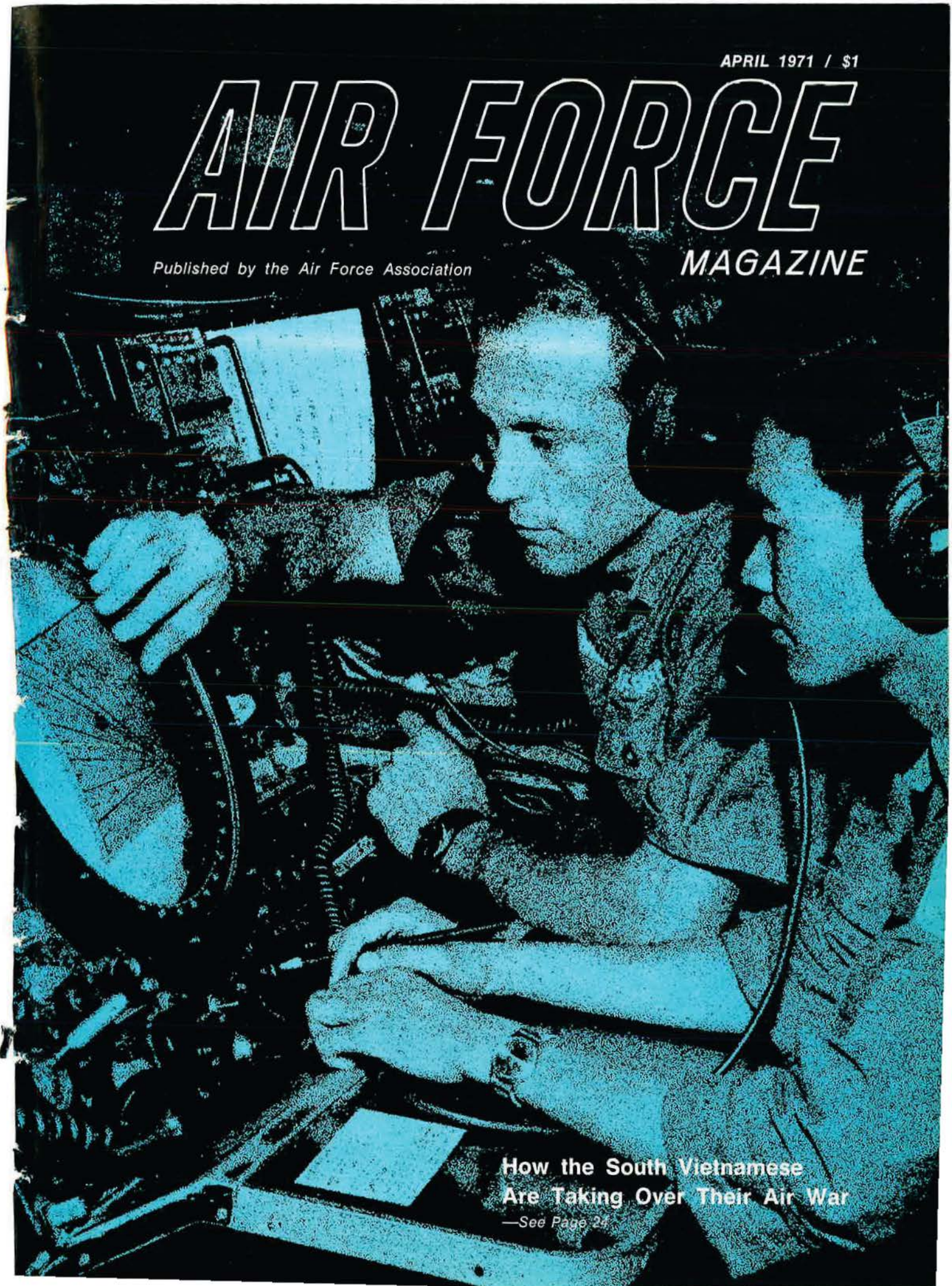
APRIL 1971 / $1

# AIR FORCE MAGAZINE

Published by the Air Force Association



**How the South Vietnamese Are Taking Over Their Air War**

—See Page 24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AIR FORCE MAGAZINE

Published by the Air Force Association

VOLUME 54, NUMBER 4

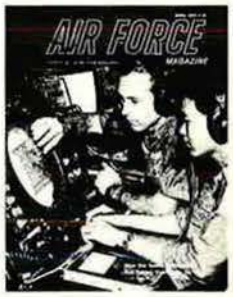
APRIL 1971

## THIS MONTH



**THIS MONTH'S COVER . . .**

*depicts USAF training of Vietnamese Air Force personnel in the complex business of plotting unidentified aircraft and running air intercepts. See page 24 for a special report on Vietnamization.*




## THE DEPARTMENTS





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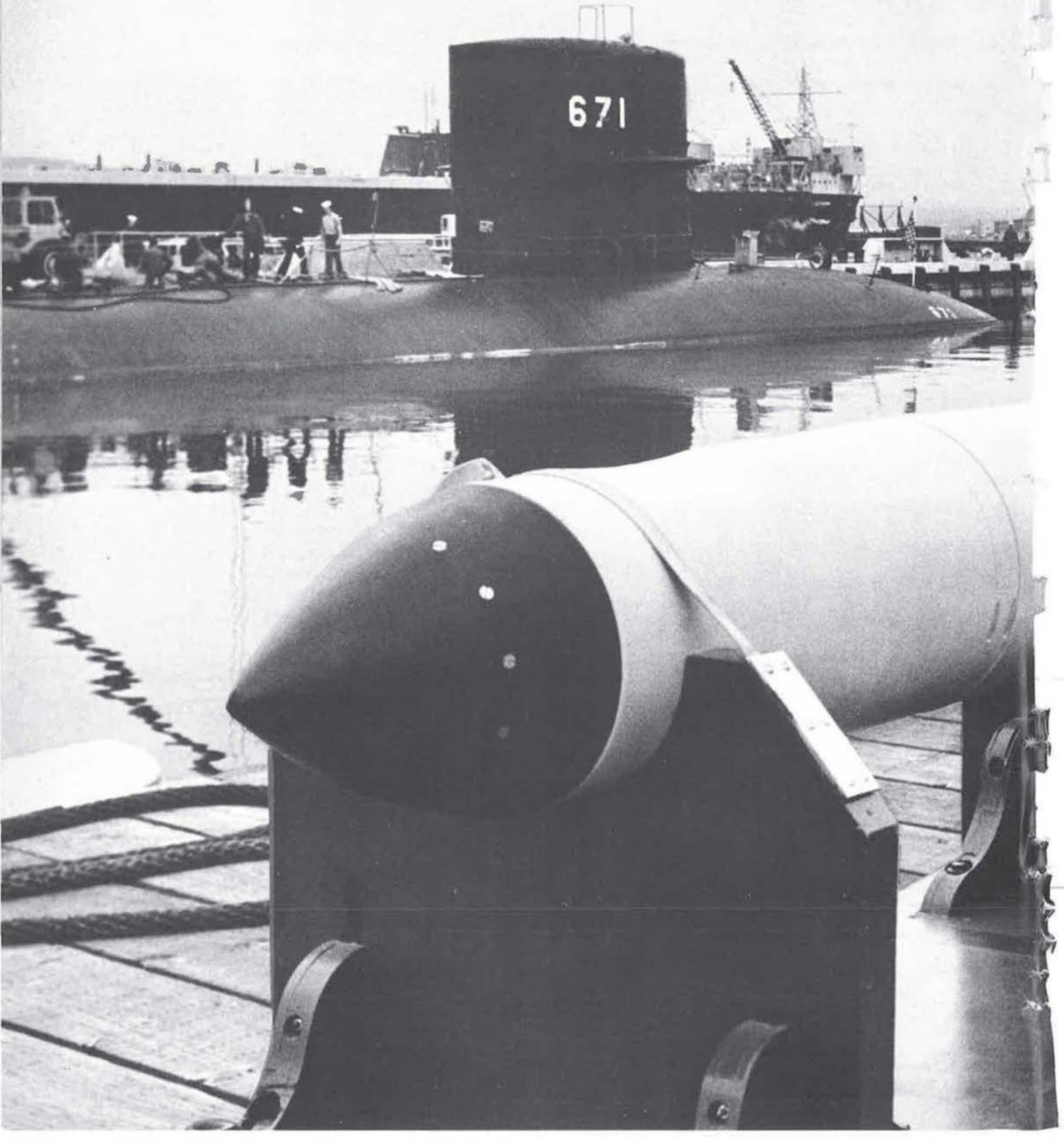
# We said we could build a
# from torpedo tubes.
# *When we say it, we*



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GOODYEAR AEROSPACE

## An Editorial

# 'Realistic Deterrence'

By John L. Frisbee
SENIOR EDITOR, AIR FORCE MAGAZINE

TOWARD the end of February and early in March, two documents that define the purpose and the proposed stature of US armed forces made their annual appearance. The first was President Nixon's February 25 Foreign Policy Message to the Congress; the second, Secretary of Defense Melvin R. Laird's Posture Statement, presented to the House Armed Services Committee on March 9.

By its nature, the Foreign Policy Message was less specific, more philosophical than the Posture Statement. Nevertheless, since foreign policy and security policy are two sides of a single coin, the President's discussion of foreign policy had a high security content.

We do not propose to comment here on the political aspects of the foreign policy statement, which have been covered extensively by the media. But the President did give some answers to questions about security policy and strategy. Not all of the answers are new, but they are important because it is the President speaking.

Early in his Administration, Mr. Nixon adopted "sufficiency" as the criterion for measuring defense requirements. The question has been, "Sufficiency for what?" Expanding somewhat on the discussion of sufficiency in his 1970 "State of the World" message, Mr. Nixon said:

"In its narrow military sense, sufficiency means enough force to inflict a level of damage on a potential aggressor sufficient to deter him from attacking. . . . In its broader political sense, sufficiency means the maintenance of forces adequate to prevent us and our allies from being coerced. Thus the relationship between our strategic forces and those of the Soviet Union must be such that our ability and resolve to protect our vital security interests will not be underestimated. . . . It would be inconsistent with the political meaning of sufficiency to base our force planning solely on some finite—and theoretical—capacity to inflict casualties presumed to be unacceptable to the other side."

Elsewhere in his statement, the President made it clear that sufficiency is "defensive in its essence" and was adopted in lieu of an attempt to regain our lost strategic superiority. "The United States and the Soviet Union," Mr. Nixon said, "have now reached a point where small numerical advantages in strategic forces have little military relevance. The attempt to obtain large advantages would spark an arms race which would, in the end, prove pointless."

It follows from the President's definition of sufficiency and his rejection of strategic superiority that sufficiency is synonymous with strategic parity. Given the present mood of the country, strategic parity probably is the best that can be hoped for. Certainly it is not the best base from which to negotiate with our adversaries on issues where national interests conflict. It is tempting to ask whether the current fervor for negotiating may not, in fact, be a product of the US retreat from strategic superiority to parity. But let that pass. We can agree that under all but the most adverse circumstances it is better to negotiate than to drop nuclear weapons on each other and, at this point in time, we're far from the nadir of adversity.

Strategic parity bears a price tag, as was pointed out in this magazine's editorial last October. It opens the door to aggression by conventional military forces. If the United States intends to remain a world power—and the foreign policy statement gives every evidence that it does—then the US must maintain large, modern, and diversified general purpose forces. That fact of life is recognized by the Administration. To quote from the foreign policy paper:

"The change in the strategic situation in recent years profoundly enhances the importance of our general purpose forces . . . which now play a larger role in deterring attacks than at any time since the nuclear era began." General purpose forces thus are recognized for what they are: a now-indispensable part of the deterrent and not a tempting springboard for military adventurism, as some would have us believe. Recognition by the President of this fact of national security life is the good.

The Foreign Policy Message also exorcises a few specters that have, perhaps unnecessarily, been haunting some defense planners. One is the idea of a strategic deterrent based entirely at sea—a frivolity offered by some pundits who are shopping in the bargain basement for a cheap national security package. Mr. Nixon firmly endorsed continuation of the deterrent triad of land- and sea-launched missiles and bombers.

He also supported what might be called a general purpose triad when he observed that the Soviet Union's strong, balanced, mobile, conventional capability "requires us to maintain balanced and mobile ground, sea, and air forces capable of meeting challenges to our worldwide interests." We are not going to turn to a

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## An Editorial

blue-water strategy with the bulk of our tactical airpower at sea.

The most intriguing item in the Foreign Policy Message is a short paragraph buried in the discussion of strategic policy and forces. This paragraph, headed "Flexibility—The responses available to us," says:

"We have reviewed our concepts for responses to various possible contingencies. We must insure that we have the forces and procedures that provide us with alternatives appropriate to the nature and level of the provocation. This means having the plans and command and control capabilities necessary to enable us to select and carry out the appropriate response without necessarily having to resort to mass destruction."

With the increased size and sophistication of Soviet strategic forces, the USSR is approaching a point where a less-than-all-out attack on the US for the purpose of coercing this country—rather than of disarming or destroying it—may be operationally feasible. An American President must have strategic options other than the senseless one of retaliatory mass destruction, if such an attack is to be deterred or countered.

Airmen have long recognized that selective, carefully controlled, strategic operations eventually could be a feasible alternative to indiscriminate nuclear warfare—an alternative whose use against us by an aggressor could be deterred only by an ability to play the same game better than he.

Today the Air Force is the only service that has this ability. The Air Force capability lies in SAC's real-time reconnaissance systems, its missile and bomber delivery accuracies, its secure communications, its command and control devices and procedures, its experience in strategic planning, and its seasoned battle staffs.

The flexibility of response advocated by the President could best be achieved by assigning all of the country's strategic forces under the operational control of a single unified command—and that could only mean under the Strategic Air Command.

On March 9, the Secretary of Defense outlined in his Posture Statement the force structure, R&D options, and strategy that will support our foreign policy. Mr. Laird described the strategy as "a new National Security Strategy of Realistic Deterrence." He explained the novelty of the strategy in this way: "Past policy was responsive and reactive. Our new Strategy is positive and active. Past policy focused on containment and accommodation. The new Strategy emphasizes measured, meaningful involvement and vigorous negotiations from a position of strength."

While the distinction between the old and new strategies may be a bit subtle—unless one goes back quite a few years for comparisons—the program presented by Mr. Laird reflects the Administration's judgment that current defense programs meet the criterion of sufficiency. This may well be true for the moment, but we do not believe that judgment will hold up very long unless the strategic defensive area gets more attention than the statement promises. Our already creaky air defenses, the Secretary reported, will be further reduced, primarily in the category of surface-to-air missiles.

Mr. Laird's Posture Statement contains few surprises, but it does indicate many open options that can be taken up if the SALT talks fail, and if the Soviets continue to improve and expand their forces. Among these options are familiar R&D programs: B-1, ULMS, AWACS, over-the-horizon radar, and A-X, to name a few. There is a modest increase in R&D funds in general, and for exploratory work in particular.

A major contribution to putting the defense picture in perspective is Secretary Laird's data that spells out in irrefutable fashion the shift in national priorities that has taken place over the last four years. In the period between the 1968 and 1972 budgets, federal, state, and local spending for nondefense purposes increased by more than $100 billion, while defense spending declined by $2 billion. In the same period, the percentage of our GNP spent for defense dropped from 9.5 percent to 6.8 percent. The share of the federal budget devoted to defense decreased from 42.5 percent to 32.1 percent. These figures should—but probably won't—take some wind out of the sails of domestically oriented opponents of military preparedness, who still insist that considerably more than half of the federal budget goes for arms and the men behind them. They are pretty windy people.

The President's foreign policy statement and Mr. Laird's five-year defense program are geared closely to the time—a time when future Soviet and Chinese military developments and intentions are uncertain, when our presence in Southeast Asia is rapidly diminishing, when our allies are increasingly able to manage or contribute more to their own defense, and a time when at home there is more enthusiasm for domestic than for external programs.

The defense program is not an optimum one. Particularly, we would like to see more funding for advanced research. But the new weapon-system options provide enough flexibility to meet likely contingencies. It is, in fact, a better program than we might have hoped for a year ago. ■

*Defense Secretary Laird carried the "big book" —the Defense Posture Statement —with him as he prepared for a closed-door session with the House Armed Services Committee. His theme: realistic deterrence.*

—Wide World Photos

# Airmail

**Comments for February**

*Gentlemen:* Just a brief note to let you know how much I enjoyed [Jack Loosbrock's] reminiscent column in the February issue. Certainly . . . AFA has spanned a critical time in American history, and the immediate future promises even more important decisions.

Our nation owes much to the Air Force Association for its continued support and leadership in maintaining our aerospace strength, and you may properly take pride in the role . . . played over the past quarter century to keep our strength a reality. . . .

LT. GEN. JAMES T. STEWART
Commander
Hq. Aeronautical Systems Division (AFSC)
Wright-Patterson AFB, Ohio

*Gentlemen:* Congratulations on a truly outstanding Twenty-fifth Anniversary edition of AIR FORCE Magazine.

Your "new look" has enhanced the Magazine's readability and appeal at least a thousand percent.

MAJ. HAROLD SCHWARTZ
Maxwell AFB, Ala.

*Gentlemen:* Reference your new type, design, etc. Good! I like it! I like it!

LT. COL. OCTAVIO JORDAN
Director of Information
Hq. Aerospace Cartographic & Geodetic Service (MAC)
Forbes AFB, Kan.

*Gentlemen:* Read Jack Loosbrock's "Milestones and Minutiae" reminiscenses, and much of the other material, in the fine Twenty-fifth Anniversary issue of your magazine.

. . . an inside account of a most interesting enterprise, a good quick rundown of some pretty high highlights. . . .

Congratulations on the anniversary, and on weathering it so well. I'm happy to have known you all for nineteen of AFA's first twenty-five years.

VERN HAUGLAND
Associated Press
Washington, D.C.

*Gentlemen:* "Milestones and Minutiae," in the February issue, was thoroughly enjoyed. I, as a charter member of the AFA, was particularly impressed by the following paragraph: "If there is a hallmark of the Air Force Association and, I hope, of AIR FORCE Magazine as well, it is this ability to keep pace with the fast flow of events, to anticipate the issues that are important to us, and to react quickly and positively to them."

That "hallmark" is a fact, not just a wish, in my opinion. . . .

COL. HARRY D. COPELAND, USAF (RET.)
Ft. Lauderdale, Fla.

**New Feature**

*Gentlemen:* I am happy that you have added Jane's Supplements to AIR FORCE Magazine. I have missed this feature since *Flying Review International* became defunct. I do hope that you will soon see fit to make it a monthly feature.

LT. COL. SEMORE T. NATHNESS, USAF (RET.)
Dayton, Ohio

**Coed Cadets**

*Gentlemen:* . . . your Silver Anniversary article on Education (*page 63 ff*) missed a golden opportunity to emphasize the new dimension in Arnold Air Society membership—female cadet membership. The three WAF cadets pictured on page 64 *are active members of the Arnold Air Society and are cadet members of the Air Force Association.* As members of the limited two-year test program that began in 1969, they will soon be commissioned and enter active duty. Now the four-year program is also being offered to coeds on many campuses.

Perhaps you will readily agree with me that Susan A. Orkins, Callie C. Cramer, and Loretta J. Mullin (left to right) easily maintain the beauty quotient traditionally associated with Angel Flight. The approving cadet in the cockpit is now Lt. Larry S. LeMaster.

COL. ROBERT P. MOODY
Professor of Aerospace Studies
The Ohio State University
Columbus, Ohio

**The Archetype Pilot**

*Gentlemen:* I have received quite a bit of mail from old friends, and total strangers, too, on the article I wrote for the January issue ["All Together, They Spell EXPERT"]. . . . I've been asked by many who the WW II commander was (or is) I described rather glowingly, in contrast to some of the horrible examples in the piece.

Well, he is Don Blakeslee—Col. D. J. M. Blakeslee, USAF, now retired.

World War II produced some superb squadron, group, and wing commanders. But in my view, if Don wasn't the best, he certainly was one of the top two or three. And, of course, he's damn good-looking, too. Most of his stewardship was with the 4th Fighter Group, Eighth Air Force (motto: Fourth but First). And if you want to read how great he was, get a copy of *1,000 Destroyed*, by Grover Hall, the group's IO.

*This Air Force Art Collection portrait of Col. Don Blakeslee is by Frank E. Beresford.*

Except for the Medal of Honor, Don has about every decoration the US and its allies gave out. He had as many clusters on his Distinguished Service Cross and Silver Star as most guys have on their Air Medals. He deserved them.

I always felt a little humble around Don; sort of like Eisenhower must have felt around Patton (if I may reach that high for a comparison). But he was a fine subordinate commander and staff officer—and modest about his accomplishments to a flaw. . . . I regard him as an extremely fine man and an outstanding officer, to whom America owes a lot, and one I'm proud to call a close friend.

In comparing myself to Don, I've often thought they gave the stars to the wrong man. But I guess Don

# Airmail

couldn't care less. He knows he did a jolly good job in the war. So do a lot of other just plain folks. And brother, that's what counts!

MAJ. GEN. PERRY B. GRIFFITH, USAF (RET.)
Redlands, Calif.

**Recce Types Too Modest**

*Gentlemen:* Unfortunately for the tactical reconnaissance crews of the Vietnam conflict, and of all wars in the past in which aerial reconnaissance has played a role, there has not been an historian/author who has been able to catch, on paper, the spirit, élan, courage, pride, reticence, sense of true accomplishment, or the very human fears that the recon crews display in their profession. . . .

There are lots of missions that could be described that would depict the recce type as his true self, a skillful combat man and hero of the spectacular kind. I can think of one mission where two '101 crews dodged eighteen missiles on the way *in* to their target and got back with the requested intelligence. Of course, when they *tell* it, you'd think that sort of thing happened every day.

As for Glenn Infield's article, "Get Out, Jack! You're Burning!" [February issue], it lacks a great deal of accuracy in its description of the mission purpose, the number of aircraft involved, and leaves out entirely the headquarters planning and scheduling that created a situation for the recce pilot that eliminated the element of surprise that he depends on so much.

Thus, Jack and those crews who preceded him knew before arrival in the target area that the NVN gunners were waiting. Weather prevented the crews who preceded Weatherby from acquiring the target.

Knowing the odds but not even considering them a deterrent was typical of Jack and made him one of the best recce types. This characteristic is picked up quite well in Mr. Infield's article and is one of many that typify the recce crew.

Hopefully, someday, an historian/author will be able to gather it *all* together and present it in one of those soul-gripping types of books that dominate so many other subject areas. Perhaps Infield will do a sequel to *Unarmed and Unafraid.*

JIM MURPHY
Ex Recce Pilot
Durango, Colo.

**Rivers Memorial**

*Gentlemen*: On December 28, 1970, the armed services lost a true and noble friend, a statesman who—in his short span, without actual service—did more to improve the individual stature and prestige of the serviceman than anyone in or out of service.

How, in a small way, can we commemorate this leader? Two suggestions:

1. A donation to the L. Mendel Rivers Fund for Heart Research, University of Alabama Medical Center Hospital, Birmingham, Ala., Attn: Dr. John Kirklin. This is the facility which did its very best to correct Mr. Rivers' heart condition.

2. The L. Mendel Rivers Library at the Baptist College at Charleston, S.C., which was established five years ago. Mendel Rivers was proud of this. Its library fund needs augmentation. Can you help? Your donation is tax deductible.

Each of us feel the loss of L. Mendel Rivers, yet his efforts remain with us—a lucky gremlin on our shoulder.

CHARLES G. BOTSFORD
Washington, D.C.

**Letter From Romania**

*Gentlemen*: I wanted to share some additional responses to my article in the August 1970 issue, "An Airman Returns to Romania." You may remember that I mentioned one of our gunners, John Diviney, who broke his back and had to be left in the hospital at Costesti. Several months ago I received a letter from Diviney's widow. He died seven years ago. She had read the article and wanted me to write the details of our fatal mission for the benefit of their four sons. I was only too glad to do so.

Something even more fantastic occurred a couple of months ago. In the article I stated that the biggest disappointment of my trip was in being unable to find Lucy Dimitru, a young Romanian who befriended us at Costesti. She wanted to be a doctor, and gave Diviney a lot of personal care while he was there.

My last night in Bucharest, the young university student who was my guide on the trip to Costesti brought to our hotel an old man who had several nieces and nephews who had grown up in Costesti. He brought one of them along—a schoolteacher now living in Bucharest, who was eleven at the time but remembered us very well. He took my name and address, and said he would try to locate Lucy.

Then, this past November, a letter came from Lucy, bearing my correct address, right down to the zip code. She said, "A year after you were here I finally have your address." She had heard that my wife and I had been to Romania and were looking for her, but was clever enough not to say exactly how the information got to her. She is a pediatrician, or, as she put it, "a children's physician," living in Ploesti. She is now forty-four years old, married, and has two children. She asked about Diviney and my pilot, Lombardi.

I have now had two letters from her. Naturally, my letters to her contain nothing but good about my visit to Romania. I don't know how much of the mail is censored, but don't want to take any chances.

KENNETH D. BARNEY
Houston, Tex.

## UNIT REUNIONS

**"River Rats"**

The Red River Valley Fighter Pilots Association reunion will be held May 7–9, in San Diego, Calif. (host: Miramar NAS). For application contact

Capt. George Vipond
18 Erwin
Nellis AFB, Nev. 89110

**Thunderbolt Pilots**

The 10th Annual Reunion of the P-47 Thunderbolt Pilots' Association will be held May 1–4, 1971, at the Antlers Plaza Hotel, Colorado Springs, Colo. For information contact

Herb Fisher, President
Port of New York Authority
111 Eighth Ave. (Rm. 1409)
New York, N.Y. 10011
Phone: (212) 620-8396

**World War I Overseas Flyers**

A group of WW I overseas flyers has announced plans for a reunion in Washington, D.C., on April 16–17, 1971. The Committee Chairman has accumulated a list of more than 500 men who flew with the AEF in 1917–18 in France, Italy, and England, either as pilots or observers. It is believed there are numerous flyers from WW I still living who would like to swap stories with old friends. Those interested and qualified are invited to write, giving their rank and overseas flying service, to

Ira Milton Jones
P.O. Box 2016
Milwaukee, Wis. 53201
Phone: (414) 276-4210

**366th Tactical Fighter Wing**

"The Gunfighters" of the 366th Tac Fighter Wing are having their second Practice Reunion for all officer members, in Tampa, Fla., April 30–May 2, 1971. All members, past and present, are requested to write for details and submit their address to

Capt. William S. Paul
GUNFIGHTERS
Box 6586
MacDill AFB, Fla. 33608

# SCIENCE/SCOPE

The successful launch of the Intelsat IV spacecraft will greatly expand the capacity and flexibility of the present Intelsat global system. Built by Hughes under the direction of Comsat for the International Telecommunications Satellite Consortium, the satellite has a communications capacity more than seven times as large as the presently operational Intelsat III satellites and more than 35 times as great as Early Bird, world's first commercial satellite, launched six years ago.

Two steerable dish antennas on the satellite are unique features which can focus power into "spotlight" beams to provide heavy traffic areas on both sides of the Atlantic with stronger signals and more channels. Intelsat IV has a capacity of approximately 9,000 telephone circuits, or 12 simultaneous color television programs, or tens of thousands of teletype circuits, or any combination of these.

U.S. Air Force B-52 crews will be able to fly "blind" night or day with the FLIR (Forward-Looking Infrared) system Hughes is developing under contract with Boeing's Wichita, Kans. division. FLIR produces a TV-like image on a cockpit display from thermal radiation of ground objects. It is one of the sensors that will be installed in the B-52 G and H series under the EVS (Electro-Optical Visual Sensors) program. Hughes' contract could lead to production of more than 300 FLIR systems.

The Law Enforcement Assistance Administration, Department of Justice, has contracted with Hughes for a 13-month research study of police problems in handling crowds and demonstrations. Systems engineers are reviewing the causes and results of past disturbances to gain a better understanding of patterns and responses. Purpose is to recommend tactics, equipment, and training for future command-and-control systems adapted to the specific requirements of civilian police departments.

The mission of the three Orbiting Solar Observatory satellites Hughes will build for NASA's Goddard Space Flight Center is to gain a better understanding of how energy is transported from the sun's photosphere into its corona. Key task is to learn the secrets of the chromosphere, where the unexplained solar flares erupt. It is an irregular layer of gases extending outward from 3,000 to 10,000 miles and varying in temperature from less than 10,000°C to more than 100,000°C. The new satellites will require a spatial resolution capability nearly 20 times greater than that of earlier OSOs.

Structural dynamists have developed an automated computer-controlled system for modal vibration testing of virtually any structure with resonant frequencies ranging from 0.75 Hertz to 800 Hertz. Called MODAPS (for Modal Data Acquisition and Processing System), the Hughes-built system cuts testing costs 50 percent. Current applications include modal testing of models and prototypes of spacecraft and aircraft parts, such as wing structures, empennages, and panel assemblies. Additional uses for MODAPS are earthquake model modal testing of buildings, bridges, and dams.

A digital automatic flight-control system for the U.S. Air Forces's F-106 -- the first of its kind -- will consist of one small solid-state electronic unit weighing 15 pounds, which will replace eight vacuum-tube units currently in use. Designed by Hughes to increase reliability tenfold and decrease weight by 75 pounds, the new system will serve as an "interface" between the F-106's control surfaces and a new solid-state computer built by Hughes and recently installed in the F-106.

# Airpower in the News

**By Claude Witze**
SENIOR EDITOR, AIR FORCE MAGAZINE

## The Wayward Press (Tube Div.)

WASHINGTON, D.C., MARCH 15, 1971

The winter issue of the *Columbia Journalism Review,* a quarterly published at the Columbia University Graduate School of Journalism, is devoted almost entirely to a study of how the press has performed in covering the war in Vietnam. The only possible conclusion a reader of these eight essays can reach is that the press has done a deplorable job. No matter what epithets you might want to hurl at the political administrations in Washington and Saigon, at the military hierarchy, at the military-industrial complex, and at the doves or the hawks, even more heated epithets could justifiably be thrown at the purveyors of ink and electronic signals.

There is one examination of television's performance, written by Fred W. Friendly, a former president of CBS News, who indulges in a bit of self-flagellation, confessing that the "news media, and particularly broadcast journalism" must share the responsibility for public misunderstanding of the situation in Indochina. Speaking of the years when he, Friendly, was the man in charge at CBS, he says, "The mistakes we made in 1964 and 1965 almost outran those of the statesmen."

One thing missing from Mr. Friendly's recitation is any suggestion that the television medium lends itself in a peculiar way to distortion of fact. This reporter has nearly forty years of experience on newspapers and magazines, including more than a decade operating from the copy desk of a metropolitan daily. Television news was born and brought up within that same forty-year period. I have watched it closely and confess that I never was impressed by its impact until Lee Harvey Oswald was murdered on camera. No newspaper or magazine ever will duplicate that 1963 performance in Dallas. Yet, if I saw it today, I would demand confirmation that the event took place at all and that what we saw on the tube was not a clever compilation of film clips, snipped from a wide variety of source material and glued together to make a visual product that could be marketed to some huckster of toothpaste or gasoline, and then turn out to be a winner of the Peabody Award.

In support of this professional skepticism, we have the performance of Mr. Friendly's own CBS on February 23. The program was billed as a "News Special" and was called "The Selling of the Pentagon." It ran for one hour, with commercials, and featured a recitation of the script by CBS's charismatic Roger Mudd. Mr. Mudd did not write the script; he was burdened with it. The show's producer works in New York. He is reported to be thirty-four-year-old Peter Davis, who says he and his staff spent ten months working on this "documentary." Mr. Davis does not appear to make any claim to objectivity in his work. He is making a charge: that the Department of Defense spends a vast amount of money on propaganda designed to win public approval of its programs. Armed with cameras, scissors, and cement, he proceeded to make his case.

This magazine has neither the space nor the desire to do a detailed critique of "The Selling of the Pentagon," but we have examined enough of it to demonstrate that it leaves CBS with a credibility gap wider than the canyons at Rockefeller Center. Here is an example:

At one point, early in the script, Mr. Mudd, the narrator, transitions to a new sequence in Mr. Davis' portrayal with a paragraph of four sentences. We will examine the sentences one at a time:

MUDD: "The Pentagon has a team of colonels touring the country to lecture on foreign policy."

The team to which he refers comes from the Industrial College of the Armed Forces (ICAF), with headquarters here in Washington. There are four colonels on the team —two from the Army and one each from the Air Force and the Marine Corps. There is also a Navy captain, and, totally ignored by CBS, a foreign-service officer from the State Department. They are not "touring the country." They have a briefing on national-security policy that is given seven times a year, no more and no less. ICAF is not mentioned in the CBS script, and there is no reference to the mission of the college. A TV cameraman who visited the school could easily take a picture in the lobby of a wall inscription that says:

"Our liberties rest with our people, upon the scope and depth of their understanding of the nation's spiritual, political, military, and economic realities. It is the high mission of the Industrial College of the Armed Forces to develop such understanding among our people and their military and civilian leaders."

The quote is attributed to Dwight D. Eisenhower, who spoke those words at the dedication of the college in 1960. He understood the requirement, perhaps more clearly than any other man in our history.

The ICAF national-security policy briefing is designed for the education of Reserve officers from all branches of the armed forces, not primarily for the general public. The reason the team, including the State Department officer, gives it in seven locations each year is to reduce travel expenses by eliminating the necessity for Reserve officers to visit the college. None of this was explained by CBS.

MUDD: "We found them [the ICAF team] in Peoria, Ill., where they were invited to speak to a mixed audience of civilians and military Reservists."

*Roger Mudd, veteran newscaster for CBS-TV, served as narrator for "The Selling of the Pentagon." He did not prepare the script, but recited it after it had been prepared in New York. Mr. Mudd has had no wide experience covering the Pentagon or the military.*

Here we have a use of the word "found" that would not be permitted by a competent newspaper copy editor. CBS was told that Peoria was on the schedule, and the CBS camera crew spent three days at the seminar in that city with the concurrence and cooperation of the Defense Department, the ICAF, and the Peoria Association of Commerce. Before departing, CBS was given full information on the curriculum, the scheduling, the military and civilian participation, the costs, and the funding. The Association of Commerce was the sponsor, in this case, and was permitted to establish the rules under which civilians were admitted. Their seminar, billed in Peoria as the "World Affairs Forum"—a label not mentioned by CBS—covered all aspects of national-security affairs. That includes economics, resources, technology, social problems, and military affairs, as well as foreign policy.

MUDD: "The invitation [to Peoria] was arranged by Peoria's Caterpillar Tractor Co., which did $39 million of business last year with the Defense Department."

The Peoria seminar was not arranged by the Caterpillar Tractor Co. It was arranged by the city's Association of Commerce, which provided the auditorium and other facilities. The Association has no defense contracts. A spokesman for the Association, contacted by this reporter, said his group shared the sponsorship with the 9th Naval District. There were two chairmen for the meeting. The civilian chairman was Charles B. Leber, who in his business life is an officer of the Caterpillar Tractor Co. The military chairman was Capt. Paul Haberkorn, USNR. He is the owner and operator of Peoria's Ace Hardware Store. The hardware store also has no defense contracts, which probably explains why it failed to get a mention on the CBS show.

MUDD: "The Army has a regulation stating: 'Personnel should not speak on the foreign-policy implications of the US involvement in Vietnam.' "

The ICAF team, consisting of five military officers and a State Department officer, does not speak on the foreign-policy implications of our involvement in Vietnam, which would be in violation of Army regulations. The regulations governing ICAF say the material used must be cleared for accuracy, propriety, and consistency with official policy. Both the State Department and the Defense Department have a hand in this routine clearance of all ICAF presentations.

In the CBS show, the camera moves from Mr. Mudd, following his recitation of the above inaccuracies, to one of the lecturers at Peoria. CBS does not identify the speaker in this paste-together of film clips, but he is Col. John A. MacNeil of the US Marines, a veteran of World War II and Vietnam. If the TV audience sensed that the next five sentences, out of the mouth of Colonel MacNeil, sounded somewhat disjointed, there was good reason for it. They came from four different spots in the camera record, and the sequence was rearranged to suit the somewhat warped taste of producer Davis. Sentence by sentence, the quotes go like this:

MACNEIL: "Well, now we're coming to the heart of the problem, Vietnam."

This appears on page fifty-five of the prepared, and approved, text of the briefing. Next sentence:

MACNEIL: "Now, the Chinese have clearly and repeatedly stated that Thailand is next on their list after Vietnam."

That one was cut out of what the Colonel was saying back when he was on page thirty-six and discussing an entirely different aspect of the presentation. Then:

MACNEIL: "If South Vietnam becomes Communist, it will be difficult for Laos to exist. The same goes for Cambodia and the other countries of Southeast Asia."

This is found on page forty-eight of the script. What is most important is that the statement was not original with Colonel MacNeil or the drafters of the briefing. It is a quotation. The CBS scissors-and-paste wizard deleted the attribution. Colonel MacNeil made it clear, in the words immediately preceding the above sentences, that he was quoting Souvanna Phouma, the Prime Minister of Laos. In other words, Souvanna Phouma said it; CBS distorted the film to make its viewers think Colonel MacNeil said it. It is the kind of journalistic dishonesty that a reputable newspaper would not tolerate. Many reporters have been fired for lesser indiscretions.

MACNEIL: "So, I think if the Communists were to win in South Vietnam, the record in the North, what happened in Tet of '68 makes it clear that there would be a bloodbath in store for a lot of the population of the South."

To get this one, the CBS film clipper searched deeper into his filmed record. In the prepared script of the ICAF team, it appears on page seventy-three.

It is easy to see how this technique can be used to make a man say almost anything you want him to say. Once the right words are on tape, they can be rearranged, and were by CBS in this instance, to make a presentation sound inept, stupid, wrong, vicious, or to reach any conclusion that the film clipper wants to get across to his audience. What the speaker actually put onto the sound track cannot be recognized.

Another example of this in "The Selling of the Pentagon" comes out of Roger Mudd's interview with Daniel Z. Henkin, the Assistant Secretary of Defense for Public Affairs. Two minutes and four seconds of the interview were used out of forty-two minutes of filmed conversation. Here is one breakdown:

MUDD: "What about your public displays of military equipment at state fairs and shopping centers? What purpose does that serve?"

Now, this is not easy to explain, but there are two answers to that question from Mr. Henkin. One is his real answer and the other is the answer concocted by the CBS cutting room from the available tape. TV viewers only know the answer CBS put together. We will give you both.

Here is the answer from the transcript of the Mudd broadcast:

HENKIN: "Well, I think it serves the purpose of informing the public about their armed forces. I believe the American public has the right to request information about the armed forces, to have speakers come before them, to ask questions, and to understand the need for our armed forces, why we ask for the funds that we do ask for, how we spend these funds, what we are doing about such problems as drugs—and we do have a drug problem in the armed forces; what we are doing about the racial problem—and we do have a racial problem. I think the public has a valid right to ask us these questions."

If the TV viewers thought that was a bit disjointed for a reply, and, more important, that it did not answer the question about displays at fairs and shopping centers, it was not Mr. Henkin's fault, because—except for the first sentence—that was not his answer to the question. In the transcript of the interview, the real answer appears, most of which ended up on the CBS cutting-room floor:

HENKIN: "Well, I think it serves the purpose of informing the public about their armed forces. It also has the ancillary benefit, I would hope, of stimulating interest in recruiting as we move or try to move to zero draft calls and increased reliance on volunteers for our armed forces.

I think it is very important that the American youth have an opportunity to learn about the armed forces."

This reply, the real one, of course makes sense and is responsive to the question. The producer of "The Selling of the Pentagon," however, was less interested in responsive answers that made sense than he was in portraying Mr. Henkin as a bureaucratic buffoon. The Secretary, incidentally, is himself an experienced and sophisticated reporter of military affairs but can be portrayed otherwise with the television technique of clipping what amounts to a phony reply from his answer to another question. And the other question, TV viewers did not know, also ended up on the cutting-room floor.

It is not necessary to labor the point, although there are several other instances. Mr. Henkin, in a letter to F. Edward Hébert, Chairman of the House Armed Services Committee, said that after spending his life in the news profession he "could not be pleased by the fact that the program's producer [Mr. Davis] chose to rearrange my words. . . ."

Congressman Hébert himself stars in "The Selling of the Pentagon." He also is a former newspaperman and stands completely shaken by this experience with television, although he had been quoted earlier as considering network TV "the most vicious instrument in America today."

That opinion appears to have been reinforced. Lou G. Burnett, who is Mr. Hébert's press aide, testifies that he was contacted early in the CBS effort by one James Branon of the network's New York office. Mr. Branon said CBS was planning to do a documentary on the prisoner-of-war situation. He said the show would explore the plight of the POW and his family. He was seeking film clips that might contribute to this exercise. Mr. Burnett responded with alacrity because he knows his boss is deeply interested in the problem and eager to help the POW families. In New Orleans, he knew, station WWL-TV had a film clip from an old "Congressional Report" program, in which the Congressman had interviewed Maj. James Rowe, a former POW. The interview was in the form of a report to Mr. Hébert's constituents. Mr. Burnett, Mr. Hébert's press aide, had the film shipped from New Orleans to New York and helped CBS's Mr. Branon round up other films dealing with the POW problem. The Hébert clip wound up in "The Selling of the Pentagon" and was offered as an example of how "sympathetic congressmen" are used by the Pentagon "to counter what it regards as the antimilitary tilt of network reporting."

*Starring on the CBS show were Daniel Z. Henkin (left) and Rep. F. Edward Hébert (right). Both were displeased by their portrayal from film clips.*

Mr. Hébert's ire, it should be suggested, was aroused more by his depiction as a patsy for the Defense Department than it was by the misrepresentations used to obtain the film. The chairman is, of course, proud of his reputation as a stern critic of military transgressions wherever they occur. In many years as an inquisitor for the House Armed Services Committee, he has never been accused of being unfair, but often accused of being tough. From the time of his famous "Chamber of Horrors," which depicted military procurement waste and had officers squirming at their desks, to the most recent congressional inquiry into the My Lai incident, he has been one of the Pentagon's most uncomfortable hair shirts.

Mr. Henkin's office estimates that it expended 640 man-hours of labor assisting CBS in the production of "The Selling of the Pentagon." No reasonable request for help was denied. CBS reimbursed the government for the cost of one guard and one electrician employed during photography one day in the Pentagon.

Out of this day's effort came a short clip of a news briefing that was deemed suitable by CBS for inclusion in "The Selling of the Pentagon." The CBS crew filmed an entire DoD press briefing, at which Jerry W. Friedheim, a deputy to Mr. Henkin, responded to routine queries from the Pentagon's regular press corps. During the session, the reporters asked thirty-four questions. Thirty-one of them brought replies from Mr. Friedheim. In three cases, he was unable to be responsive. As the film was edited for broadcast, CBS used six of the thirty-four questions, including, of course, all three of the ones that could not be answered. Why couldn't they be answered? In one example, used by CBS, Mr. Friedheim was asked about the size of some warheads. He said he had nothing to give out on that. If he did have something, and gave it out, he could go to jail.

There are a number of small factual errors in the CBS script that represent nothing more than sloppy reporting. For example, narrator Mudd has a line referring to "30,000 Pentagon offices." There are only a few more than 26,000 persons employed in the Pentagon, all but the top executives sharing an office with many other people. An educated guess is that there may be 5,000 offices in the building.

One interesting fact, denied to viewers of "The Selling of the Pentagon" by CBS editors, is the origin of a clip introduced by Mr. Mudd as "an excerpt from a film called 'Road to the Wall' [in which] the Pentagon has James Cagney tell of a Communist plan that encompasses even more than the world." The excerpt was shown. What CBS did not disclose is that "The Road to the Wall" was produced by CBS itself in 1962 and that James Cagney was the CBS choice as star of the picture. Also, that CBS was paid about $100,000 of the taxpayers' money to turn out the picture. At the time, CBS Films said in a press release from its offices—on Madison Avenue, of all places—that the picture would be "an historical treatment of the Communist Party in operation throughout the world—its doctrine, its pronouncements." In 1962 CBS was far from derisive about the project and was proud that "it will be distributed for showing at all military bases inside and outside the USA and will be backed with pamphlets, posters, and other informational material on communism."

Once all the facts about "The Selling of the Pentagon" are on the record, and someone has examined the clips on the cutting-room floor, it will be interesting to find out what Fred Friendly will write about it in the *Columbia Journalism Review*. From where we sit, watching the tube, the broadcast industry continues to carry its share of responsibility for public misunderstanding. The incredible thing is that the camera is not to blame. It's scissors, paste, and a collection of calloused consciences. ■

## By William P. Schlitz

NEWS EDITOR, AIR FORCE MAGAZINE


WASHINGTON, D.C., MARCH 9

In the opinion of the American Fighter Pilots' Association, the 8th Tactical Fighter Wing is the "most outstanding tactical fighter wing in Southeast Asia." The wing, dubbed the Wolfpack *(see February* AIR FORCE, *p. 88),* is headquartered at Ubon RTAFB, Thailand.

In recognition of this honor, Gen. Lucius D. Clay, Jr., Seventh Air Force Commander, has presented 8th TFW Commander Col. Larry M. Killpack with the Maj. Gen. Robert F. Worley Memorial Trophy. (General Worley, a former Vice Commander of Seventh AF, was killed in 1968 in SEA.)

—Wide World Photos

***US Army Maj. Gen. John Deane, Jr., left, and USAF Brig. Gen. William Evans at the Pentagon with models of sensors that report on enemy supply routes in SEA.***

The Worley Trophy is the most recent addition to other high honors rendered the Wolfpack. In the five years since the unit arrived in Thailand, it has earned two Presidential Unit Citations for extraordinary heroism and an Air Force Outstanding Unit Award with V (for valor) device.

During the days of air-to-air duels with North Vietnamese MIGs, the 8th's pilots led the field, with thirty-eight and a half aerial victories. Col. Robin Olds, who commanded the wing in that period, was credited with more MIG kills than any other pilot in SEA. (Brigadier General Olds now is Director of Aerospace Safety, Office of IG, Norton AFB, Calif.)

The significance of being judged the best by the fighter pilots is that there are no better judges.

☆

From SEA, Seventh Air Force reports that in-country training of the Vietnamese Air Force has been extended to encompass two additional aircraft types. *(For a full rundown on air-war Vietnamization, see p. 24.)*

Flight crew training for the C-123 Provider, conducted by the 315th Tactical Airlift Wing at Phan Rang AB, began in January. Maintenance training, also by the 315th and the 460th Tactical Reconnaissance Wing and 19th Tactical Airlift Squadron at Tan Son Nhut AB, began in mid-February.

VNAF airlift capability heretofore has been provided by C-47s and C-119s.

Aircrew training for the AC-119 began in early February at Phan

—Wide World Photos

*A typical picture in SEA today, as South Vietnamese troops prepare to board US helicopters for airlift into Laos for action against North Vietnamese regulars there. This was the scene recently at the Nguyen Hue base near Khe Sanh, South Vietnam.*

*Col. Clarence Anderson, left, and son, Lt. Jim Anderson, team up for an O-2 psych-war mission. "Dad" commands the 355th TFW, Thailand. Jim is with the 9th Special Ops Squadron in South Vietnam.*

Rang. The 14th Special Operations Wing will train pilots, navigators, flight engineers, weapon systems specialists, and illumination specialists. The VNAF has been flying the AC-47 Dragon and the UH-1 Huey in the gunship role.

The C-123 and the AC-119 aircraft are scheduled to enter VNAF's operational inventory in 1971 as part of the continuing modernization program.

☆

The Republic of Korea was the recent scene of another "quick-reaction" deployment exercise, Freedom Vault, which took place March 3–6.

The operation was designed to demonstrate the ability of US Strike Command (USSTRICOM) to move US-based units long distances and have them ready for immediate action.

*The Apollo-15 Astronauts—from left, Lt. Col. James Irwin, Maj. Alfred Worden, and Col. David Scott—at a recent news conference at the Air Force Academy.*

Freedom Vault was the second exercise of its type to take place in Korea. The first—Focus Retina in March 1969—was organized around an airborne brigade and its equipment airlifted from the States.

Freedom Vault followed a similar pattern, involving a task force from the 82d Airborne Division, Fort Bragg, N.C., being airlifted to the assistance of ROK forces under simulated attack. USAF Military Airlift Command provided the transport —C-141s from Charleston AFB, S.C.; Dover AFB, Del.; McGuire AFB, N.J.; McChord AFB, Wash.; Travis AFB, Calif.; and Norton AFB, Calif., represented all six MAC wings. USAF Weather Service and Aerospace Rescue and Recovery units also participated.

The airborne troops were airlifted

*Above, the Army's Cheyenne helicopter fires rockets during a recent flight and weapons test. Left, the USMC's first British-made Harrier V/STOL makes an acceptance flight. Both these aircraft are in contention with USAF's A-X, currently under development, to fill the role of close air support of ground combat troops.*

to Korea and dropped into the exercise site, an area well south of the Korean Demilitarized Zone.

☆

In mid-February, the Air Force announced cutbacks in its B-1 bomber research and development program *(see also story on p. 40).*

Plans now call for prime contractor North American Rockwell Corp., El Segundo, Calif., to build three flight-test aircraft, instead of the five originally contracted for. NAR will fabricate only one ground-test airframe instead of two. Some major structural components also have been canceled.

The new aircraft's engine supplier, General Electric Co., Evendale, Ohio, is to produce twenty-seven engines, down from an original forty.

Air Force said that the reduced hardware buy would not cripple the development program, but, linked with improved management procedures, would actually permit first flight of the B-1 earlier than its planned target date in mid-1974.

☆

President Nixon has named James C. Fletcher, a former Aerojet-General Corp. executive and Utah educator, to head the National Aeronautics and Space Administration.

He will succeed Acting Administrator George Low, who has been running NASA since the resignation of Thomas O. Paine last fall. Dr. Fletcher's appointment requires Senate approval.

Beside serving as president of the University of Utah and College of Eastern Utah, Dr. Fletcher, who is fifty-one, has also acted as consultant to DoD, the Arms Control and Disarmament Agency, and the President's Science Advisory Committee. He is a former member of the Board of Trustees of the Aerospace Education Foundation, an AFA affiliate.

☆

The Navy has completed an investigation of the crash of its first Grumman F-14 Tomcat during a second test flight on December 30 *(see February issue, p. 28).*

Navy determined that the new fighter experienced failure in its hydraulically powered flight-control system. The aircraft was returning to Grumman's Calverton, Long Island, field, twenty minutes after takeoff. Both pilots ejected without injury.

Two redundant hydraulic systems and a third backup system were involved. Lines in the two independent systems apparently broke because of "severe vibration" induced by the pulsating pressure output "from the engine-driven hydraulic pumps." Fluid loss brought about the malfunction in the backup system, Navy believes. The simultaneous failure of the three was mathematically a near-impossibility. Corrective measures have been taken to ensure future reliability in all three systems.

Navy said that a replacement aircraft will not be necessary, and that flight-test tasks will be reassigned to other prototype aircraft in the program. "Although the first Navy Preliminary Evaluation will be delayed by about four months to August of this year," introduction of the F-14 to fleet use will take place in 1973 as scheduled, the Navy said.

☆

The US Navy P-3C Orion that recently established a world record for nonrefueled, long-distance flight for heavyweight turboprop aircraft *(see March* AIR FORCE, *p. 16)* has since broken seven more world flying records.

Piloted by Cmdr. Donald H. Lilienthal, the unmodified plane attained a speed of 502 statute miles per hour on January 27 over the prescribed fifteen- to twenty-five-km (9.3 to 15.5 miles) course, topping the Soviet IL-18 record of 452 mph set in May 1968.

On February 4, the Lockheed-built antisub aircraft achieved a record 44,900 feet for "altitude in horizontal flight." A Soviet IL-18 set a previous mark of 42,618 feet in June 1969.

On February 8, the Orion broke four "time-to-climb" records. Commander Lilienthal and his crew climbed from "brake release" on the ground to 3,000 meters (9,843 ft.) in two minutes, fifty-nine seconds; to 6,000 meters (19,685 ft.) in five minutes, forty-eight seconds; to 9,000 meters (29,528 ft.) in ten minutes, thirty-one seconds; and on up to 12,000 meters (39,370 ft.) in nineteen minutes, fifty-three seconds.

The same day, the plane flew to an altitude of 46,100 feet to post a new maximum altitude record for that class aircraft. The previous record of 44,343 feet had been established by an IL-18 in October 1969.

☆

Planning is currently under way for the largest air show in Asia—the Japan International Aerospace Show 1971—which is to be held at Nagoya (Komaki) Airport from October 29 through November 3.

Nagoya is Japan's third largest city. It is situated two hours by bullet train from Tokyo and four hours by car.


—Wide World Photos

*Four US airmen, released on March 8 when their Turkish kidnapers' bid for ransom was ignored, gave details of their ordeal at an impromptu news conference in Ankara the next day. From left in the foreground are: SSgt. Jimmie J. Sexton and his wife Barbara, San Angelo, Tex., and A1C James M. Gholson, Alexandria, Va. In the background from left: A1C Larry J. Heavner, Denver, Colo.; the US's Ambassador to Turkey, William Handley; and A1C Richard Caraszi, of Stamford, Conn. The men were held nearly six days.*

## Aerospace World

Japan previously had air shows in 1966 and 1968, and now plans to conduct such shows every odd year.

A show official termed the upcoming event "truly international in scope." He said that government and industry leaders throughout the world would attend, including persons from the US, Great Britain, the Soviet Union, and France.

From 1952 to 1969, the total cost of aircraft and equipment imported into Japan reached nearly $1.7 billion, show officials say, of which $789 million was spent on completed aircraft and $892 million on related equipment. In 1968, $266 million was spent for aviation-related imports.

☆

In mid-February, Japan orbited its second earth satellite, utilizing a launch vehicle with first-stage thrust and payload capacity on a par with a US Minuteman I.

In February of last year, the island nation became the fourth country to put a satellite into orbit, when it launched a fifty-five-foot Lambda-4S vehicle carrying a twenty-five-pound radio beacon *(see April 1970* AIR FORCE, *p. 17)*. The latest launch, by a seventy-five-foot Mu-4S vehicle, contained a payload of 140 pounds. The second launch is to test systems that Japanese scientists will rely on in orbiting their first scientific observation satellite later this year.

Operating on a shoestring budget, Tokyo University's Space Science Institute used a "gravity-turn" device to put each of the two satellites in orbit, rather than very expensive guidance and control systems such as the US has developed. The Tokyo University space program, independent of the US-assisted Japanese Space and Technology Agency, is funded by the Japanese government at an average of about a mere $10 million a year.

Some observers have speculated about potential military applications for Japan's space technology, considering the increasing thrust and payload capabilities of its launch vehicles. But Japanese officials point out their lack of sophisticated guidance systems, a prerequisite for the development of effective offensive missile weaponry. The Japanese also emphasize their recent White Paper on Defense *(see December 1970* AIR FORCE, *p. 14)*, which reaffirms dependence on the US for an offensive military umbrella—at least for the foreseeable future.

*US Army's new TOW antitank missile, recently deployed to infantry units, is caught by high-speed camera during test firing. TOW, built by Hughes Aircraft Co., can destroy any known enemy armor at ranges of more than a mile, and can be fired from ground tripods, a variety of vehicles, and from helicopters.*

☆

It has been a long time since the Air Force and its predecessors used balloons for anything other than high-altitude research and meteorology. While it's not likely that we will again see Air Force people sporting "balloonautic" or "aerostat" wings, the Air Force is showing mild interest in balloons for operational purposes.

Using new, lightweight materials, the Aerospace Instrumentation Laboratory of Air Force Cambridge Research Laboratory (AFCRL) has flown 300-pound payloads at 10,000 feet for more than twelve hours, using a tethered spherical balloon in a light-wind environment.

AFCRL has an aerodynamically

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shaped balloon that, tethered by three wires, can fly an 800-pound payload at 4,500 feet for two days in winds of about forty knots, with gusts to fifty knots. Tethered balloon flight at altitudes up to 20,000 feet with a small payload is possible.

With present techniques and materials, a 10,000-pound payload can be lifted to 90,000 feet, or 2,000 pounds to 130,000 feet with free-flying balloons.

A study undertaken for AFCRL in 1967 demonstrated the feasibility of a twenty-four-hour, powered-balloon flight at an altitude of 70,000 feet. The power would be used for station-keeping—to hold the balloon over a designated area—not for lifting purposes. This type of balloon probably would resemble a small blimp.

Tethered balloons, especially, appear to offer a relatively inexpensive means of carrying out some operational missions in permissive military and climatological environments. They might, for example, be used in peacekeeping operations. Balloons are the least menacing of all flying objects. Tethered along, say, the Suez Canal, they could act as platforms for optical, radar, and other sensors to detect movement of troops and equipment on either side.

Where atmospheric conditions are not severe, they might be used in a theater of operations, as indeed they were during the Civil War, for tactical reconnaissance; as automated observation platforms for base defense; and for communications relay.

The Air Force probably will continue to explore, among other applications, the reconnaissance potential of balloons. RF-4 Phantom crews may want to take note of this development, but need have no fear of imminent technological unemployment.

☆

A group of airplane buffs in Virginia, known as the "Flying Circus" has in the works an ambitious program involving famed old World War I warplanes in weekend pageants throughout the summer.

The introductory show in the series is set for the afternoon of Sunday, May 16, and is to include aerial dogfights, aerobatics, parachuting, and static displays. The site is a field near Bealeton, Va., fifteen miles from Warrenton, Va., and an hour's drive from Washington, D.C. The field is equipped with hangars and a grass strip—reminiscent of World War I bases.

The Flying Circus group—organized by airline pilots, a minister, a magazine editor, and an architect, among others—is considering a nominal admission fee, with special rates for organizations and groups planning outings and picnics. The shows will go on each weekend through October 3.

☆

Back around the turn of the century, the military recognized that improved communications were vital to the defense of the wilderness that was Alaska. Provision was made to establish telegraph connections to and within Alaska (involved in the terrain survey was a young second lieutenant named Billy Mitchell).

Since then, the Alaskan Communications System (ACS) has grown into a vast net that not only links the military in Alaska but also provides civilian communications as well.

Earlier this year, the USAF turned over operation and ownership of ACS to RCA Global Communications, Inc., for the sum of $31,460,519. Legislation passed by the Congress in 1967 paved the way for this move.

As Air Force Secretary Robert C. Seamans, Jr., said during the transfer ceremony: "Contrary to Parkinson's Law the government is parting with a healthy, growing activity. We are parting with it voluntarily, in a planned, businesslike way, because we believe that this Alaskan business should be in the private sector of the economy."

RCA has agreed to lower telephone rates in the state and to conduct an improvement and expansion program. Under the agreement, some long-line DoD communications remain in government hands, but may be leased to RCA. In turn, some of the communications now controlled by RCA will be leased to the government when traffic warrants.

☆

In February and March, Lt. Gen. Benjamin O. Davis, USAF (Ret.), visited several countries to discuss a broad range of air-security techniques.

General Davis, Director of Civil Aviation Security under the Department of Transportation, is responsible for coordinating the US's mounting program to curtail skyjacking. He talked with officials in Italy, Hong Kong, Korea, Japan, and Australia.

The mission was in line with President Nixon's directive to consult with other governments on methods of tightening flight security and combating aerial highjacking and other crimes by learning from the experiences of other nations.

Secretary of Transportation John A. Volpe expressed hope that similar discussions might be arranged with such other countries as Yugoslavia and the USSR. "The problems of international air security transcend political differences," he said, "and if they are to be dealt with effectively, the effort must be on a universal scale."

*Retired AF Chief of Staff Gen. John P. McConnell, head of the Air Force Museum Foundation, accepts a check for $10,000 from W. C. Hagan, Jr., president of Hayes International Corp.*

*A new award, Wing Historian of the Year, was won by Sgt. Thomas Hamilton, Castle AFB, Calif., holding plaque. From left, USAFR Maj. Gen. Ramsey Potts, President of the Air Force Historical Foundation; Col. R. J. Thompson, Vice Commander, 98th Bomb Wing at Castle; Sgt. Hamilton; and Maj. Gen. R. A. Grussendorf, Chief, AF History.*

☆

NEWS NOTES—SAC's **1971 Missile Combat Competition** will take place April 20–28 at Vandenberg AFB, Calif.

**John S. Foster, Jr.,** DoD's Director of Research and Engineering, will be keynote speaker at the Electronic Industries Association's **Symposium on Tactical Reconnaissance and Surveillance** April 13 at the Institute for Defense Analysis, Arlington, Va. The symposium, classified secret, runs **April 13–15.**

**Michael Collins,** Assistant Secretary of State for Public Affairs and former Astronaut, who piloted Apollo-11's Command Module during the first moon landing, has been named **Director** of the Smithsonian Institution's **National Air and Space Museum,** effective in mid-April. ■

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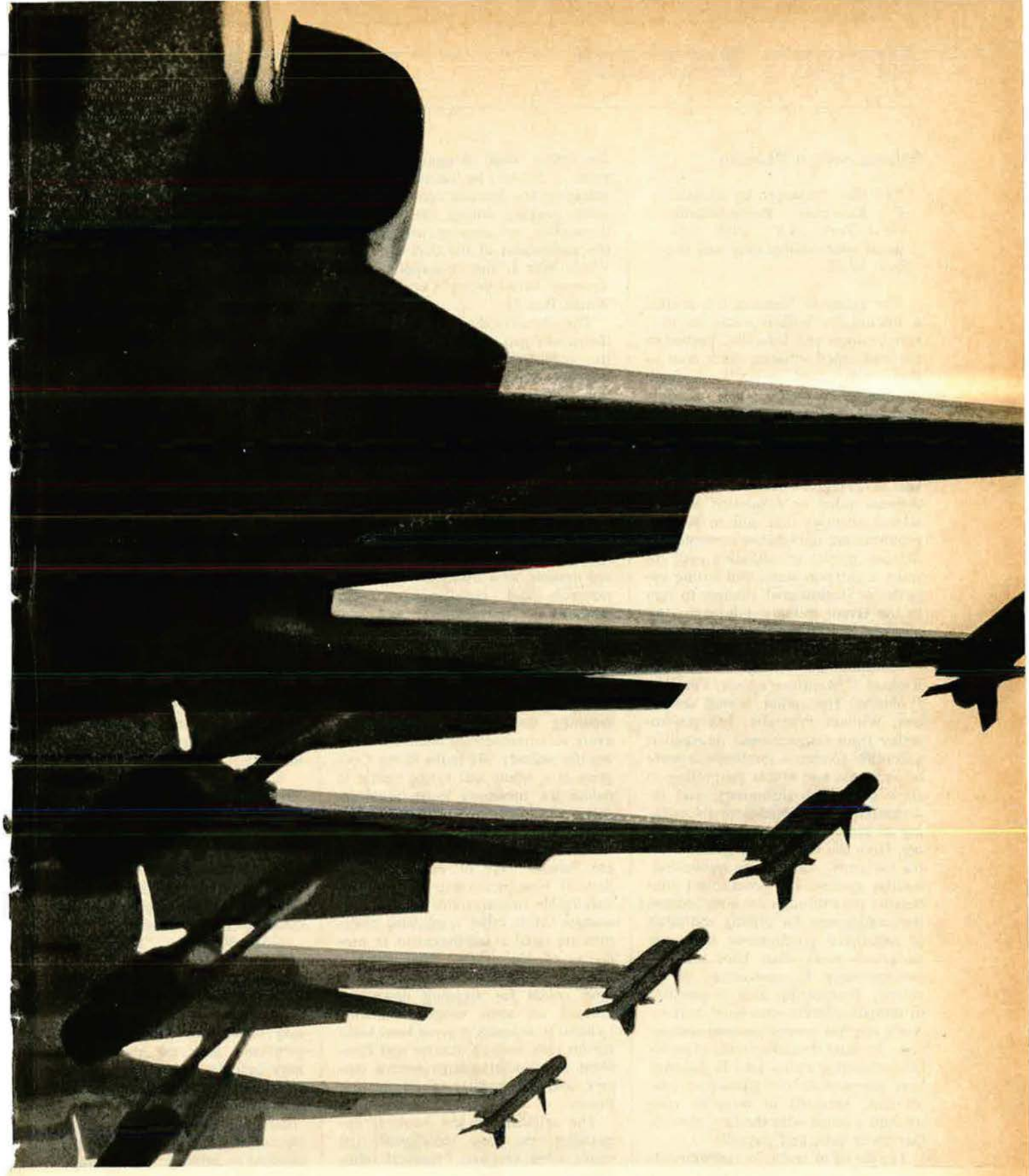

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# Airman's Bookshelf

## Sniping with a Shotgun

*The War Profiteers,* by Richard F. Kaufman. Bobbs-Merrill, New York, N.Y., 1970. 244 pages plus bibliography and index. $8.50.

The agony of Vietnam has created a market for critical tracts on military business and behavior. Potboilers for concerned citizens, who read as they run, tend toward common themes—concentration of defense contracts in the hands of giant corporations; a community of interests among powerful politicians, military bureaucrats, and corporate managers; vast outlays for weapon systems of dubious value or reliability; military service rivalries that add to weapon proliferation; universities corrupted by defense grants; an alarming rush toward a garrison state; and strong appeals for institutional changes to rein in the errant military-industrial complex and reduce it to (vastly smaller) size.

All that and more will be found in Richard F. Kaufman's book, *The War Profiteers.* The author, a staff aide to Sen. William Proxmire, has put together from congressional, newspaper, and other sources a jumbled narrative of incidents and events purporting to show the greed, dishonesty, and incompetence associated with the making of armaments and war. Profiteering, from his view, is the general, not the particular, case in the public-contracting system. The government continually pays through the nose because the mechanisms for pricing and audit of negotiated procurement never are adequate. More than hard cash in overpayments to contractors is involved. Profiteering also is ascribed to military officers who build bureaucratic empires around weapon systems and who slant decisions in the expectation of getting cushy jobs in industry later on; and to the politicians who get their rake-offs in votes by constituents pleased with the fat contracts that mean jobs and payrolls.

The thesis of endemic, institutionalized profiteering is advanced in a brief introduction along with a summary account, as an object lesson, of a crooked contractor who defrauded the government on airborne rocket-launcher contracts for some years before being caught (accidentally) and convicted. In the first chapter, the author skips through some 500 years of history; he touches upon pillaging by the Spanish conquistadores, price gouging during the American Revolution, privateering raids for loot, the enrichment of the steel barons in World War I, and revelations of the Truman Investigating Committee in World War II.

The narrative then rambles through the missile-gap issue of the late 1950s; the composition of recent military budgets; defense industry concentration (fifteen pages are devoted to merely listing the 100 largest contractors); alleged conflicts of interest on the part of certain military officers; controversies over the SST, the ABM, and the C-5A; deficiencies imputed to the Renegotiation Board and the General Accounting Office; indicators of militarism in American society and academic life (nine pages are devoted to a listing of one year's research and development dollar amounts to universities); and suggested remedies in the vein of J. K. Galbraith's nationalization of the defense industry and H. L. Nieburg's "pluralistic" control agencies. The author professes to be "eclectic," meaning that he welcomes almost every recommendation made for curbing the military. He looks to the Congress as a whole and to the public to devise the necessary institutional reforms and to compress military spending.

Mr. Kaufman's congressional heroes are Senator Nye of yesteryear and Senator Proxmire today for their indefatigable investigations of the arms makers. Most other committee chairmen are rated as indifferent to, or protective of, the defense establishment. The late President Eisenhower gets kind words for slapping down the military on some weapon requests. Lyndon B. Johnson is given hard kicks for his role, both as Senator and President, in advocating large defense outlays and particularly a strong Air Force.

The criticism in the book is unqualified; the tone ideological; the words often abrasive. President Johnson, says the author, "helped engineer the greatest Pentagon raid on the treasury since World War II." The C-5A contract is described as "a complete sham" and as signifying "the ultimate corruption of government." Agencies reviewing defense expenditures are "toothless watchdogs"; the conflict-of-interest law also is "toothless," and to the large contractor "the gears in government machinery have no teeth except for those which grind within the federal mint." (Government efficiency is a problem in periodontics!)

Although the book has a variegated bibliography, documentation of the text is sparse, and many questionable statements are difficult to verify or assess in terms of sources used. The more obvious errors of fact and interpretation suggest sloppy research and undue reliance on sources congenial to the author's preconceptions. We are asked to believe, for example, that creation of the Defense Contract Audit Agency was nothing more than a Pentagon plot to undermine the GAO. The Holifield subcommittee is charged with the same motive when it investigated the GAO's contract audit work (the author calls it an "Inquisition"). If Roswell Gilpatric reads the book, he will probably be more irked that his name is misspelled than that he is confronted with a rehash of the McClellan committee charge of conflict of interest in connection with procurement of the F-111 aircraft.

Massaging of data to make points is illustrated by this rendition of a GAO finding:

KAUFMAN: "In 1967 the General Accounting Office reported on a survey it had conducted on the enforcement of the truth-in-negotiations law. Of the 185 cases it selected for review where certified cost data were required, none had been supplied in 165 cases and the implication was that none had been requested."

GAO REPORT: "We found that 185 of the 242 procurements examined in the first phase were awarded under requirements of the law and the procurement regulations for submission of cost or pricing data and a certificate that the data submitted were accurate, complete, and current. However, in 165 of these awards, we found that agency officials and prime contractors had no record identifying the cost or pricing data submitted and certified by offerors [*sic*] in support of significant cost estimates."

The trouble with books like *The War Profiteers* is that the distortions and inaccuracies will cause them to be discounted or ignored by those who could benefit by objective analysis. The military-industrial complex needs responsible criticism. There are

enough mistakes to go around, many lessons to be learned, and many improvements to be made. Senator Proxmire once remarked about a Navy-prepared statement on shipbuilding claims that it reminded him of a barber who always lathered and never shaved. This book, by the Senator's aide, shaves without lathering. The world being what it is, big military budgets and strong defenses are necessary. There are those who would make a virtue of necessity. Mr. Kaufman makes of it a vice.

*—Reviewed by Herbert Roback. Mr. Roback is Staff Administrator of the Military Operations Subcommittee, of the Committee on Government Operations, US House of Representatives.*

## Putting It All Together

*Battle Over Britain,* by Francis K. Mason, Doubleday, Garden City, N.Y., 1970, 636 pages. $14.95.

Mr. Mason (no relation to this reviewer) has made an exceptional contribution to the history of air warfare. A graduate of the Royal Air Force College Cranwell, a fighter pilot, a member of the Hawker Aircraft design team, and a Fellow of the Royal Historical Society, he brings a unique collection of qualifications to bear in this monumental study of the most critical battle in the short history of the airplane.

His book consists of three parts. The first describes the creation and development of the two protagonists of the summer of 1940. The account begins with a survey of the earlier battle over Britain, in World War I. There follows a clearly written, if abbreviated, survey of the problems faced and overcome by the infant Royal Air Force: interservice jealousy, political naïveté, economic restrictions, but also the farsightedness of men like Trenchard and Dowding. Later he traces the organization of British Air Defense with the establishment of Fighter Command and the intricate network of radar, sector, and fighter aircraft units.

In similar manner, Mason describes the formation and development of Hitler's "Secret Air Force." The importance and vision of von Seeckt are clearly established, as is the interconnection of party politics and personality in the formulation of German airpower theory between the wars. He shows how the death of Wever in 1936 and the succession of General Major Albert Kesselring as Luftwaffe Chief of Staff spelled the end of German plans for a long-range strategic bomber. Mr. Mason summarizes the disastrous war in France, and sets the scene for July 1940 and the Battle of Britain, the subject of Part II.

The author describes each day of the battle from July 1 to October 31: the size of the raids, the targets, actual losses on both sides, and, in the majority of cases, the location, cause, crew, aircraft number, and type of every casualty. This wealth of detail is achieved without once losing the reader's interest, primarily because each day's narrative is followed by the statistical casualty-analysis table.

Consequently, one may read his account in one of two ways: straight through the history of the battle, sensing the effort, the errors, the heroism, the tactics, the controversy, as well as the desperation and the fatigue, on both sides of the English Channel; or one may pause, each day, and discover how the losses were sustained. How many casualties, on each side, occurred from flying accidents? How many pilots fell to the guns of the JU-88 or HE-111, or even the much-maligned JU-87? How did the ME-109 display its superiority up-sun, over the Hurricane and the Spitfire?

Part II concludes with a survey of the night battle over Britain and with an unemotional assessment of what the battle meant to the future fortunes of both sides.

Part III consists of fifteen appendices, themselves a mine of interest and information. Perhaps the most valuable are those that list the Fighter Command and Luftwaffe aircrews and the seriously erroneous German military intelligence report of July 16, 1940, on the RAF.

Mr. Mason's bibliography does not mention all his sources. It is, nevertheless, extensive, in both British and German areas. He has used both original documents and eyewitness reports, and enriched the whole by his own specialist knowledge of the aircraft involved. The book is superbly finished on art paper, and lavishly illustrated in both black and white and in color. It handsomely achieves what the author sought: to tell the story of the men who lived, and died, on both sides.

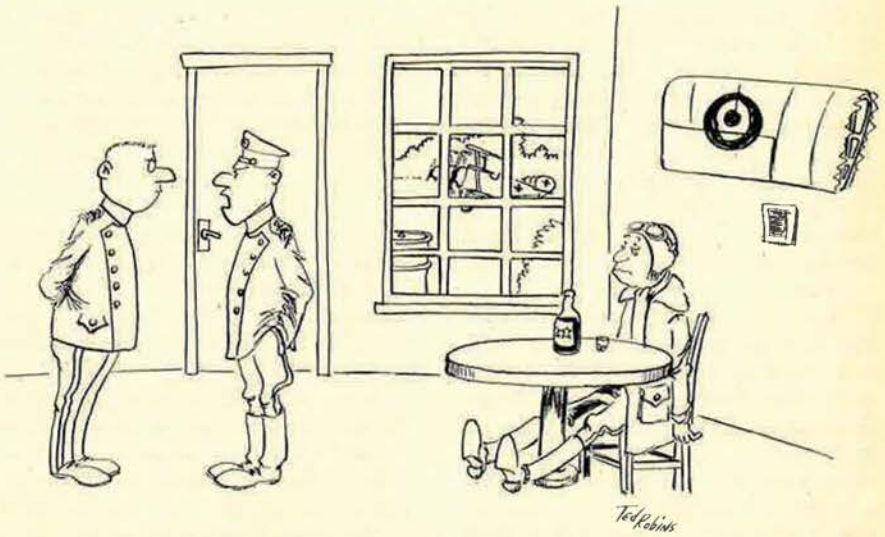
There are no strategic post facto condemnations or appraisals, but there is a lot of raw material on which such hindsight may be based. Seldom can any history book have provided so much of interest and value for both the lay reader and the professional scholar. It is a pleasure to be able to recommend this book, without reservation, to readers of AIR FORCE Magazine.

*—Reviewed by Wing Commander Richard A. Mason, RAF, an exchange officer now teaching military history at the USAF Academy.*

## POW in Java

*The Prisoner and the Bomb,* by Laurens van der Post. William Morrow, New York, N.Y., 1971. 152 pages. $5.00.

Laurens van der Post, a South African by birth, served as a colonel with the British forces during World War II. Early in the war, he was captured by the Japanese and held prisoner on Java until the war's end. Many years later, he was inspired by a strange event that look place on an anniversary of Hiroshima, to write




"I'm worried about the Baron. . . . This is the third time he's claimed to have seen a little dog piloting a Sopwith Camel!"

this small book. It is the story of his last weeks of captivity, in which he and thousands of other Allied prisoners faced seemingly certain massacre by their captors, who were preparing to fight to their own deaths against the coming Allied invasion of Southeast Asia. Two atomic bombs, followed closely by the Japanese surrender, saved both captors and captives.

At its basic level, *The Prisoner and the Bomb* is a story of almost unbearable suspense, as evidence of the impending extermination builds to a climax. The narrative of events in itself makes the book worth reading. But this is more than an exciting narrative. It is testimony to a durability of spirit that in most of us remains untested, hence unknown. It is the probing of an alien culture that transforms hatred to understanding, and understanding to sympathy and forgiveness. It is a study of leadership. Finally, it is a book of literary distinction, written by a man who has been declared one of the best living writers of English.

*—Reviewed by John L. Frisbee, Senior Editor/Plans and Policy,* AIR FORCE *Magazine.*

## Rebel With a Cause

*Action Priest: The Story of Father Joe Lauro,* by Father Joseph M. Lauro and Arthur Orrmont, with foreword by Richard Cardinal Cushing. William Morrow, New York, N.Y., 1971. 357 pages. $8.95.

You don't have to read very far into this exceptionally fine autobiography to realize that Joseph M. Lauro is a truly extraordinary human being. In compelling, straightforward prose, the authors trace Lauro's early life, his persistent attempts to become a priest, his World War II combat experiences, and his effective labors among the poor in Arkansas and Ecuador.

The early life of Lauro, in Chicago's rough-and-tumble South Side, is masterfully presented. Everything is there—the immigrants, street gangs, politicians, petty hoodlums—an era is carefully captured. One man's pettiness kept Joe Lauro from becoming a priest for almost fifteen years, but this is discussed candidly and without rancor.

World War II buffs will especially enjoy the account of Lauro's career as a Wellington and B-24 pilot, first in the RCAF and then with the AAF. Based in England and Tunisia, he flew eighty-seven missions over Germany and Italy until he was grounded because of a battle injury. Highly decorated, he was awarded the DFC by King George VI. Lauro's story of human beings under the pressures of combat is must reading to give healthy balance to the satire of a *Catch 22.*

Finally ordained at thirty-eight, fifteen years older than the average new priest, Lauro worked among Arkansas' poor, building churches, convents, and schools. The modest, humorous tone of the book does not lessen the social and religious impact of his activities.

But the climax comes in the last section, the story of Father Joe's work in Ecuador as a member of Cardinal Cushing's missionary Society of Saint James. At an age when most men seek retirement, he doggedly worked for the poor in a land long dominated by the wealthy few. Crowning his labors, there is the humorous account of how he raised money for an orphanage for 350 children in Guayaquil.

Joseph Lauro is a compassionate, intelligent, persistent man. He is also something of a rebel. All of this is quietly but clearly evident as his story presents times, places, people. More important to our befuddled age, it stresses the positive side of the human spirit. No superpious do-gooder roams these pages, but an action priest.

*—Reviewed by Maj. Joseph F. Tuso. Major Tuso is an Associate Professor of English at the United States Air Force Academy.*

## Short Voyage—Vast Sea

*The Art of the Possible: Diplomatic Alternatives in the Middle East,* by John Reisman. Princeton University Press, Princeton, N.J., 1970. 161 pages with index. $6.00 cloth, $1.95 paperback.

*The Art of the Possible* is a philosophical attempt to apply reasoned logic to the complicated and confused contemporary Middle East. It represents the work of an international lawyer who sees "creative diplomacy" as a way to bring eventual order from the seemingly perpetual chaos of the Middle East. The proposed solution offers collective benefits to all principles in the conflict, and ultimate relief to the international community from the fears inherent in the current unstable situation.

In theory, the concept is reasonably valid; however, under close scrutiny, it does not become a viable alternative as presented by the author. Simplifying assumptions based on questionable and unsupported perceptions of what constitutes the power-political-military-social situation in the Middle East today undermines many of his conclusions and proposals.

Reisman addresses each of the immediate foci of the conflict—Sinai, the West Bank, Golan Heights, Jerusalem—and offers a diplomatic plan for the resolution of problems associated with each. While his proposals are theoretically possible, the mechanisms suggested are not plausible and the underlying premise basic to the total plan is not realistic. To implement the approaches suggested by the author, there would have to be a high level of confidence and cooperation between the Israelis and Arabs, among the Arab states, between Arab governments and Arab guerrillas, and among the superpowers who have conflicting interests and clients in the area.

If both confidence and cooperation existed, there would be little need for Reisman's solutions; the Middle East long ago would have solved its many problems. The basic assumption that "time" is of paramount importance in the peaceful resolution of Middle Eastern problems and the argument that "imposed solutions" will not work unless the indigenous populations accept each other's continued existence and the merits of any such plan are valid. However, the tendency to overlook the role the superpowers must play makes the author's arguments much less defensible.

Circumstances and events have now dated the text, and the discussion is, in part, no longer relevant. The fast-changing scene in the Middle East has been altered dramatically since the late summer of 1970. The passing of Nasser, the Jordanian civil war, the new Arab Confederation, and the extended cease-fires have impacted on the fundamental dynamics of the situation and have fostered some hopes that the valuable element of "time" has been interjected and that rational statesmen will have a bit longer to attempt to utilize traditional means to secure peace for the Middle East.

This is not to summarily dismiss Reisman's "creative diplomacy" as already superfluous and outmoded, but it serves to point out the perils of offering instant solutions to problems that have persisted for many centuries and of making academic assumptions that invariably will be modified in the real world of 1971 international politics.

Finally, a few words on the purpose and style of this book. The legal background of the author frequently is reflected in the text; the result is a cumbersome and often difficult rhetoric. One is forced to ask just what audience the author had in mind.

The answer is not readily obvious, since a pamphlet-length treatment like this is too short for a text and too incomplete for a research source. The layman will not understand the subtleties of the situation, and the student of Middle East problems will reject the treatment as superficial (only ninety pages of text, with some seventy pages of UN documents) and as philosophical rather than factual.

*—Reviewed by Capt. James F. Wheeler. Captain Wheeler is an Assistant Professor of Political Science at the USAF Academy.*

## New Books in Brief

*Aircraft Propulsion*, by C. Fayette Taylor. This is the latest publication in the Smithsonian Institution's Annals of Flight series. The author traces the evolution of aircraft piston engines from 1872 to the present. This large-format, paperback volume includes many illustrations and an extensive bibliography. Smithsonian Institution Press, Washington, D.C., 1971. For sale by the Government Printing Office, Washington, D.C. 20402. 134 pages. $1.75.

*Battle Dress*, by Frederick Wilkinson. A lavishly illustrated history of military armor, uniforms, insignia, and decorations, covering a span of more than 5,000 years. The color plates and black-and-white photographs are excellent. Well indexed. Doubleday, Garden City, N.Y., 1970. 256 pages and index. $12.95.

*The Concorde Affair: From Drawing Board to Actuality*, by John Davis. This is a history of the British/French Concorde supersonic transport from conception of the idea in the mid-1950s through 1969. Beyond a discussion of the political, economic, and technical problems associated with the Concorde, the author gets into some of the social and ecological areas in which the US SST is so enmeshed. Mr. Davis, a retired RAF air commodore, is now an industry executive in England. Regnery, Chicago, Ill., 1970. 238 pages with appendix and index. $5.95.

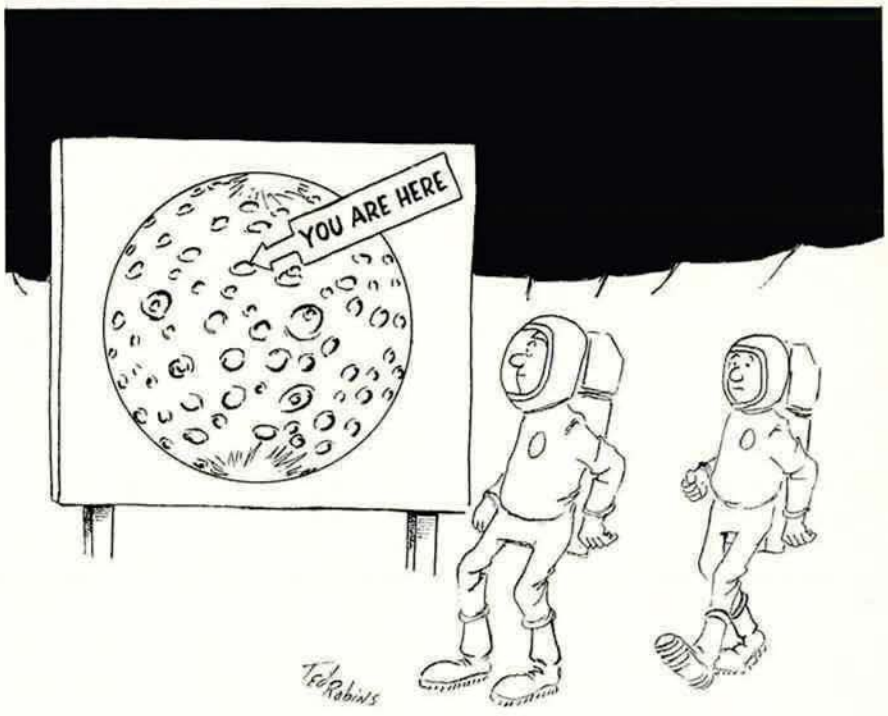
*Nakajima Ki.27A-B* and *Mitsubishi A6M Zero-Sen*. These books, part of the Arco-Aircom Aviation Series, describe two Japanese fighter aircraft of World War II: the Nakajima "Nate," the standard Japanese Army Air Force fighter in 1941–42; and the more famous Mitsubishi "Zero"—in this case, the Navy version. Each book includes a history of the aircraft, eight pages of color plates with unit markings, 125 black-and-white photos, performance specifications, and a list of using units. Arco Publishing Co., 219 Park Ave. South, New York, N.Y. 10003, 1970. 50 pages. $2.98 each, stiff paperback.

*Japanese Aircraft of the Pacific War*, by R. C. Francillon. The early chapters cover the history of Japan's aircraft industry, the Army and Navy Air Forces, designation systems, and markings. This introductory material is followed by descriptions (with pictures, drawings, and technical data) of more than 100 Japanese aircraft. There are appendices on aircraft carriers, engines, and armament. The book provides the only comprehensive coverage of the Japanese aircraft industry and its products between the late 1930s and the end of World War II. Funk & Wagnalls, New York, N.Y., 1970. 570 pages with appendices. $17.50.

*The Japanese Challenge: The Race to the Year 2000*, by Robert Guillain. The author, permanent correspondent for *Le Monde* in Tokyo, has lived for many years in Japan. Looking ahead thirty years, he believes Japan will be the toughest, most flexible, and most daring competitor to the US in the competition for world scientific and industrial leadership. J. B. Lippincott, New York, N.Y., 1970. 352 pages with bibliography. $8.50.

*Terror from the Sky*, by Edward Jablonski. This is the first of a projected four-volume series on the air action of World War II. It begins with the development of Hitler's Luftwaffe, its operations in Spain, the invasion of Poland, and some early misinterpretations of what airpower was all about. The story is carried forward through the Battle of Britain. A large-format book, well illustrated and indexed. Doubleday, New York, N.Y., 1971. 175 pages with index. $9.95.

New volumes of Ballantine's Illustrated History of World War II, published in late 1970 and early 1971 are: *Rocket Fighter*, by William Green; *Liberation of the Philippines*, by Stanley Falk; *Midway—The Turning Point*, by A. J. Barker; *Allied Secret Weapons: The War of Science*, by Brian J. Ford; *Tank Force: Allied Armor In World War II*, by Kenneth Macksey; *Anzio: The Bid for Rome*, by Christopher Hibbert; *Japan: The Final Agony*, by Alvin Coox; *Waffen SS*, by John Keegan; and *T-34: Russian Armor*, by Douglas Orgill. The authors are British and American experts in their respective subjects. The series is produced in cooperation with the Imperial War Museum, London. Ballantine Books, New York, N.Y. Each volume 160 pages. $1.00 each, stiff paperback. ■



**Progress Report**

*Less than two years after the Vietnamization program got under way, creation of a modern Vietnamese Air Force (VNAF) is "on or ahead of schedule," with results "far beyond expectations." A long-time, on-the-spot observer reports on the innovations and dedication that have gone into building Vietnam's new, 1,000-aircraft force. This program may be the most important campaign conducted by the USAF during its ten years in SEA, for withdrawal of US forces from Vietnam depends heavily on . . .*

# How the South Vietnamese Are Taking Over Their Own Air War

**By Kenneth Sams**

VIETNAMIZATION of the air war may well be the preeminent campaign conducted by the US Air Force during its ten years in the Republic of Vietnam (RVN). The task of more than doubling the number of squadrons in the Vietnamese Air Force (VNAF) and tripling its personnel strength is still in progress, but results to date have been termed "far beyond expectations." The current program is on or ahead of schedule.

VNAF is taking on a bigger share of the combat load—forty percent of all strike sorties over South Vietnam in 1970. At the same time it is embarked on the biggest training program in its history. During 1970, there were some 20,000 people trained, ranging from A-37 jet pilots to electronic-equipment maintenance specialists. South Vietnamese pilots, the elite of their nation's armed forces, and rated by USAF generals as "among the most professional flyers in the world," have almost completely taken over the air war in the populous southern Delta region of Vietnam and are moving to complete control in other areas.

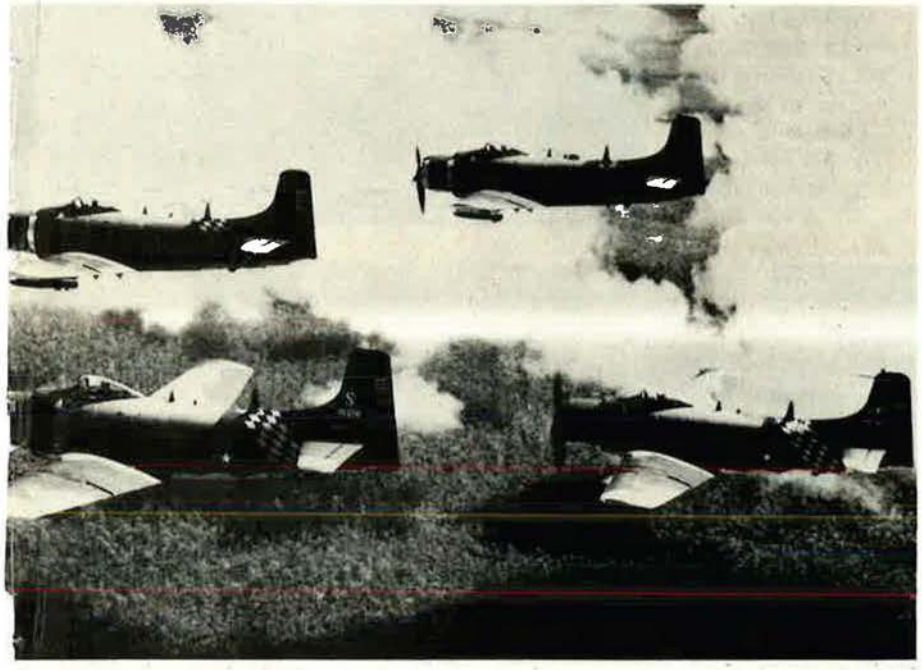
At Bien Hoa Air Base, northeast of Saigon, where USAF units have been located since 1961, a VNAF wing replaced the 3d Tactical Fighter Wing, one of the oldest USAF units in South Vietnam. At Da Nang in northernmost Military Region I, the VNAF wing has already been expanded into an air division as part of a program that will eventually see five air divisions controlling ten wings of some 1,200 aircraft, based throughout the country. Although there are obvious problems in such an unprecedented expansion, meeting the compressed timetables has the highest priority in Vietnam today. And schedules are being met.

The success of President Nixon's planned withdrawal of US forces from Vietnam depends to a large extent on Vietnamization of the air war; providing professional and technical training, and supplying more modern weapons to more than a million Vietnamese men in the regular ground forces of the Republic (Army of the RVN, Regional Forces, and Popular Forces); and organizing another 4,000,000 in the "Peoples' Self-Defense Force" (PSDF) for local defense and combat support. Although the ground force expansion will give the South Vietnamese a six-to-one advantage over enemy forces compared to three to one in 1965, airpower is still a vital factor in a war where the guerrilla forces usually have the initiative, emerging from cover in the jungle and villages for hit-and-run attacks against individual units.

When it has built up to its full strength, the VNAF will take over the air-mobility and air-strike role from the US. The VNAF is already in complete control of the Tactical Air Control System in Military Region IV, south of Saigon, and will take over the full system in 1972, giving it centralized control over all air sorties within South Vietnam. By the end of 1970, some VNAF

*Kenneth Sams, who has a ringside view of the war he writes about, has been historian of the Seventh Air Force in Vietnam for many years. Mr. Sams, whose last article for* AIR FORCE *Magazine was "The Fall of A Shau," in June '66, has written extensively on tactical air war, including "Airpower—Decisive Element," March '66, and an account of the battle of Dong Xoai in August '65.*

*South Vietnamese pilots, some of whom have flown several thousand combat missions, are expert in operation of the A-1 Skyraider, as their 1968 Tet performance showed.*



forward air controllers were controlling US tactical air strikes flown in support of South Vietnamese ground forces.

### Fluctuating Fortunes

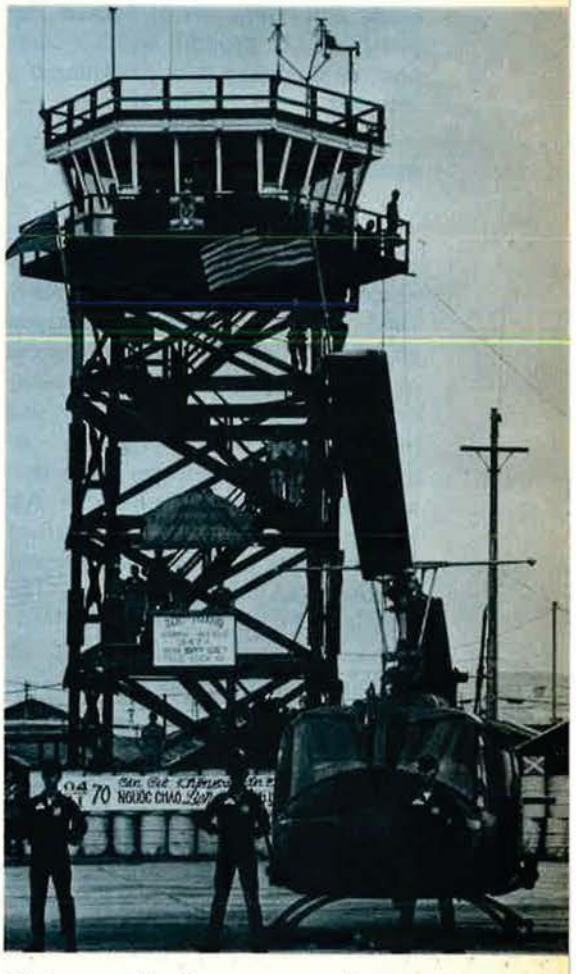
The history of the VNAF goes back more than a decade. In its early years, VNAF growth was impressive. In January 1962, when the USAF-built Tactical Air Control System began operations, the VNAF had 110 operational aircraft and 240 pilots. By June 1964, the force had more than doubled, up to 230 aircraft and 540 pilots. The VNAF, with three A-1 squadrons and three more in development, flew a great number of combat sorties.

This early program died in the chaotic months following the revolution in November 1963. There were seven successive governments in Vietnam in 1964. The Viet Cong, with .increasing help from North Vietnam, took advantage of the chaos to launch battalion-size attacks, in December 1964 wiping out complete regiments of the Army of the Republic of Vietnam (ARVN). By mid-February 1965, they had succeeded in threatening the very existence of the Saigon government. Infiltration into South Vietnam by North Vietnamese regular forces rose sharply, and the US committed ground combat forces to meet the threat. The US began bombing North Vietnam in February of 1965 and introduced jet aircraft to the fighting in the South. The air war was largely pursued by the USAF, with the Vietnamese Air Force relegated to the sidelines. In northernmost I Corps, for example, where the I Corps Direct Air Support Center was jointly manned by USAF and VNAF personnel with the VNAF in control, two more exclusively US "direct air support centers" were set up in subsequent years. The regular DASC was almost abandoned by Americans, except for one or two USAF junior officers who maintained a link with the minor VNAF effort.

The sheer numbers of US aircraft committed to action and the virtual takeover of the skies by the US, according to one senior USAF adviser, was enough to keep VNAF pilots with little command of English out of the picture. US fixed-wing attack sorties rose from some 65,000 in 1965 to more than 200,000 in 1968, while during this same period VNAF attack sorties stayed between 20,000 and 30,000 a year. At one time during the peak of the war in 1968, there was an average of one sortie a minute being flown in Vietnam.

The pendulum began to swing the other way in mid-1968 after the extraordinary developments following the massive enemy attacks begun during the 1968 Tet holiday. The US halted bombing of North Vietnam, and negotiations began in Paris.

Although probably not a factor in the political decision in Vietnamization, the surprising performance of the tiny VNAF strike force of seventy A-1 Skyraiders and seventeen F-5s during the enemy's 1968 Tet offensive revealed a potential that had been almost forgotten.



*Vietnamese Air Force crewmen line up in November 1970 at Soc Trang Airfield prior to turnover of the base and its choppers to VNAF.*

More than half of all VNAF personnel were off base with their families when the attack started. The remaining pilots flew around the clock. In three days, ninety percent of the force was back on duty, and VNAF strike pilots were flying seventy-eight sorties daily, compared to sixty-five before Tet. Helicopters, transports, liaison planes, and fighters were constantly in the air, and, though seventeen planes were lost (ten on the ground and seven in the air), the total force flew fifty percent more sorties than normal.

Much of the US air effort at this critical period was committed to Khe Sanh. Some observers called this "VNAF's Finest Hour." The VNAF performance clearly demonstrated what could be done when the chips were down and it was on its own. Not only VNAF, but the whole South Vietnamese military structure came out of the Tet 1968 experience with new confidence in its abilities. The South Vietnamese had stood up to the enemy's maximum effort, and, unlike 1965, they had held. But they were backed by powerful US ground and air support, so it could not be considered a true test.

*Right: the scene in late 1970 as Vietnamese and American officers salute their nations' colors at ceremonies turning over two squadrons of A-37s to the VNAF at Bien Hoa Air Base. Below: VNAF captains with two of the A-37 Dragonfly attack jets taken over by the Vietnamese Air Force.*

## Accelerated Modernization

The initial guidelines for the next modernization effort came just after negotiations began in Paris in early 1968. Planners in both Washington and Saigon considered the success of these negotiations in their planning and drafted a highly complex plan, considering the various contingencies that had to be taken into account. For the Vietnamese Air Force, a program originally planned for about five years was compressed to about two and a half years. The realities of the Republic of Vietnam's economic structure and its manpower base were critical factors.

Following the institution of President Nixon's Vietnamization program in 1969, the VNAF was authorized a greater increase in personnel strength, including more than 2,000 pilots. The force would be a balanced one of more than 1,000 fighters, helicopters, transports, and liaison aircraft. To build this force in less than three years, training was to be conducted both in the US and in South Vietnam itself, since some 15,000 men were expected to be in various kinds of training at any one time. This larger force was envisioned as one that would allow US withdrawal coincident with continuing negotiations in Paris.

VNAF trainees included not only pilots and aircraft maintenance people, but fire fighters, sanitation experts, power-production personnel, air police, and all other support people necessary to a balanced air force. Much of this training was in schools, but some was done by integrating VNAF personnel with their USAF counterparts on actual jobs. For example, the base operations function at each air base had VNAF officers and NCOs working side by side with Americans, preparatory to taking over the full function. At Bein Hoa, fighter pilots flew combat missions alongside USAF pilots with the A-37s they were to take over from the 3d Tactical Wing, one of the first US units scheduled for deactivation. The same was true at Soc Trang in the southern Delta, where VNAF helicopter pilots trained in actual combat with US Army chopper pilots.

Learning English was essential to the buildup, since most instructors were American, and test materials, manuals, and the like were written in English. More than 600 students a month were studying English in the Republic of Vietnam, mainly with airmen instructors. Students scheduled for pilot training in the US got another six weeks at the Defense Language Institute at Lackland AFB, Tex. The language program was stepped up in late 1970 when classes were consolidated at Nha Trang where the students live on base and devote evenings as well as days to learning.

In South Vietnam, pilots were trained at Nha Trang, where the

VNAF Air Training Center was located. In 1970, some eighty pilots went through flight training in T-41, U-17, and O-1 aircraft, spending twelve weeks in English language study, nine weeks in ground school, and thirty-two weeks in flying training. But the majority of pilots trained in the US, with an average of well over 100 Vietnamese going into training each month in 1970, most of them in helicopters. Almost a thousand a year are scheduled to enter training in 1971, with some reduction in 1972. When these pilots return to Vietnam, they are further trained in the aircraft they'll be flying, and then sent to their units for upgrading with combat crews.

More than 1,000 nonflying officers were also being trained in the US in 1970, along with some 200 enlisted men, in selected skills, such as communications, electronics, and maintenance. The bulk of training for nonrated personnel was done in South Vietnam, mainly at Nha Trang.

## The Fighter Force

The number of VNAF fighter pilots, plus their long exposure to combat, puts them in a class with the best air forces in the world, according to top USAF advisory people. Some pilots have as many as 4,000 combat missions—more than any fighter pilots in the world. They are very accurate in putting bombs on target, in formation flying, and in meeting their TOT (time on target), and they have the highest morale in the Republic of Vietnam armed services.

Up until 1965, the VNAF was strictly a prop fighter force, but at the request of Air Marshal Nguyen Cao Ky, a handful of B-57s were turned over to the VNAF early in 1965. In 1967, the VNAF took over a squadron of F-5s, their first jet fighters. Modifications of the aircraft had to be made to suit the Vietnamese, whose low-protein diet and low water intake made them far less adaptive to the dryness of the F-5 cockpit, which was heated to counter moisture condensation. Thick, upraised pads on the seats, combined with wooden blocks on the pedals also were required to reduce the distance between the seat and the windscreen for the Vietnamese. The more efficient A-37 came into the VNAF inventory starting in late 1968, allowing for a greater combat radius and heavier weapon loads in a compact delivery envelope that provided excellent delivery accuracy.

The proposed VNAF fighter squadrons will be predominantly A-1 and A-37 units. These aircraft are ideally suited for the Vietnam environment. Also, since one of the goals of the modernization program is to keep things simple, limiting the strike force to two primary types of aircraft smoothed the job of logistics and training.

VNAF pilots had been flying the sturdy, heavy-load-carrying, long-loitering, and highly effective A-1 Skyraider since 1962. The A-1, in the hands of Vietnamese and American pilots during the critical months in late 1964 and early 1965, was a decisive element in holding the line against major attacks that practically shattered the Republic of Vietnam Army before the commitment of US jets and troops. With the reversion of the VC to guerrilla tactics, the A-1 continued to be a highly valuable weapon, but there were not enough to go around. The combination of the A-1 prop with the A-37 twinjet gives the VNAF a capability for quick reaction and long loiter time, depending on the situation.

## Helicopters

The Vietnamization program calls for the helicopter mission to go to the VNAF rather than to the ground forces, which is not the case with the US. Since the early years of the war, VNAF pilots have been flying H-34 helicopters, mainly on airlift and med-evac missions. The helicopter squadrons for the new VNAF will be mainly UH-1s with a gunship and an air-assault capability. The US Army, both in South Vietnam and the US, has played a major role in training VNAF pilots for the helicopter role.

At Soc Trang, an Army chopper base in the Delta, the VNAF moved in with the Army unit scheduled for deactivation and flew with combat-experienced Army pilots. There was some early difference between the Army and Air Force over whether the choppers should be "dedicated" to specific ground units, US Army style, or placed under the centralized-control system employed by the Air Force. The decision was made to put them in the AF control system, to more efficiently make use of these limited and valuable assets.

The relatively small VNAF helicopter force has the mission of providing air mobility to the ARVN

*VNAF airmen strip down a CH-47 Chinook helicopter engine as part of the training received from US Army aviation personnel at Phu Loi Army Airfield, Vietnam. When the training is completed, the choppers are turned over to the Vietnamese.*



*An interesting adjunct to the Vietnamization program is the Republic of Vietnam's National Military Academy in the Central Highlands, where . . .*

# Tomorrow's Leaders Are Being Trained Today

*Vietnam's National Military Academy cadets study, drill, and compete in sports much as do their US counterparts. But at night, they defend their mile-high mountain campus against a stealthy enemy.*

THE Republic of Vietnam's National Military Academy sits atop a 5,000-foot-high, pine-covered mountain at Dalat, in the Central Highlands, some 125 miles northeast of Saigon.

The Academy was established at Hué by the French in 1948. Six years later, it moved to its present site, where it evolved into a four-year, college-level institution, providing sound—but generally theoretical—education to future officers. Now, with the assistance of US Air Force and Army advisers and blessed with one of the finest academic plants in Asia, theory is being combined with modern laboratory equipment and methodology.

In many ways, the National Military Academy resembles its US service academy counterparts. It offers to its 1,000 cadets an academic curriculum balanced between technical subjects and the humanities and social sciences. Rigorous military training and physical fitness, with emphasis on team sports, are parts of the plan. Most of the books in the Academy's well-stocked library are in English.

But in at least two respects, the Vietnamese institution differs from US service academies. The National Military Academy educates officers for all of its country's armed forces. Three-fourths of each class go into the Army; the others to the Air Force and Navy. And after a full day of classes, military training, and physical fitness, the cadets man the Academy's defense perimeter at night. They aren't in the bunkers as part of a training exercise.

Meeting that kind of schedule takes real dedication. The Vietnamese cadets have it. As one of the Academy's USAF advisers put it, "enthusiasm" is the word that best describes these young men, many of whom are destined to make lasting contributions to the development of their country. —J.F.

*Air Force Secretary Robert C. Seamans, on hand for Soc Trang Airfield turnover ceremonies in January 1971, was greeted by Gen. Cao Van Vien, Chief of the VNAF Joint General Staff.*

infantry divisions. As with fighters, it was obvious that air mobility and gunship support could not be on the same scale as that provided to US units by their organic helicopter squadrons. The US 1st Air Cav Division alone, for example, had almost as many helicopters assigned as were planned for the whole VNAF. But austerity was the name of the game in Vietnamization, and the armed forces had to be tailored to the economy.

### Airlift

An important aspect of the VNAF modernization program is the development of an expanded airlift force centered at Tan Son Nhut in the 33d Wing. The VNAF has had long experience with the C-47 Dakota. Vice President Ky formerly commanded the C-47 squadron in the early 1960s. The VNAF's 33d Wing grew to three C-47 squadrons in 1967, and the following year converted one squadron to AC-47 gunships and another to C-119s, giving the force more flexibility. The wing was to pick up additional airlift squadrons. Since the VNAF would have to take over a large share of the in-country transport mission, an Airlift Control Center (ALCC), modeled on USAF lines, was set up in 1969, with daily air service to each VNAF base.

In addition to these central elements of an air force, the VNAF is also building up its force of liaison planes and pilots for the forward air controller and psywar missions that have proved important in the war. Pilots for the U-17 and O-1 aircraft that would do these jobs were trained at Nha Trang and in the US. An Air Ground Operations School at Nha Trang has checked out more than 250 students a year on such subjects as how to write frag orders and what kind of ordnance is best for a particular mission.

### Earning While Learning

The continued combat situation in Vietnam and the need for regular VNAF operations has made it difficult at any time to determine how fast the compressed modernization program is moving. The period between the activation date for a new squadron and its operational readiness has not meant that the unit is not involved in combat. Even while building up to strength, pilots and aircraft of a newly activated squadron fly combat missions. The squadron activated in September 1970 to fly the cargo/troop-carrying CH-47 Chinook, for example, began flying operational missions on November 1 although it was not scheduled to be operationally ready until mid-1971. In some cases, when a new squadron had pilots and aircraft ready for combat but was short on maintenance people, US airmen maintenance technicians stayed on until the VNAF maintenance people were ready to take over.

The VNAF attack sortie rate in 1970 averaged more than 3,000 a month, compared to some 2,000 a month in the 1966–1969 period. However, the ratio of VNAF sorties to US sorties rose sharply, mainly because of a drop in the US rate. By the end of 1970, VNAF was flying about fifty percent of the total strike sorties in RVN. This percentage is expected to rise steadily in 1971 and 1972 as US units phase out and new VNAF squadrons come into being.

### Outstanding Leadership

Despite some continuing problems, the progress of VNAF expansion is looked upon by USAF advisers as nothing short of phenomenal. Leadership at the middle management level has been deficient, but this had been anticipated and could be expected where any rapid buildup was programmed. Upgrading this lower-level leadership was given top priority by VNAF Commander Maj. Gen. Tran Van Minh, who regularly gave pep talks to units in the field, bolstering their confidence and morale.

Initially, English language training was also a weak point, but this is being met by more intensive and concentrated courses attended by personnel living on base. There was also a problem in upgrading technical skill levels, since so many new


*Maj. Gen. Tran Van Minh, Commander in Chief of the VNAF, which now totals some 40,000 men, including 1,800 pilots who fly more than 700 aircraft.*

*Air Force Brig. Gen. (Maj. Gen. Selectee) Kendall S. Young has run the air-Vietnamization program since 1969. He ranks the VNAF as more combat-proficient than any present-day European air force.*

recruits were getting training for the first time in such areas as maintenance and electronics. Only time and experience could get these people to a higher skill level. Another problem was overcrowding on bases used jointly by the US and VNAF. This was an anticipated difficulty which will correct itself as US air units are phased out or return to the US.

Brig. Gen. Kendall S. Young, chief Air Force adviser in Vietnam, has steered the highly accelerated program almost from its beginnings in 1969. "When I first started on this," General Young said, "we figured the program was so tight a sneeze would blow it apart. But we managed to beat even these original tight schedules in practically every category. We activated three fighter squadrons six months early, a liaison squadron a year and a half early, and a helicopter squadron nine months early, and we're going to have two of our transport squadrons ready well ahead of time."

Passing over his own extremely significant role in the program, General Young pointed to a large photo of a neatly mustached VNAF general on the wall of his office, next to Headquarters of Seventh Air Force at Tan Son Nhut. "There's the real reason for it," he said. "Maj. Gen. Tran Van Minh is an absolutely superior man. He represents the superb quality of people we've been working with in VNAF. And he has the total loyalty and respect of his officers and men. Under his leadership, the VNAF unquestionably has developed the highest morale of any branch of the Vietnamese armed services."

General Young, who served six years in Europe, ranks the VNAF as more combat proficient than any European air force. And many top American commanders in Vietnam rate the VNAF as extremely accurate in bombing and in general air combat. Some pilots have been flying combat continuously for more than a decade, while the average American pilot serves only one year in Vietnam.

General Minh replaced Air Vice Marshal Nguyen Cao Ky as commander of the VNAF on July 25, 1965, shortly after Ky was named the nation's Premier. Ky, who remained VNAF commander for a time after he became Premier, still retains an active interest in the VNAF, attending graduation ceremonies and flying occasionally. He was one of the first pilots to fly into Cambodia. Minh claims absolutely no political aspirations and devotes his full time to the VNAF.

## A Look Ahead

When US forces have withdrawn from Vietnam, the VNAF will have full responsibility for supporting the ground forces, and they have no reservations whatsoever about their competence for this task. In terms of aerial firepower available, they will not match the overwhelming air support provided US forces during their peak activity of 1967 to 1969. But this is not considered a drawback. General Young explained: "The US, with its powerful economy and its goals in Vietnam, was willing to expend a lot of firepower to save one life, and the large amount of airpower employed certainly kept casualties down. But it's not certain that the ARVN will need this same amount. The South Vietnamese economy can support only a certain force level and a certain amount of ordnance expenditure. If we give them more than they can support in terms of their economy and available manpower, we might rupture them."

Another reason why the VNAF will not have to match the combined air strength of the allied forces in the late 1960s is their proved combat effectiveness and the fact that they will be fighting in defense of their homeland. As General Young put it: "They know the country, the terrain, the personalities involved, the philosophies of the other side, and, most important, they're not over here for just one year as our pilots are. They are better suited to fight the war in their own way, and this will not be the way we fought it."

Certainly, the VNAF will draw heavily upon US experience, but they cannot be expected to reach the level of sophistication of the US Air Force. Nor can their economy or manpower base support a force beyond a certain level. In this respect, there are certain risks and assumptions, and these were recognized by President Nixon when he announced the program. However, the VNAF is being geared to fight a war where it will continue to have complete air superiority.

The devastating casualties suffered by the VC/NVA during their 1968 "go-for-broke" offensives, followed by severe blows to their infrastructure under General Abrams' Accelerated Pacification Program, begun in late 1968, have succeeded in greatly reducing the enemy's effectiveness. By 1971 more than ninety-five percent of the hamlets in the Republic of Vietnam were under government control, and roads, waterways, and railroad tracks were being used throughout the country more than at any time since 1965. Battalion-size enemy attacks dropped from a peak of some twenty a month in early 1968 to zero in 1970. This was in line with the often-quoted COSVN Directive 9, captured in 1970, which spelled out the enemy's return to guerrilla warfare. The change in enemy tactics, coupled with General Abrams' switch to smaller recon-in-force ground actions to meet the enemy change in tactics, has made the Vietnam conflict a far different war from what it was prior to the 1968 Tet offensive.

This change has allowed a reduction from more than 20,000 strike sorties a month in 1968 to fewer than 10,000 a month in late 1970. Although the total number of VC/NVA forces has stayed at around 240,000, the North Vietnamese are having to fill up more and more VC units. NVA troops are unfamiliar with the terrain and the people, and are dependent upon hazardous supply lines for replenishment of their standardized weapons. This has reduced their support and mobility in the past two years. It is for this changed combat situation that the VNAF is being groomed. And now, in early 1971, there is solid ground for optimism about the Vietnamization program.

For men like General Young and General Minh, who are or have been directly involved in meeting scheduled unit activations, training pilots, and turning over functions and facilities to the VNAF, the primary focus must be on giving the air war back to the South Vietnamese. In this task, they can report substantial progress. ■

*Two models of the controversial F-111—the A and E—are now operational, with the Mark II-equipped D and the F soon to join TAC's forces. Under different DoD management, could we have had a better aircraft for the same—or a smaller—investment of time and money? Perhaps. But, as the author, an experienced F-111 driver, points out, evaluations differ depending on one's perspective. Here's a payoff angle on the . . .*

# F-111 A Pilot's View

**By Capt. John Francis, Jr., USAF**

AFTER SEVERAL hundred hours in the cockpit of any airplane, you get to know the bird pretty well. If you're a professional military pilot and the aircraft will do its assigned job better than any other, you respect it. If it's also a safe bird, both in training and combat, you have confidence in it. If it's a pleasure to fly, you develop real affection for it.

For two and a half years, I flew the F-111A. My feeling about the aircraft is a mixture of respect, confidence, and affection, tinged—even now—with more than a little awe. It's that kind of machine.

There has been a lot of political and economic criticism of the F-111. I don't feel qualified to discuss those matters. It may be that for the same investment of time and money, we could have had an even better aircraft. I'm not qualified to judge that, either. The point is that we now have F-111As and Es in operational units. The even more advanced D model, with improved Mark II avionics, will be along next year, and later we'll get the F model, with a more powerful engine and modified Mark II avionics. The F-111s we have now, and those to come, should be judged on their merits—not on the selection and management decisions that are now water over the dam.

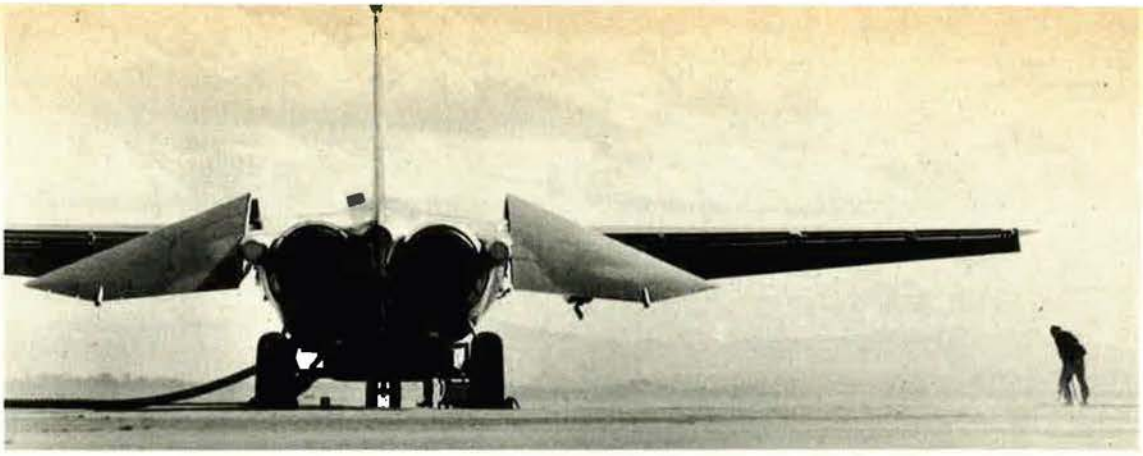
## Unique Means Priceless

There's only one word that describes the F-111 in a nutshell. The word is *unique*. As any military planner will tell you, when a weapon system has a unique capability, it becomes a priceless machine. Unique doesn't mean just higher, faster, and further than some previous model. It means opening a combat arena where you have superiority because you are the only one operating there. The F-111A has such a unique capability. It opens to the Air Force nighttime, all-weather operations at low altitude. But the mission isn't the only unique thing about this airplane, from the point of view of the operational planner, and certainly not from where the aircraft commander sits.

As an aircraft commander, I can fly the F-111 at supersonic speeds within 200 feet of some awfully hard and unseen rocks. *So I have a very special perspective.* Keeping this perspective in mind as I discuss the F-111A will give you a much better appreciation of its special features. And almost everything in the F-111, from nose to tail, is special, unique, or revolutionary in some way. Let's start with the nose.

The nose section houses the electronic gear (avionics). You've probably read other articles that said avionics is one of the outstanding features of the F-111A, and so it is. You may have seen other articles calling those black boxes unnecessary electronic gadgetry that only runs up the cost of the aircraft. The truth is, without this equipment the aircraft would be incapable of its unique mission. A good air-

*The views expressed herein are those of the author, and do not necessarily report official policy or reflect the views of the United States Air Force or the Department of Defense.*



*The F-111's swingwing design ruled out conventional ailerons. Horizontal tail surfaces operate both differentially and symmetrically to provide both aileron and elevator functions.*

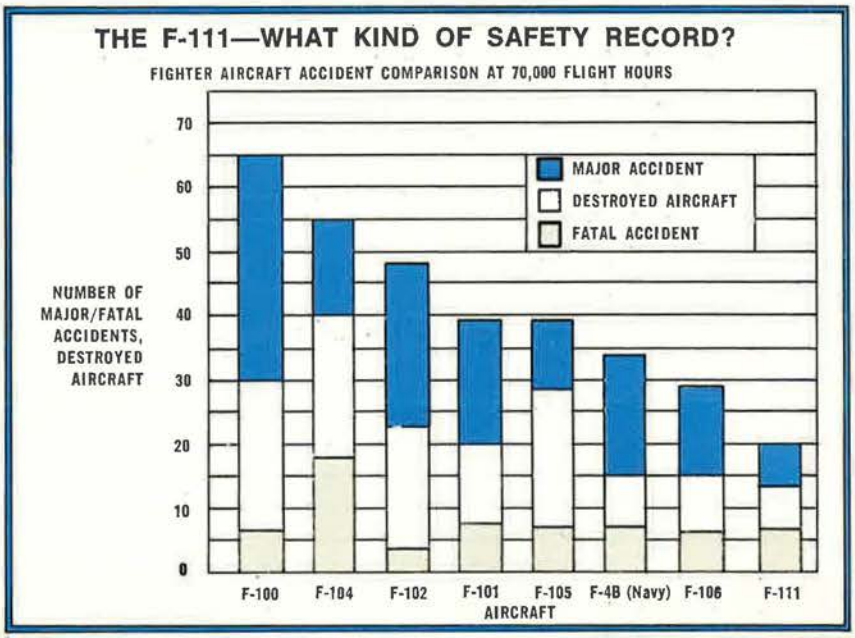
craft, yes, but not unique. In other words, the electronic "gadgetry" is not only expensive—it is priceless.

The first item of avionics I want to talk about is the attack radar. So what's unusual about an attack radar? Lots of aircraft have them, but the F-111A system is greatly advanced in its ability to identify and delineate topographical features. That enhances the total radar-bombing capability. The ease of radar bombing and navigation will be obvious when I tell you the picture projected by the attack radar is like a map. Fantastic? Yes, but even more so when tied into the inertial-navigation system.

### Fabulous Black Boxes

The inertial platform and computers that make up the F-111A's navigational and bombing system are phenomenally accurate. It is this system that makes the F-111A capable of around-the-clock, **all-weather** weapon delivery within the lethal **envelope** of conventional weapons. Here, then, is the first of those missions that no other aircraft can ac**complish**. Interdicting the enemy's supply lines (**bridges**, passes, truck parks) and airfields at any time, in any weather, deprives him of an option he once had: digging in by day, repairing and moving by night.

You may have read that the F-111A's navigation equipment is accurate to a few thousand feet per hour (very good in itself). What you may not know is that, through the attack radar tie-in, the weapon system operator can maintain position accurately within hundreds of feet, at all times. Navigating at low level in bad weather increases your appreciation of such accuracy. Knowing your position and the terrain can be very reassuring when you depend on automatic systems to provide ground clearance.




*After 70,000 hours in the air, the F-111's safety record, when compared to similar experience of other fighter-type aircraft, hardly supports allegations that it is a dangerous aircraft. The author explains why the F-111 is, in fact, one of the safest military aircraft ever built. These figures are as of February 11, 1971.*

The next avionic feature, the ballistics computer, is a pilot's dream. This computer was not originally a part of the F-111A. It's one of those modifications that contributed to the aircraft's escalating cost, of which you've heard so much. First, let me explain the increased flexibility it provides. Then you decide whether paying more money for it was justified or not.

The computer can determine continuously the impact point of any bomb, given the aerodynamic characteristics of the bomb and the altitude, airspeed, and vertical velocity of the aircraft. It then relates this information to the target's location and continuously updates a release time for the bomb. What does this mean to me, the aircraft commander? For the first time in radar-directed, level bombing, it is not necessary to fly straight and level on the bomb run. Altitude and airspeed can be changed without affecting bombing accuracy. Since these two items are essential information for the enemy's air defense system, it gives you a decided advantage over the defenses.

But the F-111's revolution in bombing flexibility doesn't stop here. Since you can vary altitude and airspeed continuously, you can make a toss-bombing or dive-bombing attack with the same accuracy as in a level bomb run. You no longer have to overfly the target area. You can start a pullup miles short of the target, release in a climb, and break away, diving back to low-level concealment while the bombs continue to the target.

If you use the offset mode of the attack radar and bomb-nav-computer, you can further protect yourself from enemy defenses by choosing an axis of attack that positions a mountain range between the target and yourself. You can toss the bombs over the range. In this mode, without seeing the target, the weapon system operator aims on an offset point, which he knows is so many feet in such and such a direction from the target. Remember, if we cannot see the target area on our radar, then normal defense radars in the target area cannot see us. In other words, an enemy's first indication of attack would be weapons detonation. *This* is the tremendously flexible F-111A doing radar bombing.

## Defense Suppression

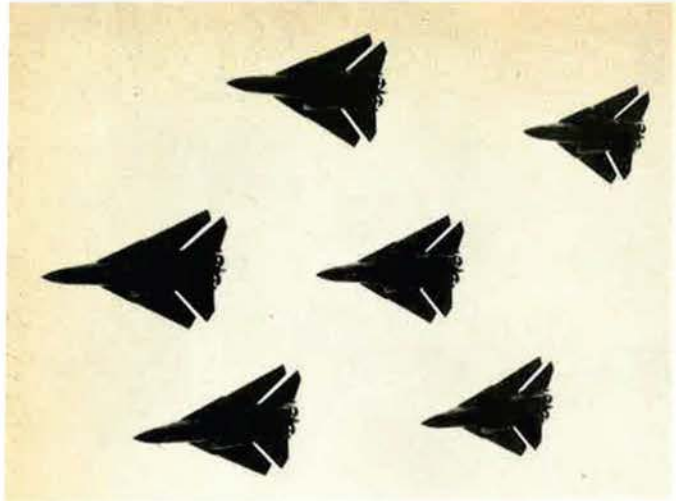
For still more flexibility, the ballistics computer can be tied into the LCOS (bombsight) for dive deliveries or visual-level deliveries. As I mentioned, the computer continuously computes an impact point. It can show the impact point on the bombsight at all times. Now you don't have to dive bomb in the traditional way —rolling in at a set altitude and airspeed, diving at a set angle, releasing at a predetermined altitude and airspeed, and making large errors in accuracy if any of these parameters were wrong. Now you can come from any direction, at any airspeed, altitude, and dive angle, drive the bombsight pipper over the target and release. Flexible? Yes, and it greatly reduces delivery errors. But it means more. When you roll in on a target, you're not committed to the target by preset conditions of release. If the enemy's defenses open fire, you can switch your attack to them. It is no longer necessary for No. 4 in a flight to be a sitting duck because he's coming in at the same angle, airspeed, and altitude as the three previous aircraft.

*When flying on the deck, at high subsonic or supersonic speed, and masked by terrain, the F-111A is difficult or impossible to see either on radar or visually. It can safely fly a course, like the one shown here, at night or in weather.*

Knowing my aircraft can do all these things, I wonder how anyone can say that the F-111 has no future as a ground-attack aircraft because it is too vulnerable and expensive to risk. The capability of striking targets and attacking the defenses at the same time doesn't leave you as vulnerable as all that. In fact, I think that defenses would be a little leery of giving away their position by opening fire, once they figure out the tremendous accuracy, firepower, and flexibility of the F-111.

The last of the avionic gear I am going to discuss is the terrain-following radar (TFR). This is *it*—the marvel of the aeronautical world. It is this equipment that allows the aircraft to fly thousands of miles over all types of terrain, never getting higher than 200 feet, and without the pilot ever touching the control stick.

The terrain-following radar is actually two completely independent sets, each capable of performing the entire terrain-following function and one serving as backup to the other. The TFR is not just unique. It's revolutionary. It is the TFR that opens up the arena of low-altitude, night, weather operation. The TFR can take you anywhere it can see. If it encounters weather that it can't see through, it takes you over or around it. The TFR not only lets you stay close to the ground; it lets you go through the low points in the hills. It lets you fly along a rocky mountainside where you'll be very hard to discern on enemy radar. But the TFR does more. It frees you from the stick



*The F-111's automatic fuel-distributing system and command-augmented flight controls make flying it "a dream during formation." The aircraft always trims itself.*

So much for avionics. Now let's look at the crew module. Here is a system near and dear to every crew member's heart. It's the second revolutionary aspect of the F-111A. The crew module is the crew escape "capsule" that has had a phenomenal history of success. In an emergency, it allows the crew to abandon the aircraft *as a crew*. The module has been successful in every attempted ejection within the design envelope. It has been used at high altitude, high speed; at low altitude, high speed; at low altitude, low speed; in a spin; and while violently out of control. The ejections have resulted in no serious injuries to any crew member. While the success rate would seem enough in itself, it is even more significant because it gives crew members the confidence necessary to operate in the dangerous flight envelopes for which the F-111A was designed. Supersonic or low-altitude ejections, while still dangerous, are not the threats they once were. A little more about the crew module later.

*Fowler flaps and full-span slats (visible here), and multiple-disc, antiskid brakes allow the F-111 to land in a couple of thousand feet without a drag chute.*

*The F-111A carries twenty-four 750-pound bombs at speeds "up to the delivery limit of the bombs." As the wings sweep back, pylons rotate to keep bombs aligned with airflow.*

and rudder work and lets you concentrate on other duties of the aircraft commander—decisions on what weapons to use, enemy defenses, evasive action, and system malfunctions.

The terrain-following radar is safe in the hands of a pilot who knows it and its limitations, and it gives him the ability to fly where no other aircraft would dare. I would take my F-111A down into the Grand Canyon at night when the overcast was below the rim. In fact, one of our training routes does take us into the canyon. No other aircraft in the world could survive in that kind of environment.

## A Swinging Wing

Now for the swingwing (switch blade, if you prefer). Revolutionary? You bet! Although there now are a few imitators in other parts of

*If the F-111 were to be used as a day fighter, its side-by-side seating and limited visibility might be a handicap. But for its assigned mission, the cockpit design offers many advantages.*

the world, the swingwing F-111 flew in 1964. When talking about the variable-sweep wing, you get into some pretty impressive statistics on aircraft range and bomb load. Range and bomb load, of course, are trade-off items. But any way you slice it, you're talking about several times as much payload, carried much further than any other fighter-type aircraft in history. And you don't drag your feet getting there. The variable-sweep wing comes forward for takeoff and, with the highly efficient Fowler flaps and full-span slats, allows the F-111A to get as many as twenty-four 750-pound bombs airborne. Then you sweep back the wings to reduce drag and push the speed right up to the delivery limit of the bombs. The same wing that allows you to come down the final landing approach at 130 knots sweeps back to reduce drag for supersonic flight on the deck.

General Dynamics could have made the movable wing a real nightmare. Instead, it is easy and natural to operate. In fact, there are some very favorable side effects of the engineering that went into the wing. As you might imagine, moving a wing changes the center of gravity and aerodynamic center of pressure. Problems of fuel balance, trim, and stability augmentation could be very annoying if the pilot had to compensate for them each time he moved the wing. Instead, the pitch-series trim of the aircraft compensates for trim changes. The fuel-distributing system is completely automatic, and the command-augmentation feature of the flight-control system gives a very nearly constant response to a given stick force, regardless of the wingsweep or aircraft speed. The aircraft always trims itself. Accelerating or decelerating, climbing or diving, you set the attitude with the stick and the aircraft trims off the forces. It is a dream during formation, flying a weather penetration, or on the air-to-ground range. The aircraft, through command augmentation, responds the same, with or without a bomb load.

Since the aft section of the wings sweep into the fuselage, conventional ailerons were impractical. The pilot gets pitch and roll by differential or symmetrical movements of the horizontal stabilizer. With the wings forward, spoilers augment the roll response. As the wings sweep, the pylons rotate to keep the external stores aligned with the airflow. It is an outstanding engineering job.

### Below and Behind

Underneath the aircraft there is another completely new idea for fighters. Both wheels of the main landing gear are on a single trunnion. They both come down together: no

*Attack radar, inertial-navigation computer, terrain-following radar, and ballistics computer combine to give the F-111 crew unique operational capabilities.*

chance of getting one without the other. The tires, designed to provide low-pressure footprints for landing on unpaved strips, are low wearing and may be used for up to 150 landings—ten times as many as some other fighter-type aircraft.

Within the wheels is a beautiful set of multiple-disc brakes. Combining the F-111's low approach speed with brakes that can be fully engaged at touchdown (thanks to the antiskid feature), the aircraft, weighing about twenty-five tons, can be stopped in a couple of thousand feet without a drag chute. Show me another fighter that can pull that one off! This short-field performance is vital to flexible, worldwide deployment. Not all places have 10,000-foot runways.

Finally, in the tail end we come to those unjustly maligned engines. Well, don't feel sorry for us F-111A crews. The P-1 engines (noted for compressor stalls) have gone the way of the test birds. The P-3 version of the TF-30 is another story. Another revolution in aerodynamics, the engine combines turbofan and afterburner for the first time in any aircraft. The result is a beautiful match of the outstanding features of each. The turbofans provide the very low fuel consumption that is needed for transoceanic deployments. The afterburners provide the thrust augmentation required to get a 70,000-pound vehicle up to two and one-half times the speed of sound. Boy, do they ever provide thrust augmentation—some eighty percent, compared to fifty percent in other engines! Further, the afterburner has five stages, each of which can be fully modulated.

Acceleration above Mach 1.0 is outstanding, and very rapid to Mach 2 plus. I've never been Mach 2.5, but that's only because our supersonic flight area runs out as we're accelerating through Mach 2.1 at 40,000 feet and climbing rapidly. This aircraft can move! Not only that, but the engines have the power, and the aircraft is so clean at seventy-two degrees of wingsweep that it can sustain supersonic flight while holding Gs in a turn—a trait not too common in other aircraft. Sure, I'd like more power; what pilot wouldn't. And that's exactly what we're getting. The P-9 is already here in the D model, and the P-100 is on the way for the F.

### What About Safety?

Well, that's the F-111A, pitot boom to tail feathers. Now we come to a critical question. Is the F-111A a safe airplane? My answer is: Yes, it is safer than other fighters. There has not been a single moment during the history of F-111 accidents and groundings when I would not have gone to the flight line and taken off with confidence.

The Air Force says the F-111's safety record speaks for itself. You've probably seen the figures of so many accidents per so many flying hours, compared to other Century Series fighters *(see chart p. 32)*. But the pilot doesn't get his feeling of safety from statistics. He gets it from knowing the aircraft and its systems,

**USAF's F-111 Program**

| MODEL | POWERPLANT | REMARKS | NUMBER IN USAF PROGRAM |
|---|---|---|---|
| F-111A | Pratt & Whitney TF30-P3 turbofan | * Basic design to provide TAC with all-weather bombing capability<br>* Now operational | 141 |
| F-111E | Pratt & Whitney TF30-P3 turbofan | * Basic F-111A design<br>* Improved penetration aids and weapons management<br>* Stall-free propulsion through supersonic envelope<br>* Now operational | 94 |
| F-111D | Pratt & Whitney TF30-P9 turbofan | * Major avionics modification to add air-to-ground, moving-target capability, plus improved weapons-delivery accuracy and payload | 96 |
| F-111F | Pratt & Whitney TF30-P100 turbofan | * Growth engine for increased payload and maneuverability<br>* Improved avionics—digital computers and advanced inertial navigation | 82 |

*In addition to the F-111 models produced for the Air Force were the F-111B—a Navy version that did not reach production—and the F-111C model for the Royal Australian Air Force.*

**THE AUTHOR . . .**

*Capt. John Francis, Jr., a 1963 graduate of the Air Force Academy, earned a master's degree in aeronautical engineering and served on the staff of AFSC's Ballistic Systems Division (now part of SAMSO) before entering pilot training. After completion of flight training in 1968, he spent two and a half years as an F-111A pilot at Nellis AFB, Nev. Captain Francis was recently assigned to Vietnam, where he will fly A-37s.*

and from knowing how well they work for him and his fellow pilots.

The history of all aircraft accidents clearly identifies areas that are critical: engine and associated systems failures; fires; flight-control malfunctions; bad weather; and, finally, pilot factors. Here's my evaluation of these areas as they relate to the F-111A.

First, the engines. As a basic design feature for safety, the F-111A has two highly reliable engines. The engines have fire-detection and extinguishing equipment as well as an automatic airstart feature. The automatic airstart system works off a pressure-sensing circuit within the engine that senses the sudden pressure changes of a flameout and provides automatic ignition. Consequently, either because of engine reliability or automatic airstart reliability, I've never had a flamed-out engine. Even if I had to shut down an engine, it's no big thing. The F-111A performs very well on one engine, and neither electrical nor hydraulic systems are lost with one engine shut down.

The F-111A has dual electrical and hydraulic systems. Losing one side of these systems does not affect the aircraft except in loss of redundancy, for a single engine will provide all the electrical and hydraulic power required for normal flight. Either generator can carry the entire electrical load. If both generators should be out, an emergency generator provides essential electrical power.

There are two hydraulic pumps, one for each system (primary and utility), mounted on each engine. If you lose an engine, the other engine powers both the primary and the utility hydraulic systems. Then, if things should get worse and you lose one of these pumps, the other system can still power the flight controls and the wingsweep. This does not mean that other hydraulically operated systems are lost. You can operate all of these by electrical or pneumatic backup methods.

The hydraulic systems contain an additional safety feature. Isolation valves keep fluid from being lost in flight if a non-flight-essential subsystem is lost. For example, if the landing-gear hydraulic actuators should leak in flight, the only fluid lost would be that in the line to those actuators. In the event battle damage occurs to the primary hydraulic system, the utility system would automatically cut out flow to nonessential subsystems in order to furnish power for the wingsweep and flight controls.

The possibility of critical flight-control malfunctions still exists in the F-111A, as it has in all other aircraft. However, the additional sophistication of the F-111A has not brought with it increased danger. The flight controls are filled with electrical circuitry designed for redundancy and self-testing. These features warn the pilot of impending malfunctions so he can prevent unwanted signals from going to the control surfaces.

The F-111A mission makes it necessary to operate in and out of airfields with marginal weather. The aircraft's systems are ideally suited for this environment. The attack radar can be used for navigation around severe weather. It can be tied to the inertial-navigational computer for an instrument approach (including glide slope) to an airfield without any ground radio or navigational aids. The TFR is an invaluable aid for providing terrain clearance in a low-ceiling penetration. Added to all this is the auxiliary flight reference

*Maj. Fred de Jong (center) of the 79th TFW at Upper Heyford, England, was the wing's first pilot to pass the 1,000-hour mark in tactical versions of the F-111. Crew chief TSgt. John Bachmann and Lt. Col. Fred W. Gray, Commander of the F-111E-equipped wing, greet the Major appropriately.*

system, a completely independent, backup instrument system that is visible to both crew members.

### The Pilot Factor

So we come around to the pilot factor. This is a very personal thing, so nebulous that it's hard to convey to a reader how the factor of possible pilot error is reduced.

The cockpit is comfortable and well pressurized. There is no need for parachutes. Fatigue is reduced on long missions. Instruments are well placed and easy to read. Caution lights quickly catch the crew's attention.

The automatic systems allow the crew to divide their attention among all operations tasks. The aircraft is easy to fly, to take off, and to land.

The crew sits side by side, able to monitor each other's efficiency and to double-check the operation of the aircraft's complex systems.

However, should the crew have to eject despite all the F-111A's safety features, there is the escape module. In many aircraft accidents, a fatality is the result of ejection-system failure or failure of the crew to use it in time. Again, the F-111A gives the crew an advantage over the crews of other fighters. The system works—it's been proved. The crew goes together and stays together. They don't face the hazards of ejection into the airstream. These advantages of the crew escape module should reduce the time it takes to decide to eject. And once on the ground, the escape module keeps right on working for the crew. They are together and equipped with more survival gear than can be carried in any other type of ejection system.

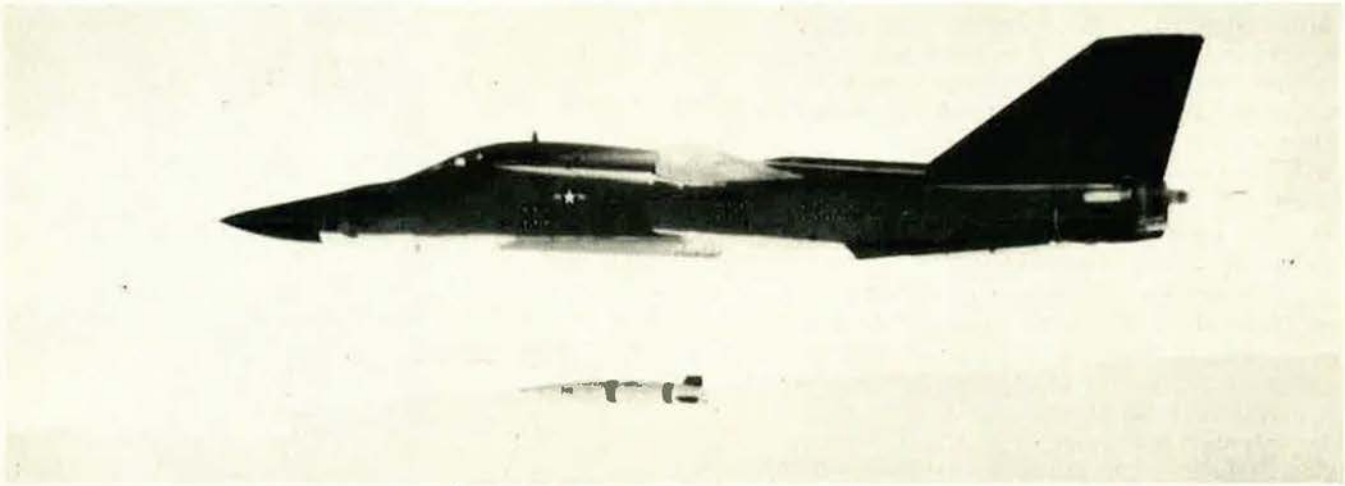
I don't want to leave you with the impression that I've covered all the safety features of the F-111A. I haven't even covered all of the major features. On almost every page of the flight manual, I can find some item that was designed to reduce a potential hazard in the air. I'll just say it again: The F-111A is a safe aircraft.

Within a pilot's frame of reference and the aircraft's operational environment, the F-111A does have shortcomings. All aircraft do. There never has been an aircraft that was all things to all pilots, performing all missions. There never will be. Just remember the things this aircraft, the F-111, can do better and more safely than any other. It can take the war to the enemy at any hour of any day of the year. He would have no time for rest, psychological relief, rebuilding and resupply, or training. Other fighters and bombers have left the enemy undisturbed as much as eighty-five percent of the time because of their inability to fly safely or effectively at night and in weather. The F-111A has taken this safe time from the enemy.

### Criticisms—How Relevant?

Now, what are some of the criticisms that have been leveled at the F-111's operational performance? Are they accurate? Are they relevant to its ability to perform its mission? Here are some of them.

"The aircraft won't fly at 65,000 feet." Maybe it will, and maybe it won't. I've never had



*An FB-111, offshoot of the F-111, fires a SRAM missile in a test run at the White Sands Missile Range in New Mexico. An FB-111 won the Bombing Trophy in SAC's 1970 Combat Competition.*

occasion to find out. I fly my F-111A below 1,000 feet above the ground, which is the best place to be when you're penetrating enemy defenses.

"The visibility of the aircraft is too limited." You can see what you need to see. And at night, in bad weather, there's not much to look at anyway.

"The aircraft can't reach Mach 2.5 without compressor stalls." This is more high-altitude performance data that's irrelevant to the primary mission. I operate on the deck. The F-111A will fly supersonic on the deck, as advertised.

"The aircraft could never win a dogfight against the MIG-21." It probably can't, but I never expect to encounter one at my speed, on the deck, at night, or in weather.

"The aircraft weighs too much." This is a relative statement. I still get off the ground and land with bigger payloads in less distance than other fighters. The aircraft maneuvers very well. The weight is a blessing in disguise. It is the weight that provides the fuel for long-range operation and the structure for carrying large weapon loads.

"The aircraft has no air-to-air role." That is simply not true. The F-111A could hardly be called a day fighter. But with air-to-air missiles aboard and the fuel to meet enemy bombers far out from our borders, the F-111A could perform admirably in augmenting our air defense forces. The fuel, incidentally, gives us another unique feature—the ability to make multiple supersonic attacks on enemy supersonic bombers.

"The aircraft cannot deploy transoceanic without refueling." The F-111A certainly can, and on *internal* fuel, as it did to Paris in 1967. There is even more flexibility with external tanks. And ferry distance for other fighters is always in terms of *external* tanks.

In the context of the F-111's primary role, many criticisms fade into academic discussion of specifications written more than eight years ago. During those years, the environment of tactical air warfare has changed considerably, and with it our understanding of how best to apply the unique features of the F-111.

I have tried to give you a view from the cockpit—the special view that F-111 crews have. For our particular mission, we do not need a different airplane. What we need are new techniques to fit a revolutionary aircraft to a new area of conflict.

The F-111 provides capabilities that are found in no other aircraft. It is unique, and, when the chips are down, unique means priceless. ■

## F-111 Industry Team

In addition to General Dynamics, prime contractor on the F-111, the F-111 industrial team includes many major subsystem subcontractors and approximately 5,900 suppliers in forty-five states. The major systems and subcontractors are listed below.

| SYSTEM | SUBCONTRACTOR |
|---|---|
| A.C. Power | Westinghouse Electric Corp. |
| Aft Fuselage | Grumman Aerospace Corp. |
| Air Data Computer | The Bendix Corp. |
| Air Inlet Control | United Aircraft Corp. |
| Ammunition Handling | General Electric Co. |
| Antenna Coupler | Collins Radio Co. |
| Astrocompass | Litton Industries, Inc. |
| Attack Radar | General Electric Co. |
| Ballistic Computer | Litton Industries, Inc. |
| Camera (KA 55) | Hycon Mfg. Co. |
| Camera (KA 56) | Fairchild Camera & Instrument Corp. |
| Camera Mount | Aeroflex Laboratories Inc. |
| Constant Speed Drive | Sundstrand Corp. |
| Countermeasure Receiver | Avco Corp. |
| Crew Module | McDonnell Douglas Corp. |
| Data Display | International Telephone and Telegraph Corp. |
| Doppler Radar | Singer-General Precision, Inc. |
| ECM Group | Sanders Associates, Inc. |
| Emergency Power Unit Motor | Sundstrand Corp. |
| Emergency Power Unit Generator and Control | The Bendix Corp. |
| Flares | Central Technology, Inc. |
| Flares | Space Ordnance Systems, Inc. |
| Flasher | EG&G, Inc. |
| Flight Control | General Electric Co. |
| Gyro Bias Test Set | Litton Industries, Inc. |
| H. F. Radio | Collins Radio Co. |
| Infrared Detection | Texas Instruments Inc. |
| Lead Computing Optical Sight | General Electric Co. |
| Missile Control Set | Raytheon Co. |
| Mobile Training Sets | Burtek, Inc. |
| Navigation and Attack Set | Litton Industries, Inc. |
| North Seeking Gyro | Singer-General Precision, Inc. |
| Nose Radome | Brunswick Corp. |
| Optical Display Sight Set | General Electric Co. |
| Pressurization | United Aircraft Corp. |
| Radar Altimeter, Low Altitude | Honeywell Inc. |
| Radar Altimeter, High Altitude | Stewart-Warner Corp. |
| Radar Analyzer Test Set | Sperry Rand Corp. |
| Radar Homing and Warning | Textron Inc. |
| Reconnaissance Computing Group | North American Rockwell Corp. |
| Refrigeration | The Garrett Corp. |
| SEESAM System | Loral Corp. |
| Servo Actuators | The Bendix Corp. |
| Side Looking Radar | Westinghouse Electric Corp. |
| Simulators | Singer-General Precision, Inc. |
| Starter Cartridge/Pneumatic | Sundstrand Corp. |
| Starter Pneumatic | The Garrett Corp. |
| Terrain-Following Radar | Texas Instruments Inc. |
| Voice Recorder | Electronics Specialty Co. |
| Windshields and Canopies | PPG Industries |
| X-Band Transponder | Motorola Inc. |

| | |
|---|---|
| Mark II Avionics | North American Rockwell Corp. |
| *Major Mark II Subcontractors:* | |
| Doppler Radar | Canadian Marconi Co. |
| General Purpose Computer | International Business Machines Corp. |
| Stores Panel, Control, Indicator, Selector | Fairchild Hiller Corp. |
| Heads Up Display and Integrated Display | United Aircraft Corp. |
| Horizontal Situation Display | Astronautics Corp. of America |
| Panels, Displays, Controls | Singer-General Precision, Inc. |


*". . . the Air Force . . . has had to battle for all its new bomber programs. . . . Once a new bomber has made it into the inventory, it rapidly establishes itself as an indispensable tool of national security." General Brown believes this will be true of the B-1 (left), planned successor to the aging B-52.*

## *Interview with AFSC's General Brown*

AFS

*The Soviets are well aware "of the essentiality of R&D to their military needs while we . . . don't show the urgency . . . that we should," according to Gen. George S. Brown in his first press interview since assuming command of AFSC. On the command's recent tenth anniversary, General Brown discussed new R&D achievements, revealed an agreement with NASA on cross-range capability of the Space Transportation System, disclosed a new R&D program called "Have Lemon," and talked about new approaches in the R&D personnel field. All of these help make . . .*

**By Edgar Ulsamer**

ASSOCIATE EDITOR,
AIR FORCE MAGAZINE


*"There isn't any doubt that the F-15 [right] will be in a class by itself so far as the job that it was designed to do is concerned." That job is air superiority, and "I'm confident it will . . . outperform anything the other side might come up with."*

# undation for the Air Force

AFTER A LONG period of slow starts, the Air Force is now grooming a "pretty good stable of horses" for the crucial race against technological obsolescence and toward force modernization. USAF's "horses" include the B-1 strategic bomber, the F-15 air-superiority fighter, the Airborne Warning and Control System (AWACS), the A-X ground-support aircraft, the nuclear-armed, air-to-ground attack missile SRAM, and the F-5E international fighter. These systems augment the existing arsenal of USAF missiles and aircraft.

On the debit side of the technological ledger, however, looms the imbalance between declining US military R&D and greater, steadily increasing efforts by the Soviets. The latter condition is being aggravated by this country's lessening awareness of the urgency and paramountcy of military R&D.

These views were expressed to AIR FORCE Magazine on the occasion of the Air Force Systems Command's tenth anniversary, by its Commander, Gen. George S. Brown.

In his first press interview since assuming command, General Brown listed as AFSC's principal requirement in the years ahead the need to "maintain a vigorous and pertinent R&D program in the realization that we [the US] don't have a corner on brains. The fundamental truth underlying R&D is that it follows the laws of nature, which are accessible to the Soviets as well as to us. The success of R&D work is determined by how hard and how well a nation works on these problems, and on the breadth and depth of the technological base that supports these efforts. Out of these efforts come some products that we foresee, and others that we don't foresee. The same is true for the Soviets. The Soviets reached parity [in terms of effort] with us in 1968, and they have been progressing at an accelerating rate ever since, when measured in terms of known funding levels. We, by contrast, have remained at a steady dollar level. But in view of the declining buying power of our funds—because of inflation—the true level of efforts is actually being reduced."

The Soviet Union, General Brown went on, appears to be keenly aware "of the essentiality of R&D to their military needs while we, I believe, don't show the urgency concerning military R&D that we should show. Also, our approach to technology differs from theirs in many ways. They keep developing many prototype systems; while only a few are committed to production, they all feed and enrich one another. Our approach is one of start-and-stop cycles. This is tough on the economy, hard on the industry, and certainly not the best way from the national-security point of view. In addition, of course, the war in Southeast Asia has absorbed a great deal of money and energy that might otherwise have been allocated to R&D work."

### Space and Missile Priorities

Space rates a high priority on AFSC's agenda, General Brown said, because "there is a lot we can and must do to further the control of our forces, improve target acquisition, and enhance communication and navigation capabilities. Space provides us with the means for doing these things. A substantial segment of what might be called orbital technology has passed from the R&D phase into operational capabilities. Related ground-tracking-station, computer and communications techniques, too, are well in hand, but I look forward to the day when we replace ground stations by a system of satellite relays."

Nuclear hardening of the sensitive components of military satellites can be attained up "to the levels which we consider desirable. But we balk at paying too high a price for hardening for a simple reason: Military satellites are protected to a degree by an automatic deterrence. We don't interfere with theirs, and they haven't interfered with ours," he said. (Presumably, either side would institute some form of reprisal if the other tampered with its orbital system, and, since tampering is almost immediately evident, either side might consider the need for a strategic alert under such conditions.)

So far as manned military space operations are concerned, "the decision on whether such a capability is now necessary was made with the cancellation of the MOL program," General Brown said. He disclosed, however, that NASA recently accepted all Air Force requirements concerning the so-called Space Transportation System's ability to maneuver in orbit. The Air Force considers flexibility in terms of landing options essential. NASA is the lead agency in the development of the reusable Space Transportation System, which is to serve both the civilian and military space needs of

*Gen. George S. Brown: SEA veteran—AFSC Commander.*

the United States. Until early in 1971, NASA and the Air Force were in disagreement over the cross-range of a reusable shuttle, meaning the ability to maneuver the vehicle in order to choose various landing areas, and also over other performance characteristics.

The accord between the two government agencies provides for an initial cross-range capability of 1,100 nautical miles. This capability, which NASA agreed to incorporate into the system, "will give us adequate flexibility, in terms of recovery, to perform future military space missions without undue constraints," General Brown stressed.

In the area of strategic deterrence, AFSC will continue its broad-based programs designed to assure the continued utility of the Air Force's ICBMs. "We are working toward greater survivability and assured penetration capability of the land-based missile force. The increases being achieved in accuracy are most encouraging. Of course, there is no good reason to believe that the Soviets can't do the same. For this reason, we need to develop good missile defense capabilities," General Brown suggested *(see March '71 issue of* AIR FORCE *Magazine, p. 32).*

A firm advocate of the triad concept of deterrence (ICBMs, bombers, and sea-launched missiles), General Brown rated as "naïve or worse" any suggestions to substitute a single, sea-based, strategic deterrence system. "I agree that we need sea-launched missiles as badly as we need the ICBMs and the strategic bomber. But there is no way of getting around the fact that, while submarines are elusive, they are not invulnerable. We are quite confident in this country that we can handle the Soviet submarine threat to the US and, I submit, it is prudent to assume that the Soviets could close the gap and achieve the same capabilities eventually. The inherent strength of the triad is the complementary nature of its components with regard to one another." Pointing to the unique flexibility of the bomber as an example, he said "This element of the triad can be launched on warning and thereby underscore the credibility of the two other triad components."

### The B-1 Program Revisions

When Deputy Secretary of Defense David Packard authorized the Air Force to start prototype development of its next bomber—the B-1—in June of 1970 on a fly-before-you-buy basis, he challenged the service to be as creative and innovative as possible in the management of this program. In response, Air Force Secretary Robert C. Seamans, Jr., announced in February of this year that he had reduced the number of B-1 flight-test aircraft from five to three, and the number of ground-test models from two to one. "The Air Force took this step as a result of its own initiative, primarily that of the director of the B-1 System Program Office (SPO), Brig. Gen. [Douglas T.] Nelson and members of his staff. We responded to Mr. Packard's demand for innovative management by an intensive, probing review of the entire program, and by examining the development history of other large aircraft, including commercial vehicles. As a result, we concluded —and these findings were concurred in universally by the experts involved—that we could safely reduce the number of flight-test aircraft from the five provided for by the original contract to three. There is no question that this step entails an increase in the risks involved in this program, but they remain well within reasonable limits. In addition, they are more than compensated for by the cost reduction we can realize and, perhaps even more important, by our ability to reach a production decision earlier because the test program is foreshortened," the AFSC Commander said.

The techniques which made this reduction possible, he said, include heavy, initial emphasis on major component and subcomponent testing rather than "full article testing." This change involves primarily structural and fatigue tests.

Progress on both the airframe, which is being built by North American Rockwell Corp., and the advanced-technology engines, which are being designed by General Electric, "has been very good so far." The B-1, a radically advanced successor of the aging B-52, will be capable of both high- and low-altitude penetration. It is to enter flight testing early in 1974 and is planned to be operational by the end of this decade.

The B-1's prototype development program is keyed to hold costs to a minimum without degrading the essential elements of systems test. A key factor of this austere management policy is the use of only off-the-shelf avionics and electronic countermeasure and radar warning devices. "This makes very good sense not only because it cuts costs, but also because there is quite a span of years between the start of prototype development and production. During that period, we could experience significant advances in avionics technology. These will be available to us since we don't have to make any binding selections until after we make a production decision. We, of course, have incorporated into the aircraft all necessary provisions with regard to interior space, power availability, and cooling capacity. The advantage of not having to make an equipment selection at this time is perhaps most beneficial in the countermeasures area. Obviously, it is almost impossible to predict today what the Soviet threat to our bombers will be like by 1980. Quite possibly, the Soviets themselves don't know that yet. By waiting until the aircraft enters production, we will be in a much better position in this regard and should be able to tailor the equipment to a better-defined

*During its first ten years, the Air Force Systems Command has had three commanders. Gen. Bernard A. Schriever (far left), who had headed the Air Research and Development Command, continued as AFSC's Commander until his retirement in August 1966. He was succeeded by Gen. James Ferguson (center), who retired in August 1970, to be followed by the current Commander, Gen. George S. Brown (right).*

## Air Force Systems Command Is Ten Years Old

On April 1, 1961, the Air Force Systems Command—in charge of planning, developing, and acquiring all USAF weapon and space systems and supporting technologies—became an entity.

Its formation was the result of a sweeping reorganization recommended by then Secretary of the Air Force Eugene M. Zuckert and then Chief of Staff Gen. Thomas D. White, and authorized by then Secretary of Defense Robert S. McNamara. The reorganization consolidated into one agency the functions and responsibilities associated with the planning, development, and acquisition of all Air Force systems—tasks that had been divided theretofore between the Air Research and Development Command (ARDC), and the Air Materiel Command (AMC). Simultaneously, the Air Force Logistics Command was created to perform the Air Force's worldwide logistics functions.

AFSC, which administers contracts worth about $48 billion and whose annual expenditures account for more than one-fourth of the total USAF budget, was set up in four divisions from the outset:

- **The Ballistic Systems Division,** located at Norton Air Force Base, Calif., composed of elements of the Air Force Ballistic Missile Division (AFBMD), AMC's Ballistic Missiles Center, and the Ballistic Missile Office of the Army Corps of Engineers, previously in charge of ballistic missile base construction.
- **The Space Systems Division,** located at Los Angeles Air Force Station, Calif., which combined the space programs of BMD and other Air Force agencies.
- **The Aeronautical Systems Division** at Wright-Patterson AFB, Ohio, which merged the former Wright Air Development Division and AMC's Aeronautical Systems Center.
- **The Electronic Systems Division** at Hanscom Field, Mass., which consolidated the Air Force Command and Control Development Division and AMC's Electronic Systems Center.

Three months after its formation, AFSC gained two major additions, the Air Technical Intelligence Center, renamed the Foreign Technology Division, and AMC's three Contract Management Regions. Subsequent changes in defense contract-management policies led, in January 1965, to the formation of a central AFSC contract-management division, which absorbed the three regional units.

Late in 1961, AFSC established an Aerospace Medical Division at Brooks AFB, Tex., to provide bioastronautic support to scientific and technological activities.

In the following year, AFSC's Research and Technology Division was formed to oversee the Command's various research laboratories. Reorganized in 1967, this agency became the office of Director of Laboratories (DOL) at AFSC Headquarters. DOL operates USAF laboratories concerned with aeropropulsion, avionics, flight dynamics, weapons and effects, rocket propulsion, armament, and human resources, and is also in charge of the Rome Air Development Center (RADC).

In 1964 the Command established the Air Force Eastern and Western Test Ranges. The latter was renamed the Space and Missile Test Center (SAMTEC) in 1970.

A major reorganization occurred in 1967, when AFSC merged two of its divisions, the Space Systems Division and the Ballistic Systems Division, into the present Space and Missile Systems Organization (SAMSO), in order to bring these related activities under a central manager.

In the following year, AFSC formed an important new agency, the Armament Development and Test Center (ADTC) at Eglin AFB, Fla., responsible for the Air Force's nonnuclear munitions programs. ADTC responsibilities include engineering development, test evaluation, and acquisition of munition systems designed for limited-war use.

The Command's most recent organizational milestone was its absorption of the Office of Aerospace Research (OAR), previously a separate operating agency of the Air Force.

Staffed by approximately 9,600 officers, 18,500 airmen, and 31,000 civilians, AFSC ranks eighth among the fifteen major commands of the Air Force in terms of personnel strength. It ranks first in terms of budget, which currently is in excess of $6 billion annually. —E.U.

threat," the Commander of AFSC pointed out.

The B-1 will be capable of performing in conventional, nonnuclear warfare far better than the highly successful B-52 because of its greater payload, improved delivery capabilities, and superior ability to penetrate enemy defenses. General Brown, who served from 1968 to 1970 as the Commander of the Seventh Air Force in Southeast Asia, said, "It is an historic fact, and almost a tradition, that the Air Force, beginning with the B-17, has had to battle for all its new bomber programs. It is also true historically that, once a new bomber has made it into the inventory, it rapidly establishes itself as an indispensable tool of national defense. Without doubt, the B-52 is the weapon most feared by the Communists in Southeast Asia. When the war in Vietnam was at its highest levels of intensity, the competition for support by the B-52s was far keener than for any other weapon system in that theater," General Brown stressed.

He emphasized that, for this and other reasons, it is vital that "the country have in its arsenal the kind of strategic and tactical flexibility that only an advanced bomber can provide. In the strategic role, the B-1's unique capabilities are being buttressed, and magnified, by SRAM, which is a weapon system of truly outstanding capability. SRAM can be fired in all directions, and we can carry quite a lot of them aboard the B-1. We don't have to overfly the target and SRAM has good range. Its CEP [circular error probability] is as good as we obtain with gravity bombs. All in all, the indications are the B-1 will turn out to be an aircraft of which the country will be very proud."

## A Range of Vital Systems

In discussing AFSC's other major development programs currently in progress, General Brown focused special attention on the F-15 air-superiority fighter, which is being built by McDonnell Douglas Corp., and whose engines are being provided by the Pratt & Whitney Div. of United Aircraft Corp.

Stressing the "excellent management structure" of this program—the program director reports directly to the Commander of AFSC and to the Secretary of the Air Force—General Brown said, "We are making very good progress on the F-15. I am confident it will be an aircraft without peer and able to outperform anything the other side might come up with. The aerodynamics of the design are very advanced. Our own engineers and those of NASA have been successful in this regard and are in full accord on the F-15's outstanding lift/drag characteristics."

He pointed out that there is a tendency to compare certain performance features of the F-15 with those of Foxbat, the Soviet interceptor, "and this is not reasonable. The Foxbat is designed to fly higher and to fly faster at altitude. This is a capability the Soviets think they need in their interceptors. It is not needed for our air-superiority mission. There isn't any doubt that the F-15 will be in a class by itself so far as the job that it was designed to do is concerned."

The AFSC Commander stated that the development of AWACS, involving modification of two Boeing 707 jetliners for a flyoff of the two competing radar systems, furnished by Hughes and Westinghouse, was progressing on schedule. While the Air Force has examined the possible use of either the C-5 Galaxy or the Boeing 747 superjet for the AWACS role, "we see no need for an aircraft larger than the 707 for this mission. The costs of the modifications required for the C-5 combined with the cost of the basic aircraft are too high to warrant serious consideration," General Brown said.

Concerning the A-X close-support aircraft program, which involves the competitive flyoff of designs developed by Fairchild Hiller and Northrop beginning in mid-1972, General Brown pointed out that source selection for the production contract will be made "not only on the strength of performance but also on the basis of cost. If we should decide to make an actual production commitment in this program, it will be because both performance and cost will be attractive."

## Needed: A Modern Interceptor

A yawning gap in the Air Force's inventory, and an unmet requirement of long standing, is a modern, high-performance interceptor to replace the aging F-106. The Air Force attempted to fill this void "during the past years by first proposing the IMI [Improved Manned Interceptor] and then the F-12 [a derivative of Lockheed's YF-12A, a Mach 3-plus research aircraft]. Unfortunately, we could not obtain the necessary funds. At this time, we believe, on the basis of preliminary studies, that there is enough growth capability in the F-15 to meet the interceptor role more than adequately. As a matter of fact, given the necessary range increase, the F-15 looks very attractive. Of course, no R&D funds have been allocated for this work," the AFSC Commander said.

He added that, while the Navy's F-14B carrier-launched fighter—which uses the same core engine as the F-15—had also been suggested for the Air Force's interceptor role, "it is not being considered seriously."

"The urgency of upgrading our air defense capabilities is real. The requirement is for an interceptor, a suitable missile, a good command and control capability, and an ABM [antiballistic missile] system. These components must fully mesh. For instance, if you lack in the ability to receive timely warning, you have to make up for this time lag by increasing the interceptor's speed and range to get to the

penetrating bomber before it can launch air-to-surface missiles. The essential element we need is a good modern interceptor," General Brown explained.

There are just so many new R&D starts that can be supported by the budget in any one year. In addition to the interceptor, General Brown listed the need to modernize and improve tactical airlift as "most pressing." Although the Light Intratheater Transport (LIT) program has been halted, the Air Force still needs to replace its aging fleet of C-7s and C-123s with a light STOL transport as soon as possible, General Brown said. Later on, he explained, replacement of the C-130s by a similarly sized STOL transport will also become necessary.

### Limited-War Technology

"One of the most productive areas of work undertaken by AFSC in recent years involves technological programs in support of limited war. I should know. I was a user of these technologies for two years in Southeast Asia [as the Seventh Air Force Commander and MACV Deputy for Air Operations]. A significant achievement, which is fully operational and working extremely well, involves laser-guided bombs and electro-optical systems, both conceived and developed by AFSC. We have also made great improvements on our gunships, the AC-119s and AC-130s, and they have proved of enormous importance to tactical warfare. Further, we have modified the B-57 to incorporate very sophisticated target-acquisition devices. We also have a program in progress that adds low-light-level TV and other sensor gear to the OV-10 FAC aircraft. This will make it possible for us to acquire targets at night and to use laser designators so that strike aircraft can attack these targets," General Brown told AIR FORCE Magazine. At this time, there are no major areas of known technology relating to limited war that have not been covered by AFSC programs, the General said.

A five-pronged program that is being handled at the highest AFSC level, and which bears the code name "Have Lemon," is currently in progress. While its exact nature and scope are classified, General Brown said, "it is of great value to limited war, and for that matter, any kind of warfare. In essence, it seeks to provide defense suppression and stand-off capabilities with regard to various forms of defenses. We have set up a special office at AFSC Headquarters, whose staff pulls together information from various AFSC Centers and Laboratories on the five project areas involved. The headquarters staff works directly, without diffusing layers in between, with the project people in such places as [the Armament Development and Test Center at] Eglin, Rome [Air Development Center], and the Air Force Laboratories at Wright-Patterson. We expect to verify the feasibility of those technologies through field demonstration in about a year."

In response to challenges posed by the Department of Defense to all the services in the field of system management, AFSC has instituted new personnel policies, especially relating to SPO staffing, General Brown said. A special coding of all personnel with program-management experience has been set up to facilitate identification, and "we monitor their careers in order to aid in the development of management expertise," he explained. Program personnel will be kept on assignments longer, and "we give them more freedom and increase the challenge of these assignments," according to General Brown. Air Force Systems Command also is increasing the enrollment of new, key program-management personnel in the DoD's Defense Weapon System Management School and has streamlined basic program review procedures.

### "We Need Not Hang Our Heads"

As the Air Force Systems Command completes its first ten years of service to the Air Force and the nation, "we encounter some adverse publicity directed basically against two of our recent major programs, the F-111 and the C-5. While there are grounds for criticism, the people connected with these programs need not hang their heads in shame and mustn't lose their sense of balance over it. We have learned serious lessons. Basically, though, there were so many changes in terms of performance and numbers in the F-111 program, so many ups and downs ranging from periods when the Secretary of Defense kept a very tight rein to others when there was an excess of management layering, that it is a miracle that anything at all did get done. And I would like to call attention to the fact that the FB-111 won the last SAC bombing competition, which represents the ultimate test of the capabilities of a bomber," General Brown stressed.

Concerning the C-5 program, he said the complexity of the contract and the technical problem of building an aircraft of such great size were not fully understood at the outset. "Nevertheless, the aircraft is technically sound and successful. While we have some trouble in the maintenance area and in the reliability of the C-5, these are no greater than we encountered in previous aircraft development efforts, such as the B-52. We are working our way out of these problems," he said.

General Brown concluded the interview with this comment: "The principal reason why I look forward with confidence to the next ten years of AFSC achievements is the people in this command. They are among the most skilled, capable, and dedicated professionals that I've encountered anywhere in the Air Force." ■

*AWACS: for better defense.*

*F-106: replacement needed.*

*OV-10: new sensors ahead.*

*C-5A: mobility revolution.*


ACELINES
NEXCELLED CHEMICAL CORPORATION
Gordon Phillips

*In the clear, blue skies over the Mojave Desert, disaster struck! There was a tremendous bang and a jolting, violent shudder as the huge cargo aircraft hit 275 mph after starting the dive at 10,000 feet. It felt as if a bomb had exploded in the nose section above our cockpit. The Guppy began to shake violently. Midair collision, I thought—the worst of all aviation disasters!*

# THE DAY THE SUPER GUPPY BLEW HER TOP

**By Lt. Col. P. G. Smith, USAF (Ret.)**

*Illustration by Gordon Phillips*

"MAYDAY! Mayday! Mayday! This is 1038 Victor, the 'Super Guppy,' in flight test over the Mojave Desert. We have had a major structural failure of the upper nose section in a maximum dive and are preparing for bailout!"

"1038 Victor, this is Los Angeles Center. May we help you?"

"Stand by, Los Angeles, we have a large hole in the nose, and the aircraft is disintegrating and buffeting severely—Thirty-eight Victor will advise intentions."

Only seconds before, we had been safely completing flight tests for the huge Guppy—confident that the converted Boeing Stratocruiser would regain from Russia the United States claim to the "world's largest airplane."

Certification tests started with the Guppy's maiden flight on August 31, 1965. We had completed all the tests except the most hazardous maneuvers—the high-speed dives that are required of all aircraft for airworthiness certification. This portion of the flight tests was saved for the last phase and is called VD, for Velocity Dive.

But now, twenty-five days later, on September 25, in clear, blue

# After 390 launches, Atlas doesn


When an Atlas now boosts its payload, it barely makes news. Mostly, it makes instant history.

Which is good in one way. And bad in another.

It's good because you expect Atlas boosters to deliver their payloads without benefit of network television. Because Atlas has demonstrated cost-efficiency. Because Atlas built a record of reliability. Over the past seven years, the latest versions of Atlas launch vehicles have compiled a successful flight record of 97%.

It's too bad, in another way, because you forget how much the Atlas rocket has shouldered to get us where we are in space.

For instance:

When the U.S. needed an ICBM, Atlas was it.

When NASA and the U.S. Air Force had 24 different missions in our space program, Atlas fulfilled them.

When we wanted to let people hear where we were in space, Atlas took the first recorded voice up there.

When we put the first American in orbit, Atlas did it. It also boosted America's first unmanned payload to the moon; sent the first orbiting

# nake the front page anymore.


spacecraft around the moon; launched the first close-up probes of Mars and Venus.

When we were ready to go further into space, Atlas was coupled with its second-stage mate, Centaur, the first hydrogen-fueled booster.

Closer to earth, Atlas-Centaur recently boosted the first of a new generation of communication satellites: INTELSAT IV.

In the 1970's, Atlas-Centaur has been selected to send probes on their way to Venus, Mercury, Mars and Jupiter.

The same team at General Dynamics' Convair Aerospace Division that built the Atlas and the Centaur, and has kept them up to date as prime launch vehicles, is now at work on another space project: the reusable space shuttle.

The space shuttle will challenge many people's technologies, including ours.

At General Dynamics, the space shuttle is typical of the kinds of projects that lead our people to develop new technologies.

Not only in aerospace, of course, but also in our other fields, such as shipbuilding, telephone systems, electronics and natural resources.

It's this kind of thinking that makes us the company that can do the jobs that have never been done before.

**GENERAL DYNAMICS**

*P. G. Smith retired from the Air Force in 1965 as a lieutenant colonel. During his twenty-two years of active duty as a pilot, test pilot, and operations officer, he accumulated 12,000 hours flying time in many types of aircraft. He is now Vice President for Marketing and Assistant to the President of Conroy Aircraft Corp., Goleta, Calif.*

skies over the Mojave Desert, with only the final VD remaining, disaster struck!

There was a tremendous bang and a jolting, violent shudder as the huge cargo aircraft hit 275 miles an hour after starting the dive at 10,000 feet. It felt as if a bomb had exploded in the nose section above our cockpit. The Guppy began to shake violently. Midair collision, I thought—the worst of all aviation disasters!

The whole sky seemed to open up around us with the sudden illumination of the cockpit.

"God, it's coming apart!" someone shouted.

The surplus Stratocruiser had been purchased from the Air Force boneyard in Tucson, Ariz. The aircraft had been completely disassembled and then lengthened and modified with a specially fabricated upper fuselage section. The whole new structure took on a mammoth, whale-like silhouette, with a shocking disregard for aerodynamic aesthetics.

Four other Stratocruisers contributed sections to increase the length to 141 feet. A cargo compartment of 50,000 cubic feet—five times that of today's standard jet transports—was created by enlarging the fuselage from eight feet, ten inches to a cavernous twenty-five-foot diameter. Power from four Pratt & Whitney turboprop engines developed 24,000 horsepower and gave us a 300-mph cruising speed.

It was no wonder that eyes were turned skyward in awe wherever the Guppy flew.

Larry Engle and I, pilots for the Guppy, instinctively reached for the throttles to reduce the power applied for the dive. Flight engineers Alex Analavage and John Kinzer and the systems engineer "Ollie" Oliver were behind us in the cockpit. Instrumentation engineer Sandy Friezner was in the forward belly, below the cockpit floor, monitoring his equipment.

At the moment of the gigantic bang, the cockpit door was ripped

*Miraculously, the Guppy made it back with a twenty-three-foot hole in her nose, imploded by the force of a test dive.*

*To make matters worse, the aircraft was ballasted with 30,000 pounds of borate in sacks that burst, blinding the crew.*

*Super Guppy's cargo compartment is larger than C-5A's. Projections behind the cockpit are hinges for her swinging nose.*

off its hinges and smashed against Ollie's leg, breaking his ankle, as he was later and painfully to learn.

"Slow it up, slow it up!" shouted one of the crew over the roar of the blast that hit us.

Engle, Analavage, and Kinzer were all veterans of flying nonscheduled airlines. Engle had some 20,000 hours in the cockpit. I was aboard because of my test-pilot time in the experimental turboprop version of the Stratocruiser, and also because I had flown forty different kinds of aircraft since my World War II pilot days. Oliver had served as a crew chief on the Boeing military Stratocruisers and had been hired to help remold the Boeing into the Guppy. Friezner operated a specialized-services company for testing all types of aircraft.

We had all been through many tight spots, but none like this. We all sensed that our time had come.

There had been no indication of any defect in our preliminary VD test the day before when we attained a speed of 250 mph. The only complaint we had for that day's flight was the frustrating loss of the radios because of a recurring short in the electrical system.

The uncontrollable buffeting and vibration were severe now, and as the power was reduced, the airspeed fell off rapidly to 150 miles an hour. But the instinctive action to slow up the huge craft boomeranged. Buffeting became almost unbearable, indicating an approach to stalling speed.

"We're gonna lose her," I thought.

Now another obstacle occurred. If the giant plane stalled, it would have been virtually impossible to bail out. We faced the stark prospect of being carried straight down to a fiery crash on the desert, almost 8,000 feet below.

Hurriedly, we shoved the power back up. The Guppy wallowed like a giant Moby Dick plowing through mountainous waves, but she managed to creep back up to 175 mph.

As the first shock passed and the aircraft somehow continued to fly, someone yelled above the terrific wind roar, "We'd better bail out while we have a chance."

I reached for the mike to let the outside world know what was happening to us, but a sudden thought sent a new wave of fear through me. If we bailed out through an emergency floor hatch in the nose-gear well, we would be carried along the underside of the plane. Radio antennas, which had been relocated to improve reception, protruded along the belly. If the slipstream flung one of us against one of the antennas, they could slice him through like a bayonet.

We were trapped in a nightmare situation.

The high-speed dive had to be flown at the maximum gross takeoff weight of the aircraft. We had prided ourselves in being resourceful and had arranged to borrow from a chemical dealer in Mojave 30,000 pounds of borate in 100-pound sacks.

As the tearing, shredding metal from the nose blew aft inside the mammoth interior, the flying slivers ripped holes in the paper sacks of borate powder. The whole interior, including the cockpit, was filled with a swirling cloud of powdered borate by the slipstream being rammed into her.

The bailout order was momentarily withheld. Ollie, still not aware that his ankle was broken, inspected the front of the huge cargo compartment and the superstructure high above us. Hobbling on his good leg, he got back to the cockpit to report his findings.

"The whole damn nose section has caved in," he shouted in disbelief. "We got a helluva hole over the cockpit!" Just then, Sandy scrambled up to the flight deck from his compartment below. He flipped open the floor hatch just in time to strike Ollie's ankle a second painful blow. Ollie slumped down and grabbed his leg in agony.

We no longer had to guess what had happened to us. The force of the dive had smashed the whole superstructure above the cockpit. We had a gaping twenty-three-foot hole, and pieces were still collapsing and tearing off.

Broken stringers and pieces of frame were being ripped loose, shooting through the air like arrows, impaling themselves like steel through tinfoil in the frames that supported the fuselage at the rear of the cargo compartment!

It was like flying a giant scoop, and just about as difficult.

We decided to risk the antennas and bail out. As we got ready, I was suddenly thankful for the six crash helmets I had scrounged for the crew—just in case. I had taken a bit of ribbing for stowing them aboard.

It was difficult to hold the hand mike steady as I transmitted the Mayday calls. The aircraft shook so severely that the mike bashed me in the teeth each time I held it to my lips to speak. I wondered if my

radio message would even be intelligible. But I remembered the cursing I had given the radios the day before for not working at all, and now was grateful just to get through.

But just when it seemed we had absolutely nothing going for us, Lady Luck smiled. The inspection hatches and access doors blew out in the tail section, and this relieved the immense internal air pressure that had been threatening to blow the ship apart. The haze of borate also was whisked away by the rushing air.

A spark of "Can we save her?" began to show among the crew.

"Los Angeles Center, this is Thirty-eight Victor. Request a chase plane for inspection of damage."

"Thirty-eight Victor, this is George Air Force Base Tower at Victorville. I can scramble a couple of air defense fighters for you."

"Roger, George, we'll take the fighters."

"Thirty-eight Victor, this is Edwards Air Force Base Tower. We have a DC-9 in flight test on a takeoff roll. Can he help you?"

"Roger, Edwards, we'll take the DC-9. George, from Thirty-eight Victor, cancel the fighters, and thank you."

The Mayday call was made on an International Distress frequency, which is continuously monitored by all agencies, and gave us instantly coordinated communications.

While we waited for the DC-9 chase plane to arrive and inspect our damage from the outside, we again checked the interior damage. We knew the huge Guppy well, for in addition to twenty-five days of flight tests, we had flown her on a cross-country tour to display and sell this mammoth cargo-carrying concept to the National Aeronautics and Space Administration. We had taken her to the Manned Space Flight Center at Houston, where Astronaut Pete Conrad had wished us good luck, and we returned the good wish.

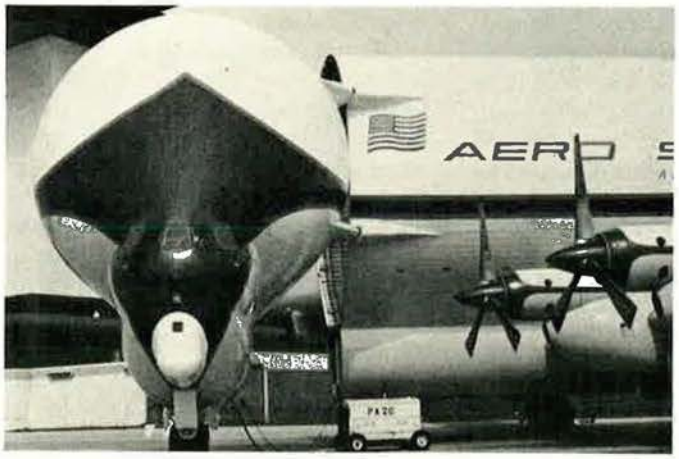
We had also shown her off at the Marshall Space Flight Center at Huntsville, Ala. Administration officials in Washington, D.C., had viewed her at Dulles International Airport, and top US Air Force brass inspected her at Andrews Air Force Base in Maryland.

We had hoped to convince NASA that the Guppy, built by a small California firm in Van Nuys, could transport the huge Saturn rocket components for the Apollo moon landing much cheaper and faster than originally estimated.

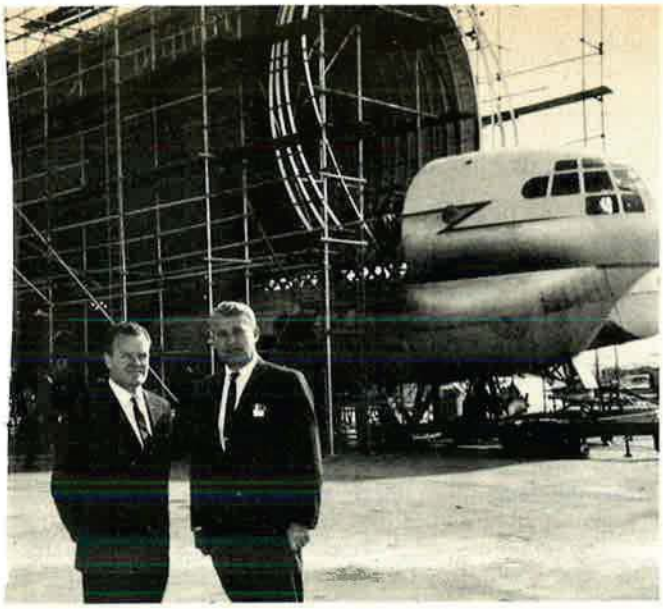
NASA had planned to ship the giant, twenty-three-and-a-half-foot-diameter, third-stage booster from its Douglas manufacturing plant on the West Coast by barge through the Panama Canal to Cape Kennedy. Our company calculated that if an airplane could be designed to accommodate cargo this size, and if it could pass airworthiness tests, surely both government and space-industry officials would be highly interested. The tremendous savings in transportation costs and the elimination of the hazards of a three-week-long ocean voyage to extremely delicate instruments should be especially attractive.

Now the DC-9 came into view and banked into position off our


*A "shocking disregard for aerodynamic aesthetics" allows the modified C-97 to carry this third stage of Saturn IVB, the booster that powers Apollo moon rockets from earth orbit to lunar orbit.*




*The Super Guppy's nose swings open 120 degrees on two 600-pound aluminum hinges—a first in the annals of aviation, and still another curiosity of this highly successful airborne aberration.*



*John M. Conroy, developer of the Guppy family, with NASA's Wernher von Braun, during construction of the Super Guppy at Van Nuys Airport, Calif.*

right wing. We asked how we looked. They replied, "Difficult to tell as we can't get too close yet, but pieces are flapping and still coming off the thing."

When the DC-9 was finally able to make a visual sweep of our tail, they gave us our first encouraging report. "The tail appears to be intact with no apparent damage."

It was then we made our decision to try to save the Guppy. Our major concern was whether or not the tail section would be able to stand the severe buffeting and vibration long enough to get us down. Loss of the tail would cause the aircraft to tumble and would make bailout impossible.

We maintained airspeed at 175 mph and now began a shallow descent toward Edwards for a landing attempt on the adjacent Rogers Dry Lake bed. Since Edwards is the major flight-test center in the world, the fifteen-mile-long lake bed is an ideal landing area for experimental craft and airplanes in trouble.

The DC-9 stayed in formation with us through the descent, providing skilled eyes to keep us posted on any changes that might occur. Only once did they comment about the gaping hole in our nose. Their consoling words were, "That kind of thing could spoil your whole day!"

"Edwards Tower, Thirty-eight Victor, ten miles north at 4,000 feet. Request landing on the dry lake."

"Roger, Thirty-eight Victor. Land to the south. Crash equipment is positioned and standing by."

The approach to the dry lake was long and flat, and we didn't use any wing flaps. The landing gear was to to be lowered just before touchdown, and if she pitched up or down, or if a miscalculation were made, we would belly her in on the hard-baked sand.

As we crossed the threshold of the lake at 200 feet, the DC-9 crew radioed, "Thirty-eight Victor, no gear yet."

"Roger, gear coming down."

The touchdown was reassuringly smooth. We let the Guppy roll out to a dead stop on the long lake bed. There were six huge sighs of relief. The absolute silence of the desert was a serenade in blessed contrast to seventeen terrifying and almost endless minutes of near-disaster.

Within five weeks, the Guppy's upper superstructure had been redesigned and rebuilt at Edwards AFB. Joe Walker, who later was killed when his F-104 collided in midair with the XB-70, made her final acceptance flight tests for NASA.

The Super Guppy has now logged more than one million miles. She and her little sister, the "Pregnant Guppy," have carried a billion dollars worth of space equipment for NASA, and undoubtedly helped to speed up the US timetable for conquest of the moon. The Super Guppy's most precious cargo was the lunar-excursion module *Eagle* and the command ship *Columbia* flown by Apollo-11 Astronauts Neil Armstrong, "Buzz" Aldrin, and Mike Collins in their moon-landing mission of July 1969.

From inauspicious beginnings, great things often grow. For seventeen very long minutes on September 25, 1965, the Super Guppy's future looked uncertain, indeed. But who could now say that she is not —quite literally—a great airplane? ■

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## BY THE LETTERS

When I was a new Civil Engineer officer for Andersen Air Force Base on Guam, I struggled to remember the abbreviations of places my office personnel dealt with on the Navy end of the island. To help me keep track, I put up a blackboard and required each person to sign out his time of departure with the initials of his destination.

One morning my red-headed secretary was gone when I needed her. She had signed out on the board, but I didn't recognize the place.

I asked my sergeant, "What's NML?"

Just then she walked in, batted her blue eyes at me, and explained, "That, Sir, is 'No-Man's Land.' "

—Col. John M. Adams, USAF (Ret.)

(Air Force *Magazine will pay $10 for each anecdote published.*)

# The Bulletin Board

By Patricia R. Muncy

ASSISTANT FOR MILITARY RELATIONS

## Guard/Reserve Horoscope

"Modernization of the Air National Guard and Air Force Reserve is proceeding." So stated Assistant Secretary of Defense (Manpower and Reserve Affairs) Roger T. Kelley before the Senate Armed Services Committee, "C-130s, F-101s, and RF-101s are replacing older model aircraft, and there will be further conversions in the future. The Air Force Reserve now has its first jet fighters in almost two decades with the assignment of the A-37 to Special Operations units. The C-141 associate program in the Military Airlift Command continues to grow in size and importance with additional squadrons being activated. There will also be Reserve associate units to provide surge or long-term expansion as the C-5 operations advance.

"An accurate overall indicator of the emphasis placed upon Guard and Reserve readiness is its portion of the total budget. The President's budget for FY 1972 includes $3.1 billion for the Guard and Reserve. This means that the Guard/Reserve share of the DoD budget is fifty percent greater than in the FY 1969 budget. And while that increase standing by itself is impressive, it doesn't tell the whole story. Specific priority requirements of the Guard and Reserve have been addressed with funds to assure maintenance of Selected Reserve strengths, funds to reduce backlogs of enlistees awaiting training, funds to increase technician support for units receiving more sophisticated equipment, and funds to bring repairable equipment in Army stocks to combat serviceable standards for issue to Guard and Reserve units."

Secretary Kelley also stated that a number of actions are now being considered to provide members of the Reserve components with additional benefits. Included is an enlistment bonus to attract nonprior-service enlistees and a reenlistment bonus to enlist prior-service personnel and to retain members of Guard and Reserve units.

When questioned about the bonus, Secretary Kelley stated, "The figures that we have under consideration would be $600 as an enlisted bonus figure for the nonprior-service candidate. In other words, $100 a year for each of the six years of the enlistment; and $1,200, or $200 per year, as a reenlistment bonus for the first reenlistment that would take the individual through twelve years of Reserve or Guard service. The objective, obviously, as with any such financial incentive, is to make it sufficiently large as to attract and yet not so large as to cause undue cost problems or too serious distortions in pay relationships. We think that $600 for the nonprior-service candidate is an attractive figure and would be an incentive to join. Similarly, we think the $1,200 figure would be a significant incentive for reenlistment of the individual approaching the end of his first term of six years of service."

Other benefits under consideration are medical, dental, and death benefits for members of Reserve components while in training or on active duty; early retirement provisions; and survivor benefits that would cover the surviving dependents of a member of the Reserve components if he should die between his transfer to the Retired Reserve and his attainment of the statutory retirement age.

The Air Force Association has long supported these additional benefits.

## Anyone for a Merger?

Speaking during recent Senate hearings on the matter of extending draft legislation, Sen. Barry Goldwater (R-Ariz.), revived the specter of a single Reserve component when he stated that "we could have a much more effective force" with a merging of the Reserves and the National Guard. At this writing, we're advised that, because both components are now very effective, such a measure would be opposed by the Army, the Air Force, and OSD.

*2d Lt. Susan M. Blair, 21, graduated first in her OTS class at Lackland AFB, Tex., the first WAF ever to do so. She is shown here with her parents, Mr. and Mrs. John R. Blair of Knoxville. The Lieutenant will now attend intelligence school at Lowry AFB, Colo.*

## High Praise for Reserves

Speaking before a responsive audience of Air Reservists at the recent annual midwinter conference of the Reserve Officers Association in Washington, D.C., Gen. John C. Meyer, Air Force Vice Chief of Staff, applauded the Air Force Reserve for its outstanding performance in defense of the country and went on to measure its importance in terms of the results it has achieved:

"Even if you limit yourself to just last year, the record of what the Reserve has done for the Air Force, and the nation, is indeed impressive. I won't recount all of the accomplishments, but let me mention a few:

"First, in support of Southeast Asia operations, the Reserve flew 18,000 hours. Those flying hours translate into 23,000,000 ton-miles of cargo and 1,000,000 passenger-miles of air operations.

Second, the Reserve flew over 100,000 ton-miles and a quarter of a million passenger-miles to reduce the human suffering associated with Hurricane Celia.

"Third, the Reserve participated in aeromedical evacuation flights to the extent of two and a quarter million passenger-miles.

"And, fourth, the Air Force Reserve has made a real success of the Associate Unit Program. Although this is a relatively new program, and something of an experiment, I am glad to report it is a very successful experiment. Last year the Reserve contributed over a quarter million crew-hours to the MAC operations. More than that, the Reserve participants are just about as much a part of the Air Force as are the MAC participants.

"In addition, the Air Force Reserve has been active in a variety of domestic-action programs, in providing legal services, in offering spiritual assistance, and in working with the youth of the nation."

Recalling Defense Secretary Melvin R. Laird's blueprint for new Reserve accomplishments, General Meyer stated:

"Today it is very clear that we are proceeding along the lines indicated by the Secretary and supported by the Congress. The successful associate program, started in Fiscal Year 1968, is being extended beyond the C-141 transports, and the C-9 aeromedical evacuation units, to our new C-5 airlift squadrons. And, because that program has been so successful, we are also looking for additional ways to exploit the associate unit concept in other Air Force mission areas."

## More on Resolutions

Additional comments have been received from the Air Force in response to the Association's 1970 resolutions.

*Resolution No. 5,* wherein AFA urged enactment of legislation to grant Reservists performing inactive-duty training, or full-time training or duty, or active duty for thirty days or less, substantially the same entitlements to medical benefits as are now provided for members who are ordered to active duty for periods of more than thirty days:

"Equalization of medical and related benefits for Reservists has been the subject of numerous legislative proposals over the past several years. One of those proposals, introduced in the Ninetieth Congress, was the subject of a hearing before the House Committee on Armed Services. Although the bill was subsequently passed by the House of Representatives, no action was taken in the Senate.

"During the Ninety-first Congress, the subject was again introduced. The Department of Defense recently urged consideration of the proposals by the Congress; however, no action has been taken in either house."

*Resolution No. 6,* in which the Association asked the Air Force to explore the possibility of charging the Air Reserve Forces with the mission of providing a training capability for the Reserve Undergraduate Pilot Training (UPT) requirements in such a way as to be able to expand the pilot production capability of the active force in the event of an emergency requiring a larger active UPT program:

"Resources required for current and USAF proposed UPT production rates are projected to remain constant through Fiscal Year 1978. Support for the AFA resolution, however, would involve funding for costly base activation and resource acquisition, including procurement of aircraft, simulators, and associated equipment.

"The Air Force is studying a program that, if approved, would increase significantly the Air National Guard and Air Force Reserve pilot production rate."

*Resolution No. 8,* wherein AFA urged that AFROTC graduates not needed by the active Air Force be made available to man junior officer spaces in units of the Air Guard and Air Reserve, and the Individual Mobilization Augmentee Program:

"The study of the feasibility of direct assignment of Air Force ROTC graduates to Air National Guard and Air Force Reserve units is continuing. Air Reserve components have been requested to present their views on the subject and identify their manpower

*1st Lt. Nancy Ann Eagan, the first Catholic nun to join USAFR, is congratulated by Gen. Jack J. Catton, Commander, MAC, left, and Brig. Gen. Harold F. Funsch, Command Surgeon, AFSC, upon graduation as a Flight Nurse from the School of Aerospace Medicine, Brooks AFB, Tex.*

*AFA President George Hardy presents the Aerospace Education Foundation's Best Author Award to Brig. Gen. M. R. Reilly, Deputy Director of Civil Engineering, Hq. USAF, for his article on USAF efforts to combat pollution published in* Air Force Civil Engineer Magazine.

requirements in this area. It is significant, however, that the autonomous nature of the various states requires that membership in the Air National Guard be achieved by individual application to the Adjutant General of the state in which membership is desired.

"At the present time all AFROTC graduates are being assigned to active duty upon graduation."

*Resolution No. 9,* in which AFA recommended to the Secretary of the Air Force that increased emphasis be given to orientation and training of all supervisory personnel in union/management relations, with a goal toward providing such training at every Air Force installation throughout the world, and to all supervisors, both military and civilian, within eighteen months or other specified time period:

"The Air Force supports the concept. Emphasis has been given and will continue to be given to orientation and training of all supervisors in union/management relations.

"The following actions have been taken, or are in progress, to ensure adequate orientation and training of Air Force military and civilian personnel: (1) Seminars were conducted in 1962 to provide for implementation of Executive Order 10988, which preceded Executive Order 11491.

"(2) Early in 1965 a standardized training course was developed and made available for Air Force-wide use. All first-level supervisors of three or more civilian employees were required to complete the course within one year of assignment as a supervisor of civilian employees. The course has been updated to include changes brought about by Executive Order 11491.

"(3) The USAF Personnel Development Center at Gunter AFB conducts a two-week Union-Management Relations Course for operating officials, key staff personnel and supervisors who are designated to serve as principals or alternate representatives on negotiating teams, or who administer the Union-Management Relations Program.

"(4) The curriculums of the Air War College, Air Command and Staff College, Air University Institute for Professional Development, Squadron Officer School, and the Air Force Academy include training in union/management relations.

"(5) The matter is a subject of Air Force regulations and Headquarters correspondence which continue to reemphasize the need for constructive and cooperative relationships between labor organizations and management."

*Resolution No. 10,* in which the Association urged the amendment of Chapter 83, Title 5, United States Code, to permit civilian employees of any federal agency who have twenty-five years of service, or are fifty years old and have twenty years' service, to voluntarily retire on a reduced annuity basis:

"The Air Force supports the concept of relaxing retirement requirements throughout the federal service in order to enhance the possibilities of retaining younger talented employees during periods of retrenchment.

*The only woman officer among the 3,200 people assigned to the AF Contract Management Division, Vandenberg AFB, Calif., 2d Lt. Ann M. McCormick, of Det. 1, receives briefing from TSgt. Lee R. Pyle, of the 6595th Aerospace Test Wing.*

"There are 53,000 employees who fall into the category covered by the Air Force Association resolution. If those employees were permitted to retire on an optional basis, the retention of younger people would improve."

The Civil Service Commission had this to say about the same resolution:

"The Commission has submitted draft legislation representing the Administration's proposal to permit early optional retirement at age fifty after twenty years of service and at any age after twenty-five years of service. This opportunity for early retirement would be limited (1) to departments or agencies that are undergoing a major reduction in force and (2) only for the time that the reduction in force is in progress. Like employees who are involuntarily separated, those who exercise the option to retire voluntarily during a major reduction in force would have their annuities reduced by one-sixth of one percent for each full month (two percent a year) they are under age fifty-five. This legislation has been introduced as H. R. 19203 and referred to the House Committee on Post Office and Civil Service.

"The Commission has no plans for proposing legislation which would extend the above early retirement privilege to employees in federal agencies that are not undergoing a major reduction in force. Except in reduction-in-force situations, the Commission has not concurred in proposals which would allow voluntary retirement prior to age sixty of employees who have completed less than a full career of thirty years of federal service.

"We believe that such proposals would result in a substantial loss of experienced employees at a time when their services are most useful, and that annuities allowed under such proposals would amount to an unwarranted subsidy to affected federal employees who could enter private employment with an assured income in competition with other people less fortunately situated."

## REFERRAL Program

More than 13,000 career servicemen and women have registered with the Department of Defense computerized REFERRAL Program and are available for immediate referral for employment consideration by public and private employers across the nation. Likewise, nearly 1,000 employers are making use of the service. That was the word from Defense Secretary Laird at the six-month point of full operation of REFERRAL, the nation's first publicly supported, nationwide, computerized man-job matching system available to large and small employers at no cost. It was designed to assist the 65,000 to 70,000 career military personnel who retire from active duty annually, and who seek a full-time second career in civilian life.

REFERRAL makes it possible for

employers to obtain the names, addresses, and job preferences of career personnel who have extensive training and experience in a wide variety of skills, including professional, technical, administrative, and managerial. Typically, these personnel have served in the armed forces for twenty to thirty years, are between the ages of thirty-eight and fifty-one, and have demonstrated their adaptability and dependability during their uniformed service to the country.

## Guardsman Receives High Honor

Cited for his "determined and enthusiastic activities under the auspices of the Delaware Air National Guard to promote a spirit of patriotism among youth," MSgt. Joseph J. Pfister has been presented the coveted National Recognition Award by the Freedoms Foundation at Valley Forge, Pa.

Sergeant Pfister, who is an accounting superintendent with the 166th Military Airlift Group, writes a newspaper column, speaks before school, civic, and church groups, sponsors essay contests, teaches swimming at the YMCA, coaches and umpires in two Little Leagues, spends three nights a week until midnight counseling street gangs, and takes children to Washington to see national memorials, all without remuneration.

Along with such notables as the Hon. John W. McCormack, recently retired Speaker of the House of Representatives, actor John Wayne, millionaire philanthropist H. Ross Perot, and newspaper columnist Victor Riesel, Sergeant Pfister was among the forty top award winners honored at the Freedoms Foundation's twenty-second annual ceremony at Valley Forge on February 15. Some 1,500 other awards are presented by the Foundation each year at local and regional ceremonies in various parts of the country.

Many other National Guard and Reserve members, including former AFA National Director Brig. Gen. Joseph J. Lingle, were among this year's award winners in other categories.

*MSgt. Joseph J. Pfister, Delaware ANG, won a top award in the Freedoms Foundation's twenty-second annual ceremony.*

## Final Approach

★ The Air Force has a requirement to reenlist 20,107 first-term airmen in FY 1971, to support a career force of 258,000. In order to achieve this requirement, approximately one out of every four eligible first-term airmen must be reenlisted. This represents quite a challenge since the Air Force hasn't reenlisted 20,000 first-term airmen since 1959.

★ The USAF Chief of Staff has approved the *concept* of wearing a plastic collar rank insignia by enlisted personnel on the raincoat, lightweight blue jacket, utility shirt, etc. Development action has been initiated. Once completed, it will validate a uniform change advocated by AFA's Airmen Council for several years.

★ Figures received from the Air University show that there are 463 women presently enrolled in first-year AFROTC, thirty-four in the second year, and six each in the third and fourth years. They are enrolled at eighty-one colleges and universities across the country.

★ The General Henry H. Arnold Educational Fund, administered by the Air Force Aid Society, has assisted 1,751 sons and daughters of Air Force members to the tune of $1,721,000 ($429,000 of it in grants) in undergraduate and vocational educational assistance in the 1970–71 school year.

★ The Veterans Administration has announced that the rate of interest to be charged on guaranteed loans to finance the purchase of mobile homes has been set at 10.75 percent. Purchase of mobile homes under the G.I. loan program was authorized for the first time by the Veterans Housing Act of 1970, a measure that also approved loans for the purchase of condominiums. ■

## Senior Staff Changes

**Col. (B/G Selectee) Andrew B. Anderson, Jr.,** from Cmdr., Hq. 410th Bomb Wg., SAC, K. I. Sawyer AFB, Mich., to C/S, Hq. 2d AF, SAC, Barksdale AFB, La. . . . **Col. (B/G Selectee) James M. Breedlove,** from Cmdr., Hq. 3500th Plt. Tng. Wg., ATC, Reese AFB, Tex., to DCS/Ops, Hq. ATC, Randolph AFB, Tex. . . . **B/G (M/G Selectee) Richard C. Catledge,** from DCS/Requirements, Hq. TAC, Langley AFB, Va., to Cmdr., USAF Tac. Air Warfare Ctr., TAC, Eglin AFB, Fla. . . . **B/G (M/G Selectee) Ray M. Cole,** from Vice Cmdr., 22d AF, MAC, Travis AFB, Calif., to DCS/Plans, Hq. MAC, Scott AFB, Ill. . . . **B/G John F. Gonge,** from Cmdr., Hq. 63d MAW, MAC, Norton AFB, Calif., to Vice Cmdr., 21st AF, MAC, McGuire AFB, N.J., replacing B/G (M/G Selectee) Clare T. Ireland, Jr.

**B/G (M/G Selectee) Clifford W. Hargrove,** from C/S, 2d AF, SAC, Barksdale AFB, La., to Dep. Dir., Ops, DCS/P&Q, Hq. USAF . . . **B/G (M/G Selectee) Clare T. Ireland, Jr.,** from Vice Cmdr., 21st AF, MAC, McGuire AFB, N.J., to DCS/Ops, Hq. MAC, Scott AFB, Ill. . . . **Col. (B/G Selectee) Lester T. Kearney, Jr.,** from Vice Cmdr., to Cmdr., 63d MAW, MAC, Norton AFB, Calif., replacing B/G John F. Gonge . . . **Col. (B/G Selectee) James A. Knight,** from Cmdr., 4453d Combat Crew Tng. Wg., TAC, Davis-Monthan AFB, Ariz., to Cmdr., USAF Special Ops Force, TAC, Eglin AFB, Fla., replacing Col. Michael C. Horgan . . . **B/G Harrison Lobdell, Jr.,** from IG, Hq. ATC, Randolph AFB, Tex., to Dir., European Region, OASD (ISA), Hq. USAF (OSD) . . . **Mr. Lloyd K. Mosemann, II,** from Dep. Chief, Analysis Div., GS-16, Office, Asst. Dir., Programs and Systems, Hq. DSA, Alexandria, Va., to Dep. Supply and Maintenance, GS-17, Office, Asst. Sec. of the AF, Installations and Logistics, Washington, D.C.

**Col. (B/G Selectee) Slade Nash,** from Vice Cmdr., Air Defense Weapons Ctr., ADC, Tyndall AFB, Fla., to Vice Dir., Defense Communications Planning Gp., Naval Observatory, Washington, D.C. . . . **Col. (B/G Selectee) Walter P. Paluch, Jr.,** from Cmdr., 4th TFW, TAC, Seymour Johnson AFB, N.C., to DCS/Requirements, Hq. TAC, Langley AFB, Va., replacing B/G (M/G Selectee) Richard C. Catledge . . . **Col. (B/G Selectee) James L. Stewart,** from Cmdr., 3615th Plt. Tng. Wg., ATC, Craig AFB, Ala., to IG, Hq. ATC, Randolph AFB, Tex., replacing B/G Harrison Lobdell, Jr. . . . **B/G (M/G Selectee) Kendall S. Young,** from Chief, AF Advisory Gp., USMACV, Saigon, Vietnam, to DCS/Plans, Hq. USAFE, Lindsey AS, Germany. ■

*For the Airman's Bookshelf*

*A Royal Air Force military historian who worked with the late Sir Basil Liddell Hart examines the man, the strategist, his posthumously published* History of the Second World War, *and . . .*

# The Legacy of Liddell Hart

*Sir Basil H. Liddell Hart (1895–1970), historian, strategist.*

—Wide World Photos

*Heinz Guderian, creator of Nazi panzer forces, studied Liddell Hart.*

**By Richard A. Mason**
WING COMMANDER, RAF

SIR BASIL H. LIDDELL HART, the English military historian and strategist, died in January 1970. In 1947 he was commissioned to write a companion volume to his *History of the First World War,* but only late last year, after his death, was that volume published in England, entitled, significantly enough, *Liddell Hart's History of the Second World War.* The book, awaited with great anticipation, is being published in the United States by G. P. Putnam's Sons, New York, this month.

## The Making of a Reputation

Liddell Hart served in the trenches in World War I, was gassed, evacuated back to England, and subsequently invalided from the army in 1924. He developed a keen interest in both military history and contemporary military developments. While still in his twenties, he redrafted the British army infantry training manual, and his later histories—*Scipio Africanus, Sherman, Great Captains Unveiled, The Ghost of Napoleon, The Decisive Wars of History*—rapidly earned him international renown. His interest in history, however, was never simply academic; in addition, he wrote several other books "elaborating," as Michael Howard expressed it in *Survival,* March 1970, "a theory of war for the guidance of all involved in it, from lance corporal to Prime Minister."

In 1937 Liddell Hart became, for a year, the unofficial adviser to the British Secretary of State for War, stressing a policy of limited liability on the continent of Europe with major reliance on sea- and airpower. These policies, expressed publicly as military correspondent of the London *Times,* not only provoked intense irritation among the "official"—and responsible—advisers to the government but also led to extensive unpopularity when his ideas were apparently proved unrealistic in the spring of 1940.

## . . . And Its Loss

In vain did Liddell Hart protest that the Editor of the *Times* had altered his articles;

in vain did he explain that his suggested strategy was the only one the political and economic policies of the British government of the day would allow. In England he lost the support of many generals and the confidence of politicians: he was especially disliked by Churchill. From a pinnacle of military influence, he subsided by the summer of 1940 to anonymity, plagued by recurring illness. This is the pattern that is reflected by Irving Gibson in Earle's *Makers of Modern Strategy*. It was not the pattern that was uppermost in Liddell Hart's mind, it was not the pattern that figured most prominently in his major works (not mentioned anywhere in Gibson's chapter), and, most important of all, it was not the pattern studied by Generals von Seeckt, Guderian, Rommel, Student, Mannstein, or Manteuffel—a list that could be extended considerably.

## The Prophet of Blitzkrieg

In certain respects, Liddell Hart was reacting to the "holocaust of war," as Professor Gibson wrote in 1942, but not simply by preaching defensive limited liability for Britain.

—Wide World Photos

*Von Mannstein*

—Wide World Photos

*Von Manteuffel*

Nor was he converted to the theories of mechanization by the early writings of General Fuller. In 1919, in the November issue of the *Royal United Services Institute Journal,* he proposed the combination of tanks and infantry. Three years later, in his suggestions for a "New Model Army," he proposed combat groups of brigade size, comprising tanks, infantry in armored vehicles, and artillery. His ideas fell on stony ground in Britain but were thoughtfully translated by officers on the staff of the Inspectorate of Motorized Troops in the Reichswehr.

In the later 1920s, Liddell Hart's studies of military history and his thoughts on contemporary warfare coalesced. "When in the course of studying a long series of military campaigns I first came to perceive the superiority of the indirect over the direct approach, I was looking merely for light upon strategy," he said in *Strategy of the Indirect Approach* (p. 16). The development of the theory, as he commented to this writer in 1967, stemmed partly from a study of warfare in history, especially Sherman's campaigns, partly from a concern for the extravagant futility of World War I, and partly from a rapidly increasing awareness of the potential of mechanized warfare.

The "strategy of the indirect approach," now instinctively associated with Liddell Hart's name, had several clearly recognizable ingredients, all made possible by the harnessing of airpower and mobile armor—dispersion, deception, concealment, surprise, and rapid mobility designed to produce deep penetration behind enemy positions, not to destroy his entrenched forces, but to throw him off balance, cutting his communication and confusing his defensive reactions. In short, strategic dislocation rather than tactical destruction was the objective.

By June 1940, Liddell Hart had seen his offensive theories disregarded by his own country and his defensive strategies maligned with many statements lifted out of context. Across the Channel, the man who had translated his theory of "expanding torrent" into practice walked along the disaster-strewn beaches of Dunkirk. "Guderian," said Manteuffel in 1945 in *Other Side of the Hill* (p. 75), "was the creater and master teacher of our armored forces." The "master teacher" was later to admit his debt, as a pupil, to Basil Liddell Hart.

## A Book with a Massive Pedigree

What then should we expect from this man's history of World War II? It has been published a quarter of a century after the end of the war; it has been written by perhaps the greatest of twentieth-century military historians; it has been preceded by several one-volume histories and by hundreds of books on individual aspects of the war. And above all, what relevance does it carry for the military, on both sides of the Atlantic, in the 1970s?

The book is a vast study in nine parts. In "The Prelude," Liddell Hart deals with the events of 1938 and 1939; in "The Outbreak," he surveys the inconclusive but highly ominous period from September 1939 to April 1940. Parts III and IV describe the crescendo of Axis victories to the end of 1941. From there the book continues its chronological survey of the major campaigns in "annual" parts to the "Finale" of 1945. Part IX, the "Epilogue," is more than the word implies. The reader who knows of his earlier experiences will not be surprised at Liddell Hart's treatment of the war, but he will be progressively more saddened.

In the "Prelude," Liddell Hart is deeply critical of the British and French guarantee to Poland in 1939, stressing its military impossibility without the cooperation of Russia, which was politically undesirable. In his criticism of British policy, he is biased by neither person-

ality nor parochialism. The political objective was clearly not attainable by the military strength available; chivalry and honor cannot, he implies, substitute for realistic policy. Churchill, as perhaps one would expect, is not allowed to escape the blame for both political recklessness and military ineptitude in the Norwegian affair of April 1940.

In his analysis of the French malaise that preceded the debacle of May 1940, there occurs the first sign that all may not be well. He dwells on strategic deficiencies to the exclusion of any considerations of political and social weaknesses in the Fourth Republic. However much it contributed to it, obsolescent military theory did not of itself bring about the French collapse. It was, in many respects, a symposium of weakness, not the infection itself.

—Wide World Photos

*Paul von Kleist*

*Field Marshal Albert von Kesselring commanded German forces in Italy and on Western Front.*

—Wide World Photos

*Gen. Fedor von Bock led army groups on the Eastern Front until relieved of his command by Hitler.*

—Wide World Photos

*Marshal Georgi Zhukov, most widely known of the Soviet generals, led Russian troops into Berlin at war's end.*

—Wide World Photos

## The Prophecy Realized

The German breakthrough in the west naturally receives considerable coverage. In 1932, Liddell Hart made the following comments on Fuller's "Lectures on FSR III":

> He does not recognize the value of combining air attack with tank attack, in order to overcome ground resistance to the tanks as well as to dislocate the enemy's communications. . . . While he deals at length with tactical penetration by tank forces, and in a masterly way, he does not consider the idea of a real strategic penetration—a stroke quick and deep, to cut the enemy's communication far back, where their main arteries can be severed. . . . High mobility and rapidity of advance into the enemy's rear area will itself tend to protect the fast-moving mechanized force from interference and danger . . . limited objectives tend to put a brake on the pursuit and its prospects . . . press hard on the heels of a rout . . . he stops short of recognizing the potential value of dropping troops from the air to seize key points behind the enemy's front. . . . [*Unpublished notes, dated 1932, copy in possession of the writer.*]

On November 10, 1933, Liddell Hart had stressed to his military associates the danger of assuming that the wooded, hilly Ardennes area of northeast France was unsuitable for tanks; he had, in fact, gone over the area himself to support his arguments.

Therefore, when he describes the blitzkrieg of 1940, his interest is deep, his description detailed, and his insights perceptive, except, perhaps, that he is prone to accept Guderian's word for Guderian's own prominence a little too readily. Throughout the book he has relied heavily on interviews with several German generals in 1945 (published in abridged form in 1948 as *The German Generals Talk*). Occasionally their stories have not been completely corroborated by subsequent research, despite Sir Basil's claims to the contrary.

## The Qualities of a Bulldog

The chapter on the Battle of Britain is regrettably symptomatic of the book. It relies heavily on older sources—the only acknowledged one is Volume II of Churchill's Histories—and it fails to spell out the desperately close nature of the battle. One regrets that the master strategist does not stand back and analyze the coups and errors of the two sides, rather than moving straight on to devote slightly more space to the peripheral campaigns of 1940 in North Africa.

Before going on to describe the Russian campaigns, he does provoke one thoughtful reaction by his comment on Britain in 1940: "Never was their collective characterization as a bulldog so clearly demonstrated, and justified, in all its sublime stupidity. . . . Instinctively stubborn and strategically ignorant." He clearly implies that Britain should have recognized "the strategic realities" and made peace. Should the US have recognized the "strategic realities" of the Pacific in 1941, as Japan would have had her do? Indeed, both the UK and the US would have saved many lives if they had done so. But what would they have lost? By the same token, should the Allies have recognized the "strategic realities" of Berlin in 1948, or Korea in 1950, or perhaps even of Vietnam in the last decade? Strategic "reality" can be a very ephemeral substance, and Liddell

Hart above all should have remembered that.

### Imbalanced Emphasis

The Russian campaigns merit only 113 pages altogether, as opposed to 147 on North Africa. This is more than a trivial finger count. It reflects the strengths, and weaknesses, of the entire book. No Russian source is used, despite the existence, since 1962, of the official Russian histories and many personal accounts. Even allowing for the unreliability of much of that material, it seems difficult to describe the largest, the most costly, campaign, and perhaps the most important in both its short- and long-term implication, without looking over the other side of the hill. The source acknowledged is a British account not yet published in the US, and regrettably not yet available to the writer.

The difficulties of the invading force are clearly set out, but, in 1970, a major history should not rely on speculation for its assessment of Soviet preparedness in July 1941. Later, the vast sweep of the Russian campaigns is clearly portrayed—the failure before Moscow, the folly of Hitler's interference, the increasing breakdown of trust between senior and subordinate commanders, the stupidity at Stalingrad, and the brilliance in retreat of Kleist, Erich Manstein, and Hasso von Manteuffel. Yet the result is drab. The Russian leaders are shadows, the soldiers on either side discounted. This is a general's history, at about the divisional level. The influence of airpower, either at the time of Kesselring's close liaison with von Bock or later, when supremacy passed to the Russians, is scarcely mentioned.

The strategies are either indirect and successful, or direct and failures. The massive encirclement of a salient seems very logical—is it, therefore, indirect? Zhukov's winter counteroffensives in the Ukraine in December 1942 owed their success to vastly superior forces—as well as to any "alternative threats" or attacks on "moral soft spots."

In this tendency to seek evidence for his theories, Liddell Hart's emphasis became a little unpredictable in his later chapters on Russia. Kursk merits only one paragraph, yet it would appear that the severe mauling of eighteen panzer and panzergrenadier divisions in the week-long, largest tank battle in history was at least as significant as the Battle of the Bulge eighteen months later. Perhaps the most revealing sentence in his description of the Russian campaigns is one that shows the complexity of his indirect-approach idea when pursued to its almost illogical conclusion: "While the preparatory moves were never directly aimed at the place which they were intended to threaten, the completing moves were often direct in the geographical sense—and this had a psychological indirectness, because they came from the least expected direction." When is the indirect approach not the indirect approach?

The African campaigns on the other hand are superbly drawn. Rommel, already a special study of Liddell Hart's, must surely rank as one of the great captains—imaginative, farsighted, audacious, chivalrous, frequently overcoming ridiculous odds. Here, too, was a general who never forgot that he was only as good as his soldiers. When his actual resources are considered, one inevitably wonders what he could have done with an army group or, indeed, with a Führer who had realized the importance of Suez, Malta, and Gibraltar to the British war effort. Liddell Hart carefully compares him on several occasions with Montgomery, who was too often overcautious, unimaginative, and who obscured his own flexibility in battle with his subsequent declaration of "all gone according to plan."

### Admiration for the United States

The American reader will find little new in the description of United States campaigns. Liddell Hart was naturally impressed with the US Pacific strategy, but he draws upon no Japanese sources and his narratives are familiar from official histories. None of the American commanders emerge as personalities in their own right, and the critical submarine campaign against Japan is given slightly more than one page, or approximately one-thirtieth of the coverage of the Burma theater.

*Liddell Hart rated Rommel (left) as one of the great captains. He was less charitable to Field Marshal Montgomery (right).*

—Wide World Photos

The Allied advance through Western Europe is equally sketchily dealt with—only some seventy pages with more than one-third devoted to the Ardennes offensive. Naturally, Liddell Hart is critical of Eisenhower's broad-front strategy, preferring instead rapid pursuit of the disintegrating German armies in the autumn of 1944. He is, however, equally critical of Montgomery's handling of the Antwerp

crisis and prefers to allocate blame across the board for the failure to finish the war before 1945:

"But the root of all the Allied troubles at this time of supreme opportunity was that none of the top planners had foreseen such a complete collapse of the enemy as occurred in August. They were not prepared, mentally or materially, to exploit it by a rapid long-range thrust."

—Wide World Photos

*Gen. Omar Bradley questioning captured German troops.*

*Churchill and Eisenhower. The news was good.*

*Field Marshal von Rundstedt commanded on three fronts.*

—Wide World Photos

Oddly enough, his account of the Ardennes battle, despite its relatively lengthy coverage, is very thin on the Allied side. The control by Eisenhower, Montgomery, and Bradley tends to be lost in the account, which is based on Manteuffel's and Rundstedt's verbal narratives of 1945. The persistent criticism of Montgomery during this period is also a little harsh. The frequently quoted "Christ coming to cleanse the temple" has too often been allowed to obscure the overall tact with which Montgomery restored the confidence of the rather shaken Hodges and his staff. The historic press conference is also mentioned in the traditional way, without note of Montgomery's deeply genuine tributes to the American soldiers he had been privileged to lead.

But what about airpower? Readers with any knowledge of either the *United States Strategic Bombing Survey* or the British official histories will recognize most of the analysis of the air war in Germany. The failure of British Bomber Command is spelled out, and the ultimate contribution of the combined bomber offensive is fairly and comprehensively assessed. Sir Basil perhaps may have underestimated the impact on British morale of the generally ineffective RAF raids prior to 1942. The British public had to swallow a long series of defeats between 1940 and 1942; the sight and sound of "ours" droning out from the darkened countryside across the North Sea coast was one of very few signs available to back up the British leader's talk of ultimate victory.

### An Unnecessary War?

It is dangerous, but necessary, to generalize about a one-volume history of these proportions. The author had to decide where his emphases were to be placed. Before the book was opened, Liddell Hart's could be anticipated. He was English, a pioneer of mechanized warfare and the editor of Rommel's papers. In his study at Medmenham, he had the signed photographs of many German generals. He attached great importance to personal interviews and mistrusted narratives and memoirs written long after the event, although he expressed satisfaction with the majority of the official histories of World War II. His book, therefore, penetrates deeply into the 1940 North African and Italian campaigns but adds little to our knowledge of other theaters.

His epilogue, however, is probably the most provocative chapter of all, especially his last paragraph. He was bitterly opposed to the policy of unconditional surrender and also, without acknowledging several important sources, he disagrees strongly with the dropping of the atomic weapon. He concludes, "Thus [after unconditional surrender] the 'unnecessary war' was unnecessarily prolonged, and millions more lives needlessly sacrificed, while the ultimate peace merely produced a fresh menace and the looming fear of another war."

This expression, so reminiscent of Fuller, is not hitherto typical of what had been a cool, analytical approach. Even allowing for British diplomatic blunders, even allowing for an


**ABOUT THE AUTHOR**

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American unwillingness to see "the Japanese point of view" in Indochina, was it not necessary to oppose Hitler? Was it not necessary to retaliate against Japan, to preserve Anglo-American interests in the Pacific and in Asia? Would either Britain or America have been in any position to dictate terms to a Germany or a Russia victorious in Europe had the West actually let Hitler and Stalin fight their own war?

It is with great regret that the book must, overall, be labeled "disappointing." It is not for this that Liddell Hart will be remembered. The presence of fifty-three excellent maps, the absence of appendices, the absence of photographs, the short and incomplete bibliography, which includes only two books published after 1961, are details that do not affect the basic quality of the work very much. The reader, however, can never quite overcome his irritation at the large number of unacknowledged quotations, particularly when their interest or importance stimulates a desire to follow them further. Nevertheless, it is the story of Liddell Hart's own war, a story that tells at least as much about him as about World War II.

### The Legacy of Medmenham

He knew there were errors—for example, the footnote on page 590, stating that the first translation of Douhet into English occurred in 1942. He made a note to correct that in April 1967, but he never did. It was not the collection of more and more material that delayed the book for twenty-three years, but the author's preoccupation with other things. He wrote other books and articles. He gave lectures all over the world. But above all, he gave advice, he read papers and manuscripts. He wrote letters. No correspondent, however insignificant, failed to receive a courteous reply from the man himself. None was refused admittance to the rather somber book-littered study or to the shelves of the annex at the side of the house at Medmenham. Everyone who knew him was fully aware that "the book" was not progressing as well as it should, but to him, encouragement of young writers was of the greatest importance.

This *History of the Second World War* should have been a great book. No one was better qualified than Liddell Hart to write it, no one could have had greater access to published and unpublished sources. It stresses in great and perceptive detail the need for senior commanders to maintain open minds; the need to maintain the close relationship between military strategy and political objective. It is a testimony to the heretical fact that captains can occasionally teach generals. More sadly, it also is posthumous evidence of a statement made by Sir Basil himself, "documents . . . do not show how ideas are sown and grow in the minds of the actual planners. Some who sow ideas are apt to overestimate the effect of their particular seed. . . ."

It is not a great book, partly because of his preoccupation with his "particular seed," partly because of the restricted sources, partly because of the location of his emphases; but primarily because his time, and ultimately his health, were allocated to people who sought his guidance, thereby perhaps giving him the tribute denied him for too many years. His real legacy lies elsewhere, as Michael Howard wrote in his review of the Liddell Hart memoirs in the February 1966 *RUSI Journal*:

> For the past twenty years, Liddel Hart has stuck to his last; teaching, writing, analyzing, above all training a new generation of officers and academics throughout the western world to apply to military matters his own meticulous criteria of reason and intellectual honesty. ■

---

## STOUT PRESCRIPTION

The late Bill Stout was a combination of aircraft (and automobile) designer, production genius, and operator. He was one of the giants of American aviation in its adolescence, and perhaps the wisest man I ever knew.

In the late 1930s, Bill reduced his design philosophy to five words and had it posted all over the walls of his shop: SIMPLICATE AND ADD MORE LIGHTNESS. This was picked up by a British aviation editor, and in due course similar posters (crediting Bill Stout) appeared in British aircraft plants.

Shortly before World War II, Stout was introduced at a dinner in London. After the dinner, a shy young man approached Bill and said, "I've always wanted to meet you, Mr. Stout."

"Fine," replied Bill. "Why did you want to meet me?"

"Well," said the Briton, "we have signs at our plant quoting your prescription for good design. I've always taken your advice and found it helpful."

"And what is your name?" Bill asked.

"Frank Whittle," was the answer. He was inventing the jet engine.

—CLAUDE WITZE (Senior Editor, AIR FORCE Magazine)

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# JANE'S

## ALL THE WORLD'S AIRCRAFT SUPPLEMENT

*Anti-submarine version of the Kamov Ka-25. Equipment varies considerably from aircraft to aircraft*

**KAMOV**
*NIKOLAI I. KAMOV, USSR*

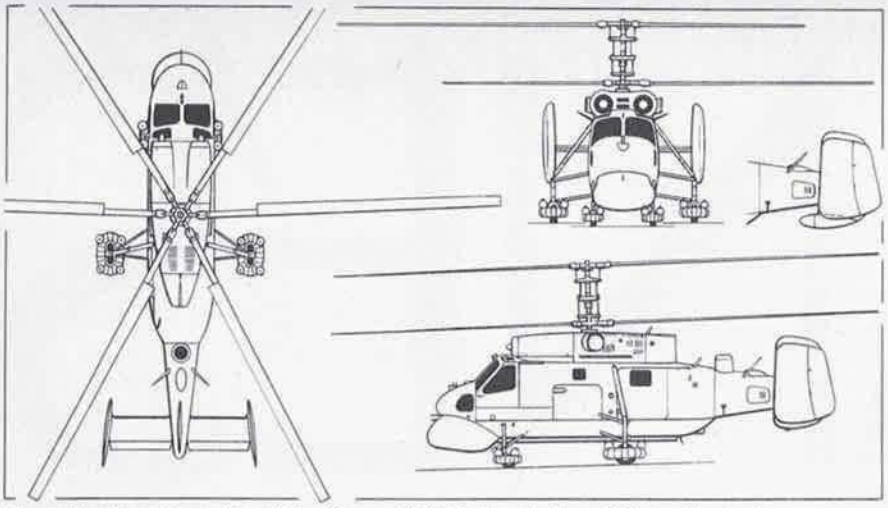
Since the Soviet Navy's 18,000-ton helicopter carrier/cruiser *Moskva* appeared in the Mediterranean, much more information has become available concerning the Kamov Ka-25 helicopter, about 20 of which are based on this ship.

**KAMOV Ka-25**
**NATO Code Name: "Hormone"**

The prototype of this military helicopter was first shown in public in the Soviet Aviation Day fly-past over Tushino Airport, Moscow, in July 1961. It was allocated the NATO code name "Harp", but this has been changed to "Hormone" for the production versions.

Basically, the Ka-25 follows the formula established by earlier Kamov designs such as the Ka-15 and Ka-18, with two three-blade co-axial contra-rotating rotors, a pod-and-boom fuselage, multi-fin tail unit, and four-wheel landing gear. It is powered by two small turboshaft engines mounted side-by-side above the cabin, and this has left the cabin space clear for personnel, operational equipment, fuel, and payload.

In its anti-submarine version, as carried by the *Moskva*, the Ka-25 has a search radar installation in a radome (diameter 4 ft 1 in; 1.25 m) under the nose. Each landing wheel is surrounded by an inflatable pontoon, surmounted by inflation bottles, to provide flotation in the event of an emergency landing on the water. Other equipment varies extensively from aircraft to aircraft, but there is no evidence that externally-mounted weap-



*The anti-submarine version of the Kamov Ka-25 helicopter (two 900 shp Glushenkov turboshaft engines)*

ons are carried. The two "air-to-surface missiles" carried on outriggers on each side of the cabin of the prototype during its Tushino appearance were dummies.

As well as serving with the Red Banner Black Sea Fleet as an anti-submarine aircraft based on the *Moskva*, the Ka-25 fulfils a variety of other military roles. There is also a commercial flying-crane conversion of the basic airframe, designated Ka-25K, of which an example was demonstrated at the 1967 Paris Air Show. It can be assumed that all versions are similar in details such as basic structure, overall dimensions, power plant, weights, and performance; the following description of the military Ka-25 is therefore adapted from information on the Ka-25K made available in Paris, although equipment details apply specifically to the anti-submarine version.

TYPE: Twin-turbine anti-submarine and general-purpose helicopter.

ROTOR SYSTEM: Two three-blade co-axial contra-rotating rotors. Automatic blade-folding.

FUSELAGE: Conventional all-metal semi-monocoque structure of pod-and-boom type.

TAIL UNIT: Cantilever all-metal structure, with central fin, ventral fin, and twin end-plate fins and rudders which are toed inward.

LANDING GEAR: Non-retractable four-wheel type. Oleo-pneumatic shock-absorbers. Nose-wheels are smaller than main wheels and are of castoring type. Each wheel is enclosed in an inflatable pontoon surmounted by inflation bottles.

POWER PLANT: Two 900 shp Glushenkov turboshaft engines, mounted side-by-side above cabin, forward of rotor drive-shaft. The engines, with their auxiliaries, transmission, and rotors, form a single self-contained assembly which can be removed in one hour.

ACCOMMODATION: Pilot and co-pilot side-by-side on flight deck, with rearward-sliding door on each side. Entry to main cabin is via a rearward-sliding door to rear of main landing gear on port side. Cabin is large enough to contain 12 folding seats for passengers in transport version.

ELECTRONICS AND EQUIPMENT: Equipment available for all versions includes auto-pilot, navigational system, radio-compass, radio communications installations, and lighting system for all-weather operation by day or night. Dipping sonar housed in compartment at rear of main cabin, immediately forward of tail-boom, and search radar under nose of anti-submarine version. Some aircraft have a blister fairing over equipment mounted at the base of the centre tail-fin; others have a cylindrical housing, with a transparent top, above the central point of the tail-boom (*see illustration*), with a shallow blister fairing to the rear of this. There is an external rack for small stores on each side of the fuselage, mid-way between the nose and main landing gear units. Doors under the fuselage enclose a stores bay.

DIMENSIONS, EXTERNAL:

| | |
|---|---|
| Diameter of rotors (each) | 51 ft 8 in (15.74 m) |
| Length overall (anti-submarine) | 32 ft 0 in (9.75 m) |
| Height to top of rotor head | 17 ft 7½ in (5.37 m) |
| Width over tail-fins | 12 ft 4 in (3.76 m) |
| Wheel track: | |
| Front | 4 ft 7½ in (1.41 m) |
| Rear | 11 ft 6½ in (3.52 m) |
| Main cabin door: | |
| Height | 3 ft 7¼ in (1.10 m) |
| Width | 3 ft 11¼ in (1.20 m) |

WEIGHTS (Ka-25K):

| | |
|---|---|
| Weight empty | 9,700 lb (4,400 kg) |
| Max payload | 4,400 lb (2,000 kg) |
| Max T-O weight | 16,100 lb (7,300 kg) |

PERFORMANCE (Ka-25K):

Max level speed
119 knots (137 mph; 220 km/h)
Normal cruising speed
104 knots (120 mph; 193 km/h)
Service ceiling 11,500 ft (3,500 m)
Range with standard fuel, with reserves
217 nm (250 miles; 400 km)
Range with max fuel, with reserves
351 nm (405 miles; 650 km)

*The Ka-25K commercial flying-crane helicopter demonstrated at the 1967 Paris Air Show. A detachable under-nose gondola, containing a rearward-facing pilot's seat with dual flying controls for use during loading and unloading, replaces the radome of the military anti-submarine version* (Tass)


## McDONNELL DOUGLAS

*McDONNELL DOUGLAS CORPORATION; Head Office and Works: Box 516, St. Louis, Missouri 63166, USA*

### McDONNELL DOUGLAS SKYHAWK
**US Navy Designation: A-4**

The Skyhawk is a single-seat lightweight attack bomber which is in production at the Douglas Long Beach works and is in service on board carriers of the US Navy, with land-based Marine Corps squadrons, with the air forces of Israel, New Zealand, and the Argentine, and with the Royal Australian Navy.

Designed originally to provide the US Navy and Marine Corps with a simple low-cost lightweight attack and ground support aircraft, the Skyhawk was based on experience gained during the Korean War. Since the initial requirement called for operation by the US Navy, special design consideration was given to providing low-speed control and stability during take-off and landing, added strength for catapult launch and arrested landings, and dimensions that would permit it to negotiate standard aircraft carrier lifts without the complexity of folding wings.

Production of the Skyhawk began in September 1953 and the first flight of the XA-4A prototype, powered by a Wright J65-W-2 engine (7,200 lb = 3,270 kg st), took place on 22 June 1954.

The following versions have been produced:

**A-4A** (formerly A4D-1). Initial version with Wright J65-W-4 turbojet engine (7,700 lb = 3,493 kg st). First A-4A flew on 14 August 1954, and this version entered ser-

vice with US Atlantic and Pacific Fleets on 26 October 1956. 166 built. Production completed. Uprated engines (8,500 lb = 3,855 kg st) fitted progressively to all aircraft.

**A-4B** (formerly A4D-2). Similar to A-4A but with improved bomb delivery system, provision for carrying Bullpup missiles, automatic dead reckoning navigation computer, flight refuelling capability (both tanker and receiver), dual hydraulic system, stiffer single-surface rudder and powered tail, and Wright J65-W-16A turbojet (7,700 lb = 3,493 kg st). First flight 26 March 1956. 542 built. Production completed. 50 reconditioned for Argentine Air Force. Uprated engines (8,500 lb = 3,855 kg st) fitted progressively to all aircraft.

**A-4C** (formerly A4D-2N). Similar to A-4B but longer nose to accommodate additional equipment to improve the all-weather characteristics. New items included advanced autopilot, low-altitude bombing/all attitude indicating gyro system, terrain clearance radar, and angle of attack indicator. First flight 21 August 1958. Deliveries began in December 1959. 638 built. Production completed in December 1962. Uprated engines (8,500 lb = 3,855 kg st) fitted progressively to all aircraft.

**A-4E** (formerly A4D-5). Increased payload and 27% greater range. Powered by a Pratt & Whitney J52-P-6A turbojet (8,500 lb = 3,855 kg st). Douglas Escapac zero-height 90-knot rocket ejection seat. Four underwing and one under-fuselage bomb racks able to carry as many as 20 separate items weighing up to 8,200 lb (3,720 kg) total. First flight 12 July 1961. Deliveries to US Navy began in November 1962. 499 built. Production completed.

**TA-4E.** Original designation of prototypes of TA-4F.

**A-4F.** Attack bomber with J52-P-8A turbojet (9,300 lb = 4,218 kg st), new lift-spoilers on wings to shorten landing run by up to 1,000 ft (305 m), nose-wheel steering, low-pressure tyres, zero-height zero-speed ejection seat, additional bullet- and flak-resistant materials to protect pilot, updated electronics contained in fairing "hump" aft of cockpit. Prototype flew for first time on 31 August 1966. Deliveries to US Navy began on 20 June 1967, and were completed in 1968. 146 built.

**TA-4F.** Tandem two-seat dual-control trainer version of A-4F for US Navy. Fuselage extended 2 ft 4 in (0.71 m), fuselage fuel tankage reduced to 100 US gallons (379 litres), Pratt & Whitney J52-P-6 or -8A engine optional, Douglas Escapac rocket ejection seats. Provision to carry full range of weapons available for A-4F. Reduced avionics. First prototype flew on 30 June 1965. Deliveries began to the US Navy in May 1966. In production.

**A-4G.** Similar to A-4F for Royal Australian Navy. Equipped to carry Sidewinder air-to-air missiles. First of eight delivered on 26 July 1967.

**TA-4G.** Similar to TA-4F for Royal Australian Navy. First of two delivered on 26 July 1967.

**A-4H.** Designation of version supplied to Israel. Delivery of an initial batch of 48 in 1967–68, followed by 22 more.

**TA-4H.** Tandem two-seat trainer version of the A-4H for Israel. Three delivered.

**TA-4J.** Tandem two-seat trainer, basically a simplified version of the TA-4F. Ordered for US Naval Air Advanced Training Command, under $26,834,000 contract. Deletion of the following equipment, although provisions retained: radar, dead-reckoning navigation system, low-altitude bombing system, air-to-ground missile systems, weapons delivery computer and automatic release, intervalometer, gun pod, standard store pylons, in-flight refuelling system, and spray tank provisions. Addition and relocation of certain instruments. J52-P-6 engine standard. Provision for J52-P-8A engine and combat avionics. Prototype flew in May 1969 and the first four were delivered to the US Navy on 6 June 1969. In production.


*McDonnell Douglas A-4M Skyhawk attack aircraft (Pratt & Whitney J52-P-408A turbojet engine)*

**A-4K.** Similar to A-4F, for Royal New Zealand Air Force. Different radio and braking parachute. First of ten of these aircraft were handed over to the RNZAF on 16 January 1970.

**TA-4K.** Similar to TA-4F, for Royal New Zealand Air Force. The first of four were handed over to the RNZAF on 16 January 1970.

**A-4L.** Modification of A-4C with uprated engine, bombing computing system and avionics relocated in fairing "hump" aft of cockpit as on A-4F. Delivery to US Navy Reserve carrier air wing began in December 1969.

**A-4M.** Basically similar to A-4F, but with J52-P-408A turbojet (11,200 lb = 5,080 kg st) and braking parachute standard, making possible combat operation from 4,000 ft (1,220 m) fields and claimed to increase combat effectiveness by 30%. Larger windscreen and canopy; windscreen bullet-resistant. Increased ammunition capacity for 20 mm cannon. More powerful generator, provision of wind-driven back-up generator, self-contained engine starter. First of two prototypes flew for the first time on 10 April 1970. About 50 ordered for US Marine Corps, the first of which was delivered on 3 November 1970.

**A-4N.** Projected version for US Navy, basically similar to A-4M.

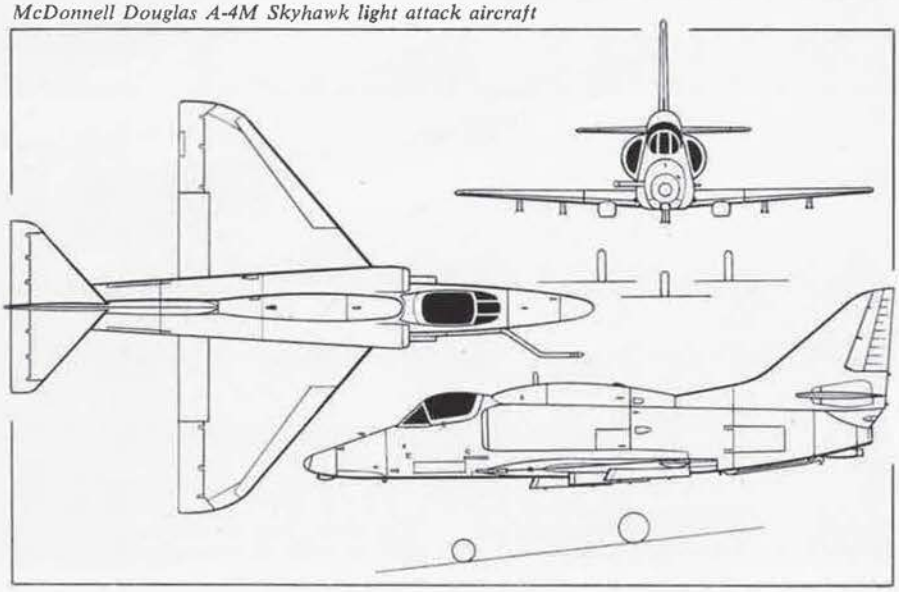
Current planning calls for production of the Skyhawk until 1974, and logistics support for its continued usage into the 1980s.

Its several hundred variations of military load can include nuclear weapons and air-to-air or air-to-surface guided missiles.

A Douglas-developed self-contained flight refuelling unit can be carried on the under-fuselage bomb shackles, enabling the A-4 to operate as a flying "tanker".

More than 2,400 Skyhawks had been delivered by the Spring of 1970.

*McDonnell Douglas A-4M Skyhawk light attack aircraft*



The following structural description refers specifically to the A-4M.

TYPE: Single-seat attack bomber.

WINGS: Cantilever low-wing monoplane. Sweepback 33° at quarter-chord. All-metal three-spar structure. Spars machined from solid plate in one piece tip-to-tip. One-piece wing skins. Hydraulically-powered all-metal ailerons, with servo trim-tab in port aileron. All-metal split flaps. Automatic leading-edge slats with fences. Hydraulically-actuated lift spoilers above flaps.

FUSELAGE: All-metal semi-monocoque structure in two sections. Rear section removable for engine servicing. Outwardly-hinged hydraulically-actuated air-brake on each side of rear fuselage. Detachable nose over communications and navigation equipment. Integral flak-resistant armour in cockpit area, with internal armour plate below and forward of cockpit.

TAIL UNIT: Cantilever all-metal structure. Electrically-actuated variable-incidence tailplane. Hydraulically-powered elevators. Powered rudder with unique central skin and external stiffeners.

LANDING GEAR: Hydraulically-retractable tricycle type, with single wheel on each unit. All units retract forward. Free-fall emergency extension. Main legs pre-shorten for retraction and wheels turn through 90° to stow horizontally in wings. Menasco shock-absorbers. Hydraulic nose-wheel steering.

POWER PLANT: One 11,200 lb (5,080 kg) st Pratt & Whitney J52-P-408A turbojet engine. Fuel in integral wing tanks and self-sealing fuselage tank aft of cockpit, total capacity 800 US gallons (3,028 litres). One 150, 300, or 400 US gallon (568, 1,136, or 1,514 litres) auxiliary tank can be carried on the under-fuselage bomb-rack, and one 150 or 300 US gallon auxiliary tank on each of the inboard underwing racks. Maximum fuel capacity, internal plus auxiliary tanks, 1,800 US gallons (6,814 litres). Large flight refuelling probe on starboard side of nose. Douglas-developed self-contained flight refuelling unit can be carried on the under-fuselage standard bomb shackles.

ACCOMMODATION: Pilot on Douglas Escapac 1-C3 zero-speed, zero-altitude lightweight ejection seat. Enlarged cockpit enclosure to improve pilot's visibility, with rectangular bullet-resistant windscreen.

SYSTEMS: Dual hydraulic system. Oxygen system. Electrical system powered by 20kVA generator, with wind-driven generator to provide emergency power.

AVIONICS: Includes Bendix Automatic Flight Control, ARC-51 UHF radio transceiver, ARA-50 UHF direction finder, APX-64 IFF, Elliott Type 546 head-up display system, Douglas angle-of-attack indicator, electronic countermeasures, APG-53A terrain clearance radar, ASN-41/WDS-600/APN-153(V) Doppler/inertial navigation and ARC-115 VHF/FM radio transceiver. Provisions for ARR-69 auxiliary radio receiver, ARN-52 TACAN and APN-141 radar altimeter.

EQUIPMENT: Ribbon-type braking parachute of 16 ft (4.88 m) diameter contained in canister secured in rear fuselage below engine exhaust. Arrester hook for carrier operation. Provisions for JATO.

ARMAMENT: Provision for several hundred variations of military load, carried externally on one under-fuselage rack, capacity 3,500 lb (1,588 kg); two inboard underwing racks, capacity of each 2,250 lb (1,020 kg); and two outboard underwing racks, capacity of each 1,000 lb (450 kg). Weapons that can be deployed include nuclear or HE bombs, air-to-surface and air-to-air rockets, Sidewinder infra-red missiles, Bullpup air-to-surface missiles, ground-attack gun pods, torpedoes, countermeasures equipment, etc. Two 20 mm Mk 12 cannon in wing roots standard, each with 200 rounds of ammunition. DEFA 30 mm cannon available as option on international versions, with 150 rounds of ammunition per gun.

DIMENSIONS, EXTERNAL:

| | |
|---|---|
| Wing span | 27 ft 6 in (8.38 m) |
| Wing chord at root | 15 ft 6 in (4.72 m) |
| Length overall (excluding flight refuelling probe): | |
| A-4A, B | 38 ft 4¾ in (11.70 m) |
| A-4C | 39 ft 1¾ in (11.93 m) |
| A-4E, F, M | 40 ft 3¼ in (12.27 m) |
| TA-4F | 42 ft 7¼ in (12.98 m) |
| Height overall: | |
| A-4A, B, C, E, F, M | 15 ft 0 in (4.57 m) |
| TA-4F | 15 ft 3 in (4.66 m) |
| Tailplane span | 11 ft 3½ in (3.44 m) |
| Wheel track | 7 ft 9½ in (2.38 m) |

AREAS:

| | |
|---|---|
| Wings, gross | 260 sq ft (24.16 m²) |
| Vertical tail surfaces (total) | 50 sq ft (4.65 m²) |
| Horizontal tail surfaces (total) | 48.85 sq ft (4.54 m²) |

WEIGHTS:

| | |
|---|---|
| Weight empty: | |
| A-4A | 8,400 lb (3,810 kg) |
| A-4B | 9,146 lb (4,149 kg) |
| A-4C | 9,728 lb (4,412 kg) |
| A-4E | 9,853 lb (4,469 kg) |
| A-4F | 10,448 lb (4,739 kg) |
| A-4K | 10,000 lb (4,535 kg) |
| TA-4F | 10,602 lb (4,809 kg) |
| A-4M | 10,465 lb (4,747 kg) |
| Normal T-O weight: | |
| A-4C | 17,295 lb (7,845 kg) |
| Max T-O weight: | |
| A-4A | 20,000 lb (9,072 kg) |
| A-4B, C | 22,500 lb (10,206 kg) |
| A-4E, F, K, M, TA-4F | 24,500 lb (11,113 kg) |
| A-4F from land base* | 27,420 lb (12,437 kg) |

PERFORMANCE (at design T-O weight):

| | |
|---|---|
| Max level speed: | |
| A-4A | 577 knots (664 mph; 1,069 km/h) |
| A-4B | 574 knots (661 mph; 1,064 km/h) |
| A-4C | 564 knots (649 mph; 1,044 km/h) |
| A-4E | 585 knots (673 mph; 1,083 km/h) |
| TA-4F | 586 knots (675 mph; 1,086 km/h) |

** Export version only: overload condition not authorised by US Navy.*

*McDonnell Douglas A-4M Skyhawk attack aircraft (Pratt & Whitney J52-P-408A turbojet engine)*

Max level speed (with 4,000 lb; 1,814 kg bomb load):
A-4F 515 knots (593 mph; 954 km/h)
A-4M 560 knots (645 mph; 1,038 km/h)
Max rate of climb (standard day at sea level):
A-4F 5,620 ft (1,713 m)/min
A-4M 8,440 ft (2,572 m)/min
Max rate of climb (standard day at 25,000 ft; 7,620 m):
A-4F 1,495 ft (455 m)/min
A-4M 2,500 ft (763 m)/min
T-O run (at 23,000 lb; 10,433 kg T-O weight):
A-4F 3,720 ft (1,134 m)
A-4M 2,700 ft (823 m)
Max ferry range, A-4M at 24,500 lb (11,113 kg) T-O weight, with max fuel, standard reserves
1,785 nm (2,055 miles; 3,307 km)

## AÉROSPATIALE

*SOCIÉTÉ NATIONALE INDUSTRIELLE AÉROSPATIALE; Head Office: 37 Boulevard de Montmorency, 75 – Paris 16e, France*

### AÉROSPATIALE SA 315B ALOUETTE

By the beginning of 1971 more than 2,150 examples had been ordered of the SE 313 and SA 318 Alouette II and the SA 316 and SA 319 Alouette III, powered by Turboméca Artouste or Astazou turboshaft engines. From mid-1971 a further version, known as the SA 315B, will be available for delivery.

Design of the SA 315B began in late 1968, initially to meet a requirement announced by the Indian armed forces, and a prototype was flown for the first time on 17 March 1969. French certification was granted on 29 September 1970. Basically, the SA 315B combines features of the Alouette II and III, having the airframe (with some reinforcement) of the former and the Artouste power plant and rotor system of the SA 316 Alouette III.

TYPE: Turbine-driven general-purpose helicopter.

ROTOR SYSTEM: Three-blade main and anti-torque rotors. Main rotor head similar to that of Alouette III. All-metal main rotor blades, of constant chord, are on articulated hinges, with hydraulic drag-hinge dampers, and can be folded for storage. Rotor brake optional.

ROTOR DRIVE: Main rotor driven through planetary gearbox, with free-wheel for autorotation. Take-off drive for tail rotor at lower end of main gearbox, from where a torque shaft runs to a small gearbox which supports the rotor and houses the pitch-change mechanism. Cyclic and collective pitch controls are powered.

FUSELAGE: Similar to that of Alouette II, but reinforced. Glazed cabin has light metal frame. Centre and rear of fuselage have a triangulated steel-tube framework.

LANDING GEAR: Similar to that of Alouette II. Skid type, with retractable wheels for ground manoeuvring. Pneumatic floats for normal operation from water, and emergency flotation gear, inflatable in the air, are available.

POWER PLANT: One 870 shp Turboméca Artouste IIIB turboshaft engine, derated to 550 shp. Fuel in single tank in fuselage centre-section, with capacity of 127.5 Imp gallons (580 litres).

ACCOMMODATION: Glazed cabin seats pilot and passenger side-by-side in front and three passengers behind. Can be adapted, with a raised skid gear, for flying crane (payload 2,204 lb = 1,000 kg), rescue (hoist capacity 265 lb = 120 kg), liaison, observation, training, agricultural, photographic, ambulance, and other duties. As an ambulance, can accommodate two stretchers and a medical attendant internally.

*The prototype Aérospatiale SA 315B Alouette, which combines features of the standard Alouette II and III*

DIMENSIONS, EXTERNAL:
Main rotor diameter 36 ft 1¾ in (11.02 m)
Tail rotor diameter 6 ft 3¼ in (1.91 m)
Main rotor blade chord (constant) 13.8 in (0.35 m)
Length overall, both rotors turning 42 ft 4¾ in (12.92 m)
Length of fuselage, tail rotor turning 33 ft 8 in (10.26 m)
Height to top of rotor hub 10 ft 1¾ in (3.09 m)
Skid track 7 ft 9¾ in (2.38 m)

DIMENSIONS, INTERNAL:
Cabin:
Max length 6 ft 10¾ in (2.10 m)
Max width 4 ft 7 in (1.40 m)
Max height 4 ft 2½ in (1.28 m)
Sill height 1 ft 11¼ in (0.59 m)
Floor area (freight compartment) 11.8 sq ft (1.10 m²)
Volume (freight compartment) 59.3 cu ft (1.68 m³)

WEIGHTS (S/L operation, ISA):
Basic operating weight empty 2,160 lb (980 kg)
Weight empty, equipped 3,065 lb (1,390 kg)
Normal max T-O weight 3,858 lb (1,750 kg)
Max T-O weight with externally-slung cargo 4,850 lb (2,200 kg)

PERFORMANCE (at normal max T-O weight, ISA):
Max level speed at S/L 113 knots (130 mph; 210 km/h)
Econ cruising speed at S/L 104 knots (119 mph; 192 km/h)
Max rate of climb at S/L 1,319 ft (402 m)/min
Service ceiling 20,670 ft (6,300 m)
Hovering ceiling in ground effect 18,370 ft (5,600 m)
Hovering ceiling out of ground effect 16,895 ft (5,150 m)
Range with max fuel:
at S/L 275 nm (317 miles; 510 km)
at 9,840 ft (3,000 m) 323 nm (373 miles; 600 km)

## CIERVA

*CIERVA ROTORCRAFT LTD; Address: South Block, Redhill Aerodrome, Surrey, England*

*Directors:*
*Air Cdre J. G. Weir, CMG, CBE (Chairman)*
*N. M. Niven (Deputy Chairman)*
*Lord Kindersley, CBE, MC*
*Dipl Ing J. S. Shapiro, MIMechE, FRAeS (Technical Director)*
*G. R. L. Weir (Commercial Director and Secretary)*

*Public Relations:*
*A. W. B. Hester*

The Cierva Autogiro Company adopted its present title after acquiring Rotorcraft Ltd, the company set up by the Mitchell Engineering Group to back development of the original Grasshopper helicopter designed by Dipl Ing Shapiro's company, Servotec Ltd. This helicopter was developed into the Cierva Rotorcraft Mk III Grasshopper, described and illustrated in the 1970–71 *Jane's*, and in its current form is known as the CR.LTH-1.

### CIERVA ROTORCRAFT CR.LTH-1

The CR.LTH-1 is a twin-engined light utility helicopter utilising a co-axial contra-

*Cierva Rotorcraft CR.LTH-1 utility helicopter (two 205 hp Rolls-Royce Continental IO-360 engines)* (Air Portraits)

rotating main rotor system. This maintains torque balance without the need for a tail rotor, and the aircraft can fly safely on one engine. Among advantages claimed for the design are a low operating noise level, high rotor efficiency due to an unusually close rotor separation, and straightforward overhaul and maintenance. The aircraft is adaptable to a variety of operational roles.

Two prototypes had been built up to September 1970, when the aircraft was shown publicly for the first time at the SBAC Flying Display and Exhibition at Farnborough. Prior to this the aircraft had already completed more than 200 hr of ground running tests as part of an exhaustive development programme. Preliminary hovering trials began in 1969 with the second aircraft (G-AWRP); the first prototype (G-AXFM, powered by IO-360 engines derated to 135 hp and first flown on 18 August 1969) underwent a number of control system modifications prior to taking over the flight test programme from the second machine.

The production version of the helicopter, to which the following description applies, is designated Mk 3-11 and is expected to be available by mid-1972.

TYPE: Twin-engined light utility helicopter.

ROTOR SYSTEM: Semi-rigid teetering system, with two co-axial contra-rotating two-blade main rotors. Blades, of NACA 00 symmetrical section, are tapered and are attached to steel hubs by "see-saw" hinges. Blade construction is of wood, glass-reinforced plastics and rigid foam plastic, with stainless steel leading-edge sheaths and a covering of epoxy-impregnated glass-cloth. Rotor brake fitted. No tail rotor.

ROTOR DRIVE: Via central spiral bevel gearbox. Patented system of "see-saw" beams, constrained by direct linkage, provides starting safety in high or gusty winds by transmitting parallel motion from one rotor to the other, contra-rotating, rotor. Directional control is by simultaneous reversed increments of torque and lift of the two rotors. Pitch lever has a twist-grip for throttle control of both engines, and a thumb lever to equalise cruising boost. Rotor/engine rpm ratio 7 : 50.

FUSELAGE: Semi-monocoque pod-and-boom structure, incorporating a number of fail-safe features. Power plant/rotor system installed in a welded steel-tube frame on anti-vibration mounts, attached to a main platform structure of sheet aluminium alloy which supports the semi-monocoque tail-boom, landing gear, instrument console, and cabin structure. Cabin, engine cowlings, and tail-boom fairing panels are of epoxy resin-impregnated glass-cloth, and are detachable.

TAIL UNIT: Single sweptback fin and rudder above tail-boom, with small underfin. Horizontal stabiliser, approx midway along tail-boom, is mid-mounted on the boom.

LANDING GEAR: Tubular steel twin-skid type, with two 3.5 x 6 ground handling wheels. Tyre pressure 75 – 80 lb/sq in (5.3–5.6 kg/cm²).

POWER PLANT: Prototypes have two 205 hp (derated to 135 hp) Rolls-Royce Continental IO-360 six-cylinder horizontally-opposed air-cooled engines. Production aircraft will have 210 hp Lycoming HIO-360 four-cylinder engines. Fuel in two flexible tanks in fuselage platform, total capacity 60 Imp gallons (273 litres). Refuelling point on each side of fuselage. Oil capacity 2 Imp gallons (9 litres).

ACCOMMODATION: Seats for pilot and up to four passengers in extensively-glazed cabin, with two forward-opening car-type doors on each side. Baggage compartment at rear of cabin, beneath engine mounting, with external access door on port side. Rear seats can be removed for carriage of freight. Dual controls optional.

DIMENSIONS, EXTERNAL:

| | |
|---|---|
| Rotor diameter (each) | 32 ft 0 in (9.75 m) |
| Rotor separation | 2 ft 3 in (0.69 m) |
| Length overall | 34 ft 6 in (10.52 m) |
| Length of fuselage | 26 ft 4 in (8.03 m) |
| Height to top of rotor hub | 9 ft 10 in (3.00 m) |
| Skid track | 6 ft 8½ in (2.04 m) |
| Passenger doors (front, each): | |
| Height | 3 ft 1 in (0.94 m) |
| Width | 2 ft 0 in (0.61 m) |
| Height to sill | 2 ft 3 in (0.69 m) |
| Passenger doors (rear, each): | |
| Height | 3 ft 3 in (0.99 m) |
| Width | 2 ft 4 in (0.71 m) |
| Height to sill | 2 ft 3 in (0.69 m) |
| Baggage door: | |
| Height | 1 ft 6 in (0.46 m) |
| Width | 3 ft 0 in (0.91 m) |
| Height to sill | 2 ft 3 in (0.69 m) |

DIMENSIONS, INTERNAL:

| | |
|---|---|
| Cabin: Max length | 8 ft 0 in (2.44 m) |
| Max width | 5 ft 2 in (1.57 m) |
| Max height | 4 ft 5 in (1.35 m) |
| Floor area | 32 sq ft (2.97 m²) |
| Volume | 105 cu ft (2.97 m³) |
| Cabin freight compartment: | |
| Volume | 40 cu ft (1.13 m³) |
| Baggage compartment (aft of cabin): | |
| Volume | 13 cu ft (0.37 m³) |

AREAS:

| | |
|---|---|
| Rotor disc | 804.25 sq ft (74.72 m²) |
| Rotor blades (each) | 10.67 sq ft (0.99 m²) |
| Fin | 6.0 sq ft (0.56 m²) |
| Rudder | 3.5 sq ft (0.325 m²) |
| Horizontal stabiliser | 7.6 sq ft (0.71 m²) |

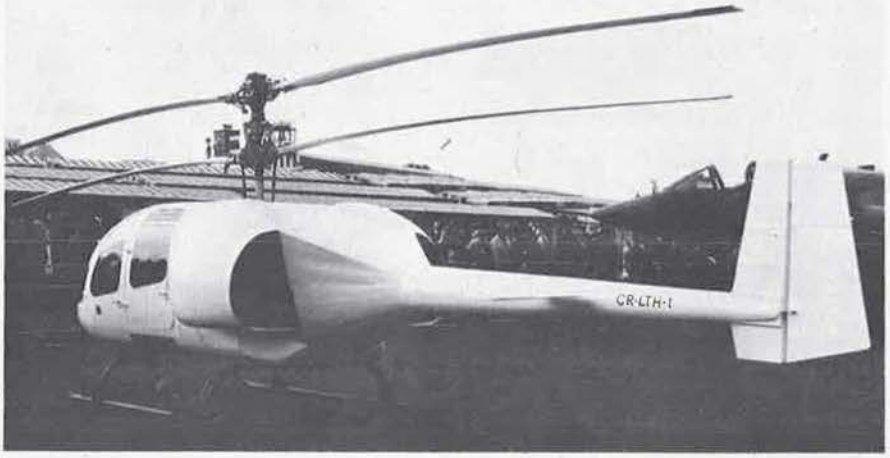
WEIGHTS AND LOADINGS:

| | |
|---|---|
| Weight empty | 1,860 lb (844 kg) |
| Max T-O and landing weight | 3,250 lb (1,474 kg) |
| Max disc loading | 4.04 lb/sq ft (19.72 kg/m²) |
| Max power loading (at 160 hp each engine) | 10.216 lb/hp (4.63 kg/hp) |

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

| | |
|---|---|
| Max level speed at S/L | 108 knots (125 mph; 201 km/h) |
| Max permissible diving speed | 121 knots (140 mph; 225 km/h) |
| Max cruising speed at S/L | 104 knots (120 mph; 193 km/h) |
| Max rate of climb at S/L | 1,400 ft (427 m)/min |
| Service ceiling | 20,000 ft (6,100 m) |

*Another view of the Cierva Rotorcraft CR.LTH-1 utility helicopter (two 205 hp Rolls-Royce Continental IO-360 engines)* (Air Portraits)



*Fuji XMH high-speed winged research helicopter (converted from a company-owned Fuji-Bell 204B)*

Service ceiling, one engine out
7,000 ft (2,134 m)
Hovering ceiling out of ground effect
7,500 ft (2,286 m)
Range with max fuel, 30 min reserves
217 nm (250 miles; 402 km)

## FUJI

*FUJI HEAVY INDUSTRIES LTD; Head Office: Subaru Building, No 7, 1-chome, Nishi-shinjyuku, Shinjyuku-ku, Tokyo, Japan*

Under an agreement with the Bell Helicopter Company, Fuji is producing in Japan the Bell Model 204B helicopter and its military version, the UH-1B. It is also conducting experiments with a winged version known as the XMH, of which all available details are given below.

### FUJI XMH

The XMH is a company-owned and -built Bell 204B helicopter which Fuji has modified as a high-speed research aircraft as part of a programme to develop a new helicopter for military use. As a first step the company has made a number of airframe modifications, including the addition of small wings to off-load the main rotor and an extra horizontal stabilising surface. Design work was started in July 1968 and construction, which began in May 1969, was completed in January 1970. The XMH prototype (registration JA9009) made its first flight on 11 February 1970.

During 1971, as a second phase of development, Fuji is planning to adapt a higher-lift rotor to the XMH, probably that of the Bell AH-1G HueyCobra with 24 in (0.61 m) chord blades, and to install either two 1,540 lb (700 kg) st Teledyne CAE J69 turbojet engines or a single 2,645 lb (1,200 kg) st Ishikawajima J-3 turbojet. With such a power plant it is estimated that the max speed will be increased to 190 knots (219 mph; 352 km/h).

The description below applies to the XMH as modified for the first phase of the development programme.

TYPE: Two-seat high-speed research helicopter.

ROTOR SYSTEM AND DRIVE: As for UH-1B, but with fairings over main rotor shaft and tail rotor gearbox.

FUSELAGE AND LANDING GEAR: Basically as for UH-1B, with some reinforcement of airframe and partial redesign of skid-type landing gear.

WINGS: Short-span constant-chord wings fitted to fuselage aft of cabin. Wing section NACA 643-418. No dihedral. Sweepback 14°. On each wing the rear 45% of the overall chord is taken up by a trailing-edge flap which can be deflected between 25° upward and 10° downward.

TAIL UNIT: Similar configuration to UH-1B, but with cambered-section fin which has a half-tailplane mounted approx midway up on the starboard side.

POWER PLANT: One 1,100 shp Lycoming T53 turboshaft engine.

DIMENSIONS, EXTERNAL: Basically as UH-1B, except for the following:

| | |
|---|---|
| Diameter of main rotor | 44 ft 0 in (13.41 m) |
| Length overall | 42 ft 7¾ in (13.00 m) |
| Wing span | 22 ft 3 in (6.78 m) |
| Wing area, gross | 40.90 sq ft (3.80 m²) |

WEIGHT:

| | |
|---|---|
| Max T-O weight | 7,606 lb (3,450 kg) |

## EMBRAER

*EMPRÊSA BRASILEIRA DE AERONÁUTICA SA; Head Office and Works: Caixa Postal 343, São José dos Campos, São Paulo State, Brazil*

For some time, a need has existed for a replacement aircraft both for the Douglas C-47 transport and for the Lockheed P-2E Neptune maritime reconnaissance aircraft at present in service with the Brazilian Air Force. To meet this requirement, Embraer has designed an aircraft known as the EMB 500 Amazonas, plans of which were submitted to the Brazilian Ministry of Aeronautics for approval in October 1970.

The Amazonas, powered by four PT6A turboprop engines, is also intended for the civil market, and is proposed for development in four basic versions. These are a passenger or cargo transport, military assault transport, maritime reconnaissance and anti-shipping aircraft, and search and rescue aircraft. Design conforms to the requirements of FAR Pt 25 in the transport category and of MIL-A-8860 to 8870 in the assault class. It is claimed that the choice of this particular four-engined configuration offers savings in power plant price and installed weight, while permitting a 50% increase in payload compared with a twin-engined design studied earlier.

All available details of the Amazonas, a prototype of which is expected to fly in October 1974, are given below.

### EMBRAER EMB 500 AMAZONAS

TYPE: Four-turboprop general-purpose medium transport.

WINGS: Cantilever high-wing monoplane. All-metal structure, designed on fail-safe principles. Built in three sections: two outer panels, and a centre-section which carries the engines, integral fuel tanks and trailing-edge flaps. Dihedral 4° on outer panels. All-metal ailerons and double-slotted flaps, the latter having a max setting of 70°. Trim-tab in each aileron.

FUSELAGE: All-metal semi-monocoque structure, designed on fail-safe principles.

TAIL UNIT: Cantilever all-metal structure. Trim-tabs on elevators and rudder.

LANDING GEAR: Retractable tricycle type. Hydraulic retraction, twin-wheel main units into inboard engine nacelles, twin-wheel steerable nose unit into nose-cone. Low-pressure tyres on all units. Anti-skid brakes. Legs fitted with devices to display weights/CG information on cockpit instrument panel.

POWER PLANT: Four Pratt & Whitney (UACL) PT6A-40 turboprop engines, each developing 850 shp for take-off and each driving a Hartzell low-speed propeller, diameter 8 ft 4¾ in (2.56 m). Fuel in four integral tanks in wing centre-section, each feeding one engine but with provision for cross-feeding. Pressure refuelling standard, with provision for overwing gravity refuelling. Tanks are protected against bacteriological corrosion.

ACCOMMODATION: Crew of two pilots side-by-side on flight deck. Main cabin seats 30 passengers in the transport version, with space for 1,323 lb (600 kg) of baggage. Seats can be folded upward for rapid change to cargo configuration. Assault version can carry 36 paratroops or a maximum load of 7,937 lb (3,600 kg) (typically, two jeep-type vehicles, one anti-tank gun, and 20 troops), and has a hydraulically-operated loading door and ramp at rear of cabin. Patrol version carries a crew of five. Search and rescue version has capacity for 15 stretchers and five medical attendants. Access to main cabin via two doors on port side, one aft of flight deck and one aft of wing trailing-edge.

SYSTEMS: Pressurisation system, supplied by the compressors of the four engines, maintains cabin pressure differential of 5 lb/sq in (0.35 kg/cm²). Hydraulic system, pressure 3,000 lb/sq in (210 kg/cm²), utilises 6.6 Imp gallons (30 litres) of MIL-H-5606A fluid and actuates landing gear, brakes, and nose-wheel steering. Primary 28V DC electrical system; secondary 208/120V AC system, with variable-frequency alternators. Instrument power provided by a 115V 400Hz AC fixed-frequency system. Engines drive four 200Ah 30V generators (set to 27.5V) and four 3kVA 208/120V alternators. Two 24V 22Ah alkaline batteries (MS24497-3 type) supply static power. Provision for GPU attachment.

ELECTRONICS AND EQUIPMENT: Blind-flying instrumentation standard. Radio/navigation system includes dual automatic VOR/LOC/glide-slope receivers, two ADF, marker beacon receiver, DME, ATC transponder, and a 178 nm (205 mile; 330 km) range X-band weather radar. Standard communications system in-


*Another view of the Fuji XMH high-speed winged research helicopter, converted from a company-owned Fuji-Bell 204B*

cludes dual 360-channel VHF, one 400W AM/SSB/CW HF, one 100W AM/SSB HF, crew intercom and passenger address system. Optional equipment (for FAR Pt 91 Cat II and FAR Pt 121 operations) includes flight director, three-axis autopilot, radio altimeter, ATC transponder, DME, flight recorder, and voice recorder.

DIMENSIONS, EXTERNAL:

| | |
|---|---|
| Wing span | 78 ft 9 in (24.00 m) |
| Wing chord at root | 9 ft 2¼ in ( 2.80 m) |
| Wing chord at tip | 5 ft 10¾ in ( 1.80 m) |
| Wing aspect ratio | 9.34 |
| Length overall | 65 ft 7½ in (20.00 m) |
| Height overall | 23 ft 3½ in ( 7.10 m) |
| Tailplane span | 28 ft 2½ in ( 8.60 m) |
| Wheel track (c/l of shock-struts) | 19 ft 8¼ in ( 6.00 m) |
| Propeller ground clearance (aircraft stationary) | 7 ft 0¾ in ( 2.15 m) |
| Fuselage: Max width | 9 ft 10 in ( 3.00 m) |
| Passenger door (fwd, port): | |
| Height | 5 ft 5 in ( 1.65 m) |
| Width | 2 ft 5½ in ( 0.75 m) |
| Passenger door (rear, port): | |
| Height | 5 ft 5 in ( 1.65 m) |
| Width | 5 ft 10¾ in ( 1.80 m) |

DIMENSIONS, INTERNAL:

| | |
|---|---|
| Passenger cabin: Max height | 6 ft 2¾ in ( 1.90 m ) |
| Max width | 9 ft 2¼ in ( 2.80 m ) |
| Max length | 31 ft 6 in ( 9.60 m ) |
| Floor area | 258.3 sq ft (24.00 m²) |
| Usable volume | 1,413 cu ft (40.00 m³) |
| Baggage hold: Volume | 212 cu ft ( 6.00 m³) |

AREAS:

| | |
|---|---|
| Wings, gross | 664.1 sq ft (61.70 m²) |
| Ailerons (total) | 46.82 sq ft ( 4.35 m²) |
| Trailing-edge flaps (total) | 133.47 sq ft (12.40 m²) |
| Fin | 110.33 sq ft (10.25 m²) |
| Rudder, incl tab | 43.06 sq ft ( 4.00 m²) |
| Tailplane | 185.14 sq ft (17.20 m²) |
| Elevators, incl tabs | 69.96 sq ft ( 6.50 m²) |

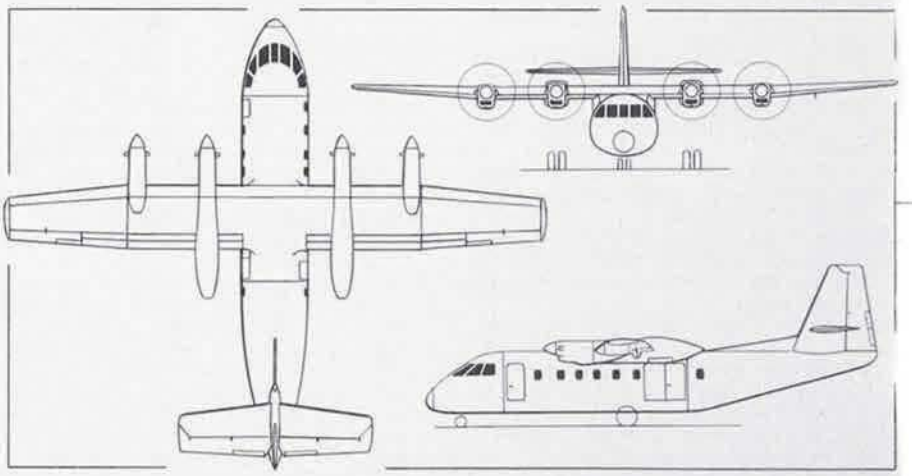
WEIGHTS AND LOADINGS (A = passenger, B = assault, C = patrol version):

| | |
|---|---|
| Basic weight empty: | |
| A | 14,110 lb (6,400 kg) |
| B | 13,340 lb (6,050 kg) |
| C | 14,440 lb (6,550 kg) |
| Operating weight empty: | |
| A | 14,990 lb (6,800 kg) |
| B | 14,065 lb (6,380 kg) |
| C | 15,540 lb (7,050 kg) |
| Max payload (all versions) | 7,936 lb (3,600 kg) |
| Max T-O and landing weight: | |
| A, B | 26,455 lb (12,000 kg) |
| C | 30,865 lb (14,000 kg) |
| Max wing loading: | |
| A, B | 39.84 lb/sq ft (194.5 kg/m²) |
| C | 46.49 lb/sq ft (227.0 kg/m²) |
| Max cabin floor loading | 82 lb/sq ft (400.0 kg/m²) |
| Max power loading: | |
| A, B | 7.76 lb/shp (3.52 kg/shp) |
| C | 9.08 lb/shp (4.12 kg/shp) |

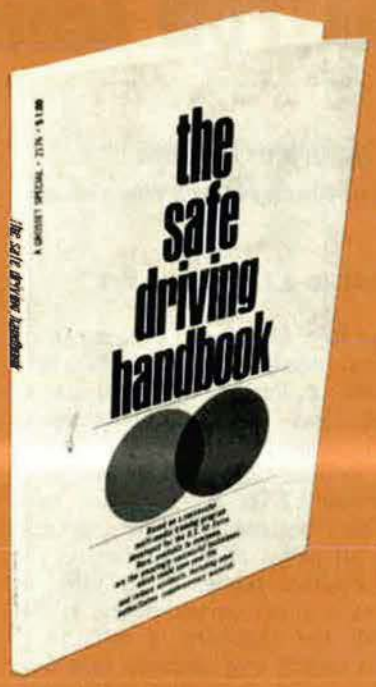
PERFORMANCE (estimated, at 26,455 lb = 12,000 kg AUW):

| | |
|---|---|
| Max cruising speed at 20,000 ft (6,100 m) | 270 knots (311 mph; 500 km/h) |
| Stalling speed, flaps down | 63 knots (72 mph; 115 km/h) |
| Rate of climb at S/L | 2,200 ft (670 m)/min |
| Service ceiling, one engine out | 30,000 ft (9,145 m) |
| T-O to, and landing from, 50 ft (15 m) | 1,805 ft (550 m) |
| Range at econ cruising power at 25,000 ft (7,620 m), 45 min reserves with 30 passengers and 990 lb (450 kg) baggage | 970 nm (1,120 miles; 1,800 km) |
| with 25 passengers and 827 lb (375 kg) baggage | 1,135 nm (1,305 miles; 2,100 km) |
| with max payload of 7,937 lb (3,600 kg) | 755 nm (870 miles; 1,400 km) |
| with payload of 3,307 lb (1,500 kg) | 1,405 nm (1,615 miles; 2,600 km) |

*Embraer EMB 500 Amazonas medium transport (four 850 shp Pratt & Whitney (UACL) PT6A-40 turboprop engines)*



# SAFE DRIVING—
# THE AIR FORCE WAY




HIS is to tell you about a current id important program of AFA's erospace Education Foundation. e have published, in cooperation th Grosset & Dunlap, Inc., a New ork publishing firm, an excellent ok called THE SAFE DRIVING ANDBOOK.

The book is based on the highly ccessful safe driving program of e Air Force, which accounts for r interest. It is an unusual exmple of how research and techques paid for and developed by e Air Force can be converted into seful material for the civilian popation at large. Perhaps the best ay to describe the book is to print excerpt from the Foreword:

". . . The Air Force concluded that e principal factors in vehicle accients, aside from mechanical failure, ere operator errors and violations esulting from personal driving attides. Education in the basic facts safe driving and the development a good attitude were the keys to Air Force approach . . .

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# MIA/POW Action Report

By Maurice L. Lien
SPECIAL EDITOR FOR MIA/POW AFFAIRS

## Appeal to Church Leaders

The Rev. Dr. J. A. O. Preus, international president of the 3,000,000-member Lutheran Church–Missouri Synod, has appealed to religious leaders around the world to join him in a modern "crusade" in behalf of American POWs in Southeast Asia. He has received excellent response from all major church leaders in the US. Positive replies from religious leaders in other countries are, at this writing, just beginning to come in.

The appeal was included in a five-point program announced in February by Dr. Preus, aimed at procuring humane treatment for US POWs. In his statement, Dr. Preus said that he, like most other church leaders, had been so busy with parochial concerns that he had neglected to speak out on vital moral issues facing our nation and "humanitarian concerns all over the world."

Response has been received from all major Christian denominations across the US, with pledges of support from Dr. Billy Graham, Dr. Norman Vincent Peale, and from many other nationally known religious figures. Church leaders of many denominations joined the Lutheran church president in declaring a "Day of Prayer for American MIAs and POWs" for their congregations, one part of Dr. Preus's program.

Dr. Preus also announced that he was directing a sustained program of education and prayer in behalf of MIA/POWs for a one-year period in the 6,000 congregations of the Lutheran Church–Missouri Synod, located in all fifty states and in twenty-three foreign countries. He invited the heads of all other Christian denominations to undertake a similar program in their congregations and urged religious radio and TV programs to include special prayers for MIA/POWs.

Dr. Preus said he was also contacting Lutheran leaders in all countries of the world that accept the Geneva Convention, urging that they request their governments to influence the North Vietnamese and other Communist leaders to comply with the Convention.

Dr. Preus is organizing a worldwide group of church leaders who will request permission to inspect POW camps and present an unbiased account of conditions in the camps. "I believe that these Communist leaders will be hard pressed to deny permission for a visit from a group of religious leaders with completely altruistic motives," he said.

At this writing, provisions are being made for a delegation of US religious leaders to visit neutral and Communist capitals in an attempt to talk with North Vietnamese and National Liberation Front officials, with a view to visiting POW camps in SEA.

## Responsibility Identified

The North Vietnamese peace delegation in Paris has repeatedly disclaimed any responsibility for the treatment of POWs held outside of Hanoi, but a new petition placed in circulation by the National League of Families identifies the head of the organization controlling insurgent military and political activity in South Vietnam—the Central Office for South Vietnam (COSVN)—as one of North Vietnam's six Vice Premiers and a member of the Politburo and Secretariat of that country's Communist Party.

The petition, addressed to Pham Hung, head of COSVN, demands that the organization answer for the inhumane treatment of POWs held by the Communists in South Vietnam and Laos. The Viet Cong and Pathet Lao are charged with direct responsibility for the treatment of prisoners they hold; however, according to a League of Families spokesman, "the link between COSVN and North Vietnam reveals the command and overall responsibility so blatantly denied by the North Vietnamese representatives in Paris."

The National League of Families said this is the first step to focus additional attention on the plight of the more than 775 Americans missing or held captive in areas outside Hanoi. Some 200 Air Force men are listed

*AFA National **President** George D. **Hardy** (second from right) presented Certificates of Honor for **MIA/POW** work at **Cape Canaveral**, Fla., to (from left) Col. V. J. Donahue, USAF (Ret.); and POW wife Mrs. L. N. Guarino; G. J. Burrus, III, Florida AFA MIA/POW Coordinator; and POW wife Mrs. J. S. Finlay, III. At right is Cape Canaveral Chapter President Maj. Gen. D. F. Callahan, USAF (Ret.).*

as MIA or POWs in Laos, and seventy are missing or believed prisoners in South Vietnam.

## Spurious Schemes

Professional promoters, self-seeking individuals, and amateur do-gooders have long been known for their agility in jumping on a rolling bandwagon, especially where human emotions are involved.

The MIA/POW campaign has proved no exception. Reports of fund-raising drives to promote nefarious schemes have come in from all over the country.

Caution is recommended before contributing money to any campaign, no matter how humanitarian or noble the cause sounds. The idea of raising funds to ransom our POWs, or to mount a Sontay-type commando raid in Southeast Asia, may sound admirable but is hardly practical.

Private groups across the country are conducting fund-raising drives to promote their programs without revealing their full intentions or ultimate purposes, many without the knowledge or endorsement of MIA/POW families. One group, not connected with Radio Free Europe or the Voice of America, is raising money for propaganda broadcasts in the Far East. Another, a midwestern-based fundamentalist religious group, seeks contributions for advertising in Southeast Asian newspapers.

Some groups, ostensibly raising funds for an MIA/POW program, may casually, and discretely, note in their literature that some of the money may be used for other purposes.

We have received reports of small, newly formed groups who have belatedly discovered that the Communists are not complying with the Geneva Convention in their treatment of American POWs. With intense zeal, they are asking for money to travel the world in order to plead the cause. Paris *is* lovely in the spring.

There are many legitimate organizations across the country that need and deserve financial support. Check into the background and true purpose of any group before you sign that check.

## Campaign Notes

H. Ross Perot, active in the MIA/POW campaign since its inception, has called on his home state of Texas to "set the example" and put together a delegation "led by the elected officials to confront the North Vietnamese and demand the prisoners' release." He urged this action at a mid-February joint session of the Texas Legislature, in Austin, at ceremonies honoring the families of the more than 120 Texans listed as MIA or POWs.

*Nine persons were honored by the Lubbock, Tex., AFA Chapter for outstanding service during a West Texas MIA/POW campaign, among them was Col. James M. Breedlove, Wing Commander at Reese AFB, third from right. Chapter President Tom Ireland is at far right, and Vice President Harlan Hodges is at far left.*

Responding to Mr. Perot's plea, Texas Lt. Gov. Ben Barnes said, "We accept your challenge to be the first state to organize on a community basis to make our views heard around the world."

Other speakers at the event included Gov. Preston Smith; Mrs. Bobby G. Vinson, National Coordinator for the League of Families; Mrs. Jerry A. Singleton, Texas Coordinator for the League, whose Air Force captain husband is a POW; and Brig. Gen. Daniel "Chappie" James, Jr., Deputy Assistant Secretary of Defense for Public Affairs.

* * *

The Ak-Sar-Ben Chapter of AFA, at Omaha, Neb., has contributed funds to the Forgotten Americans Committee of Omaha for a second printing of its thirty-two-page brochure "How You Can Help Our Prisoners of War." Paul Gaillard is Chapter President.

The first issue of the brochure went to congressmen, governors, and other dignitaries and groups throughout the country with a great response from all quarters. The second printing of 5,000 copies will permit the committee to fill the many requests for additional brochures and to make even wider distribution. For copies of this excellent, fact-filled publication, write to the Forgotten Americans Committee, P.O. Box 127, Omaha, Neb. 68101.

* * *

Miss Linda Burmaster of AFA's Erie, Pa., Chapter and coordinator for "Operation POW" in that city reports that General Telephone Co. of Pennsylvania included MIA/POW inserts in its billings to some 275,000 customers in that state. The insert included a detachable postcard addressed to the President of North Vietnam.

Miss Burmaster also reported that on February 28 the Erie *Times-News* devoted nearly the entire issue of its Sunday *foto feature Magazine* to the MIA/POW problem. Two men from the Erie area are MIA and one is a POW.

* * *

"Hughes people through the years have proved outstanding in their support of worthwhile projects," Hughes Aircraft Co. Vice President and General Manager L. A. Hyland said on January 29 when he kicked off an intensive company-wide MIA/POW campaign. "We're confident," he continued, "you will respond as never before in this finest effort of all . . . an appeal to recognize man's essential dignity and his right to humane treatment wherever he may be."

On February 22, George Washington's birthday, thousands of signatures from Hughes employees, their families, and their friends, all on yellow-colored petitions furnished by the company, were mailed in Culver City, Calif., addressed to the President of North Vietnam. Many contained signatures of from sixty to 100 persons.

"The response, particularly from entire families, has been heartwarming," Hyland said. "We believe, and released prisoners have said, that Hanoi is reacting to American public opinion by improving prison conditions and treatment, even if ever so slightly. Every signature counts," he told Hughes employees. "Every signature has to impress the North Vietnamese with the unanimity among Americans on the prisoner-of-war issue, regardless of the different opinions on the war itself." ■

SHE WAS conceived and built to be exactly what she turned out to be—a high-flying, hard-hitting, overloaded, bomb-laden, lumbering heavy bomber. That's all. No soft brass-ferrying jobs for her—no postwar career as aerial tanker or cargo carrier. She was built by Americans to deliver the slash of the eagle's claw to America's enemies, and that she did with deadly dispatch.

From the end of 1944 to the final blast of August 1945, I was a young Army Air Force flying officer stationed in what was then British East India. My outfit was the 9th Bomb Squadron. The 9th dated back to World War I, but in 1944, there in India, we were the Flying Cobras—one of the four squadrons that made up the 7th Bombardment Group (H). The H stood for "Heavy," and in the 7th that meant the B-24 bomber—the big, waddling, four-engine airplane also known as the Liberator.

The Liberator carried a crew of ten, and even though we who manned the B-24s reserved the right to cuss some of her eccentricities, we loved and respected the "Old Box" when her superior fighting and flying abilities were called on during combat missions over the jungles and cities of Southeast Asia. On the ground, she looked like an overstuffed duck, but in the air her speed, endurance, and bomb load more than made up for appearances. With proper maintenance, and when flown by a competent crew, she had no peer.

The first B-24 took to the air at San Diego, Calif., on December 30, 1939, the creation of Consolidated Aircraft Corp. Before production finally halted in 1946, huge plants at San Diego; Fort Worth, Tex.; and Willow Run, Mich., had turned out more than 18,000 of these great airplanes. I was a bombardier on one of them.

There was only one group of heavies in the entire India-Burma theater—thirty-six airplanes when our four squadrons were at full muster. Our missions were against specialized targets that were important to the Japanese invaders. Woe be unto the hapless bombardier who inadvertently dropped his load on one of those Buddhist pagodas that dotted the landscape of Burma and Thailand. That included the magnificent 300-foot-high Shwe Dagon Pagoda, sheathed in real gold and glistening in the sunlight, which we used as a landmark when approaching the city of Rangoon.

### Enter the Cactus Kid

I first saw Aircraft B-24J, Army Air Force's serial No. 44-44175, when she touched down on the airstrip we shared with the 436th Squadron. The date was February 14, 1945, the time, 11:00 a.m. She had been sent as a replacement from the "Arsenal of Democracy" to our squadron. The J was the latest in the B-24 series. Before the war's end, it would be followed by the more-advanced models K, L, and M, although relatively few of these were built.

We were to fly 44175 on many a hairy combat mission after that. She bombed bridges, freight yards, coastal shipping, power plants, ammo dumps, enemy troop concentrations, and, in the waning days of the fighting, we even cranked her up for a low-level crack at a huge Jap battleship that was said

—ILLUSTRATION BY CLIFF PRINE

*With a flat muffled roar, the B-24 flew out of a distant past, from another world, into the jet age of 1969. As its engines came to a stop, an impossible question—or was it?—arose in the mind of the author, a World War II B-24 bombardier and a witness to the . . .*

# LAST FLIGHT OF THE CACTUS KID

**By Thurzal Q. Terry**

to be steaming somewhere in the Indian Ocean. I'm happy to report that this particular mission was scrubbed by an unknown benefactor somewhere up the line.

The crew named old 44175 the *Cactus Kid* in tribute to our only married member, the top-turret gunner from Arizona.

As all things do, World War II finally came to an end. A few days after the hostilities ended, we loaded our crewmen and gear, plus a return crew of three from my squadron, aboard the J. For the last time we lifted her off the 9th Squadron's familiar humpbacked airstrip and pointed her nose south for the 120-mile flight to Calcutta, whence we would be taken by personnel carrier to the processing depot nearby, to await sea transportation back to the USA.

After the passengers and gear had been unloaded, I climbed back inside the faithful airplane. Crawling through the narrow passageway under the flight deck into the nose, I knelt at the Norden bombsight and peered through the familiar eyepiece one last time. Then back to the bomb-bay catwalk, I stepped to the ground and emerged from her cavernous belly. The return flight crew took their stations, started the engines, and taxied out for takeoff. In a moment, 44175 was roaring down the runway, and then was airborne. I stood at attention and saluted in a final gesture to a gallant lady. As she disappeared into the distant haze, I suddenly felt very small and very alone. Turning stiffly, I walked toward the waiting truck.

## New Life for Liberators

On April 26, 1969, I received a telephone call at my construction company office in Los Angeles. The caller represented a group in Tucson, Ariz., that was backing the new Pima County Air Museum to be located there. Apparently they had dug up my name from old Army Air Force records and had determined that I was an ex-China-Burma-India hand. The caller said that a B-24 bomber was due to arrive at Davis-Monthan Air Force Base in Tucson at 11:00 o'clock the next morning. They said the B-24 had come clear from India. Would I like to come over for the welcoming ceremony? I didn't have to be asked twice! I was on the first available jet to Tucson.

Early the next morning, I was at the Officers' Club awaiting the arrival. Seated around the table with me were some illustrious friends of aviation including Gen. Jimmy Doolittle; officials from the Shell Oil Co.; Air Commodore M. D. Khanna, Indian Air Attaché in Washington; the Mayor of Tucson; and the Base Operations Officer at Davis-Monthan. It was here that

*During World War II, the author served as a B-24 bombardier with the Tenth Air Force (CBI). After graduating from the University of Southern California in 1949, he was with North American Aviation as a chemist until 1953, when he formed Terry Construction Co., Tarzana, Calif. Mr. Terry has written several articles and one book,* The Silent Majority, *Exposition Press, 1970.*

*A live B-24, late of the Indian Air Force, arrives at Davis-Monthan AFB, Ariz., after an adventuresome flight halfway round the world—its destination, the Pima County Air Museum.*

I pieced together the latter chapters of the remarkable tale that was about to reach its climax.

Rhodes Arnold, an Air Force Reserve officer from Tucson, had heard that the Indian Air Force still owned some B-24 bombers—a legacy of American beneficence at the close of World War II when much equipment was either destroyed at the site or turned over to the local government. The Indian Air Force had announced that a few would be given to authorized historical institutions, FOB Poona, India. Arnold began a drive to acquire one of the B-24s for Tucson. After months of negotiation and fund raising, the dream came true. Although thousands of Liberators had been built, this would be one of only two intact B-24s in the entire United States.


*Some of the group that gathered to welcome the ancient Liberator had never seen one of these famous World War II bombers. Not so the author (right), a B-24 veteran who was on hand for the arrival ceremony.*

Air Commodore Khanna picked up the connecting thread of the story. When India gained her independence from Great Britain in August 1947, the British relinquished much of the war materiel and other goods they didn't want to remove from that country. Included in this assortment was the huge air depot at Khanpur—the largest in Asia. Here, among the various trappings of the late air war, mouldered the remains of seventy or eighty B-24s. Some were mere shells; others had been cut in two. Wings and tail assemblies were scattered about in lonely repose. Another few had been spared intact.

He went on to tell us how India's leaders wanted an Air Force. If they could reclaim a few airplanes from the forlorn hulks at Khanpur, they would have a nucleus. It seemed worth a try.

Hindustan Aircraft Ltd. of Bangalore was given the job. The parts began to arrive at the sprawling facility from Khanpur and then from other parts of Asia as the story of the project spread across the land. At the time, more than one American and British adviser shook his head in frank disbelief.

But, with the energy born of pride and necessity, take shape they did, and in December 1948, the first sixteen reconstructed B-24 bombers stood ready for action. No. 5 Squadron was formed that month and took all sixteen.

Most of the aircraft had been put together with whatever component was nearest at hand. Some originally had been painted the old US Army olive drab, while others had been left unpainted in keeping with United States policy of the latter war years.

"When the test crew took off in that first modified job," Air Commodore Khanna said, "it looked like such a patchwork thing that we couldn't believe it would stay in the air." Well, stay in the air she did

*Compared to modern jets, the old B-24, still wearing Indian Air Force markings, looks about as sleek as a water buffalo. A lot of enemy fighter pilots were fooled by her appearance.*

*Crew members of the author's World War II B-24,* Cactus Kid, *point with pride to the record of her missions against Japanese-held targets. At war's end, they left her in India, destined for the scrap heap.*

and was soon joined by thirty-five sister ships.

Later, when the others were completed, No. 6 Squadron was formed at Poona in early 1950 to receive them. Now, No. 6 Squadron was returning one of these B-24s to the land of her birth, and soon she would arrive in the skies over Tucson.

## The Long Flight Home

As we headed for the flight line, Khanna was still singing the praises of the gallant old warrior. He told how Indian crews of the budding air force were trained in these aircraft, how eventually and until recent years the B-24s had flown 200 to 300 hours per month. In fact, some still were flying.

Out at the flight line at Tucson a small crowd had assembled. A speakers' stand had been set up, and running out onto the apron from it was a red carpet. I figured few other crews had deserved it more.

At precisely 10:58 a.m., I heard a flat muffled roar that, in an instant, melted away almost a quarter century of time. I squinted to the southeast, and a chill ran down my spine as I sighted her. The wraith-like image grew larger, and then the pilot brought her down and came roaring by on the deck. As he reached the end of the runway, he racked her up in a climbing turn to the right, flew downwind, turned to base leg, and made a beautiful final approach. My watch said 11:00 a.m. as the wheels screeched onto the concrete runway.

The B-24J completed her roll, and the pilot taxied her right over to the end of the red carpet. As he cut the engines, the bomb-bay doors rolled up the sides and the crew came tumbling out, just as our crew had done so many times in the past.

The pilot and crew were escorted to the speakers' platform, and, after introductions, they related some of the highlights of their journey.

The crew—pilot, copilot, navigator, radio operator, and engineer, all on leave from the United States Air Force—had been airlifted to India by commercial jet more than a month earlier. At Poona they were introduced to the workhorse bomber of World War II by representatives of the Indian Air Force. Then followed a period of intensive flight instruction by their Indian counterparts.

Finally, the big day arrived for the long flight out of the past. It was an adventure from the start. As they neared Karachi, Pakistan, across the border from India, their radio went out. Soon afterward, a flight of Pakistani F-86 jet fighters swept up to intercept them. (India and Pakistan are not on the best of terms.)

*Lieutenant Terry, AAF bombardier and veteran of many B-24 missions in South and Southeast Asia, poses with the* Cactus Kid *at Chengtu, China, early in August 1945. Within days, the war was to end, and he would not see another airborne B-24 for nearly a quarter of a century.*


*Construction company president Terry with a strangely familiar B-24 at Davis-Monthan AFB in April 1969. Same man—well, maybe a couple of pounds heavier, but still "rarin' to go." Same flight jacket. Same flight suit. Same B-24!*

The fighters looked menacing, and the bomber crew hoped they saw the large American flags painted on both rudders.

The B-24 was escorted to a landing at Karachi. After explaining things for a few days, the crew and their venerable airplane set course for Tehran, Iran. From there, clearance could not be obtained to fly the lower route over Iraq to Turkey, so several hours at 15,000 feet were spent dodging mountaintops en route to Ankara. The cabin heaters went out about then. On to Greece, and the batteries started throwing acid just as they were letting down at Athens Airport. Well, nothing unusual about that. I recalled two B-24 idiosyncrasies—balky cabin heaters and occasional flying battery acid.

The next stop was Naples and then off over the sunny Mediterranean—except now it wasn't so sunny. It was bathed in a heavy rain, and so was the B-24. Through the inexorable passage of time, the wind screen had developed a few leaks. The engineer spent the whole flight, all the way to Madrid, stuffing towels around the edges to keep the deluge off the instruments and pilots.

They landed at Torrejon, the big American Air Force facility close to Madrid. Maintenance crews swarmed over the Liberator, getting her ready for the long flight across the North Atlantic. In a few days the voyagers were off again, bound for the Azores, and then the big jump to Saint John's, Newfoundland.

The monotony of that hop was broken by the alternate failure of No. 1 and No. 4 engines during fuel-transfer operations. Then the radio antenna broke, and the long wire flailed the fuselage in an eerie tattoo.

From Newfoundland it was down the St. Lawrence for Quebec, but a snowstorm forced a landing at a small airstrip some miles short of there. The next day, in clearing weather, the B-24 took off for Washington, D.C. From then on, it was all "downhill." First Fort Worth, Tex., where she had been built twenty-five years earlier, and then to her final destination at Tucson.

### Reunion in the Desert

As I stood listening to the brief description of this latter-day odyssey, my mind had been traveling back over the years, searching for familiar things that would relate to the relic sitting before me on the flight apron. As the crowd drifted away, I went over to the aircraft. It seemed incredible but—could this be the *Cactus Kid* back after a quarter of a century? True, she had been newly named *Pima Paisano* by the Pima County Air Museum. A desert bird, known as a road runner, was painted on her port-side nose. On the starboard side, where I remembered the painting of a bow-legged cowboy, complete with woolly chaps, ten-gallon hat, and lariat, there was now a winged gargoyle with the words "No. 6 Squadron Indian Air Force."

I pored over the aircraft from stem to stern, and finally, there it was, high up on the nose, just forward of the cockpit, the original manufacturer's stenciling—B-24 Air Force Serial No. 44–44175.

She was in unbelievably good condition. Yes, maybe she was now the *Pima Paisano* and bore a new civilian Serial No. N7866, but to me she was still the *Cactus Kid*, late of the 9th Bombardment Squadron (H), United States Army Air Forces, Pandaveswar, India. I reflected on times long past. It was good she had survived—it was good *I* had survived. But I thought of her sister ships that hadn't made it home. I thought of the gallant men who crewed these great airplanes and who hadn't made it home either.

I walked under the port wing and noted the oil streak on the underside that had been thrown by the No. 2 engine. You'd think they'd have found the cause of that in twenty-five years, I mused.

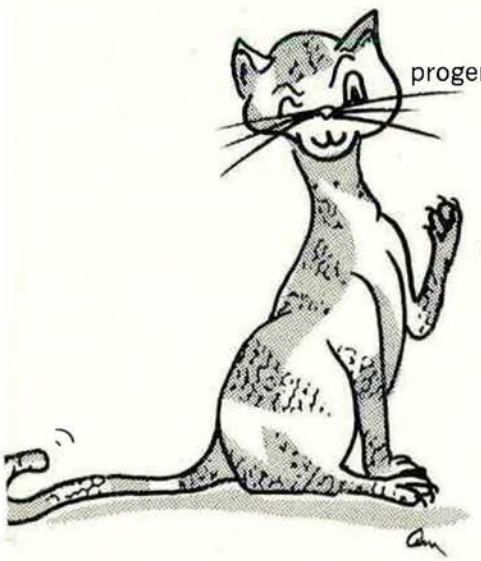
As I headed back to the Officers' Club, where a reception was being held for the flight crew, I turned for a last look at an old, faithful friend who had done her duty so well.

"Rest easy, old girl," I whispered, "you've earned it." ■

# The Fable of the Pusillanimous Pussycat

Once upon a time, there was a very cute pussycat. He had soft fur, adorable eyes, a button nose, and very sharp claws. The pussycat meant no harm to anyone. If you petted him, he would purr softly and rub up against you in a most friendly manner. If, on the other hand, you pulled his tail, watch out! Sometimes people complained about the claws, saying that they were too long, and too sharp. "Nonsense," said the pussycat, "anybody who knows me at all knows I am, well, a pussycat, and wouldn't hurt a flea. The only reason I keep these claws so long and so sharp is because of the big dog who lives up the street. The claws are purely defensive weapons. I need them to climb up the tree out in front should the dog launch an unprovoked attack one of these days."

"But don't you see?" the critics would say. "The dog is only hostile to you because you are hostile to him, and when he sees your claws so long and sharp, he froths at the mouth and growls and strains at the leash that way." As the years passed, the dog on one side of the street and the cat on the other learned to live in what became known on the block as peaceful coexistence. They found there were even areas of mutual interest on which they could cooperate, such as when another cat moved onto the street and another time when another dog moved onto the street. But even though they lived and let live for the most part, the pussycat kept his claws in shape anyway. Just in case! The cat became preoccupied with a mouse that had the audacity to set up housekeeping in the basement. And the dog had his own problems with fleas, which plagued him, despite his imposing size and the ferocity of his jaws. They seemed not to care. All this time, the pressures kept building up on the pussycat. Why with all the other things you have to worry about do you still spend all that time and energy on your claws? Why not take advantage of this momentary détente to deescalate the weapons race between you and the dog, people would say. The cat's own cacophonous, hirsute kittens took to marching around the house carrying signs, suggesting that their progenitor was not feline, but porcine, and renouncing their own claws. The householder, furthermore, did not replace the worn-out scratching post, and, all in all, the cat began to feel maybe he was being too—well—militaristic in his attitudes. And so he began to neglect the claws, and so they began to grow a little soft and a little dull, and sure enough, life was a little easier and more pleasant, not having to worry and sharpen and hone all the time. One day, the cat stepped out into the sunshine and playfully tried to climb the big tree out in front of the house. But his claws would not dig in, and try as he might, the cat couldn't get up. Across the street, the dog, seeing this, calmly walked over and ate the cat whole, swallowing him in one gulp.



**Moral:** If you can't climb a tree, you may be out on a limb.

**—By Charles Osgood, from "Profile," on CBS Radio; with permission**


*Among the guests were Air Force Secretaries—past and present—congressmen, aerospace industry executives, aviation pioneers, Air Force leaders of four wars, and many of the men who have directed AFA throughout its twenty-five years of support for freedom and peace through power.*

*AFA leaders and guests had "a ringside seat to aviation history" as probably the all-time greatest assemblage of aviation, Air Force, and AFA pioneers and leaders gathered to celebrate a significant milestone at . . .*

# AFA's

## AN EVENING TO REMEMBER

AFA leaders, past and present, from throughout the nation joined with leaders of Congress, the Air Force, and industry in celebrating the Twenty-fifth Anniversary of the Air Force Association at a banquet in the Sheraton-Park Hotel's Cotillion Ballroom on February 5.

The black-tie, stag banquet featured an address by Lt. Gen. James H. Doolittle, USAF (Ret.), one of the founders of AFA and its first President *(see accompanying text of General Doolittle's speech)*.

AFA President George D. Hardy served as Master of Ceremonies and introduced the distinguished guests at the head table, each of whom received a sterling silver anniversary commemorative medal.

Seated at the head table were men who, through their efforts over the past twenty-five years, contributed much to establishing AFA as the most successful and effective organization of its kind in the country, and men who helped establish the most powerful Air Force in the world. Among them were Sen. Howard W. Cannon (D-Nev.), and Rep. Charles Wilson (D-Calif.), representing the Senate and House Committees on Armed Services, respectively; the first Air Force Secretary, Sen. Stuart Symington (D-Mo.), and the current Secretary, the Hon. Robert C. Seamans, Jr. The first Air Force Chief of Staff, retired Gen. Carl A. Spaatz was there, as was the current Chief of Staff, Gen. John D. Ryan. And, of course, AFA's first President, General Doolittle; the first Board Chairman, Edward P. Curtis; the current President, George Hardy; the current Board Chairman, Jess Larson; and twelve other men who are AFA Past Presidents or former Board Chairmen.

Guests, other than head table, included prominent members of Congress, members of the Department of Defense and Air Force Secretariats, top executives of the aerospace industry, numerous general officers—both active-duty and retired—AFA National Officers and Directors, and twenty-two of AFA's State Presidents.

Among the many congratulatory letters received were two which seem to express the feelings of most of those who attended this "milestone" in AFA's history. The first, from an Air Force colonel: "The Twenty-fifth Anniversary Reception and Banquet last night was, as usual, a delightful and impressive occasion, and I thank you for inviting me to attend. There was a tremendous amount of history represented at the gathering—a mutual tribute, I think, to the AFA as an organization and to the individuals who have made it viable and productive through the years."

The second was from an Air Force captain, "For me, the Friday night Banquet was a ringside seat to aviation history with people I'd only heard and read about before, there to see and talk to." *(See also telegrams, p. 85.)* —D.S.

By Lt. Gen. James H. Doolittle, USAF (Ret.)

*Photographs by Dave Mayhew*

# SILVER ANNIVERSARY BANQUET

THE LITTLE ritual we have been through tonight—the presentation of silver anniversary medals to AFA's Presidents and Board Chairmen, and to Air Force leaders, past and present—is more than a backslapping operation for a few individuals.

We don't stand much on ritual, and never have, but we do stand fast on indicating appreciation for jobs well done. This is necessary in our continual striving for excellence.

And, as George Hardy has said, the silver medals presented tonight were received not only by individuals but in behalf of many thousands of people throughout the country who, over a twenty-five-year span, have served our cause.

To pay tribute to these people, all of them, is one of the major reasons we are gathered here tonight.

And never in our history has the need been so great for dedicated volunteer workers in behalf of the cause.

Now, what is the cause?

AFA's anniversary medal carries the slogan "Power for Freedom."

I suspect it was difficult in deciding to use just the word "power" in that slogan. The temptation must have been great to use "airpower" or "aerospace power."

Now, I grant you, the slogan is illustrated by an aircraft, a missile, and a spacecraft, which lets you know the kind of power we lean toward.

But, nevertheless, it says "Power for Freedom." And I for one am happy with that.

It recognizes the fundamental truth that power, military power of *all* types, is the essential element in our defense of freedom—in maintaining peace with honor.

And conversely, it means that *lack* of power is a sure way to invite aggression, to endanger both peace and freedom.

Military weakness before a strong, determined, and aggressive enemy bent on political or military conquest encourages blackmail or at-


*Before his Twenty-fifth Anniversary address, Jimmy Doolittle receives an anniversary medal from AFA President George D. Hardy. General Doolittle urged the Association to continue "thinking young" in the years ahead.*

*Top: former AFA President C. R. Smith; Sen. Howard W. Cannon (D-Nev.); and Jess Larson, AFA Board Chairman. Lower left: the present and first Air Force Secretaries, Robert C. Seamans, Jr., and Sen. Stuart Symington (D-Mo.). Right: the present and first USAF Chiefs of Staff, Gens. John D. Ryan and Carl A. Spaatz.*

tack. History has repeatedly proved this. And yet, the idea of "Power for Freedom" is being contested today by many organized and articulate groups.

Today's flower children, on and off the campus, in high places and low, ignore the flowers that grow in "Flanders Fields" all across the world. They ignore the fact that the power and sacrifice of yesterday bought them the freedom they now enjoy to lash out against the power we need today.

The national mood is targeted on our environment, and this is understandable. In smog-filled, sunny California, we have a special feel for that. In fact, if it gets much worse, we'll have to feel our way from place to place.

I was sheep-hunting in Wyoming last October, and another chap and I stood up on top of a mountain, and as we breathed that fresh, clean air, he expressed it very well. He said, "Isn't it wonderful to breathe air without lumps in it?"

But I can think of nothing that would do more to pollute our atmosphere than a covey of well-aimed Russian missiles armed with nuclear warheads.

That would really upset our environment, and that threat, among our doves and a large segment of our population, is gaining less and less credibility, despite its continued growth.

It's a sad commentary on human nature that many people are inclined to believe what they want to believe, what is pleasant, rather than the raw, abrasive truth.

The threat of Soviet power always has been, and is today, a key policy issue of the Air Force Association. And gaining public understanding and acceptance of the threat is, as always, an uphill fight.

It's not too difficult, if you're so inclined, to oversimplify the complexities of aerospace power into a mishmash of overkill and overrun, and gain public support in the process.

It's very difficult, on the other hand, to convince people, year in and year out, of the need for expensive weapon systems which, if all goes well, will never be put to operational use.

Deterrence, as we all know, is not an easy sell. The old B-36 was retired from service without ever firing a shot in anger, but it represented a show of force which was very important at the time.

Now we MIRV and harden the Minuteman ICBM in the hope that it, too, can someday reach the scrap pile at *our* discretion. Only then can we conclude that it has represented the effective use of power.

In contrast, our dilemma in Southeast Asia, resulting from open defiance of all our military has learned about the use of power, has blown up a minor conflict into a major war, and has resulted in a strong public opposition to all things military.

Yes, and the opposition is up to more than that.

In the Senate, votes against the development of the supersonic transport were openly and gleefully hailed by leaders of the opposition as votes against technology.

The SST, of course, is a civilian project, but that's not the important point. In this day and age, any vote against advanced technology is a vote against military preparedness, a vote against the kind of power needed to maintain freedom.

We're face to face with an anti-military, antiindustry, and antitechnology complex. And that sets the battleground for the Air Force Association.

For this engagement, the Association is well equipped. Following the advance of technology has been over the years a basic mission of the Association, as reflected in our many seminars, exhibits, public statements, speeches, and magazine articles.

This interest in technology early drew educators to AFA, and the establishment of our affiliate, the Aerospace Education Foundation, is one of the great achievements of the Association.

Through its Foundation, AFA channels a variety of educational activities which greatly enhance the Air Force image—at national, state, and community levels.

Dr. Leon Lessinger of Georgia State University, one of the nation's leading educators, has explained why educators, more than a decade

ago, began seeking out the Association. "Technical revolution," he said, "was all around the educators, but it had not yet entered the classrooms."

In working with the Association, the educators found a way, in his words, "to get closer to the trends of the modern age."

Dr. Lessinger, then serving as Associate US Commissioner of Education, added this explanation:

"People who work in the aerospace world are on the frontiers of technological advance. They think in terms of total objectives. They have pioneered the systems approach in getting big jobs accomplished. They are realistic about the present, but they think in futures. Research and development is not a fringe benefit for them, but a basic ingredient of their work. Change is not an emergency measure, but a way of life."

That's a wonderful tribute, not only to the Air Force Association, but to the Air Force, to the aerospace industry, to a great many people in this room. It represents, as our Foundation work has proved time and again, the voice of many who cast their votes for technology, for the power that goes with freedom.

I hope and pray that twenty-five years from now, at the *golden* anniversary of the Air Force Association, these same words can be repeated, with full meaning; that change and improvement will continue to be, for the participants, truly a way of life.

Technological advance in our time has been so tremendous, it's hard to realize that it's only a drop in the scientific bucket of what's to come.

We have moved from low-yield gunpowder to TNT to fission bombs to fusion bombs in the span of a relatively few years. However, we must remember that the Soviets have followed us closely and, in some important military technological areas, have done more research and testing than we have.

And the new frontier is space. It is national policy at the moment to consider the military space mission in low key, give it a "low profile," in the jargon of the day. But as sure as we are sitting here tonight, our sons and grandsons will be *in* space, keeping watch, doing the defense job, as we have done it on the deck and in the atmosphere.

And yet, with all this, people and their customs, nations and their ambitions, don't seem to change much over the years. I guess it means that threats to freedom, from within and without, will be with us for the foreseeable future, until that happy day when *people* improve.

As technology moves forward, I am sure that the Air Force Association will move with it.

I take great pride in the work the Association is doing with young people. Our Junior Officers' Council, our relationship with the Air Force Academy, our support of the Air Force ROTC program and sponsorship of the Arnold Air Society, our Foundation work in the high schools and community colleges—all these are in tune with the times.

And so we commemorate twenty-five years of the Air Force Association.

Well, we're still young by today's standards. Thirty is the cutoff date of the youth movement. At thirty you've had it—or have you? More than half of all the 780,000 military personnel in the United States Air Force, so I'm told, are under the age of twenty-five, two-thirds of them under thirty. I will venture to say the majority of our Air Force Association members are not "old." Still, most of the Air Force leaders and the leaders of the Air Force Association are over thirty—therefore, "old."

In five years our Association will be "old." So as we go into our second quarter century, I suggest that we dedicate ourselves to thinking young, but remembering—to having the open minds and aggressiveness of youth, tempered by experience, and the wisdom which comes only through living and observing. ■

## ANNIVERSARY ACCLAIM

*Representative of the messages of greeting received in conjunction with AFA's Twenty-fifth Anniversary celebration are these two telegrams:*

THE AIR FORCE ASSOCIATION HAS PROVIDED OUTSTANDING SUPPORT TO THE UNITED STATES AIR FORCE DURING THE PAST QUARTER OF A CENTURY. THROUGH ITS MANY PROGRAMS THE ASSOCIATION HAS GREATLY INCREASED THE PUBLIC AWARENESS AND UNDERSTANDING OF THE EMINENT MISSION OF THE UNITED STATES AEROSPACE FORCES. THE STRATEGIC AIR COMMAND EXTENDS ITS CONGRATULATIONS ON YOUR SILVER ANNIVERSARY AND WISHES CONTINUED SUCCESS IN YOUR IMPORTANT OBJECTIVES.

—GENERAL BRUCE K. HOLLOWAY
COMMANDER IN CHIEF, SAC

IN BEHALF OF THE MEN AND WOMEN OF THE MILITARY AIRLIFT COMMAND I EXTEND GREETINGS AND CONGRATULATIONS TO THE AIR FORCE ASSOCIATION UPON THE OCCASION OF ITS TWENTY-FIFTH ANNIVERSARY. YOUR MEMBERS OVER THESE YEARS HAVE DONE MUCH TO CONVINCE THE AMERICAN PEOPLE THAT AN AIR FORCE SECOND TO NONE IS NECESSARY TO THE SECURITY OF OUR COUNTRY. BEST WISHES FOR CONTINUED SUCCESS.

—JACK J. CATTON, GENERAL, USAF,
COMMANDER, MILITARY AIRLIFT COMMAND

# AFA's 25th Anniversary

## Convention and Aerospace Briefings and Displays

### Washington, D.C.—September 20-21-22-23

*AFA's 1971 Annual National Convention and Aerospace Briefings & Displays, highlighting AFA's Silver Anniversary, will be held at the Sheraton-Park and Shoreham Hotels, Washington, D.C., September 20–23. All reservation requests for rooms and suites should be sent directly to the Sheraton-Park Hotel or Shoreham Hotel Reservation Office. Be sure to refer to AFA's Annual Convention when making your reservation requests, otherwise your request will not be accepted by the Sheraton-Park or Shoreham Hotels.*

*The Sheraton-Park Hotel's address is: 2660 Woodley Road, N.W., Washington, D.C. 20008; and the Shoreham's address is: 2500 Calvert St., N.W., Washington, D.C. 20008.*

*AFA's National Convention activities will include luncheons for the Secretary of the Air Force and the Air Force Chief of Staff, a Silver Anniversary Reception, and AFA's 25th Anniversary Reception and Dinner Dance. The National Convention will also feature AFA's Business Sessions, Seminars, and several other activities, including a reception in honor of AFA's Chapter Officers and Official Convention Delegates, the Annual Outstanding Airmen Dinner and the Chief Executives Buffet Reception.*

### SCHEDULE OF EVENTS

**Sunday, September 19**

12:00 NN Registration Desk Open

**Monday, September 20**

8:00 AM Registration Desk Open
9:20 AM Opening Ceremony & Awards
2:30 PM 1st AFA Business Session
7:00 PM AFA President's Reception For Chapter Officers and Convention Delegates

**Tuesday, September 21**

8:00 AM Registration Desk Open
8:30 AM 2d AFA Business Session
9:00 AM Briefings & Displays Open
11:45 AM AF Chief of Staff Reception
12:00 NN Briefing Participants Buffet Luncheon
12:30 PM AF Chief of Staff Luncheon
2:30 PM Air Force Reserve and Air National Guard Seminar
6:00 PM AFA's Silver Anniversary Reception

1946 1971

# Aerospace/Defense Companies To Present Newest Hardware

Some 50 companies will present the latest aerospace/defense hardware at the 1970 Aerospace Development Briefings and Displays, to be held in conjunction with AFA's 25th Anniversary National Convention at the Sheraton-Park Hotel in Washington, September 20–23.

The Briefings and Displays combine the presentation of equipment with company briefings in the booth to key military, government, and industry personnel. Morning attendees are assembled into parties of 20 persons each and are escorted from briefing to briefing on schedule. Afternoon attendees may select any of the presentations offered in any order of preference.

Last year, 5,764 persons participated in the Briefings and Displays, including 227 General Officers and Admirals and 535 Colonels and Naval Captains. The Secretary and Chief of Staff of the Air Force were honored at a reception in the display area, attended by some 2,000 guests.

Since this year's Convention marks the 25th anniversary of the Air Force Association, the largest attendance to date is expected at the Briefings and Displays. The Briefing concept was developed by AFA in 1964 and has been widely acclaimed for its ability to guarantee exhibitors an audience in their booth on schedule.

Much of the booth space has already been reserved. Companies desiring to participate in the Briefing and Display program should contact AFA as quickly as possible. A minimum of 300 square feet of space is required to conduct briefings; no minimum is required to display only.

**Wednesday, September 22**

| | |
|---|---|
| 8:00 AM | Registration Desk Open |
| 9:00 AM | Briefings & Displays Open |
| 9:00 AM | Air Force Symposium |
| 11:45 AM | AF Secretary's Reception |
| 12:00 NN | Briefing Participants Buffet Luncheon |
| 12:30 PM | AF Secretary's Luncheon |
| 4:00 PM | Briefing Participants Reception |
| 7:00 PM | AFA's 25th Anniversary Reception |
| 8:00 PM | AFA's 25th Anniversary Dinner Dance |

**Thursday, September 23**

| | |
|---|---|
| 9:00 AM | Briefings & Displays Open |
| 12:00 NN | Briefing Participants Buffet Luncheon |
| 4:00 PM | Briefing Participants Reception |

**ADJOURNMENT**

**TO RESERVE BRIEFING/DISPLAY SPACE, WRITE OR CALL:**

AFA BRIEFING & DISPLAY OFFICE

Attn: Ralph V. Whitener
1717 K St., N.W., Suite 1107
Washington, D.C. 20036
Telephone: (202) 833-9440

**By Don Steele**
AFA AFFAIRS EDITOR

## THE FORT WORTH, TEX., CHAPTER AND THE FORT WORTH AIRPOWER COUNCIL

cited for consistent and effective programming in support of the mission of the Air Force Association.

Speaking before a joint meeting of AFA's **Fort Worth Chapter** and the **Fort Worth Airpower Council, Gen. John D. Ryan,** USAF Chief of Staff, discussed the current strategic force of the Soviet Union, "especially as manifested in the aerospace threat, and America's own aerospace power."

Noting that the Soviets are closing the technological gap, General Ryan said, "They have now reached approximate strategic parity with the United States. Where five years ago Soviets had about one-fourth the number of ICBM launchers we had, today they have forty percent more than we have. Equally significant," he continued, "are the nearly 300 SS-9 missiles they currently possess or have under construction. The SS-9 can carry up to a twenty-five-megaton-yield warhead. This is about 1,000 times more destructive than either of the bombs dropped on Hiroshima or Nagasaki."

In order to ensure that our Air Force is sufficient and competent to accomplish our mission, the General said, the United States must avoid obsolescence in weapon systems, ensure quantitative adequacy, and maintain top-quality people with the know-how and leadership to best employ military forces.

"This requires," he explained, "a vigorous exploitation of our technology as the most effective means of maintaining an advantage over the enemy. Force modernization is essential to avoid obsolescence. This means continued introduction of new systems such as the FB-111, the Minuteman III intercontinental missile, the B-1 strategic bomber, the F-15 air-superiority fighter, and the A-X close-air-support aircraft."

To attract and retain top-quality people with the know-how and leadership to best employ our airpower, he urged a significant increase in starting pay for both officers and airmen, extending privileges for travel of dependents and household goods to the lowest-ranking enlisted man, equalized compensation for married and unmarried airmen, improved on-base bachelor housing for airmen, and expanded on-base family housing.

General Ryan also urged that more effort be extended in behalf of the POWs and MIAs. "These men," General Ryan said, "have earned and deserve our untiring efforts to seek their release—to let them know that we have not forgotten them.

"The efforts of your Fort Worth Chapter and Airpower Council to rally support and concern for these men have been most inspiring. It is of the utmost importance for us to assure them that they are far from being 'The Forgotten Americans.'"

During the meeting, General Ryan was named an honorary Texan and citizen of Fort Worth, and received a proclamation from Fort Worth Mayor **R. M. Stovall,** proclaiming Tuesday, January 26, 1971, as "Gen. John D. Ryan Day."

Among the more than 700 members and guests of the two organizations who attended the meeting in Fort Worth's Ridglea Country Club were retired USAF **Maj. Gens. Chester W. Cecil and Harold E. Humfeld; Brig. Gen. Arthur W. Holderness, Jr.,** Commander, 19th Air Division (SAC); **Brig. Gen. John W. Hoff,** Commander,

*At the meeting in Fort Worth were, from left, Chapter President H. Morris, Airpower Council Chairman S. Keith, General Ryan, USAF Chief of Staff.*

*During a visit to the Cape Canaveral Chapter, AFA President George D. Hardy, center, visits with Chapter President Dan Callahan, left, Maj. Gen., USAF (Ret.), and Maj. Gen. David M. Jones, Commander, AF Eastern Test Range (AFSC), Patrick AFB, Fla.*

Central Air Force Reserve Region; **Brig. Gen. George H. Wilson,** Commander, 512th Military Airlift Wing; and retired USAF **Brig. Gens. Cecil P. Lessig, Howard W. Moore, and John A. Roberts;** AFA National Director **Sam E. Keith, Jr.;** and Texas AFA President **John Allison.**

In recognition of the outstanding and continuing efforts of these two organizations to keep their membership and the public at large informed of technological advances, and to enhance the image of the military in general, we are pleased to name AFA's **Fort Worth Chapter** and **Fort Worth Airpower Council** as "AFA's Units of the Month" for April.

* * *

More than 150 members and guests attended the **Cape Canaveral, Fla., Chapter's** recent dinner meeting in the Patrick AFB Officers' Club.

In addressing the meeting, AFA President **George D. Hardy** said, "We [AFA] commemorate the twenty-fifth anniversary of our founding with the motto 'Power for Freedom.' This is fitting, because our reason for being is the commitment to a fact of life backed up by incontrovertible historical evidence: Peace presupposes power . . . weakness invites aggression . . . and while military preparedness cannot prevent war, it is far and away the single most effective deterrent. Our heritage is based on this creed."

After citing areas in which the Air Force has much to offer society, over and above national security and the strengthening of the nation's technology base—education, drug-abuse problems, safe-driving program, low-priced modular housing, and pollution control—and AFA's role in serving or preparing to serve as an intermediary for these programs between the Air Force and civilian society, Mr. Hardy said, "These examples of the interface between the Air Force and civil society typify benefits that both sides can reap if they work together, or lose, if forced to work apart. The Air Force Association will continue its efforts to heal the artificial rift that has been created between the civil and military sectors of our society."

In closing, Mr. Hardy said, "Dynamic change is a way of life in the world of aerospace. The Air Force Association, as well as the Air Force, needs to remain relevant and responsive to change. Only in that way will we be able to serve the cause of freedom—and the men and women of the United States Air Force—as effectively in the next twenty-five years as we believe we have during the past quarter of a century."

During the program, Mr. Hardy presented AFA Certificates of Honor to the following for their efforts in behalf of the POW/MIA program: **George Burrus, III, Mrs. Lawrence N. Guarino, Mrs. John S. Finlay, III, Mrs. Raymond Preece, and Col. Vincent J. Donahue, USAF (Ret.).**

Chapter President **Dan Callahan,** Maj. Gen., USAF (Ret.), was the Master of Ceremonies.

Special guests included **Maj. Gen. David M. Jones,** Commander, Air Force Eastern Test Range (AFSC), and **Lester C. Curl,** Vice President for AFA's Southeast Region.

* * *

AFA's seventh annual **State Presidents' Orientation Meeting** was held in Washington, D.C., February 4–5, 1971, in conjunction with a banquet observing AFA's twenty-fifth anniversary. Also held in conjunction with the anniversary program were an **Organizational Advisory Council** (OAC) meeting, a meeting of AFA's **Vice Presidents** with the National President, an **Executive Committee** meeting, and a meeting of AFA's **Board of Directors.**

Twenty-two State Presidents attended the two-day meeting, which convened at AFA's Headquarters offices for briefings on AFA—its mission and internal operation.

AFA Executive Director **James H. Straubel** moderated a series of briefings on the responsibilities and operation of the various departments within AFA Headquarters, as well as a series of community-action programs in which the Air Force is deeply involved and in which AFA currently is involved or is considering becoming involved, either in a support role or as intermediary for the programs between the Air Force and civilian society.

This portion of the program, pre-

*Above, AFA State Presidents attending the recent Orientation Meeting listen intently to briefings on AFA's mission and internal operation. At left, Maj. Gen. H. L. Hogan, III, Director of the USAF Office of Information, addresses a luncheon gathering during AFA's State Presidents' Orientation Meeting in Washington, D.C.*

# This Is AFA

*The Air Force Association is an independent, nonprofit airpower organization with no personal, political, or commercial axes to grind; established January 26, 1946; incorporated February 4, 1946.*

**Membership**

**Active Members:** US citizens who support the aims and objectives of the Air Force Association, and who are not on active duty with any branch of the United States armed forces—$10 per year.

**Service Members** (nonvoting, nonofficeholding): US citizens on extended active duty with any branch of the United States armed forces—$10 per year.

**Cadet Members** (nonvoting, nonofficeholding): US citizens enrolled as Air Force ROTC Cadets, Civil Air Patrol Cadets, Cadets of the United States Air Force Academy, or a USAF Officer Trainee—$5.00 per year.

**Associate Members** (nonvoting, nonofficeholding): Non-US citizens who support the aims and objectives of the Air Force Association whose application for membership meets AFA constitutional requirements—$10 per year.

**Objectives**

• The Association provides an organization through which free men may unite to fulfill the responsibilities imposed by the impact of aerospace technology on modern society; to support armed strength adequate to maintain the security and peace of the United States and the free world; to educate themselves and the public at large in the development of adequate aerospace power for the betterment of all mankind; and to help develop friendly relations among free nations, based on respect for the principle of freedom and equal rights to all mankind.

**PRESIDENT**
**George D. Hardy**
Hyattsville, Md.

**BOARD CHAIRMAN**
**Jess Larson**
Washington, D.C.

**SECRETARY**
**Nathan H. Mazer**
Roy, Utah

**TREASURER**
**Jack B. Gross**
Harrisburg, Pa.

## NATIONAL DIRECTORS

**John R. Alison**
Los Angeles, Calif.
**Joseph E. Assaf**
Hyde Park, Mass.
**William R. Berkeley**
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**Milton Caniff**
Palm Springs, Calif.
**M. Lee Cordell**
Berwyn, Ill.
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**S. Parks Deming**
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**James H. Doolittle**
Los Angeles, Calif.
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**Paul W. Gaillard**
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**Jack T. Gilstrap**
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**Martin H. Harris**
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**Joseph L. Hodges**
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**Robert S. Johnson**
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**Sam E. Keith, Jr.**
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Los Angeles, Calif.
**George C. Kenney**
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**Maxwell A. Kriendler**
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**Robert Lawson**
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**Curtis E. LeMay**
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**Howard T. Markey**
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**J. B. Montgomery**
Tulsa, Okla.
**Warren B. Murphy**
Boise, Idaho
**Martin M. Ostrow**
Beverly Hills, Calif.

**Dick Palen**
Edina, Minn.
**Julian B. Rosenthal**
New York, N.Y.
**Peter J. Schenk**
Arlington, Va.
**Joe L. Shosid**
Fort Worth, Tex.
**Robert W. Smart**
Washington, D.C.
**C. R. Smith**
Washington, D.C.
**Carl A. Spaatz**
Chevy Chase, Md.
**William W. Spruance**
Wilmington, Del.
**Thos. F. Stack**
San Francisco, Calif.
**Hugh W. Stewart**
Tucson, Ariz.

**Arthur C. Storz**
Omaha, Neb.
**Harold C. Stuart**
Tulsa, Okla.
**James M. Trail**
Boise, Idaho
**Nathan F. Twining**
Hilton Head Island, S.C.
**Jack Withers**
Dayton, Ohio
**James W. Wright**
Williamsville, N.Y.
**Rev. Robert D. Coward**
(ex-officio)
National Chaplain
Orlando, Fla.
**Phillip Robinson** (ex-officio)
National Commander
Arnold Air Society
Seattle, Wash.

## VICE PRESIDENTS

Information regarding AFA activity within a particular state may be obtained from the Vice President of the Region in which the state is located.

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Colusa, Calif. 95932
(916) 458-2179
**Far West Region**
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**John G. Brosky**
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**Northeast Region**
New York, New Jersey, Pennsylvania

**C. W. Burnette**
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99501
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**Northwest Region**
Montana, Idaho, Washington, Oregon, Alaska

**B. L. Cockrell**
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**Southwest Region**
Oklahoma, Texas, New Mexico

**Lester C. Curl**
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**Southeast Region**
North Carolina, South Carolina, Georgia, Florida, Puerto Rico

**Wm. D. Flaskamp**
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**Jack C. Price**
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Clearfield, Utah 84015
(801) 777-3750
**Rocky Mountain Region**
Colorado, Wyoming, Utah

**David M. Spangler**
503 N. Union St.
Danville, Va. 24540
(703) 793-5431
**Central East Region**
Maryland, Delaware, District of Columbia, Virginia, West Virginia, Kentucky

**W. M. Whitney, Jr.**
708 Francis Palms Bldg.
Detroit, Mich. 48201
(313) 961-6936
**Great Lakes Region**
Michigan, Wisconsin, Illinois, Ohio, Indiana

sented to a joint meeting of AFA's Vice Presidents, the State Presidents, and the OAC, included briefings on "Drug Abuse and the Air Force," "Environment and the Air Force," "Traffic Safety and the Air Force," "Communicating with Youth," the AFROTC, the AFJROTC, and the Arnold Air Society.

These briefings were presented by **Brig. Gen. John W. Roberts,** Deputy Director, Personnel Planning, Hq. USAF, and **Col. Don Foster,** USAF (Ret.); **Brig. Gen. M. R. Reilly,** Deputy Director, Civil Engineering, Hq. USAF; AFA's Deputy Executive Director **John F. Loosbrock,** and **Capt. John Gura,** Pictorial/Broadcast Branch, Office of Information, Office, Secretary of the Air Force (SAFOI); **Col. Leo I. Beinhorn,** Chief, Internal Information Division, SAFOI; **Col. Jack Watkins,** Vice Commandant, AFROTC; **Col. T. E. Lamb,** Chief, AFJROTC; and **Stephen J. Bliss,** AAS Cadet Colonel, Commander, Area B-1, Arnold Air Society, respectively.

An afternoon of general discussion rounded out a most effective and productive State Presidents' Orientation Meeting.

**Maj. Gen. H. L. Hogan, III,** Director, Office of Information, Office of the Secretary of the Air Force, was the guest speaker at a luncheon on the first day of the two-day meeting. General Hogan spoke on "AFA and the Air Force."

Special guests at the luncheon included **Brig. Gen. Thomas P. Coleman,** Deputy Director, SAFOI; AFA Board Chairman **Jess Larson; Robert J. Schissell,** President, the Nation's Capital Chapter, AFA; **General Roberts; General Reilly; Colonel Beinhorn; Colonel Foster; Captain Gura; and Maj. Mel Bailey and Capt. William Turk,** SAFOI Project Officers to AFA.

In his remarks at the second day's luncheon, AFA President **George D. Hardy** announced the appointment of **James A. McDonnell, Jr.,** to the newly created position of Director of ROTC Affairs ". . . to increase our competence in this area and . . . looking toward more active AFA participation in ROTC affairs at all levels of our organization."

The following State Presidents attended the meeting: **John H. Haire,** Alabama; **William F. Barns,** Arizona; **Richard E. Stanley,** Colorado; **Taylor Drysdale,** Florida; **William H. Kelly,** Georgia; **M. Lee Cordell,** Illinois; **Toulmin H. Brown,** Louisiana; **James Fiske,** Massachusetts; **Victor J. Vacanti,** Minnesota; **Lloyd Grimm,** Nebraska; **Gerald Hasler,** New York; and **Ernest E. Pierce,** Ohio.

Also, **Edward L. McFarland,** Oklahoma; **Robert Ringo,** Oregon; **Robert L. Carr,** Pennsylvania; **James F. Hackler,** South Carolina; **James W. Carter,** Tennessee; **John Allison,** Texas; **Glen L. Jensen,** Utah; **Richard C. Emrich,** Virginia; **Clyde Stricker,** Washington; and **Lyle W. Ganz,** Wisconsin.

* * *

A recent dinner meeting of the **Pope, N.C., Chapter** featured an address by **Joe Higgins,** a Past President of AFA's Los Angeles Chapter and the "Dodge Safety Sheriff" of TV fame.

Mr. Higgins, a loyal and dedicated AFAer and enthusiastic supporter of the Air Force and US aerospace power, spoke on the value of AFA to the individual member, the community, the Air Force, and the nation.

Chapter President **Robert H. Butler** was Master of Ceremonies, and **Lester C. Curl,** Vice President for AFA's Southeast Region, was a special guest at the dinner.

* * *

At a recent dinner meeting of the **Ogden, Utah, Chapter, Col. Robert L. Stephens,** USAF, technical adviser to the SST program at Boeing Co.'s plant in Seattle, Wash., told the more than 150 Chapter members and guests that "Americans will be flying supersonically across long distances within the next ten years—whether we build SSTs or not."

He went on to say that "craft of this type have already been built and tested in Russia, and by a joint effort of the French and British governments.

"If work on the SST is stopped, American airlines will purchase supersonic commercial transports from Britain and France. I, for one, would like to see America keep in the front of modern aviation."

Citing a specific benefit of the program to the nation, Colonel Stephens said, "A successful transport system will improve the economy. The SST program could create between 150,000 to 200,000 jobs over the country. This, in turn, would put between $6.5 and $7 billion into the treasury in taxes by the 1980s."

During the meeting, Chapter President **Harvey Howarth** presented awards to members of the Chapter, whose efforts contributed to the out-

*TV's popular "Dodge Safety Sheriff," Joe Higgins, addresses a dinner meeting of AFA's Pope Chapter. On his right is Chapter President Robert Butler, and on his left is Lester C. Curl, Vice President for AFA's Southeast Region.*

standing success of the Chapter's award-winning "1970 Weber County Air Fair," for which the Chapter was named the Utah AFA's "Chapter of the Year," and AFA's "Unit of the Month" for December 1970. Award recipients were: **Bob Mockby, Ray Cassell, James Brown, Doris Edvalson, Bill Glassman, Joe Neary, Bob Christofferson, Harvey Bergen, Col. William Kyle, Maj. Richard Mickelsen, A. B. Draper, Charles Kelley, Glenn Adams, and Bobbie Walker.**

* * *

AFA's **Anchorage, Alaska, Chapter** celebrated AFA's twenty-fifth anniversary at a chapter-sponsored banquet at the Elmendorf AFB NCO Open Mess on February 5, 1971.

Honored at the informal affair, at which Chapter President **Edward Monaghan** was Master of Ceremonies, were Elmendorf AFB's 1970 "Airmen of the Month," and the Base's "Airman of the Year," **Sgt. Joseph G. Beckwith.** A Chapter plaque was presented to each in recognition of outstanding contributions to the Air Force and the Alaskan Air Command (AAC). In addition, Sergeant Beckwith received a $25 share from the Elmendorf Federal Credit Union.

Other honored guests included **Lt. Gen. Robert G. Ruegg,** Commander in Chief, Alaska; **Maj. Gen. Conrad Necrason,** USAF (Ret.), former AAC Commander and former Alaska State Adjutant General; **Maj. Gen. Thomas E. Moore,** USAF (Ret.), former AAC Commander; **Brig. Gen. James H. Isbell,** USAF (Ret.), former AAC Vice Commander and former director of the Alaska Disaster Preparedness Office; **Brig. Gen. Kenneth M. Taylor,** USAF (Ret.), former Assistant Adjutant General for the Alaska Air National Guard; and **Bob Reeve,** pioneer Alaska bush pilot, President of Reeve Aleutian Airways, and a Past President of the Alaska AFA. The Alaskan Air Command was represented by **Col. John A. Nelson,** Vice Commander, and Elmendorf AFB by its Commander, **Col. A. L. Hughes.**

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**COMING EVENTS . . . Arnold Air Society National Conclave,** Hollywood Beach, Fla., April 14–18 . . . **Boston, Mass., Chapter** meeting with Air Force Secretary **Robert C. Seamans, Jr.,** as guest speaker, Hanscom AFB Officers' Club, April 23 . . . The **Nation's Capital Chapter's** Luncheon with the **Hon. Melvin Laird,** Secretary of Defense, Washington Hilton Hotel, April 28 . . . **Florida AFA Convention,** Orlando, April 30–May 1 . . . **Alaska AFA Convention,** Anchorage, May 8 . . . **Washington AFA Convention,** Seattle, May 15 . . . **New York AFA Convention,** Hofstra University, Long Island, May 15 . . . **San Bernardino, Calif., Chapter's** Third Annual AFA Charity Golf Tournament, March AFB and Norton AFB, May 21–22 . . . AFA's annual dinner honoring the **Outstanding Squadron at the Air Force Academy,** Colorado Springs's Broadmoor Hotel, June 5 . . . **Texas AFA Convention,** Fort Worth, June 25–27 . . . AFA's **Twenty-fifth Anniversary National Convention and Aerospace Development Briefings,** Washington, D.C., September 20–23. ■

*In upper photo, at a recent Anchorage, Alaska, Chapter banquet, Lt. Gen. Robert G. Ruegg, right, USAF, Commander in Chief, Alaska, visits with, from left, Elmendorf AFB's "Airman of the Month" for November, A1C Donald W. Balhoff; Mrs. Balhoff; and Bob Reeve, Alaska AFA Past President. In photo at the left, Col. Robert Stephens points out features of the SST to Ogden Chapter Secretary Ray Cassell, center, and President Harvey Howarth. The Colonel was the featured speaker at a recent Chapter meeting at Hill AFB, Utah.*

# Air Force Association

# SILVER ANNIVERSARY MEDALS


**struck in**

**Solid Palladium ***

**and**

**Solid Sterling Silver**

From Kitty Hawk to Tranquility Base, Americans of courage, dedication and foresight have built and maintained our country's preeminent role in mankind's conquest of flight.

The Wright brothers and Billy Mitchell; Doolittle, Spaatz, and Arnold; Glenn, White, and Armstrong—names representing thousands of American airmen whose efforts and achievements have helped bring honor and freedom to our skies. In this crucial quarter century past, the Air Force Association has stood with the vanguard of Americans who nurture, protect, and support the continued growth of United States aerospace power.

Twenty-five years ago, a group of air-war veterans, responding to General "Hap" Arnold's call for an "independent civilian organization" to act as spokesman for airpower, chartered the Air Force Association "to educate its own members and the public at large in the proper development of air power."

AFA's independent character has been emphasized by its adherence to civilian leadership. Throughout its growth to a membership of 105,000 and some 240 chapters, AFA has served its country well.

At its first national convention in 1947, AFA's president, General Jimmy Doolittle, could proudly say: "No organization did more to achieve a co-equal and autonomous Air Force."

In his keynote address at the same occasion, General Eisenhower observed: ". . . this group . . . will devote itself to our defense needs . . . as it keeps always in view the potential usefulness of the airplane in bringing the world closer together in purpose as well as in time . . ."

AFA has demonstrated clearly that private citizens can work together effectively in the national interest. In the 50's, not forgetting the speed with which the airplane brings progress and change, AFA was again among the leading spokesmen for the development of America's aerospace program and in 1959, Life magazine hailed the AFA sponsored World Congress of Flight as the "world's greatest air-space show."

The results of AFA activity in the fields of military pay and living conditions, prisoner of war treatment, and civilian application of Air Force vocational training techniques speak for themselves.

The foresight of General Arnold and those who brought AFA through those 25 years has withstood the test of time. Silver Anniversary President Hardy summed up AFA's past contributions and its future potential when he said:

"Because our nation has been strong, we have been able to deter the general war that could destroy civilization. Because we have been strong, there is at least a measure of hope for rational arms control agreements. Because we have been strong, we have a society, admittedly imperfect and in need of many reforms, but all the same, intact. To help maintain the strength required to protect that society is the unashamed purpose of the Air Force Association now and in the future."

A limited edition commemorative medal has been commissioned to honor the Silver Anniversary of the Air Force Association and its dedication to American achievement in the aerospace field.

These serially numbered, deep relief medals and medallions will be struck in solid palladium* and in sterling silver by The International Mint whose master engravers created the personal presentation medals for each Apollo flight crew.

The obverse design of the heavy gauge, jeweler's antique finish medal depicts the Air Force Association wings as interpreted by the well-known medallic designer, Donald Struhar, whose work includes the International Mint "History of America's Men in Space" and commemorative art for the United States Air Force Academy.

The finely detailed reverse design bearing the legend "Power for Freedom", recreates the World Congress of Flight symbol over an arc of 25 stars.

To insure the limited edition status of this medallic tribute to the Air Force Association, The International Mint will restrict the serially numbered commemorative issues to the following mintages:

| SOLID PALLADIUM* | |
|---|---|
| 2½" Medallion | 25 |
| 39mm Medal | 250 |
| **SOLID STERLING SILVER** | |
| 2½" Medallion | 2,500 |
| 29mm Medal | 10,000 |

Those wishing to subscribe to all four issues or to both sizes in either palladium or sterling will receive matched serially numbered sets. These sets and the 2½" medallion will be housed in handsome desk-top collector displays. Subscribers to the 39mm medals will receive a specially designed Clear-Vue holder which allows display of both sides of the medal without requiring its removal.

Subscription details are included in the limited edition subscription form below. Since applications will be handled in strict rotation, may we suggest you act now so as to ensure acquisition of this unique medallic tribute to the Air Force Association.

* *A rare, lustrous, silver-white metal approximately equivalent in value to 24K Gold.*



**Air Force Association Silver Anniversary Medal**

**Limited Edition Subscription Application**

Please make check payable to: **Air Force Association**
and mail to: **1750 Pennsylvania Avenue, N.W.**
**Washington, D.C. 20006**

Please enter my order for the following AFA Silver Anniversary medallic issue(s):

| QUANTITY | ITEM | PRICE | EXTENSION |
|---|---|---|---|
| _____ | Complete set of four issues | $1195. | _____ |
| _____ | Set(s) of Palladium issues | $1150. | _____ |
| _____ | Set(s) of Sterling Silver issues | $ 45. | _____ |
| _____ | 2½" Palladium issue(s) | $1000. | _____ |
| _____ | 39mm Palladium issue(s) | $ 150. | _____ |
| _____ | 2½" Sterling Silver issue(s) | $ 35. | _____ |
| _____ | 39mm Sterling Silver issue(s) | $ 10. | _____ |
| | Washington, D.C. residents, please add 4% sales tax | TOTAL | _____ |

I understand that all orders will be handled in strict rotation and that my check will be refunded promptly should this edition be over-subscribed.

The International Mint will begin shipment in March, 1971.

NOTE: As a convenience to subscribers, The International Mint will embed your medals in clear lucite vertical wedges for use as desk ornaments. Add $5.00 for each 39mm medal and $8.00 for each 2½" medallion.

The International Mint, Inc. is a wholly-owned subsidiary of The Robbins Company Medallists since 1892. It is not affiliated with the U.S. Mint or any other government agency.

**NAME**_____

**STREET**_____

**CITY**_____ **STATE**_____ **ZIP CODE**_____

# Include Your Whol

## Military Group Li

## Low-Cost Protection for your Wife... All of Your Children... Can Be Included in Your AFA Life Insurance Coverage

For only $12.50 per month, AFA's FAMILY PLAN insures you, your wife and all of your children, regardless of number, between the ages of 6 months and 21 years. Additional children will be insured automatically as they become eligible.

Naturally, basic AFA Military Group Life Insurance is available where no family insurance requirement exists – at a low premium of $10 per month, unchanged since the program's inception in 1960 except for **cost reductions** by annual dividends in most years. Family Plan protection can be added later.

However, in today's uncertain world, **total** family insurance in one policy – for only $2.50 per month more – is protection no Air Force family can afford to be without.

### OTHER FACTS ABOUT YOUR POLICY

All certificates are dated and take effect on the last day of the month in which your application for coverage is postmarked. Coverage runs concurrently with AFA membership. AFA Military Group Life Insurance is written in conformity with the insurance Regulations of the District of Columbia.

The insurance will be provided under the group insurance policy issued by United Benefit Life Insurance Company to the Air Force Association. However, National Guard and Reserve members who are permanent residents of Ohio, Texas, Wisconsin, and New Jersey, will not be covered under the group policy, but will be eligible for individual policies providing somewhat similar benefits.

### EXCLUSIONS – FOR YOUR PROTECTION

In order to provide maximum coverage at minimum cost for all participants, there are a few exclusions which apply to your coverage. They are:

Death benefits for suicide or death from injuries intentionally self-inflicted while sane or insane shall not be effective until your policy has been in force for twelve months.

The Accidental 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 commiting a felony, or (3) Either directly or indirectly from bodily or mental infirmity or poisoning or asphyxiation from carbon monoxide, or (4) During any period while the policy is in force under the waiver of premium provision of the master policy, or (5) From an aviation accident, military or civilian, in which the insured was acting as pilot or crew member of the aircraft involved.

### EQUAL COVERAGE – AT THE SAME LOW PREMIUM – FOR FLYING AND NON-FLYING PERSONNEL

**All policyholders are insured for the same basic amounts at the same low premium, whether or not they are on flying status.** This eliminates the penalty of lower coverage for the men on flying status whose death is caused (as most are) by illness or ordinary accident. There is one exception* to this provision which is clearly stated below the benefit table on the opposite page.

# amily in Air Force Association
# surance Protection

## BIG, NEW FAMILY PLAN BENEFITS FOR MEMBERS AND THEIR FAMILIES

| Insured's Age | Insured's Basic Coverage* | Extra Accidental Death Benefit* | Optional Coverage For | |
|---|---|---|---|---|
| | | | Spouse | Each Child** |
| 20-39 | $20,000 | $12,500 | $6,000 | $2,000 |
| 40-44 | 17,500 | 12,500 | 5,250 | 2,000 |
| 45-49 | 13,700 | 12,500 | 4,050 | 2,000 |
| 50-59 | 10,000 | 12,500 | 3,000 | 2,000 |
| 60-64 | 7,500 | 12,500 | 2,250 | 2,000 |

*A flat sum of $15,000 is paid for all deaths which are caused by an aviation accident in which the insured is serving as pilot or crew member of the aircraft involved. In this case, the accidental death bentfit does not apply.

**Each child is covered in this amount between the ages of six months and 21 years. Coverage in the amount of $250 is provided between the ages of 15 days — or upon leaving the hospital, if later — and six months.

## UNRESTRICTED, WORLDWIDE COVERAGE AND OTHER VALUABLE BENEFITS MAKE THIS AFA PROGRAM YOUR BEST POSSIBLE PROTECTION!

- No War Clause
- No Hazardous Duty Limitation
- No Geographical Limitation
- $12,500 Accidental Death Benefit
- Guaranteed Conversion to Permanent Insurance
- Waiver of Premium for Disability
- Full Choice of Settlement Options
- Coverage May Be Retained After Leaving Active Duty

## You ARE ELIGIBLE IF YOU ARE ON ACTIVE DUTY WITH THE USAF, OR IN THE AIR FORCE READY RESERVE, OR THE AIR NATIONAL GUARD

## .ICATION FOR AFA MILITARY GROUP LIFE INSURANCE (Underwritten by United of Omaha)

Name (please print)

g Address

State Zip

of Birth Soc. Sec. Number

ficiary Relationship

nsurance is available only to AFA members
enclose $10 for annual AFA membership dues (includes subscription ($9) to IR FORCE/ SPACE DIGEST.)

am an AFA member.

Please indicate below the form of payment you elect:

| | Family Plan | Basic Plan |
|---|---|---|
| ☐ Monthly government allotment. I enclose 2 month's premium ($25 for Family Plan, or $20 for Basic Plan) to cover the period necessary for my allotment to be established. | ☐ $12.50 | ☐ $10 |
| ☐ Quarterly. I enclose amount checked | ☐ $37.50 | ☐ $30 |
| ☐ Semi-annually. I enclose amount checked. | ☐ $75 | ☐ $60 |
| ☐ Annually. I enclose amount checked. | ☐ $150 | ☐ $120 |

Category of eligibility. Please check appropriate box.

- ☐ Active Duty, Air Force
- ☐ Ready Reserve, Air Force
- ☐ Air National Guard

erstand the conditions governing AFA's Group Life Insurance Plan. I certify that I am eligible for this insurance under the category indicated, that I am currently od health, and that I have successfully passed, within the past two-year period, the last physical examination required by my branch of service. (Reserve and Guard onnel not on extended active duty must include with this application a copy of their most recently completed SF88.) I further understand that if I have requested ly coverage, an additional application will be forwarded to me so that members of my family may be included in my policy.

ture of Applicant _____ Date _____

cation must be accompanied by check or money order. Send remittance to:

URANCE DIVISION, AFA 1750 PENNSYLVANIA AVE., N.W., WASHINGTON, D. C. 20006

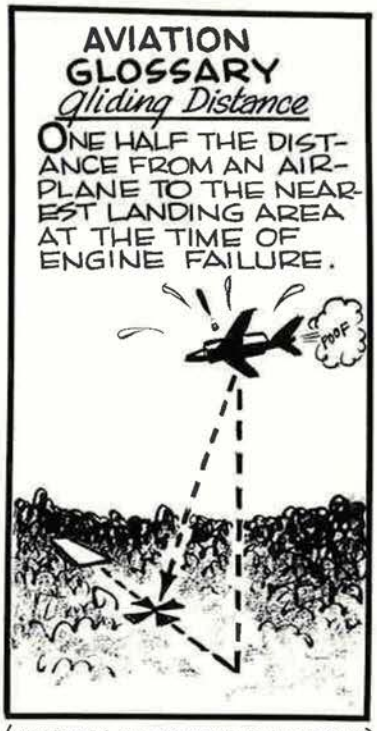
4-71

Bob Stevens'

# "There I was..."

**Engines and airframes and armaments change,**
**As do ceilings and airspeeds and ferry range,**
**But what keeps 'em flying—according to rumor—**
**Is the airman's kind of wild-blue humor.**

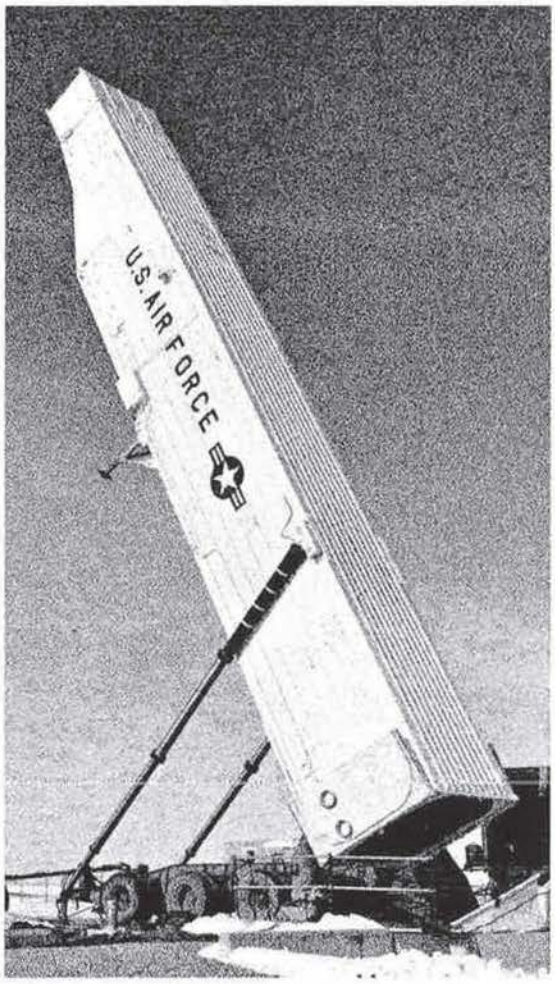
'FREDDY THE FAC'


(COURTESY, CONFEDERATE AIR FORCE)


THANKS TO BOB HOWARD
COLUMBUS, OHIO.

# The First Team delivers under budget.




Mobile transporter deposits Minuteman in its silo at Minot AFB, N.D.

Minuteman is a $1-billion-a-year effort. Yet in this age of soaring costs, the program saved nearly $15 million last year, and is projected to save another $200 million over the next five years. Without sacrifice in quality or performance.

Autonetics is proud to be a member of the First Team, supplying inertial navigators, on-board computers and checkout equipment—fully 99 percent of electronics guidance and control—to three generations of this magnificent bird.

Like other members of the First Team—the Air Force, associate primes and thousands of subs—Autonetics Aerospace and Marine Products Division has participated in the full growth of the missile, from drawing board to silo.

The goal has always been maximum potential and value and never change for the sake of change, which is where the overruns start.

In all, an extremely well-managed program, particularly when you consider that Minuteman is the most advanced unmanned aerospace system ever built.

**Autonetics**
North American Rockwell


# Over 1,000 consecutive home station departures without mechanical delay.

Day and night, every day, Air Force Aeromedical C-9As are establishing new records for dispatch reliability—99.5%—and flight performance. ☐ Even operating from remote airfields and in unfavorable weather, these Military Airlift Command C-9A Nightingales transport sick and injured patients in jet-age comfort and speed. ☐ This rugged and versatile airframe could also serve as a Navigational Trainer or a high-performance Test Bed. In a convertible configuration, it can fly passsengers in airline seating or cargo on indirect support missions. ☐ The C-9, like its DC-9 commercial counterpart, provides quick turnaround, easy maintenance, and is backed by our worldwide product support system.

**MCDONNELL DOUGLAS**