for thirteen years now, there seems to be no getting away from the need for military force to maintain control.

There are varying accounts of this occupation, as the Arabs term it. The Israeli view is that the vast majority of Palestinian Arabs living in the West Bank are better off than they ever were under Jordanian rule. In all probability this is true, at least in terms of prosperity and social services. Nevertheless, the Israeli military can play a pretty rough game when the occasion arises, as it has done repeatedly in the past few months, and so the occupation aspect of the West Bank has been accentuated to the detriment of Israel's claim to legitimate possession

of this ancestral land. The trouble is, to oversimplify matters, that it is too many people's ancestral land.

Anyway, these are ugly times in the Holy Land, and they bring on ugly incidents. The booby-trapping of the three Arab mayors' automobiles was terrorism in its lowest form. In a conversation with Ezer Weizman, who had resigned as Defense Minister only the week before, he told me that the bombings were probably the work of Jewish terrorists, perhaps Rabbi Kahane's fanatics, and that the Arabs—"I know my Arabs"—would surely retaliate. Prime Minister Begin's insistence on building ten more settlements in the West territories and "thickening"—his word—those already built has further inflamed Arab emotions. All in all, the outlook for the West Bank is a depressing one.

The Palestinians I talked with say Jerusalem is the key to any negotiations with Israel. The Israelis—very much including that charismatic old fighter pilot Ezer Weizman, who seems to many people Israel's best hope—say Jerusalem will never again be divided. It will remain under Israel's control.

The tension will clearly remain between Israel and her neighbors regardless of what miracles of negotiation may be passed. It is the existence of these tensions, and the threat they bring to Israel's existence, that has kept her so on her toes militarily.

The IAF—A Never-Ending Red Flag

There seems little question that the Israeli Air Force is the world's best, at least at what it does. And what it does is air combat. The pilots in that Air Force fly double the monthly hours of our own fighter pilots, and there is scarcely a wasted minute in those hours. They fly clean airplanes in all-out simulated combat missions. And like major league ballplayers with slumping batting averages, fighter pilots risk being sent down to the minor leagues, which is to say to some less-exacting pilot duty, when they begin to lose too many engagements. The Syrians learned to their sorrow in June of 1979 what it was to tangle with the Israelis when the Israeli pilots put their new F-15s through a combat evaluation. Israeli pilots love the F-15, although they had a few criticisms of some of the weapons in that Syrian encounter. They evidently love the F-16, now about to enter their squadrons, as well. Ezer Weizman, obviously happier talking about airplanes than Mr. Begin's government, says, from what he hears, the F-16 "fits like a glove."

There can be no question about the quality of the Israeli Air Force, and so it seems likely that they might have a few ideas to pass on about this business of operating in the Middle East. It is hot, dusty, and there is the ever-present problem of sand getting into things. On the plus side, the Mideast is essentially a clear air environment without the complications that heavy weather brings to fighter operations.

The two Israeli fighter bases in the Sinai, Eitam and Etzion, that we are presently replacing in accordance with the Camp David agreements, are a fascinating example of what can be done in the way of decentralized operation and hardening. The key element is the aircraft shelter. It is there that the airplane is maintained, serviced, and turned around. The pilot gets his briefing, plugged into a land line while he sits in the cockpit. The concept is much like an Indianapolis 500 pit stop, and it does generate the sorties. The Israelis train every day the way they are going to fight, if it comes to that again—a sort of never-ending Red Flag.

The new bases we are building, Ramon and Ovda, at a cost of some $800 million, on the Israeli side of the Sinai border, will follow the same design philosophy. Dispersed, decentralized, with redundant concrete so that taxiways can serve as runways if need be. Ramps are small and play no part in the tactical operation. All in all, it is about as far as it is possible to get from the highly centralized maintenance concept our own tactical air forces went through. Air Force Manual 66-1, I think it was called, and how the fighter people hated it. Anyway, that is the Israeli way of operating tactical forces. It is, admittedly, expensive in terms of people, but that is not one of their worries in a country where everyone has to serve and the pay of draftees is $25 or so a month.

There is no real question, either now or in the near future, that Israel could win any new battle with her Arab neighbors. The question that cannot be answered is how long can this confrontation go on? Inflation in Israel is well out of hand—150 percent—to a large extent because of the heavy burden of defense. There is a certain amount of disenchantment with life in Israel under these conditions of everlasting military vigilance and raging inflation. Emigration, for instance, now equals immigration. So far, Israel has met the rising costs by raising pay. In other words, by printing more money. Then there are our own massive aid programs and the contributions of overseas Jews—mainly American—which put off the day of reckoning. Nevertheless, Israel's economic vulnerability, enhanced as it is by rising oil prices, is a fact that must deeply trouble anyone concerned with the long-term survival of that embattled land. ■

"I'd walk a mile for a Camel, but not for you!" US Navy sailor confronts a "Ship of the Desert" during port call to Alexandria, Egypt.

Officer Training School

Gone are the "tight meals," automatic restriction to campus the first three weeks of training,

OFFICER Training School doesn't have the Rocky Mountains for a backdrop, or a curriculum that is taught at more than 140 colleges and universities throughout the nation. However, since it was established in 1959, it has been a full partner along with the US Air Force Academy and Air Force ROTC in training and commissioning the thousands of officers needed each year to keep the Air Force "flying and fighting."

In more than twenty years of operation, the school, located on the Medina Annex of Lackland AFB, Tex., has commissioned about 71,000 second lieutenants. More than forty percent of them are still on active duty. Looking ahead to the end of FY '85, the Air Force estimates it will need slightly more than 52,000 new officers. More than half—about 28,000—will come from Officer Training School, commanded since May of this year by Col. William L. Hiner. By comparison, during the same period, Air Force ROTC is expected to commission about 18,400 and the US Air Force Academy about 5,400.

History of OTS

Studies conducted in the mid-1950s revealed that the Air Force Academy and ROTC would not be able to train enough new officers to meet Air Force requirements. The only other option—beefing up Officer Candidate School—didn't seem to be the best solution. OCS students were not required to have completed a college degree in an era when weapon systems and career fields were becoming increasingly complex. Therefore, a plan was developed in 1957 to recruit, train, and commission college graduates already having the educational background and technical skills needed by the Air Force.

The plan called for these people to be put through an extensive three-month program augmenting their college education with professional military skills necessary for second lieutenants. The first Officer Training School class began in November 1959. Officer Candidate School was not immediately phased out. The Air Force wanted to be sure that the new OTS concept would work. It did. In June 1962, the last Officer Candidate School class graduated, leaving OTS as the only Air Force officer commissioning program of its type.

A unique feature of Officer Training School is its ability to rapidly increase or decrease production to meet changing Air Force requirements. Although excellent commissioning sources, both the Academy and ROTC require several years to graduate a student. In addition, their programs are most efficient when production is fairly stable. However, Air Force officer requirements can fluctuate considerably over a relatively short time, such as during the Southeast Asia buildup or lately with the onset of the Air Force's retention problems. Recent Officer Training School production figures clearly demonstrate its ability to adjust to changing requirements. During FY '79, 3,900 officers were commissioned, compared with 1,560 in FY '78. In FY '80, 5,700 officers are expected to graduate from the school. For the next several years, both the Academy and ROTC programs will remain fairly stable. Air Force ROTC will commission slightly more than 3,000 a year and the US Air Force Academy a few more than 900.

Philosophy

The Officer Training School philosophy begins with the assumption

A woman officer trainee gives a flight mate a boost during one segment of the leadership reaction course. The course presents trainees with crisis-like situations they might face in a patrol scenario, with only minutes available to solve each problem.

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igh self-initiated elimination rate. In their place is a new philosophy . . .

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BY MAJ. GENE E. TOWNSEND, USAF, CONTRIBUTING EDITOR

that an individual's college degree is evidence of maturity and ability to learn and to stick with a project to completion. Therefore, the mission of the school is to provide the training an individual needs to begin a military career and evaluate each person's potential as an Air Force officer. Harsh military training was never part of the school's philosophy. However, strict adherence to discipline and standards always has been. The training philosophy of the early 1970s can be illustrated by a typical exchange between an instructor and student the first day or so of training:

"Mister, report! What's that on your shirt?"

"Where, sir?"

"On your left pocket."

"I don't see anything, sir."

"Mister, you are at attention! When at attention your eyes look straight ahead. Since you did not ask permission to be at ease before you moved your eyes, you are out of formation. Write three!"

"Write what, sir?"

"Turn in three demerits for being out of prescribed military formation."

"Yes, sir."

"Now back to your shirt. What's that thing on your left pocket?"

"Sir, request permission to be at ease to look at my left pocket."

"Permission granted."

"Sir, I don't see anything on my left pocket except a small thread."

"Mister, that's no thread—that's a cable, understand? And near that cable is a woolie. Cables and woolies are not authorized uniform items. Write two more for violating Air Force policy which states that uniforms will be worn properly at all times."

"Yes, sir. Will that be all, sir?"

"Yes. Carry on."

Until fairly recently, that kind of an exchange was more or less typical of the first meeting between a flight commander and a student. While harassment was never tolerated, many of the instructors, students, and staff thought that some of the training was too negative and too laden with "Mickey Mouse." The end result was that a significant number of students eliminated themselves after only a few days—before they really had a chance to see what the Air Force had to offer. Now, that's all been changed.

New Training Philosophy

Col. J. F. Dwyer, Jr., Deputy Commander of Military Training at OTS, explained that the training environment was adjusted to mirror the active-duty Air Force as much as possible. "I think today's students are pleasantly surprised that even though we subject them to a lot of pressure, we treat them with dignity. Once commissioned, we hope they will make that philosophy part of their everyday leadership," he said. Colonel Dwyer notes that some students believe their introduction to OTS will be by an instructor who will put them in a brace, and stand two inches from their faces, yelling ridiculous orders. "That isn't done. We recognize the trauma a new student faces arriving in a new town and being placed in a new situation. There is no need to add to that trauma. We get the students off to a reasonable start so they can adjust to the slowly building pressure resulting from training. OTS is basically a leadership laboratory where leadership qualities, styles, and philosophy are tested and examined daily," he said.

Lt. Col. Daniel A. Augustyniak, Chief of the School's Standardization and Evaluation Division, explained that for the first three days

of training, flight commanders arrive at 5:30 a.m. just to be with the students—joining them for meals and helping them get over the initial shock. "They eat with the students, answer questions, and spend as much time with them as possible to allow for a smooth transition. After the first three days, the initial shock is pretty well over and the students can assume more responsibility," he said.

Colonel Augustyniak notes that before the new philosophy was implemented, students didn't see their flight commander for several days. Their initial impression of the Air Force was based solely on what other students told them. "They were apprehensive about the initial meeting with their flight commander; now, the flight commanders greet the students upon arrival and some even give them a hand with their luggage," he said.

The abbreviated form of the new philosophy is—lead, motivate, *then* evaluate, according to Colonel Augustyniak. "We also looked into other negative factors. 'Tight meals' [sitting at attention while eating] was counterproductive. Students apparently believed they ate tight meals in memory of the prisoners of war. We don't know where they got that idea. Air Force doctors and psychologists told us that it was unhealthy. So we eliminated that practice," he said.

Colonel Augustyniak pointed out that students are no longer automatically restricted to campus the first three weeks or so of training. "Recently, we decided to allow students to compete for off-base privileges the second week. We found that because of the positive motivation, the overall performance of the students improved significantly. The end result is that we have very few coming in after a few days saying, 'This place is the pits—I'm going home.' "

The numbers seem to back up his claim. The self-initiated elimination rate is down from about eight percent in FY '79 to about four percent today, and overall attrition for the same period has decreased from eleven to about seven percent.

The Daily Grind

"Good morning." "Good morning, sir," echo the students. "Take your seats." "Take your seats," repeat the students. It is the third day of training for OTS class 80-12. Several hundred students have just filed into Forbes Hall, the large auditorium that overlooks the campus from the top of the hill. Colonel Dwyer has just arrived to welcome the class.

"You are joining a very special organization—one that is both an institution and a way of life. Our mission is to fly and fight and help secure the interests of the nation. That is our job. In addition, the Air Force is sort of like a fraternity—a club, if you will. If we get ill, we are treated by Air Force doctors. If members of our family get seriously ill, an Air Force pilot medevacs them to a hospital. Life in the Air Force is an adventure. I don't know where I will be a year from now. I like it that way—to have a variety of experiences and be able to say 'I did that.' Welcome to the Air Force and welcome to Officer Training School. We will look out for you in a hundred ways that you never dreamed of. [Laughter] Don't worry though. By regulation, you are guaranteed seven and a half hours of rest. [More laughter] I wish I had that kind of protection."

It is now 10:30 a.m. The students have been up since 5:30. The day began with a shower, followed by getting the room and themselves in inspection order, then off to breakfast. The first formation was scheduled for 7:30 a.m. A casual review of the training schedule shows it to be jam-packed. Following Colonel Dwyer's welcome, class 80-12 will have three lectures, then lunch. After lunch, they will attend a seminar conducted by their flight commander on the Honor Code, followed by an hour on Group Communications, and two on Air Force customs and courtesies.

Dinner will be served from 4:30 to 6:30 p.m., with each flight assigned a predetermined priority for each meal. The evening is spent in study or attending to squadron and personal matters. Finally, students must be in their rooms, asleep or quiet, at 10:00 p.m., and lights must be turned out at 11:00 p.m. For those who earn off-base privileges, the weekends provide some relief from the hectic schedule. "Privilege Period" begins at 12:00 noon on Saturday and runs to 8:30 p.m. on Sunday.

Levels of Instruction

Officer Training School has three levels of instruction. The formal instruction is shared by the flight commanders and "mass" lecturers

Prior and initial service selectees are meshed into flights and begin training from the moment they arrive.

The referee, a flight commander, evaluates how well the team has performed solving a problem in the Leadership Reaction Course. On-the-spot critiques give officer trainees immediate feedback on how leadership principles apply in a real situation.

to an entire class. Students are organized into flights of about twenty officer trainees each. They undergo all training as a team, throughout the twelve-week course. Each flight has a flight commander—usually an Air Force captain. The flight commander conducts the seminars—the mainstay of the formal instruction, accounting for about fifty percent of this training—and evaluates the day-to-day progress of the individual officer trainees. In turn, the flights are organized into squadrons and groups. There are two training groups, each with five squadrons. The squadrons have five upper- and five lower-class flights each. The mass lecturers give slide presentations in the Forbes Hall auditorium to an entire upper or lower class. Noncommissioned officers teach a few special courses and supplement the training in drill and ceremonies.

A second level of training is that conducted by the upper class. Students achieve upper-class status after six weeks of training. At that time, they assume student leadership positions ranging from student wing commander, wing staff, group commander and group staff, squadron commander and squadron staff, to flight positions such as lower and upper flight commanders (not to be confused with the commissioned flight commanders). The student organization runs many of the school activities. Upperclassmen help the lower class with academics and drill, and supervise their squadron and flight details.

A third level of training is accomplished by each student—alone. Some of the curriculum is taught through self-paced study and later tested. In short, students are taught skills required for good officership through a combination of hands-on practical experience gained by holding student staff positions, coupled with guided discussions led by flight commanders, mass lectures, and private study. Students are closely monitored and evaluated throughout the twelve-week course.

Curriculum

Using the training methods outlined above, the OTS curriculum covers six major areas, with the number of hours devoted to each shown below:

- Communicative Skills, 44.5 hours;
- Leadership and Management, 37.25 hours;
- Human Behavior, 34.5 hours;
- Professional Knowledge, 23.0 hours;
- Defense Studies, 24.5 hours; and
- Field Leadership, 133.75 hours.

Lt. Col. Barry W. Hubbard, Chief of the Academics Division, notes that during the past few years the school has seen a decline in student writing skills. "As a high-priority project, we recently initiated a new unit of instruction in Air Force letter writing. The focus is on the new, more informal style currently being taught throughout the Air Force. To identify students who are weak in this area, we are evaluating them earlier in training to provide them more remedial instruction," he said.

A brief synopsis of the other areas of the curriculum includes:

- *Leadership and Management:* teaches leadership concepts, management principles, scientific problem solving, basics of military justice, evaluation and rating enlisted personnel, and how to use and delegate authority.
- *Human Behavior:* deals with interpersonal, people-to-people relations, group dynamics, motivation theory, working with ethnic and racial minorities, drug and alcohol abuse problems, the role of women in the Air Force, and counseling techniques.
- *Professional Knowledge:* covers wearing the uniform, military customs and courtesies, pay and allowances, financial management, and educational, retirement, and survivor entitlements.
- *Defense Studies:* takes a look at the nature of war; law of armed conflict; democratic and Communist theory and practice; US, USSR, and PRC (People's Republic of China) internal and foreign policies; and USAF doctrine, mission, organization, and history.
- *Field Leadership:* offers practical leadership laboratories in drill and physical conditioning. This includes the mile-and-a-half-run program; the two-and-a-half-day Leadership Reaction Course (consisting of sixteen problem-solving exercises); and the softball and flickerball sports programs. Drill and ceremonies also fall within this block of instruction.

Students are being evaluated throughout the program, primarily by the flight commander who is the officer trainees' teacher, counselor, and advisor. The flight commander and staff have several tools with which to accomplish these evaluations. They include five objective academic measurements, one drill

performance test, three verbal communications tests, a running test, and two effectiveness reports. Evaluations and subsequent awards are made solely on the basis of performance. Students are measured against firm standards. Those who do not meet them are eliminated.

In addition to changing the communicative skills area, Colonel Hubbard notes that the school is considering a split-core curriculum. Under that concept, some courses would be taught to all students, with other courses tailored to smaller groups, based on their needs. A curriculum committee, composed of OTS instructors, was formed recently to offer recommendations on what courses should be taught in each core.

"Since about the middle of last year, we have placed greater emphasis on leadership training to give our students a better appreciation of 'officership.' We want to make sure that our students realize that the Air Force isn't a nine-to-five job—that at any time they can be called upon to defend their country. To give additional emphasis to that area, last fall we initiated a new lecture series to explain the meaning of an Air Force commission and the oath of office," Colonel Hubbard pointed out.

Flight Commanders

To meet the OTS annual goal of 4,000 to 5,000 new officers, about 120 flight commanders are needed with another thirty or so assigned to staff and support functions. The criteria for selection as a flight commander are rather stiff. An officer must be a volunteer, have strong, consistent evaluations, an Air Force specialty code needed by the school, good military bearing, diversified Air Force experience, and demonstrated solid performance in communicative skills.

Instructors must complete a four-week course conducted at OTS. The course teaches drill and ceremonies, the physical-conditioning program, student administration, record keeping, how to conduct a seminar, and subjective grading measurements. After completing the course, new flight commanders undergo an on-the-job instruction period of twenty training days. If all requirements are met, they are certified by the Standardization and Evaluation Division and allowed to teach unassisted.

Student Eligibility Requirements

To be eligible for OTS, an applicant must be a US citizen, at least twenty-one when commissioned; a graduate of an accredited college or university or a senior within 180 days of graduation; earn a good score on the Air Force Officer Qualification Test; qualify for a "secret" security clearance; and meet other strict mental, physical, and moral standards. Requirements are even more difficult for those hoping to become pilots or navigators. They must pass a flight physical and be entered into flying training prior to twenty-seven-and-a-half years of age. Air Force recruiting officers have complete details.

A board of Air Force officers meets regularly at Randolph AFB, Tex., to review student applications. Selections are made using a competitive system under the whole-person concept. Applicants are then chosen based on Air Force requirements. Nonrated officers have a four-year obligation from date of commissioning. After earning their wings, pilots have a six-year obligation and navigators a five-year obligation.

A recent class profile shows that slightly more than half of the students are married, about sixty-four percent have had no prior service, and almost twenty percent are women. Women are housed in coeducational dormitories and complete the same training as the men except for a different time standard for the mile-and-a-half run. By career area, the yearly average runs about five percent pilot, nine percent navigator, twenty-one percent engineering and technical, sixty-one percent nontechnical, along with a few other categories bringing the total up to 100 percent. However, these percentages fluctuate depending on Air Force needs.

Flying Operations

In addition to two training groups and a Deputy Commander for Military Training, there is an OTS Deputy Commander for Flying Operations, Lt. Col. Roger "Kip" Taylor. He oversees two major areas—the Flight Screening Program and the Security Assistance Program Training. The latter helps foreign students transition into Undergraduate Pilot Training. "We train officers from Nigeria, Zaire, Portugal, and Saudi Arabia. The program was significantly reduced following the Shah's downfall in Iran," he said. It is expected that in FY '80, SAPT will train between sixty and a hundred students. The final figure depends on several factors relating to foreign military sales and international affairs.

The Flight Screening Program is much larger, graduating from 600 to 650 US students a year. They go on to attend Officer Training School, then UPT. "The students—called 'fish-pots'—arrive about four weeks before the start of their OTS class. We integrate them into the military environment by teaching them basic military customs and courtesies and marching skills," he said. Colonel Taylor explained that the flying training is accomplished at Hondo, Tex., and lasts about three weeks. Civilian instructor pilots provide most of the training. Each student receives twenty-eight hours of academics and fourteen hours of flying training in eleven sorties.

"Since our business is flight screening, we must ensure that we produce a quality product. We track all our graduates through UPT and, using quality screening methods, reduce Air Force training costs at the front of the UPT pipeline. Since last summer, we have tightened our standards so overall attrition is running about eighteen percent. That compares to about nine percent a year ago. By being more selective, more of our graduates go on to complete UPT," Colonel Taylor explained.

A student must be proficient in normal and no-flap landings, simulated forced landings, power-on stalls, traffic pattern stalls, slow flight, steep turns, en route descent, and aircraft ground operations. "They have to do all this in a very short period of time. A student solos on the ninth ride, reviews all maneuvers on the tenth, and gets a check-ride on the eleventh. I was a T-38 instructor. I find it as difficult

to solo a person on the ninth ride in a T-41 as it is later in the T-38," Colonel Taylor said.

"Always With Honor"

Officer Training School students and commissioned staff strongly believe in their motto "Always With Honor." The students live their honor code—"I will not lie, cheat or steal, nor will I tolerate among us those who do." Col. John E. Rush, Vice Commander, notes that the honor code is "alive and well. We revised our system of administering it to be more efficient and fair. Professional ethics representatives are tasked to make recommendations to the school commander. The representatives include the group commanders and the OTS student staff. We expanded the Honor Council to ten voting members. Although students run the council, it is the commander's decision whether or not a student must leave the school. A person violating the Honor Code rarely gets a second chance," Colonel Rush said.

Following my interviews and visits with some students and commissioned staff, I wondered how the new training philosophy might be affecting student discipline. Has it deteriorated since I was an OTS instructor almost ten years ago?

A Personal Inspection

A quick look around the school seemed to show that everything was tight. Students were marching or running in formation. Before their first seminar, they received a thorough inspection. While walking, corners were squared, and salutes were snappy. When a commissioned officer walked into a room, a student called it to attention, everyone holding it until the order "At ease" or "As you were" was sounded.

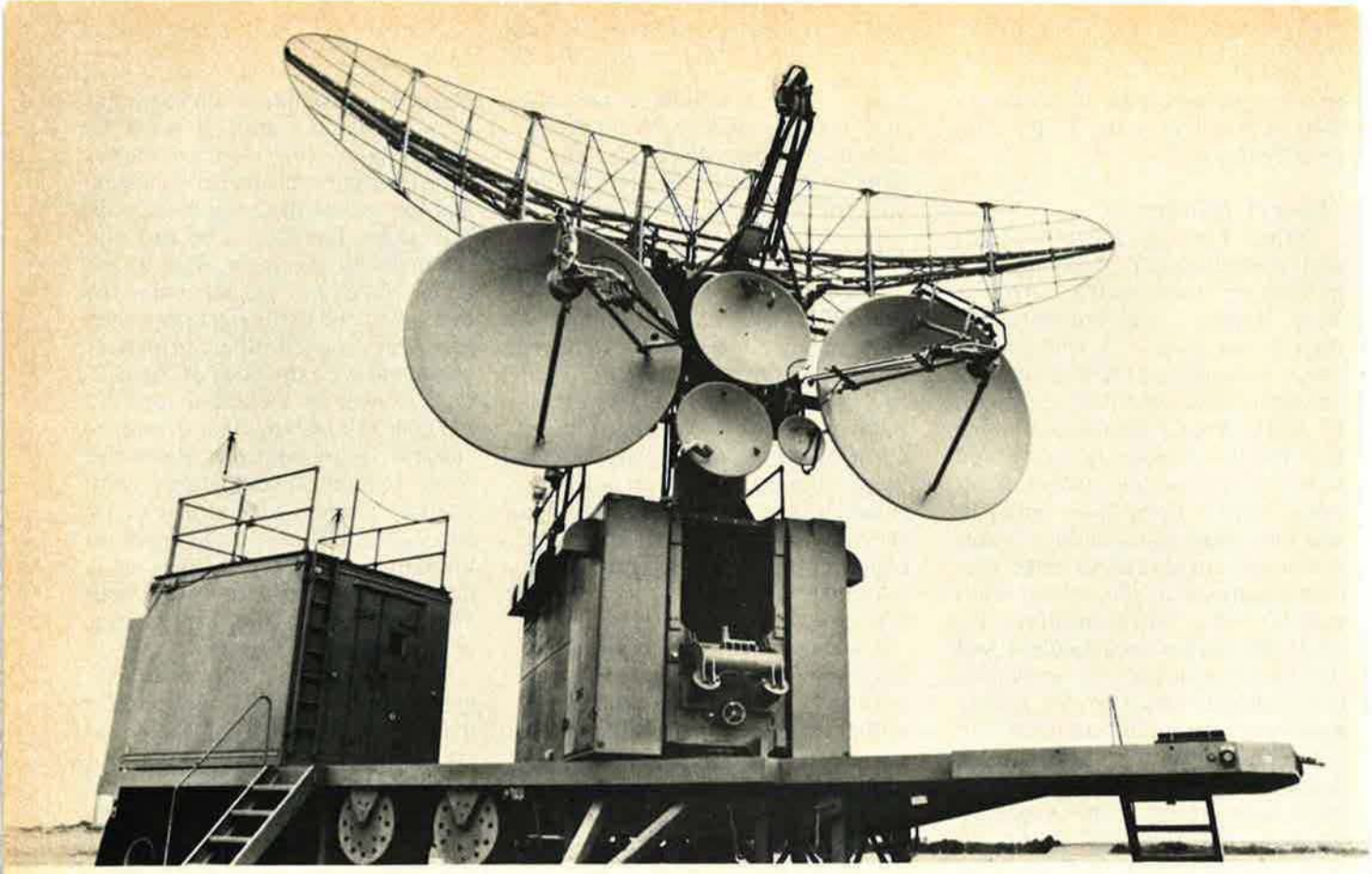
I walked down the hill and entered the Group I, Squadron I dormitory. "Area, tench-HUT!" an officer trainee yelled. Fifty heels clicked to attention. Out in the hall, I met Officer Trainee Maj. Richard L. Burlingame, student commander of Squadron I. I asked him if I could see his room. "Yes, sir," he said. Then I asked him to explain the requirements for room arrangement.

"Everything has a designated place. For example, each room has a small metal table. It must be thirty-six to thirty-seven inches from the right wall and between nine and ten inches from the back wall. The table lamp is centered and grounded to the back edge of the table. Shoes are placed under the bed, grounded to the right post, then grounded to each other, in perfect alignment with the edge of the bed. One drawer is locked to protect valuables; however, that drawer is subject to inspection. Beds are made to tight specifications, with hospital corners tucked at exactly forty-five degrees. The second blanket is folded to serve as a dustcover over the top of the bed. The floors are waxed once a week and buffed daily," he said.

I reached down and ran my fingers along the floor, looking for dust. There wasn't any. "How do you keep the dust off the floor?" I asked. OT Major Burlingame pulled a yardstick out of his closet. "I strip masking tape on both sides of this yardstick and run it along the floor. It does a pretty good job of picking up the dust," he said.

I'll bet it does. ■

The traditional throwing of hats into the air marks the culmination of twelve weeks of solid training for officer trainees. This event is followed by the pinning on of new second lieutenant's gold bars.



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GENERAL DYNAMICS

THE BULLETIN BOARD

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

Pay-Benefits Measures Advance

A flock of measures to boost military pay and benefits made progress on Capitol Hill in early summer. Many are seen winning final approval soon.

Most of the goodies are contained in the Administration's so-called "Fair Benefits Program," which includes the Nunn-Warner package endorsed belatedly by the White House. The Senate-passed Nunn-Warner has been delayed in the House but likely early approval will bring a variable housing allowance, a twenty-five percent increase in flight pay, a subsistence pay hike, re-up bonuses for certain NCOs with ten to fourteen years of service, and a PCS mileage allowance increase.

Committees in both the House and Senate, meanwhile, looked favorably on other parts of Fair Benefits. The Senate Armed Services Committee, in fact, amended the FY '81 military authorization bill with several pieces.

The committee's centerpiece is a 11.7 percent increase in basic pay and allowances effective October 1, 1980. It also voted to increase enlistment bonuses from $3,000 to $5,000 and reenlistment bonuses from the present $15,000 maximum to $20,000; hike travel entitlements for mobile home owners to equal those paid non-owners; pay a $30 per month family separation allowance to low-ranking airmen; improve certain CHAMPUS benefits; raise per diem from a $35 to $50 maximum and to $75 in particularly high-cost areas; pay a bonus of up to four months of basic pay to various rated officers; expand and increase bonuses for the Reserve Forces; and provide $45 million to test a student loan forgiveness project and increase government contributions to the Veterans Educational Assistance Program.

The Senate Committee also generated some bad news for present and future retirees *(see item in "Short Bursts," p. 83)*.

Also in the Fair Benefits package is a dependent dental-care request *(see separate item below)* and a plan to let single members E-7 through O-3 live off base and collect their basic allowance for quarters. Only single O-4s and above automatically enjoy this privilege now.

Many but not all of the above-cited proposals moving through Congress are included in what the Air Force calls its list of twenty-five "Compensation Priorities." That list is headed by (1) a 7.8 percent pay raise in addition to the annual October comparability hike; (2) a fifty percent boost in flight pay; and (3) a variable housing allowance. Items on the Air Force list but not in the Fair Benefits package include:

An updated CHAMPUS fee schedule and reimbursement at the 90th percentile; a $15,000 bonus for certain new engineers; larger household goods allowances; miscellaneous junior enlisted PCS entitlements; temporary lodging allowance in conjunction with PCS moves; broader hazardous-duty pay authority; junior enlisted BAQ; househunting trip reimbursement; tuition aid increase from seventy-five to ninety percent; a noncontributory education program; and enlisted per diem equity.

Air Force officials, of course, don't expect most of these last-named items to fly this year, but they are starting to push them, hoping for action in two or three years. Getting the money will be the big problem.

Tenure Extender Plan Pays Off

Earlier this year, Air Force authorities, concerned about the heavy loss of experienced NCOs in critical skills, decided to offer selected members an "extension of their high year of tenure." That means asking them to stay on active duty two years beyond their mandatory retirement dates, which vary as follows: E-5s twenty years, E-6s twenty-three, E-7s twenty-six, and E-8s twenty-eight. These may seem premature, but they are designed to keep the force youthful and vigorous and promotions flowing.

The Pentagon's top team lines up for its annual photograph. Front row (from left): Deputy Secretary Graham W. Claytor; Defense Secretary Harold Brown; and JCS Chairman Gen. David C. Jones. Second row (from left): Chief of Naval Operations Adm. Thomas B. Hayward; USAF Chief of Staff Gen. Lew Allen, Jr.; US Army Chief of Staff Gen. Edward C. Meyer; and Commandant of the Marine Corps Gen. Robert H. Barrow.

Approximately 1,400 HYT extender bids went out, and 650 NCOs decided to accept. "That's about what we expected and hoped for, and we're pleased with the result," a Hq. USAF personnel official told AIR FORCE Magazine.

Accordingly, more tenure extensions will go out annually, starting about now, though in somewhat smaller numbers than were distributed the first round. A separate extender program for E-9s, in effect for several years, also will continue. E-9s normally serve up to thirty years, but those who agree to extend their HYT remain on board for thirty-three years.

Officials figure that the extensions will shore up the experience level, but are not too heavy to depress promotions among the NCO corps generally. In fact, one authority said, airman promotions will improve during the next few years.

Regular AF Door Wide Open

The chances of USAF officers winning Regular commissions have never been better, and they are likely to continue that way for some time.

Regular Air Force appointments began to "loosen up" a couple of years ago, especially for rated non-Regulars. The increases hopefully mean for careerists fewer separations. More recently, the service chose 3,131 captains for temporary major, and of these 766 were active-duty Reservists. All 766 have been given Regular bids; normally, among any promotion group only a portion is tendered Regular status.

This "first" is in accord with what would have been mandated had the DOPMA legislation been approved. And it probably will be repeated for the new year group entering the temporary major promotion zone next year. But authorities made clear that Reserve majors who won their gold leaves before this year, but without a Regular bid, will have to wait. Some of them have complained strenuously.

"We've no plans to convene special boards for them, though when they come up for lieutenant colonel they should enjoy an excellent chance of making Regular," one Hq. USAF official said. He forecast splendid opportunities throughout the officer corps to make Regular in the years ahead.

Coming up in early September is the annual permanent-Regular major promotion board. It normally rates only minor attention because those considered are already serving as majors. However, two passovers by this panel mean elimination; there is no chance for continuation on active duty as is now the case with most officers passed over twice by other O-3 and O-4 boards.

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The recent temporary majors board, for example, dealt 389 Reserve captains a second deferral, but it turned around and invited 371 of them to stay aboard. This included all sixty-two of the pilots and twenty-four of the twenty-five navigators involved. The Air Force, in short, with its officer manpower levels in trouble, has all but eliminated "up or out."

"Our only up-or-out losses these days are confined to the permanent-Regular majors board. There were 134 such losses last year, but there probably will be fewer this year," the official said. He acknowledged that the situation poses a minor problem for officers offered Regular appointments. For example, take the group of 766 cited above. If they reject their Regular commissions, their permanent-Reserve majority is automatic—there is no board action or passover threat. But, as a Regular, the threat of two passovers by the permanent-Regular panel—which usually means separation—exists.

DOPMA would straighten out this ridiculous situation by creating a single promotion list, but Congress appears to have defaulted on that legislation. Meanwhile, the Air Force was pushing a legislative proposal calling for an early extension of the Officer Grade Limitation Act's temporary promotion tables. This action is needed in order to keep promotions flowing.

There are several pros and cons about going Regular, some of which are contained in a fact sheet sent

Country music entertainer Barbara Mandrell smiles following a recent flight in a T-38 at Randolph AFB, Tex. She has recorded Air Force public-service announcements for radio stations nationwide, and was named an Honorary Air Force Recruiter by USAF's recruiting chief, Brig. Gen. Keith C. McCartney.

SMSgts. David Wilhelm (left) and Earl Hill, in ceremonies at the Military Training Center, Lackland AFB, Tex., unveil a monument honoring military training instructors. The monument features a bronze sculpture bearing the MTI code and was provided by the Gateway Chapter of the Air Force Sergeants Association.

each of the 766 recent selectees. It covers tenure, assignments, RIF, dual compensation, etc. Most of the 766 are expected to accept the Regular bids.

Kin Dental Care Makes Breakthrough

The Administration's recent endorsement of a dependent dental-care program under CHAMPUS and space-available care in Stateside service facilities has excited the military community. It's a major breakthrough, all previous Administrations (and Congresses) having refused to touch it despite the proliferation of family dental programs in the private sector. And despite its retention appeal.

The Air Force in recent years frequently advanced the kin dental-care idea, but higher authority always shot it down. "Too expensive," opponents held. But now, with recruiting and retention in serious trouble, higher authority has changed its tune. Promptly after the Carter Administration endorsement, DoD officials sped to Capitol Hill to spell out the particulars. Defense's major plan, costing a first-year $110 million (all services) would, like most commercial dental insurance programs, pay only part of the dental charges. First, there is an annual deductible; eligible dependents would pay the following "first-dollar" amounts, depending on their sponsor's pay grade:

Pay Grade	Amount of Deductible
E-1 through E-3	$30
E-4 through E-7	$50
E-8 and E-9	$75
O-1 through O-3	$150
O-4 through O-6	$175
O-7 through O-10	$200

Once the deductible is paid, the payment schedule varies depending on type of care obtained, as follows:

Coverage	Gov't Share	Member's Share
Emergency treatment, diagnostic and preventive services	85%	15%
Basic restorative services, prosthetic appliance repairs	70%	30%
Endodontic, periodontic, oral surgery, single cost restorative services	50%	50%
Prosthodontic services	50%	50%
Orthodontic services	25%	75%

This, of course, is still too expensive for many service families. So, the services' dental chiefs asked Congress to also provide space-available kin dental care in CONUS military facilities. Presently such care is provided overseas and also at a few remote Stateside bases. Chief Master Sergeant of the Air Force James M. McCoy was among a group of Pentagon officials who testified in support of the measures.

Early in the summer, other health-care improvements were gaining headway in Congress. The Senate Armed Services Committee approved two CHAMPUS improvements: (1) coverage for routine newborn infant medical care and immunizations, and (2) an increase in the maximum coverage for handicapped dependents from $350 to $1,000 per month. The House Armed Services Committee, meanwhile, approved measures to reduce cost-sharing rates for certain medical care.

Dr. John H. Moxley III, the Assistant Secretary of Defense (Health Affairs), said the Pentagon is preparing a large CHAMPUS legislative change package. Among other things, it would establish for all CHAMPUS beneficiaries an annual maximum liability of $1,000 for deductible and cost share amounts applicable to covered services under CHAMPUS. Unfortunately, the package won't be ready before early 1981, Moxley said. And several months will doubtless follow before Congress considers it.

Veterans' Checks Going Up

The government is in the process of raising educational, disability compensation, dependency-indemnity, and pension checks for millions of veterans and survivors. Here are the details:

• *GI Bill Educational Benefits.* Both the House and Senate Veterans Affairs Committees have approved a ten percent increase, effective October 1. For a single recipient in full-time study, it will mean a raise from $311 to $342 a month. An eligible married vet would receive $407 instead of the present $370. Both committees wanted a fifteen percent increase, but budget restrictions forced the reduction to ten percent. Some 6,000,000 veterans still have GI Bill eligibility, but, according to the Veterans Administration, nearly 1,000,000 of them will pass the deadline for using their benefits this year. All eligibility will cease December 31, 1989, under present law.

• *Disability Compensation.* More than 2,300,000 veterans with service-connected disabilities would receive a thirteen percent increase under the House bill, while a 14.3 percent hike is provided in a Senate bill. The difference will be ironed out. One source said that if the settlement is delayed beyond the October effective date, the increased payments will be made retroactive to that date.

• *Dependency-Indemnity Compensation.* More than 300,000 widows and children of service members and veterans who died of service-connected causes will receive the same percentage increase provided for disability compensation recipients. If the raise is 13.5 percent, for example, the survivor of an E-7 would receive $459 per month, up from the present $404. An O-4's widow would receive $547, instead of $482 today.

• *Pensions.* Some 2,400,000 elderly, infirm, and impoverished veterans collect monthly pensions, though their ailments are not connected to any military service. Effective this month, 300,000 of them are receiving automatic 14.3 percent increases, because they switched to the "improved" VA pension program invoked last year. The others elected to stay under the old rules whereby they can avoid a pension reduction that Social Security increases would have triggered.

To help pay for the new outlays, the House Veterans Committee has recommended the termination of veterans' flight training and correspondence courses. This is a turnaround from previous years when the lawmakers stood firm against Administration efforts to kill the two programs.

Other savings are envisioned by reducing disability compensation for veterans in jail, eliminating burial benefits for certain nonservice-connected disabled vets, and improved debt collection procedures by the VA.

According to the House committee, disability compensation since 1975 has outdistanced the overall rate of inflation by thirty-seven percent.

Airmen of the Year Named

Three of the twelve Airmen of the Year for 1980 are security specialists, including **CMSgt. Glenn H. Woody,** a police inspector at Randolph AFB, Tex.; **TSgt. David L. Butler,** NCOIC of security police training at Whiteman AFB, Mo.; and **SrA. Clifton S. Diaz,** a policeman at Kelly AFB, Tex.

The other nine are **Sgt. Caren E.**

Calvin, an intelligence specialist at RAF Alconbury, UK; **SMSgt. Raymond F. Enright,** an accounting specialist at Kirtland AFB, N. M.; **SMSgt. John A. Norris,** a social actions superintendent at Clark AB, P. I.; **Sgt. Garry R. Y. Shafovaloff,** a personnel specialist at the Air Force Academy, Colo.; **TSgt. Larry J. Smith,** an electronics specialist at Iraklion AS, Greece; **MSgt. James F. Spears,** NCOIC of a pararescue school at Kirtland AFB, N. M.; **SMSgt. Ralph E. Swift,** a communications superintendent at Lindsey AS, Germany; **SrA. Kathy A. Walls,** an aircraft maintenance repairwoman at Holloman AFB, N. M.; and **A1C Mark A. Watts,** an administrative specialist with the JCS at the Pentagon.

The Outstanding Airmen and their spouses will be honored at the Air Force Association Convention in Washington, D. C., next month. Also, they will form the nucleus of AFA's Enlisted Council for the coming year. AFA's Enlisted Council advises the AFA President on matters of concern to this important part of AFA's constituency. Additionally, this group will serve as a resource for Air Force-generated speaking engagements before various military and civilian groups.

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Angel Prominent in NASA

Bonnie J. Dunbar, who commanded the University of Washington Angel Flight before graduating there in 1971, and who is an active Angel alumna, has been designated by NASA a Space Shuttle mission specialist. Presently a flight controller and payload officer with NASA at Houston, Tex., she will be involved with payload operations of the Space Shuttle.

Ms. Dunbar last year participated in the AFA-sponsored Angel Flight seminar "Angel Flight—An Air Force Voice in Tomorrow's Community," presented at the Arnold Air Society-Angel Flight National Conclave in St. Louis. Holding a commercial pilot's rating, she recently flew to Dallas to attend the 1980 joint conclave.

SENIOR STAFF CHANGES

PROMOTIONS: To be **General:** Charles A. **Gabriel.**

To be **Lieutenant General:** Jerome F. **O'Malley.**

To be **Major General:** Thomas B. **Bruton.**

To be **Brigadier General:** William M. **Constantine;** John P. **Hyde;** Thomas W. **Sawyer.**

RETIREMENTS: B/G Walter J. **Bacon** II; B/G William E. **Carson;** M/G Gerald E. **Cooke;** B/G Paul E. **Gardner;** M/G William C. **Norris;** Gen. John W. **Pauly;** M/G Walter D. **Reed;** B/G John P. **Russell;** B/G Vernon H. **Sandrock.**

CHANGES: M/G James A. Abrahamson, from Dep. for F-16, ASD, AFSC, Wright-Patterson AFB, Ohio, to DCS/Systems, Hq. AFSC, Andrews AFB, Md., replacing M/G (L/G selectee) Thomas H. McMullen . . . **M/G Robert W. Bazley,** from Cmdr., Sheppard TTC, ATC, Sheppard AFB, Tex., to Cmdr., 3d AF, USAFE, RAF Mildenhall, UK, replacing retiring M/G William C. Norris . . . **B/G (M/G selectee) Thomas B. Bruton,** from Staff Judge Advocate, Hq. SAC, Offutt AFB, Neb., to Judge Advocate General, Hq. USAF, Washington, D. C., replacing retiring M/G Walter D. Reed . . . **B/G Robert E. Buhrow,** from Dep. Cmdr., 22d NORAD Rgn., North Bay, Ontario, Canada, to Dep. Dir., J-3, USREDCOM, MacDill AFB, Fla., replacing retiring B/G John P. Russell.

Col. (B/G selectee) William M. Constantine, from Exec. to C/S, Hq. USAF, Washington, D. C., to Vice Cmdr., 22d AF, MAC, Travis AFB, Calif., replacing retiring B/G William E. Carson . . . **B/G James S. Creedon,** from Cmdr., 26th AD/NORAD Rgn., Luke AFB, Ariz., to Dir. of Insp., Hq. AFISC, Norton AFB, Calif., replacing B/G Thomas E. Wolters . . . **L/G (Gen. selectee) Charles A. Gabriel,** from DCS/OP&R, Hq. USAF, Washington, D. C., to Cmdr., AFCENT, & Cmdr., USAFE, Hq. USAFE, Ramstein AB, Germany, replacing retiring Gen. John W. Pauly . . . **Col. (B/G selectee) John P. Hyde,** from Cmdr., Tac. Comm. Area, AFCC, Langley AFB, Va., to Cmdr., European Comm. Area, Ramstein AB, Germany.

B/G Albert J. Lenski, from Vice Cmdr., Hq. AAC, Elmendorf AFB, Alaska, to Dep. Cmdr., 22d NORAD Rgn., North Bay, Ontario, Canada, replacing B/G Robert E. Buhrow . . . **B/G Horace W. Miller,** from IG, Hq. ATC, Randolph AFB, Tex., to Cmdr., CAP-USAF, & Exec. Dir., CAP Inc., ATC, Maxwell AFB, Ala., replacing retiring B/G Paul E. Gardner . . . **B/G George L. Monahan, Jr.,** from Ass't DCS/Systems, Hq. AFSC, Andrews AFB, Md., to Dep. for F-16, ASD, AFSC, Wright-Patterson AFB, Ohio, replacing M/G James A. Abrahamson . . . **M/G Harry A. Morris,** from Ass't DCS/M&P, Hq. USAF, Washington, D. C., to Cmdr., Sheppard TTC, ATC, Sheppard AFB, Tex., replacing M/G Robert W. Bazley.

M/G (L/G selectee) Jerome F. O'Malley, from Ass't DCS/OP&R, Hq. USAF, Washington, D. C., to DCS/OP&R, Hq. USAF, Washington, D. C., replacing L/G (Gen. selectee) Charles A. Gabriel . . . **Col. (B/G selectee) Thomas W. Sawyer,** from Mil. Ass't to Sec. of USAF, OSAF, Washington, D. C., to Cmdr., 26th AD/NORAD Rgn., Luke AFB, Ariz., replacing B/G James S. Creedon . . . **B/G William T. Twinting,** from Cmdr., 6510th Test Wing, AFSC, Edwards AFB, Calif., to Cmdr., SAMTO, AFSC, Vandenberg AFB, Calif. . . . **B/G Clinton H. Winne, Jr.,** from Ass't DCS/Ops & Intel. (IN), Hq. USAFE, Ramstein AB, Germany, to Assoc. Dep., DCI for Collection Tasking, CIA, Washington, D. C. . . . **B/G Thomas E. Wolters,** from Dir. of Insp., Hq. AFISC, Norton AFB, Calif., to Dep. CINC, USSOUTHCOM, & Cmdr., USAF Southern AD, TAC, Howard AFB, Panama.

SENIOR ENLISTED ADVISOR CHANGES: CMSgt. Billy P. Cecil, from SEA, 17th AF, USAFE, Sembach AB, Germany, to SEA, Hq. USAFE, Ramstein AB, Germany, replacing CMSgt. Sam E. Parish . . . **CMSgt. Wade H. Grimm,** to SEA, Hq. AFESC, Tyndall AFB, Fla., replacing CMSgt. Richard A. Pinto . . . **CMSgt. Joel M. Hamilton,** from Special Agent, District 10, AFOSI, San Antonio, Tex., to SEA, Hq. AFOSI, Bolling AFB, Washington, D. C., replacing CMSgt. Lawrence A. Shellhammer . . . **CMSgt. James R. Vitalie,** from SEA, 21st AF, MAC, McGuire AFB, N. J., to SEA, Hq. MAC, Scott AFB, Ill., replacing retiring CMSgt. Edward A. Henges. ■

Short Bursts

That **"continuation pay"** the Administration has suddenly endorsed as a bonus for rated officers is attractive. If Congress okays it, as seems likely, it will mean *up to four months' extra basic pay per year* for certain officer and warrant officer pilots. This is in addition to the twenty-five percent flying pay raise in the Nunn-Warner package. While the Senate Armed Services Committee version would give the Defense Secretary "discretionary authority" to name bonus recipients, the committee said "all rated officers" should be considered. What about enlisted aircrew members? The Air Force wants them to get a flight pay raise too, but Defense and the lawmakers are ignoring them. AFA urges reconsideration of this.

The same committee **slipped the needle to future retirees** by voting to compute retired pay on a three-year average of the member's highest pay instead of on the terminal pay. The "high-three" means less pay. The committee's plan would exempt persons with ten or more years' service, as of passage date. Also, the committee approved a once-a-year retiree CPI raise, effective March 1 of each year, in lieu of the present two. However, elsewhere in Congress there is a move to limit the military-federal employee retired single raise to 1980 only.

USAF's **PCS account** for FY '80 recently came up **short $31.4 million.** So officials put the bite on Congress, explaining the funds were needed because of rate increases in shipping household goods and fuel "pass throughs" granted by the ICC. Without the extra PCS funds, 7,200 PCS moves would have to be deferred and that, Air Force officials declared, would "adversely impact . . . readiness and morale and retention. . . ." Needed funds are included in the Supplemental Appropriation Bill.

Because smaller year groups are entering promotion zones and more vacancies are surfacing because of heavy separations and retirements, the Air Force will hold its **1981 field grade promotion boards** earlier. The new schedule calls for the next L/C panel to meet in February 1981 and the upcoming majors board to convene in March. Date of the full colonels' board is yet to be determined but it will be earlier than October 27, date of this year's O-6 board.

Jerome H. Stolarow is USAF's new **Auditor General,** the first civilian to hold that post. The Audit Agency, which he heads, has more than 1,000 military and civilians located in eighty-four offices, including eight abroad. The Audit Agency reports directly to the Secretary of the Air Force. Mr. Stolarow, a CPA, an attorney, and a graduate of the Industrial College of the Armed Forces, comes to the Air Force from the General Accounting Office. He replaces Maj. Gen. James B. Dodd.

Four hundred people work in **housing referral offices** at USAF bases around the world. Last year, they were asked for help by 116,193 home seekers and in 105,563 instances they came through, according to the Air Force News Service. The referral offices also handled more than 12,400 landlord/tenant complaints and sixty-seven discrimination cases.

Air Force **retirees with questions about pay** can now get the word direct from the Accounting and Finance Center, in Denver. It has installed a toll-free number for them: **1-800-525-0104.** The Center pays 489,000 retirees and annuitants, 559,000 active-duty personnel, and 153,000 members of the Air Reserve Forces.■

Mark your calendar now . . .

October 23-24, 1980, Hyatt House Hotel, Los Angeles, California
for
AFA's 1980 Symposium, featuring top Air Force and Government speakers

America's Security in the 1980s

A searching look by top Pentagon experts at the defense needs and plans of this country and the Free World.

Sperry Update 11

A timely report of Sperry Flight Systems activities in the airline, defense, space and general aviation markets.

Strapdown AHRS delivered to Airbus.

Production units of Sperry's SRS-1000 digital strapdown attitude and heading reference system have been delivered to Airbus Industrie, Toulouse, France, for certification flight testing.

The SRS-1000, which replaces gimballed vertical and directional gyros, will initially go into a Garuda Indonesian Airways Airbus A300.

Also standard for the new Airbus A310, the SRS-1000 provides precise attitude and heading outputs with instantaneous measurements of ground speed and drift angle. Its digital microprocessor integrates inputs from two tiny flex gyros, accelerometers, air data computer and navigation sensors.

Arizona and New Mexico expansion announced.

Sperry is investing about $17 million in the future at two new sites in Arizona and New Mexico.

The Sperry Flight Systems Avionics Division will build the first phase of a planned 300,000 square foot, $10 million complex to house its new headquarters in Glendale, Ariz.

Its sister Defense and Space Systems Division is locating a $7 million, 100,000 square foot production facility in Albuquerque, N.M., as the first phase of a planned 400,000 square foot complex.

Both plants are planned to begin operations in mid-1981.

Army helicopter compass system completes tests.

An impoved version of Sperry's ASN-43 slaved gyro compass system, intended for a variety of doppler-equipped helicopters, has finished flight and environmental testing.

The ASN-43B, developed under a U.S. Army contract, has improved performance under high dynamic flight profiles and has self-calibration capability. Multiple flights aboard a UH-1H demonstrated heading accuracy resulting in .8 of a percent average navigation cross-track error.

▲

Challenger autopilot certification work done.

Certification work on the SPZ-600 dual channel automatic flight control system for the Challenger business jet has been completed by the Sperry Avionics Division and Canadair Aircraft Ltd. Approximately 126 Challengers have been ordered with the standard Sperry flight control package which includes directional and vertical gyros, air data system and advanced AD-650 and RD-650 series flight instruments.

New display data processor to go into F-15s.

More than 1,000 existing and future McDonnell Douglas F-15 fighters are expected to receive a new Sperry Programmable Signal Data Processor (PSDP) to fully exploit the greater capabilities of new programmable radars and improved sensors.

A contract from the McDonnell Aircraft Company, St. Louis, Mo., calls for full-scale development and initial production of 71 units with potential follow-on orders for retrofit into all existing USAF F-15s.

With the PSDP, display system operational modes may be added or changed via the digital avionics bus and also through ultraviolet erasable read-only memory (UVROM) devices. The unit also provides an output to a voice warning system which alerts the pilot when approaching airframe G limits.

European equipment repair capability expanded.

Sperry Flight Systems Commercial Division equipment repair capability in Europe has been broadened with a new center in Toulouse, France, along with relocation and expansion of repair facilities in Great Britain.

The Toulouse repair center has resources to maintain all Sperry equipment in Airbus A300 and A310 transports plus much of the Sperry general aviation equipment operated in France.

The newly-opened United Kingdom repair facility at Basingstoke is more than double the size of the West Drayton center which had operated since 1970.

Talk to us.

We're Sperry Flight Systems, a division of Sperry Corporation. Talk to us. We'll listen. With us, listening is more than just a word in an advertising slogan; it's part of our philosophy of doing business.

We understand how important it is to listen.

SPERRY FLIGHT SYSTEMS

PHOENIX, ARIZONA 85036

Commissioned by the National Air and Space Museum to symbolize flight "in the air and in space," the drollest Englishman of them all, Rowland Emett, has given the world another of his zany but enchanting contraptions. Introducing the Marvelous, Mechanical Masterpiece . . .

S.S. (Space Ship) Pussiewillow II

BY WILLIAM P. SCHLITZ, ASSISTANT MANAGING EDITOR

WHILE the *S. S.* (Space Ship) *Pussiewillow II* would be equally at home below the Heavyside Layers as well as in the Upper Planetary Reaches, it is, indeed and in fact, on permanent display in the National Air and Space Museum's Gallery of Art.

The whimsical machine was created by British inventor-sculptor and *Punch* illustrator Rowland Emett, known for his imaginative use of common household items to build "moving sculptures" that whir, spin, flash, sway, quiver, and poke gentle fun at technology.

Mr. Emett designed the thingamabobs for the 1968 film *Chitty Chitty Bang Bang*. Borg-Warner Corp. commissioned his *Vintage Car of the Future*, and a Honeywell subsidiary financed his *Forget-Me-Not Computer*. While *Pussiewillow II* has been on display at NASM since March, several museums and commercial establishments around the world have on exhibit earlier Emett works.

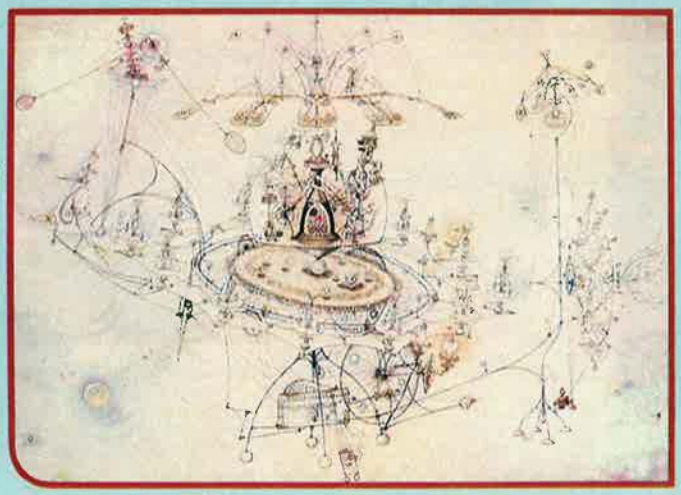
Heart of the marvelous machine's technology is *Pussiewillow's* gravity-defying Kashmir carpet, which is not permitted to wander the heavens at random as did antiquity's Flying Carpet, but is "suspended firmly within a large translucent Jupiter-ring." The Jupiter-ring, which "undulates in every known direction" while at the same time spinning gently in a clockwise manner as seen from the pilot's seat, creates False Gravity and thus acts as a counterbalance to the gravity-repelling Carpet.

The Jupiter-ring is studded with the twelve signs of the zodiac, "which as they circle, spin up and die down in a state of controlled flux which ensures that the correct sign has a good chance of being activated and on hand for any trying situation that might arise," Mr. Emett said. Each sign is capped by a badminton shuttlecock. "What flies better than a shuttlecock?" the inventor asks, again portraying absolute reasonableness.

Poised above this Advanced Technology is the vehicle's Tiffany-type Control Module and Hospitality Room (CMHR), the domain of Dr. Leo Capricorn, H_2O, part-time Planetary Ponderer and well-known Connoisseur of Constellations. The CMHR is furnished to Dr. Capricorn's taste, in solid Victorian comfort with fireplace, lamps and flowers, and a hand-cranked phonograph. Accompanying Dr. Capricorn in the CMHR is a pale-green Being and an Astrocat, Cirro Cumulus II.

Should creatures from outer Other Places see fit to board *Pussiewillow II*, the crew is prepared to utterly disarm them and welcome them with offerings of tea and teacakes, a stock of which the pale-green Being is toasting at the CMHR's fireplace. Astrocat, whose responsibility on earlier voyages was to determine the direction of gravity by falling on his feet, is along simply as companion and Observer. In his role as the latter, his job is to keep an eye on the teacakes.

Outer shell of the CMHR is composed of eight panels that, when activated by warm air from the fireplace, rise languorously and thus contribute to aerodynamic lift when the craft is cruising at low altitudes or during clement weather.



©Rowland Emett 1980

Above, a "blueprint" of sorts of the S. S. (Space Ship) Pussiewillow II, *in the inimitable Rowland Emett style, and, right, the elegant master himself.*

Main propulsion source of *Pussiewillow II* is the red-mustachioed Dr. Capricorn himself. Relaxed but vigilant, he pedals a small updated Wimshurst Machine (WM) that turns the great Stern Paddle-wheel (SPw), the task of which is eased by an infestation of thrust-producing magnetic Butterflies.

In pedaling the WM, Dr. Capricorn is aided by the helium-filled kneecaps of his spacesuit, and soothed by the strains of celestial baroque music.

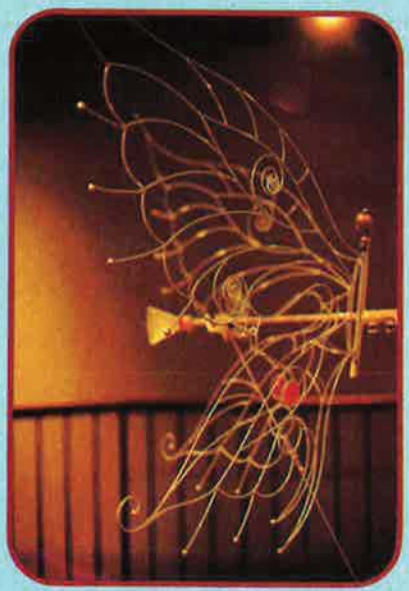
Augmenting thrust of the SPw with his solar-panel oars is an elevated Power Pack GEORGE (Geometric Environmental OARiented Row-Gently Energiser), a space robot situated above the Peacock-like prow, which, of course, also provides some additional thrust and whose wings serve to keep *Pussiewillow II* on a balanced course.

High above *Pussiewillow II's* stern is the unique Solar Transfuser (ST), which, "by means of small oscillating vanity mirrors and green mote-filters, converts the sun's rays into puny but positive impulses."

Should Dr. Capricorn need a much-deserved rest from pedaling the WM, the ST will automatically take over to "feed a continuous convulsive twelve-volt twitch to the magnetic Butterflies, which maintain a small torque in the great SPw."

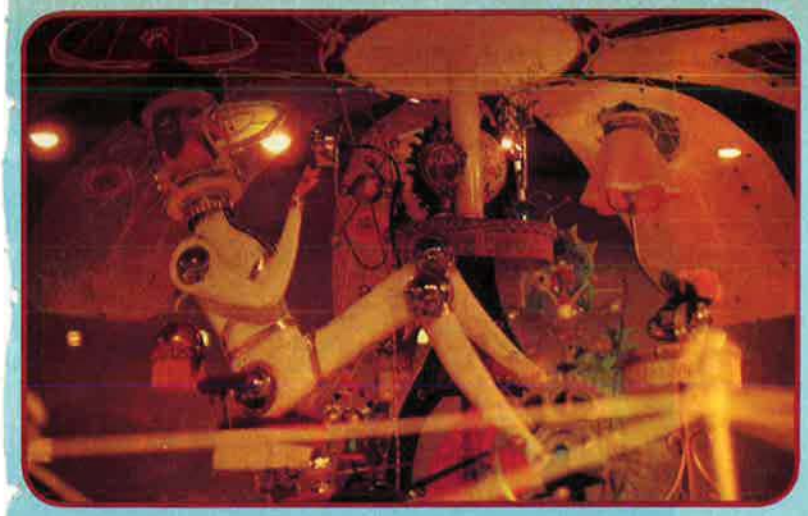
Was there a *S. S.* (Space Ship) *Pussiewillow I?* Yes, it existed in Mr. Emett's imagination as the prototype for today's AM (Advanced Machine). ■

Signs of the zodiac stud the Jupiter-ring and may be on hand "for any trying situation that might arise."



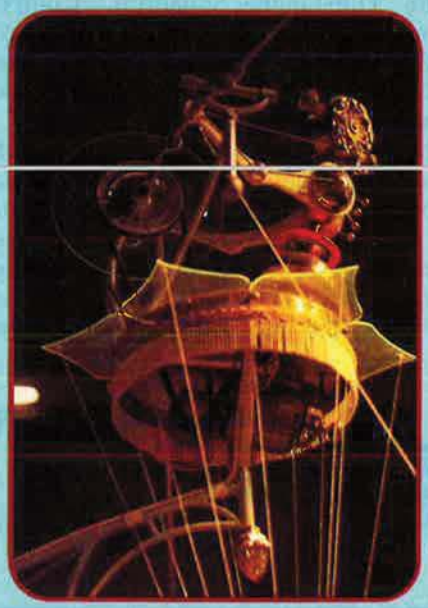
Magnetic Butterflies infesting the great Stern Paddle-wheel (SPw) produce additional thrust.

S. S. *(Space Ship)* Pussiewillow II. *(Photo courtesy the Smithsonian Institution.)*



Far left, a pale-green Being is one companion of Dr. Leo Capricorn, left, on the explorer's eternal journey through time and space.

Photographic details of *Pussiewillow II* by Art Director William A. Ford



Solar-panel oar-rowing GEORGE, the space robot, augments the paddle-wheel thrust.

Peacock-like prow and the craft's figurehead keeps Pussiewillow II *on a balanced course.*

As the curtain rose on the stage of the Broadmoor Hotel's International Ce in Colorado Springs, Colo., the largest audience in the twenty-one-ye history of the event applauded the cadets of the "Fightin' Fourth." This

"Fightin' Fourth"—US

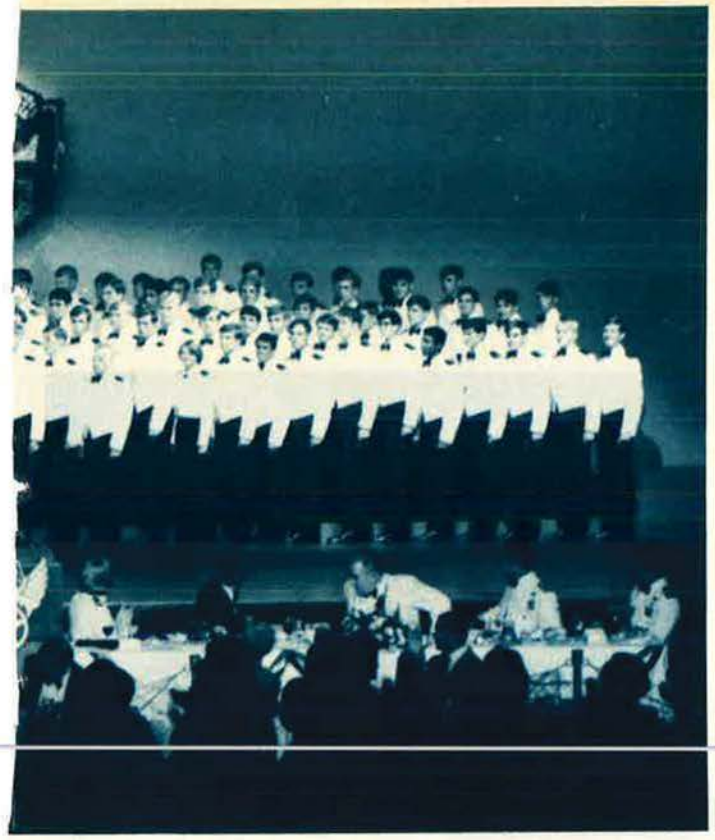
BY JAMES A. McDONNELL, JR., MILITARY RELATIONS EDITO

EACH year, the Air Force Academy selects from the Cadet Wing an "Outstanding Squadron." Competition for this honor is fierce—unlike several other awards, the Outstanding Squadron award is based on overall excellence across the full spectrum of academics, physical education, and military training.

Academic factors include grade point averages for each squadron member; athletic factors include physical fitness and aerobic testing scores, plus participation in intramural and intercollegiate sports; military performance includes drill and ceremonies, mission support activities, and rankings by the Group Air Officers Commanding. In short, it is the one award at the Academy

Getting together before the dinner are (from left) Assistant Secretary of the Air Force for Manpower, Reserve Affairs and Logistics and Mrs. Joseph Zengerle; Mr. and Mrs. Louis Nye; and AFA President and Mrs. Victor Kregel. Secretary Zengerle addressed the dinner meeting on behalf of the Secretary and Chief of Staff of the Air Force.

Preparing for the program are (from left) President Kregel; Secretary Zengerle; Lt. Gen. K. L. Tallman, Academy Superintendent; Capt. Ka LaSauce-Arlington; Louis Nye; Judge John Brosky, typical of the man leaders who attended; and Col. Frank Merritt, USAF (Ret.), Chapter Pre of AFA's Colorado Springs Chapter, cosponsor of this event. Captain LaSauce-Arlington, a C-141 pilot at Norton AFB, Calif., and one of the Force's first women pilots, served as Toastmistress for the dinner. Significantly, this dinner honored among the Squadron the first of the USAFA's female cadet graduates.



adron also won in 1979, thus becoming the first squadron at the Academy nore than a decade to achieve consecutive-year recognition in this tough npetition.

that stresses the overall excellence of the entire squadron. As the Superintendent, Lt. Gen. K. L. Tallman, puts it, "It is an example of teamwork at its best—a quality that predicts great success for its members as they pursue Air Force careers."

For the past twenty-one years, AFA, along with its Colorado Springs Chapter, has cosponsored a banquet for the Outstanding Squadron. A formal, no-long-speech event, it is specifically designed to honor the cream of the cream of the crop. Cadets receive a suitable memento of the evening (this year's was a personally engraved pen set bearing the AFA seal), and the selected squadron is awarded custody of a large trophy. *(See also p. 90.)*

'A Tops for Second Year

otos by Renee Smith, Academy Staff Photographer

President Vic Kregel, on behalf of the entire Air Force Association, ents the coveted trophy for the Outstanding Squadron to Cadet manders (left) Michael L. Eastman and Michael G. Jackson. Mr. Kregel awarded each commander a lifetime membership in AFA. Cadet Lt. Jackson responded on behalf of the Squadron.

Shown here with the trophy are (left to right) Cadet Lt. Col. Michael G. Jackson; AFA President Kregel; Captain LaSauce-Arlington; General Tallman; Louis Nye; and Cadet Lt. Col. Michael L. Eastman. Mr. Nye, a well-known television and stage personality, provided the entertainment for the evening's festivities.

"Fightin' Fourth"—USAFA Tops for Second Year

Lt. Gen. K. L. Tallman, USAFA Superintendent (center), who addressed the dinner on the stringent criteria involved in the selection of the Outstanding Squadron, meets with Cadet Commander Michael G. Jackson (left); Lt. Gen. James V. Hartinger, CINC NORAD (second from left); Cadet Commander Michael L. Eastman (second from right); and Maj. Dennis P. McGuirk, who, as the Squadron's Air Officer Commanding, led them to a second consecutive designation as Outstanding Squadron.

Maj. A. "Buz" Carpenter, an SR-71 Instructor Pilot at Beale AFB, Calif., addressed the cadets on the value of their Academy experience to their subsequent Air Force careers. Major Carpenter, a 1967 USAFA graduate, was the commander of that year's Outstanding Squadron, the last squadron to achieve back-to-back Outstanding Squadron honors until this year.

The two squadron commanders of the "Fightin' Fourth"—Cadet Lt. Col. Michael L. Eastman (Fall Squadron Commander, left) and Cadet Lt. Col. Michael G. Jackson (Spring Squadron Commander, right)—pose with the trophy and with Maj. Gen. Dan Callahan, USAF (Ret.), Chairman of the Board of Directors of AFA, and with Louis Nye.

Traditionally, a diverse mixture of military and civilian community leaders gather together for this event. Shown here at the reception are (from left) Mrs. Culver with her husband, Colorado Springs businessman Col. Gordon Culver, USAF (Ret.); Brig. Gen. William E. Lindemann, DCS/Plans, Policy, Programs and Requirements, Hq. ADCOM; Maj. Gen. William C. Moore, Vice Commander in Chief, ADCOM; and Gen. James E. Hill, USAF (Ret.), and Mrs. Hill. Prior to his retirement, General Hill was Commander in Chief, NORAD. He now serves as the Executive Vice President of the Colorado Springs Chamber of Commerce.

SPEAKING OF PEOPLE

VA's Agent Orange Dilemma

By Ed Gates, CONTRIBUTING EDITOR

THE federal agency handling benefits and health care for millions of veterans has been boxed into a "no-win" corner on the controversial Agent Orange issue. AO is the chemical defoliant US forces sprayed in Vietnam to destroy enemy hiding spots in the trees and tall grass.

The spraying ceased in 1971. Ever since 1978, when a Chicago TV station suggested that the earlier exposure may be responsible for the cancer, impotency, and other disorders certain veterans are now suffering, claims and charges against the government have poured in.

Antiwar groups sparked the campaign, damning the Defense Department for using the chemicals and blasting the VA for cooperating in what they claimed was a government conspiracy. Nonsense, of course. But this has led to widespread media coverage, including newspaper editorials demanding a blanket presumption of service connection be awarded veterans with serious ailments who were exposed to AO. Service connection begets government benefits.

The basic problem, of course, is that no scientific or medical link between exposure and serious illness has been established. With one exception, according to the government, none of the hundreds of people who did the actual AO sparying is in serious trouble medically.

Deputy VA Administrator Rufus H. Wilson recently explained the agency's position: "We are not waiting for the long-range scientific results to implement programs for veterans who think they have problems related to Agent Orange.

"If they do have a medical problem . . . we can treat those who are eligible, and if there is a disability we can in any way relate to the period they were in military service, we can pay compensation."

However, Wilson continued, "we can't compensate for exposure alone—even to bullets. There has to be some physical or psychological manifestation of this exposure to qualify under the law for disability. Nor can our doctors assure anyone that they will go through life free of medical problems. No one can do that."

Wilson delivered his message to a conference of top VA officials. He urged all agency personnel to show compassion and concern when dealing with vets who fear they may be affected by Agent Orange. "Our lack of real scientific knowledge of this subject has been translated by some into accusations of not caring," he said.

VA officials, naturally, are concerned about adverse publicity, like the headline in the Fayetteville (N. C.) *Observer*, which said: "Agent Orange Peril Cited." It's irresponsible, of course, but is the type of thing that surfaces frequently.

Mr. Wilson instructed all VA people to be "open, candid, concerned, and factual" when dealing with the press. He conceded that VA probably won't win the "battle of the press" on Agent Orange, but "our record needs to be clear that we have made a noble effort."

Keeping veterans informed on all benefits as well as their health problems is one of the agency's major aims. It involves a continuing series of press, radio, and TV announcements, application reminders to veterans, notices to syndicated columnists, magazine ads, etc. This is all part of the "Outreach" program that sends the government to the veteran, to assure he knows what's available, when it expires, and how to apply.

VA, for example, recently told the media and the veterans' community that grants of up to $3,800 are available for certain seriously disabled vets to buy a car and that VA will pay for special equipment, car repairs, and replacement equipment in subsequent cars. Last year 1,300 veterans used this benefit, but other eligibles probably didn't know about it or thought they couldn't qualify. The new reminder aims to get them into the program.

Another recent country-wide release advises vets and their families that VA will provide $450 to $1,100 toward the veterans' burial expenses. Still another is in the nature of a new benefit. It announces that a new VA-DoD study recommends that psychoses suffered by any of the nearly 100,000 former American POWs any time after military service should be considered service-connected. Also, the study recommends VA hospital and outpatient care for any disease the ex-POWs may now be suffering. The recommendations are expected to receive congressional approval.

GI loans and orphans' education benefits are other programs the VA frequently publicizes to assure that veterans take advantage of them. "Many people aren't aware of, or forget about, orphans' education benefits [worth up to $311 per month for forty-five months], so we remind them," a VA official said.

VA intends to keep the veterans' community fully informed. And this includes publicizing all new developments on Agent Orange as soon as they are available. ■

AIRMAN'S BOOKSHELF

Deception and Counterdeception

Wilderness of Mirrors, by David C. Martin. Harper & Row, New York, N. Y., 1980. 236 pages. $12.50.

Words such as "Byzantine" and "convoluted" accurately describe the baffling world of the counterintelligence specialist. *Newsweek* reporter David C. Martin has written a casebook for the practice of highly specialized deception and counterdeception.

Many of these spy tales have been told before in the Sunday supplements, columnists' exposés, and published testimony from hearings on CIA activities. Martin has woven the stories around the unofficial biographies of two career CIA employees, William Harvey and James Angleton. These two diverse personalities, Harvey a flamboyant swashbuckler and Angleton an ascetic schemer, spent most of their lives attempting to penetrate Soviet intelligence and to prevent KGB penetrations of their own agency. As Martin points out, the successes and failures were sometimes monumental, sometimes illusory.

Harvey, now deceased, was widely regarded as the CIA's point man for counterintelligence missions and one of its best agents. He once was introduced to President Kennedy as the American James Bond. Shortly after the meeting, CIA's project of the moment exploded in Kennedy's face at the Bay of Pigs.

Harvey devoted months to the planning and construction of a tunneled listening post under the Berlin Wall, which yielded much useful information. Later, however, when convicted spy George Blake escaped from an English prison, he taunted that the Soviets had discovered the tunnel's location and purpose early in the game. The KGB concealed the discovery to protect their well-placed agent, Blake, who had told them about it.

The other principal subject of the book, James Angleton, provided the title by once describing the labyrinth of plots as a "wilderness of mirrors," where nothing was quite what it appeared to be.

Recruited in 1943 by his former Yale professor, Angleton joined X-2, the counterintelligence arm of the Office of Strategic Services, CIA's wartime predecessor agency. He liked the work and stayed on. For years he served as head of CIA counterintelligence, seeking no further advancement or any other assignment. Finally, he was forced to resign, largely because of his "ultraconspiratorial turn of mind."

His stumbling block was a Russian defector, Anatoli Golitsin, who convinced Angleton that there was a hidden Soviet agent, or "mole," within the CIA itself. Argument still swirls around Angleton—whether the gifted professional was the naïve tool of a KGB plot to turn the CIA upside down with self-doubt and suspicion. In author Martin's assessment, the mole hunt touched off by Golitsin was "the single most corrosive episode in the CIA's history."

Throughout, there are illustrations of the popular technique of disinformation, whereby an agent provides shreds of true information as bait, later introducing false reports to those who have come to rely on him.

In such a climate, some degree of paranoia seems to go with the territory. The careers of both Harvey and Angelton were finally blighted by the manner in which they had to conduct their daily business. Author Martin concludes: "There were no winners or losers in this game, only victims."

—Reviewed by Marjorie Ulsamer, Deputy Director of Publications, HUD.

World War II Air Photos

IMPACT: The Army Air Forces' "Confidential" Picture History of World War II, Vol. I, sponsored by the Air Force Historical Foundation. James Parton & Co., 15 E. 48th St., New York, N. Y. 10017, 1980. 240 pages, plus index. $14.95.

This is the first in an eight-volume series of books that will incorporate the thousands of photos—plus maps and drawings and diagrams—that made up the contents of the thirty issues of the pictorial magazine *IMPACT* published during World War II.

IMPACT, classified "Confidential" during the war and thereafter, was distributed by Army Air Forces Intelligence to combat flyers and operations officers around the world to keep them informed about events in other theaters.

Now declassified, most of the photos that will appear in the eight-volume series are being made public for the first time. To lend insight and help flesh out the photos, top-rank Allied and Axis leaders and other observers of the war's monumental events have contributed retrospective essays on particular aspects of the air war. One such is the article by Maj. Gen. H. S. Hansell, USAF (Ret.), that was reprinted in our July issue. It will appear in the fourth volume of *IMPACT.*

Vol. I, which contains the first through the fifth issues of *IMPACT* (April '43 through August '43), leads off with essays by Lt. Gen. Ira C. Eaker, USAF (Ret.), and Marshal of the RAF Sir John Slessor. It contains a wealth of information about that period in which the Allies began to get a grip on the war.

The eight volumes, to be published at six-week intervals, should contain the best single collection of AAF action pictures from the era in existence. A comprehensive index concluding the final volume will make this war document a useful, permanent reference work.

—Reviewed by William P. Schlitz, Assistant Managing Editor.

CBI Revisited

China Airlift—The Hump, edited by retired Cols. J. F. "Pappy" Brewer and Harry Howton, with Janet M. Thies. Preface by retired Lt. Gen. William H. Tunner. Hump Pilots Association, 917

Pine Blvd., Poplar Bluffs, Mo. 63901, 1980. 596 pages with index and list of members. $40.

This large-size, hard-bound volume will set the standard for association publications for years to come. More than a saga of the Air Transport Command units that kept China in the war by airlifting supplies over the Himalayas, it includes accounts of the many organizations that supported the operation: fighters, bombers, air evac, recce, search and rescue, AACS, weather, tech reps, and many others. More than 1,000 US, British, and Canadian airmen lost their lives in that first, hazardous demonstration of the capabilities of large-scale airlift.

The book includes information on all types of aircraft involved; personal accounts of bailouts, crashes, rescues, and other CBI experiences; newspaper clippings of the day; CBI songs and poems; and personally written short biographies of about 1,000 members of the Hump Pilots Association. All this is embellished by nearly 3,000 remarkably good photos—most of them World War II vintage, but some of association reunions.

Supplementing the book is a set of twelve interlocking World Pilotage Charts, long out of print, that shows many of the routes flown by Hump pilots. Price of the maps is $5.

—J. L. F.

New Books in Brief

Aircraft of the Royal Air Force Since 1918, by Owen Thetford, and *Japanese Aircraft of the Pacific War*, by René Francillon, reviewed in the May and June issues respectively, are available in the United States through the Merrimack Book Service. These books may be obtained from: Putnam Aeronautical Library, 99 Main St., Salem, N. H. 03079.

The Chindit War: Stilwell, Wingate, and the Campaign in Burma: 1944, by Shelford Bidwell. One of the relatively unpublicized campaigns of World War II was the Allied attempt to clear the Japanese from northern Burma and reestablish a land route to China. Known as the Fifth Burma Campaign, 20,000 British, American, Chinese, Nigerian, Gurkha, and Burmese soldiers fought in some of the most forbidding terrain in the world. Military historian Shelford Bidwell sets the stage for his account of this campaign by analyzing the political and strategic factors involved. Against this backdrop he portrays the flamboyant and controversial commanders, "Vinegar" Joe Stilwell and Britain's Orde Wingate. With maps and illustrations, sources, notes, and index. Macmillan Publishing Co., Inc., New York, N. Y., 1979. 304 pages. Cloth $13.95.

Defense Policy Formation: Towards Comparative Analysis, edited by James M. Roherty. This volume, a collection of original essays by academicians from seven countries, is an attempt to understand and elaborate on the concept of the "defense community." In a study of five medium powers and their defense communities, the authors suggest that an American "ethnocentric fallacy" militates against understanding fully the defense policies of other nations, and that a more promising approach involves a "comparative analysis." This approach would serve as a more realistic model for comprehension of foreign defense communities, the authors believe, and would give new perspectives to American defense policy formulation. With tables, notes, and index. Carolina Academic Press, P. O. Box 8795, Forest Hills Station, Durham, N. C. 27707, 1980. 315 pages. Cloth $14.95.

The Fall of Fortresses, by Elmer Bendiner. This memoir by a participant in the costly B-17 raids on Schweinfurt in 1943 is a haunting, meditative account of one man's experience in the crucible of war. While some readers may question Bendiner's conclusions regarding the wisdom and efficacy of daylight strategic bombing, his poetic descriptions—of the beauty and thrill he felt as the Fortresses formed up in the cold blue skies over England or of the "anonymity of war . . . as terrible and profound as that of chessmen tumbled into a box when the game is over"—cannot fail to move the reader. The book is an intelligent and gripping story, and Bendiner's account is both highly personal and universal as he struggles to understand his memories of an era "when the world each morning stood on the brink of catastrophe or redemption." Photos. G. P. Putnam's Sons, New York, N. Y., 1980. 258 pages. $11.95.

Iwo, by Richard Wheeler. The battle for the island of Iwo Jima was one of the bloodiest actions of World War II, as the Japanese abandoned their *banzai* tactics in favor of a strategy of defensive attrition. The American invasion caused more than 40,000 casualties combined, with almost 2,700 on the American side resulting from combat fatigue alone. Richard Wheeler, a member of the company that raised the Stars and Stripes atop Mount Suribachi, recounts the fighting day by day (sometimes for a few yards at a time), from the perspective of Japanese and American participants. This is a vivid description of a battle that left a handful of surviving defenders and earned the invaders twenty-seven Medals of Honor. With illustrations, bibliography, and index. Lippincott & Crowell, New York, N. Y., 1980. 243 pages. $12.95.

Kingdoms of the Blind, by Harold W. Rood. Professor Rood, while avowing that history does not necessarily repeat itself, believes that the behavior of democracies in the twentieth century seems repetitious. He argues that once again the Western democracies are discounting the threat of war from an expansionist, totalitarian power—the Soviet Union. The book advances the notion that a strategy for avoiding war cannot be successful if it derives from the idea that war is impossible. Rood warns that if the West is forced to fight without preparing for or even considering such an eventuality, the fire next time will spell the end of freedom. Appendices, index. Carolina Academic Press, P. O. Box 8795, Forest Hills Station, Durham, N. C. 27707, 1980. 294 pages. Cloth $14.95.

Oil Diplomacy: The Atlantic Nations in the Oil Crisis of 1978–79. A collection of essays presented by the Foreign Policy Research Institute, this book analyzes the impact of the energy crisis on the political and economic structures of the world, with special emphasis on its lasting ramifications for the West. Foreign Policy Research Institute, Philadelphia, Pa., 1980. 137 pages. $6.

The Political Influence of the Military, edited by Amos Perlmutter and Valerie Plave Bennett. This large collection of essays, a sociological companion to Amos Perlmutter's *The Military and Politics in Modern Times,* is organized into sections dealing with the various "political" types of military—the professional soldier, the praetorian soldier, and the revolutionary professional soldier. Designed as a "comparative reader," the book is an ambitious, and largely successful, compendium of studies and source material in the military/political field. Yale University Press, 92A Yale Station, New Haven, Conn. 06520, 1980. 508 pages. Cloth $35; paper $10.95.

—Reviewed by Hugh Winkler.

The *Eddie Allen* was unique among nearly 4,000 B-29 Superforts built by Boeing during World War II. It had been bought for the AAF by men and women of Boeing Wichita as a tribute to the legendary Edmund T. Allen, one of the country's leading test pilots and Director of Aerodynamics and Research for Boeing, who lost his life at the controls of a B-29 prototype in February 1943. Based at Tinian after flying earlier 40th Bomb Group missions from bases in India, the B-29 was to be returned to the States after its twenty-fifth mission to become a memorial to the man whose name it bore, and who had been largely responsible for developing the B-29 bomber. This is the story of mission number twenty-four . . .

THE LAST MISSION OF THE EDDIE ALLEN

BY COL. EINO E. JENSTROM, USAF (RET.)

The Eddie Allen, *riddled by heavy flak over Tokyo, begins her miraculous 1,500-mile flight back to base at Tinian Island. (Illustration by Glenn Illustrators, Keller, Tex.)*

THE briefing was at 11:00 a.m., May 23, 1945. The target: Tokyo. A total of 550 B-29s fully loaded with incendiary bombs was to enforce the harsh realities of war on the Japanese. The Superforts were to be led by the Pathfinders, XXI Bomber Command's elite crews, going in at low level to mark the target. The rest would follow at 9,000 to 11,000 feet. The aircraft of the 58th Bomb Wing began their takeoffs from West Field on Tinian Island shortly after 4:00 in the afternoon. The *Eddie Allen* would be in the main stream at 9,000 feet.

Big John Mahli, crew chief and master of Hardstand 11, the built-up coral and asphalt island home of the *Eddie Allen*, met the truck delivering the eleven-man combat crew to "his" airplane.

Big John was all business. "We're all set. Write-ups cleared. Number three is the high-time engine; the others are in the second hundred hours. Radar and radio check out. Gas tanks topped off. Forty clusters loaded. Full load of ammo."

Bombardier Lt. Fred Billingsley disappeared in the bomb bay to check each cluster of incendiaries. Flight engineer Sgt. Olan Garrett climbed on the wing to inspect the fuel and oil quantities. Radar operator Flight Officer Walter Kraus clambered into the aft compartment to preflight the radar set. The gunners checked ammunition and remote sight operation of the turrets studding the aircraft above and below. Nothing was left to chance. The margin for error was nil.

The crew watched the clock. With more than a hundred airplanes moving into the air from Tinian's two parallel runways, everything and everyone had to act with precision. Start engines, taxi, and takeoff were scheduled to the minute. A slip-up meant moving to the end of the bomber stream. Nobody wanted to be last. A thirty-minute planned fuel reserve for fifteen and a half hours of flight was a meager margin.

The *Eddie Allen* shuddered at the end of the runway as I applied full power; the Superfort strained and inched forward on the fully set brakes. Copilot Lt. Lou Bicknese counted off the last ten seconds. Brake release. We felt the forward surge. Airspeed up—nose up—airborne with a swirl of coral dust from the end of the short runway, and we skimmed a scant 200 feet over the Marine encampment on the ridge line a mile away. Then the dip down to a few hundred feet over the water to raise the wing flaps and gain airspeed for the climb. The *Eddie Allen* was on its way!

Now came the long haul into the night, cruising smoothly, skirting the tops of the broken cloud deck over the peaceful Western Pacific. After Iwo Jima, the bright moon and navigational stars were obscured by a thin high overcast, forecasting the approach to the persistent band of storm clouds lying across our course to the east of Japan and parallel to the coastline. Finally we emerged from the front into the lighter blackness.

Tokyo! Light from the fires in the city shone on the overcast clouds and was reflected back on the black waters of Tokyo Bay. The net effect revealed the totality of the city to bombardiers, matching the daylight target photos taken earlier in the week.

"We're Hit!"

We could see a stream of planes over the southern end of Tokyo Bay and alongside Mount Fuji to the initial point, a town thirty miles southwest of Tokyo lighted by the Pathfinders. Some of the planes were caught in the crossed beams of searchlights, absorbing punishment from antiaircraft fire, but holding their steady, inexorable course onward to the target.

Suddenly left gunner Cpl. Vic Braeunig shouted a warning. There was no time to act. All that we saw was the dark hulk of another bomber passing a few feet below the *Eddie Allen*. Taut nerves drew tighter as we pressed on.

Nearing the initial point, the airplane ahead was caught by searchlights. Flak focused on it as it turned toward the target, weaving to escape the lights. The *Eddie Allen* was no more than 500 yards behind. Off to the right another plane, paralleling our course, was pinned to the cloud ceiling by lights.

Successive lines of searchlight and flak batteries picked up the B-29 in front and swung past us to spear the airplane behind. Ahead and to the left, a plane exploded—a victim of flak or enemy fighters. The pieces fell for a very long time. There were no parachutes. Another B-29, wavering in the lights, turned from the target area eastward to the sea, trailing a plume of white smoke from one wing.

Tokyo was now partially shrouded by an enormous column of smoke as the fire storm grew with each additional load of bombs. We learned later that the ground wind feeding air to the fire storm was said to have approached a hundred miles an hour.

Our aiming point was the edge of the fire storm. Bombardier Billingsley had the target in his bombsight, the

Edmund T. "Eddie" Allen, World War I Army pilot, first test pilot for the National Advisory Committee on Aeronautics, and first winner of the Octave Chanute Award. As Boeing's Director of Aerodynamics and Flight Research, he had a major part in improving the performance of the B-17 and in developing the B-29. He was killed piloting a burning B-29 prototype, trying to get it back to base for fault analysis.

Crew of the Eddie Allen. *Back row, left to right: Copilot Lt. Louis C. Bicknese; pilot and author of this article Capt. Eino E. Jenstrom; radar officer Flight Officer Walter Kraus; navigator Flight Officer Francis H. Moch, Jr.; bombardier Lt. Fred E. Billingsley. Front row, from left: Engineer Cpl. Olan W. Garrett; right gunner Cpl. Robert W. Mautner; radio operator Cpl. Ralph F. Desch; top gunner Cpl. Daniel F. Thorne; left gunner Cpl. Victor H. Braeunig; tail gunner Cpl. James E. Taliaferro. In addition to intense antiaircraft fire all the way from Yokohama to Tokyo, the 550 B-29s in the May 23 mission were attacked by enemy fighters and "Betty" bombers that launched rocket-powered Baka bombs into the bomber stream.*

bomb run was on. Airspeed, altitude, and heading became critical. The *Eddie Allen* was committed for the next three minutes to steady, unwavering flight.

Then lights hit the plane with what seemed physical force. Contrasts in the cockpit were remarkable—shadows appeared to be made of solid substance while the rest was brighter than day. Then the flak began—to the left and slightly to the rear.

Billingsley leaned forward to look below and threw himself back with a shout "Wow!" Slowing visibly in its upward flight, an antiaircraft shell passed a foot in front of the nose of the *Eddie Allen*, exploding harmlessly a hundred feet above and behind.

"Bombs away! Bomb bay doors closed!" Billingsley shouted.

Almost simultaneously, the *Eddie Allen* was slammed hard. The left wing was thrown upward. Tail gunner Cpl. Jim Taliaferro cried out, "We're hit!" Then he was silent.

The top gunner, Sgt. Dan Thorne, called over the intercom: "Tail Gunner, Tail Gunner, this is CFC [Central Fire Control]. Come in! Come in!"

Taliaferro came back, "I'm OK. We're hit! Can't see much."

Another round of flak lifted the *Eddie Allen* with great force. The plane slid to the right, diving, turning seaward, accelerating faster and faster. The airspeed needle approached the red line. Any faster and structural failure might occur. The searchlights still held the plane tightly, but flak fell further behind. The plane slowed, leveled off, and headed east. The *Eddie Allen* entered the welcome darkness of the weather front.

A Welter of Wounds

It was time for me to take stock of the battle damage. I went into the front bomb bay. Hydraulic fluid dripped from broken lines and cables hung loose. The rear bomb bay told the same story. Miraculously, the radar equipment between was unscathed.

In the aft gunner's compartment, the crew stuffed cushions into holes in the fuselage. Unbelievably, none of the men had been wounded by penetrating shrapnel. Right gunner Cpl. Bob Mautner had the narrowest escape; a piece of shrapnel had buried itself in his seat.

A gaping hole a yard in diameter had been blasted in the elevator, not six feet from the tail gunner. It looked bad, but until landing the pressures on this control surface would be minimal. It would probably hold.

Navigator Flight Officer Frank Moch, waiting at the front end of the crew tunnel, announced calmly, "Captain, the leading edge of the left wing outboard of number two is red hot."

I looked from the astrodome to the left wing. There was a long, dull red line, a foot behind the true leading edge, a glow feathered back toward the rear of the wing. A thin wisp of white smoke peeled back from the number one engine.

Left gunner Braeunig reported, "Smoke from number

The author retired from the Air Force in 1971 after serving in the Air Staff, SHAPE, and the Joint Staff. He flew B-29s from the Mariana Islands in 1945 and from Japan in 1951. A graduate of the National War College and the University of Maryland, he holds an M.A. from George Washington University and a J.D. degree from Georgetown University, and is an attorney at law.

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one engine increasing—more sparks than before."

Decision: "Feather number one."

The propeller ground to a position of attention, blades turned into the slipstream.

"How's the smoke?" copilot Lou Bicknese asked.

"Appears to be thinning, fewer sparks." Braeunig reported.

"Request permission to transfer fuel from number one fuel cells," came from flight engineer Garrett.

"Roger! Start pumping," I replied.

"Smoke real thin now, hardly any sparks," Braeunig announced.

A short time later the flight engineer reported that only 800 gallons had been transferred from the outer fuel cells of the left wing—800 when it should have been 1,100. Our reserve fuel was gone. We would have to stop at Iwo Jima, the halfway mark between Tokyo and Tinian. Besides refueling, there would be repairs to be made. It would be days before the *Eddie Allen* would be back at Hardstand 11 and under the care of crew chief Mahli.

Iwo: Zero Zero

Fifty miles from Iwo, radio operator Sgt. Ralph Desch called for clearance to land, reported battle damage, and requested Iwo weather.

This attack on Tokyo, two days after the Eddie Allen's *last mission, completed destruction of the city. More than fifty-six square miles of buildings had been gutted by fire.*

"Iwo weather zero zero. Expected to remain for the next six hours. Crashed aircraft on the runway. Iwo closed to all air traffic. Enter orbit area Charlie. Stand by," came the reply.

Six hours! Six hours? It would take less time than that to reach Tinian, yet according to the fuel gauges, flight log, and charts, the fuel reserve for four-engine flight was lost. Reaching Tinian on three engines did not seem possible. The *Eddie Allen* would have to ditch on the open sea. The question was, "Where?" Here at fog-shrouded Iwo, or as near as possible to sunny Tinian? It had to be Tinian.

We radioed for an escort. At least a sea search would not be necessary. Moments later a nearby B-29 answered navigator Moch's marking flare from the Very pistol, and the *Eddie Allen* had an escort.

Now was time for the most extraordinary precision in flying, navigation, and engine power management. Throttling back to settings below the demands of the maximum range charts and flying as smoothly as possible, we headed for Tinian and home. We took every opportunity to penetrate the occasional tall clouds, to feel the life-giving turbulence within them that lifted us fifty feet—one hundred feet—once as much as 300, and to slide gently downward to the next cloud, and the next.

It seemed impossible. The fuel gauges sank steadily, but slower than the charts specified. Altitude lost was fought for and surrendered grudgingly. The *Eddie Allen* passed the point where ditching at sea had been predicted. Suddenly there was Tinian Island, the air crowded with B-29s landing in a steady stream!

"West Tower, Victor One Nine. Emergency landing. Battle damage. Minimum fuel. Flare marks position."

The single red flare arched skyward. The approaches were emptied of airplanes. The runway was cleared for the *Eddie Allen*. Wheels down. Elevator reaction sluggish, but firm. Flaps down halfway. Little difference in reaction noted. We were going down.

The *Eddie Allen* settled smoothly on the runway. The nose gear took its share of the weight as the airspeed fell. The right wing settled to rest, but the left wing hung drooping like that of a winged mallard!

Taxiing slowly, the *Eddie Allen* rolled to a stop on Hardstand 11. Mission number twenty-four was over.

The Ultimate Test

The *Eddie Allen* had been mortally wounded and there'd never be a mission number twenty-five.

A hole in the lower surface of the sagging left wing near the root of number one engine was large enough for head and shoulders. The entire internal wing structure was visible. Dividing walls between the fuel cells were burned away. The *Eddie Allen* had taken a dud round of antiaircraft fire, but the friction of that hot shell had started the fuel burning in the cells. We had transferred fuel from this burning tank. Less than fifty gallons of fuel remained in the other tanks. We had flown sixteen hours on fuel for fifteen and a half. Incredible!

The path of the dud was still clearly visible in the upper part of the wing, but the dud itself was gone. The main wing spar checked out later at one-half its specified hardness.

Repair was out of the question, but so was destruction. The name, the indomitable spirit of Eddie Allen,

was a thing to be preserved. And it was! The *Eddie Allen*, stripped of nonessentials, was moved to our training area. There, beside newly constructed quonset huts, it became a classroom for practicing emergency procedures until the war ended some three months later.

What happened to the plane? I don't know, but I do know eleven men owed their lives to some force—some spirit—that averted the midair collision, shielded the crew from flying shrapnel, caused the round that hit the wing to be a dud, put out the fire, held the weakened wing together, and kept the engines turning long after their fuel should have been gone.

Eddie Allen once told his staff, "Remember, it is not enough that these planes fight the enemy. They must *endure*; they must bring their crews home." The B-29 that bore his name had met that ultimate test. ■

Before it was based at Tinian, the Eddie Allen had delivered aviation fuel over the Hump from India to China and flown bombing missions throughout Southeast Asia. Here, it was approaching a target near Rangoon, Burma, in November 1944.

KEEP 'EM FLYING

While I was assigned to a SAC wing in Goldsboro, N. C., the main job of all us maintenance personnel was to keep the big birds repaired and make sure they always took off on time.

One morning, a KC-135 was getting ready to crank up when one of its starters failed. No truck was available to get a new one, so, with time being critical, my CO, Col. Richard Gerrity, jumped into his little Fiat and raced to the hangar for a new one.

On returning, he pulled up to the plane, opened his hood (the engine was in the rear of his car), and took out the starter.

Seeing that, a crewman leaned out the window of the tanker and said, "You guys will do *anything* to get a plane off on time—even to giving us the engine out of your car!"

—Contributed by Lt. Col. Charles J. Zubarik, USAF (Ret.)

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

On July 21, 1930, President Hoover signed an Executive Order to "consolidate and coordinate government activities affecting war veterans" under one agency . . .

The Veterans Administration: Fifty Years of Caring

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

President Franklin D. Roosevelt signs the "Servicemen's Readjustment Act of 1944" on June 22, 1944. More popularly known as the GI Bill, this law is said to have had more impact on more aspects of American life than any legislation since the Homestead Act. It is estimated that some 18,000,000 persons have received some form of training under this Act, administered by the VA. Some $52 billion has been spent on this program. That investment has been recaptured by the government many times over in both income tax dollars paid by veterans who increased their earning ability and in the achievement of a better educated populace.

On July 21, 1930, when President Herbert Hoover created the Veterans Administration, there were 4,600,000 veterans. Now, on the agency's fiftieth anniversary, there are 30,100,000. The VA of today, with its far-flung network of hospitals, regional offices, clinics, nursing homes, domiciliaries, and national cemeteries, is the largest independent federal agency, with 235,000 employees.

From President Abraham Lincoln's second inaugural address came the phrase that has been adopted by the VA as its motto: "To care for him who shall have borne the battle, and for his widow, and his orphan."

But our system of caring for veterans has deeper roots in American history, based on a custom adopted from England. In 1636, the Pilgrims at Plymouth Colony made provisions for those disabled in clashes with the Pequot Indians. Its law stated, "If any man shall be sent forth as a soldier and shall return maimed, he shall be maintained competently by the colony during his life."

Other colonies had similar laws, and the Continental Congress also provided for disability pensions. Some benefits were being paid to dependents of Revolutionary War veterans until 1911.

Later laws provided mainly for pensions. Hospitalization was largely a function of the states until the early 1800s. After World War I, other benefits, such as vocational training of a sort, entered the picture. By 1922, three agencies—the Veterans Bureau, the Bureau of Pensions of the Interior Department, and the National Home for Disabled Volunteer Soldiers—had a hand in veterans benefits. It was to bring order to this hodgepodge that President Hoover, in 1930, set up one agency to "consolidate and coordinate government activities affecting war veterans."

The early post-World War II era was a watershed in number and complexity of veterans benefits. Also during that period the groundwork was laid for the professionalism found in the agency today. Great strides were made in medical research, affiliation of VA hospitals with medical schools for teaching purposes, and in insurance administration techniques.

In the 1960s, the VA took a significant step by changing its philosophy from waiting for a veteran to apply for benefits to actively seeking out those whose service made them eligible. This "outreach" program continues today, with computerized mailings to discharged veterans, toll-free numbers to call for assistance, and VA "storefront" offices set up in areas known to have a high concentration of veterans.

The VA operates the nation's largest hospital and medical-care system. It is a major force in both the housing and insurance fields, administering one of the largest life-insurance programs in the world.

Ninety-three million veterans, veterans' dependents, or survivors of deceased veterans—approximately forty-one percent of the US population—are potentially eligible for veterans benefits and services. Some Civil War widows and children still draw VA benefits, and it is likely that the VA will be administering benefits for Vietnam-era dependents until early in the twenty-second century. ■

Max Cleland, the current Veterans Administrator (and the only Vietnam War veteran to head the agency) is in charge of 235,000 employees. The first Administrator of Veterans Affairs, Frank T. Hines, held sway over 25,000. The 1930 budget was $785 million; the budget for 1980 is estimated at $21 billion.

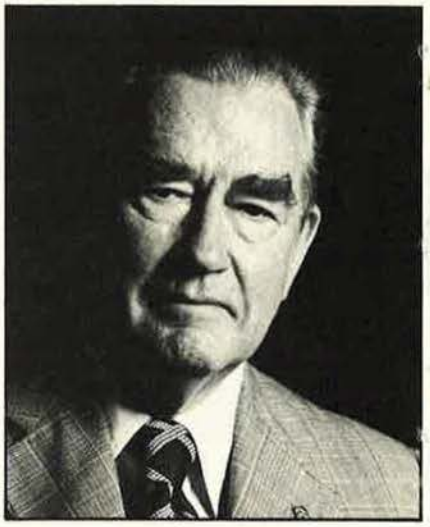
AT ITS annual meeting in Colorado Springs, Colo., on May 24, the Air Force Association Nominating Committee, consisting of the National Officers and Directors and the President or designee of each AFA State Organization, chose a slate of four National Officers and twenty Directors to be presented to Delegates at the National Convention in Washington, D. C., on September 15.

For National President, members of the Nominating Committee nominated **Victor R. Kregel,** a native of Irwin, Pa., who now resides in Dallas, Tex. Mr. Kregel is an industry executive. He entered the Air Force in 1942 and received an Air Force commission and pilot's wings in 1943. In 1944, he completed Navy flight training and received the gold wings of a Naval aviator. He flew 500 combat hours in the Southwest Pacific. He later served for two years as an exchange officer with Fighter Command, Royal Air Force. A graduate of several service schools and the University of Maryland, he was a member of the faculty at the Air University as a section commander and lecturer. His last assignment prior to retirement in 1965 was as Business Manager of Athletics at the United States Air Force Academy in Colorado Springs.

Mr. Kregel now serves AFA as National President, and Chairman of the Executive and Convention Site Committees. He has served as an elected National Director, as a National Vice President (Southwest Region), a member of the Organizational Advisory Council, and as a State and Chapter President. He is a member of the Aerospace Education Foundation Board of Trustees, and is a Life Member of AFA.

Dan F. Callahan, the incumbent Chairman of the Board of Directors, was nominated for a second one-year term. A resident of Nashville, Tenn., he is a retired Air Force major general and a self-employed engineering and management consultant. During more than thirty years on active duty, General Callahan served as Chairman of the Permanent Working Staff, NATO Military Production and Supply Board; Alternate US Representative, NATO Defense Production; Chief, US Military Assistance Advisory Group, United Kingdom; and as Director for Logistics (J-4), the Joint Chiefs of Staff. A graduate of West Point, General Callahan holds a master's degree in engineering mechanics from the University of Michigan and has received an honorary law degree from the University

Kregel



Callahan

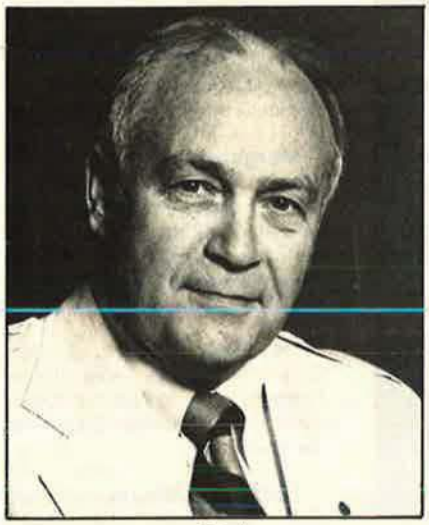
AFA NC 1980-

of Alabama. He was a Command Pilot.

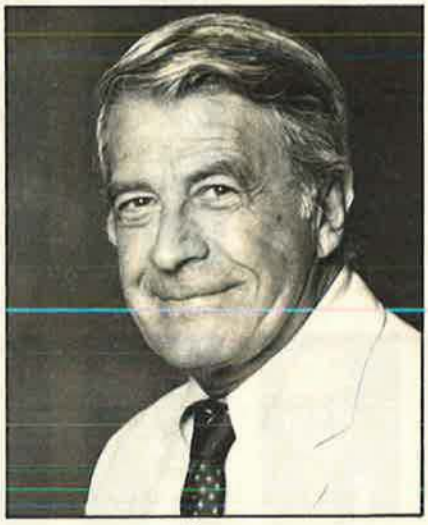
General Callahan is a Charter Member of AFA and has served the Association in many capacities, including National Director and State and Chapter President. He is a member of the Executive and Convention Site Committees, and is a member of the Aerospace Education Foundation Board of Trustees. He is a Life Member of AFA.

Earl D. Clark, Jr., of Kansas City, Kan., was nominated for a second one-year term for the office of National Secretary. Mr. Clark is president of the Collins Construction Co. and of the Earl D. Clark Architectural Firm, as well as a bank director. He is an Air Force colonel in the retired Reserve. He has served AFA as a National Vice President, as a National Director, a member of the Organizational Advisory Council, and a State and Chapter President. He is chairman of the Resolutions Committee and a member of the Executive Committee. He is a Life Member of AFA.

Jack B. Gross, a prominent Hershey, Pa., civic leader and businessman, was nominated for an unprecedented twenty-first term as National Treasurer. Mr. Gross serves as Chairman of AFA's Finance Committee and is a member of the Executive Committee and the Aerospace Education Foundation's Board of Trustees. He has served as Chairman of the Board of Directors, an elected National Director, and as a State and Chapter President. He is a retired Air Force colonel and a Life Member of AFA.



Clark



Gross

The following are permanent members of the AFA Board of Directors under provision of Article IX of AFA's National Constitution: John R. Alison, Joseph E. Assaf, William R. Berkeley, John G. Brosky, Edward P. Curtis, James H. Doolittle, George M. Douglas, Joe Foss, George D. Hardy, Martin H. Harris, Gerald V. Hasler, John P. Henebry, Robert S. Johnson, Sam E. Keith, Jr., Arthur F. Kelly, Thomas G. Lanphier, Jr., Jess Larson, Curtis E. LeMay, Carl J. Long, Nathan H. Mazer, J. P. McConnell, J. B. Montgomery, Edward T. Nedder, Martin M. Ostrow, Jack C. Price, Julian B. Rosenthal, John D. Ryan, Peter J. Schenk, Joe L. Shosid, C. R. Smith, William W. Spruance, Thos. F. Stack, Harold C. Stuart, James M. Trail, Nathan F. Twining, and A. A. West.

The twenty people whose photographs appear on the following page are nominees for the eighteen elected Directorships for the coming year. Names marked with an asterisk are incumbent National Directors.

MINEES
981

NOMINEES FOR AFA'S BOARD OF DIRECTORS

Incumbent National Directors indicated with an asterisk (*)


Blankenship


Carr


Chabbott


Chandler


Dean

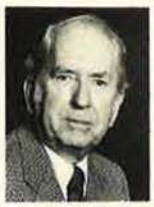

Devoucoux


Emrich


Faust

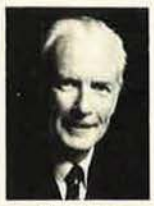

Field


Grazioso


Harris


Jones


McBride


Nettleton


Rapp


Reed


Ritchie


Stearn


West


Wilkins

***David L. Blankenship,** Tulsa, Okla.—industry executive. Former Chapter, State President; National Council member. Current National Committee Chairman. Life Member.

Robert L. Carr, Pittsburgh, Pa.—real estate broker. Former Chapter, State President, and Vice President (Northeast Region). Current National Committee member.

George H. Chabbott, Dover, Del.—management consultant. Former State President and Vice President (Central East Region). Current National Committee member.

***William P. Chandler,** Tucson, Ariz.—insurance broker. Former Chapter, State President, National Council member, Vice President (Far West Region). Current National Committee member. Life Member.

***Hoadley Dean,** Rapid City, S. D.—retired development company president. Former Chapter President and Vice President (North Central Region). Current National Committee Chairman and Aerospace Education Foundation Board of Trustees member. Life Member.

***R. L. Devoucoux,** Portsmouth, N. H.—stock broker. Former Chapter, State President, and Vice President (New England Region). Current National Committee member.

***Richard C. Emrich,** McLean, Va.—financial manager, FAA. Former Chapter, State President, and Vice President (Central East Region). Life Member.

***E. F. Faust,** San Antonio, Tex.—bank executive. Former Chapter Officer, State President, Vice President (Southwest Region), and National Trustee, Arnold Air Society. Current National Committee member. Life Member.

***Alexander C. Field, Jr.,** Chicago, Ill.—broadcasting company executive. Former Chapter, State President, and Vice President (Great Lakes Region). AFA "Man of the Year," 1979. Current National Committee member and Aerospace Education Foundation Board of Trustees member. Life Member.

***James P. Grazioso,** West New York, N. J.—roofing and sheet metal contractor. Former Chapter, State President, Vice President (Northeast Region), and National Council member. Life Member.

***Alexander E. Harris,** Little Rock, Ark.—property management executive. Former Chapter, State President, Vice President (South Central Region). Life Member.

Francis L. Jones, Wichita Falls, Tex.—property manager. Current Chapter President, National Committee member, and Vice President (Southwest Region).

***William V. McBride,** San Antonio, Tex.—retired Air Force general officer. Former Vice Chief of Staff, United States Air Force. Current National Committee member, and Aerospace Education Foundation Board of Trustees member. Life Member.

***J. Gilbert Nettleton, Jr.,** Washington, D. C.—industry executive. Former Chapter Treasurer, Vice President, and President. Current National Committee member. Life Member.

***William C. Rapp,** Buffalo, N. Y.—telephone company executive. Former Chapter President and State President, National Council member, Vice President (Northeast Region), and National Committee member. Life Member.

Margaret A. Reed, Seattle, Wash.—industry executive. Former State President, State Secretary, State Treasurer, and National Committee member. Current Vice President (Northwest Region). Life Member.

***R. Steve Ritchie,** Golden, Colo.—industry executive. Former Under-40 National Director. Current National Committee member.

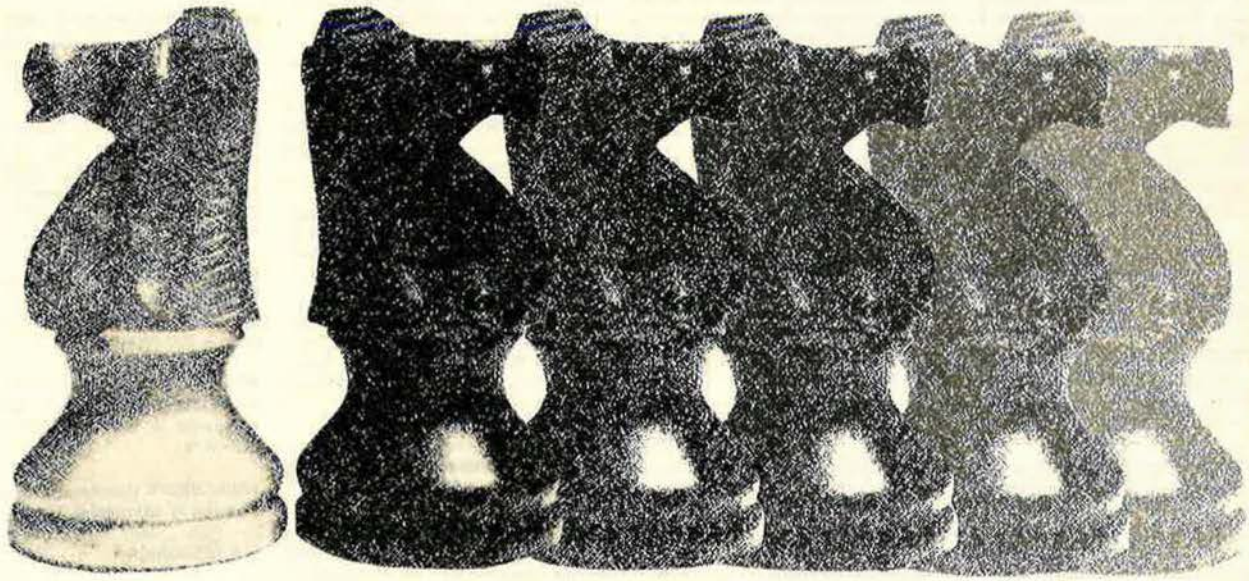
***Edward A. Stearn,** Redlands, Calif.—aerospace industry executive. Former Chapter President, National Council member, and National Advisor. AFA "Man of the Year," 1977. Current State President, Aerospace Education Foundation Board of Trustees member, and National Committee member. Life Member.

***Herbert M. West, Jr.,** Tallahassee, Fla.—environmental consultant. Former Chapter, State President, Vice President (Southeast Region), and National Council member. Current Aerospace Education Foundation Board of Trustees member and National Committee member.

***Sherman W. Wilkins,** Bellevue, Wash.—aerospace executive. Former Chapter President and Vice President (Northwest Region). Current Aerospace Education Foundation Board of Trustees member and National Committee member. Life Member.

THE MILITARY BALANCE 1980|81

In December, AIR FORCE Magazine proudly presents the International Institute for Strategic Studies' "The Military Balance 1980/81." This internationally respected and widely sought-after study, published under a special arrangement with the Institute, offers a comprehensive country-by-country analysis of the world's military forces and equipment. This issue has traditionally become a standard working reference for military decision-makers throughout the world. You can be a part of this important issue with your advertising. Closing for reservations is October 24. Copy is required by November 5.



AIR FORCE MAGAZINE
PUBLISHED BY THE AIR FORCE ASSOCIATION

AFA STATE CONTACTS

Following each state name, in parentheses, are the names of the localities in which AFA Chapters are located. Information regarding these Chapters, or any place of AFA's activities within the state, may be obtained from the state contact.

ALABAMA (Auburn, Birmingham, Huntsville, Mobile, Montgomery, Selma): **Frank M. Lugo,** 5 S. Springbank Rd., Mobile, Ala. 36608 (phone 205-344-9234).

ALASKA (Anchorage, Fairbanks): **David W. Robinson,** P. O. Box 1120, Anchorage, Alaska 99510 (phone 907-274-3561).

ARIZONA (Phoenix, Tucson): **R. C. Olson,** 8313 E. Encanto, Scottsdale, Ariz. 85258 (phone 602-991-4208).

ARKANSAS (Blytheville, Fayetteville, Fort Smith, Little Rock): **Arthur R. Brannen,** 605 N. Hospital Dr., Jacksonville, Ark. 72076 (phone 501-982-2585).

CALIFORNIA (Apple Valley, Edwards, Fairfield, Fresno, Hawthorne, Hermosa Beach, Long Beach, Los Angeles, Marysville, Merced, Monterey, Novato, Orange County, Palo Alto, Pasadena, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, San Mateo, Santa Barbara, Santa Monica, Vandenberg AFB: **Edward A. Stearn,** 15 Cardinal Lane, Redlands, Calif. 92373 (phone 714-889-0696).

COLORADO (Aurora, Boulder, Colorado Springs, Denver, Fort Collins, Grand Junction, Greeley, Littleton, Pueblo, Waterton): **Stephen L. Brantley,** 1089 S. Buchanan St., Aurora, Colo. 80011 (phone 303-370-7153).

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OKLAHOMA (Altus, Enid, Oklahoma City, Tulsa): **William N. Webb,** 404 W. Douglas Dr., Midwest City, Okla. 73110 (phone 405-734-2658).

OREGON (Eugene, Portland): **Martin T. Bergan,** 12868 SE Ridgecrest, Portland, Ore. 97236 (phone 503-288-5611, ext. 236).

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VIRGINIA (Arlington, Danville, Harrisonburg, Langley AFB, Lynchburg, Norfolk, Petersburg, Richmond, Roanoke): **H. B. Henderson,** 10 Cov Dr., Seaford, Va. 23696 (phone 80-838-1300).

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WEST VIRGINIA (Huntington): **Jame Hazelrigg,** Rt. 3, Box 32, Bar boursville, W. Va. 25504 (phone 304 522-3616).

WISCONSIN (Madison, Milwaukee **Charles W. Marotske,** 7945 S. Verde Dr., Oak Creek, Wis. 53154 (phon 414-762-4383).

WYOMING (Cheyenne): **G. Robe Bessett,** 5820 Osage Ave., #10 Cheyenne, Wyo. 82001 (phone 30 635-2888).

AFA's 1980 National Convention and Aerospace Development Briefings and Displays

September 14-18 • Washington, D.C.

AFA's 1980 National Convention and Aerospace Development Briefings and Displays will be held at the new Sheraton Washington Hotel, a $100 million facility which has been erected on the site of the old Sheraton-Park Hotel. The new main entrance and the convention entrance are on Woodley Road. The old Motor Inn, now called the Park Tower, and the Wardman Tower are being completely renovated.

We have reserved additional blocks of rooms at the Connecticut Inn and the Normandy Inn at substantially lower rates than the Sheraton Washington. Both properties are on the Connecticut Avenue Metrobus route with frequent Metrobus service.

All reservation requests for rooms and suites at the Sheraton Washington should be sent to: Sheraton Washington Hotel, 2660 Woodley Road, N.W., Washington, D.C. 20008. Reservation requests for the Connecticut Inn and Normandy Inn should be sent to: Connecticut Inn, 4400 Connecticut Avenue, N.W., Washington, D.C. 20008; Normandy Inn, 2118 Wyoming Avenue, N.W., Washington, D.C. 20008. We urge you to make your reservations as soon as possible. To assure acceptance of your reservation requests, please refer to the AFA National Convention.

The new Sheraton Washington Hotel.

Arrivals after 6:00 p.m. require a one-night deposit or major credit card number guarantee. Guaranteed reservations must be canceled by 4:00 p.m. on the date of arrival to avoid being charged for that night. We urge you to make your hotel reservations as soon as possible.

Convention activities will include AFA Opening Ceremonies, Business Sessions, luncheons honoring the Secretary of the Air Force and the Air Force Chief of Staff, Aerospace Education Foundation Awards Luncheon, the annual AFA Salute to Congress, Annual Reception, and the Air Force Anniversary Reception and Banquet. The Annual Reception and the black-tie pre-banquet reception will both be held in the newly expanded Sheraton Washington's 100,000 square foot Exhibit Halls which are already sold out.

ADVANCE REGISTRATION FORM

Air Force Association National Convention and Aerospace Development Briefing & Displays

September 14-18, 1980 • Sheraton Washington Hotel • Washington, D.C.

Type or Print

Name _____

Title _____

Affiliation _____

Address _____

City, State, ZIP _____

Note: Advance registration and/or ticket puchases must be accompanied by check made payable to AFA. Mail to AFA, 1750 Pennsylvania Ave., N.W., Washington, D.C. 20006.

Reserve the following for me:

☐ Advance Registrations @ $65 per person (includes credentials and tickets to the following Convention functions. Value $75.) AF Chief of Staff Luncheon; Annual Reception *OR* Salute to Congress;* AF Secretary's Luncheon $_____

Tickets may also be purchased separately for the following:

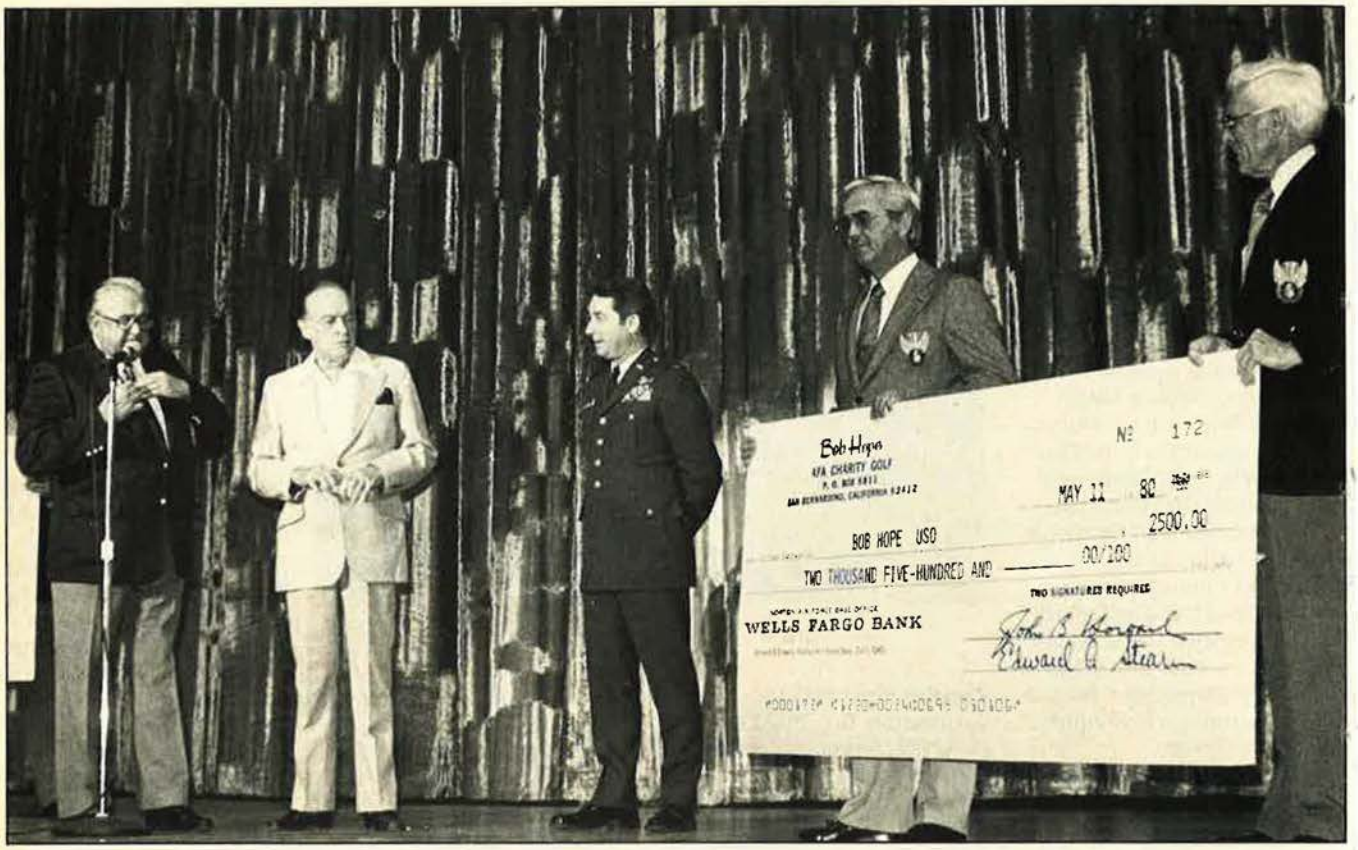
☐ Aerospace Ed. Foundation Luncheon @ $20 $_____
☐ Outstanding Airmen Dinner @ $40 $_____
☐ AF Chief of Staff Luncheon @ $25 $_____
☐ Annual Reception @ $25 $_____
☐ Salute to Congress* @ $25 $_____
☐ AF Secretary's Luncheon @ $25 $_____
☐ AF 33d Anniversary Reception and Dinner Dance @ $55 each $_____
Total for separate tickets $_____
Total amount enclosed $_____

Advance Registration Fee before September 5 — $65 (After September 5 — $75)
*Tickets to Salute to Congress available only to AFA Convention Delegates accompanied by their Congressman.

AFA NEWS

Chapter and State Photo Gallery

By Vic Powell, AFA AFFAIRS EDITOR



Two checks for $2,500 each were presented recently to Bob Hope during the Military Day portion of the National Orange Show. The checks represent advance proceeds from the Bob Hope AFA Charity Golf Tournament held at March and Norton AFBs, and are for the Jerry Pettis Memorial Veterans Hospital and for Bob Hope USO. The tournament is cosponsored by the Riverside and San Bernardino Chapters. Shown, from left to right, are Ed Stearn, President of California AFA; Bob Hope; Col. Duane Cassidy, Commander, 63d Military Airlift Wing, Norton AFB, one of the military hosts; Gene Moneymaker, Vice President, San Bernardino Chapter; and John Howard, General Chairman of the tournament.

Rep. John Ashbrook (R-Ohio), second from right, presented AFA Medals of Merit during a recent meeting of the Mid-Ohio Chapter, Newark, Ohio. Award recipients were Charles E. Skidmore, second from left, and Tony Skufca, right. At left is Roy Haberlandt, Chapter President. During his address Congressman Ashbrook predicted that the USSR will move against Morocco and Spain to gain control of the western Mediterranean.

CALENDAR OF EVENTS

Massachusetts State AFA Convention, August 9, Lexington . . . **Louisiana State AFA Convention,** August 9, Bossier . . . **Colorado State AFA Convention,** August 15–16, Boulder . . . **AFA Board of Directors Meeting,** September 14, Washington, D. C. . . . **AFA 34th Annual National Convention,** September 15–18, Washington, D. C. . . . **AFA Aerospace Development Briefings and Displays,** September 16–18, Sheraton Washington Hotel, Washington, D. C. . . . **AFA 1980 Symposium,** "America's Security in the '80s," Hyatt House Hotel, October 23–24, Los Angeles, Calif. . . . **Air Force Ball,** Century Plaza Hotel, October 24, Beverly Hills, Calif.

AFA National President Vic Kregel attended the recent Nevada State AFA Convention at Nellis AFB, Nev., and was presented the Key to the City of Las Vegas by Mayor William Briare, left. Las Vegas Chapter President Bob McLellan, right, reciprocated with a complimentary AFA membership for Mayor Briare.

Sen. Barry Goldwater (R-Ariz.), shown here with Mrs. Goldwater, served with Gen. Seth J. McKee, USAF (Ret.), as Honorary Chairmen of the Sky Harbor Chapter's Fifth Annual Arizona AFA Ball, attended by more than 250 members and guests, including leaders of the Air Force, AFA, and the Phoenix community. Mrs. John L. Hay III was Ball Chairman. Proceeds benefited Teresa Village, the Air Force Enlisted Men's Widows and Dependents Home, and the Arizona Kidney Foundation.

Sgt. Myra Jean Rowell, 28th Bomb Wing, Ellsworth AFB, S. D., a member of AFA's Rushmore Chapter, was selected recently as one of five people in South Dakota to receive the Jefferson Award for Public Service. Sergeant Rowell was cited for her volunteer work in finding housing for elderly people, helping needy airmen improve their housing, and providing transportation for the visually handicapped. The award is sponsored by television station KELO in Sioux Falls, S. D. Sergeant Rowell's selection makes her a nominee for the national Jefferson Awards program sponsored by the American Institute for Public Service. Making the presentation are AFA National Director Hoadley Dean, left, and Col. Alan Renshaw, Commander of the 28th Bomb Wing.

AFA NEWS PHOTO GALLERY

Four Air Force and three Navy JROTC units competed recently in the Second Annual Long Island JROTC Field Day sponsored by the Suffolk, N. Y., Chapter of AFA. Patchogue-Medford High School AFJROTC cadets captured all trophies in academic, athletic, and military events. Chapter President William Holecek, second from left, presented Scott Memorial Fellowship plaques to Col. Harry Hagenbrock, center, and to New York State Sen. Kenneth LaValle in appreciation of their cooperation with the Chapter and JROTC. At left is Rear Adm. Charles Scherier, USN (Ret.), an academic judge. At right is Lt. Col. David Hill, senior field judge.

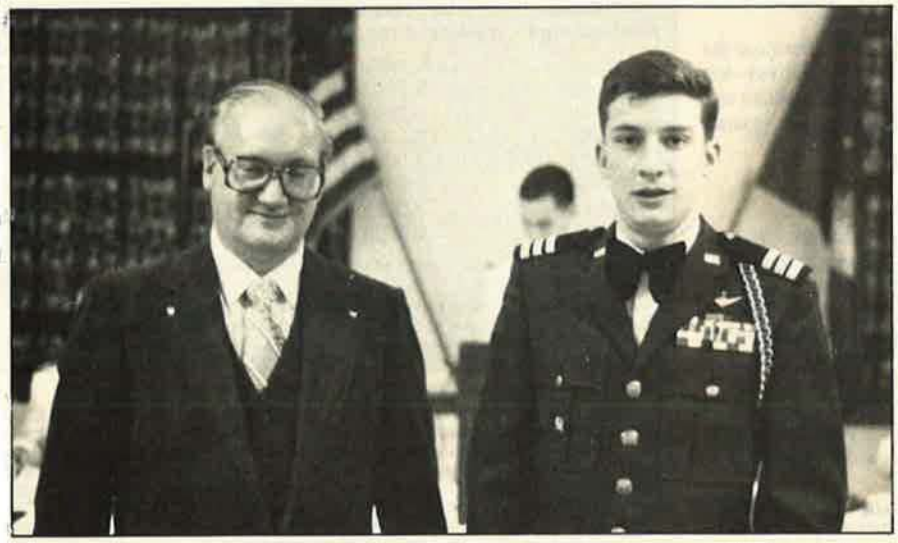
The Washington State AFA Community Service Award was presented by Air Force Secretary Dr. Hans M. Mark to the 3636th Combat Crew Training Wing, USAF Survival School, Fairchild AFB, Wash., during recent ceremonies at the state convention held at McChord AFB. Col. Leo D. O'Halloran, Jr., 3636th CCTW Commander, accepted the award, as ATC Airman of the Year Sgt. Lello Galassi, center, looks on. During the awards banquet, Colonel O'Halloran praised the close ties between AFA's Spokane Chapter and the Survival School.

Delaware Gov. Pierre S. du Pont, seated, recently signed a proclamation designating the Dover AFB Open House as Delaware Community Appreciation Day, in honor of Charles A. Legates, second from left, retiring mayor of Dover. Also present for the signing ceremonies were Col. Al Guidotti, left, Commander of the 436th Military Airlift Wing at Dover AFB; Jack Strickland, President of Delaware State AFA, second from right; and Deputy Base Commander Col. Paul A. Harvey.

Alamo Chapter President Jim Shutt presents the Texas State AFJROTC Drill Championship plaque to Cadet Maj. Deborah Egan, commander of the Blue Angels Drill Team of Judson High School, Converse, Tex. The award, sponsored by the Alamo Chapter, was won by the Blue Angels at the Texas Invitational AFJROTC Drill Meet at Lackland AFB.

Gladstone Shaw, Vice President of the Anchorage Chapter, presents a $200 check to Trudy Smith, volunteer coordinator for the Anchorage Special Olympics. The funds were donated to support the community's Special Olympics Bowling Tournament.

Maj. Gen. Patrick J. Halloran, Assistant DCS/Operations, Hq. SAC, recently addressed the Redwood Empire Chapter, Novato, Calif. General Halloran, an SR-71 pilot, spoke about the SAC mission and its reconnaissance activities. At left is Chapter President M. N. "Bud" Morss.



Irving Mednick, left, President of AFA's Brooklyn Key Chapter, recently presented the Association's AFROTC Award to Cadet Normand P. Long, a mechanical engineering major at Manhattan College. The presentation took place at a Dining-In and Awards Ceremony at the college.

ALMOST EVERYONE reads

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Insured's Attained Age	STANDARD PREMIUM: $10 per month Basic Benefit*	HIGH OPTION PREMIUM: $15 per month Basic Benefit*	HIGH OPTION PLUS PREMIUM: $20 per month Basic Benefit*
20-29	$85,000	$127,500	$170,000
30-34	65,000	97,500	130,000
35-39	50,000	75,000	100,000
40-44	35,000	52,500	70,000
45-49	20,000	30,000	40,000
50-54	12,500	18,750	25,000
55-59	10,000	15,000	20,000
60-64	7,500	11,250	15,000
65-69	4,000	6,000	8,000
70-74	2,500	3,750	5,000
Aviation Death Benefit*			
Non-war related	$25,000	$37,500	$50,000
War related	$15,000	$22,500	$30,000
Extra Accidental Death Benefit*	$12,500*	$15,000*	$17,500*

*The Extra Accidental Death Benefit is payable in addition to the basic benefit 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.

OTHER IMPORTANT BENEFITS

COVERAGE YOU CAN KEEP. Provided you apply for coverage under age 60 (see "ELIGIBILITY") your insurance may be retained at the same low group rates to age 75.

FULL TIME, WORLD WIDE PROTECTION. The policy contains no war clause, hazardous duty restriction, combat zone waiting period or geographical limitation.

DISABILITY WAIVER OF PREMIUM. If you become totally disabled at any time prior to age 60 for at least a 9-month period, your coverage will be continued in force without further payment of premiums as long as you remain disabled.

FULL CHOICE OF SETTLEMENT OPTIONS. All standard forms of settlement options, as well as special options agreed to by the insured and United of Omaha, are available to insured members.

CONVENIENT PAYMENT PLANS. Premium payments may be made by monthly government allotment (payable to Air Force Association), or direct to AFA in quarterly, annual or semi-annual installments.

DIVIDEND POLICY. AFA's primary policy is to provide maximum coverage at the lowest possible cost. Consistent with this policy, AFA has provided year-end dividends in all but three years (during the Vietnam War) since the program was initiated in 1961, and basic coverage has been increased on six separate occasions.

ADDITIONAL INFORMATION

Effective Date of Your Coverage. All certificates are dated and take effect on the last day of the month in which your application for coverage is approved, and coverage runs concurrently with AFA membership. AFA Group Life Insurance is written in conformity with the insurance regulations of the State of Minnesota. The insurance will be provided under the group insurance policy issued by United of Omaha to the First National Bank of Minnesota as trustees of the Air Force Association Group Insurance Trust.

EXCEPTIONS: There are a few logical exceptions to this coverage. They are:

Group Life Insurance: Benefits for suicide or death from injuries intentionally self-inflicted while sane or insane will not be effective until your coverage has been in force for 12 months.

The Accidental Death Benefit and Aviation Death Benefit shall not be effective if death results: (1) From injuries intentionally self-inflicted while sane or insane, or (2) From injuries sustained while committing a felony, or (3) Either directly or indirectly from bodily or mental infirmity, poisoning or asphyxiation from carbon monoxide, or (4) During any period a member's coverage is being continued under the waiver of premium provision, or (5) From an aviation accident, either military or civilian, in which the insured was acting as pilot or crew member of the aircraft involved, except as provided under AVIATION DEATH BENEFIT.

ELIGIBILITY

All members of the Air Force Association are eligible to apply for this coverage provided they are under age 60 at the time application for coverage is made.

*Because of certain restrictions on the issuance of group insurance coverage, applications for coverage under the group program cannot be accepted from non-active duty personnel residing in either New York or Ohio. Non-active duty members residing in Ohio, however, may request special application forms from AFA for individual policies which provide coverage quite similar to the group program.

OPTIONAL FAMILY COVERAGE
(new benefit schedule effective 6/30/80)
PREMIUM: $2.50 per month

Insured's Attained Age	Life Insurance Coverage for Spouse	Life Insurance Coverage for each Child*
20-39	$20,000.00	$4,000.00
40-44	15,000.00	4,000.00
45-49	10,000.00	4,000.00
50-54	7,000.00	4,000.00
55-59	5,000.00	4,000.00
60-64	3,000.00	4,000.00
65-69	2,000.00	4,000.00
70-75	1,000.00	4,000.00

*Children under six months are provided with $250 coverage once they are 15 days old and discharged from the hospital.

Upon attaining age 21, and upon submission of satisfactory evidence of insurability, insured dependent children may replace this $4,000 group coverage (in most states) with a $10,000 permanent individual life insurance policy with guaranteed purchase options.

Please Retain This Medical Bureau Prenotification For Your Records

Information regarding your insurability will be treated as confidential. United 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 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.

ALL AFA MEMBERS (under age 60)

APPLICATION FOR
AFA GROUP LIFE INSURANCE

United of Omaha

Group Policy GLG-2625
United Benefit Life Insurance Company
Home Office Omaha Nebraska

Full name of member _____
Rank Last First Middle

Address _____
Number and Street City State ZIP Code

Date of birth (Mo. / Day / Yr.)	Height	Weight	Social Security Number

This insurance is available only to AFA members

☐ I enclose $13 for annual AFA membership dues (includes subscription ($9) to AIR FORCE Magazine). Please send membership application.

☐ I am an AFA member.

Name and relationship of primary beneficiary

Name and relationship of contingent beneficiary

Please indicate below the Mode of Payment and the Plan you elect.

Mode of Payment	Plan of Insurance: Standard Plan		High Option Plan		High Option PLUS Plan	
	Member Only	Member And Dependents	Member Only	Member And Dependents	Member Only	Member And Dependents
Monthly government allotment (only for military personnel). I enclose 2 month's premium to cover the necessary period for my allotment (payable to Air Force Association) to be established.	☐ $ 10.00	☐ $ 12.50	☐ $ 15.00	☐ $ 17.50	☐ $ 20.00	☐ $ 22.50
Quarterly. I enclose amount checked.	☐ $ 30.00	☐ $ 37.50	☐ $ 45.00	☐ $ 52.50	☐ $ 60.00	☐ $ 67.50
Semi-Annually. I enclose amount checked.	☐ $ 60.00	☐ $ 75.00	☐ $ 90.00	☐ $105.00	☐ $120.00	☐ $135.00
Annually. I enclose amount checked.	☐ $120.00	☐ $150.00	☐ $180.00	☐ $210.00	☐ $240.00	☐ $270.00

Names of Dependents To Be Insured	Relationship to Member	Dates of Birth Mo. Day Yr.	Height	Weight

Have you or any dependents for whom you are requesting insurance ever had or received advice or treatment for: kidney disease, cancer, diabetes, respiratory disease, epilepsy, arteriosclerosis, high blood pressure, heart disease or disorder, stroke, venereal disease or tuberculosis? Yes ☐ No ☐

Have you or any dependents for whom you are requesting insurance been confined to any hospital, sanatorium, asylum or similar institution in the past 5 years? Yes ☐ No ☐

Have you or any dependents for whom you are requesting insurance received medical attention or surgical advice or treatment in the past 5 years or are now under treatment or using medications for any disease or disorder? Yes ☐ No ☐

If YOU ANSWERED "YES" TO ANY OF THE ABOVE QUESTIONS, EXPLAIN FULLY including date, name, degree of recovery and name and address of doctor. (Use additional sheet of paper if necessary.)

I apply to United 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

FORM 3676GL App. REV. 10-79

Application must be accompanied by a check or money order. Send remittance to:
Insurance Division, AFA, 1750 Pennsylvania Avenue, NW, Washington, D.C. 20006 8/80

Bob Stevens'

"There I was..."

INSTRUMENT TRAINING IS A *REAL* PAIN - PARTICULARLY WHEN IT'S HOT, THE HOOD DOESN'T FIT RIGHT, THE AIR'S BUMPY and YOU'RE INVOLVED IN THE ULTIMATE EXERCISE OF BOREDOM - HOLDING PATTERNS.

A C-45 CREW IS STACKED IN A PATTERN NEAR THE TOP - THE WEATHER'S CLEAR.

DISCRETION BEING THE BETTER PART OF VALOR, 107 PULLS OUT, DESCENDS, and LANDS VFR.

AND WHILE THE CO-PILOT STAYS ON THE HORN & GIVES THE APPROPRIATE ANSWERS TO APPROACH, THEY LOAD UP WITH FUEL & COKES...

REFRESHED and REFUELED, THEY TAKE OFF, RE-ENTER THE STACK JUST IN TIME TO HEAR:

After the "all clear," Bendix says "all clean."

Today's Air Force knows the threat of surface chemical contamination. So they're taking appropriate action to safeguard themselves. And Bendix has been enlisted to help.

We're developing a Surface Contamination Module (SCM) to monitor surfaces such as aircraft, vehicles and roads, buildings and ground, as well as clothing—including CB protective gear—for liquid and vapor contamination. The hand-held unit detects and alarms the operator of chemical agents. It will also verify the effectiveness of decontamination on these surfaces.

The United States Air Force awarded a contract to develop the SCM to Bendix. And because of our commitment to defense, we're designing it to detect all known nerve agents and various other chemical agents.

The SCM is just one of the chemical agent detectors Bendix is developing for the safety and protection of U.S. forces around the world. Bendix also makes the M8 and M256 detectors and is working on the BDWS, ACADA and ALAD sensors for the future. At Bendix we're helping to do more than just sound the "all clear." We're helping to ensure the safety of the entire free world.

For more information about the SCM, write The Bendix Corporation, Environmental and Process Instruments Division, 1400 Taylor Avenue, Baltimore, Maryland 21204, or call (301) 321-5200.

We speak *sensor* technology.

Bendix

The KC-10 rolls out... to double the reach of rapid deployment.

The Air Force's new KC-10 Extender advanced tanker cargo aircraft is on its way to active duty. With it, our fighter squadrons and their support equipment will soon be able to go almost any place on earth without regard to enroute basing or overflight rights. The KC-10 refueling capability nearly doubles the non-stop reach of a fully-loaded C-5 transport.

The KC-10 can deliver 200,000 pounds of fuel as far as 2,200 statute miles and return to its takeoff point. With its advanced, longer boom, it can refuel other aircraft at rates up to 1,500 gallons per minute.

Or, the KC-10 can carry 170,000 pounds on its huge cargo deck more than 4,400 statute miles on a cargo mission.

Global security is dependent on America's ability to deploy tactical forces to trouble spo at a moment's notice. The KC-10 is a valuable new extension of Free World defense.

KC-10 Extender

MCDONNELL DOUGLAS