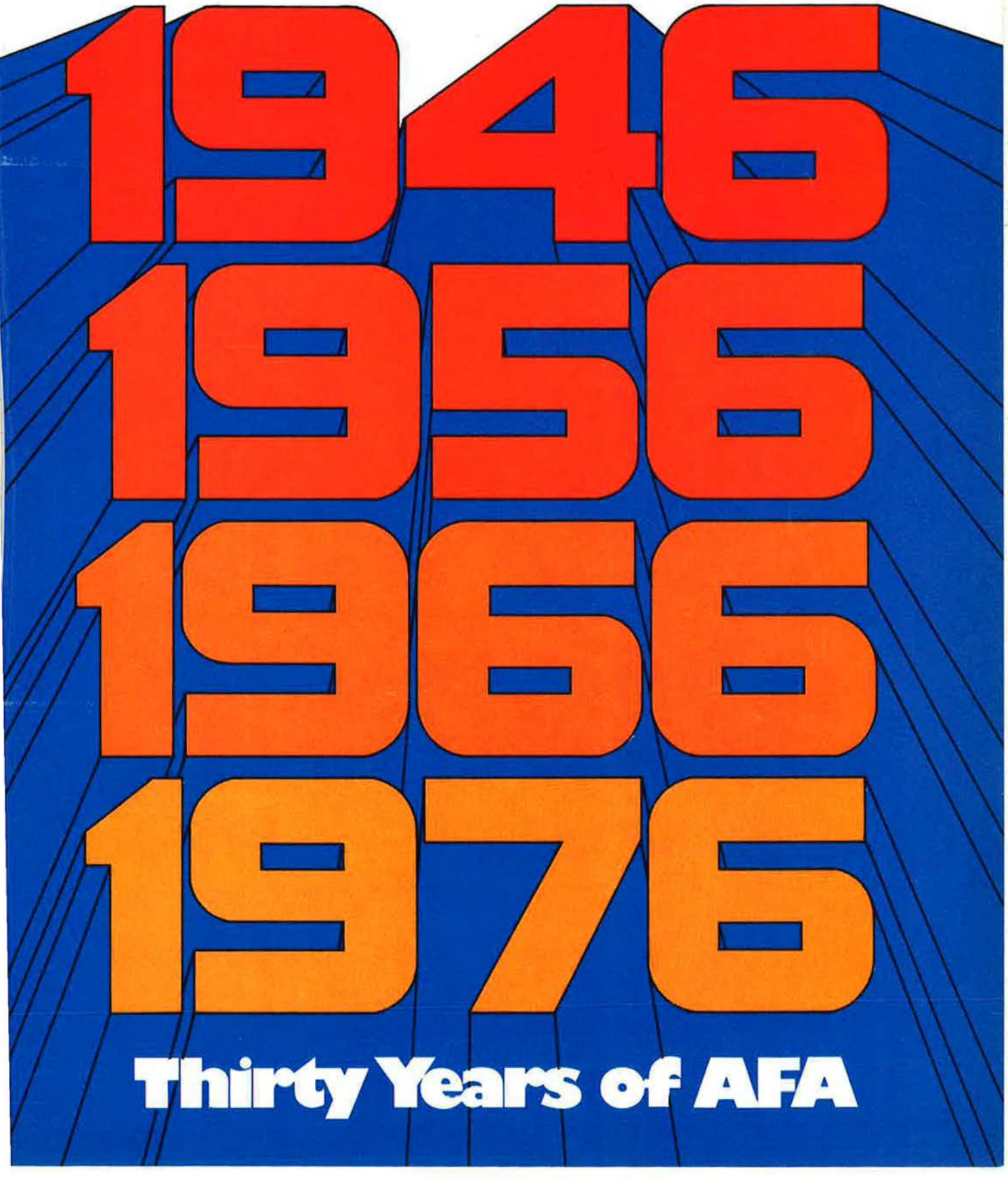
SEPTEMBER 1976/$2

# AIR FORCE MAGAZINE

PUBLISHED BY THE AIR FORCE ASSOCIATION

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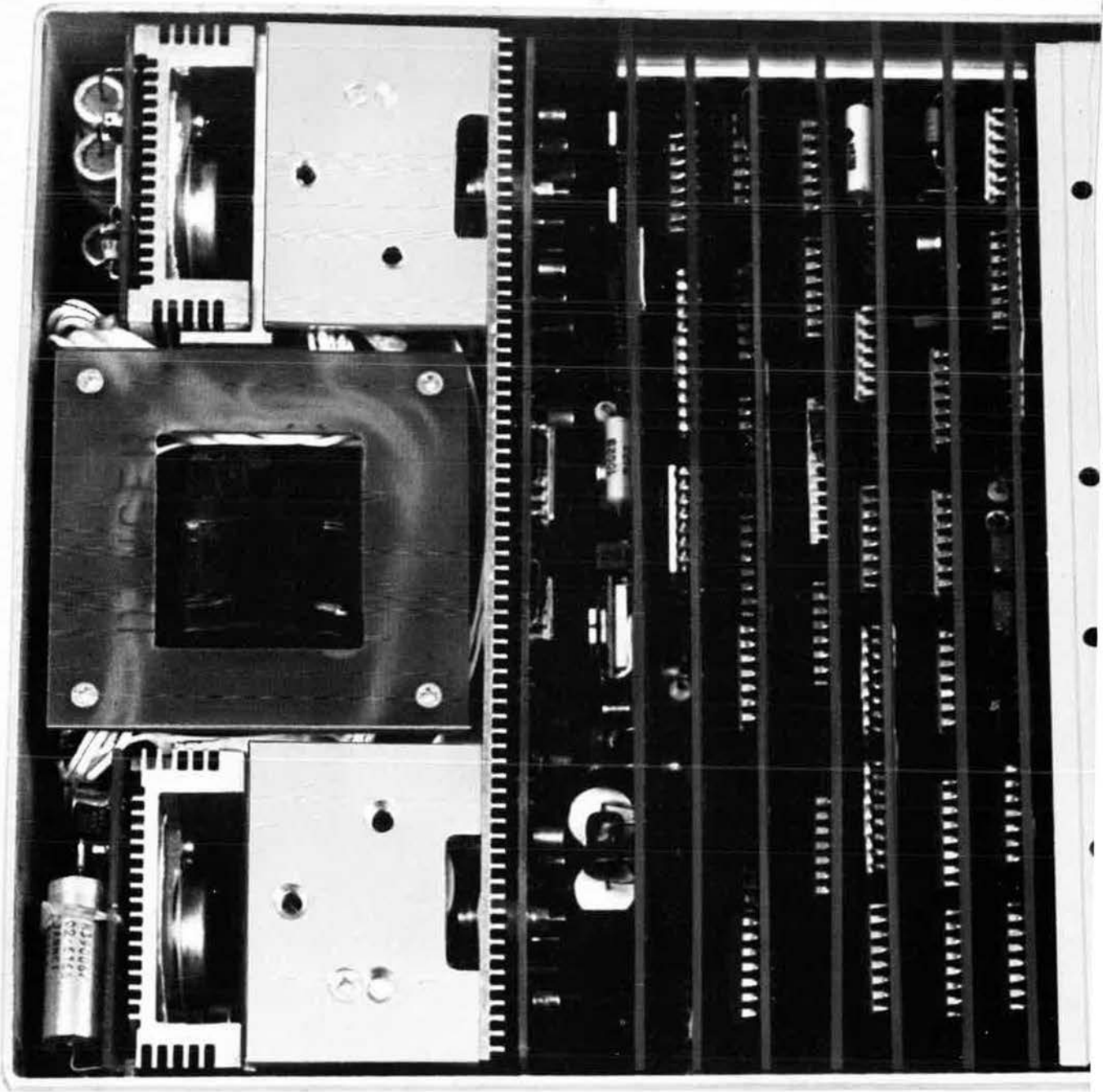

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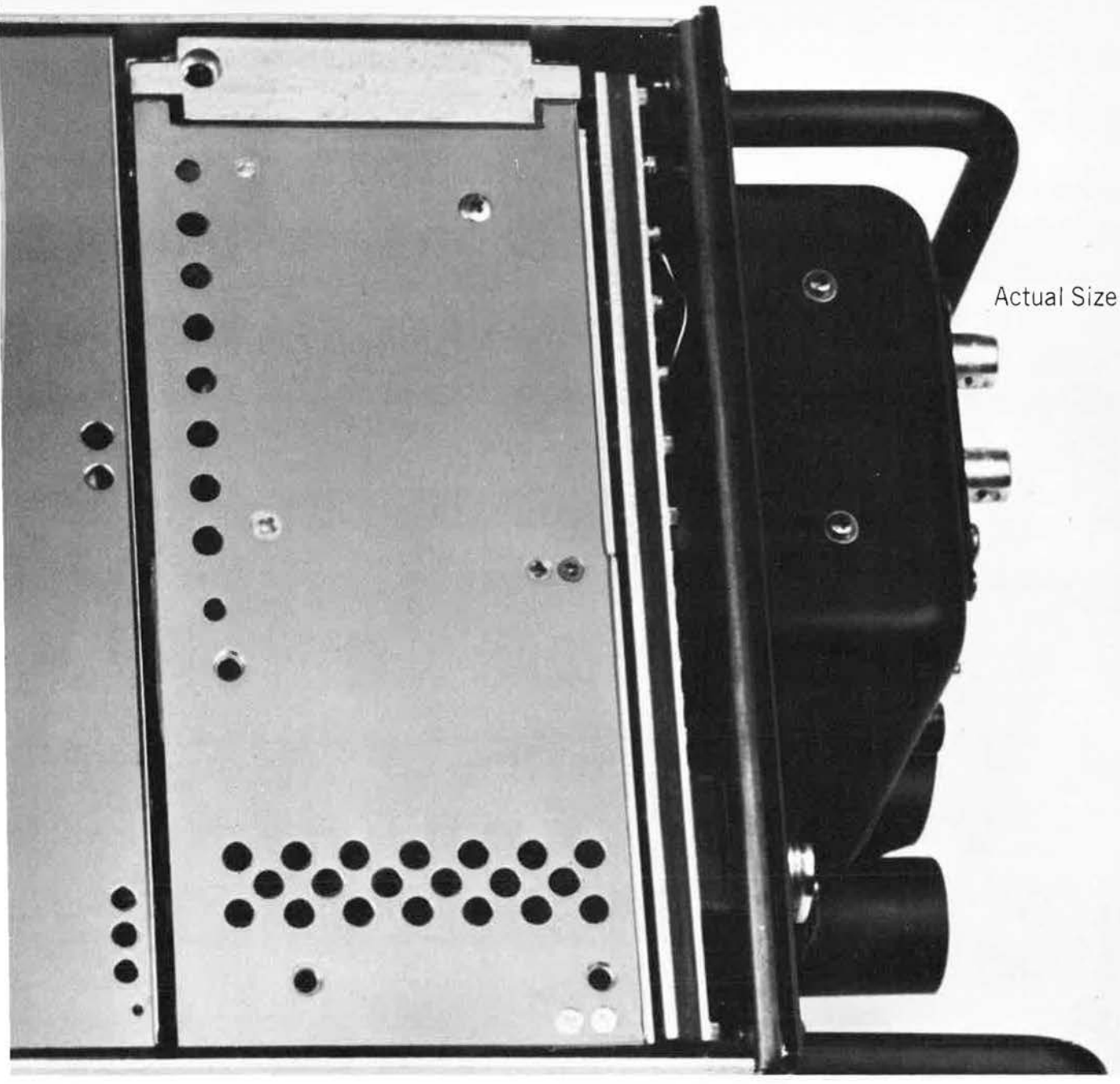

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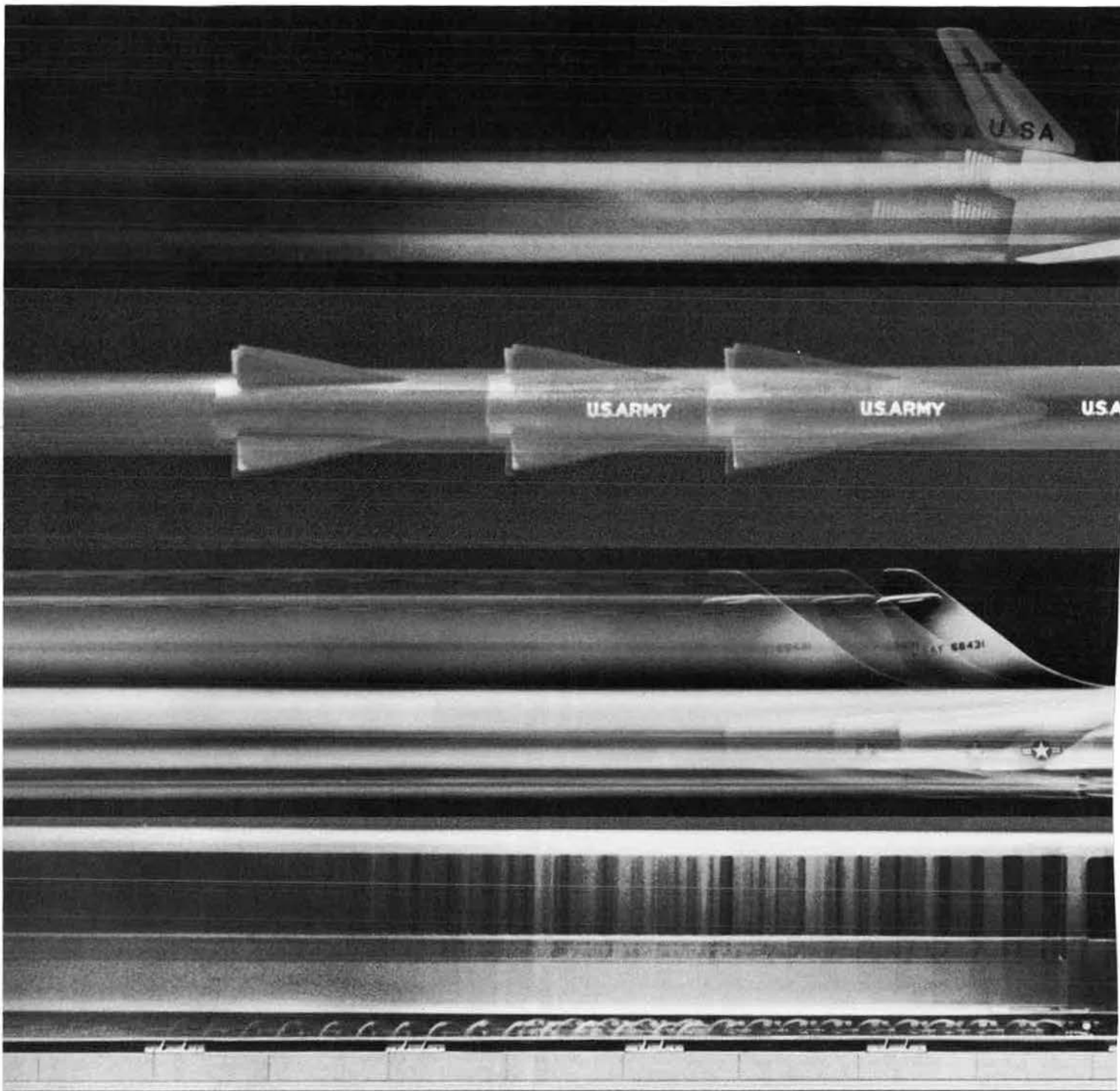


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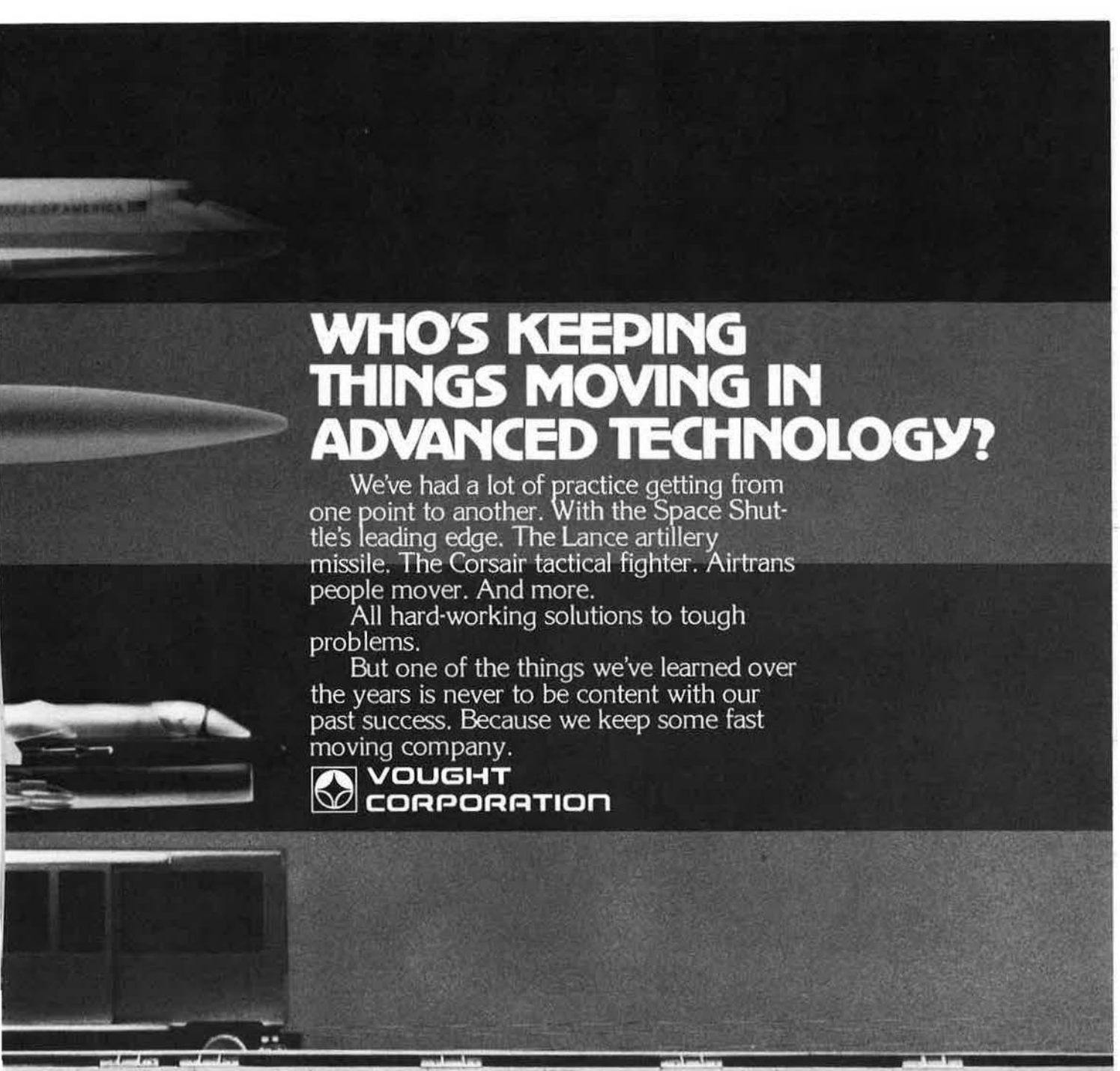

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We've had a lot of practice getting from one point to another. With the Space Shuttle's leading edge. The Lance artillery missile. The Corsair tactical fighter. Airtrans people mover. And more.

All hard-working solutions to tough problems.

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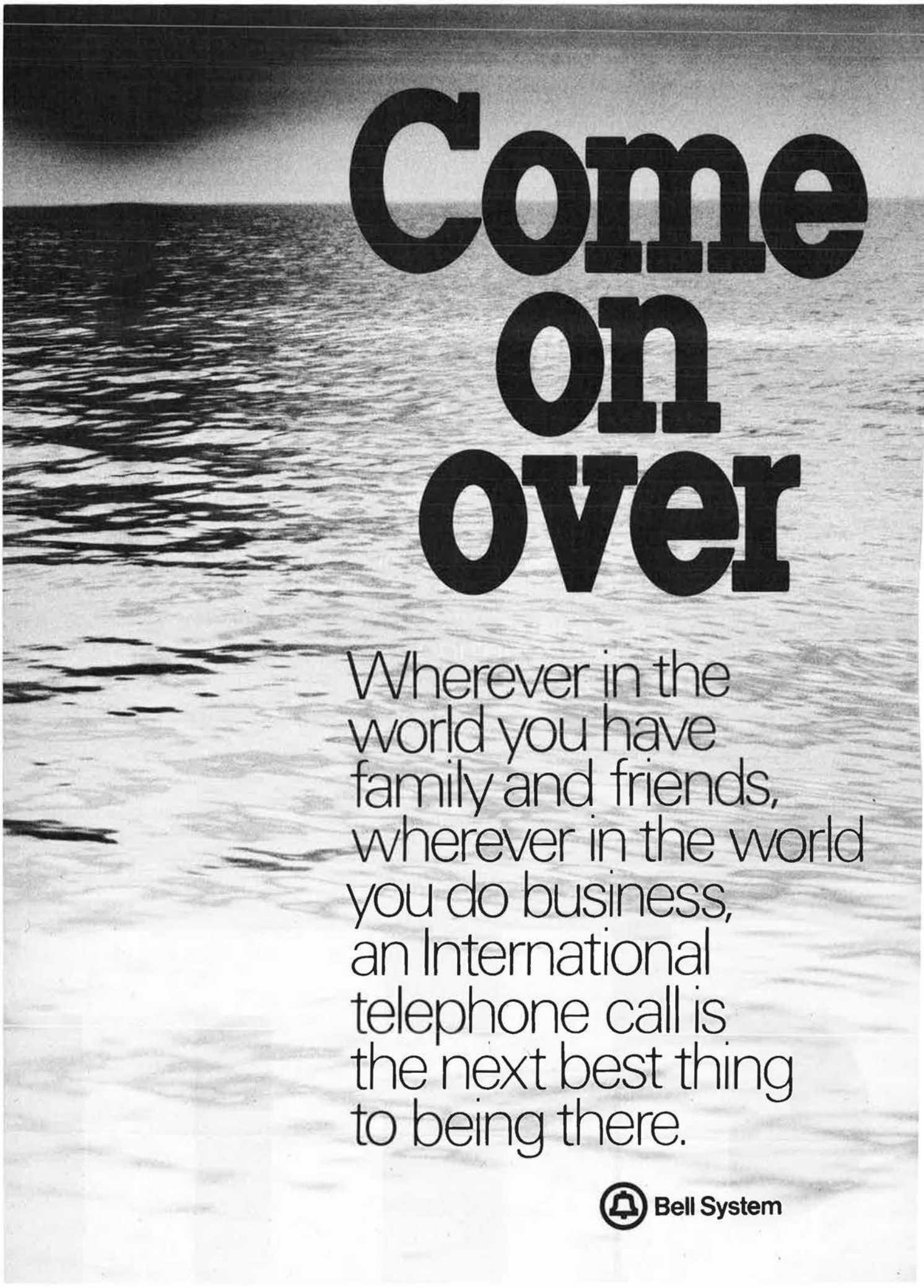
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Wherever in the world you have family and friends, wherever in the world you do business, an International telephone call is the next best thing to being there.
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AIR FORCE MAGAZINE
PUBLISHED BY THE AIR FORCE ASSOCIATION

# This Month



**ABOUT THE COVER**


*The cover of this September issue commemorates the Air Force Association's thirty years of active support for US aerospace power as an instrument of freedom and security for this nation and the free world.*

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**VOLUME 59, NUMBER 9**

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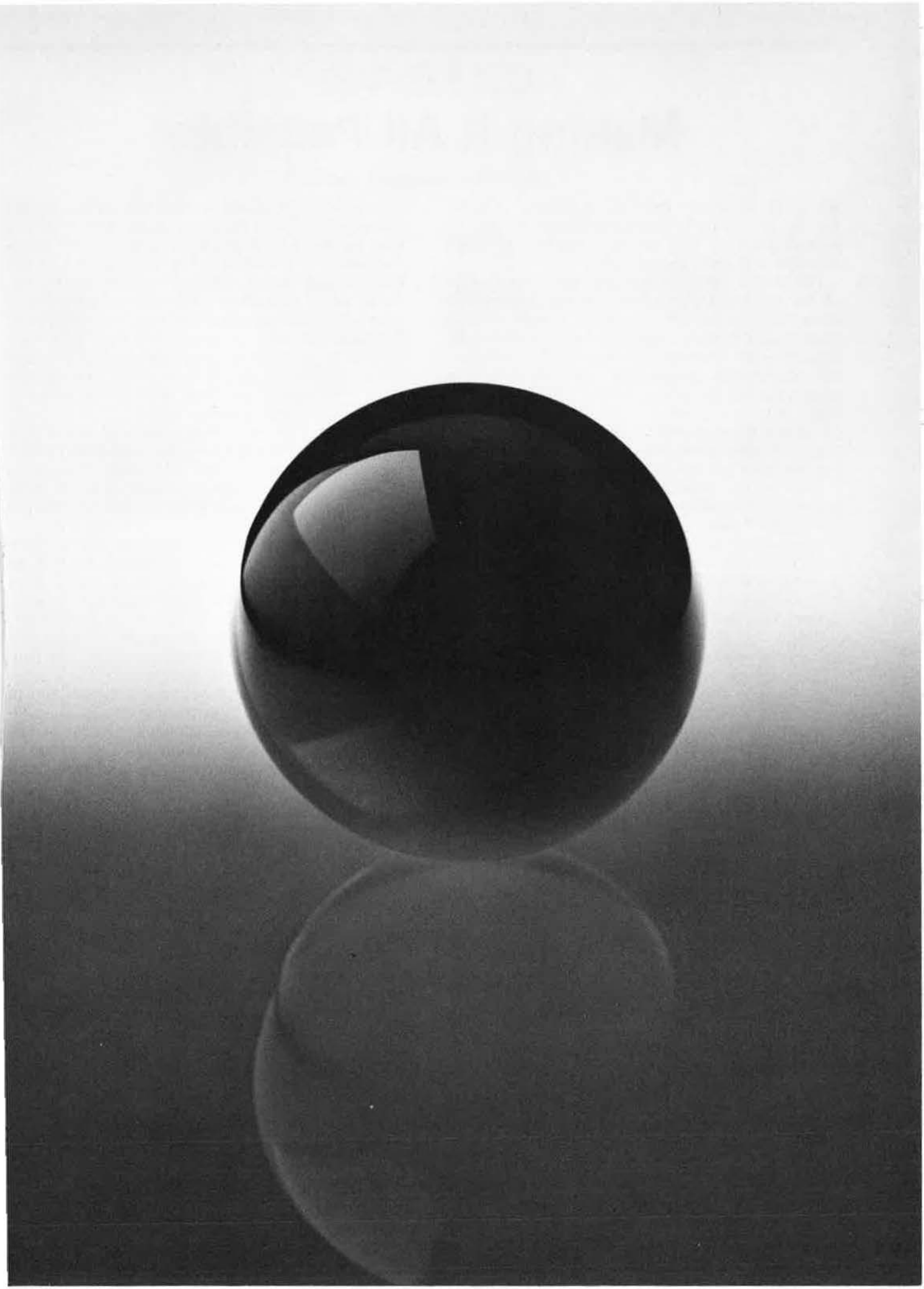

# COMMENTARY

# Making It All Possible

**By John F. Loosbrock, EDITOR**

IT IS an extremely risky thing to write approvingly, and publicly, about one's boss. He may be embarrassed. He may be angry. He may privately disagree with your assessments.

But in discussing what to say about thirty years of the Air Force Association in this Anniversary Issue of AIR FORCE Magazine, I kept coming back to Jim Straubel. After all, had it not been for Straubel—his courage, his tenacity, his imagination, his creative talent—AFA very likely would not have survived for thirty months, let alone thirty years. And to say some of the things that should be known about Jim Straubel, I'm ready to run all the risks cited above plus the very obvious opening of myself to charges of sycophancy.

No, I do not sleep better because Jim Straubel is Executive Director of the Air Force Association. Very often I sleep worse, and occasionally not at all. No lack of faith is suggested by the foregoing. Rather, it is the deep sense of responsibility which Straubel is able to inculcate in those who work for him and which represents the essence of that overworked word, leadership.

We all are products of our past, it is said, and Straubel is no exception; a fortuitous circumstance which explains in large part why he has been just right for AFA and, conversely, why AFA has been right for Jim Straubel.

The guts of the Air Force Association is communications—internal as well as external. And Straubel is, above all, a communicator. Blooded in the reportorial trenches of the daily newspapers in his native Wisconsin—Appleton *Post-Crescent,* Green Bay *Press-Gazette,* Milwaukee *Journal*—he came to Washington, D. C., in 1940 as managing editor of the then-new *American Aviation* Magazine.

A Reserve second lieutenant, Straubel was called to active duty in 1941, when Gen. H. H. "Hap" Arnold gave him the job of setting up and editing AIR FORCE Magazine as the official journal of the US Army Air Forces. Straubel plucked a team of talented people from the dark canyons of Manhattan to sun-drenched Hollywood and the product reflected the talent.

He ended his wartime stint as a colonel and, after a brief fling in paperback book publishing in New York, was called to the rescue of the floundering Air Force Association. His first chore was to revitalize AIR FORCE Magazine, which had been bequeathed to the Association by the AAF in a kind of war surplus status. In 1948, then-President C. R. Smith named him Executive Director of the Air Force Association, a title he holds to this day.

So much for biography. Suffice it to say that Straubel's background as reporter, writer, editor, and publisher has mirrored itself, first in AFA's very survival when the magazine proved the financial savior of the Association and, second, in the respect and highly professional latitude he accords AFA's publishing staff today. This latter is a rare phenomenon among association executives. It makes our editorial job easier but—and more important—creates an atmosphere of professionalism without which an association journal can never rise above the drab level of an unloved, unread, uninfluential house organ.

To colleagues who have wondered at my own adherence to the same boss for more than twenty-five years, my stock reply has been: "You don't have to change bosses to change jobs. At AFA, you may keep the same desk but you find the job changing under you."

It is this yeasty approach to his life and his work that has made Straubel's thumbprint on AFA so legible and so indelible. He could easily have settled into a too-familiar Washington rut—an easy life for a few people. He opted for growth and innovation, for risk and reward, for a broad and visionary approach to the marketing of this concept we call "aerospace power."

Out of this ferment has risen a succession of programs and events, all pointed in the same direction—a widened professional and public understanding of aerospace technology and its pervasive side effects—not simply its implications for national security but across the entire fabric of our national life.

There are more examples than can be listed here, but some stick firmly in my memory. The Jet Age Conferences in 1956, which hit head-on the public problems of the advent of commercial jet service. The week-long World Congress of Flight in Las Vegas in 1959—a financial flop but a critical success called by *Life* Magazine "the world's greatest aviation-space show." The briefing approach to aerospace exhibiting, an innovation that breathed new life into a dying program. The focusing of the work of AFA's Aerospace Education Foundation on injecting proven Air Force training and education techniques into the civilian school system at a time when improvement and expansion in vocational education for the world of work is so badly needed. Not the least, of course, is the steady and, in recent years, spectacular growth of the entire Air Force Association—since 1966 an expansion in total numbers of eighty-four percent, in chapter memberships of 227 percent.

It's been an incredible thirty years, thanks in the larger part to an incredible man—Jim Straubel. ■

# SCIENCE/SCOPE

U.S. Air Force F-15 Eagle fighters recently downed two simulated MIG-25 Foxbats in tests at Eglin AFB, Fla. Equipped with Hughes APG-63 radar, the McDonnell-Douglas-built Eagles took on jet drones simulating the high-performance MIGs. The first Eagle launched a Sparrow missile with a dummy warhead at a drone moving at Mach 2.7 at 71,000 feet. The missile passed within lethal range of the target. The second Eagle, with live missiles, found and destroyed the mock MIG-25 at 68,000 feet and Mach 2.7.

A precision Ground Laser Locator Designator, for guiding laser homing missiles like Maverick, Hellfire, or cannon-launched guided projectiles to their target, is undergoing field testing at Redstone Arsenal. GLLD (pronounced "glid") is a 50-pound, tripod-mounted device built by Hughes for use by ground troops. It combines high-power optics with a viscous fluid, damped tracking unit, providing the accuracy to work against rapidly moving distant targets. GLLD emits a narrow beam of invisible light to the target. The guided missile senses the reflected beam and thereby homes unerringly on the target for a direct hit. Range and bearing information can be sent to the artillery battery for use with conventional artillery.

Unmatched infrared views of the heavens will be possible with a space-orbiting infrared telescope, according to a NASA-sponsored study at Hughes. The Space-Lab Infrared Telescope Facility (SIRTF) could provide infrared views of the universe a thousand times brighter than obtainable from earth, where the atmosphere severely restricts observations, and allow detection of objects 30 times more distant than those now observed in infrared light. Unlike a regular telescope, which observes visible light from an object, an infrared telescope measures its thermal radiation. Cooling SIRTF's telescope to 20 degrees Kelvin (minus 423 degrees Fahrenheit) with supercritical helium would achieve unmatched sensitivity to thermal radiation. NASA funding for the facility is tentatively set for 1979, with initial orbiting envisioned for early in the 1980s.

Now, with the launch of the second Marisat, the new maritime communications satellite system blankets the sea lanes in a 120-million-square-mile area of the Atlantic and Pacific. For the first time, ships can communicate clearly and without interruption with other ships and with shore bases. The two Marisat spacecraft -- built by Hughes for COMSAT General Corporation -- relay high-quality voice, telex, facsimile, and data transmission. Vessels flying the flags of 10 nations already are equipped for satellite communications. The U.S. Navy also is leasing a substantial portion of Marisat's capacity for its fleet communications needs.

Men at sea have depended in the past primarily on international Morse code and radio telephony that often was disrupted and delayed by adverse weather conditions, signal fading or crowded frequency channels. The Marisat system has eliminated these delays.

Marisat earth stations in Connecticut and California, interconnected with terrestrial networks and linked by 24-hour voice and data lines to COMSAT General's Washington, D.C., control center, complete the Marisat satellite system.

*Creating a new world with electronics*

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# Airmail

**Blast From a Riled Reader**

It takes a lot to get me riled, so the cumulative exposure to your "Wayward Press" monthly feature has led me to believe that everyone on your staff is paranoiac about newspapers. A reader of your diatribes would believe that there are only two newspapers in the country—The Washington *Post* and the New York *Times*. You seem to get a sadistic delight in seeking out errors in these, and other newspapers.

It may come as a surprise to you that there are other newspapers in the country. Many of them have a promilitary editorial policy! Many of them feel strongly about maintaining a strong military posture in the world.

It seems to be an occupational hazard among military writers and information officers to have the idea that all the media in the country are out to castrate every branch of our armed forces. The enclosed editorial [*see box*] is an example of how I feel, personally, about things military.

If you would spend as much time in cultivating understanding in the media, you would be far better off. I arranged for the New Jersey Press Association's board of directors to have their quarterly meeting at McGuire AFB. The directors, and their wives, saw an active Air Force base in operation. After the usual "dog and pony show," we spent considerable time talking with the command at the headquarters of the Twenty-first Air Force as well as McGuire AFB. The result of this meeting far exceeded the expectations of the men at McGuire. There were columns and features that appeared all over the state. The editors of our newspapers know that they can call McGuire AFB and get straight answers to questions. McGuire AFB made an effort to meet and understand the "wayward press," and now they benefit from the one-to-one relationship they have with New Jersey newspapers.

For once, I would like to see you find something nice to say about us. The newspapers of this country have been an integral part of our democratic process. If the need arises, it is their duty to point out errors in government.

Thomas Jefferson wrote: "Were it left for me to decide whether we should have a government without newspapers, or newspapers without government, I should not hesitate to prefer the latter."

Albert E. Freeman
Editor and Publisher
*Burlington County Herald*
Mount Holly, N. J.

**More on the Honor System**

In the July issue, Gen. T. R. Milton lashed out at critics of the service academy honor system. I explore here some questions General Milton overlooked.

He warns that if an honor system becomes a "tool" of administration, it will and should collapse,

### Isn't This the Time to Change Our Values?

All of the world's major religions have been preaching "the brotherhood of man" for centuries. Yet, for over 2,000 years of this constant preaching, we are no farther in attaining that ethical goal. If you could add up the millions of people killed in the name of God or in the name of Allah, the answer would be far greater than the numbers killed in wars during our lifetime. If you were to add up the billions of dollars spent on churches, mosques, cathedrals, synagogues and temples and then add up the expenses of running these institutions, we think that you would be startled by the astronomical figure you would find!

No, we are not going to promote atheism. All we are trying to do is to equate the cost of our military establishment with the costs of running the world's churches.

We are firmly convinced that no one likes war, and this includes the military. You must remember that they are the first ones to pay the supreme sacrifice. We even hear young couples express fear in having babies, because of their doubts about the future. They wonder why they should have children and then have them become war casualties.

If the world's organized religions cannot bring about world peace, then we should, by all means, maintain a strong military presence in the world. As long as we live in this Cain and Abel world, we need it. The amount of money it takes to maintain our military might is miniscule compared to the amount of money that it takes to maintain all the religions today.

We believe that there is one way that would help us establish world peace. If we would require the heads of state and the commanders in chief of our armed forces to lead us into battle physically, as they did centuries ago, the politicians would have second thoughts about starting another war. We know that this would never happen, not in this era of political wars.

We're tired of having people downgrade our country's military organization. These dedicated men and women have made the decision to defend our country, and our way of life, with their lives. As long as we have these dedicated men and women, we should supply them with the best tools available. All the money spent on military research and development has benefited mankind in the civilian world! Just look about you and you will see examples of military research and development. Just to name an infinitesimal amount of examples, we could point to nuclear energy, air travel, television, cosmetic surgery, radio and hundreds of other things we take for granted every day. Every industry in the world has benefited from military research and development.

Let's not have isolated examples of mismanagement in the defense of our way of life rule all our judgment of our military. To bring it closer to home, Fort Dix and McGuire Air Force Base are the largest cities in the county. As in any large city, you have problems. We can't judge everyone at Fort Dix and McGuire AFB by the actions of a few. By the same token, we cannot judge the entire military establishment by the actions of a few. The men and women in our Army, Navy, Air Force, Marines and Coast Guard are our bulwark for freedom. They deserve your support. The mere fact they wear a uniform doesn't change them a bit. They laugh, cry, breathe and think just like you do. They are offering themselves as your defenders. What more can we ask?

—Reprinted with permission from the *Burlington County Herald*, Mount Holly, N. J.

failing to note that the system *automatically* is a tool. If authorities suspect they know who is "slipping out of barracks" (Milton's example), they can "gig" him and require that he answer the accusation in writing. Thus, cadets confess to numerous offenses about which authorities have no evidence. I once witnessed authorities catch cadets for buzzing (near Stewart AFB), by gigging everyone who had flown that night.

In the recent West Point scandal, some cadets accused others of very serious offenses (illegally selling government equipment, using stolen or forged ID cards). If officials asked a cadet about such an offense, he might confess "on his honor," but the evidence could not be used in court. The upshot is that cadets can be punished more severely for minor offenses inside the honor code (having a beer) than for serious offenses outside the system. Cadets learn to become truly expert at what Milton calls "adventurous breaking of rules" (not always innocent pranks), while maintaining their honor in the narrow range of things covered by the code—a dubious double standard.

All "honor scandals" are academic ones, and some old problems need new examination. Any honor code is bound to wilt when extreme pressures or temptations emerge. Some of these are the desire to field strong football teams, grading on a curve, encouraging cadets to take extra courses for enrichment, and take-home exams, all of which can and do put severe strain on an honor code.

A USAFA faculty member recently described his dilemma to me. He liked take-home exams (the source of the recent West Point problem) because they encouraged cadets to learn from discussion with each other, but he realized that a cadet's answers could be "honor violations" if they were traceable to such discussion. The choice was between a sacrifice of learning outcomes and a technical violation of the honor code. When learning is defined as cheating, things are awry.

Any high-technology organization, especially USAF, relies upon constant teamwork, exemplified by the word and concept of "crew." Every decision is based upon the maximum possible discussion in the time available. An honor code, then, is not only a hindrance to learning, but is incompatible with the situations academy graduates will face throughout their careers.

Milton asserts there is no stigma attached to cadets charged with honor violations, "unless they are found guilty." They are then "honorably discharged" and the academy, cleansed of the unworthy, is renewed.

As Milton implies, there is considerable (lifetime) stigma attached to a finding of "guilty." Indeed, critics of a Presidential nominee call upon him to fire his press secretary because that individual left USAFA as an honor violator. Hiding behind the myth that the cadet has been found *unofficially* guilty by his peers instead of *officially* guilty by authorities, honor system defenders overlook the implications of requiring a guilty third- or fourth-year cadet to enter the service in enlisted status. No matter the desirability of recovering an investment from resigning cadets, it is outrageous to assert that an individual not honorable enough to stay at an academy is good enough to pursue a military career in other ways. Why should enlisted service be defined as the punishment for an honor violation, especially in the age of an all-volunteer force?

Defenders of honor codes cannot have it both ways. For practical purposes, cadets who "leave quietly" are *dis*honorably discharged, especially since academy superintendents must review all such decisions. When Milton uses the words he uses, and when West Point's superintendent insists that his acts, investigations, and statements are within the boundaries of due process and simple justice, they are misleading all of us. Sooner or later, we must face the likelihood that honor codes based largely upon self-incrimination cannot forever endure above the law, so to speak. Small wonder that those threatened with lifetime stigma seek the full range of remedies subsumed under "due process."

In summary, there are tough questions to ask, and reasonable people are asking them. Milton's targeted critic was an antimilitary sociologist-priest; others, notably congressmen who seek to keep the academies healthy, cannot be lightly dismissed. As the recent West Point scandal should demonstrate, any honor system must be flawed if hundreds of cadets are simultaneously investigated. It is silly to imply that the mothers of America produced a bumper crop of immoral offspring in a single year, nor can we simply blame the world at large for an ever-more-permissive environment. Honor systems as now constituted may be more the problem than the solution.

Col. Frederick C. Thayer,
USAF (Ret.)
USMA '45
University of Pittsburgh
Pittsburgh, Pa.

*The author replies:* Well, let's see. Where to begin? It is clear that Colonel Thayer is not one of the strong supporters of the honor system, although it is not so clear what he would support in its stead. He seems convinced that the system is a "tool of the administration." I can only say he is ill-informed, at least about the Air Force Academy. I am not a competent judge of what has been going on at West Point lately, but the column under attack had to do with the Air Force Academy. We should stick to that.

The system at the Air Force Academy prohibits the writing up—gigging—of a cadet unless the reporting officer has a "reasonable suspicion" that the offense did occur and a "probable cause" to accuse a particular cadet. No blanket indictments. The accused cadet replies by a Form 103 in explanation or denial. The only honor implication in this procedure is the need not to lie. Since most offenses are straightforward and minor, and the accused is generally guilty, the success rate of these appeals is pretty low. But that is not the point. If the offense is serious, and punishable under the Uniform Code of Military Justice, the Form 103 cannot be used as evidence on any matter not contained in the original charge, or gig, nor can this explanation be used to implicate any other cadet.

Another aspect of this same issue is the improper question. The officers at the Academy are instructed against asking a cadet any personal or incriminating question unless that

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

# Airmail

officer has a reasonable, and thus specific, suspicion that the cadet has committed a specific offense. If the cadet thinks the question improper, he may, after answering truthfully, take the matter up with the Cadet Honor Committee. If that committee agrees that the question was indeed improper, no punishment can result.

The Air Force Academy chooses to let the cadets run the system, and thus a guilty cadet may resign with no mark on his honorable discharge indicating the reason for his resignation. When we remember that lying, cheating, and stealing, or covering up those infractions, are all court-martial offenses, the honor code becomes a pretty simple proposition. An unhappy alternative to the honor code would be a steady reliance on the UCMJ. After all, the academies are military institutions. The cadets are in the military service.

Academician Thayer appears to be outraged at what he perceives to be the inhibiting effect of the honor code on the collaborative learning experience. Collaborative homework is frequently given at the Air Force Academy. The rule is simple. Cheating, which means violating the instructions governing the homework in order to gain an unfair advantage, is forbidden.

Finally, Thayer seems to be completely confused about the true purpose of the honor system. It is not something that is turned on and off, nor something that confines itself to the minor things in life. Admittedly, like any system men devise, it is imperfect. There are occasional gray areas, and there are, from time to time, some failures in the system. Nevertheless, it is a code these young people believe in. It is a code that takes the place of classroom proctors, closed-circuit TV, and all the other safeguards that must replace such a simple thing as trust that no one will cheat, or lie, or steal.

Gen. T. R. Milton, USAF (Ret.)
USMA '40

**AFLC's Facts and Figures**

Perhaps the credibility gap between Congress and DoD can be partially explained by the inconsistent "facts" that are forever pouring from the DoD. For example, your May issue (p. 58) states Air Force Logistics Command has 88,000 civilians and 10,000 military personnel, led by General Rogers.

Your June issue states that General Rogers leads an Air Force Logistics Command staffed by some 92,000 people. Did AFLC lose 6,000 people between May and June?

You may also notice your June article states AFLC controls an inventory of about $13.8 billion, whereas in your May issue AFLC managed an inventory of nearly $28 billion. What happened to $15 billion in inventory between May and June?

Maybe Air Force Logistics Command has no idea how many people or how much inventory it has.

Name withheld by request.

• *Air Force Logistics Command's Office of Information informs us that the May figure of 98,000 was assembled early in calendar year 1976 and was based on the command's calendar 1975 year-end manpower position.*

*The figures in the June article were furnished in mid-March and—in view of the June publication date—were adjusted to reflect the command's anticipated position at the time of publication. AFLC's manpower, as of June 30, 1976, stood this way: Civilians, 83,500; military, 9,200; for a total of 92,700.*

*Our reader is correct in one sense: AFLC has lost more than 6,000 personnel. However, the loss—through attrition and reduction-in-force—was between January and June, rather than May and June.*

*The May issue reported that AFLC manages an inventory with a gross value of nearly $28 billion. The June article says AFLC controls an inventory worth about $13.8 billion.*

*May refers to all Air Force items that AFLC uses, including in-use and installed engines and equipment, plus those used by the Air Force, but controlled by the Defense Supply Agency and other government agencies. These total some 1,620,000 different items.*

*On the other hand, the figure in June relates only to Air Force managed items that are part of the 1,620,000 items AFLC uses. These items have a value of some $13.8 billion.*—THE EDITORS

**The Guy in Back**

I really thought the Air Force leaders had put the question of what constitutes an ace to rest. However, your comment on Col. W. B. Mills's letter indicates this may not be so.

I personally do not feel the Colonel's point was well taken as you indicated in your comments. Whether a rated crew member is riding in the front or back seat is really not an important item, at least in my opinion. It was teamwork that enabled them to become aces. If it is important to distinguish what seat the individuals were riding in, I recommend we call the individual in front GIF (Guy in Front), and the individual in back GIB (Guy in Back).

Col. James D. Suver, USAF (Ret.)
Colorado Springs, Colo.

As a former pilot GIB, I strongly disagree with Colonel Mills's oversimplification in July's "Airmail" that GIBs "were riding the back seat of two-seater fighters. . . ." GIBs, rather, played a key role in target acquisition, tracking, identification, and destruction. I am further disappointed with the editor's concurrence.

Hopefully, AIR FORCE Magazine will really set the record straight on how many of Steve Ritchie's kills were made possible through the efforts of GIBs.

Capt. Howard J. Hill
Andrews AFB, Md.

I fail to appreciate the need for Lt. Col. W. B. Mills to "set the record straight" on Vietnam aces by distinguishing Steve Ritchie as a pilot as opposed to his navigator contemporaries, Charles DeBellevue and Jeffrey Feinstein, who crewed their F-4s as weapon systems officers.

Are we to believe that these GIBs were merely "riding the back seat of two-seater fighters when they became aces" and made less significant contributions in achieving aerial kills than their pilots? Perhaps we would be wise to remember that the F-4 is a two-seat aircraft, and both individuals who crew her perform important and essential aerial duties, particularly in the fast action air combat arena. I'll wager Major Ritchie would be the first to attest to the value of a GIB in this demanding environment and does not see the need to dis-


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GENERAL ELECTRIC

# Airmail

tinguish aces by aeronautical rating. I hold that all these men share equal distinction in a job well done.

Capt. Thomas R. Coury
Seymour Johnson AFB, N. C.

• *The Air Force officially credits both the Electronics Warfare Officer and the pilot with kills, thus recognizing the importance of the GIB, without whose assistance the kill could not be made. The purpose of distinguishing between the two is to give due credit to professionals in essential and highly technical fields.*—THE EDITORS

**Viva la Difference!**

Re Capt. Kitty Taylor's letter in the July AIR FORCE Magazine, p. 11, I'll bet that whenever distaff members of your staff, and Kitty too, arrive at the sandbox door—they are totally relieved to read "Ladies" and "Men" on each, rather than just "Persons."

It's known as dilemma prevention.

Kenneth W. Wrede
Warner Robins, Ga.

**In Search of the Past**

Would like to get in touch with Captain Gossman, flight surgeon of the 740th Bomb Squadron, 455th Bomb Group, 304th Bomb Wing, Fifteenth Air Force, which was based at San Giovanni, Italy. I was a combat crewman of the 740th Bomb Squadron. Our pilot was Lt. Willie Moore, of Oklahoma.

I would appreciate hearing from anyone who can help.

Paul F. Greland
P. O. Box 8882, JFK PO
Government Center
Boston, Mass. 02114

Assistance is needed to determine the facts concerning an incident which was thought to have occurred in Italy during WW II and was supposed to have received some notoriety at that time.

A young pilot of Italian extraction (Capt. Anthony Malley?), flying a fighter plane, is supposed to have lost his life crashing into a mountain, rather than crash-land into a village and risk killing or injuring the inhabitants.

It would be greatly appreciated if someone could give me information on this matter.

Achilles P. Anton, M. D.
1148 San Bernardino Rd.
Suite B-1
Upland, Calif. 91786

A history is being written of graduates of Norwich University who served in the Air Service, Army Air Corps, Army Air Forces, Naval Aviation, Army Aviation, and the US Air Force. Former cadets from "The Hill" are urged to send information and loan photographs to

Capt. David E. Potts
AFROTC Det. 867
Norwich University
Northfield, Vt. 05663
Phone: (802) 485-8525

Writer-historian wishes to contact air and ground crews of any units that saw active duty in the Korean War to help with a book covering operations, units, and aircraft markings. Particularly need information on color schemes, nose art, etc. Please write

J. C. Scutts
20B, Kidbrooke Grove
Blackheath
London SE3 OLF, England

## UNIT REUNIONS

**Airlift Association**

The 8th annual Airlift Reunion/Convention will be held at the Aladdin Hotel in Las Vegas, Nev., October 28–31. For information contact

Brig. Gen. E. W. Gauch, Jr., USAF (Ret.)
The Airlift Association
1227-1231 North Gulfstream Ave.
Sarasota, Fla. 33577
Phone: (813) 366-5000

**Silver Wings Fraternity**

Pilots who soloed more than 25 years ago are holding a reunion/convention at the Speedway Motel, Indianapolis, Ind., October 1–3. Contact the chairman for reservations

Jane E. Roy
5216 Haverford Ave.
Indianapolis, Ind. 46220

**USAFSS**

The sixteenth annual reunion of USAF Security Service officers will take place at the Andrews AFB, Md., Officers' Club Saturday, October 9, from 1800 to 2100 hours. All officers, past and present, of USAFSS are invited with guests. For


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# Airmail

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**79th TFS**
Former members of the 79th Tactical Fighter Squadron, Woodbridge Air Base, England—a roster is being organized and a possible reunion. Contact

Homer R. Charlton, Jr.
P. O. Box R-W
APO New York 09205

**96th Bomb Group (H)**
A minireunion of the 96th Bomb Group (H) Memorial Association will be held in Dayton, Ohio, October 15–17, with other 8th Air Force units. For further information write

96th Bomb Group Memorial Association Reunion
c/o Reunion Services
Box 1304
Hallandale, Fla. 33009

**306th Bomb Group**
The 306th Bomb Group, stationed at Thurleigh, WW II, will meet in Dayton, Ohio, October 15–17, with other 8th AF units. For further information write

306th Bomb Group Reunion
c/o Reunion Services
Box 1304
Hallandale, Fla. 33009

**351st Bomb Group**
The 351st Bomb Group (H) will meet with other 8th AF units at a reunion in Dayton, Ohio, October 15–17. For further information, write

351st Bomb Group Reunion
c/o Reunion Services
Box 1304
Hallandale, Fla. 33009

**368th Fighter Group**
A reunion of the 368th Fighter Group, 9th AF, will be held October 8–11, at the Crystal City Marriott Hotel, 1999 Jefferson Davis Hwy., Arlington, Va. For details write

Joe McLachlan
2300 S. 24th Rd., Apt. 435
Arlington, Va. 22206

**391st Bomb Group**
In addition to the name given in last month's notice of the 391st Bomb Group Association's reunion, October 2–3, at Hilton Head Island, S. C., members may also contact

Robert L. Holliday
525 McNeilly Rd.
Pittsburgh, Pa. 15226
Phone: (412) 561-7620

# Airpower in the News

By Claude Witze, SENIOR EDITOR

## Walking a Tightrope

Washington, D. C., August 2

The Senate started debate today on the Fiscal 1977 defense appropriations bill, which came out of committee burdened with an amendment that would defer a decision on production of the USAF B-1 bomber until next February. The idea barely squeaked through the Appropriations Committee, 15 to 14, after having been eliminated from the earlier weapons procurement authorization bill.

This time around, it was Sen. William Proxmire, the nettlesome Democrat from Wisconsin, who proposed the delay in spending for the bomber. His proposal was like the one from Sen. John C. Culver of Iowa that was adopted, 44 to 37, and then dropped in the final version of the authorization bill that passed on July 1, 78 to 12. If those figures were walking a tightrope, as they were, the performance probably is not over. As we go to press, it is anticipated there will be no effort to remove the Proxmire amendment on the floor of the Senate. The correction, if it comes, probably will be made in conference, as it was in the case of the authorization bill.

A new factor, born since the last runaround on the Culver amendment, is the nomination of Jimmy Carter by the Democrats and the platform on which he will run for President. The candidate has expressed skepticism about the B-1, and the platform pursues the subject. It says, "No decision regarding B-1 production should be made prior to February 1977." The record is not at hand, but it may be the first time a party platform has tried to influence a decision before the party won an election. The B-1 clause is not a promise to do something if we win; it is an effort to do something before the votes are cast. The tone of the Democratic platform is clear; it belabors the defense industry.

"Misdirected efforts such as the construction of pork-barrel projects under the jurisdiction of the Defense Department can be terminated," the platform says. "Exotic arms systems which serve no defense or foreign policy purpose should not be initiated." The pork-barrel reference presumably does not point at the $1.1 billion added . . . to the Fiscal 1977 defense authorization for weaponry not requested by the Pentagon.

Here is a clue to the real peril at the moment. It is that some of the wackiness accompanying a presidential campaign will have an impact on pending decisions that are vital to national security. We have a Congress highly apprehensive about the alleged usurpation of its powers by the White House; the same Congress now threatens to delay a decision it should make, on B-1 bomber production, and force the White House to make that decision next February.

We have a Congress that is screaming for economy in defense expenditures and not for economy in social programs; the same Congress is trying to impede the Administration in its efforts to cut down on nonessential military bases. We have some members of Congress, staunch supporters of the Israeli cause, who cheered our military forces in 1973 when they seriously depleted the US arsenal to supply weapons, ammunition, and vehicles for use in the war against the Arabs; some of the same members of Congress now are assailing the Pentagon because

*Defense Secretary Rumsfeld called the committee vote on B-1 "unsound."*

the General Accounting Office has detected shortages of equipment and ammunition. The list goes on.

There are side situations that are almost funny. We have at hand a circular from an operation called In the Public Interest (IPI), which calls itself "the voice of the Fund for Peace." IPI's message, over the signature of Edward P. Morgan, is that right-wing propagandists dominate the nation's airways, filling them, Mr. Morgan says, with "a constant barrage of hate, bigotry, and outrageous misinformation." To offset this, he says his IPI has a battery of prominent speakers who stand ready to spread a more liberal word on defense issues, as prepared by The Center for Defense Information, the Center for National Security Studies, and the Institute for International Policy.

All three of these outfits are listed in the District of Columbia telephone directory at the same address: 122 Maryland Ave. N. E. It is the home of Stewart Mott's multifaced pacifist operations and the base of operations for Gene LaRocque, the retired admiral now in the forefront of the disarmament drive.

Edward P. Morgan, in his plea for tax-deductible gifts to "help maintain and extend IPI's audience" lists some eminent gentlemen who

# Airpower in the News

are spokesmen for IPI. Two of them are Sen. Walter Mondale, now the Democratic vice presidential nominee, and, side-by-side at the IPI microphone, Sen. Richard Schweiker, named by Ronald Reagan the other day as his vice presidential choice. Liberalism these days makes strange bedfellows.

The Senate Appropriations Committee vote to delay the bomber decision brought a fast reply from Defense Secretary Donald H. Rumsfeld. He said it was "unsound," announcing at the same time that President Ford will submit requests for an additional sum, possibly $3.8 billion for Fiscal 1977. This would cover some items stricken by Congress and the $1.1 billion needed to pay for things like an attack submarine and six A-6E airplanes never requested by the White House.

In a press conference on July 21, the Secretary was blunt. At the moment, he was upset by Capitol Hill insistence that Congress get detailed justification for the closing of military bases, where the action would have an impact on the local economy.

"From a management standpoint, it makes no sense to retain military installations which are not needed," Mr. Rumsfeld said. "Over the past several years, the Defense Department has saved for the taxpayers of this country over $5 billion by reducing or eliminating low-priority functions. Base alignments and closures, where necessary, have been a key element of those savings. . . .

"If allowed to become law, the bill as it stands would delay closures and realignments of bases that we have already announced for study earlier this year. It would force us to waste approximately $150 million annually, money that would well be used to further our military strength.

"I would hope that all of those in public life who have been out clamoring to cut waste in the defense establishment, and all those who subscribed to the recent Democratic platform which discusses this subject in urging $5 to $7 billion worth of savings in the defense budget through better management and greater efficiencies, would participate in preventing Congress from inhibiting us from making these kinds of savings."

Among the subscribers to the Democratic platform, and in the forefront of the effort to switch dollars from defense to social programs, is Hubert Humphrey, the distinguished Senator from Minnesota. Mr. Humphrey also is a prominent Democrat, and it is a year in which he finds possible benefit in deprecating our military readiness, while deploring military expenditures. Twice in July, Senator Humphrey issued press releases suggesting that the Army, in particular, was failing on its mission in Europe.

The headlines were startling: "U. S. Army Found Weak in Europe"—"U. S. Army in Europe Faulted by Humphrey"—"U. S. NATO Force Called Unready." The Senator's language was strong enough to support the headlines. He declared that "the readiness of first-line U. S. combat armored units in Europe is woefully deficient and far below what it ought to be in view of the nation's key role in NATO and the huge sums being spent for mutual defense purposes in the European area."

Mr. Humphrey went on to cite a recent GAO report that was critical of the Army, but not as critical as he portrayed it. The GAO, for example, did not say there were woeful deficiencies. Mr. Humphrey did. He said it from the viewpoint of a Democratic Senate leader, chairman of the Joint Economic Committee and chairman of the Subcommittee on Foreign Assistance of the Senate Foreign Relations Committee. Mr. Humphrey is not a member of the Senate Armed Services Committee. The latter committee is the one with true responsibility in the area of our European readiness. Here is what the Armed Services Committee said on the subject in its report on authorization for Fiscal 1976:

"The committee is concerned about the serious drain on the inventories of US forces caused by the transfer of major equipments to other nations through the Foreign Military Sales program, since these transfers obviously reduce the combat readiness of our forces to some degree and delay planned force modernization. The Army, for example, has estimated that its shortfalls from foreign sales will not be made up until the end of Fiscal 1978."

The GAO report used by Mr. Humphrey was based on a study made between December 1974 and March 1975. Only two Army units in Europe were examined, eighteen months ago. They were the 2d Armored Cavalry Regiment and the 2d Brigade of the 1st Armored Division. The deficiencies were there at that time. Army Secretary Martin Hoffmann admitted this in his response to the Humphrey blast, but accused the Senator of using material "selectively taken" from the GAO study and ignoring the fact that it was outdated. The GAO has, in fact, looked at the situation again and found "marked progress."

Mr. Hoffmann made no secret of the fact that the war in Vietnam and the aid extended to Israel—both supported at one time or another by Hubert Humphrey—were mainly responsible for the equipment situation. So far as personnel is concerned, he insisted the situation in Europe has been "dramatically improved" since the GAO inspection of eighteen months ago. The readiness of our forces, the Secretary said, is "far from woefully inadequate." He also pointed to the Pentagon's budget appeals and said the requests submitted have reflected the Army's concern with the problem. At the end of Fiscal 1975, for example, Congress was told that the Army had in stock only fifty-one percent of the dollar value of equipment needed for the total force. There are some areas in which that figure still holds. There is a shortage of tanks that runs into the thousands and, until recently, we were producing only 360 a year. It is a pace set by congressional action.

Mr. Humphrey has indicated he wants the Senate Foreign Relations Committee to conduct hearings on the subject, calling the Secretary of Defense, the Chairman of the Joint Chiefs, and the Army Chief of Staff to testify. It is unlikely this can be arranged to his satisfaction before the fall election, if at all.

The Humphrey outburst probably takes its inspiration from the new Democratic platform. It is a lengthy document with something for almost every special interest. The

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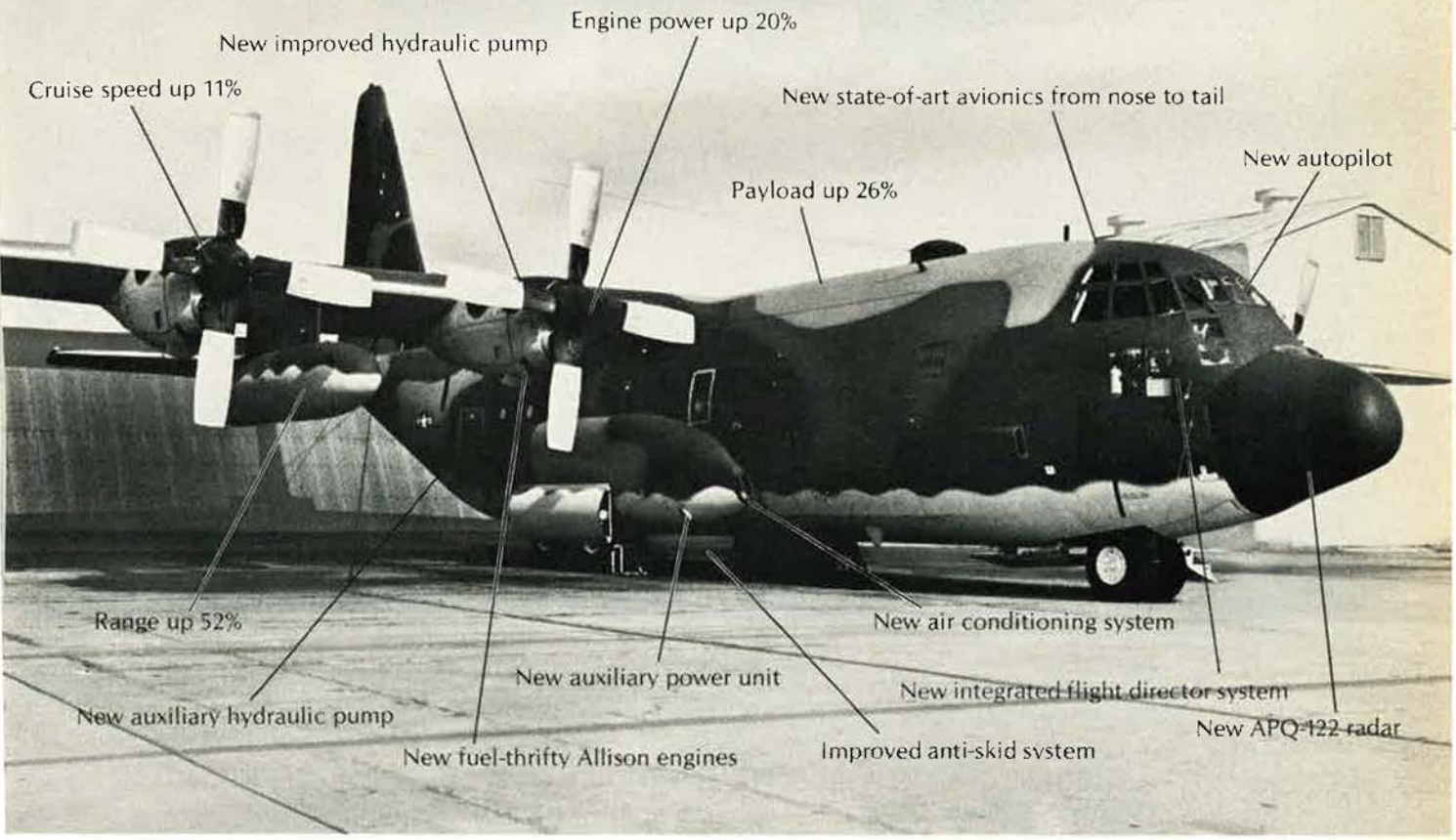


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# Airpower in the News

section on defense policy says the US must carefully assess its military responsibilities and be able "to fight successfully, if necessary, conventional wars in areas in which our national security is threatened." It lists other requirements and then says "the hallmarks of the Nixon-Ford Administration's defense policy, however, have been stagnation and vulnerability."

Then:

"By its reluctance to make changes in those features of our armed forces which were designed to deal with the problems of the past, the [Nixon-Ford] Administration has not only squandered defense dollars, but also neglected making improvements which are needed to increase our forces' fighting effectiveness and their capability to deter future aggression."

If defense is to be an issue in the election campaign, this paragraph would be a fine one on which to focus the debate. For certain, the role of Congress, as well as the White House and Pentagon, would have to be examined. ■

# The Wayward Press

It is summertime of a presidential election year and the political reporters don't seem to be doing any better than they did four and eight years ago. Bob Schieffer, CBS's man at the White House, who used to cover the Pentagon beat, says "every bit of conventional wisdom we've had about politics this year has turned out to be wrong." The sidebars to the campaign story seem concerned only with the seamy business of keyhole reporting, in which few of us have any burning interest. Much of the material is unimportant, if it is not inaccurate. There have, of course, been no sex scandal stories about the private lives of newsmen.

In this void, it is good to turn to books. A few are worth attention, as the shelves get heavier with critiques of press performance. If you like to read about it, look on the bookstalls for:

• *The New Muckrakers,* by Leonard Downie, Jr., published by The New Republic Book Co. ($10). This is one of the good ones. Downie is a reporter on the Washington *Post,* but that should not be held against him. His book is so objective, it is almost enough to make "The Wayward Press" stop using quotation marks, as we always do, fore and aft, on "investigative reporter." Downie's first chapter is about Woodward & Bernstein, of course, and it is the best account of their Watergate adventure in print. To read it, you wouldn't know Downie was more than an observer in the newsroom. His detailed story of how the team did it is more accurate and believable than the film version, now so popular at the box office.

Possibly even more revealing is Downie's exposition of how Seymour Hersh, the "Scoop Artist," works. Hersh is the man credited with uncovering the My Lai massacre story, when he didn't even have a job on a newspaper. The author makes it clear that Hersh is, at times, rude, obnoxious, and not entirely truthful in facing his sources. He also is an admitted advocate journalist, and Downie's chapter on Hersh will be textbook material for the new wave of youngsters who think advocacy is what should be taught in a school of journalism.

There are other chapters on other competent "investigative reporters," some of them less well known. Jack Anderson and Izzy Stone are included. The Anderson story is well done, with most of the warts exposed and no glossing over of his irresponsible performances. We missed mention, however, of the fact that he once bugged Bernard Goldfine's room in the Carlton Hotel.

• *The Good Guys, The Bad Guys, and The First Amendment,* by Fred W. Friendly, published by Random House ($10). This is a thorough examination of the conflict between the First Amendment and the Fairness Doctrine, written by a devoted friend of the radio and television world; indeed, Fred Friendly ranks as a guru in that fraternity. As such, he shudders in the "chilling effect" of government regulations that seek, without too much success, to ensure balance on the air waves, which belong to the public and not to the broadcasters. Friendly examines cases in great detail and his account is interesting, if biased.

We were disappointed that he devoted so little space, only a couple of pages, to the 1971 CBS outrage called "The Selling of the Pentagon." He says there were "minor errors of fact." The truth is, there were gross and deliberate distortions. Friendly does admit, to his credit, that the network never was cited for contempt of Congress in the resulting investigation because of "last-minute corporate strategy in which virtually every CBS affiliate put pressure on its local congressmen." That is true; it should be added that nobody in the press, so sensitive to the sources of pressure on congressmen when other issues are involved, ever chided CBS for winning that way.

• *The Messenger's Motives,* by John L. Hulteng, published by Prentice-Hall ($8.95). This one is subtitled: "Ethical Problems of the News Media." Mr. Hulteng is Dean of the School of Journalism at the University of Oregon and about thirty years ago was a colleague of this reporter's on the Providence (R. I.) *Journal.* His book is an excellent and cool-headed discussion of newspaper ethics that is certain to become a text in good schools of journalism.

Hulteng is no apologist, like Fred Friendly. He is a teacher. Any serious newspaper reader will profit from his discussion. It includes dozens of examples of what we call newspaper malpractice, and Hulteng pulls no punches. He says *Time,* the weekly newsmagazine, "bends the journalistic ethic out of recognizable shape" when it reports on politics. He reports that of fifty newspapers that ran Jack Anderson's erroneous story about Senator Eagleton's drunk-driving record on page one, only fifteen printed the correction on the same page. No matter what your gripe has been against your favorite daily, Dean Hulteng examines it, clinically.

• *The Unseeing Eye,* by Thomas E. Patterson and Robert D. McClure, published by G. P. Putnam's Sons ($7.95). The subtitle in this case is "The Myth of Television Power in National Politics." This is a short book, and not easy to read. The authors are professors at Syracuse University, who got their basic support from a grant by the National Science Foundation. They studied the 1972 election and concluded that every prevailing assumption about the power of television is incorrect.

A fascinating part is the foreword, written by Warren Weaver, Jr., a political reporter for the New York *Times.* Weaver confesses that he "covered" the 1972 campaign by watching television broadcasts. He was shocked to learn from Patterson and McClure that everything he did that year was wrong. But, as a newspaperman, Weaver is not to be put down. He finds it "comforting, however, to learn here that regular readers of newspapers during the campaign became a good deal better informed as it progressed than regular television viewers who did not read the papers."

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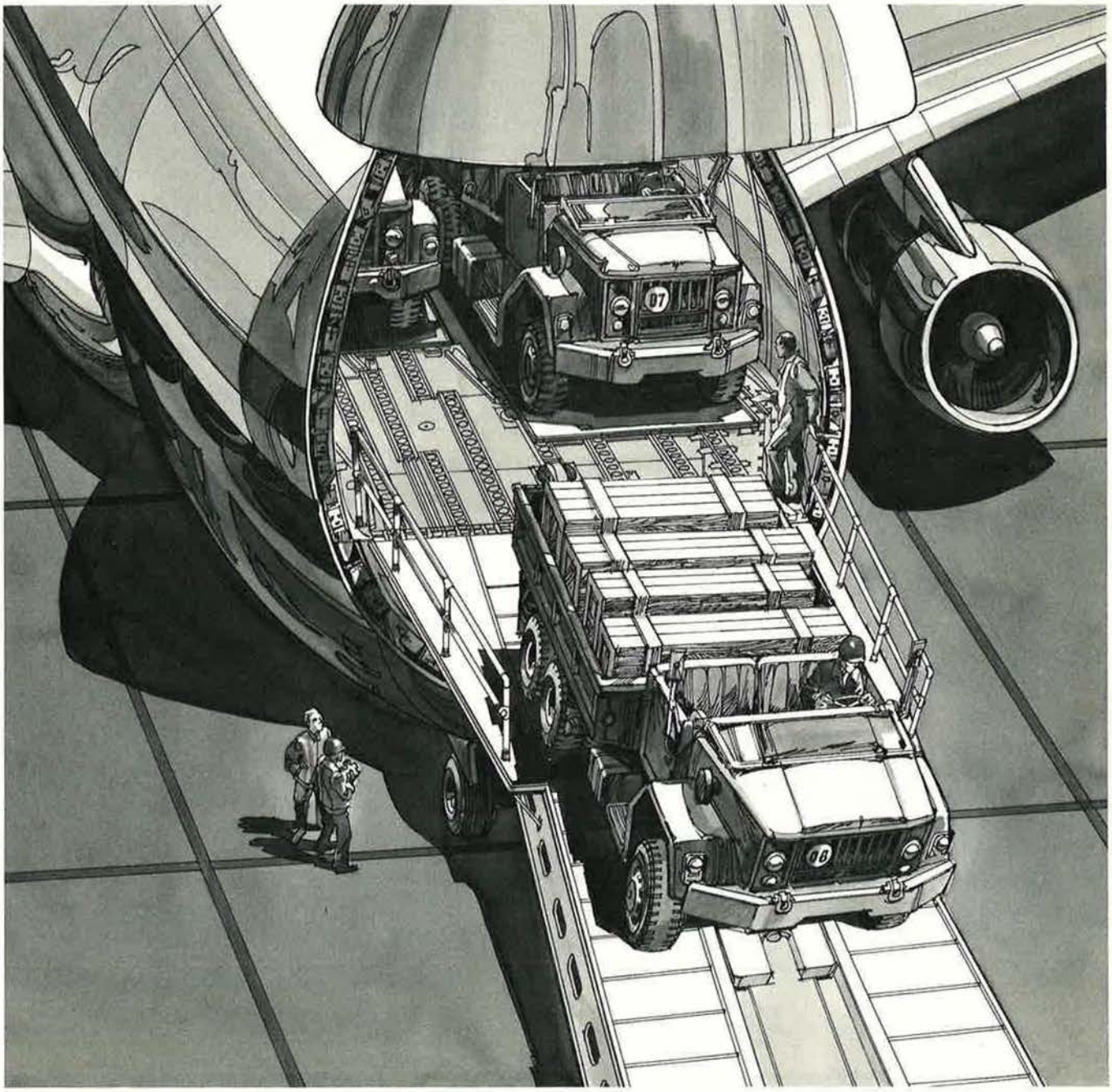


# Aerospace World News, Views & Comments

By William P. Schlitz, ASSISTANT MANAGING EDITOR

Washington, D. C., August 9

★ The Soviet Union added some heavy muscle to its blue-water Navy with the addition of its first full-fledged aircraft carrier—the *Kiev*—in mid-July.

The 40,000-ton giant, nearly 900 feet (274 m) long, entered the Mediterranean from the Black Sea, where it had been conducting sea trials following its initial shakedown.

The *Kiev* reportedly can operate either twenty-five V/STOLs of the new Yak-36 type similar to the British Harrier (USMC's AV-8A) or thirty-five to forty helicopters. It will probably carry a mix of both, experts believe.

While *Kiev* has no steam catapults or arresting gear, it is equipped forward with an arsenal of antiaircraft and ASW missilery.

The Soviet carrier entered the Mediterranean despite strong protests from the West that under long-standing treaty provisions no ships possessing offensive armaments could pass through the Bosporus.

Besides another *Kiev*-class carrier currently being built, the Soviet Navy also has two *Moskva*-class helicopter carriers displacing some 15,000 tons. Yet another big carrier is believed under construction in the Leningrad area.

The *Kiev,* after steaming through the Med, headed north to join the Soviet Northern Fleet.

★ The most extensive multinational aircraft production arrangement in history took another major step forward in July.

Prime contractor General Dynamics Corp., developer of the F-16 Air Combat Fighter, reached agreement with a number of European companies on the shared production and sale of the aircraft.

As terms previously stipulated, the four participating European countries are to produce forty percent of the value of the F-16s procured for their own air forces, ten percent of that for F-16s produced for USAF, and fifteen percent of the value of those ordered by other countries.

Under the agreement, Denmark's Per Udsen Co. will furnish vertical fin box assemblies and fuel and weapon pylons to the three assembly lines, one each in the US, Belgium, and the Netherlands.

Another Danish firm, Standard Electric, will produce flight control system components. Denmark will order up to fifty-eight F-16s.

Belgium's Fairey, S. A., will assemble F-16 fuselages, as well as fabricate parts for the high-performance fighter's vertical stabilizers. The Belgian Air Force is to receive 116 F-16s.

In the Netherlands, Fokker-VFW B. V. will manufacture major fuselage and wing components and assemble 102 F-16s for the Royal Netherlands Air Force and seventy-two for the Royal Norwegian Air Force.

In addition, Norway's Kongsberg Vapenfabrikk has agreed to pro-

—WIDE WORLD PHOTOS

*The Kiev—the Soviet Union's first full-fledged aircraft carrier—passes under the Bosporus Bridge on its way to the Mediterranean. The 40,000-ton vessel later joined the Soviet Navy's Northern Fleet. (See item above.)*


*The YC-14—Boeing's contender in the USAF short-field transport program—began taxi tests in July. The plane, powered by two CF6-50 engines, is designed for operation on primitive runways while hauling a wide variety of outsized cargo, including heavy Army ground-combat equipment.*

duce fan-drive turbine modules for the F-16, which is powered by a Pratt & Whitney engine.

For its part, USAF has announced its intention to acquire at least 650 of the single-engine fighters, and other countries have indicated interest in F-16 procurement, General Dynamics said.

★ The US is in the preliminary stages of planning another trip to the moon, this time an unmanned mission scheduled for 1980.

Launched together to make the journey would be an instrumented polar-orbiting vehicle and a smaller subsatellite.

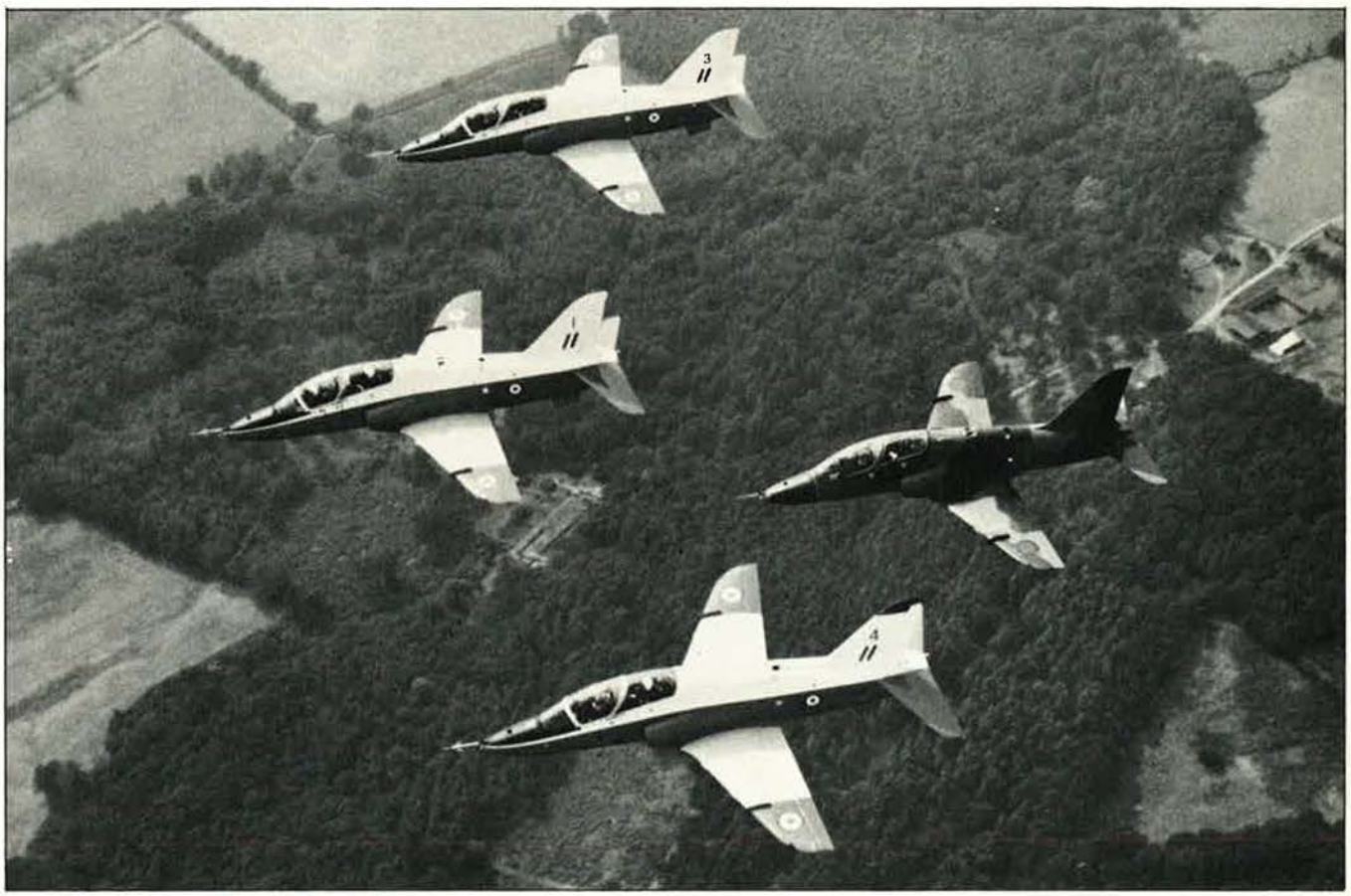
According to NASA, the craft would orbit the moon for a year and expand greatly the knowledge about the surface derived from other manned and unmanned lunar visits. In fact, the mission would constitute the first global survey of a body other than earth, NASA said.

From data received, scientists would be able to measure the sphere's gravity, magnetism, heat flow, and the chemical and mineral composition of the lunar surface.

Some questions that might be answered:

- Were the earth and moon formed from a common source?
- Is the moon core rich in iron like earth? If not, from what stems the magnetism found in lunar rocks?
- Is the moon core molten and in movement like earth's?
- What resources—particularly water—might be available to support a base on the moon?

NASA has assigned a team of



*The RAF is expecting first deliveries of the Hawk ground attack/trainer in October. The Hawker Siddeley aircraft is capable of toting 5,000 pounds (2,270 kg) of ordnance on its five pylons. RAF has on order a total of 175 Hawks.*

# Aerospace World

some seventy scientists from universities and institutions around the country to eight different fields of investigation to prepare the experiments for the lunar trip, the first US mission to the moon since Apollo-17 in 1972.

★ In early July, NASA issued its long-awaited call for Space Shuttle astronaut candidates, with applications to be accepted through June 1977.

Qualified women and minorities are encouraged to apply, the space agency said.

NASA is looking for a minimum of fifteen pilot candidates and fifteen mission specialist prospects for a two-year training program to begin in July 1978 at the Johnson Space Center, Houston, Tex.

Pilots who apply must have a bachelor's degree in engineering, physical science, or mathematics, and at least 1,000 hours' flight time as first pilot. Flight-test and jet experience are highly desired, NASA said.

Other than the pilot rating, qualifications for mission specialists are the same except that biological science degrees are included.

If interested, write the Astronaut Candidate Program, Code AHX, NASA Johnson Space Center, Houston, Tex. 77058.

Military personnel should apply under directives to be issued by DoD later this year.

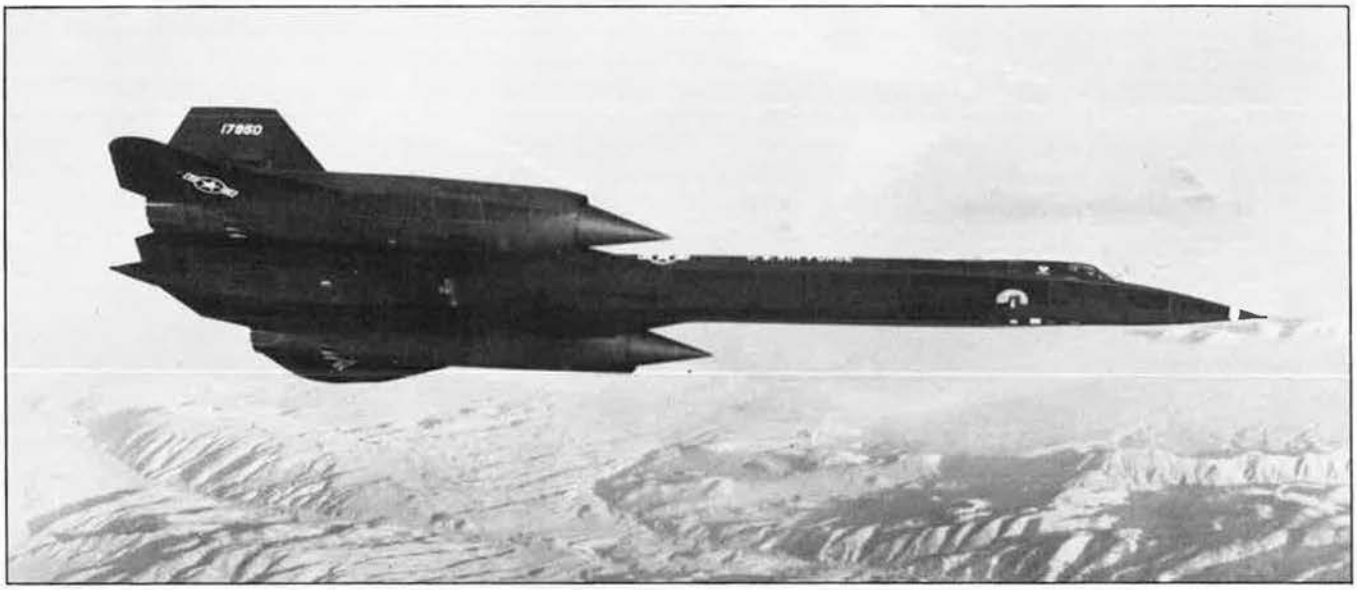
Shuttle crews may number as many as seven persons—commander, pilot, mission specialist, and up to four payload specialists, these last depending on the sponsor of the payload being flown. *(For a status report on the Space Shuttle program, see p. 98.)*

*Development of the Space Shuttle moves forward as wind-tunnel tests determine heat distribution on model's surface. For details on the manned spaceflight program, see adjacent items and article beginning on p. 98.*

★ In planning for Space Shuttle operations to come, NASA is looking far into the future.

With most of the space work to date concerned with scientific and exploratory activities, a swing is now being made toward "space industrialization." NASA defines this broad concept as space activities undertaken primarily for the production of goods and services of major economic benefit.

To this end, Marshall Space Flight Center, Huntsville, Ala., ex-



*In late July, SR-71s like the one above broke six flight records, including two previously held by a Soviet MiG-25 Foxbat. The new altitude record established by the SR-71 is a way-out 85,000-plus feet. (See p. 29.)*

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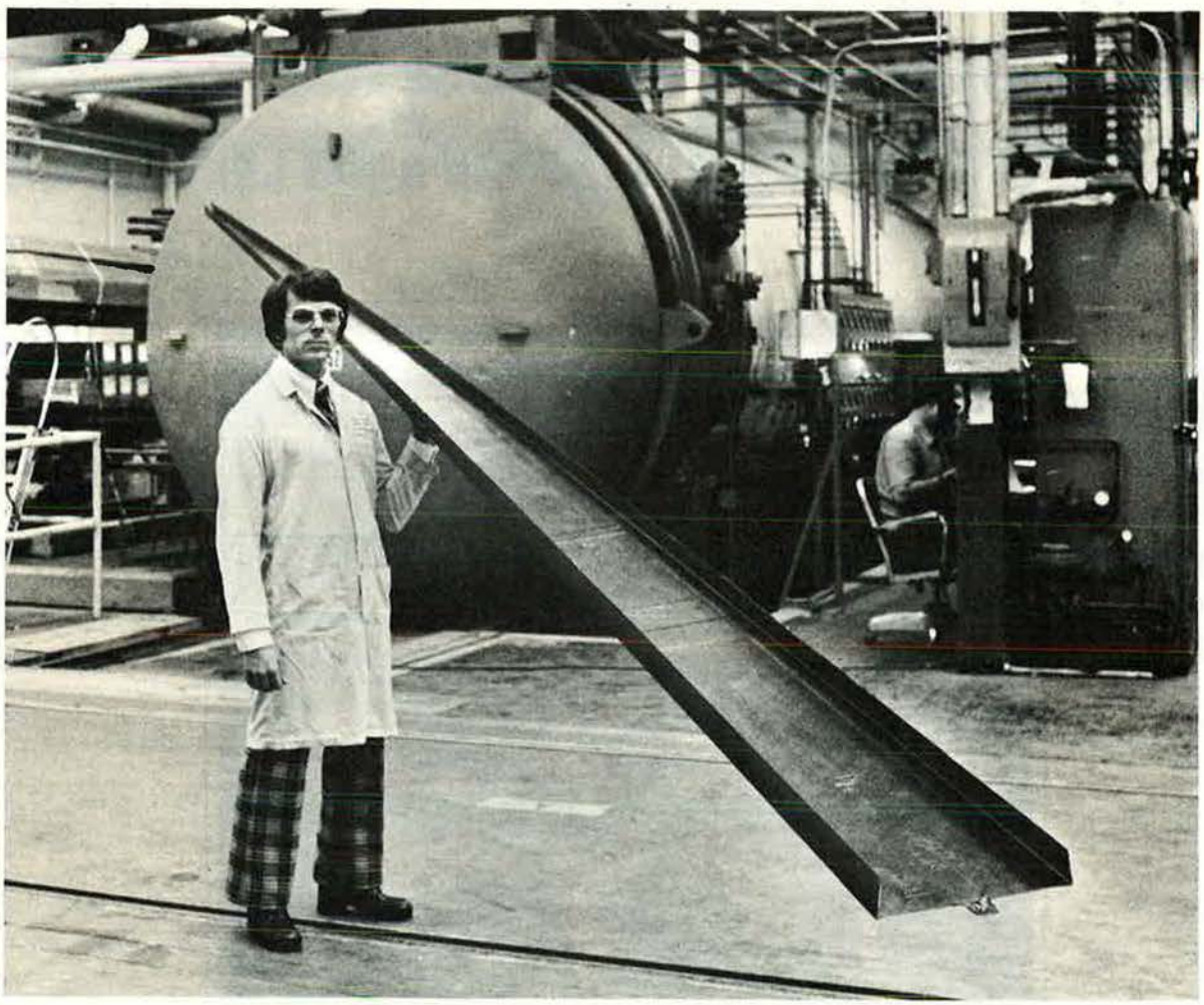

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# Aerospace World

pects to sponsor two parallel studies that will accomplish the necessary spadework toward the evolution of a space industrialization effort from 1980—when the Shuttle is to begin orbital flights—to 2010.

According to NASA, the studies will be conducted by an aerospace firm and a "think-tank" research company. Contracts are to be awarded later in the year.

Likely areas of investigation include electrical power generation, and manufacturing techniques that utilize the weightlessness of space. Farther down the line may be the production of new materials, chemicals, and medicines, new weather services and communications, and the further development of earth resources. Two other interesting prospects: space tourism and colonization of the moon.

*USAF Capt. Jerrold C. Ulven, of the 36th TFS, Osan AB, Korea, and son James enjoy Bicentennial activities during the base's three-day Independence Day celebration.*

★ In late July, SR-71s of the 9th Strategic Reconnaissance Wing, Beale AFB, Calif., broke six world speed and altitude records.

The world absolute and world class straight-flight record of 2,070 mph (3,331 km/hr), set by the YF-12A in 1965, was bettered when pilot Capt. Eldon W. Joersz and Reconnaissance Systems Officer Maj. George T. Morgan, Jr., hit 2,200 mph (3,540 km/hr), on July 28.

The same day, the YF-12A's altitude record of 80,257 feet (24,462 m) was shattered when a Lockheed SR-71 flown by pilot Capt. Robert C. Helt and RSO Maj. Larry A. Elliott reached 85,100 feet (25,938 m), thereby setting new world absolute and class records for altitude in horizontal flight.

## League of Families Facing Its Most Serious Crisis

The National League of Families is awaiting with trepidation a congressional report that could mean an end to the organization and its pursuit of a major goal—an accounting of those still listed MIA in Southeast Asia.

The report is not expected before early next year. The House Select Committee on Missing Persons in Southeast Asia, created this time last year for a twelve-month investigation of the MIA issue, in early August was extended until January in order to finalize its report.

The fear is that the report is apt to be negative on the likelihood of any MIA Americans still being alive in SEA and on the usefulness of the select committee studying the matter further. Committee Chairman Rep. G. V. "Sonny" Montgomery (D-Miss.) told League members that the committee turned up no hard evidence of Americans being held captive in SEA and, in effect, that the committee has gone as far as it can. "This does not mean that the nation should not continue to press for a factual accounting and repatriation of remains," he said.

Once the committee is dissolved, it is probable that the Defense Secretaries will resume status changes to "presumed killed in action" of the 800 remaining men listed as MIA.

On the other hand, if the committee can be maintained in being, a formal body will exist within the government to keep the MIA issue alive and help influence whatever Administration is elected in November.

There is another important factor, League officials point out. According to treaty provisions, the Vietnamese are charged with accounting only for those Americans officially listed as MIA; with each change in status, Vietnamese responsibility is that much less.

In regard to the Vietnamese, League members have long been frustrated over the lack of progress in negotiations. (They are also realistically aware that chances for any bargaining at all are nonexistent until after the US elections.) But in a blisteringly worded resolution passed at the League's seventh annual convention in July, the League demanded the replacement of Secretary of State Henry Kissinger with someone who would give the MIA situation top priority.

Also at the July convention, attended by some 500 members, the League shored up its tottering finances by creation of the "Century Club"—members who pledged to contribute $1,000 during the next year. League officials stressed that contributions of any size from individuals and groups continue to be essential to the League's survival.

During a convention business session, members elected Carol Bates, a non-MIA/POW family member who as a concerned citizen served with VIVA for five years, to follow Earl Hopper as League Executive Director.

Although beset by financial and other problems that threaten the League's existence, members seem as determined as ever—as mirrored by the lack of erosion in the group's membership rolls.

* * *

In a related matter, Air Force Col. William M. Hubbell has assumed command of the Joint Casualty Resolution Center, headquartered at Barbers Point NAS, Hawaii. He previously served as Deputy Commander.

Colonel Hubbell was assigned to the 8th Tactical Fighter Wing—the "Wolf Pack"—at Ubon RTAFB, Thailand, during 1966, from which he flew more than 100 missions over North Vietnam in F-4 Phantoms. He knew personally a number of the men now listed MIA.

The JCRC has been in existence since 1973 to assist in resolving the status of the missing and killed in the Southeast Asia conflict.

Since the fall of Laos, Cambodia, and South Vietnam in 1975, the JCRC has been refining its documentation and is on standby should an agreement be arrived at for the resumption of search and recovery activities.

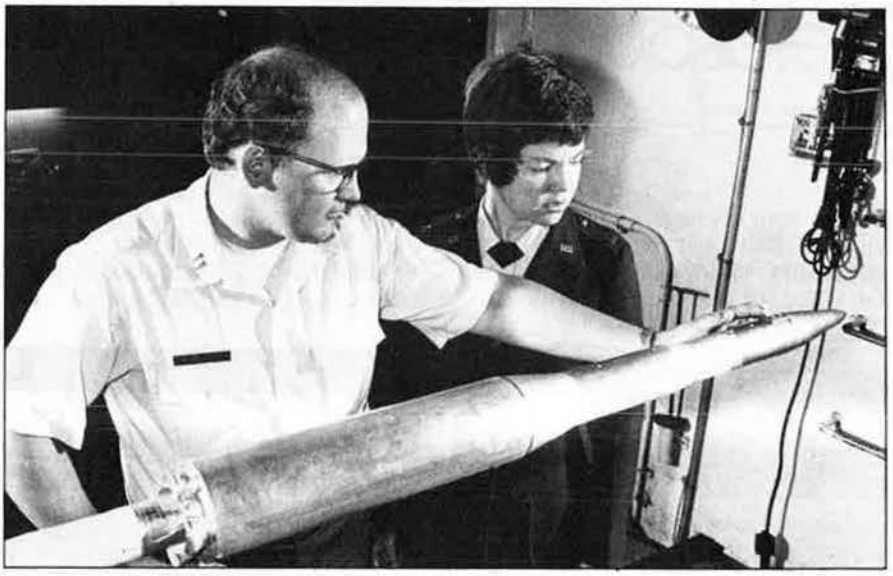
# Aerospace World

Maj. Adolphus H. Bledsoe, pilot, and Maj. John T. Fuller, RSO, on July 27 set world absolute and class records for a closed circuit flight at 2,086 mph (3,356 km/hr). The previous records of 1,853 mph (2,982 km/hr) and 1,815 mph (2,921 km/hr) were set by a Soviet MiG-25 Foxbat in 1967.

The new records await official approval of the Fédération Aéronautique Internationale.

★ Air Force B-52s have begun flying sea reconnaissance/surveillance missions in support of the Navy's Atlantic Command.

The new role for SAC's bombers is in accordance with the September 1975 agreement between the Navy and USAF that spelled out guidelines for Air Force support in sea control operations.



*At AFSC's Arnold Engineering Development Center is 2d Lt. Kathleen C. Gaines—the first female USAF engineer occupied in test monitoring at AEDC. Here, she and Capt. Tom Burleson, an AEDC test director, examine a modified Minuteman model. An engineering graduate of the University of Illinois, Lieutenant Gaines is married to Air Force 2d Lt. James W. Gaines.*

Thus far, USAF participation in safeguarding the sea-lanes is limited. According to DoD, "Only a few aircraft will be involved in these flights, which will occur from time to time over various Atlantic Ocean areas of operation."

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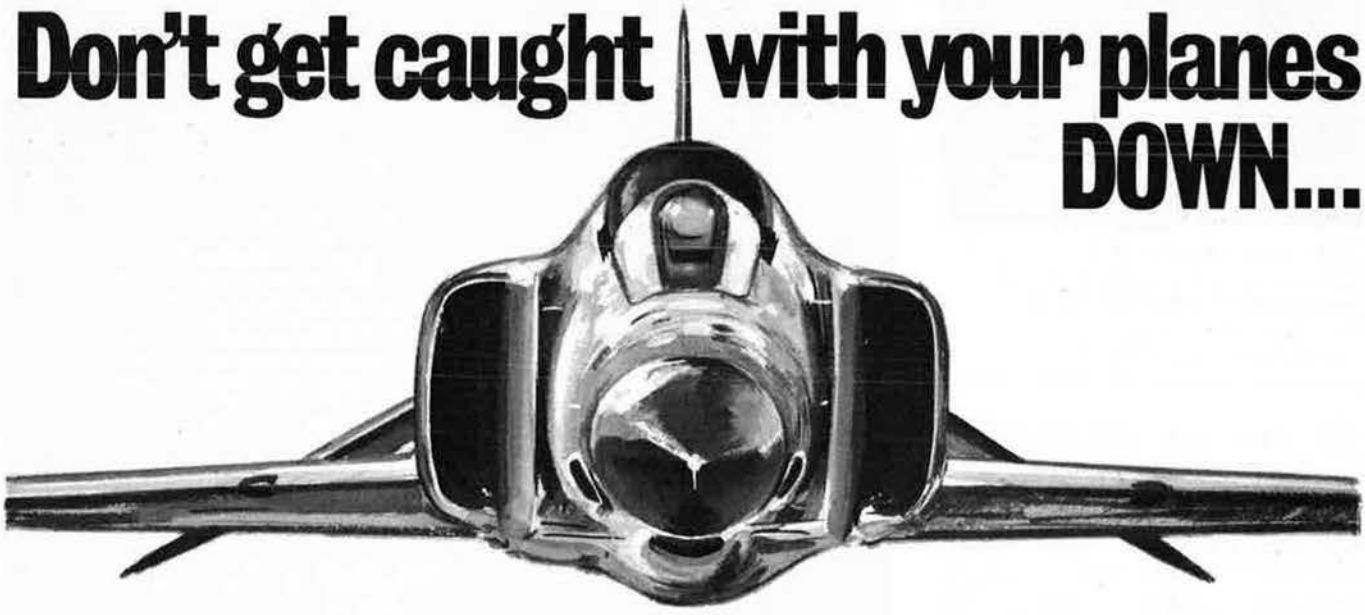

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And a conversion to the UH-1N from the mission proven UH-1F carries the added advantages of training standardization for pilots and maintenance crews and reduced logistics impact because of inventory commonality.

Whether it's escorting a missile convoy, delivering critical supplies and personnel, or carrying out a search and rescue mission day or night, even in marginal weather, the doubly dependable Bell UH-1N will be on the job.

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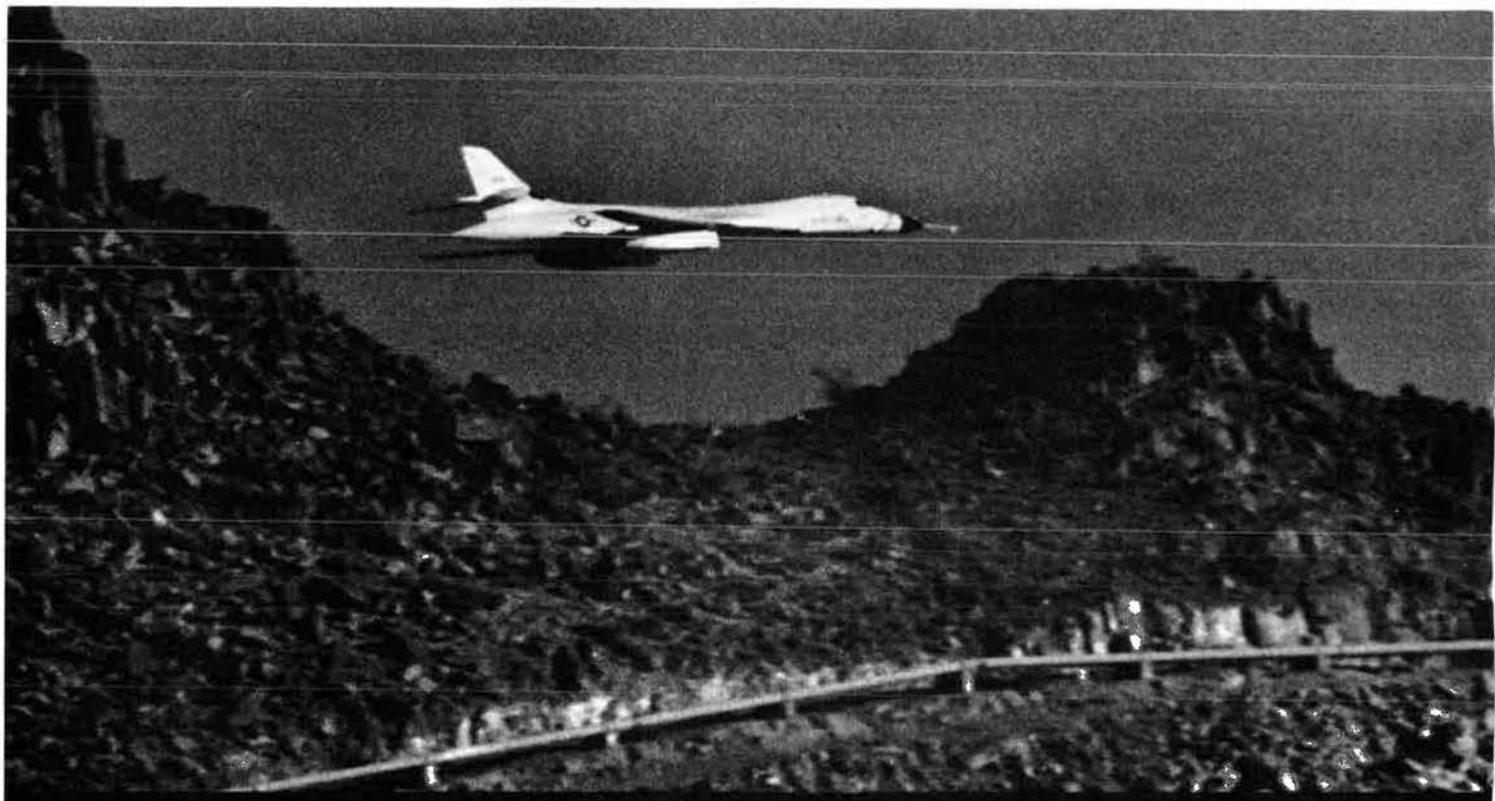

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The B-1's ability to follow the natural terrain at tree top heights, through valleys, zipping just over hills, at just under the speed of sound will make it almost invisible to radar detection.

The most important thing the B-1 has in common with the B-52 is that both have man in the cockpit. Man doesn't have to be programmed. He can respond to unusual situations. And in the age of nuclear weapons, the manned bomber can be recalled. A missile, once launched, cannot. (Some have called the manned bomber the "safest" strategic weapon because it allows time to negotiate even while on its way to a target.)

America can get an airplane designed to serve well into the 21st century. A supersonic "Insurance Policy" for this and future generations.

If we have the B-1, waiting to retaliate, an aggressor will think long and hard before attacking the U.S. And that deterrence—along with land-based and sea-based missiles—is the primary mission of the B-1.

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# Aerospace World

sources to their utmost, however, and DoD's increasing emphasis on total force, maritime surveillance by Air Force aircraft can be expected to expand. *(For TAC operations in sea surveillance, see March 1975 issue, p. 31.)*

Aside from reconnaissance, other specific collateral functions for the Air Force in what has been the Navy's domain have already been agreed to. They include such wartime activities as the interdiction of enemy shipping; ASW and protection for shipping; and aerial minelaying, among others.

The agreement avoids even a hint of one service poaching in the other's roles and mission areas and notes that since the supplemental Air Force resources may not always be available "that a primary organic Navy capability must be maintained."

★ The US Navy is in the midst of a program to develop a "B" version of its V/STOL AV-8 Harrier light attack aircraft.

The aim is to about double the British-built aircraft's performance and provide operational aircraft for the Marine Corps inventory by the early 1980s.

According to USN, this would be accomplished "primarily because of aerodynamic improvements in the wing and intake areas, the addition of life improvement devices, the incorporation of improved electronics, including an angular rate bombing system, and various reliability and maintainability changes."

The B is to be developed both in the US and UK, with modification of several A versions. If approved for full-scale development following validation, the Bs would be produced by McDonnell Douglas Corp., St. Louis, Mo., and Hawker Siddeley, Ltd., of the UK, as principal subcontractor, USN said.

Great Britain is already developing a version of the Harrier—Sea Harrier—for the Royal Navy, and the US and UK plan to cooperate in an exchange of technical information.

USMC is currently operating 110 AV-8As in the air-support role and as trainers; if the go-ahead is given, several hundred Bs will be built, USN confirmed.

★ The Navy is well along in its program to develop an aircraft configured specifically to resupply aircraft carriers at sea *(see photo)*.

Undergoing flight tests has been the US-3A, a modified Lockheed

# Index to Advertisers

# Aerospace World

S-3A Viking ASW aircraft. With a crew of two, the US-3A can carry six passengers and cargo of 4,600 pounds (2,086 kg) or an all-cargo load of 7,500 pounds (3,400 kg). Additionally, the plane can be equipped with a cargo pod under each wing, with a combined capacity of 2,000 pounds (906 kg).

On conclusion of the flight test program, the Navy will conduct carrier suitability tests and preliminary evaluation prior to survey trials scheduled for October.

The US-3A has a range in excess of 2,900 nm (5,360 km). It has an air-to-air refueling capability and can be equipped with auxiliary wing tanks.

The Navy originally requested funds in the FY '77 budget to purchase twelve US-3As, but Congress pared the authorization to six at a total of $104.1 million.

★ Yet another attempt to cross the Atlantic by hot-air balloon ended in near-tragedy late in June.

A major search of the North At-


*Prototype of the Lockheed US-3A, the cargo and passenger transport derivative of the Navy's S-3A ASW aircraft, designed to supply carriers at sea. (See adjacent item.)*


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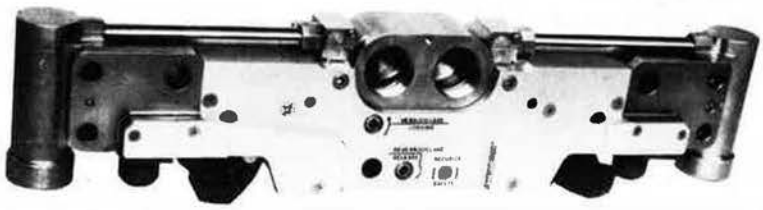

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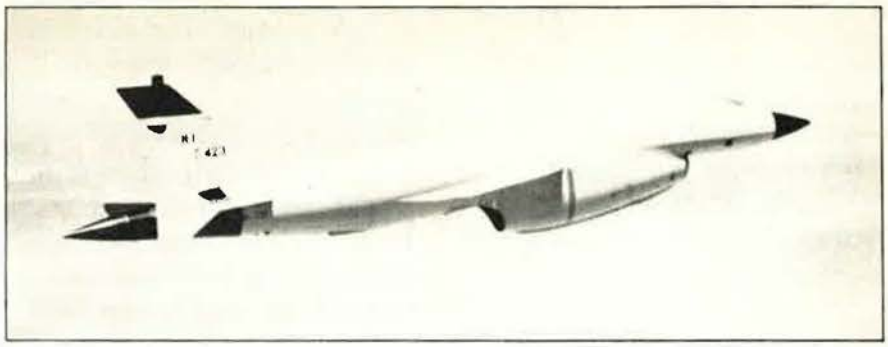

*Test flight of the new AQM-34V at Hill AFB, Utah. Built by Teledyne Ryan Aeronautical, the uprated RPV will undergo operational evaluation by TAC beginning this autumn.*

lantic was just getting under way when word came from the Soviet salvage tug *Dekabrisk* that it had rescued Karl Thomas from the ocean some 360 miles (579 km) north-northeast of Bermuda.

The German-born balloonist had taken off from Lakehurst, N. J., in "The Spirit of '76," a ten-story-high balloon, on June 25. A search had been requested when Thomas was not heard from for seventy-two hours.

Thomas ditched in the ocean when a storm wrecked his craft. He was injured but was in satisfactory condition, after spending four days in a raft without food or water before being picked up.

★ **NEWS NOTES**—ADC will sponsor **William Tell '76,** a Bicentennial **weapons meet** at Tyndall AFB, Fla., October 31 through November 21. Twelve teams—seven active USAF, four ANG, and one Canadian—will hone air defense skills in the competition.

For the second year in a row, **Trina A. Jarish,** of Los Angeles, Calif., took first place in the 2,916-mile (4,693 km) **Powder Puff Derby.** She averaged 209.7 mph (337 km/hr) in an A-36 Bonanza.

A new **Visitor Reception Center** has opened at the Air Force Museum, Wright-Patterson AFB, Ohio. Much of the construction cost was offset by a bequest from the estate of the late **Brig. Gen. Erik H. Nelson,** USAF (Ret.), who participated in 1924's first round-the-world flight.

The **US Navy Surface Effect Ship** SES-100B set a new Navy speed record this summer when it hit **103.038 mph** (89.48 knots) off the coast of Florida.

US Army **Gen. Bernard W. Rogers** has become **Army Chief of Staff,** replacing retiring **Gen. Frederick C. Weyand.**

The **Uniformed Services University of the Health Sciences** is to enroll its **charter class** this fall at Walter Reed Army Medical Center in Washington. The University will move to a permanent home at the National Naval Medical Center, Bethesda, Md., in 1977. ■



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The tree-shaped antenna elements, shown below undergoing tests, are part of PAVE PAWS, an early warning radar system that will soon be scanning 3,000 miles over the Atlantic and Pacific Oceans.

The radar, shown at the upper right, is Cobra Dane. From Shemya Island in the Aleutians, this radar looks down a 2,000-mile corridor to collect intelligence and early warning data.

These long range eyes are being developed for the Air Force Electronic Systems Division...and both are the result of Raytheon's phased array radar technology.

As prime contractor for PAVE PAWS, Raytheon will install dual-faced, phased array radars at both Otis and Beale AFB, located on the East and West Coasts respectively. Employing the most advanced phased array and solid-state technology, the 105-foot high radars will provide rapid detection, early warning, and attack characteristics of submarine-launched ballistic missiles approaching the U.S. mainland.

We're also prime contractor for Cobra Dane. This 100-foot, phased array radar will monito Soviet missile development flights, provide early warning of ICBM launches, detect new satellites, and update known satellite orbit parameters.

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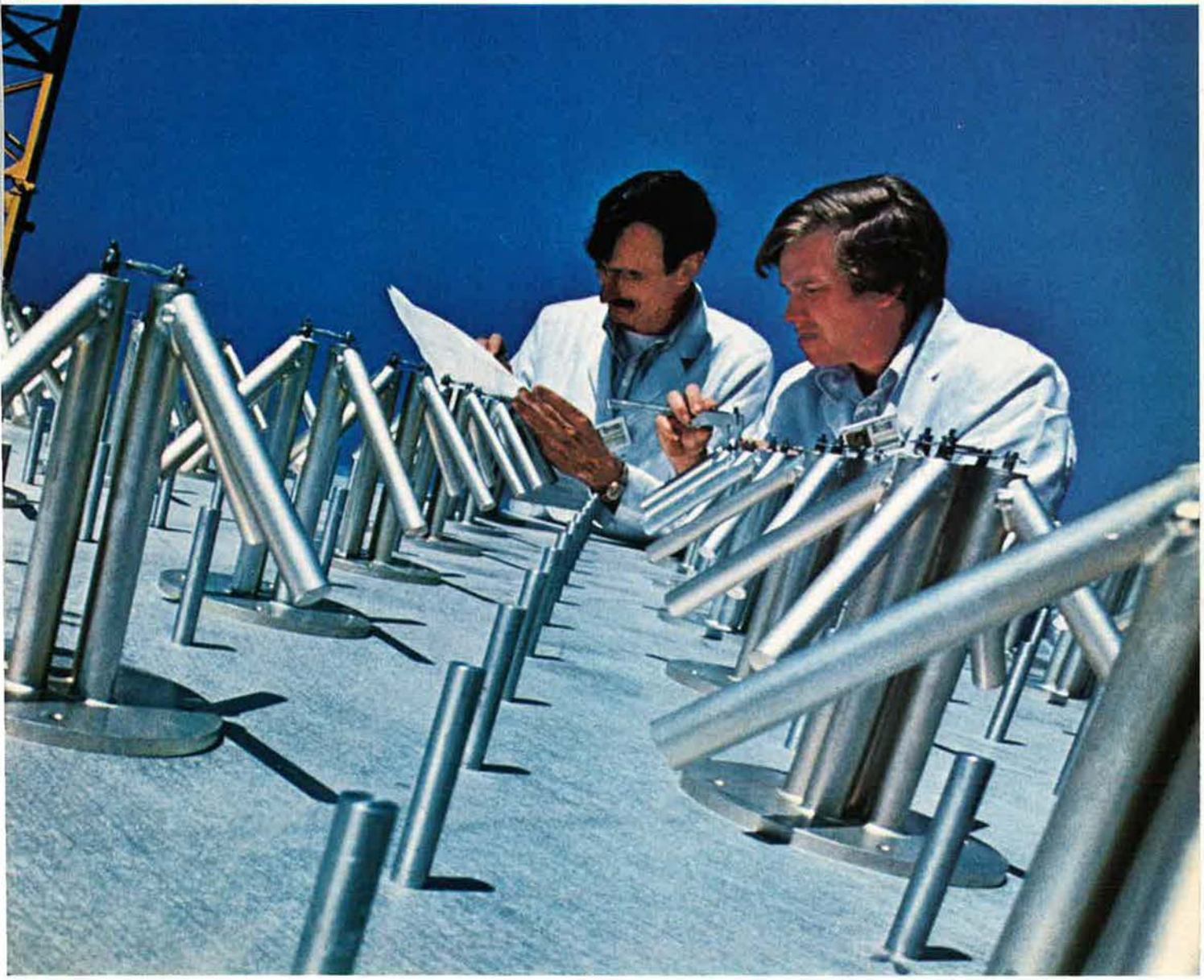


What's our mild-mannered civilian turbofan engine doing in a tough bird like this?
Just proving a point, just proving a point.
The bird is the new CASA C-101 trainer/light attack aircraft.
The engine, Garrett's TFE 731 turbofan.
And the point is this:
Our TFE 731 has what it takes to perform as efficiently and reliably in the combat environment as it does in the world of the business jet.
The C-101, being developed by CASA (Construcciones Aeronauticas S.A.) for the Spanish Air Force, is a basic and advanced trainer, with an air-to-air and air-to-ground weapons delivery capability. Armed recon, ECM and photo recon missions are also planned because of the CASA's maneuverability and long endurance at low level.
Its Garrett engine will be essentially the same fuel-saving, low-pollution turbofan now used by four leading business jet builders—Dassault, Israel Aircraft Industries, Learjet and Lockheed. The TFE 731 is also the conversion engine for AiResearch Aviation's 731 JetStar.
The CASA 101. As the forerunner of a new breed of economical, virtually smokeless combat aircraft, it makes sense to power it with the turbofan that powers the economical clean-flying business jets.
GARRETT
The Garrett Corporation One of The Signal Companies
C-101
GARRETT'S TFE 731 TURBOFAN
The only one in its class
Northrop Corp. and Messerschmitt-Boelkow-Blohm (MBB) are partners in the development of the C-101.

# AFA: Three Decades of Service

**BY THE HON. THOMAS C. REED**
**SECRETARY OF THE AIR FORCE**

To many observers of international military and political affairs, the early 1970s was a period of euphoria. Détente was widely hailed as a major swords-to-plowshares breakthrough in Soviet-American relations. US participation in the conflict in Southeast Asia was drawing to a close through our accelerating withdrawals and resolute efforts to reach a negotiated peace settlement. Just over the horizon—or so America hoped—was an era of peace and stability.

Unfortunately, that idyllic vision is not materializing in the second half of this decade. Slowly the nation has awakened to the reality of a growing Soviet military capability and its potential consequences. That realization has received further impetus from the introspection of our Bicentennial celebrations. Once again, our role in the world is being examined closely. A new, sharper focus has been brought to bear on the values that Americans have held and for which so many have fought and laid down their lives.

Despite the generally optimistic outlook of the early

1970s, a number of persuasive voices were raised in a perceptive call to caution. While staunchly supporting efforts to achieve increased international harmony, those voices reminded the nation of the need to maintain an adequate national defense. The Air Force Association has been in the forefront of that effort.

Yours has been a vibrant voice, reasoned, compelling, urging America to move forward, to maintain its military strength. You have counseled a posture that would ensure security through deterrence, thus yielding real peace and stability.

And the nation has moved forward. With the support of a concerned citizenry, the Air Force has initiated significant force structure improvements. We have been able to proceed with the development of a number of vitally important weapons and support systems. We have begun to correct a long-term logistics imbalance.

Had it not been for the foresight of concerned Americans, the nation could have awakened from its euphoria not only to *one* realization—the existence of a growing Soviet threat—but to *two*. That second realization would have been that our deterrent capabilities had slipped away, unnoticed. And it might have come too late.

The Air Force Association has contributed significantly to sparing the nation that recrimination. Your stalwart support of a strong defense posture deserves the thanks of all Americans. For three decades, your involvement on the national scene has served the country well. I look forward to your continuing support of the Air Force and to your reasoned counsel in public forums, wherever concerned Americans discuss national defense. ■

# AFA: Spotlight on Security

BY GEN. DAVID C. JONES
CHIEF OF STAFF, UNITED STATES AIR FORCE

With pageantry and pride appropriate to the occasion, the United States has celebrated its Bicentennial and is turning now to the solemn agenda of our nation's third century. It hardly needs to be pointed out that at the head of the list must be the injunction to preserve the values of freedom and equality whose longevity we have just saluted.

Many Americans take these values for granted, assuming that the "Noble Experiment," which quickened the world's pulse 200 years ago, has been confirmed for all time. Unfortunately, one can make the case that the boundaries of democracy on our planet have been receding rather than expanding in the past decades. Although I do not share the pessimism of some who believe that the light of individual freedom is about to flicker out, there can be little doubt that the liberty Americans enjoy (and which is shared by a depressingly small proportion of other nations) is facing a crucial challenge from an adventurous, militarily powerful, and ideologically motivated adversary.

In my view, no single fact argues more strongly nor defines more clearly the need for a strong American military capability; not that we may tremble behind a wall of weapons, but that we can keep

freedom from being snatched from us or our allies while the power and appeal of our fundamental beliefs dissolve the chains of armed totalitarianism.

The Air Force is proud of its role in contributing to this purpose and proud of the unflagging support for national security issues provided by the Air Force Association. The success of our mission hinges as much on public awareness and support as on weapon systems. For years, the Air Force Association and AIR FORCE Magazine have made a vital contribution to improved understanding of defense matters.

The AFA and AIR FORCE Magazine have carried the message to a concerned public that, despite steady resource reductions, ours is still the best Air Force in the world. You have helped unlock the complexities of strategic rationale, explaining the critical role which the ready-for-production B-1 will play in our nation's deterrent posture through its contribution to strategic equivalence. You have underlined the importance of modernizing our key general-purpose capabilities, including the E-3A Airborne Warning and Control System (AWACS, a national command and control asset without parallel in versatility), the new class of tactical fighters entering our inventory (F-15, F-16, and A-10), and the Advanced Tanker/Cargo Aircraft (ATCA).

Most important, you have kept the spotlight focused on the men and women, active and Reserve, officers and enlisted, who operate, maintain, and support Air Force systems. Their talents, professionalism, and dedication breathe life into the policy of Total Force and provide the impetus to the improved combat readiness that will *keep* the US Air Force second to none.

On behalf of a grateful Air Force, my congratulations and appreciation for your valuable and unending support. The many challenges ahead can be borne with greater confidence because of the loyal and perceptive backing of the Air Force Association and AIR FORCE Magazine. ■

# The Multi-Mission RPV Weapon System is here!

The vehicle is a BGM-34C, the launch platform a DC-130H and the control system a Multiple Drone Control Strike System (MDC/SS). Teledyne Ryan Aeronautical is producing the RPV, with Lear Siegler, Inc. modular avionics aboard; Lockheed Aircraft Service is producing the DC-130H and Sperry Univac is building the MDC/SS. This multi-mission RPV prototype weapon system incorporates existing electronic warfare and reconnaissance equipments currently in inventory. Production procurement scheduled for early 1977 will turn out an extremely cost-effective weapon system which will complement manned aircraft in fulfilling present-day electronic countermeasures, reconnaissance and strike force support missions.

Four pioneering aerospace companies have teamed to produce the system that with its inherent growth capabilities can easily be the operational multi-mission RPV weapon system of the future.

**RPV MULTI-MISSION WEAPON SYSTEM**

LEAR SIEGLER ASTRONICS DIVISION
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TELEDYNE RYAN AERONAUTICAL

# Passive countermeasures.

# With IBM on board, the nation's electronic support measures work to a common purpose.

For ships and aircraft, IBM is providing everything needed to pinpoint and identify emitter signals in today's dense electromagnetic environments. That means hardware, software and, most important, systems integration.

Take the Navy's Mark 105 Target Acquisition Console, for example. This programmable shipboard passive fire control system automatically detects, sorts, identifies and locates microwave emitters. It has multiple digital channels for two-way communication with weapons direction systems, tactical data systems, and missiles, and can simultaneously process a number of emitters. And its display console is specially designed for operator ease of use and rapid decision making.

Fast reaction is also crucial in today's fighter aircraft. Another IBM system, the Advanced Wild Weasel Receiver Set, is designated for the Air Force F-4 fighter. This system is capable of accurate identification and rapid response against radiating sites.

IBM is also part of the Navy's newest countermeasures development program involving design-to-price concepts as well as being on board the Navy's newest carrier-based patrol aircraft, the S-3A, with the AN/ALR-47 System.

Passive countermeasures: just one area where IBM exercises its special ability to make complex systems work to a common purpose. From the B-52 through the space shuttle, IBM has designed integrated systems for command and control, navigation, ASW helicopters, shipboard and submarine sonar, ground tracking and launch control.

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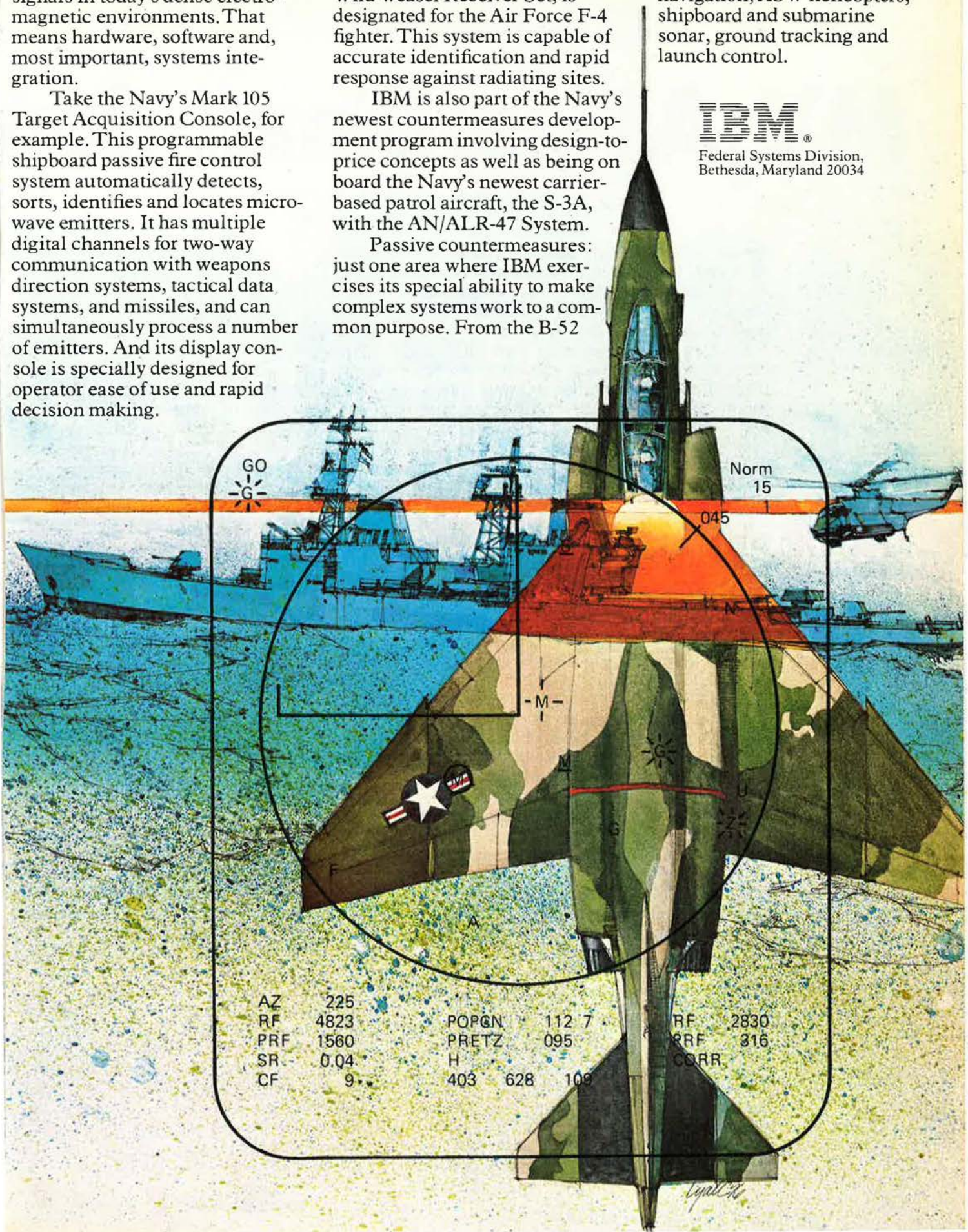


One of the most urgent challenges confronting the Defense Department and the Air Force is modernization of the Intercontinental Ballistic Missile Force to assure the continued viability into the twenty-first century of this important leg of the Triad. The following AIR FORCE Magazine exclusive puts the spotlight on . . .

# MX, A New Dimension

BY LT. GEN. ALTON D. SLAY, USAF
DEPUTY CHIEF OF STAFF/R&D

THE intercontinental ballistic missile, or ICBM, has become a familiar fact of life for the military and the general public. We sometimes forget that the first test ICBM was launched only twenty years ago.

The United States got off to a slow start in this field. We did not begin developing our first ICBM, later to be called the Atlas, until 1955. Shortly thereafter, interest in ICBMs was further stimulated when the Soviet news agency, Tass, triumphantly announced the launch of the world's first ICBM in August 1957. The US launched its first ICBM in December of the same year.

In the intervening twenty years, the United States Air Force developed and deployed three generations of ICBMs—Atlas, Titan, and Minuteman. Concurrently, the US Navy brought to operational status several versions of the Polaris and Poseidon submarine-launched ballistic missiles. The Air Force now is moving ahead with development of a fourth-generation ICBM known as "Missile-X" or "M-X."

The M-X program had its real beginning in 1971 when the Strategic Air Command documented the requirement for an advanced ICBM. The performance characteristics that SAC identified far exceeded anything available at that time. It was clear that new technologies would have to be pursued and refined. An advanced development program was begun in late 1973 to define the technology and design concepts for a large throw-weight, survivable, highly accurate, MIRVed ICBM. As one might expect, the program has centered on the two critical areas of missile technology: guidance and propulsion. But a considerable effort also has been devoted to conceptual development and technological exploration of basing arrangements alternative to existing silos.

Under the advanced development program, Air Force Laboratories and the aerospace industry have undertaken numerous technology projects aimed at providing a firm technical base for the M-X program. These projects have been managed by the ICBM Systems Program Office at Norton AFB, Calif. Concurrently, the Strategic Air Command (SAC) and Hq. USAF, assisted by Air Force Systems Command (AFSC), Air Force Logistics Command (AFLC), and Air Training Command (ATC), conducted a series of studies designed to illustrate likely scenarios, employment concepts, and cost/performance trade-off options. This preliminary effort culminated on March 9, 1976, when the OSD Defense Systems Acquisition Review Council convened to determine if the program had been sufficiently defined to allow the Air Force to proceed with the next step. The program successfully passed this milestone. In October, M-X will officially enter the program validation phase. Preprototype hardware will be built and tested to help validate the studies and analyses and the results of our technology work.

Many of the achievements of the M-X program have been reported in AIR FORCE Magazine during the past three years. In this article, I want to put the entire program in perspective by outlining what M-X is, and where we intend to go with it. But before examining the major technical aspects, it seems useful to set the stage with a short review of the basic requirement for M-X, beginning with national defense policy considerations and their relationship to ICBM modernization.

## National Defense Policy

The requirement for M-X is tied directly to the national defense policy of the United States. That policy is to deter conflict by ensuring that the US and its allies maintain a rough military balance with the Soviet Union and its allies across the range of war-fighting capabilities—and in the will to use them. In turn, US nuclear policy is based on two interrelated objectives: deterrence, and employment of forces, as appropriate, should deterrence fail. For the latter objective, operational plans for strategic nuclear forces are designed to achieve the best possible outcome for the US and its allies if escalation cannot be controlled and a major nuclear conflict takes place. The absolutely essential element of strategic deterrence is a force that can strike back in devastating retaliation even after a surprise attack.

To carry out this policy, the US relies on a

AIR FORCE
SEPTEMBER 1976

# In Strategic Deterrence

Triad of strategic systems—land-based ICBMs, manned bombers, and sea-launched ballistic missiles (SLBMs). The Triad derives its strength from the diverse characteristics of each of its elements. Many of the characteristics are shared by at least two elements, thus providing a hedge against possible failure of any one.

Within the Triad, the unique capability of the ICBM force is a product of extreme accuracy, a high level of force availability, flexibility, reliability, and early time on target. Each of the other elements has its own unique characteristics, and all contribute to deterrence. ICBMs have a key role since they can be applied across the entire target spectrum, and clearly constitute the nation's best capability against time urgent and hardened targets. It is crucial that we plan our future missile force capabilities to provide a level of effectiveness appropriate to evolving target structures and threats.

## Requirements for ICBM Modernization

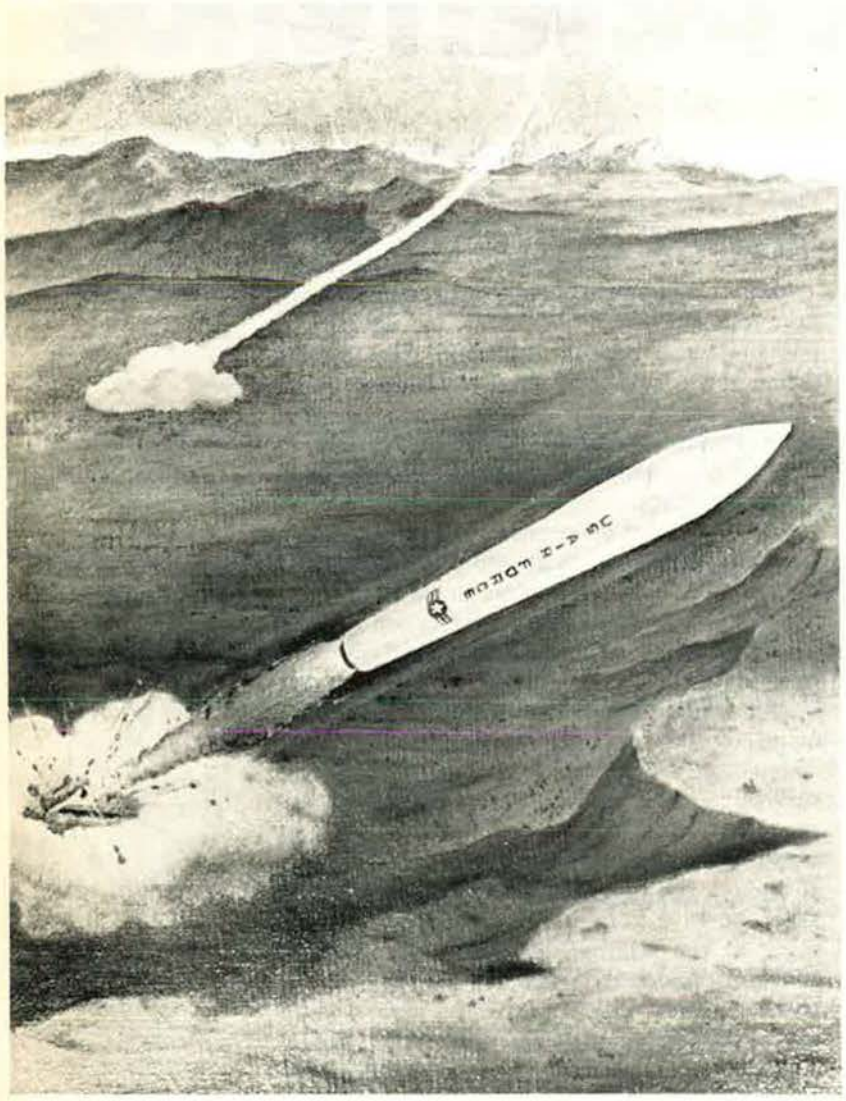
Planning future force effectiveness encompasses three separate yet complementary requirements for our ICBM force. They are: (1) sufficient effectiveness in quantity and quality of weapons; (2) continued ICBM force survivability; and (3) maintenance of "rough equivalence" with the Soviet Union. This latter term, rough equivalence, means that we need not try to match the Soviet Union missile for missile, warhead for warhead, megaton for megaton, as long as we maintain an *aggregate* Triad posture approximating the estimated Soviet posture. An assessment of rough equivalence is by definition somewhat subjective in nature, but is based on detailed quantitative and qualitative analyses.

Reliance on the Triad diminishes the requirement to match fully the Soviet Union's aggressive ICBM development program. However, there are many operational considerations that flow from defense policy directly into ICBM employment planning, and constitute a clear requirement to increase ICBM effectiveness. The ICBM is the only Triad element that has a prompt, high confidence, counterforce capability. As the number of targets grows, so too must the number of weapons available to attack them. Furthermore, the Soviets have embarked on a hardening program. Simply to maintain currently planned retaliatory damage levels against their target systems will require an appreciable increase in the quality and quantity of our strategic weapons. Together, these factors define the first ICBM modernization requirement—more accurate missiles, each carrying more nuclear warheads of sufficient yield to cope with expanding and increasingly hardened target structures.

The essence of deterrence rests in large measure with the ability to absorb a first strike and then retaliate with the appropriate level of force. Survivability, the second modernization need, is at the heart of any reasonable analysis of a hypothetical nuclear exchange. To put this issue in perspective, future as well as present estimates of silo survivability must be examined. The pertinent facts are these: First, US silos are survivable today and will remain so for some time. Second, there is a wide range of uncertainty associated with projections of silo survivability. The number of surviving silos is critically sensitive to the threat; that is to say, sensitive to the number, accuracy, and yield of attacking Soviet weapons and the tactics employed. Third, some silos would survive even after attack by a postulated severe threat. Nevertheless, the US cannot afford to discount the eventual emergence of a Soviet capability that could reduce silo survivability to an unacceptably small number. Therefore, an alternative to silo basing must be developed concurrently with the missile, as a hedge against the eventual emergence of that projected severe threat. The alternative mode must maintain ICBM survivability while preserving the existing advantages of silo basing, *e.g.*, quick reaction, accuracy, reliability, and high alert rate.

The rough equivalence issue is basically one of perceptions—the Soviet assessment of their strategic capability vs. that of the US and vice versa. Also important are third-party views of relative US and USSR strength. The Soviet Union already has the advantage in ICBM and SLBM numbers and throw-weight. They have recently developed four new ICBMs and are

deploying three of them. Two of the new missiles are MIRVed, and a third is MIRV-capable. All incorporate improved guidance systems. Two of the new missiles also use a cold launch technique, which means that the silos could be reloaded. Conversely, the US has practiced restraint in ICBM modernization and, to



*One of the most promising basing concepts requiring validation is the trench roof breakout mechanism, shown in the lower left corner of this M-X artist conception.*

date, only relatively modest improvements to the force have been programmed. This divergence in policy is beginning to cause a serious imbalance in ICBM forces—one that would not be offset fully by planned improvements in the other two Triad elements.

These broadly described considerations are the criteria against which our ICBM modernization plans must be measured. During concept definition, several alternatives were examined to determine if the long-term requirements for force modernization could be met without developing a totally new missile. Alternatives ranged from doing nothing through a maximum upgrade of our current Minuteman III force to adaptations of the Trident SLBM as an ICBM. In each case, one or more of the criteria for modernization were not met. This ultimately led to the requirement to proceed with the development of M-X.

### M-X Baseline Missile

The M-X baseline design that evolved from concept definition has roughly twice the launch weight of Minuteman III. The missile basing mode was a prime determinant of the physical size of the missile. To preserve an alternate basing capability, the missile could not exceed a size that was reasonably transportable and still could withstand the vibrations and other harsher environments (when compared to silos) of alternate basing. Consequently, the missile was limited to a total gross weight of no more than 180,000 pounds. Even with this size restriction, anticipated advances in propulsion technology should provide the capability to boost several times the Minuteman III payload to longer ranges while achieving higher accuracy and an expanded reentry vehicle footprint. Our basing studies concluded that this size missile could be accommodated in existing Minuteman silos without reducing the hardness obtained through the Upgrade Silo Program. Furthermore, our detailed trade-off studies and analyses indicated that a missile of this size would be the most cost-effective to develop and produce.

To facilitate deployment of the larger missile, a canister is being designed to accommodate the baseline M-X, either in an alternative basing mode or in the existing Minuteman silos. Canisterization will provide a cold launch capability in either mode.

Reentry vehicle technology for M-X offers two generic classes of candidates: ballistic and maneuvering, each in a different stage of development. A ballistic RV may be more appropriate for initial deployment on M-X, perhaps followed in the longer term by a maneuvering RV if system complexity is offset by gains in accuracy and other operational considerations. Depending upon the size and weight of the RV option, M-X could carry several times more MIRVs than a Minuteman III.

### Basing Alternatives

The least-cost basing option for M-X is deployment in existing silos. We believe these hardened and dispersed launch facilities will offer acceptable protection for some time to come. Consequently, fixed silo basing is now the Air Force preferred option, principally for cost, operability, and maintainability reasons. Nevertheless, the Air Force is convinced that an alternate basing mode must be fully developed concurrently with the M-X.

Several alternate basing concepts, such as

proliferated hardened aim points, randomly dispersed launch vehicles, and air-launched ICBMs have been examined as a hedge against the potential erosion of fixed silo survivability. During concept definition, the random land movement concepts were eliminated for reasons of cost, technical feasibility, public reaction, and vulnerability. Only the hardened aim point and air-launched concepts remain as candidates for further study and validation.

As a result of the C-5 air-launched feasibility demonstration in October 1974, considerably more is known about air mobility than about the alternate ground concepts. Several air-launched ICBM system concepts and alternatives were evaluated during the M-X concept formulation phase. Of the concepts and potential missile carriers evaluated, most were rejected because of the high cost of assuring the required number of survivors, unacceptable technical risk within the projected deployment time frame, and limited payload capability of some potential carriers.

The air-launch concept that evolved from this process consists of two M-X missiles (the number of missiles is limited by aircraft size) carried on board a modified wide-body jet aircraft. This operational employment concept called "flexible mode" or "flex mode," combines the high survivability of an air alert mode with the lower cost of the ground alert mode. During periods of low strategic stress, the aircraft could be located on austere bases in the North Central US. In response to warning indicators, the force could transition to a continuous air alert from dispersed bases. Depending on the alert level, which is a function of strategic warning, exceptionally high force survivability could be achieved.

### Alternative Ground-Basing Concepts

Two classes of proliferated, hardened, aim point concepts are under consideration. In the first class, a threat-dependent number of individual facilities or shelters that can house a missile and launching mechanism is provided for each missile. The shelters are spaced and hardened to preclude multiple kills by an attacking weapon, and a method is provided to transport the missile and its launching mechanism from shelter to shelter. Shelters may be earth-covered, hardened concrete structures with a blast and radiation shielded door; a simple vertical shelter with modest hardening; or a shallow facility with an unprotected cover. The latter type consists of inexpensive excavations and uses a hardened capsule for each missile to provide hardness and environmental protection. Thus, shelter cost is low, but the transporter/capsule/launcher could be expensive and more cumbersome to operate. The missile based in the vertical shelter would derive most of its hardening from the capsule and hence would also require a heavier transporter/launcher. The earth-covered shelter provides hardness at higher cost, but the transporter/launcher is less expensive and easier to operate and maintain.

In all shelter concepts, missiles are transported in canisters on vehicles that store, support, and launch them. The launch vehicles are moved by transporters and emplaced randomly in any one of a number of shelters. Frequency of movement can be adjusted as operational considerations dictate. Command control communications and ground power requirements are similar to other alternative ground-based concepts. Security and maintenance are conceptually more difficult, however, and could require more manpower.

The second class of concepts consists of a continuous hardened underground facility or "trench" for each missile. The missile transporter/launcher moves at random intervals inside the trench, providing total uncertainty as to missile location along the length of the trench. An enemy must attack the entire trench to achieve a high-confidence expectation of destroying the missile. Survivability is attained by providing more miles of trench than the enemy's attacking RVs can destroy. Preliminary analysis indicates that each trench could be on the order of ten to twenty miles long.

The trench itself could be a continuous cylinder of hardened concrete or randomly spaced sections of hardened concrete. In both concepts the concrete construction would be designed to withstand significant downward overpressure, but yield to upward pressure during missile erection like a keystone in an arch. The continuous concrete cylinder concept permits missile launch from any place in the trench and, although potentially more costly to construct, is probably less expensive to secure and control environmentally.

The alternate trench concept requires that the missile be in one of the hardened concrete sections during normal alert periods. Connecting sections provide only concealment, minimal blast protection, and an avenue of movement between hardened sections. The hardened sections of the alternate trench design could become visible following a modest attack, transforming the survivability situation into one similar to that of the shelters.

Missile launch involves elevating the missile and canister through the crown of the trench, breaking the structure, and pushing aside the earth cover and attack-induced debris to an angle sufficient to launch the missile.

Each of the alternatives discussed offers a potentially suitable basing mode for the M-X missile. A final decision will be predicated on the evolution of the threat, land availability, costs, performance, and other factors that will be studied during the upcoming validation phase. Pinning down these parameters is the goal of

*AIRS guidance system weighs 115 pounds. Its core, the "floated ball," is ten inches in diameter.*

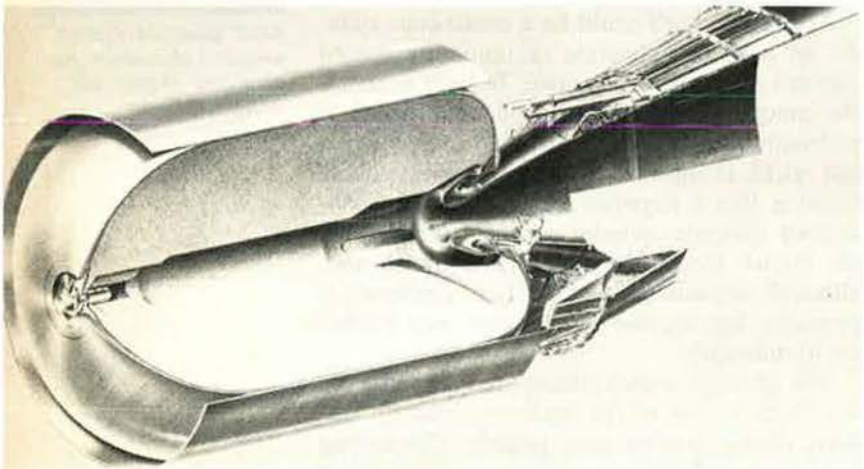
the alternate basing element of the M-X validation program.

### M-X Validation

As with most weapon system development programs, the M-X validation phase will be crucially important. It is not practical to build the entire weapon system prior to its entry into full-scale development. Rather, during the validation phase, critical subsystems will be built and tested with a continuing search for reduced cost options. Trade-offs among operational requirements, performance factors, and life-cycle costs will be carried on throughout the development program.

During the validation phase, system definition will continue as a sequential and iterative process. We will concentrate primarily on the technology associated with propulsion, guidance, reentry vehicles, and alternate basing. A few selected examples should illustrate the nature and thrust of the evaluation tasks.

As stated earlier, the most important technology areas are missile propulsion and guidance, with secondary but very important emphasis on alternate basing and reentry vehicle options. Primary elements of the propulsion effort are higher performance propellants, lightweight nozzles capable of large thrust deflection angles, an extendable nozzle exit cone, and lightweight motor case materials.



*M-X upper stage motor capitalizes on the synergism of advanced propellants, lightweight motor cases, and an extendable nozzle exit cone to boost performance.*

To validate advanced propulsion technology, we plan to build and test several preprototype upper-stage motors with improved propellants and advanced hardware. Four will be static fired under simulated altitude conditions at the Arnold Engineering Development Center (AEDC). A fifth motor will be subjected to simulated alternate basing environments, *e.g.*, shock and vibration. In the third-stage development program, three motors designed with early thrust termination capability will be produced and tested. Early thrust termination permits the orderly achievement of relatively short-range flights, even with an M-X-size missile. The first third-stage motor will be static fired while the second will be fired and thrust terminated under simulated altitude conditions at the Air Force Rocket Propulsion Laboratory (AFRPL). The third motor will be subjected to simulated alternate basing operating environments and then static fired at AEDC. Three full-scale nozzles will also be built and tested at AFRPL. One of the test assemblies will be subjected to shock and vibration loads prior to firing.

Intense efforts are being devoted to guidance technology, including guidance set preprototype development and advanced computer design and fabrication. Examples are so-called "third-generation" gyros, refined accelerometers, and a very advanced inertial reference sphere, based on "floated ball" technology that replaces the more common gimballed platform. This system is identified by the acronym AIRS.

Planned M-X system accuracy will be a quantum advance over today's Minuteman III capabilities. The advanced inertial reference sphere (AIRS), in conjunction with a new computer, appears to be the most promising means to achieve this goal. The accuracy potential of the basic inertial instruments has been demonstrated during development testing of a missile performance measurement system (MPMS) that will be used to validate Minuteman III guidance system performance.

Three AIRS inertial measurement units have been delivered as part of the MPMS program. One of the units has already been flight tested on a Minuteman III. In addition to the very important data that was obtained from this flight, the MPMS program will provide extensive ground test data on AIRS performance in laboratory and other environments. Equipment residual to this program will also be used for further testing during M-X validation.

In May 1975, contracts were amended to include further development of the MPMS instruments to meet M-X requirements for hardness, reliability, and producibility. The contractor team is scheduled to produce eighteen units for the M-X/AIRS program. After entering full-scale development, second sources for each of

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*General Slay became USAF's Deputy Chief of Staff for Research and Development on August 23, 1975, following assignments as Assistant DCS/R&D and as Director of Operational Requirements and Development Plans of that Deputate. A command pilot with 7,500 flying hours and 181 combat missions over Southeast Asia, General Slay previously served as Vice Commander, Air Training Command; Deputy Chief of Staff, Operations, Seventh Air Force; and Deputy for Operations, Military Assistance Command, Vietnam.*

the instruments are planned for competitive award.

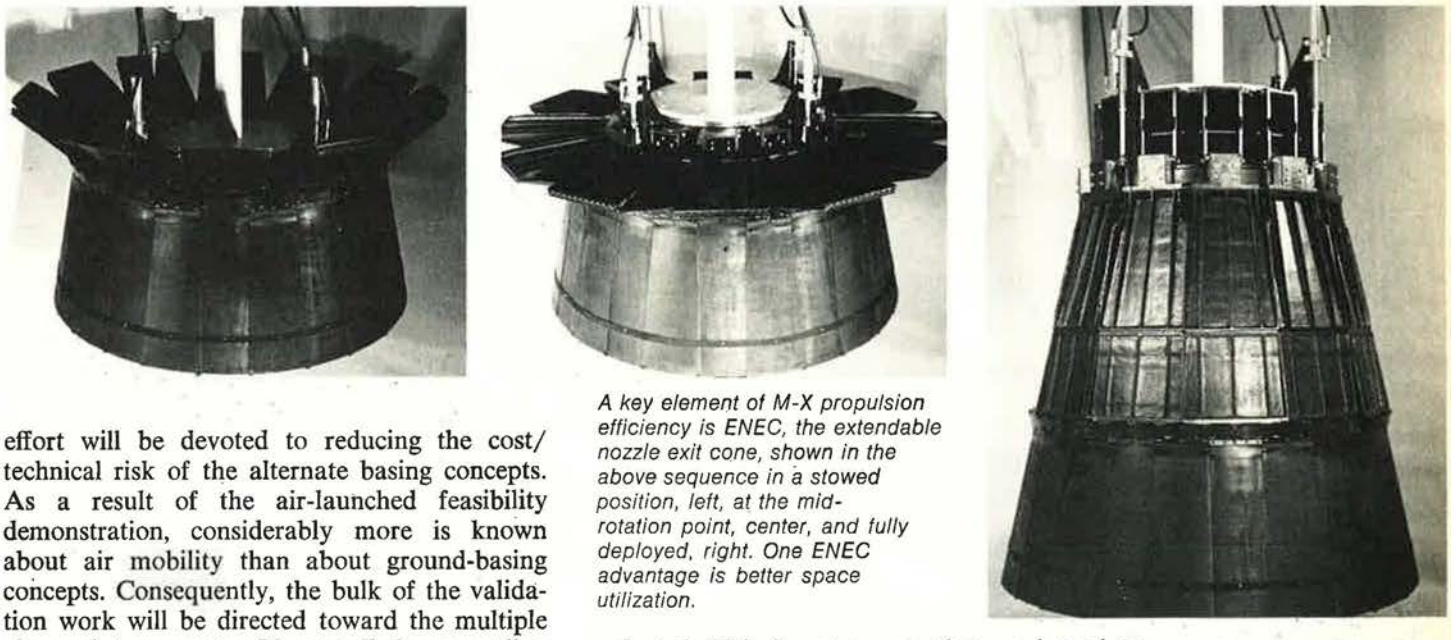
Using the MPMS/AIRS design as a baseline, major design changes to the inertial measurement unit (IMU) are anticipated. Primarily, the changes deal with complete radiation hardening; improvements in reliability, maintainability, and performance; and modifications to enhance producibility. These changes will be incorporated into the guidance system, which is to be fabricated and tested during validation. The resultant design is to be transitioned into full-scale development.

### Validating Alternative Basing

A significant part of the validation phase effort will be devoted to reducing the cost/technical risk of the alternate basing concepts. As a result of the air-launched feasibility demonstration, considerably more is known about air mobility than about ground-basing concepts. Consequently, the bulk of the validation work will be directed toward the multiple aim point concepts. Plans call for awarding design contracts for the major subsystems in both of the generic concepts (trench and shelter). In many cases dual sources will design the same subsystem to enhance competition and increase flexibility in selecting the most cost-effective option. We believe that one of the central issues in the trench concept is construction cost. To narrow the cost uncertainty, a contract will be awarded to construct three to five miles of trench with varying hardness along its length. Pre-excavating, excavating, slip forming, and backfilling equipment will be produced by modifying certain pieces of existing construction equipment. The same trench section will be used in testing missile breakout and simulated nuclear survivability.

Survivability/vulnerability (S/V) testing is a key element of the M-X program. Several S/V issues will be examined for each alternate basing concept. These activities will be integrated into the validation program so that an effective flow of design and test information occurs to ensure that timely system modifications are made as required. This will be done through simulation tests conducted jointly by the Defense Nuclear Agency and appropriate Air Force activities. This undertaking requires both the refinement of existing simulation techniques, and, ultimately, the demonstration of successful survivability designs through a full-scale simulation test.

The validation phase will reduce the magnitude and uncertainty of critical subsystems costs and demonstrate system practicality and technical feasibility. A vigorous attempt will be made to refine cost estimates for all options. A basic policy governing the validation phase is that all objectives will be fulfilled independent of future planning dates; that is, validation activities will be event-oriented, not schedule-oriented. This is not to say that we intend to allow the program to drag. It does say that there are certain things we believe should be accomplished before committing the M-X system to full-scale development.



*A key element of M-X propulsion efficiency is ENEC, the extendable nozzle exit cone, shown in the above sequence in a stowed position, left, at the mid-rotation point, center, and fully deployed, right. One ENEC advantage is better space utilization.*

In summary, modernizing the ICBM leg of the Triad is a matter of high priority. The ICBM is a proven weapon system that offers a significant contribution to the strategic posture of this nation. Its high alert rate, accuracy, positive command control, and responsiveness are particularly important characteristics. But today's systems are based on designs of the 1950s and 1960s. Technology has progressed substantially since then, and it is now time to take advantage of it. We plan to use new technology in a soundly devised and well-executed development program responsive to a comprehensive and well-articulated operational requirement and employment concept. The system that evolves should be in the operational inventory well into the twenty-first century to maintain the immense deterrence benefits derived from the synergistic relationship of the ICBM and other legs of the Triad. ■

# DNA'S BUSINESS: THINKING THE UNTHINKABLE

The horrendous physical forces and insidious side effects of high-yield nuclear weapons can vary widely, depending on where the blast takes place and on the design of the warhead. In terms of designing nuclear weapons as well as nuclear war doctrine, it is vital to understand as precisely as possible the effects of nuclear weapons on both friend and foe . . .

**BY EDGAR ULSAMER, SENIOR EDITOR**

IN ORDER to work, US nuclear deterrence must be credible. A strategic force of questionable survivability would have little or no credibility. A theater nuclear deterrent perceived as punishing allies almost as much as the enemy would fare no better. Finding out what it takes to assure force survivability and how to minimize unintended nuclear damage is the job of the critically important Defense Nuclear Agency (DNA), staffed by some 1,000 military and civilian scientists and technical experts, and directed by Lt. Gen. Warren D. Johnson, USAF.

DNA is the Pentagon's principal agent for examining and analyzing the gamut of effects and side effects of nuclear weapons, for controlling these effects, for exploiting them to enhance the effectiveness of US and allied nuclear forces, and for relating them to hostile nuclear forces. DNA's research probes how specific targets respond to the products of nuclear bursts—mainly blast, thermal shockwaves, neutron flux, X-rays, gamma rays, and electromagnetic phenomena. Equally important are indirect environmental side effects of a nuclear detonation, including the formation of ice clouds that can hinder the fly-out of ballistic missiles, fallout, rain out, and other residual phenomena. Conversely, DNA cooperates closely with other DoD agencies and the Energy Research and Development Administration (ERDA) in providing nuclear effects information "to assess the vulnerability of our own weapon systems and to develop means of hardening them to survive a first strike and to penetrate enemy defenses," according to General Johnson.

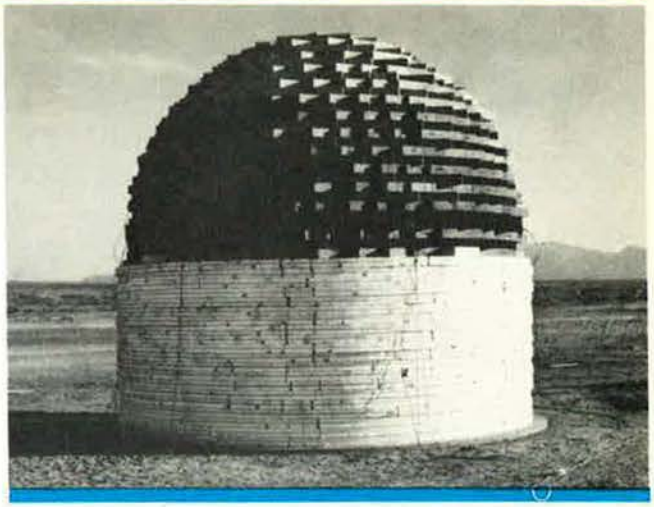
Prior to the Limited Test Ban Treaty of 1963, nuclear tests in the atmosphere and space could be used to investigate the effects of nuclear weapons. This year's Threshold Test Ban Treaty also prohibits underground weapon tests with yields of more than 150 kilotons. DNA, along with other agencies, therefore had to "invent" nuclear effects simulation—a new science—through the "use of high explosives, shock tubes, pulsed nuclear reactors, X-ray and gamma-ray generators, and other techniques. Some nuclear weapons effects can be handled by computer codes," General Johnson told AIR FORCE Magazine. Others require actual underground nuclear tests that are conducted by DNA in concert with ERDA.

Among the Agency's top priorities are research and tests associated with USAF's M-X Advanced ICBM program; ways to modernize theater nuclear forces; increasing the survivability of communications systems; and intensive hardening of electronic components, especially in satellites, against nuclear radiation.

### Making ICBMs More Survivable

The intercontinental ballistic missile is unique among modern strategic weapons: It can fight its own kind—enemy missiles—by attacking them in their silos. Neither bombers nor submarine-launched ballistic missiles are likely to be targeted against their enemy counterparts, since neither is fully capable of such a mission. ICBMs thus have a singular ability to fight a limited nuclear war as instruments of flexible response, in addition to their contributions to the assured destruction mission. This unique ability puts the ICBMs at the top of an enemy target list and subjects them to special vulnerabilities. This condition is exacerbated by differences in US and Soviet strategic postures, with Moscow emphasizing actual war-fighting capabilities and Washington accenting deterrence. This may be the reason why about eighty percent of the Soviet Union's total megatonnage resides

*DNA Director Lt. Gen. Warren D. Johnson considers development of simulators to test the nuclear-war survivability of various M-X basing modes the most challenging problem confronting his agency.*



*High-explosive tests—the charge is shown in the photograph at right—are a key element in simulating above-ground nuclear bursts. This year's Threshold Test Ban Treaty prohibits underground tests of weapons yielding more than 150 kilotons, while the 1963 Limited Test Ban Treaty rules out atmospheric and space tests.*

in its ICBM force, compared to less than forty percent of the US total.

These factors, coupled with USSR's comprehensive ICBM modernization, have generated concern about the long-term survivability of the Minuteman force. Assured survivability is a central goal of USAF's M-X program, the conservatively paced development of this country's next ICBM tentatively scheduled to enter the inventory in the early 1980s (*see p. 44*).

Since it is the principal objective of the opponent's nuclear counterforce targeting and because it is susceptible to a number of nuclear effects, the ICBM's vital subsystems must be shielded from nuclear weapons effects in all phases of operation, from launch and fly-out to ballistic flight and descent to target. Minuteman is being hardened in a systematic, evolutionary manner. But M-X, which must cope with advanced threats that may emerge toward the end of this century, will require considerably more hardening.

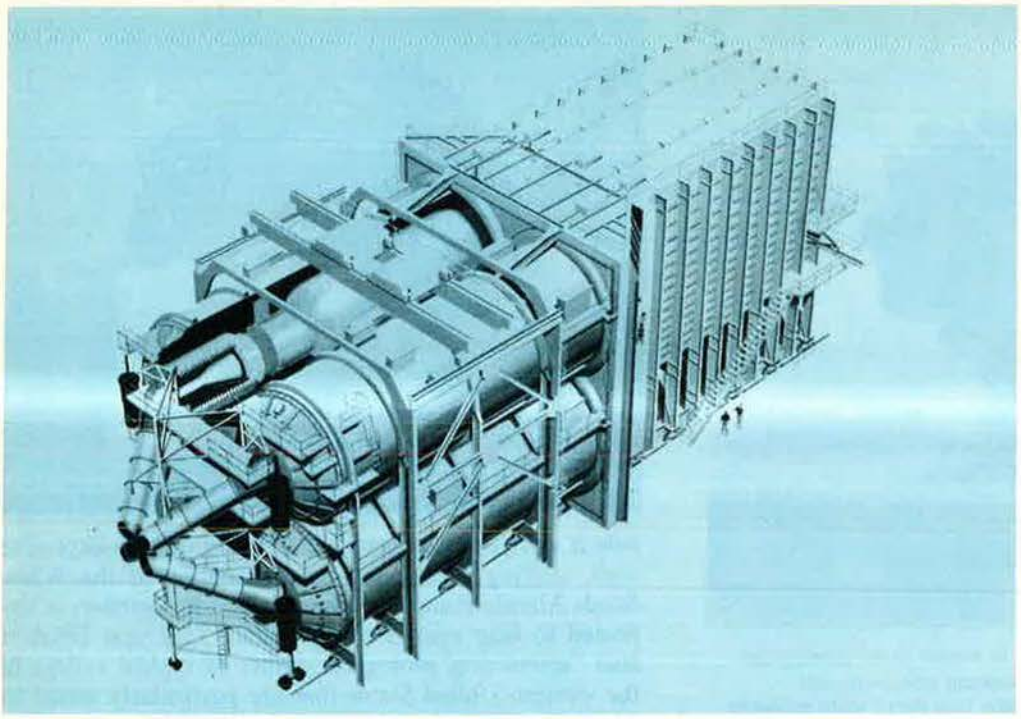
Three agencies participate in the current M-X hardening efforts: SAMSO (Air Force Systems Command's Space and Missile Systems Organization), the Air Force Weapons Laboratory at Kirtland AFB, N. M., and DNA. Of primal concern are survivability from the standpoint of the missile itself, its reentry vehicles, its command and control system, and, most importantly, its basing, known as the Multiple Aim Point (MAP) program. Since the only reason for MAP is to assure M-X survivability, the means for determining which of several Air Force basing concepts would provide the *most* protection *most* economically become paramount. DNA's foremost challenge is to design simulators that can answer this question, General Johnson told AIR FORCE Magazine.

How to simulate the effects of blast overpressures and thermal radiation on such MAP candidates as long tunnels is not yet fully resolved. A series of high-explosive tests, starting with a 600-ton detonation at the White Sands Missile Range in New Mexico in October, is expected to help resolve this problem. This year DNA is also "sponsoring geological studies of typical valleys in the western United States that are particularly suited to Multiple Aim Point systems . . . to help us predict accurately the ground motions resulting from nuclear bursts over these special geologies," according to General Johnson. DNA has already conducted a test "tailored to the above-ground shelter concept being studied by the Air Force," he added. The Agency will provide test-beds for all MAP concepts before USAF selects the most effective basing mode of M-X, a decision that will be reviewed subsequently at the program's next DSARC (Defense System Acquisition Review Council, which is the final judge of all major weapon development programs).

Another major DNA function in support of M-X is improved electromagnetic pulse (EMP) hardening. EMP is possibly the most insidious product of a nuclear burst. In the atmosphere the effects of EMP—the creation of intense electromagnetic fields—resemble lightning, but affect vastly larger areas and cover a broad segment of the frequency spectrum, from extremely low frequencies to the UHF (ultrahigh frequency) band. The pulse unleashed by an intense high-altitude burst can disable electric and electronic systems up to 3,000 miles away. If no precautions are taken, EMP, for instance, could lock out the launch control or missile guidance subsystems of an ICBM in its silo or other launch facility—thereby halting the countdown—or disturb the weapon's digital computer by introducing false signals or eradicating information in its memory banks.

There now are two principal EMP simulators. One is at Kirtland AFB and the other is a portable system developed by the Army under DNA sponsorship. The Agency also operates, jointly with the Army and Navy, AURORA, a laboratory for studying ionization, and CASINO, a facility for X-ray effects research. Both facilities are located at White Oak, Md., and are unique.

AURORA, the largest single power source in the world, produces for very brief times about twenty terawatts (twenty trillion watts), roughly equal to the total peak electrical power output of the United States. The



*The AURORA facility, managed, operated, and maintained for DNA by the US Army Harry Diamond Laboratories in a Washington, D. C., suburb, is the largest single power source in the world. The machine weighs about 7,500 tons.*

7,500-ton machine delivers this vast amount of power in about 100 nanoseconds (a nanosecond is a billionth of a second) to simulate certain nuclear weapons effects, including high-energy X-rays. The latter, a product of the superconducting ionized hot gas, or plasma, that is the essence of nuclear explosions, has, like EMP, a vast killing range. X-rays, also like EMP, can "attack" the electronics and inertial guidance of a ballistic missile over fairly large distances and cause the missile to break up, even when the latter is in ballistic flight hundreds of miles above the earth's surface.

Other DNA work associated with future missiles includes a "radically new" classified concept to make reentry vehicle nose cones more resistant to the dust and ice clouds caused by nuclear bursts, according to General Johnson. This project, and a related effort that permits low-cost flight testing of these nose cones, are to be turned over to the Air Force in the near future.

The importance that DNA accords the M-X program is manifest in the assignment of Dr. Marvin Atkins, DNA's Principal Assistant to the Deputy Director for Science and Technology, as M-X Program Director, General Johnson pointed out.

### Modernizing Tactical Nuclear Capabilities

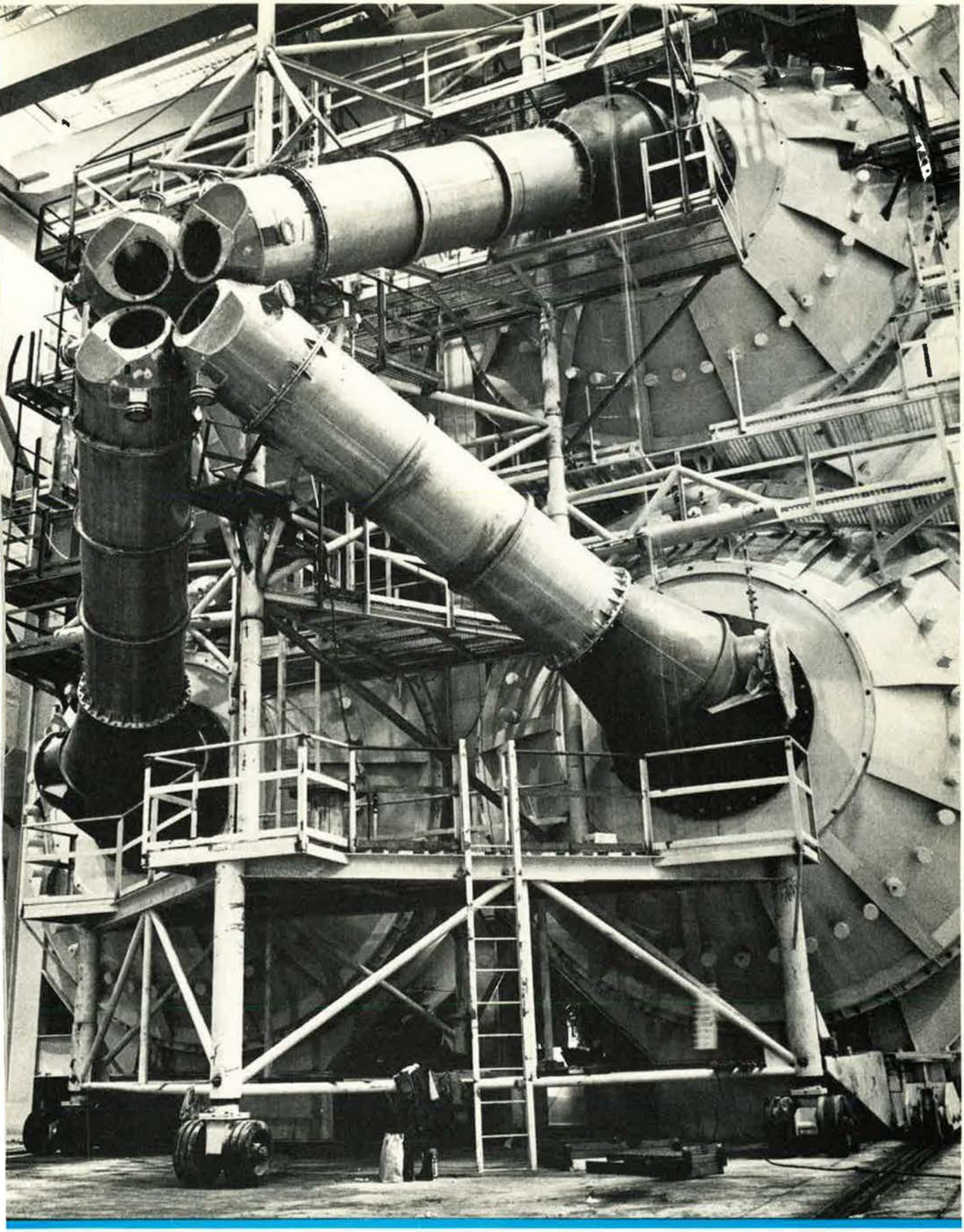
Defense Secretary Donald Rumsfeld and senior assistants, together with NATO representatives, have formed a group to plan for modernizing theater nuclear weapons and forces in Europe, including SLBMs. (Because defense planners recognize that the line between tactical and strategic nuclear weapons has become almost nonexistent, the term "theater" nuclear warfare is preferred over tactical nuclear warfare.)

Rethinking "the structure and employment doctrine for our theater nuclear forces," according to General Johnson, is keyed to force modernization with these specific goals:

- Survivability under nuclear or nonnuclear attack of a significant portion of theater nuclear forces and their essential support so as to provide options for a full range of response;
- Responsiveness to civilian control comparable to that of strategic forces;
- A range of flexible options that can be controlled and limited, but will have sufficient political and military shock effect to terminate conflict at the lowest possible level;
- Control over collateral damage to enhance the credibility of US/NATO nuclear deterrence and to minimize damage to friendly forces and territory;
- Significant advantage over conventional alternatives, particularly when the possibility of enemy nuclear response is taken into account; and
- High security of nuclear weapons against terrorist threats.

At the heart of this revision are the changing role of tactical airpower in the delivery of modern nuclear weapons, its ability to perform some missions with conventional ordnance that heretofore required nuclear munitions, and significant advances in nuclear weapon technology and design that "were not known and planned for," in the configuration of the present force, according to Peter H. Haas, DNA's Deputy Director of Science and Technology. What makes modernization possible is the increasing ability to tailor nuclear weapons to theater use.

For example, developments in enhanced radiation weapons, and so-called shallow-burst munitions detonated at sufficient depth in the ground can keep the fireball from reaching the surface. In oversimplified form, tailoring nuclear weapons means shifting a larger percentage of the total energy output to one product and correspondingly decreasing another, such as increasing certain forms of radiation while reducing blast. It is



*DNA's AURORA facility is used to study ionization and to measure gamma ray induced radiation effects on weapon systems electronics. AURORA produces for very brief moments the equivalent of the total peak power output of the United States. The laboratory's Marx generator tank contains five megajoules of stored energy that is delivered in about 100 nanoseconds.*

*Underground testing at a Nevada site provides information about shock, thermal, and nuclear radiation effects on military hardware. Testing takes place in tunnels drilled into the mountainside.*

possible, for instance, to create enhanced radiation antipersonnel weapons that can cope with the Warsaw Pact's vast tank forces through radiation rather than blast, thus reducing collateral damage such as fallout, according to General Johnson.

DNA is also conducting research on how to use the nuclear weapons assigned to SACEUR against a wider range of theater targets. "We don't do targeting ourselves, but provide information to the Navy and the Joint Chiefs about what targets can be attacked with what warheads, and what side effects can be expected under different circumstances," General Johnson said.

Nuclear targeting capabilities have been improved through the development of a computer code called Dual Criteria Aimpoint Selection (DCAPS), which facilitates the employment of specific nuclear weapons against specific targets. DCAPS maximizes the effectiveness of theater nuclear weapons against specific targets while minimizing unsought collateral damage, according to Mr. Haas. (There has been recurring doubt about the credibility of theater nuclear deterrence in Europe because of the threat of possible levels of collateral damage to friendly forces and territory without discrete targeting.) Further, in assessing collateral damage, DNA's Armed Forces Radiobiological Research Institute plays a major role by "comparing new research information with the medical data on casualties in Hiroshima and Nagasaki. We are providing our commanders in Europe more specific information on how our forces can be defended while minimizing civilian casualties," he explained.

An ancillary function of DNA, performed jointly with the intelligence community, is assessing the capabilities, survivability, equipment, doctrine, and plans of Soviet nuclear forces, globally as well as in-theater. The US, General Johnson said, is able to glean enough information about Soviet nuclear forces and their weapons to meet "all operational requirements."

### Communications Vulnerabilities

When the US detonated a nuclear device with a yield of 1.4 megatons 250 miles above Johnston Island in September 1962, "a number of satellites in low earth orbit at the time of the burst suffered severe electronic damage resulting in malfunction and early failure," according to the US Arms Control and Disarmament Agency (ACDA). Another unexpected effect of this and other high-altitude bursts was "the blackout of high-frequency radio communications. Disruption of the ionosphere [which reflects radio signals back to the earth] by nuclear bursts over the Pacific . . . wiped out communications for hours at distances of up to 600 miles from the burst point," ACDA reported.

Large, high-altitude bursts, according to Mr. Haas, can propagate radiation energy far out into space and possibly affect even satellites in geosynchronous orbit (22,300 miles up). While most of these effects are of short duration, the effect on the spacecraft often would be of longer duration. When the radiation from a nuclear detonation at high altitude or in space strikes a satellite, it generates large electric currents and voltages known as "Systems Generated Electromagnetic Pulse," or SGEMP, that can temporarily put the system out of commission. By designing satellites to "fail gracefully and to recover rapidly," that is providing them with various redundancies, some or all of these effects can be ameliorated or overcome, according to General Johnson. This work, due to the complexity of both the phenomenon and the individual satellites to be hardened, requires radiation simulators whose design has been under study by DNA for the past ten years. "The knowledge needed to build an SGEMP simulator is now almost complete, and we have included funds for starting initial procurement of equipment for an SGEMP facility" in the FY '78 budget proposal, General Johnson said.

To improve understanding of radio signal propagation through an ionosphere disturbed by nuclear weapons, DNA this year will conduct high-altitude barium releases in the direct path between an Air Force satellite and several ground-based and airborne receivers to simulate the effects of nuclear bursts on such systems. The Agency will use this information "to test the validity of our analytical models in order to gain confidence in applying prediction codes to nuclear detonations," General Johnson said.

DNA's FY '77 budget of almost $141 million is scheduled to increase to $161 million in the following year to accommodate intensified work on M-X, theater nuclear capabilities, and command and control survivability, according to the Agency's Director. ■

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*The July 3-4 airshow at Andrews AFB had it all—from World War I nostalgia (with varying degrees of authenticity) to radio-controlled models . . .*

# BICENTENNIAL


*. . . and (below) Stearman PT-17s, where it began for thousands of World War II airmen who helped build USAF's aerospace power . . .*

# AIRSHOW

**Photos By MSgt. Eddie McCrossan, USAF**

*. . . there, representing that power, were the B-52 (below), symbol of deterrence, the record-breaking SR-71 (above), the incomparable F-15 (left), the C-5, airlifter supreme.*


*There, too, were the Thunderbirds, exemplifying the professionalism of Air Force aircrews and support people, whose dedication has done so much to preserve the freedoms we celebrate this Bicentennial Year.*

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**(As of August 25, 1976)**

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Duluth IAP, Minn.

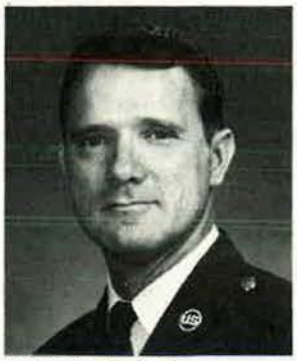
**24th Air Div.**
Maj. Gen. Louis G. Leiser

**25th Air Div.**
Brig. Gen. Elwood A. Kees, Jr.
McChord AFB, Wash.

**26th Air Div.**
Brig. Gen. Thomas E. Clifford
Luke AFB, Ariz.

**Alaskan NORAD/ADCOM Rgn.**
Lt. Gen. James E. Hill
Elmendorf AFB, Alaska

**Air Force Communications Svc.**
Maj. Gen. Rupert H. Burris
Hq. Richards-Gebaur AFB, Mo.



CMSgt. Earl E. Dorris
Senior Enlisted Advisor

**European Communications Area**
Brig. Gen. John T. Randerson
Hq. Ramstein AB, Germany

**Pacific Communications Area**
Brig. Gen. William G. MacLaren, Jr.
Hq. Wheeler AFB, Hawaii

**Tactical Communications Area**
Col. Robert F. McCarthy
Hq. Langley AFB, Va.

**Northern Communications Area**
Col. Charles B. Jiggetts
Hq. Griffiss AFB, N. Y.

**Southern Communications Area**
Brig. Gen. Donald J. Bowen
Hq. Oklahoma City AFS, Okla.

**Strategic Communications Area**
Col. Gerald L. Prather
Hq. Offutt AFB, Neb.

**Air Force Logistics Command**
Gen. F. Michael Rogers
Hq. Wright-Patterson AFB, Ohio

CMSgt. Robert E. Rogers
Senior Enlisted Advisor

**Air Force Acquisition Logistics Div.**
Lt. Gen. Bryce Poe II
Wright-Patterson AFB, Ohio

**Ogden Air Logistics Ctr.**
Maj. Gen. Edmund A. Rafalko
Hill AFB, Utah

**Oklahoma City Air Logistics Ctr.**
Maj. Gen. Carl G. Schneider
Tinker AFB, Okla.

**Sacramento Air Logistics Ctr.**
Maj. Gen. Herbert J. Gavin
McClellan AFB, Calif.

**San Antonio Air Logistics Ctr.**
Maj. Gen. John R. Kelly, Jr.
Kelly AFB, Tex.

**Warner Robins Air Logistics Ctr.**
Maj. Gen. William R. Hayes
Robins AFB, Ga.

**Military Aircraft Storage and Disposition Ctr.**
Col. Harry L. Gronewald
Davis-Monthan AFB, Ariz.

**Aerospace Guidance and Metrology Ctr.**
Col. William H. Bush
Newark AFS, Ohio

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

CMSgt. Thomas J. Echols
Senior Enlisted Advisor

**Alaskan Air Command**
Lt. Gen. James E. Hill
Hq. Elmendorf AFB, Alaska

CMSgt. Wesley H. Skinner
Senior Enlisted Advisor

**Air Force Systems Command**
Gen. William J. Evans
Hq. Andrews AFB, Md.

CMSgt. Robert D. Harrison
Senior Enlisted Advisor

**Aeronautical Systems Div.**
(Temporarily Vacant)
Wright-Patterson AFB, Ohio

**Space and Missile Systems Organization**
Lt. Gen. Thomas W. Morgan
Los Angeles AFS, Calif.

**Electronic Systems Div.**
Lt. Gen. Wilbur L. Creech
Hanscom AFB, Mass.

**Aerospace Medical Div.**
Brig. Gen. Howard R. Unger
Brooks AFB, Tex.

**Air Force Contract Management Div.**
Maj. Gen. Maurice R. Reilly
Kirtland AFB, N. M.

**Foreign Technology Div.**
Col. John B. Marks
Wright-Patterson AFB, Ohio

**Armament Development and Test Ctr.**
Maj. Gen. Howard M. Lane
Eglin AFB, Fla.

**Air Force Space and Missile Test Ctr.**
Maj. Gen. Warner E. Newby
Vandenberg AFB, Calif.

**Air Force Flight Test Ctr.**
Maj. Gen. Thomas P. Stafford
Edwards AFB, Calif.

**Arnold Engineering Development Ctr.**
Col. Oliver C. Tallman
Arnold AFS, Tenn.

**Air Force Civil Engineering Ctr.**
Col. Robert M. Iten
Tyndall AFB, Fla.

**Air Force Eastern Test Range**
Brig. Gen. Don M. Hartung
Patrick AFB, Fla.

**Director of Science and Technology**
Brig. Gen. Gerald K. Hendricks
Andrews AFB, Md.

**Air Training Command**
Lt. Gen. John W. Roberts
Hq. Randolph AFB, Tex.

CMSgt. Brian Bullen
Senior Enlisted Advisor

**Air Force Military Training Ctr.**
Maj. Gen. John P. Flynn
Lackland AFB, Tex.

**Technical Training Ctr./Chanute**
Maj. Gen. Edwin W. Robertson II
Chanute AFB, Ill.

**Technical Training Ctr./Keesler**
Maj. Gen. Winfield W. Scott, Jr.
Keesler AFB, Miss.

**Technical Training Ctr./Lowry**
Brig. Gen. Warren C. Moore
Lowry AFB, Colo.

**Technical Training Ctr./Sheppard**
Maj. Gen. Cecil E. Fox
Sheppard AFB, Tex.

**USAF Recruiting Svc.**
Maj. Gen. Andrew P. Iosue
Randolph AFB, Tex.

**Air University**
Lt. Gen. Raymond B. Furlong
Hq. Maxwell AFB, Ala.

CMSgt. Richard C. Buxton
Senior Enlisted Advisor

**Air War College**
Maj. Gen. Stanley M. Umstead, Jr.
Maxwell AFB, Ala.

**Air Command and Staff College**
Brig. Gen. William L. Nicholson III
Maxwell AFB, Ala.

**Squadron Officer School**
Col. Thomas E. Wolters
Maxwell AFB, Ala.

**Air Force ROTC**
Maj. Gen. James R. Brickel
Maxwell AFB, Ala.

**Air Force Institute of Technology**
Maj. Gen. Frank J. Simokaitis
Wright-Patterson AFB, Ohio

**Civil Air Patrol**
Brig. Gen. Carl S. Miller
Maxwell AFB, Ala.

**Leadership and Management Development Ctr.**
Col. Robert E. Chapman
Maxwell AFB, Ala.

**Academic Instructor and Allied Officer Course**
Col. C. R. Carlson
Maxwell AFB, Ala.

**Logistics Management Ctr.**
Col. D. H. Watt
Maxwell AFB, Ala.

**USAF Senior NCO Academy**
Col. David L. Oakes
Gunter AFS, Ala.

**Extension Course Institute**
Col. Marvin E. Grunzke
Gunter AFS, Ala.

**Military Airlift Command**
Gen. Paul K. Carlton
Hq. Scott AFB, Ill.

CMSgt. Otto H. Lensch III
Senior Enlisted Advisor

**21st Air Force**
Maj. Gen. Alden D. Glauch
Hq. McGuire AFB, N. J.

**22d Air Force**
Maj. Gen. Thomas A. Aldrich
Hq. Travis AFB, Calif.

**Aerospace Rescue and Recovery Svc.**
Maj. Gen. Ralph S. Saunders
Hq. Scott AFB, Ill.

**Air Weather Svc.**
Brig. Gen. Berry W. Rowe
Hq. Scott AFB, Ill.

**Aerospace Audio-Visual Svc.**
Col. Theodore N. Mace
Hq. Norton AFB, Calif.

# The Maior Commands
## (Continued)

**Pacific Air Forces**
Gen. Louis L. Wilson, Jr.
Hq. Hickam AFB, Hawaii

CMSgt. Charles L. Reynolds
Senior Enlisted Advisor

**5th Air Force**
Lt. Gen. Walter T. Galligan
Hq. Yokota AS, Japan

**313th Air Div.**
Brig. Gen. Walter H. Baxter III
Hq. Kadena AB, Okinawa

**314th Air Div.**
Maj. Gen. Don D. Pittman
Hq. Osan AB, Korea

**13th Air Force**
Maj. Gen. Leroy J. Manor
Hq. Clark AB, Luzon, P. I.

**326th Air Div.**
Col. Paul J. Gilmore
Hq. Wheeler AFB, Hawaii
(Kunia Facility)

**Tactical Air Command**
Gen. Robert J. Dixon
Hq. Langley AFB, Va.

**CMSgt. Norman O. Gallion**
Coordinator, Senior NCO Advisor
to TAC Commander

**9th Air Force**
Lt. Gen. James V. Hartinger
Hq. Shaw AFB, S. C.

**12th Air Force**
Lt. Gen. James D. Hughes
Hq. Bergstrom AFB, Tex.

**USAF Tactical Air Warfare Ctr.**
Brig. Gen. Thomas H. McMullen
Eglin AFB, Fla.

**USAF Tactical Fighter Weapons Ctr.**
Maj. Gen. James A. Knight, Jr.
Nellis AFB, Nev.

**USAF Southern Air Div.**
Maj. Gen. James M. Breedlove
Albrook AFB, Canal Zone

**Strategic Air Command**
Gen. Russell E. Dougherty
Hq. Offutt AFB, Neb.

CMSgt. James M. McCoy
Senior Enlisted Advisor

**8th Air Force**
(Temporarily Vacant)
Hq. Barksdale AFB, La.

**19th Air Div.**
Brig. Gen. Thomas P. Conlin
Carswell AFB, Tex.

**40th Air Div.**
Brig. Gen. Walter B. Ratliff
Wurtsmith AFB, Mich.

**42d Air Div.**
Brig. Gen. James R. McCarthy
Blytheville AFB, Ark.

**45th Air Div.**
Brig. Gen. Jack L. Watkins
Pease AFB, N. H.

**15th Air Force**
Lt. Gen. Bryan M. Shotts
Hq. March AFB, Calif.

**4th Air Div.**
Brig. Gen. Harold E. Gross
F. E. Warren AFB, Wyo.

**12th Air Div.**
Brig. Gen. Christopher S. Adams, Jr.
Davis-Monthan AFB, Ariz.

**14th Air Div.**
Brig. Gen. Albert L. Melton
Beale AFB, Calif.

**47th Air Div.**
Brig. Gen. David L. Gray
Fairchild AFB, Wash.

**57th Air Div.**
Brig. Gen. James E. Light, Jr.
Minot AFB, N. D.

**1st Strategic Aerospace Div.**
Brig. Gen. Stuart H. Sherman, Jr.
Hq. Vandenberg AFB, Calif.

**3d Air Div.**
Maj. Gen. Hilding L. Jacobson, Jr.
Hq. Andersen AFB, Guam

**United States Air Forces in Europe**
Gen. Richard H. Ellis
Hq. Ramstein AB, Germany

CMSgt. Jackson L. Davidson
Senior Enlisted Advisor

**3d Air Force**
Maj. Gen. Evans W. Rosencrans
Hq. RAF Mildenhall, England

**16th Air Force**
Lt. Gen. Joseph G. Wilson
Hq. Torrejon AB, Spain

**17th Air Force**
Maj. Gen. Benjamin N. Bellis
Hq. Sembach AB, Germany

# USAF's Separate Operating Agencies


**United States Air Force Academy**
Hq. Colorado Springs, Colo.
Lt. Gen. James R. Allen, Superintendent
CMSgt. Elmer W. Wienecke, Senior Enlisted Advisor


**Air Force Reserve**
Hq. Robins AFB, Ga.
Maj. Gen. William Lyon, Chief
CMSgt. Olin B. Colwell, Senior Enlisted Advisor


**Air Force Inspection and Safety Center**
Hq. Norton AFB, Calif.
Maj. Gen. Ranald T. Adams, Jr., Commander
CMSgt. Edward H. Johnston, Senior Enlisted Advisor


**Air Force Test and Evaluation Center**
Hq. Kirtland AFB, N. M.
Maj. Gen. Robert A. Rushworth, Commander
CMSgt. Martin J. Kuettel, Senior Enlisted Advisor


**Air Force Management Engineering Agency**
Hq. Randolph AFB, Tex.
Maj. Gen. Jack I. Posner, Commander
CMSgt. William C. Toups, Senior Enlisted Advisor


**Air Force Intelligence Service**
Hq. Washington, D. C.
Maj. Gen. George J. Keegan, Jr., Commander
CMSgt. Wayne E. Ford, Senior Enlisted Advisor


**Air Force Military Personnel Center**
Hq. Randolph AFB, Tex.
Maj. Gen. Walter D. Druen, Commander
CMSgt. Theodore J. Severson, Senior Enlisted Advisor

**Air Force Commissary Service**
Hq. Kelly AFB, Tex.
Maj. Gen. Daniel L. Burkett, Commander


**Air Force Accounting and Finance Center**
Hq. Denver, Colo.
Maj. Gen. Lucius Theus, Commander
CMSgt. Melvin D. Bauer, Senior Enlisted Advisor


**Air Force Audit Agency**
Hq. Norton AFB, Calif.
Brig. Gen. Joseph B. Dodds, Commander
CMSgt. Robert S. Wise, Senior Enlisted Advisor

**Air Force Data Automation Agency**
Hq. Gunter AFS, Ala.
Brig Gen. Frederick L. Maloy, Commander


**Air Reserve Personnel Center**
Hq. Denver, Colo.
Brig. Gen. James E. Dalton, Commander
CMSgt. John W. Spencer, Senior Enlisted Advisor


**Air Force Office of Special Investigations**
Hq. Washington, D. C.
Col. Roy C. Tucker, Jr., Commander
CMSgt. Billy Johnson, Senior Enlisted Advisor

The post-World War II Luftwaffe, only twenty years old, is the second largest NATO-committed air force in manpower and the third in number of aircraft. One of its former commanders describes the German Air Force's organization, tactical concepts, operational capabilities, and modernization plans in this article on . . .

# The Luftwaffe 1976

BY GEN. JOHANNES STEINHOFF, GAF (RET.)

THE history of the Luftwaffe goes back to the early days of the first World War. Those were the romantic times in aviation, when biplanes armed with slow-firing machine guns fought high over the battlefield. Brave men in leather flying suits, with helmets and huge goggles, their scarves fluttering in the wind, did Immelmanns, cloverleafs, and loops near the ground, while the infantry in the trenches and foxholes waved and cheered and threw their caps in the air. The beginning of Germany's air arm is associated with such famous names as von Richthofen, Boelke, Immelmann, and Udet.

But the Luftwaffe became an independent service only in 1935. Before then, it was the army's air arm, and a part of the army. One should bear in mind that Germany, as a continental nation, always had a strong army, and the army always wanted the primary task of the Luftwaffe to be close support. Despite that emphasis, the idea of strategic air warfare goes back to World War I, when the Germans began strategic operations in the true sense of the term: "Strike against the resources and lifelines of the enemy and against the morale of his population."

Zeppelins were assigned to wage strategic air warfare against Great Britain in 1916 and 1917. They crossed the Channel by night and dropped bombs on London and the harbor cities—a very expensive, but not a very successful, enterprise. These Zeppelin attacks were followed by bomber raids. The huge Gotha and Dornier long-range bombers were operational toward the end of the war, but their attacks against Britain became effective only when it was too late.

The Luftwaffe, founded in 1935, learned from its experience in that war. However, it remained a tactical air force rather than developing a truly strategic capability. The Luftwaffe's World War II bombers could reach the British Isles, but a long-range bomber capable of crossing the Atlantic with a reasonable bomb load never became operational.

The new Luftwaffe was born in 1956, the day the Federal Republic of Germany became a member of the North Atlantic Alliance. Building a new air force was full of problems and difficulties, since the Federal Republic had not been allowed to have a military force for more than ten years. All the former pilots, technicians, maintenance and radar people, and antiaircraft artillerymen had returned to civil life after World War II and had to be called back to active duty. But in the intervening decade, a technical revolution had taken place. The world had entered the jet age. Nuclear weapons, rockets, and missiles had been introduced into the arsenal of the major military powers.

Progress since that time has been remarkable. Today the Luftwaffe, a tactical air force, is fully operational. It plays an important role in the NATO Air Forces in Central Europe, and its operational standards are high.

## Command and Control

Command in peacetime rests with the Federal Minister of Defense. On his behalf, the Chief of Staff of the Luftwaffe issues orders to major subordinate commands. At the same time, the Chief of Staff of the Luftwaffe is head of a division in the Federal Ministry of Defense, the Luftwaffe-Staff, and he has administrative control of all Air Force personnel. He reports to the Federal Ministry of Defense on the operational readiness of the Luftwaffe. Thus, the Air Force Staff is a division in the Federal Ministry of Defense and at the same time of the Supreme Command of the Luftwaffe. The Chief of Staff exercises his command and authority either on his own responsibility or in proper collaboration with the other service staffs and divisions of the Ministry, depending on his cognizance and assigned responsibilities. He is a member of the Federal Armed Forces Defense Council, whose Chairman is Chief of Staff, Federal Armed Forces. The Council is the highest military consultative body in the Federal Ministry of Defense.

But the Luftwaffe Chief of Staff does not exercise operational control over his units. The Luftwaffe assigns all of its operational units to the operational control of the Commander, Allied Air Forces Central Europe (COMAAFCE) and to the Commander, Baltic Approaches (COMBALTAP) respectively. COMAAFCE controls two Allied Tactical Air Forces (ATAFs). The Second ATAF, with headquarters in Mönchen-Gladbach, is at present under a British commander. The Fourth ATAF, under a German Air Force general, has its headquarters in Ramstein.

Before dealing with command structure and operational units, I should explain what basically distinguishes the Luftwaffe from other air forces in the Western world. Because of the peculiar conditions of the Central European theater—the narrow land and airspace in Central Europe—it was decided that all air defense units should be under command of the Luftwaffe and manned by Luftwaffe personnel. This includes both Nike and HAWK units. Offensive missile systems of a certain range, such as Pershing, which play a role in the nuclear strike plan, were also assigned to the Luftwaffe.

## Command Structure

Under the Chief of Staff, Luftwaffe, are three major subordinate commands: Luftwaffe Tactical Command, Luftwaffe Support Command, and Luftwaffe General Office.

The Luftwaffe Tactical Command includes all flying and ground-based operational combat units, organized into four divisions. The divisions are responsible for the operational readiness of their units, which are all assigned to NATO. Their operation centers are either combined national/NATO operation centers (Allied

*The Alpha Jet, shown here landing on the Autobahn, will replace the Luftwaffe's Fiat G-91s as a close-support aircraft.*

Tactical Operation Centers, ATOC) or constitute the "German element" in an Allied Sector Operation Center (SOC).

Under the Luftwaffe Support Command, logistic units and activities are organized in the Northern and Southern support regions. Another agency under the Luftwaffe Support Command is the Air Materiel Office. Other functions, such as training, the Air Weather Service, Air Transport Command, communications, and personnel management come under the Luftwaffe General Office.

### Operational Units

The Luftwaffe is made up of tactical, air defense, and support elements in consonance with terms of the North Atlantic Treaty, the "assigned" forces or forces "earmarked for assignment" are, or in case of hostilities will be, operationally controlled by NATO commands under exactly defined conditions. One of the command and control functions of the NATO Command Authorities is to check the combat readiness of operational units. This is done by tactical evaluation teams at irregular intervals, to ensure uniformity in standards of training, operational effectiveness, and deterrence in all NATO units. Logistics, personnel, management, training, and other support tasks continue to be matters of national responsibility.

Maintaining operational effectiveness requires the continued efforts of all units and commanders. The air defense system, for instance, has to operate round the clock to ensure the surveillance and security of German and Western European airspace. A certain portion of the fighter-bomber and reconnaissance aircraft and missile units are on "quick reaction alert" (QRA) at all times.

### Luftwaffe Tasks

Before looking at the tasks of the operational units, we must first consider the fact that the Luftwaffe is part of the NATO forces in Central Europe. In this theater, there is an unprecedented massing of troops and weapons on both sides of the Iron Curtain. Therefore, the task of the Luftwaffe is dictated by factors different from those in other regions of the world. These are: massing of armed forces, narrowness of the land and airspace, and weather factors.

The Chief of Staff, Lt. Gen. Gerhard Limberg, recently wrote an article, "The Challenge," in the *Jahrbuch der Luftwaffe.* He dealt with the threat facing NATO forces in Central Europe and characterized the development of the Warsaw Pact air forces in these words:

> Since the end of the 1960s, the Soviet Union has continuously increased its air warfare potential. The development of the Soviet Air Force is characterized by:
>
> • A more than fifty percent increase of ICBM units,
>
> • A decrease of the long-range bomber reconnaissance and fighter units,
>
> • An increase of approximately forty percent of the total number of ground-support aircraft, and
>
> • A qualitative improvement of the flying systems.
>
> The strong air components supporting the Soviet ground forces pose the major conventional air threat in Central Europe. Neglecting possible increases through reserve units, roundabout 4,200 fighting aircraft can be deployed by the Soviet Union during a conflict in Central Europe. The basic features of the new generation of Soviet aircraft are:
>
> • Variable geometry,
>
> • Modern, sophisticated munitions,
>
> • Effective avionics,
>
> • Increased payload for weapons, and
>
> • Increase in range.

Before I deal with the operational concept of the Luftwaffe in detail, let's look at its specific geostrategic conditions. The Federal Republic of Germany, situated in the heart of Europe and, therefore, a potential

*Lt. Gen. Gerhard Limberg has been Chief of Staff of the German Air Force since April 1974.*

gateway between the eastern and western parts of the continent, is exposed to a severe air threat. Bordering on the Soviet sphere of power, its average depth is about 300 kilometers.

### Tactical Units

The tactical units are the offensive forces of the Luftwaffe. As part of the NATO Air Forces in Central Europe and under the operational control of AAFCE, the offensive forces conduct the classic operations of a tactical air force:

• Attacks against enemy air forces on the ground,

• Interdiction of targets in the enemy's rear,

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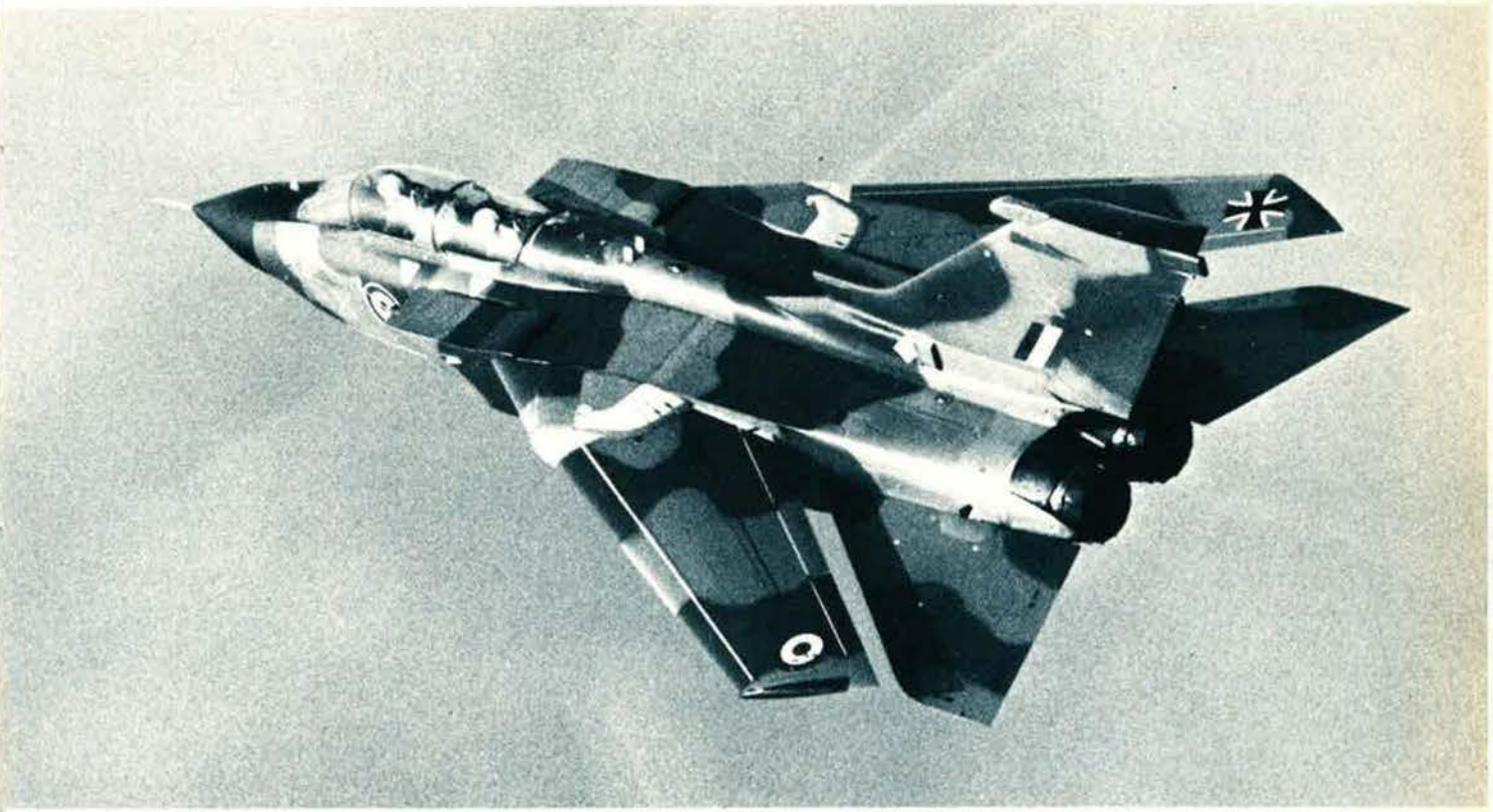
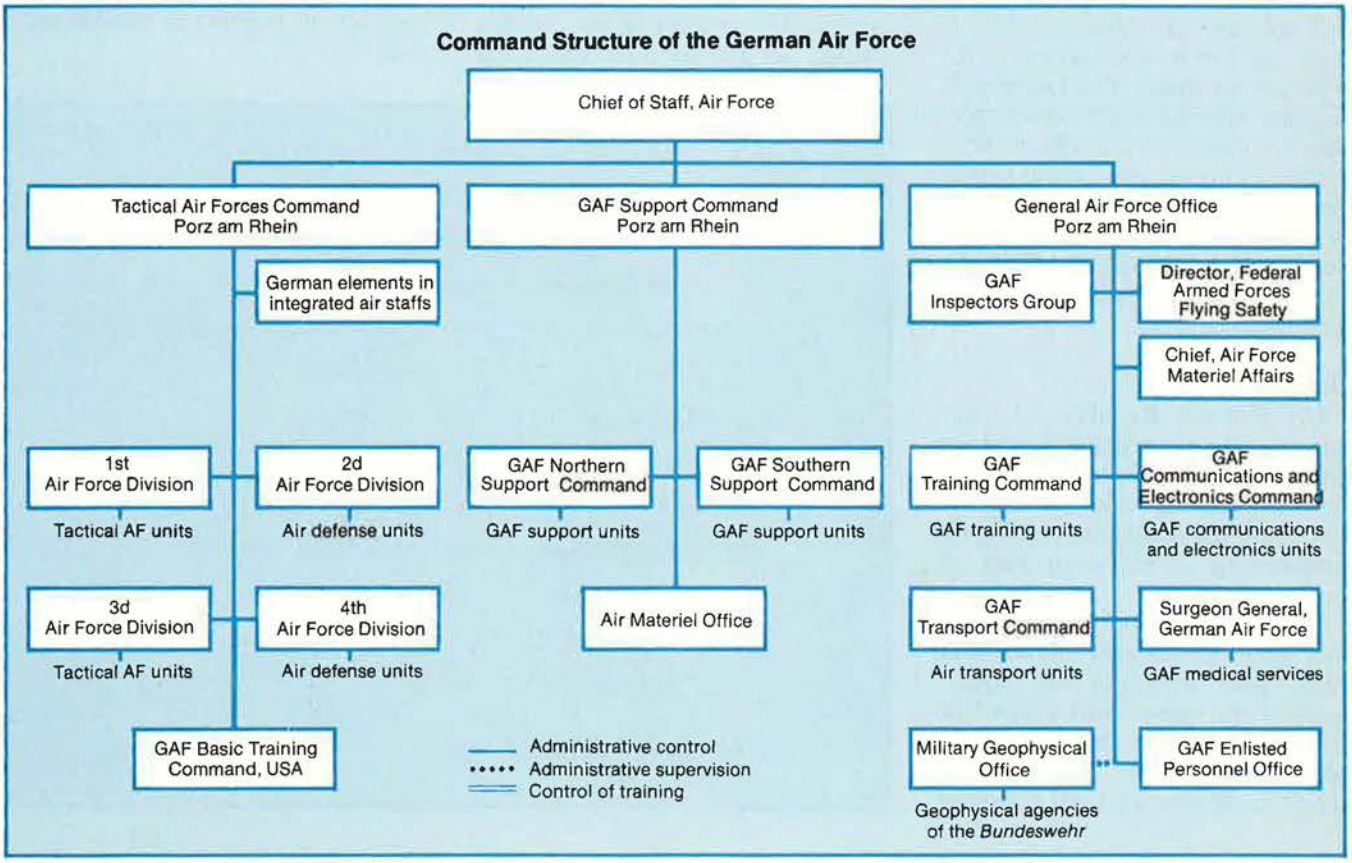
*The author, retired German Air Force Gen. Johannes Steinhoff, was a leading Luftwaffe ace of World War II with 176 confirmed victories, and the commander of its first jet fighter wing. He rejoined the Luftwaffe when it was reestablished in 1956, took refresher jet training in the US, and was named Assistant Chief of Air Staff (Plans). After a tour as Permanent Military Representative to NATO's Military Committee in Washington, he became Chief of Staff of Allied Air Forces Central Europe. In 1966, he was appointed Chief of the German Air Staff, and in 1971 became Chairman, NATO Military Committee in Brussels. General Steinhoff retired in 1974, lives in Bonn, and has recently been named Executive Director of* Aerospace International *Magazine.*



*The MRCA Tornado, developed jointly by Germany, Italy, and the United Kingdom, will join operational units in 1978 and 1979.*



- Battlefield interdiction,
- Direct attacks against enemy ground forces on the battlefield or enemy naval forces in coastal waters.

In an alliance such as NATO, whose declared strategy is strictly defensive, offensive air forces are an effective contribution toward deterring a potential enemy or, in case of an engagement, toward capturing the initiative. This is due to their specific capabilities of quick-reaction, flexible employment over extensive areas, rapid formation and deployment of concentrations, and the ability to engage a wide variety of targets.

The Luftwaffe's contribution to NATO offensive forces is comprised of four fighter-bomber wings with the F-104G Starfighter; two fighter-bomber wings with the F-4F Phantom; two light combat wings with the Fiat G-91; one training unit with the Fiat G-91; two missile wings with the Pershing; and two reconnaissance wings with the RF-4E Phantom (*see box*).

Luftwaffe fighter-bomber and attack aircraft are also capable of being used in a secondary role for defensive air tasks. The Luftwaffe's Pershing missiles could attack preplanned targets deep in the enemy's territory. This weapon system figures significantly in the nuclear capability available to the Supreme Allied Commander Europe (SACEUR). Some of the offensive air wings also are nuclear capable.

### Air Defense Units

The Federal Republic of Germany is densely populated and its industries are concentrated. Opposing this country and its NATO partners is the mammoth and highly sophisticated offensive air fleet of the Warsaw Pact.

The NATO countries agreed to pool their air defense efforts and assign their personnel and equipment to the operational control of SACEUR, even in peacetime. The German air defense units assigned to SACEUR are two F-4F Phantom fighter wings; six Nike surface-to-air missile battalions; nine HAWK surface-to-air missile battalions; and four radar control and reporting regiments.

### Air Transport Units

The air transport organization, which comes under the Luftwaffe General Office as mentioned earlier, provides support to all services and permits rapid movement of personnel and materiel over short, intermediate, and long distances. Air transport is subdivided into the following functions: logistical air transport, troop carrier missions, airlift for airborne operations, medical air evacuation, search and rescue, and special air transport missions for military and civilian purposes.

The transport units are equipped with the C-160 Transall and the Bell UH-1D.

### Training

Effective execution of the Luftwaffe's mission depends on its autonomous and efficient training system. The concept of the "citizen soldier," as defined in the legislation governing military service in the Federal Republic of Germany, relates the rules of military service to those prevailing in civilian society. In military training, civilian occupational backgrounds that can be applied to military service are taken into account. In turn, long-term airmen are trained during their service for subsequent civilian jobs.

All officer candidates get basic military training for fifteen months. This is followed by a three-year officers' training course at one of the two degree-granting Armed Forces Universities. Subsequent specialized training lasts an average of nine months, with a maximum of two and a half years for pilots. Pilots, who are subject to a special age limit, are given assignment-oriented training without attending an Armed Forces University.

Noncommissioned officers may make careers as specialists.

Most of the Luftwaffe's specialists (pilots, navigators, and missileers) are trained in the United States. Between 2,000 to 2,500 Luftwaffe airmen attend training in the US each year.

**TODAY'S LUFTWAFFE AT A GLANCE**

| | |
|---|---|
| **Manpower** | 110,000 (40,000 enlisted) |
| **Reserves** | 100,000 |
| **Combat Aircraft** | 444 |
| **Attack Squadrons** | 17: 4 with 60 F-4Fs, 8 with 144 F-104Gs, 5 with 102 G-91s (to be replaced with Alpha Jet) |
| **All-Weather Fighter Squadrons** | 4 with 60 F-4Fs |
| **Interceptor Squadron** | 1 with 18 F-104Gs |
| **Recce Squadrons** | 4 with 60 RF-4Fs |
| **Transport Squadrons** | 5 with 76 Transall C-160s |
| **Helicopter Squadrons** | 4 with 105 UH-1Ds |
| **SSM Squadrons** | 8 with 72 Pershing missiles |
| **SAM Batteries** | 60: 24 with 216 Nike Hercules missiles, 36 with 216 HAWK missiles |
| **Aircraft Control and Warning Regiments** | 4 |

All air defense units, including these HAWK surface-to-air missiles, are under command of the Luftwaffe, as are Germany's Pershing tactical missiles.

The Luftwaffe's five transport units are equipped with Transall C-160s, a medium transport developed through Franco-German cooperation.

The following training organization exists in the US:

- The German Training Command in the US at Fort Bliss, Tex.;
- The Missile School of the Luftwaffe at Fort Bliss, Huntsville, Ala., and Fort Sill, Okla.;
- A training squadron at Sheppard AFB, Tex.;
- A training squadron at Luke AFB, Ariz.;
- A training squadron at George AFB, Calif.

Basic flying training for the Luftwaffe and the German Naval Air Arm is conducted at Sheppard AFB. This training lasts thirteen months and the students fly a total of 260 hours in one year. After graduating from Sheppard, they proceed to Luke AFB for F-104 Starfighter combat training, to George AFB for

F-4 Phantom familiarization, or to Shaw AFB, S. C., for RF-4F pilot training.

Luke is sometimes called "Kraut Field" because for the past twenty years German pilots have been training there, averaging nearly 11,000 flying hours annually.

After flying training, all pilots and navigators proceed to Homestead AFB, Fla., to attend a brief air-sea rescue course.

Since air defense is solely the responsibility of the Luftwaffe, it has all of the SAM units. In order to train its personnel effectively, the Luftwaffe established a school at Fort Bliss, taking advantage of US Army facilities, including its SAM firing ranges. In addition to training technical officers and NCOs, as many as eighty officer candidates take a twelve-month training course at the SAM School every year. Operators, technicians, and unit leaders for the eight Pershing squadrons are trained at Fort Sill and Huntsville.

### Modernization Plans and Outlook

Like other air forces, the Luftwaffe is in a process of constant modernization. Although it has effective and relatively modern weapon systems, the Luftwaffe must continuously update its weapons and supporting systems. Within the next few years, it will have to buy new aircraft to replace the aging F-104 Starfighter, the F-4 Phantom, and the Fiat G-91.

The MRCA (Multi-Role Combat Aircraft) Tornado is NATO-Europe's most advanced and ambitious aircraft project. It became evident in 1967 that a number of European nations would need a new combat aircraft at some point between 1975 and 1978 to replace their F-104 Starfighters and other aircraft of similar vintage, which by that time would be reaching the end of their fatigue lives. Tornado, developed by the United Kingdom, Italy, and the Federal Republic of Germany, will enter operational units in 1978 and 1979. It is designed as a multipurpose aircraft for long-range interdiction, battlefield interdiction, naval strike, air superiority, and reconnaissance missions. A twin-engine, two-seat, supersonic aircraft, its variable-geometry wings, complex avionics, and advanced engine give it a multirole capability.

The Tornado is, with the exception of the F-111, the only Western long-range aircraft capable of flying all-weather missions day or night. Because of the often unfavorable weather conditions in Central Europe, the Tornado, as a fast, low-level penetrator, will play a very important conventional and nuclear role. Its outstanding STOL capability will enable it to operate from short fields with steel matting and semiprepared runways.

The introduction of Soviet ground-based missile systems, such as SA-6 and SA-8, has made NATO strike missions feasible only with high-speed, low-level penetration and single-pass, low-level attack.

A Texas Instrument-built terrain-following radar in the Tornado enables the aircraft to fly beneath enemy radar in any kind of weather. When it becomes operational in the Luftwaffe and the German Naval Air Arm, the Tornado, equipped with standoff missiles, cluster bombs, and other modern weapons, will serve as the hard core of NATO's tactical strike force. This aircraft will make AAFCE's forces in Central Europe much more effective.

The other aircraft due to be replaced very soon is the close-air-support Fiat G-91. The Luftwaffe selected the Alpha Jet, a ground-support version of the modern training aircraft developed by Germany and France, to replace the Fiat. The performance of the Alpha Jet—high speed, long range, exceptional rate and radius of turn—make this aircraft a good replacement for the Fiat. In a way, the Luftwaffe followed the US Air Force's philosophy of using a ground-support aircraft like the A-10 for the specific task of supporting the ground forces. Both the Tornado and Alpha Jet are now in production.

There are other obsolete weapon systems that must be replaced—air defense systems, for instance. While Nike and HAWK surface-to-air weapon systems still fulfill the operational requirement, they will have to be replaced within the next decade. This is especially true for Nike. The HAWK has gone through an extensive modernization process and its operational life has been extended. Together with the United States, the Federal Republic is studying the possibility of using the air defense weapon system SAM-D as a possible early successor for Nike, and later to replace the improved HAWK. This is a complex problem since the air defense missile system in Europe is fully integrated and since most of the NATO nations participate in this program by stationing Nike or HAWK units on German soil. How can we replace the present SAM air defense "missile belt"? Questions like deployment and financing have not been decided. But time is running out and the decision to replace Nike and HAWK must be made soon.

Another burning issue for the Luftwaffe is the introduction of the Airborne Early Warning and Control System (AWACS). The possibility of improving NATO's air defense and early warning system with AWACS is evident, and the system's potential is convincing. But since air defense has always been an integrated NATO responsibility, the Federal Republic is not in a position to procure AWACS alone. NATO is presently studying the possibility of joint procurement.

The Luftwaffe has become an effective tactical air force since its rebirth twenty years ago. It has no major personnel problems. Modernization, everywhere a crucial budgetary problem, will take place as planned. Together with the US Air Force and the Royal Air Force, the Luftwaffe forms the backbone of the defenses in Central Europe. ■

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# THE ACE

**The first American fighter ace of World War II relives his August 27, 1941, mission with RAF No. 71 Eagle Squadron, when he downed his fifth and sixth enemy aircraft, and was himself severely wounded.**

**BY LT. COL. WILLIAM R. DUNN, USAF (RET.)**

IT WAS still dark on the morning of August 27, 1941, when the batwoman (yes, a WAAF) knocked on my quarters door, entered the room, and turned on that bloody bright light. "Four o'clock, sir," she cheerfully informed me. "You've got to be at dispersal in an hour. Come on now, sir, hop to it." Then she shoved a cup of boiling tea under my nose. How could she be so damned cheerful at four in the morning?

"Okay, okay, I'm awake," I responded sleepily. "What's the weather like?" She said the sky was brilliantly clear with twinkling stars (bloody poetic), dawn would soon be upon us, and it looked like the day would be nice and sunny. Hell's fire, I mused, why couldn't it be raining and socked in with fog so we could stand down, or be released, and I could sleep in for a few more hours? Not today, kid. War is hell! Get out of the sack if you want any breakfast.

I struggled out of bed, took a semi-cold shower, dressed in my old flying uniform, and went to the mess dining room. Some of the other guys of No. 71 Eagle Squadron were already breakfasting—McGerty, Uncle Sam, Crowley, Gussy, and Provenzano. Several others straggled in during the next few minutes. I was surprised to see so many squadron pilots being routed out—usually there were only four or six of us on readiness at this time of the morning—so I wondered out loud what was going on. Uncle Sam told me we were going on a circus this morning, the whole squadron, and that's all he knew about it. (A circus, in RAF language, was a bomber mission with fighter escort.)

Our breakfast, nicely served to us by more WAAFs, consisted of two sausages (ninety percent bread and ten percent meat mix), a fried tomato (I grew to hate them), toast, jam, and a brackish liquid the English mistakenly called coffee. No sense in complaining—the stock response was: "Don't you know there's a war on?" By the way, we were rationed one egg per month. Everyone, even the Admin types, got up for breakfast on that morning.

In ten minutes, breakfast was finished and six of us piled out of the mess and into Flight Lieutenant George Brown's little canvas-covered truck for our ride to the dispersal hut on the far side of North Weald Airfield. The others caught a ride with Squadron Leader Paddy Woodhouse, who had been issued a staff car.

At dispersal we were assigned to our flight and section positions. I was assigned Blue Three. My aircraft was a Spitfire IIA, code letters XR-D,

serial number P7308. I usually flew aircraft XR-D or XR-T. Both were good machines, but XR-D had just a bit more zip, I thought. Just as we went out to the dispersal bays to get our aircraft ready, lugging our parachutes and flying helmets, I heard the operations corporal calling 11 Group to report No. 71 Squadron's readiness status.

The fitter (crew chief) had already run up my Spit's engine. She checked out okay, he informed me. I stepped up on the port wing root and straightened out the Sutton harness to suit me, put my chute into the cockpit seat, and climbed in.

After checking the fuel gauges, I selected most of the switches to the "on" position, except for the master switch. Then I unscrewed the Ki-gas pump, but left it closed. Next I set up the throttle, mixture, and propeller pitch for quick starting. I plugged in the radio cord and oxygen tube, and placed my flying helmet over the gunsight. Then I checked the maps in the map case, and reached up above the windscreen and adjusted the rear vision mirror. The engine coolant temperature was normal—about eighty-five degrees. Hydraulic and oxygen pressures were good.

After this, I climbed out of the narrow cockpit and did a "walk-around" inspection of the aircraft. All okay, ready to go. I patted my XR-D affectionately on her brown and green camouflaged fuselage. By this time the sky was fairly light with the coming dawn. I signed the Form 400 for the fitter and walked back to the dispersal hut.

Now there was nothing to do but wait. Damn, I hated that waiting! I put my "Mae West" on, and then, like the other pilots, settled down in a chair to try to catch a few more minutes of shut-eye. I must have dozed off, because when the ops phone rang I really came alive—we all did. The squadron leader was called to the blower for a briefing on the circus by some 11 Group staff weenie. Following a few minutes of muffled conversation, Paddy hung up the phone, picked up his hurriedly scribbled notes, and walked over to the briefing blackboard.

"Okay, boys," he began, "the operation is on: Circus 86. The wing will escort nine Blenheims to bomb the steel plant at Lille. We will fly top cover. The other two squadrons of the wing will provide close escort. Intelligence says we can expect enemy fighter reaction—a couple of squadrons at least, probably the Abbeville Kids—so keep your eyes open. And, damn it, if you see a Hun, give your call sign and his clock and altitude position. If you just call out, 'Bandits,' you'll give everyone in the circus a dose of the brown ring twitch. Start engines time will be 0600 hours—in ten minutes. You new boys stick with your section leaders if we get in a flap. Any questions? No? Okay, let's go!" Short and sweet and to the point.

### Red Flak

The time is now 0815 hours. Takeoff had been delayed, and we've been in the air a little more than an hour. We're at 18,000 feet, flying top cover to protect the nine Blenheim bombers from surprise top and rear attacks by enemy fighters. We had crossed the French coast near Cape Gris Nez at 15,000 feet on course to Saint Omer and on toward the steel plant target at Lille. Our entire formation, nine bombers and thirty-six fighters, comprised Circus 86.

Far below me, through the scattered clouds, I see the bright flashes of German antiaircraft guns—88-mm—firing at us from the seemingly peaceful green fields. The brownish-black shell bursts come quite close at times, though usually a little behind and below our formation. I can easily see the course we have flown by glancing back at the long avenue of slowly diminishing dark smoke puffs. From the moment we crossed the coast, the Huns had fired at us constantly.

Our squadron leader had ordered us to fly in a wide "vic" battle formation, to keep changing height, and to weave back and forth above the Blenheims. His voice comes to me clearly through my R/T (radio-telephone) earphones as he delivers his orders to the section leaders.

"Parson White Section. Parson Leader calling. Keep together, White Section. Don't straggle, White Two."

I look over at the right side of the formation—"A" Flight's side—to see if White Two has got back in position. He has. It's like asking for it to straggle. One seldom sees what happens to stragglers. They just disappear. They're easy prey for enemy fighters to bounce and shoot down.

Again Paddy's crisp voice over the R/T. "Parson Squadron. Parson Leader here. Red flak. Watch out for 109s."

Behind us I see several red ack-ack smoke puffs. Not very dangerous looking, but it means that enemy fighters are up and being vectored toward us by a combination of these visual markers and radio communications. Every time I see these red puffs, I get a kind of tingling sensation up and down my spine. I know that in the next few minutes my life may end. It just doesn't seem possible that in this bright, beautiful, sun-filled summer sky there are men waiting to kill me—or for me to kill them. I wonder if the Hun pilots have similar feelings. I suppose they do.

I reach up to the instrument panel and switch on my reflector gunsight. Its circle and dot glow a faint orange color on the glass plate before my eyes. I double-check the span setting—thirty-two feet—and the range setting—250 yards. Then I press the petrol (fuel) indicator button. Yes, plenty of fuel. Enough for another hour or so, even at high boost. Next I set my compass ring on the reciprocal of my present course heading—the return direction to England. This last simple precaution eliminates the initial orientation problem after the confusion of an air battle. Last, I turn the gun button on the control column to "fire." I am ready to fight.

### Splash Number Five

"Hello, Parson Leader. Parson Blue One calling. Three 109s, seven o'clock high."

My head snaps around toward the

left rear, and I search the sky until I see three enemy machines flying about 4,000 feet above us. Their course is the same as ours. Evidently waiting for some straggler.

Now, suddenly, startling as a whip crack, white streaks shoot past my starboard wing. I yank the control column hard to the left and back as I jam the throttle full open and whirl around in a steep climbing turn. I switch my R/T transmitter to "send" and, while trying to control my inward excitement, say in a slow, even voice, "Parson Squadron. Blue Three. Snappers at six o'clock high. Watch out below." My job as top weaver is done. I've warned the squadron and the bomber escort. Maybe a bit late for the first attacking enemy fighters—but I've alerted them against those Me.109s that follow.

Below me there is no longer a formation of our eleven top-cover fighter aircraft. The individual sections of my squadron have split away, breaking up the wide "vic." They're all mixed up in groups of twos and threes. Each little group is twisting and turning as the air battle develops. The attacking Huns have come straight down on us, hoping to break through the escort and get to the bombers. It was the leader of the first section of four Me.109s that had taken a quick squirt at me as he dove past.

Over on the right side of the formation I see a long trail of white smoke. One of our Spitfires is in a steep, fast dive with glycol streaming out behind it. He has been hit in the radiator or engine coolant system and is making for the French coast and home with his damaged aircraft. Hope he makes it.

Another section of four Huns comes down to join in the scrap. The bluish-white bellies of their machines flash in the morning sun. I can clearly see the black crosses, bordered with white, painted on their stubby, square-tipped wings. All the Messerschmitts' noses are painted a bright yellow. We know this German unit—we've met in battle before—as the Abbeville Kids. Most of the Hun machines are Me.109Es, with a few of the newer type Me.109Fs.

A Spitfire from B Flight—Flight Lieutenant George Brown, I think—

*Author Bill Dunn has been a frequent contributor of World War II combat stories. Two years after the mission described here, he transferred to the USAAF and added several more victories to his score, flying P-47s and P-51s in Europe, Burma, and China. After the war, he was a military adviser to the Nationalist Chinese, Iranian, and Brazilian air forces. Colonel Dunn retired in 1973 and now lives in Colorado Springs, where he follows a second career as a painter and writer.*

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climbs up to engage the four newcomers. I watch his eight machine guns send a long burst of .303s into the belly of the third 109. The enemy aircraft's fuselage is blown in half just in front of the tail section. Then the port wing explodes and rips off as the ammunition tray for the 20-mm cannon in it is hit. Another second and the Messerschmitt's hood jettisons off. Out comes the enemy pilot from his cockpit. I momentarily watch his body falling through the air until his parachute snaps open far below the fight. How he was able to get out of that machine alive, I'll never know. The lucky s.o.b.

On the far side of the scrap there is a large flash—just a flash and that's all. Someone has been blown to bits. I can't tell whether it was a Spitfire or a 109. Fragments, all that remains of the aircraft and its pilot, rain down from the sky.

The fight is now about twenty or thirty seconds old. Things happen very fast in air combat. To the onlookers, or rather the uplookers, our fights last for only a few minutes, but to us, the fighter pilots, they sometimes seem an eternity.

So far in this engagement, I have only been attacked by the first enemy section. I look around for a 109 that will give me a good target. In the previous months, I had shot down four enemy aircraft. Now I need one more victory to earn the coveted title of fighter ace. Just above the scrap I see two Me.109Fs that are evidently waiting for a shot-up Spit or a Blenheim to drop out of the fight and try to get home. Then they'll dive down and finish it off—easy meat.

I climb fast behind and above the two Huns. I'm about 1,500 feet above them now and have the sun at my back. I give my engine full throttle and dive on the rearmost enemy machine. The German leader of the two sees me coming and quickly half-rolls onto his back, diving away from me. The second aircraft—my target—does a climbing turn to the left. I close the range to about 150 yards, line the 109 up in my gunsight, and press the gun-firing button. My aircraft shudders as I hear the sharp chatter of its eight machine guns. Acrid fumes of burned gunpowder fill the cockpit and sting my nostrils. I like this odor—it seems to stiffen my spine and tighten my muscles. It makes my scalp tingle, and I want to laugh.

I see the grayish-white tracer streaks from my guns converge on the Messerschmitt's tail section. The elevators and rudder disintegrate under the impact of the explosive DeWild bullets. Pieces fly off the enemy's fuselage. The range is now down to fifty yards. Black liquid—engine oil—spatters my windscreen and a dense, brownish-colored smoke is flung back at me. My enemy is finished. Splash one, but good! I've got my fifth victory!

### Make It Six

I lift my gloved thumb from the gun button and do a steep climbing turn, first to the right and then left, as I watch the German fall to the French fields below. His aircraft is burning furiously now. It doesn't leave a long smoky trail behind it. This one looks like the blue-white flame of a blowtorch. It seems odd that the Hun pilot didn't really try to get away from me. I guess he must have been a new boy. Well, what the hell, they all count.

The sections of my squadron are fighting at about 11,000 or 12,000 feet now. I'm a couple thousand feet above them. I see the buildings and tall chimneys of the steel plant—the bombers' target—far below and on the outskirts of Lille. Sticks of bombs are now falling. Soon I can see the shock waves caused by their heavy explosions in the target area. All nine Blenheims are still with us, surrounded by the defending fighters of our close escort. Now, to get them safely home again.

From what I can see, the scrap be-

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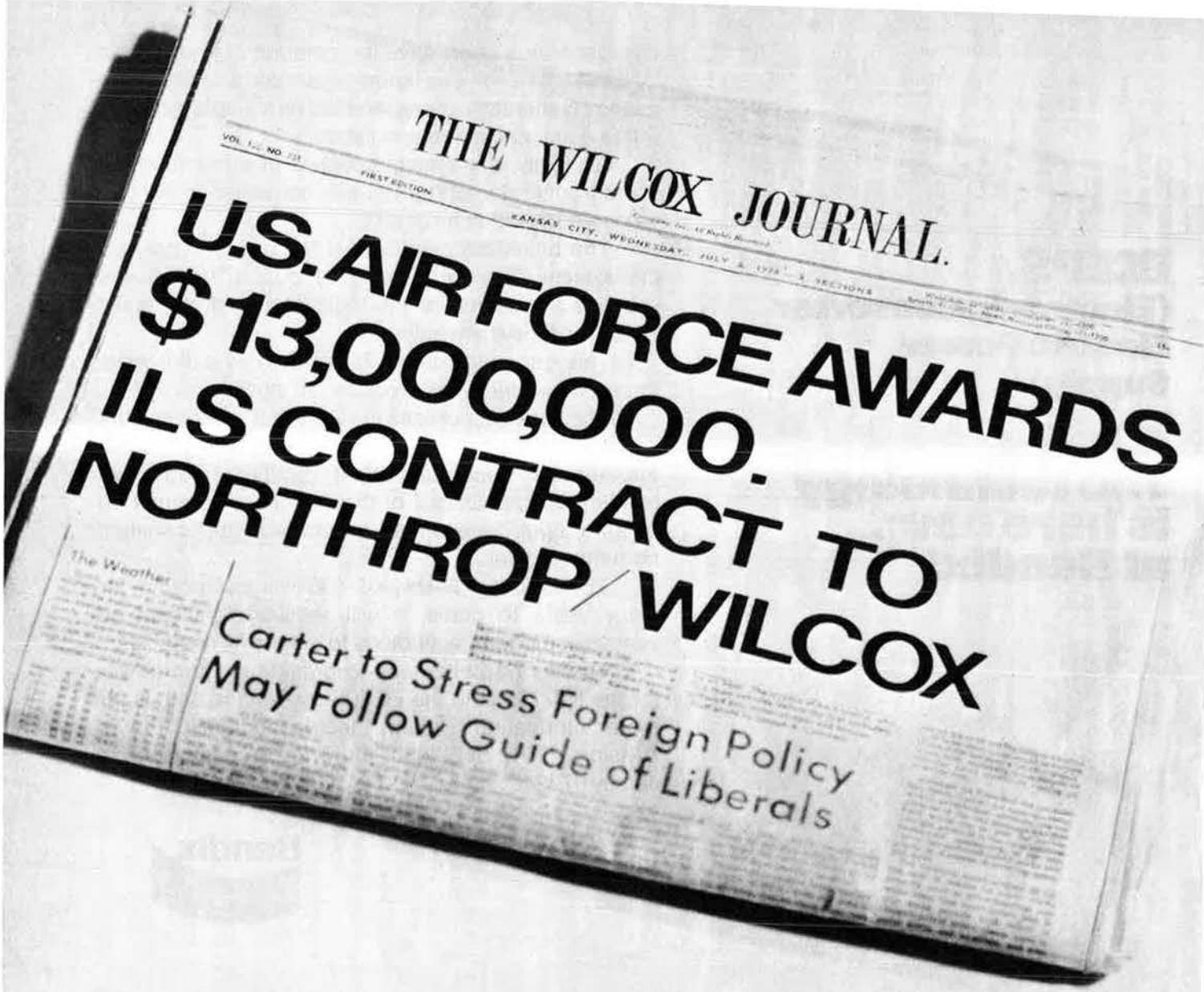


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*This is Spitfire Mk IIA, XR-D, serial number P7308, that the author, Bill Dunn, was flying on the mission of August 27, 1941, described in this article. Though wounded, he managed to bring the shot-up aircraft back to England.*

*This Me.109 is the kind of aircraft the author bagged on the day he became America's first fighter ace of World War II. This is a gun-camera view.*

low is breaking up into a number of running dogfights. Our Spitfires use a lot of petrol in a battle such as this one. The fuel left in our tanks will get us back to England, but it isn't enough to stay over enemy territory and fight much longer. Maybe another ten minutes or so.

My port wing jerks and skids my Spitfire to the right. Now there are several long rips in the metal skin and a jagged hole near its tip. I look back quickly and see my attacker coming at me from the left rear quarter, slightly higher, and closing fast. I think he is the leader of the pair I had first attacked.

There are perhaps three seconds left for me between life and death. The German's tracers, glowing like little balls of fire, flash past my cockpit. I yank back the throttle, jam the flaps full down, and violently skid my aircraft out of his gunsight. He is now closing too fast. I have decreased my speed considerably by dumping flaps—luckily, they didn't blow off. He overshoots me, skimming not more than ten feet above my head.

The bluish-white belly of the 109F fills my windscreen. I can even see oil streaks and rivets on the underside of its fuselage, and above that the black cross insignia, unit markings, and a red rooster painted on the side of the cockpit. The German pilot is peering directly down at me. His expression tells me that he fully realizes the mistake he has just made.

I fire. I can't miss. My guns chatter for no more than three or four seconds. I see the bullets smashing into the Hun machine's belly. Pieces fly off the 109. Then a wisp of gray smoke streams back from its engine, and then the whole aircraft is suddenly engulfed in a sheet of white-hot flame. It rolls over slowly onto its back and starts down at a high rate of speed. The tail section breaks off. I last see it, tumbling as it falls, far below me. Splash two! My face is wet with nervous sweat. I can hear myself gasping in my oxygen mask.

I see another 109 flying level some 500 feet below me and crossing my path from left to right—heading for home, I assume. The Hun pilot has now seen me. He starts taking violent evasive action as I make a diving turn toward his tail. I close to seventy-five yards. He suddenly pulls up into a steep climb. I fire a short burst into his back. He flicks over into a right turn and flies straight across my gunsight. Now no more than thirty yards separate our two aircraft. I fire again. He begins to smoke!

At this moment, in my rear-vision mirror, I see four more Me.109s climbing up to intercept me. This is getting too hot for me. I jam the throttle through the gate, jerk the control column back into my stomach, and climb up and over them. The nearest one takes a squirt at me. His deflection is bad—luckily. The 20-mm cannon shells and machine-gun bullets streak toward me and then veer off my tail.

### Death Flies My Wing

I roll my Spit onto its back, pull on the stick, and the reversed horizon comes up to meet me. I hear explosions and a banging like hail on my aircraft's fuselage. My port wing is hit again. I see pieces flying off. A ball of fire flashes through the cockpit, smashing into my instrument

panel. My right foot takes a heavy blow, bounces off the rudder pedal, and is numb. Two sharp blows bang into my right leg. My head snaps forward, and my vision bursts in a blinding white flash. Then comes a soft, deep darkness. I can just faintly hear bits of broken glass and metal strike the cockpit floor.

Fear grips me with strong arms. It is finally happening to me, the one who wasn't going to die in this war. The one who had planned so many things to do when the war ended.

My neck and the back of my head ache horribly. My arms and legs seem to be floating lightly on air, yet I can feel their weight against my body. My hand on the control column becomes leaden. I want to let go of it, but I haven't the strength to loosen my fingers. It doesn't make any difference anyway. In a few seconds it will all be over. There will be a grinding crash—an explosion—and then nothing.

Visions of my family and friends, those I'd loved in life, appear before my mind's eye. I can see them all smiling tenderly at me. I hear familiar voices murmuring softly, caressingly. They seem to give me a sense of being watched over and comforted during the passage of these last fleeting moments.

My swaying head strikes the side of the cockpit hood. It jars my vision. The deep darkness that covers my eyes lightens little by little. Dimly I see my instrument panel, broken and shattered.

### Home on a Wing and a Prayer

I raise my head and look through the windscreen toward the swirling fields below charging madly upward to enfold me. Suddenly I become conscious of my two hands tugging back on the control column. The nose of my Spitfire is slowly lifting. The land below me stops whirling as earth and sky return to their rightful places. The horizon reappears! My brain tells me that I live! I laugh without sound. I still own life!

Strength has returned to my body. My pulse is beating violently. My skin feels cold and clammy, yet I know that I am perspiring profusely. I shiver. My brief brush with death has ended.

I am again in level flight at 1,200 feet. I look behind and above me for attacking enemy aircraft. There are none. I am alone in this hostile sky, near the little town of Ambleteuse, and about five miles from the French coast. I point my Spit's nose toward England as I inspect its and my own damage.

There are large holes and rips in the port wing, though the aileron controls seem right enough. A shaft of light penetrates the left side of my cockpit. It must be the hole made by the cannon shell that struck my instrument panel. Bits of broken glass from the instruments and twisted scraps of metal lie scattered on the cockpit floor.

I look at my right flying boot. The whole toe of the boot is shot off and covered with blood. My top rudder pedal is also blood-spattered and bent out of shape. My right trouser leg, just below the knee, is drenched with blood and is dripping on the floor. My head and neck pain me terribly—but I am afraid to inspect myself further. I can feel a wet stickiness in my hair, seeping from under my leather flying helmet onto my neck and cheek. I turn on full oxygen and breathe deeply. I must not pass out now!

Ahead, the waters of the English Channel gleam. My Spitfire's engine is running rough, surging. I have enough petrol to get home. I gently weave, as assurance against further enemy attacks. The flight across the channel seems endless, until in the distance I see Dover's white cliffs reaching out to greet me. My engine is losing power. I am now down to 800 feet. I switch on the R/T and squawk "May Day." In no more than a minute or so two Spitfires join me. The leader waggles his wings and beckons me to follow him. The other Spit drops into a position behind me to protect my tail.

My escort leads me across the coastal cliffs to the little grass airfield at Hawkinge, near the town of Folkestone. I change the fuel mixture to "rich," set the propeller to "fine" pitch, select undercarriage "down," and, as I turn to final approach, drop the flaps. One of the escorting Spitfire pilots signals that my landing gear is down. I have no indicator lights in the cockpit. All is smashed. I follow my escort's descent and air speed until the grass surface of the airfield is rushing under my wings. Gently I close the throttle, feel a slight sinking motion, then my wheels are rolling smoothly across the green turf.

I'm home! I'm safe! A feeling of complete relief from the last hour's extreme tension envelops me. Thank you, dear God, thank you.

I see an ambulance parked at the edge of the airfield, so I taxi over to it and stop my aircraft's engine. A medical orderly points toward a fuel bowser and several other aircraft parked near a dispersal hut, telling me that I must go over there to refuel and rearm. I tell him that I'm wounded and to help me get out of the aircraft. He looks at my bloody face and helmet, then at the bloody mess in the cockpit, vomits, and promptly slides off the wing.

A medical officer now arrives, quickly takes in the situation, and has me out of the cockpit and lying on the grass in the shade of my Spitfire's wing. Now I feel very weak. My fingers close on the cool blades of grass. It's good to be back on earth again. Someone puts a lighted cigarette between my lips.

I hear cloth ripping—my trouser leg—two machine-gun bullet holes in the right calf. My flying boot is cut off—the front of my right foot has been blown off by a 20-mm cannon shell. The medics carefully remove my leather helmet—just creased across the back of my head by a machine-gun bullet. Lucky! Bloody lucky!

Two medical airmen help me onto a stretcher and carry me to the waiting ambulance. The Doc gives me an injection and says he's sending me to the Royal Victoria Hospital in Folkestone. So long XR-D. You were a good kite. Hope they can patch us both up.

As the ambulance starts, an intelligence officer scrambles in and sits down on the opposite stretcher. He asks my home station and squadron number. He'll let them know where I am. Then, briefly, I dictate my combat report as he writes in a little notebook. I have done my job today—now he must do his.

The injection in my arm begins to take effect and I—the Ace—pass out. ■


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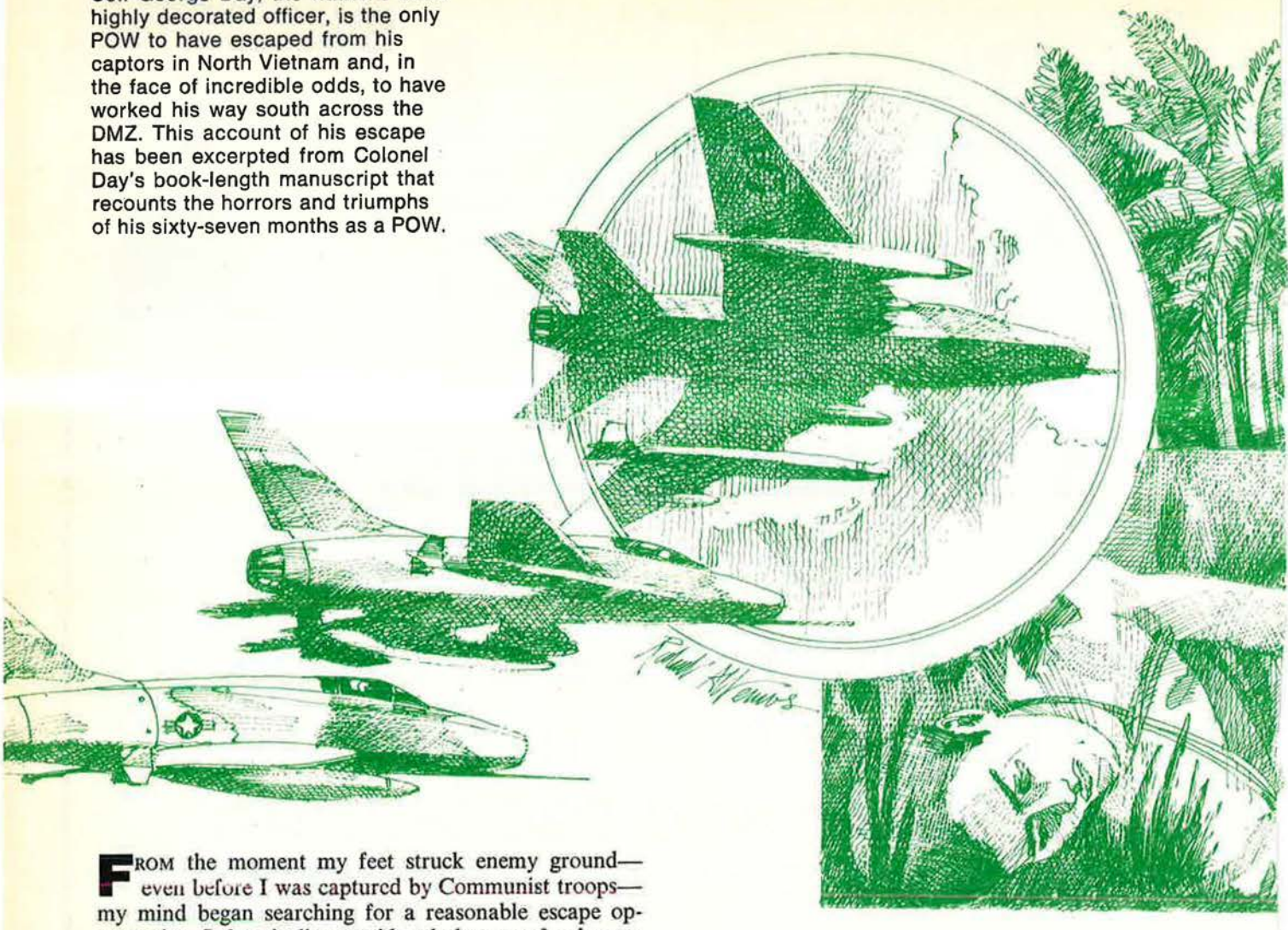
Col. George Day, the nation's most highly decorated officer, is the only POW to have escaped from his captors in North Vietnam and, in the face of incredible odds, to have worked his way south across the DMZ. This account of his escape has been excerpted from Colonel Day's book-length manuscript that recounts the horrors and triumphs of his sixty-seven months as a POW.



FROM the moment my feet struck enemy ground—even before I was captured by Communist troops—my mind began searching for a reasonable escape opportunity. I frantically considered dozens of schemes, discarded each as too risky or too harebrained. With a multiple fractured arm, a badly wrenched knee, and a damaged eye, even the most optimistic Air Force fighter pilot had to admit that chances for escape were low.

However, the gullibility of my youthful Communist guard was encouraging. The young irregular could not have been more than fifteen years old. Despite his instructions to sit sphinxlike outside the hole in the ground where I was being held, each day found him more careless. He spent more and more time talking with a friend on the dusty road several yards away.

By faking internal injuries and a total inability to move, I had convinced him that I posed no escape threat. He had swallowed my act so completely that he began leaning his rifle against the entrance to my bunker, and trying to engage me in sign-language conversation. In one of these "conversations," he told me, unwittingly, that the time had come for desperate measures. He had entered the hole to bind my legs with cheap clothesline, and, after drawing the outline of a jeep on the clay wall, said, "Hanoi!"

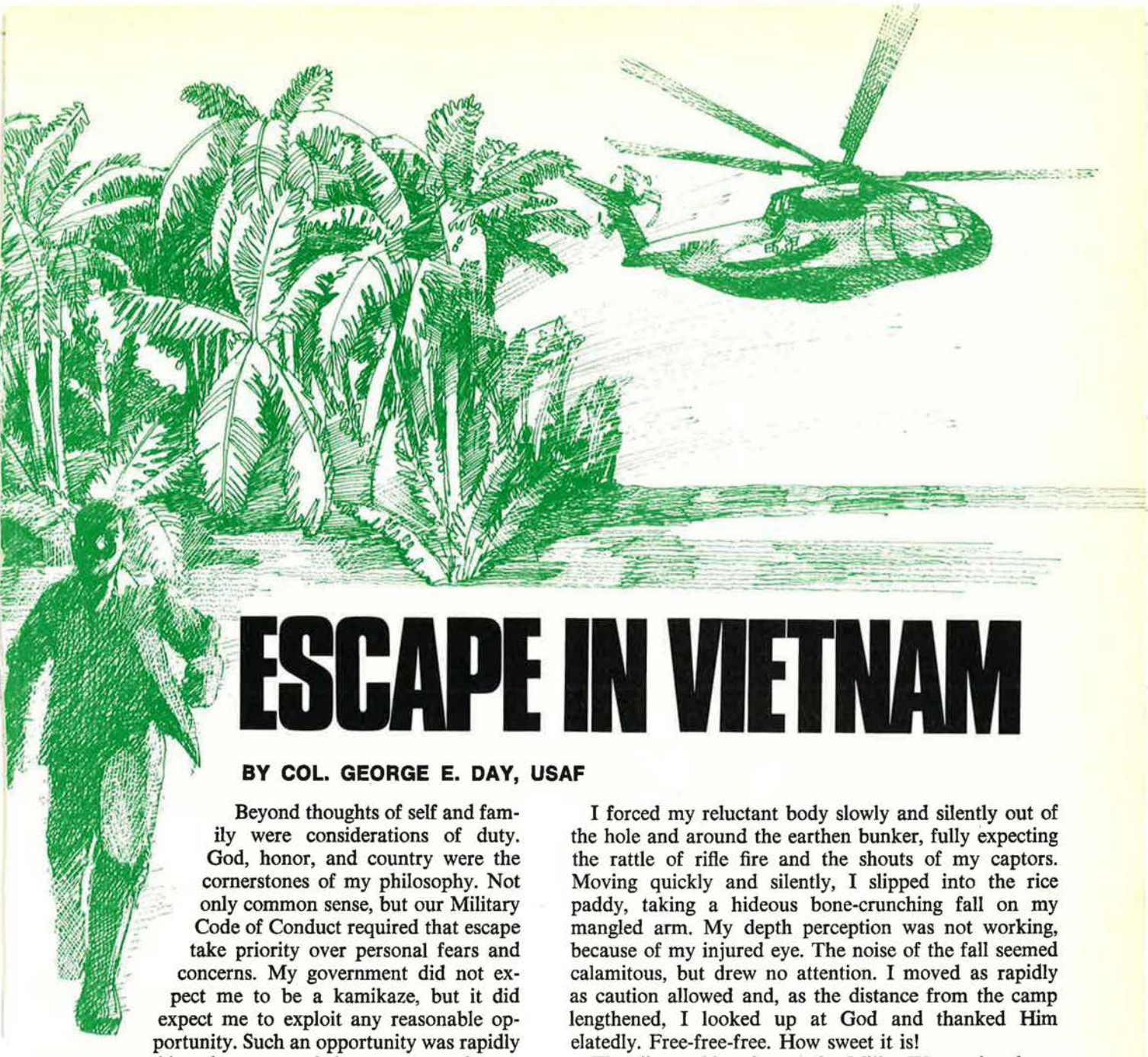
It is an unwritten rule that the best chance for escape is in the first days after capture, while in the custody of untrained guards and outside the walls of an organized prison. Less than one week after my F-100 had been shot down, I had all of the escape conditions going for me in this primitive area of rice paddies. The only impediments to escape were my injuries and the probability that I would take a bullet in the back during the attempt.

Any escape plan had to take into account my wife Doris and our four children who waited for me in Arizona—a sobering restraint to any ill-considered venture. What reasonable man wants to make his wife a widow and leave his children fatherless?

Life as an Air Force major, jet pilot, and squadron commander had been sweet. Travel, excitement, challenge, and comradeship were part of my rich rewards. Who wants to blow a good thing for a near-certain bullet in the back?

What of the alternatives? All the previous day, I had hung by the feet like a side of beef after refusing to answer my captors' questions. This mistreatment was only a prelude. What of prison in Hanoi? Did I want to suffer through barbarous marches in Hanoi as my friend, Col. Robbie Risner, had? And the long, arduous journey to Hanoi with its propaganda parades through every village could not be discounted.

Thus far, my treatment had all of the cruelties and disregard for human decency that US prisoners had suffered at the hands of the Chinese and North Korean Communists a few years earlier. Considering the forty percent death rate of those prisoners, the notion of going to another Communist prison was not enticing. Perhaps being alive in Hanoi was worse than a bullet.



# ESCAPE IN VIETNAM

**BY COL. GEORGE E. DAY, USAF**

Beyond thoughts of self and family were considerations of duty. God, honor, and country were the cornerstones of my philosophy. Not only common sense, but our Military Code of Conduct required that escape take priority over personal fears and concerns. My government did not expect me to be a kamikaze, but it did expect me to exploit any reasonable opportunity. Such an opportunity was rapidly taking shape around the unconcerned carelessness of my guard.

### Out of the Frying Pan . . .

My plan had to be simple, audacious, and perfectly timed. Although my right arm was mangled, the fingers were still functional and I was able to untie the ropes that bound my ankles. Next, I had to wriggle out of my bunker with a minimum of motion at a time when my guard was preoccupied. Finally, timing was critical. It could not be done too late at night, when I would not have time before daylight to work my way through the slippery rice paddies and into the protection of the jungle, several miles away.

With fumbling fingers, I unraveled the skein of knots around my ankles, just as dusk reached over the camp. My guard ambled lazily to join his rifle-carrying friend on the dusty road. As I stared at them apprehensively, waiting for that exactly perfect moment, my lips formed the silent prayer, "Help me, Father!"

I forced my reluctant body slowly and silently out of the hole and around the earthen bunker, fully expecting the rattle of rifle fire and the shouts of my captors. Moving quickly and silently, I slipped into the rice paddy, taking a hideous bone-crunching fall on my mangled arm. My depth perception was not working, because of my injured eye. The noise of the fall seemed calamitous, but drew no attention. I moved as rapidly as caution allowed and, as the distance from the camp lengthened, I looked up at God and thanked Him elatedly. Free-free-free. How sweet it is!

The distant blue fire of the Milky Way pointed my route like a neon arrow. The course was slightly southwest to a tip of jungle that protruded into the paddies. It was a destination I knew well, having flown over this area for months. My plan dictated that I hole up there and rest for the coming journey.

Suddenly a cacophony of frightening sounds rent the evening quiet. Gongs clanged and whistles blew. Flashlights began to flicker. My captors had discovered that their bird had flown. My pace quickened. I shivered as I thought of the consequences of being recaptured and returned to that camp.

Despite my injuries, I made good progress, and as dawn began to lighten the countryside I could see the tip of jungle. With some dismay, I found myself on the edge of an enemy gun position that was firing to the south. As I sat resting my damaged, shoeless feet and surveyed the route ahead, I heard a strange roaring sound. Suddenly bombs began cratering the earth in neat rows, like the work of a colossal corn planter.

As the tide of destruction rolled ominously toward me, I pondered the irony of death at the hand of US Air Force B-52s. Was there a certain poetic justice here: "To live by the bomb . . . to die by the bomb?" But fate's protective hand pressed my shoulder, and nothing more lethal than the deafening blast and a shower of excavated rock engulfed me.

Nightfall found me cautiously picking my way through the bomb-cratered terrain adjacent to the gun site. My injured knee protested painfully, and my feet began to take a serious number of cuts on the sharp semiglass slivers formed by the heat of bomb blasts.

My heretofore good progress was halted by a heavy rain squall that blotted out the stars and made navigation impossible. Taking refuge from the deluge under a heavy leafy bush, I drifted into an uncomfortable half-sleep. Suddenly I was picked up by a giant force, thrown sideways in the air, and rolled painfully across my injured arm and leg. My ears rang violently from a hideous blast, and massive violent vomiting erupted from my throat. Total debilitating nausea overcame my faculties, and I lay retching like a wounded animal.

As dawn began to break, my befogged mind comprehended that I needed to move into better cover. Even then, the aftereffects of shock were so strong that it did not occur to me to wonder what weapon had tried to take my life. I guessed that it had been "friendly" fire. It demoralized me to find that I couldn't even stand erect, but had to crawl like an animal into the nearest heavy brush for protection from the blazing sun and the enemy. Deep, anesthetic sleep overtook me for that entire day and the following night.

As another dawn broke, I tried to assess the physical damage. Dry blood around my mouth, upper lip, and ear indicated that the blast had ruptured my eardrums and perhaps my sinuses. There was a painful gash on the calf of my right leg. Its pronounced hardness was an omen of future problems.

As I sipped from the canteen that my captors had conveniently provided me, I sensed that the extreme nausea had diminished, and that my stomach would accept minute quantities of water. I remembered that I had now been without food for three days, and had not seen a single living animal or bird in this devastated land. My surroundings resembled the surface of the moon.

It seemed time to move, but my feverish and battered body would not respond. Just the thought of activity was exhausting and I sank back to rest. Despite the incredible clouds of gnats and then mosquitoes, I slept the sleep of the dead.

### A New Game Plan

The morning of the fourth day was a new world. There was a certain vigorous elation in being free and having survived death's cruel and indiscriminate hand. The acute dizziness had subsided, I could take some water without vomiting, and my battered feet were less painful. The water tasted cool, fresh, and delicious. It was time to make some miles toward South Vietnam and that complete freedom I so cherished. By my reckoning, I should be within twenty-five miles of friendly forces.

My experiences in flying over this land had been deceptive. From an aerial view, the rivers, fields, and paddies stood out very clearly in neat organized patterns. Now, unhappily, low scrub trees, brush, and 200-foot-tall trees destroyed all semblance of order. To travel off the trails through the tangled snarls of brush, crawling rattan, and vines was like trying to walk through a cement wall. Once under the canopy of the huge trees, all trace of the sun disappeared, and with it, any semblance of orientation. There was no choice but to seek the thin thickets that bordered the trails and to press forward. My ability to move along at a reasonably steady pace surprised me, and after many hard choices between turning left or right at junctions of the trails, I found myself in the clear on some rather high ground.

Orienting myself on the setting sun and focusing on a ridge I had earlier named Pork Chop Hill, it became frustratingly clear that I was substantially further to the north than I had been in the morning. Sure as God made green apples, I had walked one monstrous circle, and actually lost some ground. Wounded and hungry, one can't have many days like this before endurance is gone. I should have made that damned river today.

There was no time for self pity. I had to get a new game plan together. Okay. The main Communist supply trails run north to south. Right? They will be the largest and most heavily worn. Right? Then, *that* is the answer. I will get out on the trails and walk the same supply net that the enemy uses. I'll read the trails like our old-time Indian scouts, and I'll let the enemy steer me to freedom. Things are not all bad. Water is easy to find. I'm alive. I'm free. It is time to give thanks and to ask for God's help.

After an early wakeup, I struck off to the south. My previous night's prayers for food were answered with the discovery of some frogs in a shallow pool. Though clumsy and not very mobile, I managed to capture a large green and black fellow and jammed his protesting body into my chomping jaws . . . and swallowed. Not recommended by Duncan Hines. Too clumsy to catch another, I moved southward. Later that day I lucked onto a tangerine-like fruit that was mostly seed (balefruit). It has some nutrition, and certainly tasted better than frog. My spirits buoyed. Things were improving. I'm going to see my wife Doris in Honolulu on September 13, 1967, I told myself confidently.

After avoiding a small group of soldiers, I found myself looking at the Ben Hai River valley. Only a few miles to freedom. The river served as the north edge of the so-called Demilitarized Zone, a no-man's land between North and South Vietnam. It was, in fact, about as demilitarized as the border between East and West Berlin.

When I arrived at the river and an old plantation house that I called Tara, I sighted several soldiers. I bedded down only 200 to 300 yards from a large Viet Cong camp.

My planning and sleep were interrupted first by a series of incoming artillery rounds that put me cringing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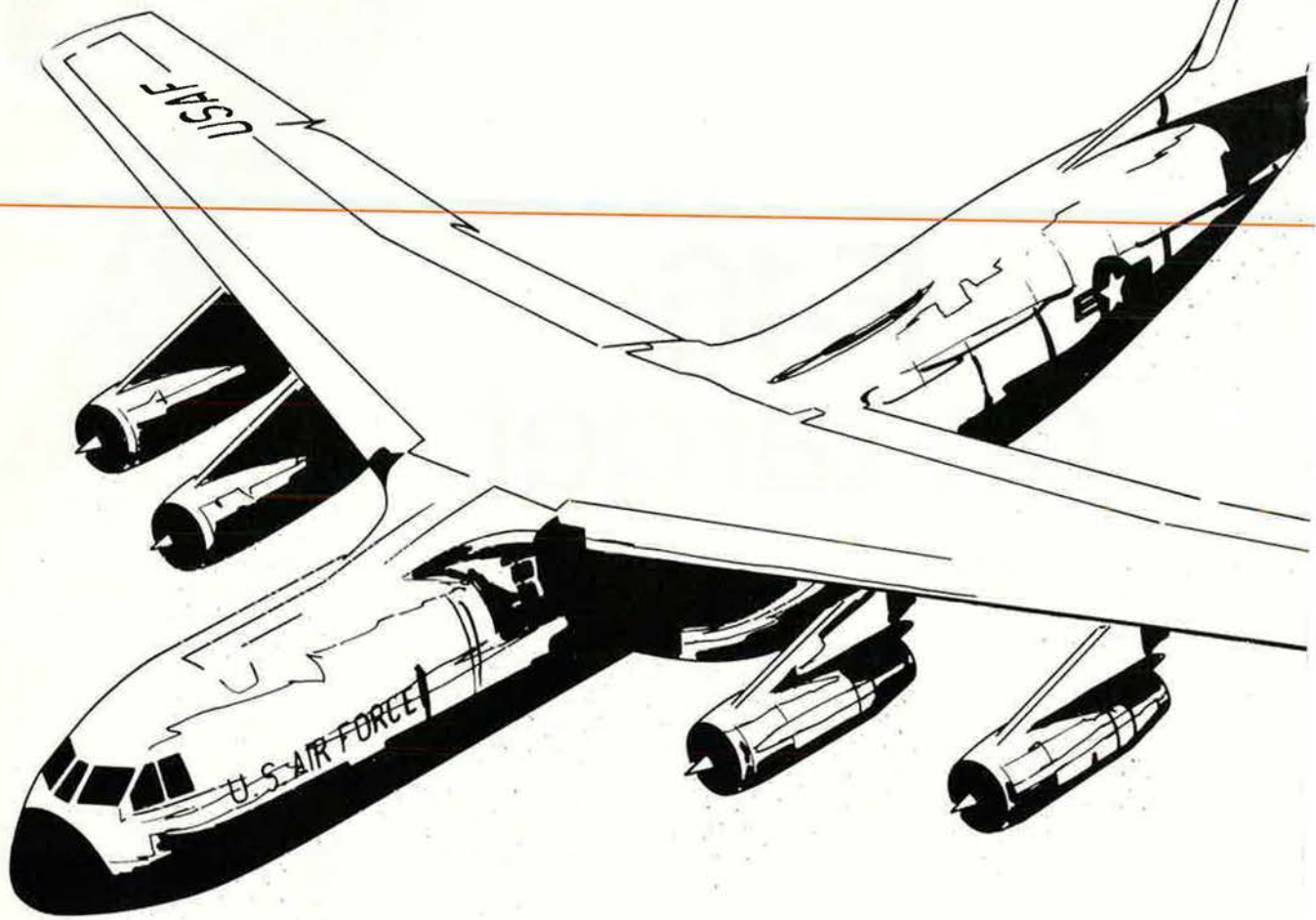


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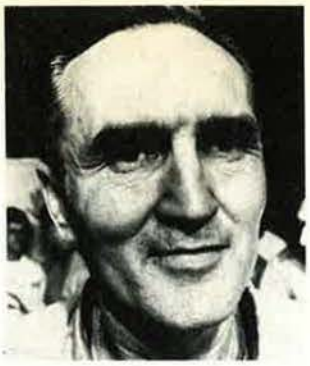

*The author, shortly before he was shot down and on his release from prison in North Vietnam, five and a half years later.*

fearfully against the ground. They were exploratory rounds, searching for the VC camp, and only rattled my eardrums and showered me with clods.

The real fun commenced about 4:00 a.m., when three bomb trails from B-52s went through the VC camp. As the first bombs began exploding, I mentally wrote myself off as a dead man. Words cannot do justice to the churning, grinding, mashing violence of 300 bombs, many exploding thirty to forty feet above the ground.

With thanks to God for my life, I headed for the river. Being a strong swimmer and using bamboo logs, I easily crossed to the south shore. My feet were now in theoretically neutral territory.

### Through the DMZ

Progress grew infinitely more difficult as the days passed! Streams of heavily loaded soldiers bored southward. My feet were a hideous sight, swollen, cut, and bleeding. The calf of my right leg was huge, and it was torture to simply move one foot in front of the other. My old, ragged trousers were reduced to a breech clout.

Overhead were US jets. Occasionally, I could identify an A-4, F-8, or F-4. In the distance, muffled sounds of exploding bombs reached my ears.

Now more than a week along the route, my stomach pressed a continual demand for food. A bit of raw frog, a handful of berries, and a puny balefruit were not sustaining my weakening body. My thoughts began to wander, and I realized fearfully that I was losing control. Now quite frequently I found myself talking loudly to myself, to my wife, or to God.

My sense of time disappeared: "Is this the tenth day?" Before my lips could answer, the mind had slipped to never-never land. Reasoned, careful thought gave rein to instinct, cunning, and determination. "I understand that everything—the jungle, the enemy, my wounds, hunger, fear, *everything* is against me. How can I expect to make it?"

"I will make it!" an inner voice said. "I have promises to keep! I will make it!"

Guns boomed to the south, and their outgoing message of death flew over me to the north. Rationality and lucidity whirled like drunken Cossack dancers through my subconscious. Suddenly I found myself in a VC camp. Slipping into the brush, I waited for siesta time and then walked safely out of camp. One enemy contact after another punctuated my days like half-remembered nightmares. Patrols, a storage depot, gun sites, scouts. Like a punch-drunk boxer, I continued to avoid the knockout blow.

An American spotter plane flew low over the trees. I signaled, but he didn't see me. Another plane appeared over the horizon on takeoff. Dimly I perceived that if I could hear friendly guns booming, and planes taking off, I was in freedom's front yard. How far must I go? Two miles? Three?

Whop—whop—whop came the unmistakable sound of a helicopter. I could see it faintly through the trees. At least a mile away. Then a second chopper, one holding high while one landed.

A colossal jolt of adrenaline transformed my thought processes from incompetent to razor sharp. I pressed rapidly toward the choppers, thinking they were supplying a gun position. As I moved ahead the chopper launched and flew away. I had missed a pickup by only a half mile, perhaps only ten minutes. "No sweat," I thought, "it has to be a gun position, and I'll approach it tomorrow when it's light."

But in the morning, there was no gun position to be found. The chopper had picked up a patrol, nothing more. A dreadful, self-pitying despair washed over me. The adrenaline disappeared, and my nutrition-starved brain slipped back into neutral.

Which way to go? Yesterday, to the east I had evaded both North Vietnamese regulars and irregulars. It appeared impossible to circle to the west.

"To hell with it," said my subconscious. "It's trouble in every direction. You can travel east. East it is."

To the southeast of a devastated village lay a funnel-like entrance into the heavy jungle. About twenty-five yards from the entrance, I was surprised by a shout behind me that sounded like "Hey, Boy!" Two uniformed young men held rifles at the ready. To the north I could hear the stirring of people. Were they friendly?

Finally, I saw that their right hands grasped pistol grips under the rifle barrels. The rifles were Chinese AK-47s. "Run!" screamed my brain. "We didn't come this far to surrender to these little sons of bitches!"

My damaged feet and legs were slow to respond. Rifle fire seemed to crackle from all directions. Suddenly, a searing, numbing jolt struck me in the left thigh, then the left hand, nearly knocking me off my feet. Legging it into the jungle I smashed my way into the low brush, trying to become invisible. It didn't work.

In a few minutes, I was recaptured. Now, with wounds or damage to all extremities, and only two miles from the Marine base at Con Thien in South Vietnam, I was once again to start the long trip to the Hanoi Hilton, and five and a half years of imprisonment. ■

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*The author, Col. George E. "Bud" Day, served thirty months in the South Pacific as a Marine Corps NCO in World War II. Commissioned in the National Guard in 1950, he completed jet pilot training the following year and served two tours as a fighter pilot during the Korean War. In 1967, he organized and became the first commander of the "Misty" F-100 Super FAC Squadron at Phu Cat AB, South Vietnam, an assignment he held when he was shot down. Colonel Day has been awarded the Medal of Honor and some sixty other decorations, including the Air Force Cross, DSM, Silver Star, Legion of Merit, DFC, Air Medal, Bronze Star for Valor, and Purple Heart. He is President of NAM-POWS and the Misty Super FAC Association, and holds a Doctor of Laws degree from the University of South Dakota. For the past two years, he has been Vice Commander of the 33d Tactical Fighter Wing, Eglin AFB, Fla.*

# War Survival In Soviet Strategy

**A FOREWORD BY FOY D. KOHLER**
**FORMER US AMBASSADOR TO THE SOVIET UNION**

Last month, in an editorial on Soviet civil defense, we cited an important new book, *War Survival in Soviet Strategy,* by Leon Gouré (Center for Advanced International Studies, University of Miami, 1730 Rhode Island Ave., N. W., Washington, D. C., 1976. 218 pages. $6.95.). In a foreword to the book, Foy D. Kohler, former US Ambassador to the USSR, highlights the major points developed at a conference on the implications of Soviet war survival preparations, held at the Center in January 1976, where there was general agreement among visiting experts with Dr. Gouré's analysis of the scope and strategic importance of these Soviet preparations. A slightly abbreviated version of Ambassador Kohler's foreword—in effect, a summation of both Dr. Gouré's findings and of the conference discussions—is reprinted here, with permission of the Center for Advanced International Studies.

—THE EDITORS

I HAVE long been puzzled by the fact that so little attention has been paid to Soviet war-survival efforts in American appraisals of the present and future strategic equation as between the USSR and this country. I have, for example, participated in many military briefings over the years, but not until December 1975 did I attend one in which serious account was taken of Soviet civil defense and related programs. Moreover—and perhaps even more alarming—it would appear from the extensive public discussions of Strategic Arms Limitations Talks with the USSR (SALT) that the US side has neither given weight in its negotiating plans to the striking asymmetries between the Soviet and US war-survival postures nor sought to secure reflection of those asymmetries in "equal security" understandings with the Russians. . . .

The Soviet program represents a comprehensive "package" wherein population survival measures are combined with a long-run program of the dispersal of key industries; underground and otherwise hardened industrial sites; hardened facilities for protecting the political leadership and its nationwide command and control structure; and hardened facilities to preserve communications and command and control operations within varied individual elements of the wartime armed forces posture. Furthermore, these passive defense measures are combined with a massive antiaircraft defense system and a strategic doctrine which calls for the blunting of the enemy's nuclear offensive capability by means of a Soviet preemptive counterforce first strike. . . .

Studies conducted in the government and outside in this country, including extensive modeling on the basis of known Soviet practices, indicates that with ongoing measures, Soviet population losses in a nuclear war could be held to the range of six to eight percent and that the Soviet "political and economic machine" could essentially survive and be kept going. . . . About half the population of cities threatened by attack could be saved by a simple walkout. With an organized evacuation-relocation and fallout shelter program such as the USSR is developing, Soviet losses from a nuclear attack could be held to the low percentage noted, less, for example, than Leningrad and other major Soviet cities suffered from German bombardments during World War II. We are not speculating here. . . . We have found through our own tests and calculations that what the Soviets are relying upon would actually work.

Would, however, population survival be enough? What of the nationwide chaos that would be produced in the days and weeks following an attack? Could any war-fighting capability or any economic and political viability be retained? . . . Against the sort of nuclear attack the US is now prepared to launch against the USSR, across-the-board Soviet measures would be adequate to keep the Soviet machine going—militarily, economically, and politically. Terrible costs would be entailed to be sure, but the regime, the nation itself, and its war-making capabilities should survive.

What . . . if the US changed its doctrine with respect to the use of nuclear weapons in a war with the Soviet Union and aimed at such a "dirty attack" as to make the total of the USSR, along with some adjacent territories, unlivable? Can the Soviet leadership be sure that we do not plan this? Does not this possibility make all Moscow's survival efforts meaningless? The simple answer . . . is that the US does not have the weapons for such a totally devastating attack. People talk of possibilities along these lines, but in realistic terms such

talk is based upon a combination of myths and illusions. The sober fact . . . is that allowing for the maximum use of existing US nuclear weapons and taking into account the present—much less the growing—defensive capabilities of the USSR, the US does not have an assured total destruction capability against the Soviet Union. . . .

How could it possibly be that the US assured destruction capability has been so seriously impaired in light of US official positions on the subject? These positions, as set forth in endless documentation, have rested for more than a quarter century on a totally opposite conclusion than that being postulated. Soviet civil defense measures, indeed civil defense measures on either side, have consistently been treated in US estimates as an essentially insignificant consideration. Now we are finding that they may well be decisive, and that the whole foundation of the US deterrence posture is crumbling. . . .

The factor responsible for this dichotomy is the ingrained belief in the US that it is impossible to limit damage in the event of a nuclear war, a belief which it has so far been impossible to dispel. . . . Such assumptions have led to the concept, now so strongly held, of "overkill," that is, the concept that existing nuclear stockpiles are sufficient to destroy the total world population many times over.

The prevailing attitude in the US is that given an overkill capability on both sides mutual assured destruction can be taken for granted and nothing else is needed. Anything else is, in fact, superfluous and can have no military or political utility whatsoever. Further, it is assumed that there cannot possibly be a winner in a nuclear war, however it starts or develops; there can only be mutual suicide. Hence, nuclear weapons are essentially unusable. Their only meaning is to ensure a deterrence of terror, something which they automatically bring.

Nearly all of the experts at our conference viewed the reasoning behind the overkill concept as "absurd." . . .

Soviet military doctrine and military writings . . . have never accepted either the "overkill" concept or the concept of "mutual assured destruction" which US doctrine has considered to constitute the basis of a stable mutual deterrence between the two superpowers. The Soviet emphasis has rather been on survivability and indeed on the possibility of victory in a nuclear war.

The [conferees] did not consider that the problem lay in a possible Soviet intention deliberately to resort to nuclear war. All agreed that Moscow recognizes that such a war would bring great Soviet losses and would hardly contemplate this prospect with equanimity. The critical consideration was seen as Moscow's unwillingness to let the prospect of nuclear war produce a paralysis of Soviet will to actively pursue its international objectives. In this connection, it was felt that Moscow's unhappy experiences during the period when the US had an overwhelming predominance in nuclear power have had a lasting influence on Soviet thinking. Americans tend to forget the feeling of humiliation engendered in the Kremlin by US defiance of Khrushchev's threats in its intervention in Lebanon in 1958; in its defense of Berlin in 1961–1962; and in the forced withdrawal of Soviet missiles from Cuba in 1962. These reverses not only brought about a realization in the Kremlin that bluff based on potential doesn't work, but brought about a resolve on the part of Khrushchev's more sober successors to achieve a global position where the US, rather than the Soviet Union, would be the party obliged to be passive or to back down in future conflict situations. Consequently, the Soviets set about achieving such a position with an unpublicized and unprecedented massive buildup of strategic capabilities as well as conventional ground and naval forces.

**". . . we are finding that [Soviet civil defense measures] may well be decisive, and that the whole foundation of the US deterrence posture is crumbling."**

The participants of the conference agreed that a decisive turn came with the SALT I agreement on ABMs. Having already achieved a rough parity in offensive nuclear weapons and suffering technical problems with their own ABM system, their most important aim in the SALT negotiations was clearly to get rid of the US Safeguard system. They had every reason to believe that the Safeguard system was viable and that in time it could enable superior US technology to provide assured US survival in case of a Soviet attack. Thus, an ABM agreement that would effectively eliminate Safeguard was vital to Moscow's strategy. And it won such an agreement virtually without cost. Not only did the US not trade the ABM for the abandonment of the Soviet survival program; we did not even bring up the subject. We gave up ABMs in exchange for an agreement to talk further about offensive weapons downstream. Thus, with the ABM agreement, the USSR could contemplate a two-pronged strategic breakthrough—an assured destruction capability against the US and an assured survival capability on its own part. The significant step-up in Soviet survival measures since 1972 appears designed to nail down these new Soviet prospects.

The basic issue . . . is how Moscow intends to exploit the situation politically. The Soviet risk calculations and ability to use its military power for political purposes are already being increasingly influenced by Moscow's perceptions of asymmetries between the US and Soviet war-survival vs. assured destruction capabilities. According to Moscow's view, these asymmetries are of great strategic significance for making Soviet power credible as a deterrent and as an instrument of policy. Soviet spokesmen have given clear indication of their awareness of the lack of a war-survival program in the US as well as of the vulnerability of the US arising from the high degree of concentration of its popu-

lation and industry in a few areas of the country. It is inevitable, therefore, that the Soviet leadership will perceive this asymmetry between the Soviet Union and the US as altering the balance of forces in Moscow's favor, and as affecting the credibility of the respective strategic deterrence and war-fighting postures of the two countries.

In effect, with its growing war-survival capability, the Soviet Union could well conclude that the US threat of "massive retaliation" has no credibility except as an act of sheer desperation. In crisis situations, this factor could decisively influence both sides' risk calculations and consequently their relative ability and willingness to hold a hard line. The Soviet Union could confront the US with its ability to keep Soviet population and resource losses within acceptable limits, all the more so if it carries out the evacuation of its cities, as against the certainty of US losses of fifty percent or more of its population and of a very large portion of its industry. This would place the US at a great disadvantage in the management of the crisis and in its negotiations with the Soviet Union. Instead of a "balance of terror," which equally restrains both sides, the "terror" would be mainly on the part of the US and, faced with the possibility of national "suicide," the public reaction to it would be likely to deprive the President of any flexibility in his policy choices in dealing with Moscow. . . .

An aspect of the situation that was noted as often overlooked is that while the Soviet leadership is seeking to reduce to a minimum, if not to eliminate, risk of a nuclear war as it pursues its various expansionist foreign policy objectives, it still allows for, and is preparing for, the possibility of a nuclear conflict occurring despite all its calculations and efforts to the contrary.

As various members of the group emphasized, the Soviet position on the prospect of nuclear war is decidedly ambivalent. There is the line, begun with Khrushchev and ever more strongly echoed since, that given the nuclear-missile might of the Soviet Union, no aggressor will dare to attack it because of the certainty of his own destruction. There is the contrary line, antedating Khrushchev but continued by him and his present-day successors, that capitalism will not surrender its positions without resistance and, therefore, will not hesitate to resort to war with all means if it perceives any reasonable prospect of success. Further, there is the long-standing Leninist principle that capitalist states, as they suffer an inevitable succession of losses and come closer and closer to final defeat, may resort to war regardless of the seeming odds against them in a desperate attempt to save themselves. This principle, which tended to be downplayed by Khrushchev, is pointed to by present Soviet leaders as a distinct danger in view of the increasingly decisive shift in the "correlation of world forces" against the US. One cannot be sure, Soviet spokesmen constantly assert these days, that the US will not at some point adopt the most extreme measures in an effort to restore its lost positions.

To meet either of these opposing eventualities, Moscow treats as an essential requirement a Soviet ability to fight and win a nuclear war. . . . And for a war-fighting-winning capability, whichever of these disparate purposes it might end up serving, an indispensable ingredient is an effective civil defense program, which the Soviets increasingly view as a "decisive strategic factor," which to a large extent can determine the course and outcome of a war.

*Foy D. Kohler entered the US Foreign Service in 1931. He has served in Yugoslavia, Romania, Greece, Egypt, Turkey, and Canada, and has been Director of the Voice of America, Assistant Secretary of State for European Affairs, and Deputy Under Secretary of State for Political Affairs. From 1947 to 1949, he was Counselor of Embassy in Moscow, and from 1962 until late 1966, Ambassador to the USSR. Ambassador Kohler retired from the Foreign Service in 1967 and is associated with the University of Miami as a professor at the Center for Advanced International Studies. He is the author of several books and many articles on Soviet affairs. Dr. Leon Gouré, author of the book,* War Survival in Soviet Strategy, *is Director of Soviet Studies at the Center. A former senior analyst for the Rand Corporation, Dr. Gouré is an authority on Soviet strategy who has studied the USSR's war-survival measures since the early 1950s.*

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Although some participants in the conference believed the seriousness of the prevailing situation was being overdrawn in our discussion, all agreed that anything like a US vulnerability to a nuclear attack ten times as great as Soviet vulnerability, which Oak Ridge studies were said to indicate is currently the situation, is extremely dangerous. Considerable attention was consequently devoted to what the US should do. . . .

One possibility of a US countermove that the group explored was a US civil defense program comparable to that of the Soviets. All felt that an effort should be made to get a real US program under way, both because of its effect on Soviet views of the strategic balance and because, as numerous calculations show, it can radically reduce population losses and greatly facilitate national recovery in the event of a war. But no one was particularly sanguine as to realistic prospects of accomplishing through this anything like as much as is needed. . . . The present mood appears to be even less favorable than in the past. Additionally, there is the real question of whether even a far-reaching US civil defense program could by itself rectify the asymmetries in the strategic balance, given Moscow's long head start, the extensiveness of the industry dispersal and hardening measures already carried out, and Soviet geographic advantages.

A second possibility explored was to seek redress in SALT negotiations with the USSR. All participants believed that the US has made a mistake in not pressing war-survival issues in talks to date, and that it should put them on the agenda in further talks. Moscow has repeatedly insisted in the negotiations that because of various alleged asymmetries in the strategic postures and security requirements of the two countries, the Soviet Union be allowed certain numerical and other advantages in its strategic weapons capability, presumably as a means of achieving "equal security" with the United States. In this the Soviets have pressed the line that because of the mutual security principle, there must be some sort of "strategic bal-

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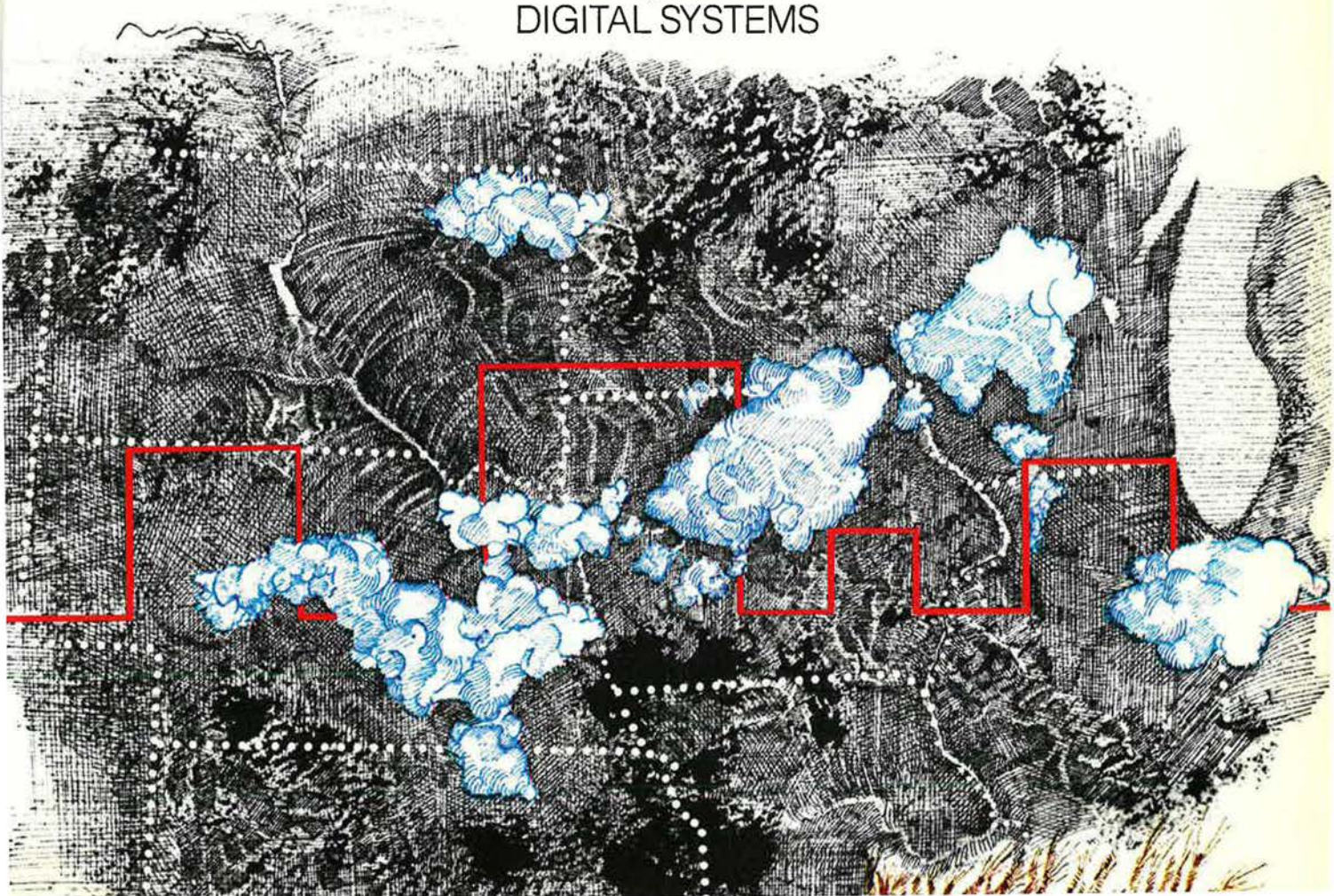


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ance," or at least a mutual perception that each side possesses a credible deterrent capability.

The Soviet war-survival capability, according to the Soviet authorities themselves, affects the strategic balance. Hence, given this capability the two sides are not "equally" secure; and the balance favors the USSR. Indeed, agreements limiting offensive strategic weapons and other efforts to maintain strategic parity between the two countries inevitably increase the significance for the balance of other factors, and most of all survival factors. It becomes, therefore, increasingly important for the US as it proceeds with further disarmament negotiations, to insist that survival factors and capabilities be taken into account in order to achieve a true balance and to restore the credibility of the US "assured destruction" deterrence posture.

Either of two demands should be pressed in future SALTs: (1) that just as in the past the Soviet Union has been allowed numerical advantages in its strategic missile capabilities on the grounds of Soviet claims of existing asymmetries between the two offensive postures, the US should now be compensated for the imbalance in "equal security" arising from the existing and still improving Soviet war-survival posture; or (2) that the Soviet Union terminate its civil defense program and dismantle its existing facilities. Neither of these demands was believed at all likely to gain Soviet agreement. However, it was considered of great importance that one or the other or both be pressed in order to get the US stance in SALT more on track, as well as to get the realities of the present situation and trends on the public record.

A third possibility explored was for the US to bring to bear its scientific-technological resources to increase its offensive strategic capabilities in ways that would make possible at least a partial offset of Soviet war-survival measures. The aim would be to add capabilities, including greater missile accuracies, that could threaten the Soviet Union with the destruction of its evacuated population and dispersed industry. Certain weapon systems already under development in the US would presumably help toward this end.

A first concern of the US authorities in connection with new weapons should be to avoid trading off these systems in another "ace on a deuce" operation, for example through sacrificing the cruise missile and/or the B-1 bomber for some sort of Soviet concessions with respect to its already operational Backfire bomber system. Moscow, it was noted, is already signaling its intention to press heavily for such one-sided trade-offs.

A second major US concern should be to nip in the bud the mounting Soviet campaign to tie US hands in the whole area of new weapons development. As was discussed during the course of the conference, Brezhnev inaugurated this Soviet campaign in June 1975 when he proposed that the great powers conclude "an agreement on a ban on manufacturing new categories of mass destruction weapons, and new systems of such weapons." In November 1975, the USSR formally tabled the draft of such an agreement at the UN General Assembly. Key provisions of the draft were: (1) Contracting parties would undertake "not to develop and not to produce new types of mass destruction weapons or new types of systems for such weapons." (2) "If any party to this agreement suspects violations" consultations shall be held. (3) If consultations "do not lead to results acceptable to the two sides, the states harboring suspicions can complain to the UN Security Council." (4) Complaints "must contain evidence confirming the grounds for the complaint." (5) Each party "undertakes to cooperate in the holding of investigations by the Security Council."

An agreement along such lines, it was stressed at the conference, would be completely one-sided. The USSR never reveals information regarding its plans and activities in the weapons development field until after the efforts involved have been carried to a conclusion. On the other hand, the US, because of constitutional processes, engages in a considerable public airing of nearly all its innovative projects. Thus, it would be impossible for the US to secure and present "evidence" to back up "suspicions." The USSR, in contrast, would be able to obtain evidence for an endless series of fishing expeditions from merely reading US newspapers, and would be able to create great confusion, if not a high degree of paralysis, within the US, by lodging and following up protests.

A fourth possibility explored was that, lacking a fundamental change in Soviet war-survival policies and actions that now seem so clearly aimed at securing strategic advantage, the US invoke Article XV of the ABM Treaty and proceed with the deployment of an anti-ballistic missile system. As noted above, participants in the conference who are experts in defense and war-survival areas considered the ABM trade-off in SALT as having been the fateful turning point for the US in allowing the Soviets the prospect of achieving an assured survival capability and hence of undercutting the US assured destruction capability. . . .

While no consensus was sought or reached at our conference as to which, if any, of these alternative courses the US should adopt, there appeared to be complete unanimity in the view that the situation is indeed threatening and that effective answers must be worked out lest lasting damage be done to our security. . . .

My own view is that these possible courses of action are not mutually exclusive. Certainly efforts should be stepped up to develop a meaningful civil defense program in the US and to make the American people aware of its importance not only for survival in a nuclear war but as an essential element in deterrence of such a war. Certainly the war-survival factor should be introduced into the SALT negotiations. Certainly we should not give the Kremlin a license for a fishing expedition into our arms research and development programs. At the same time, we should hold in reserve—and let it be known that we are doing so—the possibility of denouncing the ABM Treaty, in accordance with its own terms, and countering a growing Soviet war-survival program with an effective US defense capability designed to restore the strategic balance.

Since the early 1970s, we Americans have been engaged in any orgy of wishful thinking and self-deception about what has been happening in US-Soviet relations. This is not unprecedented. Indeed, the relationship has

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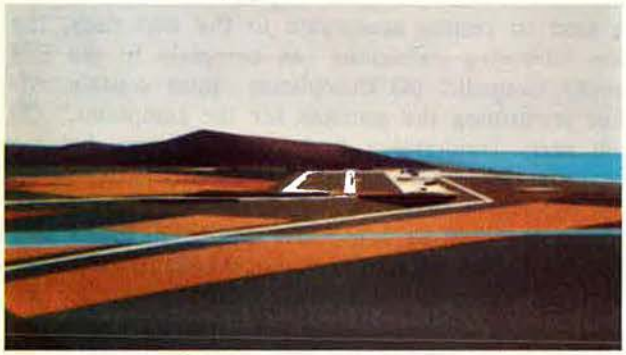

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been plagued from the beginning by the tendency of American sentiment toward the USSR to fluctuate between naïve euphoria and angered disillusionment. In this period that we have insisted on calling "détente" and the Russians call "peaceful coexistence," some sound and useful things have in fact been accomplished, if evaluated and accepted realistically and without illusion.

Happily, there have been signs of a change in the last half year or so. President Ford in his State of the Union message in January . . . spoke of US policies in terms of a "position of strength." Subsequently, the President began shifting from references to "détente" to a "policy of peace through strength." While predictably derided in some quarters in the US, this change in language suggests a much-to-be-desired greater sense of realism as to the true state of relations between this country and the USSR.

Rhetoric alone, however, will hardly be sufficient to change the perceptions of either Americans or Soviets. With respect to Americans, we must cease being apologists for Soviet positions and actions, and expose to public view their mounting aggressions against US positions and interests throughout the world. With respect to the Soviets, the current tide of overweening confidence can only be changed by our military posture, and above all by what we continue to do in research and development and in actual production. We should not only be carrying on advanced research, but should be demonstrating the results in ways that will not alarm the American people but will sober the Russian leadership. We should abandon the détente-generated practice of signing declaratory statements, or nonenforceable agreements, with the Soviets. We should insist on concrete performance to match the performance expected of us.

Finally, we should free ourselves of the bind in which we have entrapped ourselves that we and not the Soviets have responsibility for preventing a nuclear war. It is indeed true that we do not want a nuclear war. But if the evidence can be believed neither do the Soviets. If we refuse to pay the prices many of our own people—and increasingly also the Soviets who sense a gratuitous opening for gains—are demanding that we pay "because there is no alternative to peace in the nuclear age," we have no more reason to expect a nuclear holocaust than at any other time over the past quarter century. We also have no more reason than the Soviets for self-paralysis in the protection and promotion of our global interests because of the danger of nuclear war. Here we might take well to heart the difference between our concept of international politics in the nuclear age and the Soviet concept. As *Communist of the Armed Forces*, the main Soviet military journal, explained in November 1975:

> The premise of Marxism-Leninism on war as a continuation of policy by military means remains true in an atmosphere of fundamental changes in military matters. The attempt of certain bourgeois ideologists to prove that nuclear missile weapons leave war outside the framework of policy and that nuclear war moves beyond the control of policy, ceases to be an instrument of policy and does not constitute its continuation is theoretically incorrect and politically reactionary. ■

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# Space

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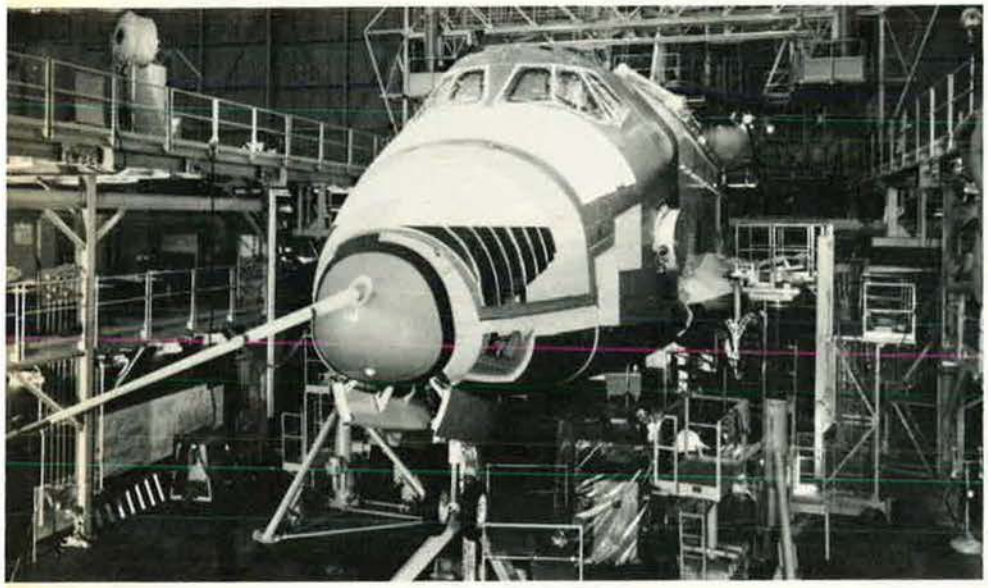


*The Space Shuttle's Orbiter is scheduled for roll-out by Rockwell International's Space Division later this month. The vehicle is fully reusable and "flyable."*

NEARLY a quarter of a century ago, the now-defunct *Collier's* Magazine startled its readers, and "hyped" its circulation, with a futuristic blueprint of a three-stage rocketship that could launch men and payloads into space and fly them back to earth in airplane fashion. This far-out, prescient vision of the early, pre-Sputnik 1950s, with some modification, becomes hardware reality this month when NASA and Rockwell International's Space Division roll out the Orbiter, the reusable, airplane-like core element of the Space Shuttle. Next year, that chubby vehicle, comparable in size to a DC-9 or Boeing 737 jetliner, will be released from a modified, NASA-owned 747 jumbojet for its first approach and landing tests at Edwards AFB, Calif. And, three years from now, NASA plans to launch the complete Shuttle system —two solid-rocket boosters, external tank, and Orbiter—on its first manned orbital flight from a modified launch and landing complex at John F. Kennedy Space Center (KSC) in Florida.

Over the past several years, the Defense Department and Air Force views of the Shuttle have undergone subtle but significant changes. Somewhat resigned acceptance of the national policy that mandated the Shuttle as *the* space transportation system for both civilian and military users has evolved into cautious enthusiasm over the prospect of flying into space at half the present cost, and being able to retrieve and repair orbiting spacecraft, in a period when military dependence on space is expected to advance in quantum leaps. (DoD's investment in space this fiscal year is about $2.336 billion, up some fifteen percent from last year, a growth pattern likely to prevail for some time to come.) But this enthusiasm for "the most visionary technology program in the world today" might lessen, as Dr. Malcolm R. Currie, Director of Defense Research and Engineering, points out, if the Department's share of Space Transportation System (STS) costs increases significantly over currently envisioned levels.

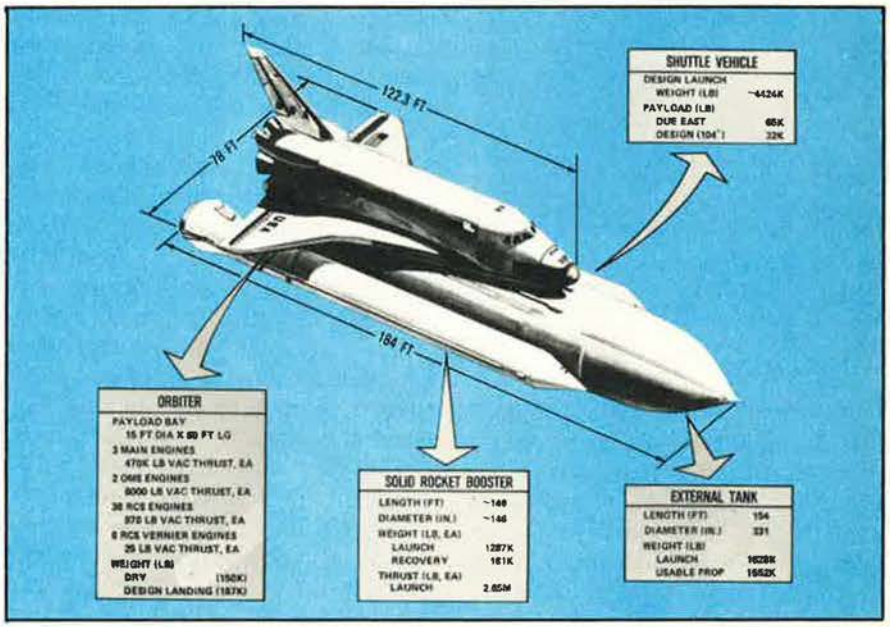
STS consists of several elements: a low-orbit (100 to 600 miles) Shuttle; a high-orbit Interim Upper Stage, or IUS, eventually to be replaced by the Space Tug, both of which can reach beyond geostationary (22,300 miles) altitudes; a manned Spacelab; and associated command communications and control networks for ground, launch, recovery, and on-orbit operations. At present, the Air Force, as DoD's executive agency, has allocated about $1.45 billion to STS through 1981, mainly to develop the solid-propellant, expendable IUS (estimated at about $178 million in then-year dollars); equip Vandenberg AFB as a Shuttle launch

# Shuttle

BY EDGAR ULSAMER
SENIOR EDITOR

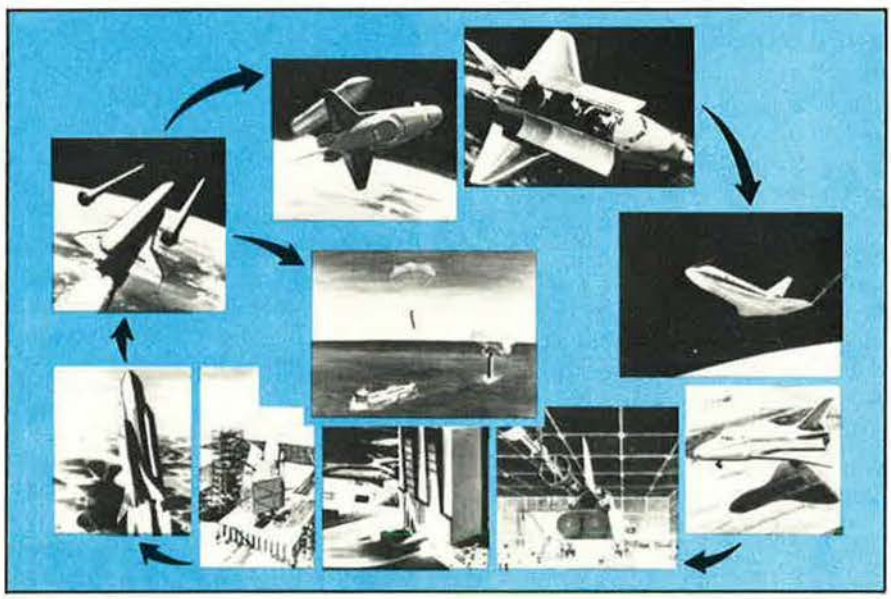
and landing complex (about $700 million); and prepare for DoD launches from NASA's KSC in Florida (about $190 million), according to Dr. Currie. This investment, he told AIR FORCE Magazine, could be amortized over a twelve- to fourteen-year period through reduced operating costs, *if* the economics of the Space Shuttle remain close to present forecasts.

Lt. Gen. Alton D. Slay, USAF's Deputy Chief of Staff for Research and Development, told this reporter that "the operational cost to our DoD users of a manned Shuttle flight promises to be something less than half that of our largest operational unmanned space boosters today. The Shuttle can lift about twice the payload weight and three times the payload volume of today's space boosters. Also, the Shuttle promises the ability to retrieve low earth orbit payloads and affords our payload designers fewer design constraints in military spacecraft development." Current estimates put the cost of a Shuttle flight at about $15.4 million, while the cost of a single Titan IIIC launch, calculated at a rate of two launches annually, is $35 million.




*Orbiter can fly at least 100 missions, the boosters twenty times. The tank is expendable.*

But all DoD bets that its investments in the Space Transportation System could work out to more or less of a "wash" by the mid-1990s are off if the Pentagon has to pay for the two Orbiters that the Air Force will operate from Vandenberg AFB, Dr. Currie told Congress. He added that "we just don't see how" such an expenditure—a lump sum of about a billion dollars—could be accommodated in the Defense Department's budget.



*Shuttle takeoff involves simultaneous firing of the two solid-rocket boosters and the three Orbiter engines that draw their fuel from the expendable tank. The two boosters land in the ocean while the tank breaks up or burns up on reentry.*

*Dr. Alan M. Lovelace, NASA's new Deputy Administrator, says the Space Shuttle program is on time and within cost.*

What makes this question acute is that the Shuttle's mission model—a partly classified forecast of the frequency and nature of its operations prepared by NASA and DoD—requires five Orbiters to perform the expected annual average of about sixty Shuttle flights. But the NASA program funds only three of these vehicles. The billion-dollar question of who pays for the two additional Orbiters is to be resolved by the Office of Management and Budget late this summer. The Pentagon awaits this decision with noticeable apprehension.

### The Question of Costs

Also unresolved is the price NASA will charge the Defense Department and other governmental, industry, and foreign users for delivering individual payloads into orbit. NASA's Deputy Administrator, Dr. Alan M. Lovelace, told AIR FORCE Magazine, "We are working on NASA's schedule of user charges and expect to publish this information by September of this year. We will come up with an equitable cost sharing and, on the basis of informal discussions with the Shuttle's users, believe that we are on the right track." In order to capitalize on the Shuttle's high payload capabilities, there will be various payloads from different users aboard most NASA and on some USAF Shuttle and IUS flights.

The hybrid character of the Shuttle vehicle requires launch from coastal sites to avoid possible damage to land areas from the two unguided, droppable solid-rocket boosters, or emergency jettisoning of the large hydrogen-oxygen tank. Also, no single coastal site can provide the launch flexibility needed to achieve the different orbits and orbital inclinations the Shuttle's varied payloads will require. Hence the decision by a joint NASA/DoD Shuttle Launch and Recovery Board to use sites at NASA's John F. Kennedy Space Center and at Vandenberg AFB (VAFB).

Vandenberg can provide near polar and retrograde (counter to the earth's rotation) azimuths with orbital inclinations ranging from fifty-six to 104 degrees; KSC can provide easterly azimuths for orbital inclinations from twenty-nine to fifty-seven degrees. Because of the effects of the earth's rotation on the Shuttle's payload capability, more weight can be lofted from KSC than from VAFB. Payloads of 65,000 pounds can be launched due east into an orbit of 28.5 degrees inclination from the former, while the VAFB's polar orbit capability is 40,000 pounds and that of its highest inclination orbit (104 degrees) is 32,000 pounds.

Eventually, there will be about forty launches from KSC and twenty launches from Vandenberg annually, according to NASA. Since both DoD and NASA require launches from the two sites, a special operational procedure for mutual support is essential. NASA, therefore, "has agreed to act as the launch agent for DoD at KSC, and place our classified [Interim Upper Stage] IUS/payload combinations into the required low earth orbits along with unclassified payloads, much as the postman delivers classified mail today in plain double-wrapped brown envelopes. This means the entire Orbiter portion of our missions from KSC probably will be designed, launched, and controlled by NASA," according to General Slay.

Conversely, the Air Force will act as launch agent at VAFB for NASA, "although the Orbiter portions of the flight will still be designed and controlled by NASA at the Johnson Space Center," General Slay said. In the case of DoD's own flights from Vandenberg, or IUS payloads, on-orbit control will be from USAF's Satellite Control Facility at Sunnyvale.

For the time being, the Air Force's work at Vandenberg, according to Dr. Currie, is confined to "the planning and engineering required to maintain an option" to begin construction of a Shuttle launch complex in 1979. In the autumn of 1978, USAF's proposed plans for the VAFB Space Transportation System facility will be reviewed by the Defense Acquisition and Review Council (DSARC). If the DSARC approves the plan and Congress appropriates the funding, construction is to start in the following year, and "an austere single pad" operational capability achieved by 1982, according to General Slay. There is, however, an option to eventually construct a second Space Shuttle launch pad at VAFB, if and when traffic rates and mission requirements justify such an enlargement, he told AIR FORCE Magazine.

Last year, the interagency Aeronautics and Astronautics Coordinating Board accepted SAMSO's recommendation to select the old MOL (the Manned Orbiting Laboratory) launch site at VAFB as the baseline configuration for the STS launch complex. This baseline groups all Orbiter-related activities around an enlarged, 15,000-foot-long runway at north Vandenberg and all the booster-related activities around the MOL site. The Orbiter will be delivered in piggyback fashion to VAFB by NASA's special 747 jet transport. The solid-rocket boosters will come by rail, and the external tank will be transported by a special NASA barge to a nearby US Navy port and then transshipped.

### The Interim Upper Stage

Most military and some civilian payloads must be placed into orbits significantly higher than the Shuttle's. The Air Force's twenty-four-satellite Global Positioning System, for instance, operates at about 10,000 miles; geostationary spacecraft that remain fixed relative to a given geo-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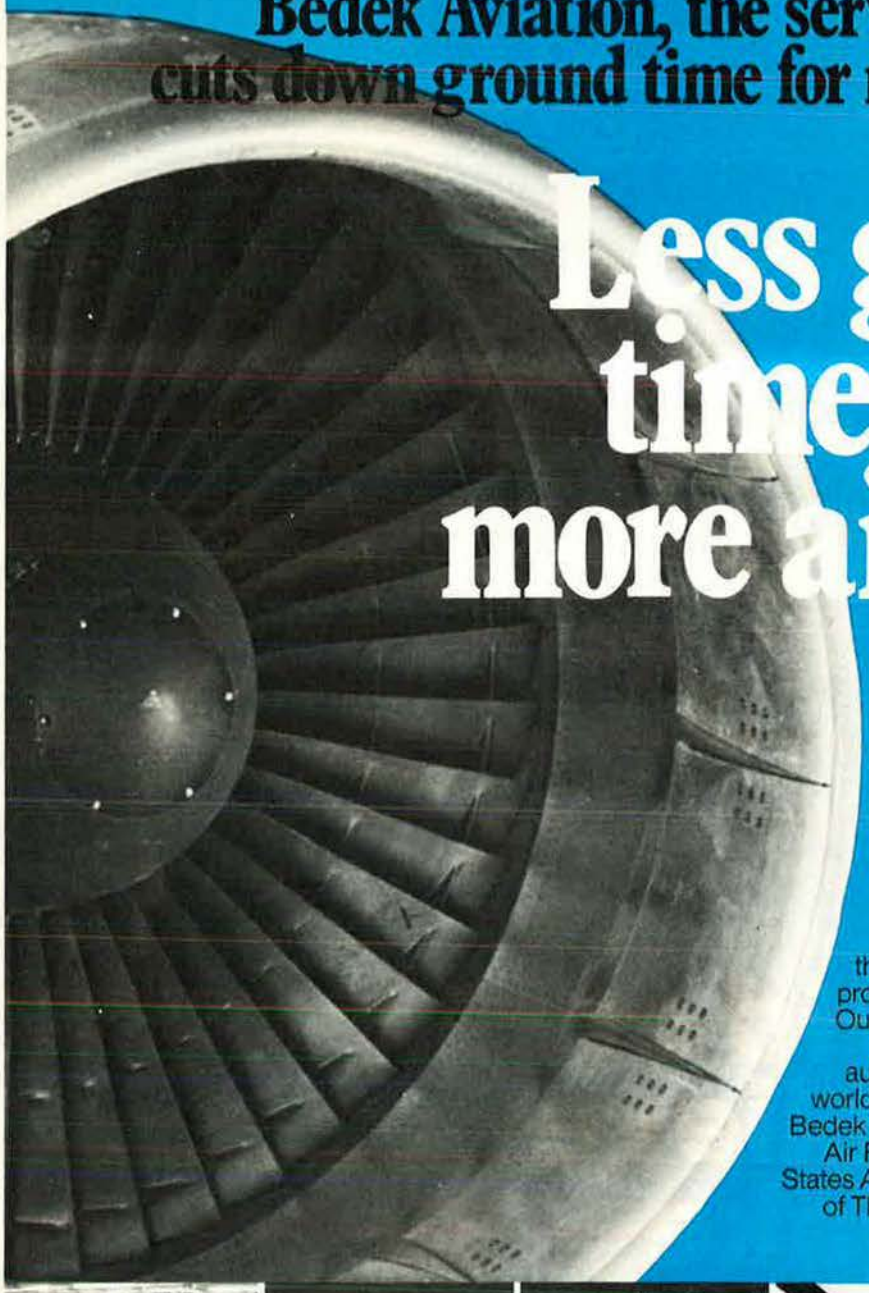

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graphic position on earth must be at 22,300 miles; and satellites requiring high survivability may be still further out in space.

To deliver payloads to these higher altitudes requires a special vehicle, or stage, that flies into near-earth orbit aboard the Shuttle and then takes off on its own to deliver payloads into high orbits. NASA originally planned to develop such an upper stage, a "Space Tug," in phase with the Shuttle and expected operational readiness in the early 1980s. National budget planners willed otherwise; NASA now views the Space Tug as a program not likely to be tackled before 1986, according to Dr. Lovelace. But the Defense Department needs such an upper stage concurrently with the Shuttle, and therefore instructed the Air Force in 1973 to begin development of a low-cost Interim Upper Stage.

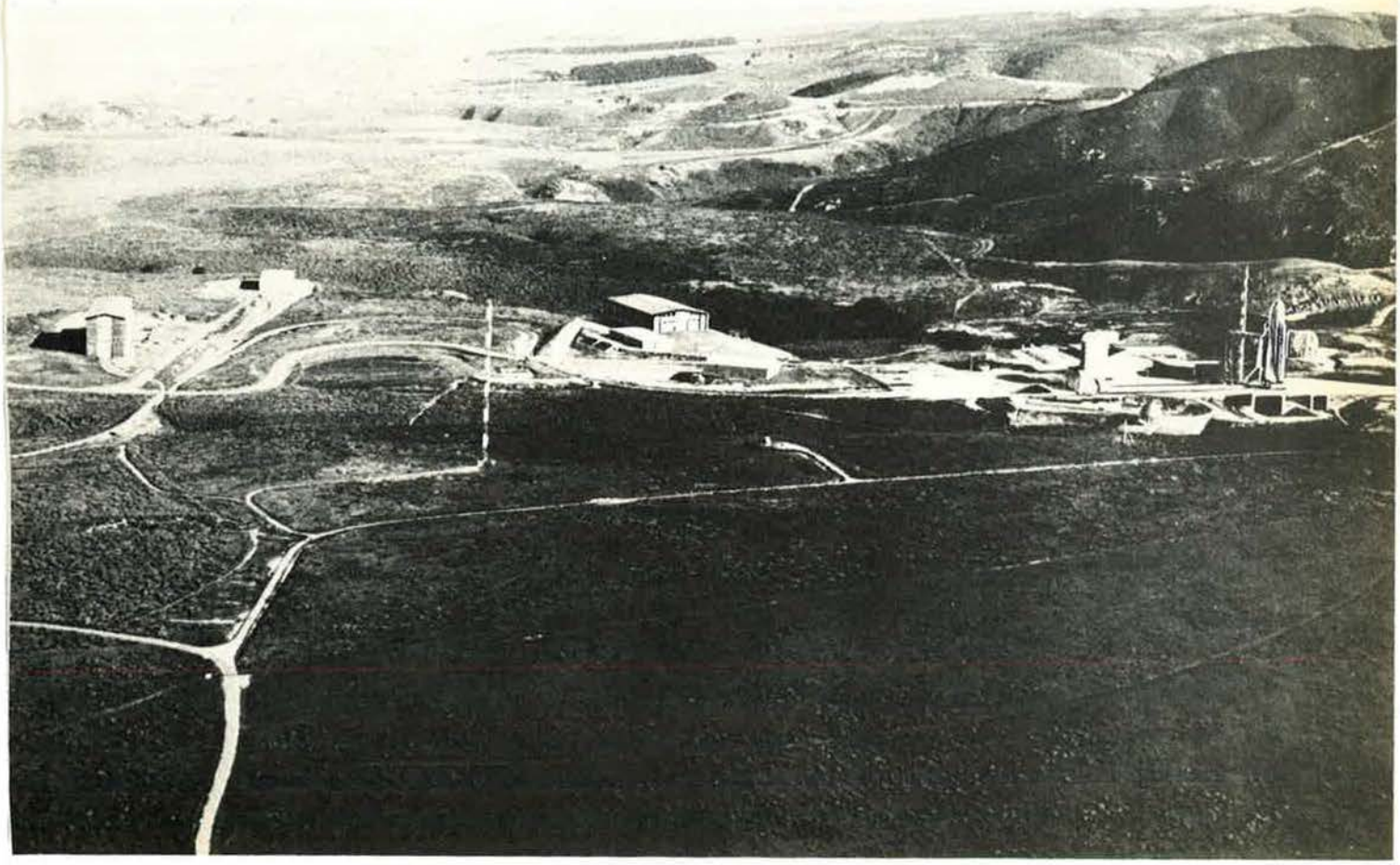
On September 5, 1975, the Air Force announced selection of a solid-propellant concept for IUS and is expected to announce the winning contractor team to build the system in September of this year. NASA is participating in the source selection and development of IUS, which is to become operational in mid-1980, concurrently with full Shuttle operation from KSC. The possibility of flight-qualifying the IUS with the Shuttle during the development test period is under USAF and NASA consideration, according to General Slay.

USAF's decision in favor of a solid-stage IUS (two solid-fuel rockets) was motivated by the high reliability of such space propulsion systems. With redundant avionics, IUS reliability is 0.97, or almost the same as that of the Shuttle itself. The reliability of Titan III is considerably less. The IUS payload to geosynchronous orbit is 5,000 pounds, or enough to accommodate all military payloads planned for the early 1980s, according to General Slay. The Space Tug, as originally formulated by NASA and DoD, was to have had a payload of between 8,000 and 12,000 pounds. It was also meant to be reusable while IUS is expendable; it can put payloads in high orbit, but cannot retrieve them.

The Air Force's largest operational booster, Titan IIIC, can loft 3,220 pounds into a geosynchronous equatorial orbit, while NASA's Titan IIIE payload for a similar orbit is 7,200 pounds, according to Dr. Currie. The payload of an IUS mounted on Titan IIIC is 4,000 pounds. For an indeterminate period after the Shuttle's introduction, Titan III and possibly other launch vehicles will remain in USAF's active inventory to provide launch backup for high-priority military payloads, according to General Slay. (The probable duration of this backup is being weighed by the Air Staff, Air Force Systems Command, and the Secretary of the Air Force.) The Shuttle, he said, will be able to transport two IUSs, which will make it possible, for instance, to launch eight Global Positioning System satellites—four per IUS and on two orbital planes—with one Shuttle flight. The IUS will be available to NASA and other users. For payloads of more than 5,000 pounds, an additional solid stage can be strapped on. The number of IUSs programmed by USAF at this time is about seventy by 1991.

"For the present, our mission models show DoD payloads beginning to fly on the Space Shuttle with small Space Test Program (STP) payloads in 1980, and all our full-

*USAF Shuttle launches will take place at the former MOL site at Vandenberg AFB, Calif., starting in 1982. Eventually a second launch pad may be built there. All flights involving the Interim Upper Stage will be from NASA's KSC in Florida.*



size satellites flying on the Shuttle by 1985," General Slay noted.

An element of the Space Transportation System not directly related to DoD but of considerable scientific importance is the so-called Spacelab, under development by ten European countries at a cost of about $500 million per unit, one of which will be delivered to the United States. Spacelab is a large module located in the payload bay of the Orbiter and designed to conduct scientific space research. Several variants of Spacelab are planned, including a pressurized design in which experimenters can work in a shirtsleeve environment. Each Spacelab can be flown as many as fifty times over a period of ten years. Crew members and payloads will be multinational.

The long-term payoff from the STS and Spacelab, in Dr. Lovelace's view, is that they promise to open the door to practical utilization of space: "I think we will see within the lifetime of this generation space systems in operation that will monitor automatically our biosphere and keep track of such things as the ozone layer and other factors vital to our health, resources, and productivity. We might think of these systems as the earth's thermostat, barostat, and chemistat that sound the alarm the minute things get off track."

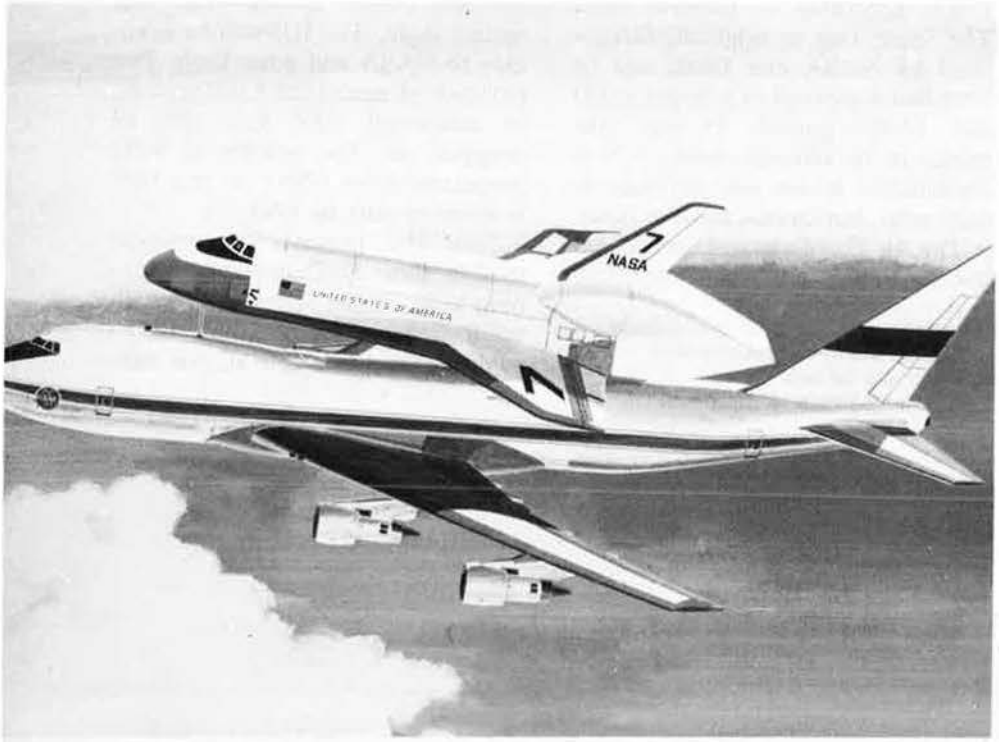
## The Military Advantage of the Shuttle

Beyond reducing the cost of operating in space, the Shuttle is expected to offer military users a benefit not easily available through other means, namely "large space structures," Dr. Currie told AIR FORCE Magazine. Largeness, according to DDR&E's Assistant Director for Space and Advanced Systems, Dr. Robert A. Greenberg, "spells more reliability, more accuracy, more jam-resistance, more energy transmitted to the ground, and smaller receivers on the ground." The key to all these factors is the ability to put very large antennas and very large power sources into space, a task for which the Shuttle appears uniquely suited.

Under certain circumstances, spacecraft size can be traded for quantity to increase the survivability of military satellite systems, Dr. Greenberg suggested. The Defense Department plans to emphasize communications satellites vigorously in the years ahead, which, in turn, could make them more of a target of potential adversaries. But, "if the would-be aggressor sees that we are proliferating their number by putting up more, but less sophisticated, satellites and perhaps putting some of them beyond geosynchronous altitudes, he might find it far less attractive to go after them." The Shuttle's low payload launch costs combined with simpler, lower-cost satellites appear to permit such a proliferation.

The Shuttle's high payload capability could hasten the development of space-qualified high-energy laser systems. Such systems, presumably defensive weapons, could be checked out while still on the Shuttle's extractor arms that take payloads out of the Orbiter's payload bay. "If the system is not working, and with man still in the decision-making loop, the laser or any other payload can be pulled back in and returned to earth for repair. With about half of our spacecraft failures occurring within the first twenty-four hours after launch, the Shuttle's ability to test and retrieve is important," Dr. Greenberg pointed out.

The Shuttle's ability to retrieve payloads in near-earth orbit points the way toward "less-costly spacecraft because we won't have the severe restrictions that now keep pushing us against the existing limits of technology. In place of epoxy composites, we should be able to use such less sophisticated materials as aluminum. Probably we could also do away with ultrathin, ultraexpensive printed circuit boards, and thereby significantly reduce the cost of our spacecraft," according to Dr. Greenberg.

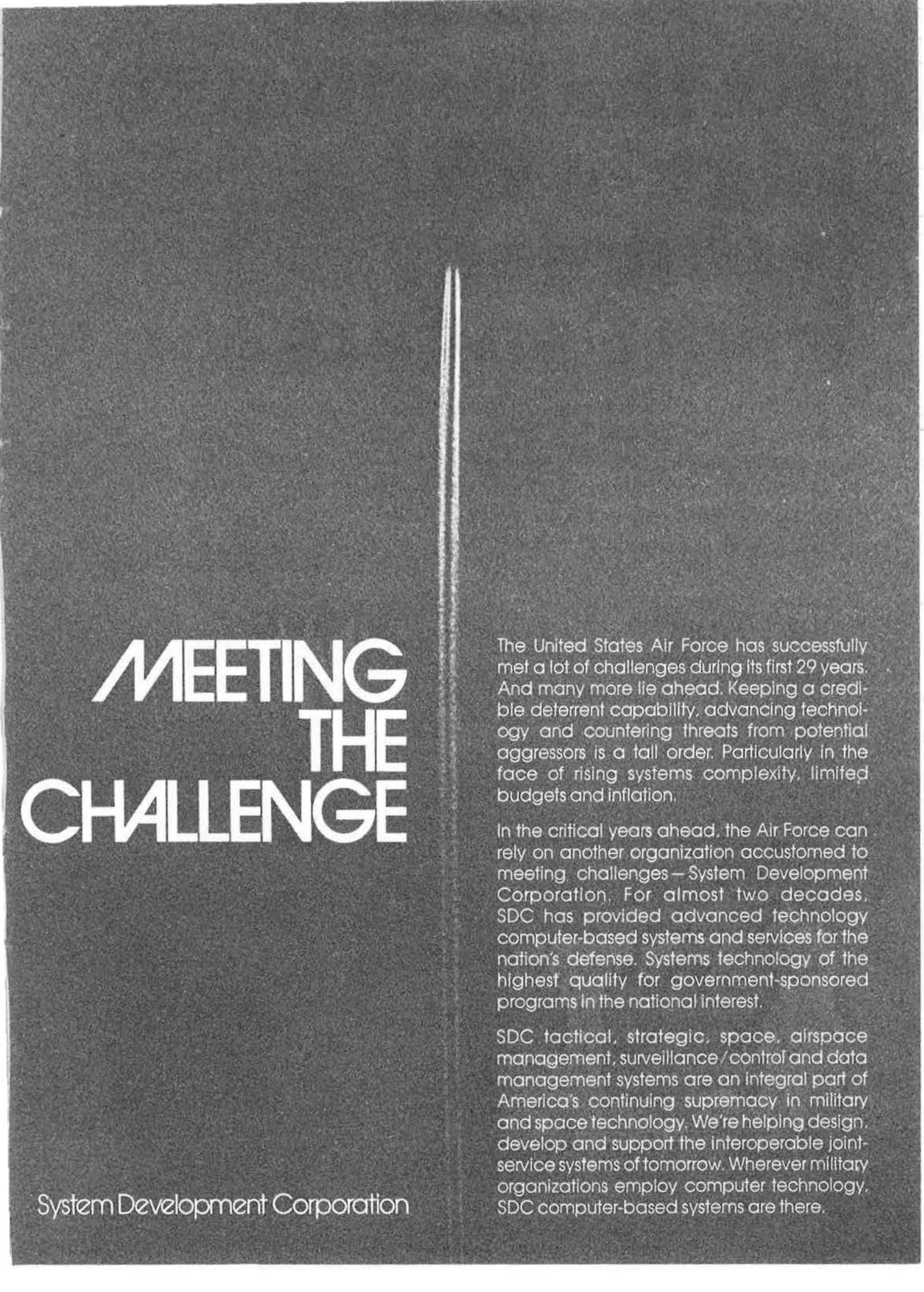



*The Orbiter will be flight-tested and transported in piggyback fashion across country aboard a modified Boeing 747 superjet. The Shuttle's fuel tank will be delivered to Vandenberg AFB by barge and the boosters by rail.*

## Cost-Saving Attributes

General Slay believes the Shuttle eventually will lead to the creation of space-based facilities for the repair of spacecraft. Other cost savings can be realized by refurbishing and modernizing satellites as well as by "storing" in space satellites and spacecraft that are not needed immediately. Storage on the ground usually requires keeping satellites in a superclean and expensive artificial environment.

With spacecraft designers no longer slavishly tied to holding down weight while assuring longevity through expensive, one-of-a-kind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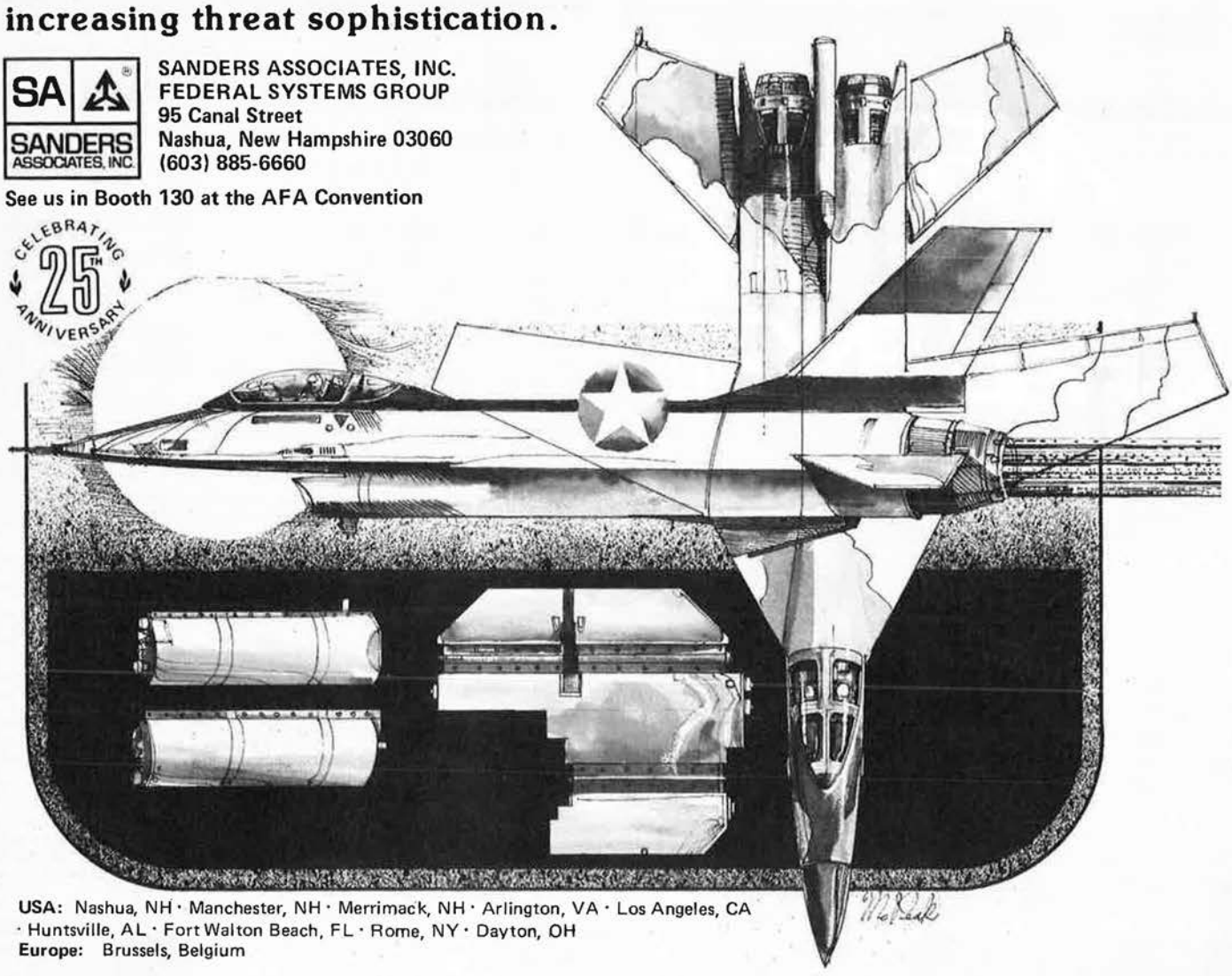

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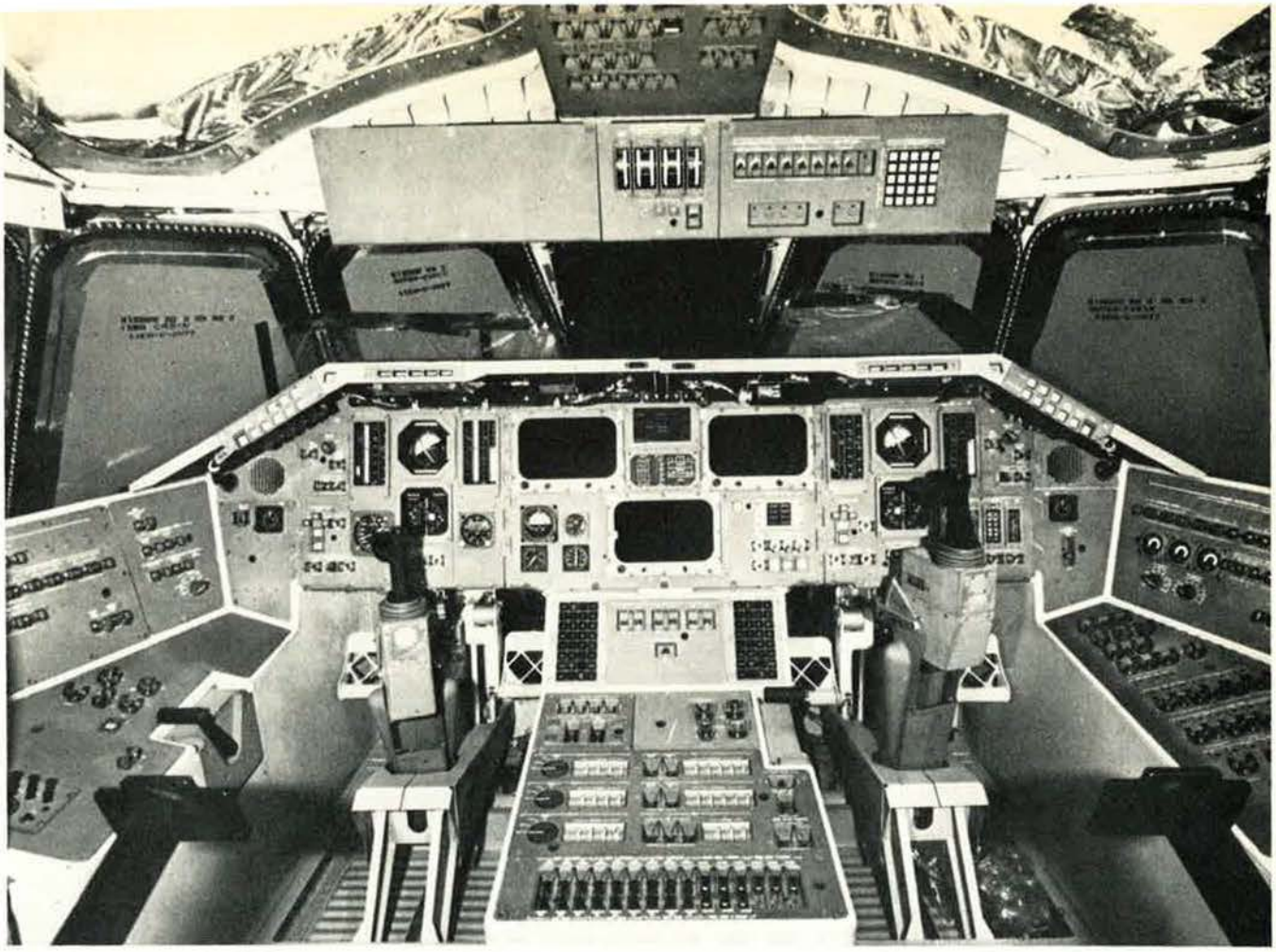

*The Orbiter's cockpit reflects the vehicle's airplane-like character. The Orbiter can remain in space for up to thirty days. Its first approach and landing flights will take place next year and the first orbital flight in about three years.*

techniques, standardization and modularization will be stressed by the Air Force, General Slay said. USAF's space test program, currently in progress, centers on developing a modularized spacecraft with standardized, self-trouble-shooting features, and of a laser communications package, all of which might be test flown aboard the Shuttle by about 1980.

Eventually, in Dr. Greenberg's view, the Space Transportation System could become the key to developing a "Spaceborne Command Post" to enhance the survivability of the national command control and communications systems. "Presumably you would want to put such a command post where it could be well hidden when things break loose," Dr. Greenberg suggested.

DoD's mounting concern that space can't be expected to remain for long a sanctuary in the military sense extends to the Shuttle. This concern was heightened by the resumption this year of Soviet tests involving an antisatellite system (ASAT). Between October 1968 and December 1971, the USSR conducted seven antisatellite interceptor tests, according to Dr. Currie. Their program then remained dormant until February 16 of this year, when the Soviets performed another successful intercept involving ASAT and one of their spacecraft.

The Shuttle's vulnerability to attack either by an ASAT or a space-based laser weapon appears to be less than that of currently used systems. "Assuming that we have the right sensors and $C^3$ capabilities aboard, the Orbiter should be able to maneuver away from threats that are coming at it," General Slay said. Because of the Orbiter's protection against the heat generated by reentry into the atmosphere, "it's susceptibility to future laser weapons appears to be low," according to Dr. Greenberg. (Laser weapons are not barred by the space treaty, which prohibits the use of "mass destruction" weapons and, therefore, must be considered the most likely threat to US spacecraft should warfare be carried into space in the future.) Recent advances in the power levels and reductions in the size and weight of chemical lasers make it likely that space-based chemical laser weapons weighing 10,000 pounds or less could be deployed within a few years.

With the exception of the Space Shuttle Main Engine (SSME), three of which power the Orbiter, progress of the STS program is "both on schedule and within cost," according to Dr. Lovelace. A lag in the SSME test schedule caused by several minor difficulties has been overcome and its critical design review is scheduled for late this month, he said. "This has not affected our master schedule and our launch costs remain as advertised," he said.

NASA is already looking beyond the current generation of STS and has started exploring concepts for a single-stage-to-orbit aerospace plane with greater cost-effectiveness than the current system. If it can achieve this goal, the US Secretary of Defense in the year 2000 might well be the aerospace plane's most enthusiastic supporter. ■

The Entebbe scenario probably will never be rerun, but terrorism wasn't ended with Israel's spectacular rescue mission. The US is bound to be a prime terrorist target in the future, and we have a unique capability to counter that threat . . .

# Tankers, Task Forces, and Terrorism

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

THE Israeli raid into Entebbe Airport made for the best summer reading since *Goldfinger*. And because terrorism is on the rise—professional, trained, centrally directed terrorism—we are going to see more of it in spite of that spectacular Israeli success. While Hollywood moguls work feverishly to capitalize on the Entebbe Caper, we can be sure there are some moguls of a different sort studying what went wrong and planning their next venture.

Inevitably, there are going to be examinations, in the press and in the Congress, of our own capability to deal with similar situations. Already there have been invidious comparisons of Entebbe with the *Mayaguez,* where we were accused of overkill, and Son Tay, where no one was rescued. Just as inevitably, there are going to be proposals for an élite commando force on call to deal with these terrorist activities. I would suggest we do nothing hastily, out of respect for one of the costly lessons of Vietnam. That lesson is to beware of bright ideas.

Bright ideas were the hallmark in Vietnam: C-47 gunships, helos masquerading as fighters, air commandos wearing funny hats and banging around in WW II airplanes. Then there was the almost stupefyingly bright idea of the electronic fence, the Vietnam version of the Maginot Line. There were countless other bright ideas, most aimed at particular problems in a very small place and thus not useful anywhere else.

Entebbe has come and gone, and it is most unlikely that particular scenario will have a rerun. There is little point, then, in rehearsing a cast for it. Nevertheless, the growing polarization of Africa, the turmoil in the Mideast, and our increasing dependence on imported oil and other raw materials make us ever more vulnerable to acts of terrorism and blackmail. In those situations, submission is the road to impotency, and negotiation, we have seen, is successful only when there is an element of submission. Terrorism is clearly on its way to becoming a very real political and economic threat to civilized nations. At that point, it also becomes, if not a military threat, at least a military problem. The question, then, is how to deal with it.

In the early days of our nation, the Barbary pirates gave our shipping a hard time as it passed in and out of the Med. It was a job for the Navy, and they took care of it nicely, ensuring not only free passage for our merchant ships but world respect for the fledgling United States of America. It took a little time, but, as the French say, the more things change, the more they are the same. We seem to have ahead of us a modern version of the Barbary pirates. Like everything else in this ever-shrinking and polarized world, the matter of dealing with these people has become infinitely more complex than it was in the days of Commodore Decatur.

A principal complexity nowadays is simply the speed with which things happen. An airplane hijacking, for instance, takes place and, a few hours later, the hijackers are thousands of miles away in some remote, and friendly, sanctuary. Even in the case of the *Mayaguez,* a throwback to the era where the sea was the theater for this sort of thing, the time available for our reaction was very short, and airpower was thus essential to our reaction as it was, indeed, to the Israeli mission.

There is considerable, and justifiable, sentiment these days for rebuilding our Navy. It still remains a most important means of projecting US power and protecting US interests. But it is equally important to remember that the fastest reaction force available to the United States, in situations where we do not have, either by luck or planning, something in the immediate area, is the air task force refueled in flight by tankers. Somehow, in all the arguments going on these days about what is or is not essential, the aerial tanker is seldom mentioned; yet more than any other single thing, it is the key to the US being able to respond to unpredicted crises.

Following the Tet offensive, the carrier *Midway's* emergency departure from Norfolk for the South China Sea was a major news story. The departure of the 4th Tactical Fighter Wing from Seymour Johnson AFB in North Carolina was scarcely noticed. And yet, about the time the *Midway* was passing through the Caribbean, the 4th was in Thailand, ready to go to work.

Airborne task forces, with transports, fighters, tankers to meet them along the way, and an AWACS, perhaps, to control them, are something that could be put together today. The truly essential element is the tanker. That is the system we must have, and in sufficient numbers to ensure the mobility of our tactical forces.

The point is simply this: We are going to be challenged, and we are going to feel a need to react. We have, in our regular forces, everything we need for that reaction. Not the least of what we have is a capability, unique in the world, to move air forces great distances in a hurry. We should all understand that capability against the time when the people with bright ideas start to move in. ■

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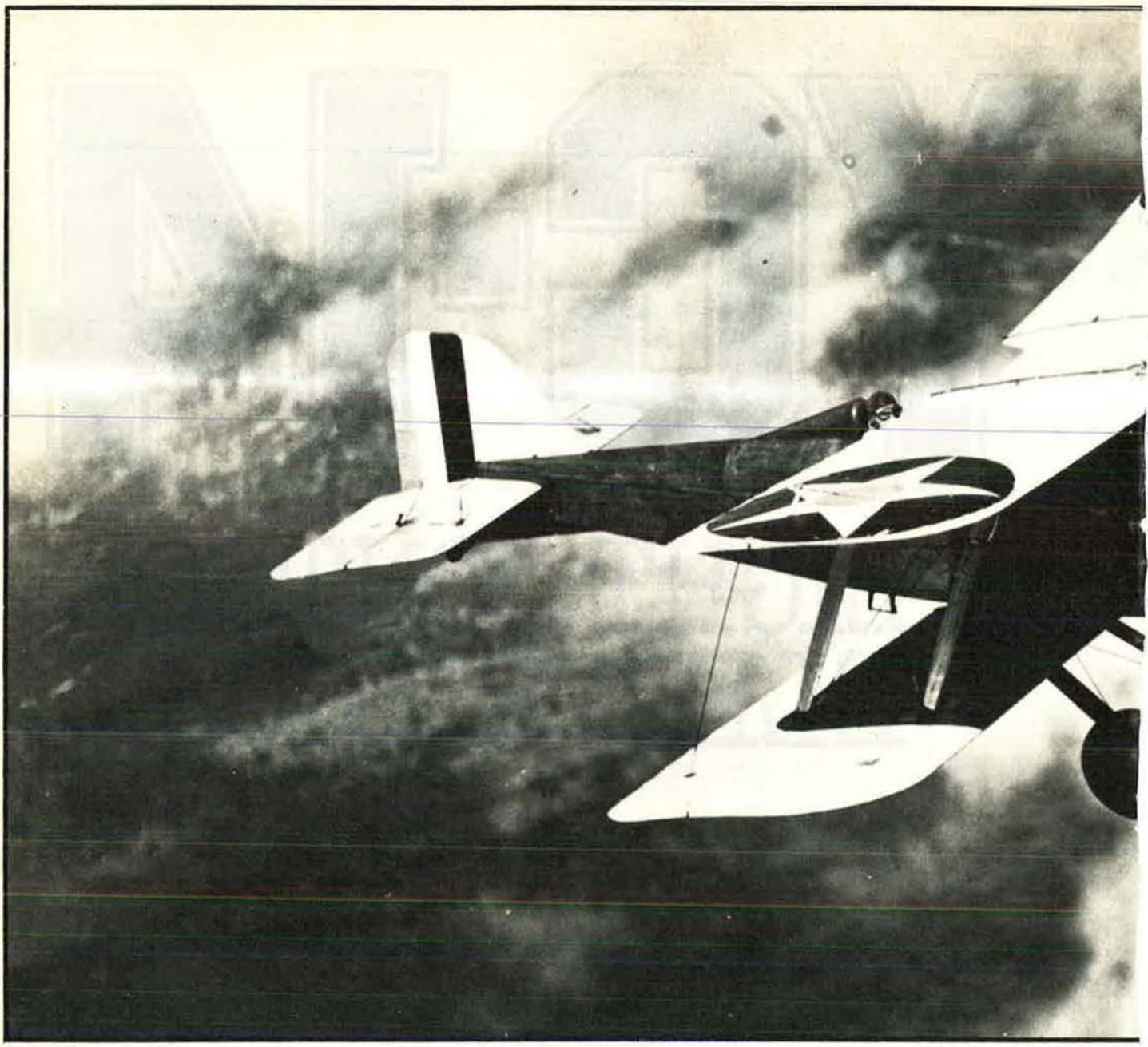

THE SE-5 was designed and built by the British. More than 5,000 were produced, equipping twenty British, one Australian, and two American squadrons on the Western Front during the last eighteen months of World War I. It was considered by many leading British aces to be the best all-around Allied fighter of the war.

The United States did not have a fighter airplane of its own at the end of World War I. We purchased a considerable number of SE-5s just before the Armistice, and assigned them to the 25th and 92d Squadrons. They later made their way to this country and were assigned to fighter units here, in Hawaii, and to the Advanced Flying School, Kelly Field, Tex., for use in fighter training.

The SE-5 was a biplane with wooden airframe, fabric covered except for some plywood around the engine, and a hinged, metal panel to allow access to the gun. It was powered by the Hispano-Suiza engine of horsepower varying from 150 to 220. The upper wing was staggered well forward, and considerable dihedral was built into both upper and lower wings, making it susceptible to ground-looping in crosswinds, especially since it did not have brakes. However, the dihedral made the airplane stable in flight and, therefore, a better gun platform than many early pursuit planes. Many British aces, among them J. I. T. Jones, James T. McCudden, and Edward C. "Mick" Mannock, scored most of their victories flying the SE-5.

A small, trim-looking airplane, the SE-5 had a top speed of 125 mph and an endurance of three hours. It

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*The author, General Hoyt, was active in military aviation from 1918 until his retirement in the closing months of World War II. Much of his career was associated with the development of fighter aircraft and command of fighter units. He took part in many pioneering flights during the 1920s and '30s, including flying Refueling Plane No. 1 for the* Question Mark *endurance flight in 1929. His report here on the SE-5 is the first in a series of short reports on the aircraft of that era.*

## Flying the Early Birds

# THE SE-5

**BY BRIG. GEN. ROSS G. HOYT, USAF (RET.)**

carried one .30-caliber, fixed Lewis machine gun firing through the propeller.

I first flew the SE-5 at Luke Field, Hawaii, in 1922. I was in lighter-than-air, commanding the 3d Coast Defense Balloon Co., at Ft. Ruger, Hawaii, when all captive balloon companies were deactivated. Orders were received assigning me to command of the 72d Bombardment Squadron, also at Luke Field, equipped with DH-4s and two JN-4s ("Jennies").

Lt. Gene Eubank, later a major general, gave me instruction in the Jennies and later soloed me. After some solo time in the JN-4, arrangements were made with Lt. Frank Tyndall (Tyndall AFB, Fla., is named after him), of the 6th Pursuit Squadron, to borrow an SE-5. I would meet him on the line when he came in to land. He would leave the engine running and his parachute in the cockpit, and get out. I would get in, take off, fly to Wheeler Field at Schofield Barracks, where landings could always be made into the wind, practice landings, return to Luke Field, a two-way field with frequent crosswinds, and make one landing. The fact that I—an inexperienced, unrated pilot—did not have an accident speaks well of the handling qualities of the SE-5.

I next encountered the SE-5 in 1925 as a student in the Advanced Flying School, Kelly Field, Tex., specializing in pursuit training. We were flying in a flight of nine (three elements of three planes each) led by the instructor, Lt. Tommy Blackburn, recently assigned to the Advanced Flying School from the 1st Pursuit Group at Selfridge Field, Mich. He was putting us through some of the maneuvers performed by the experienced pilots of the 1st Pursuit Group. I was No. 3 wingman in the top element, which gave me a grandstand seat for what was about to happen. Lt. Charles MacAllister and Cadet Charles Lindbergh were the wingmen of the element below.

We went into a straight-down turning dive and were recovering when MacAllister and Lindbergh collided. Pieces of airplane came back through our element, but missed us. MacAllister jumped first. One of his wings covered Lindbergh's cockpit. I lost sight of them temporarily, but finally saw two 'chutes floating down. Lindbergh had been able to push the wing aside far enough to squeeze out.

The SE-5 was soon phased out by service attrition or sale to individuals. ■

### THE SE-5

Data on the SE-5 vary slightly, according to the source. The following specifications are for the SE-5a, and come from *Aircraft of the 1914–1918 War*, by O. G. Thetford and E. J. Riding; Harleyford Publications, Harleyford, England; 1954.

| | |
|---|---|
| **Wingspan** | 26 ft., 7½ in. |
| **Length** | 20 ft., 11 in. |
| **Height** | 9 ft., 6 in. |
| **Powerplant** | Hispano-Suiza engine of 220 to 240 horsepower |
| **Weight** | Empty, 1,531 pounds<br>Loaded, 2,048 pounds |
| **Max. Speed** | 128 mph at 10,000 feet |
| **Rate of Climb** | 6 minutes to 6,500 feet |
| **Service Ceiling** | 20,000 feet |
| **First Delivery to RAF** | March 1917 |
| **First Combat Sortie** | April 23, 1917 |

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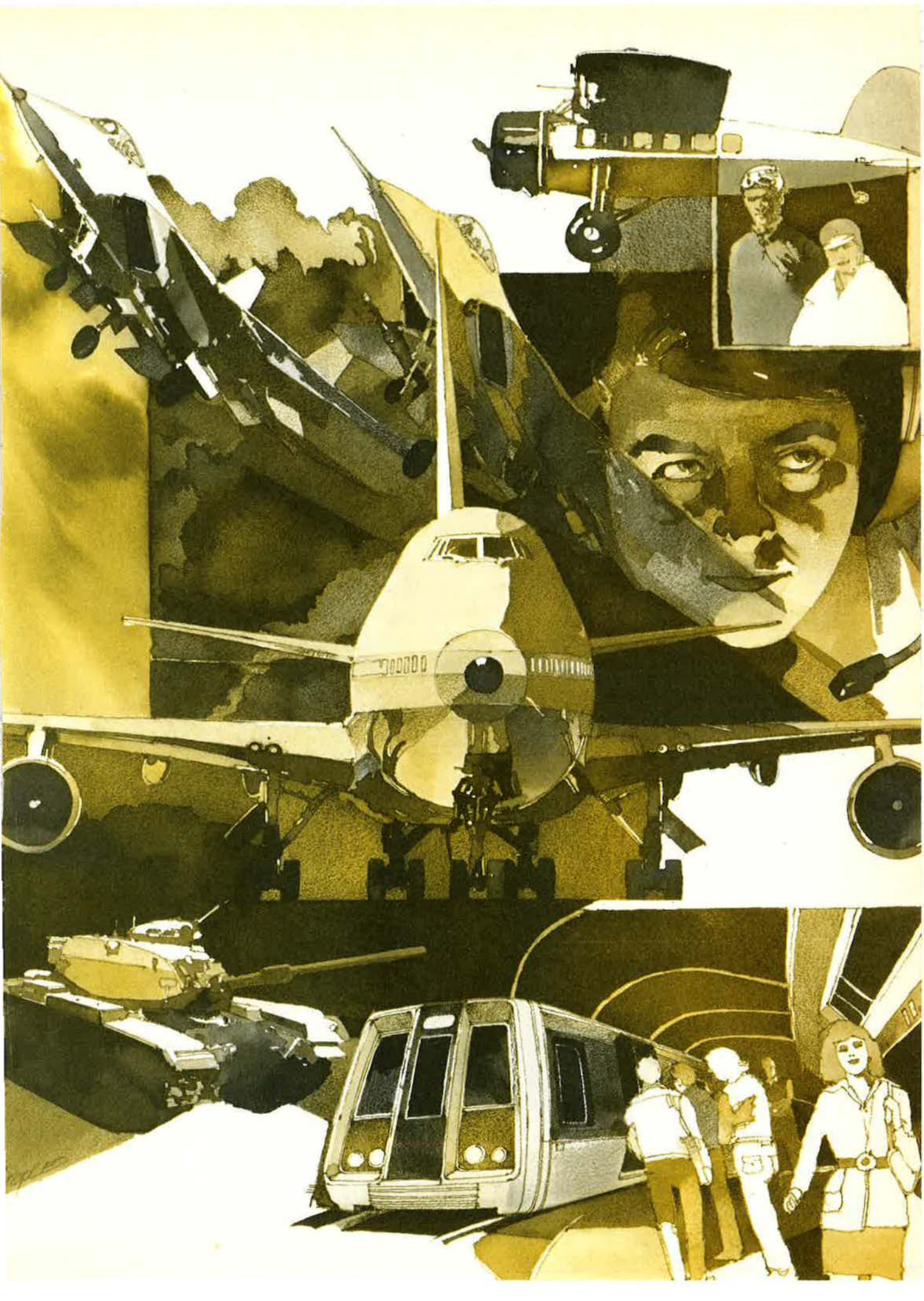

THIS year marks the fiftieth anniversary of the start of the Pan American Goodwill Flight. As the only survivor of the ten Army Air Corps officers involved, I have been asked by the editors to relate some of my memories of that expedition.

Those memories have been refreshed by a copy of the report we submitted to the War Department, borrowed from my files in the Library of Congress, and an article by Maj. Herbert A. Dargue, the commander of the flight, published in *The National Geographic Magazine* in October 1927.

The idea for the flight came from Maj. Gen. Mason Patrick, then Chief of the Army Air Corps, who earlier had planned the round-the-world flight by four Douglas World Cruisers—a 26,000-mile flight that took 175 days in 1924.

General Patrick submitted his proposal for a flight around Central and South America to the Secretary of War, Dwight Davis, who in turn sought the advice of the Secretary of State, Frank B. Kellogg. The latter endorsed it enthusiastically, since our relations with Central and South America needed attention (a condition that seems to recur periodically).

The purpose of the flight was to further friendly relations with Latin American countries, to encourage commercial aviation, to provide valuable training for Air Corps personnel, and to give an extensive service test to the amphibian airplane. President Calvin Coolidge sent a goodwill letter to the President of each of the twenty-three Pan American countries, to be delivered by the flight.

Working out the organization and operational plan was charged to the Assistant Chief of Army Air Corps, Brig. Gen. James E. Fechet, who, with his staff, selected the plane, equipment, and flyers. General Fechet assigned Capt. Ross Hoyt as his principal assistant in drawing up the administrative, diplomatic, logis-

Fifty years ago, during America's Sesquicentennial Year, five Air Corps Loening amphibians began a 23,000-mile goodwill flight around Latin America. That expedition ranks, along with the 1924 round-the-world flight, as one of the great achievements of early military aviation. Here, the last surviving member of the flight recalls some adventures and achievements of . . .

# The Air Corps's 1926 Pan American Flight


*Lt. Muir Fairchild (left), later to become USAF Vice Chief, and the author after landing at Rio de Janeiro.*

**BY LT. GEN. IRA C. EAKER, USAF (RET.)**


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Sperry CRTs have also been used successfully in a number of subsonic aircraft. They are being used in NASA's STOLAND project aboard a Convair 340, deHavilland Buffalo, Twin Otter and a Bell UH-1. The Air Force used a Sperry display in a C-141 during an all-weather landing program.

B-1 VSD

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tic, and operational details. The report of the flight includes this tribute to him: "A great deal of credit is due Captain Ross G. Hoyt for the preparation of the greater portion of the project and detailed plans for the Pan American Flight."

The airplane selected for the mission was the Loening OA-1 amphibian, a design recently submitted by Grover Loening, which was being evaluated by the Air Corps as a new observation type. The hull was of duralumin over a wooden frame, and the fuselage was built on top of the hull. The aircraft had a wingspan of forty-five feet.

The OA-1 was powered by a water-cooled Liberty engine of 400 horsepower, mounted upside down. This novel feature was necessary in order for the propeller to clear the forward end of the hull.

The weight of the plane fully loaded, including all the supplies and baggage carried on the Pan American Flight, was nearly three tons. In spite of its weight, flying characteristics were very good. An average cruising speed of from eighty-five to ninety miles an hour was maintained by the flight. No plane was considered by the personnel of the flight to be more suitable for the mission.

Mounting the engine upside down created most of our maintenance problems. Unless the piston rings were perfectly fitted, oil leaked past, fouling the spark plugs. It was normal at each stop to remove the twenty-four plugs and clean and replace them before starting the next leg of the journey.

Another time-consuming, laborious task was refueling. Gasoline in steel drums had been stored along the route. It had to be hand pumped through a chamois-covered funnel into the tanks, at a normal rate of sixty gallons an hour. The Loening had a full capacity of 200 gallons.

## The Crews

The plan called for five planes, each crewed by two officers, a pilot and assistant pilot, one of whom should be an experienced engineer and maintenance officer. This was especially important since no mechanics could be carried.

The crews were selected by the Chief of the Air Corps with the advice of General Fechet. A telegram was sent to each of the principal Air Corps station commanders, authorizing him to submit the names of two officers. The stated requirements to be considered were "length of service, cross-country flying experience, and practical engineering ability." It was also suggested that officers with observation squadron experience should have preference over bomber or fighter pilots, because of the type of flying this expedition required. General Fechet submitted a list of twenty-six officers to the Chief of Air Corps, who selected the ten officers listed below:

**Maj. H. A. Dargue,** Office, Chief of Air Corps.

*Shortly before the flight, Secretary of State Frank Kellogg gave a luncheon for members of the flight, the Secretary of War, and Latin American diplomats.*

**Capt. A. B. McDaniel,** Kelly Field, Tex.

**Capt. Ira C. Eaker,** Office, Chief of Air Corps.

**Capt. C. F. Woolsey,** McCook Field, Dayton, Ohio.

**1st Lt. B. S. Thompson,** Aberdeen, Md.

**1st Lt. L. D. Weddington,** Fort Sam Houston, Tex.

**1st Lt. C. McK. Robinson,** Fort Crockett, Tex.

**1st Lt. Muir S. Fairchild,** Langley Field, Va.

**1st Lt. E. C. Whitehead,** Wright Field, Fairfield, Ohio.

**1st Lt. John W. Benton,** Crissy Field, Calif.

We were divided by Major Dargue, the flight's commander, into five flight teams and, following the example of the World Flight, the planes were named for prominent US cities:

- *New York,* crewed by Major Dargue and Lieutenant Whitehead.
- *San Antonio,* crewed by Captain McDaniel and Lieutenant Robinson.
- *San Francisco,* crewed by Captain Eaker and Lieutenant Fairchild.
- *Detroit,* crewed by Captain Woolsey and Lieutenant Benton.
- *St. Louis,* crewed by Lieutenant Thompson and Lieutenant Weddington.

Subsequent events proved that this team pairing had special significance for the success of the mission. The two pilots had to be congenial in temperament and they must complement each other's qualifications.

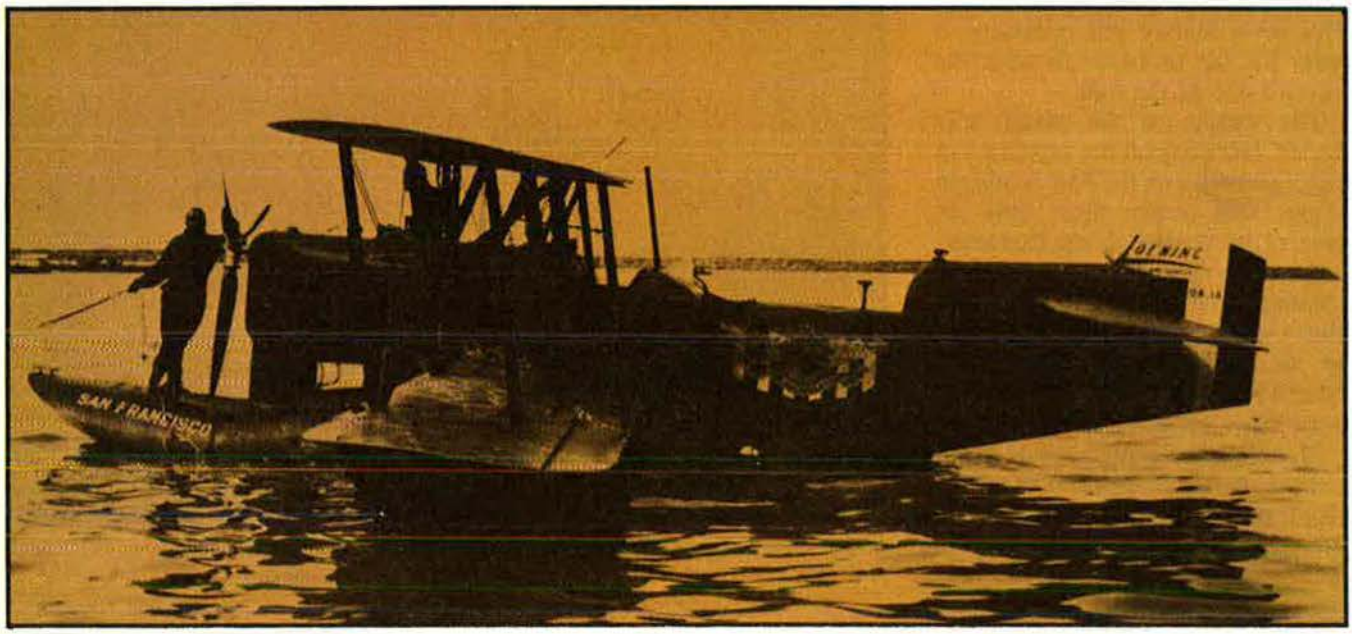
"Santy" Fairchild and I developed a plan for joint labor during the training period. We also soon learned that we shared a determination, almost an obsession, to get the *San Francisco* home safely. We agreed that we were a two-man partnership in which each had invested his total assets—his reputation, his ambition, even his life. This shared realization ensured maximum effort for our team. I have no doubt the other plane crews devised similar plans. For example, all the pilots alternated daily in flying their planes.

The flight route and schedule called for a diplomatic stop at the capital of each of the twenty-three countries of Latin America; the colonies of Europe in this area—Great Britain's Guiana, Jamaica, and

Trinidad, and France's Guiana and Guadaloupe—and the Republic of Cuba.

The flight schedule included fifty-six flying days and seventy-seven delay days for diplomatic ceremonies and plane and engine maintenance—a total of 133 days. As actually executed, the journey took fifty-nine flying days and seventy-four delay days, and was thus completed exactly on schedule.

Advance officers visited all the planned stops, selected landing areas, arranged the diplomatic schedule, and selected representatives who contracted to store the advance shipments of engines, spare parts, and supplies. The six advance officers were: Capt. W. P. Hayes, Lt. S. C. Skemp, Lt. B. T. Burt, Lt. W. B. Souza, Lt. M. B. Asp, and Lt. I. G. Moorman. The efficient work by these officers greatly facilitated accomplishment of the mission.




*The author's Loening amphibian, shown here at Buenos Aires, was the only one of the five planes to complete the entire journey, making every scheduled stop. It is now at the Air Force Museum at Wright-Patterson AFB, Ohio.*

### Preparations and Protocol

The Pan American Goodwill Flight departed the United States from San Antonio, Tex., on December 21, 1926, flew a 23,000-mile trip, and landed in Washington, D. C., May 2, 1927, as scheduled.

It soon developed that, after pilot and engineering ability, the principal crew requirement was physical stamina. Usually we were awakened at 4:00 a.m. in order to begin the day's flight by 6:00, since the early morning hours provided the best flying weather. After a normal flight of four to six hours, we landed at primitive fields or in rivers or bays, then taxied out onto beaches to facilitate maintenance and refueling, which normally required three to four hours. We thus arrived at our lodging, arranged by the advance officers, late in the afternoon, discarded mechanic's coveralls and prepared for social functions.

There was a banquet every night given by the American colony or by the officials of the country. These usually lasted, with the dancing that habitually followed, until midnight. So, to bed by midnight for four hours of sleep before the 4:00 a.m. call for a new day of flying, mechanical maintenance, and social or official protocol events. The latter could not be avoided or slighted since, after all, the first priority of our mission was diplomatic. Captain McDaniel remarked near the end of our flight that we had danced more miles than we had flown.

The wisdom of those who selected us, in stressing youth and physical stamina, became evident. Our average age was thirty-two; none had records of any physical infirmities and, as General Patrick later revealed, all had been recommended by their Air Corps commanders as "industrious, accustomed to heavy schedules, and [with] demonstrated enthusiasm for flying."

One of the principal memories I have of this expedition is of being continually tired and short of sleep. This could be cheerfully tolerated because of the kindly, enthusiastic receptions we received at each stop from the American colonies and the local people, both average citizens and national leaders.

Some experiences in our preparation for the flight have remained with me through the years. Since this was to be a diplomatic mission, State Department counselors lectured us on protocol and proper conduct in foreign capitals. One advisory item from this program stated, "Unless you speak the language of the country visited perfectly, make no public speeches in other languages than your own. Realize what we think of people who speak English ungrammatically, and remember that is exactly what they will think of you if you speak Spanish or Portuguese imperfectly." Since immediately after being selected for this flight we had begun Spanish classes and memorized brief protocol speeches in Spanish, this State Department advice was a great relief.

Flight surgeons lectured us on how to stay fit under the conditions likely to be encountered. They correctly

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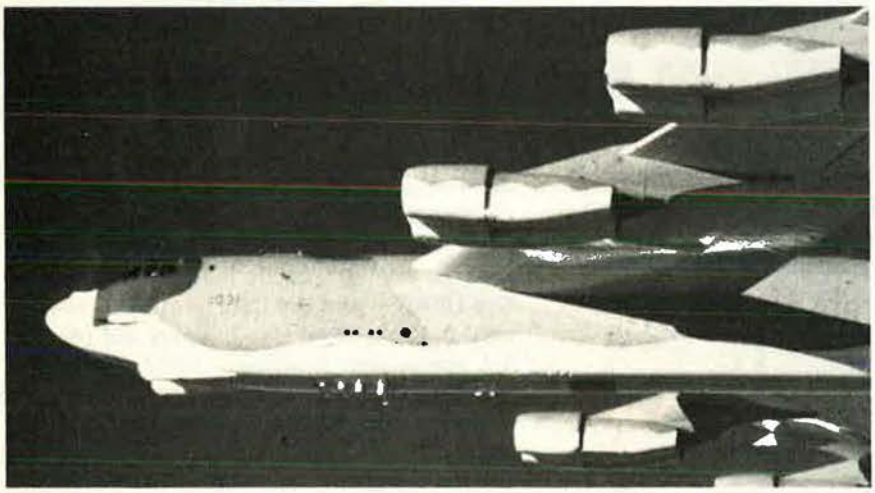


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stressed the great importance of avoiding stomach infections and ailments from contaminated food and water. "Drink only boiled water. If you can't get boiled water, drink bottled water, if bottled water is unavailable, use bottled soft drinks or beer. As to food, since you will spend much of your time in the tropics, favor fruits: bananas, coconuts, oranges, papayas, mangoes, and avocados. Favor also canned and packaged foods like sardines, cheese, and crackers. In primitive areas, avoid like the plague native foods prepared by natives. An airplane, on a long flight, is a poor place to have diarrhea."

They also said that in the tropics skin diseases are prevalent and the best antidote is to bathe frequently in unpolluted water.

These health and hygiene lectures proved very valuable, although they were hard to follow while dining at a banquet in a different city of a different country nearly every night.

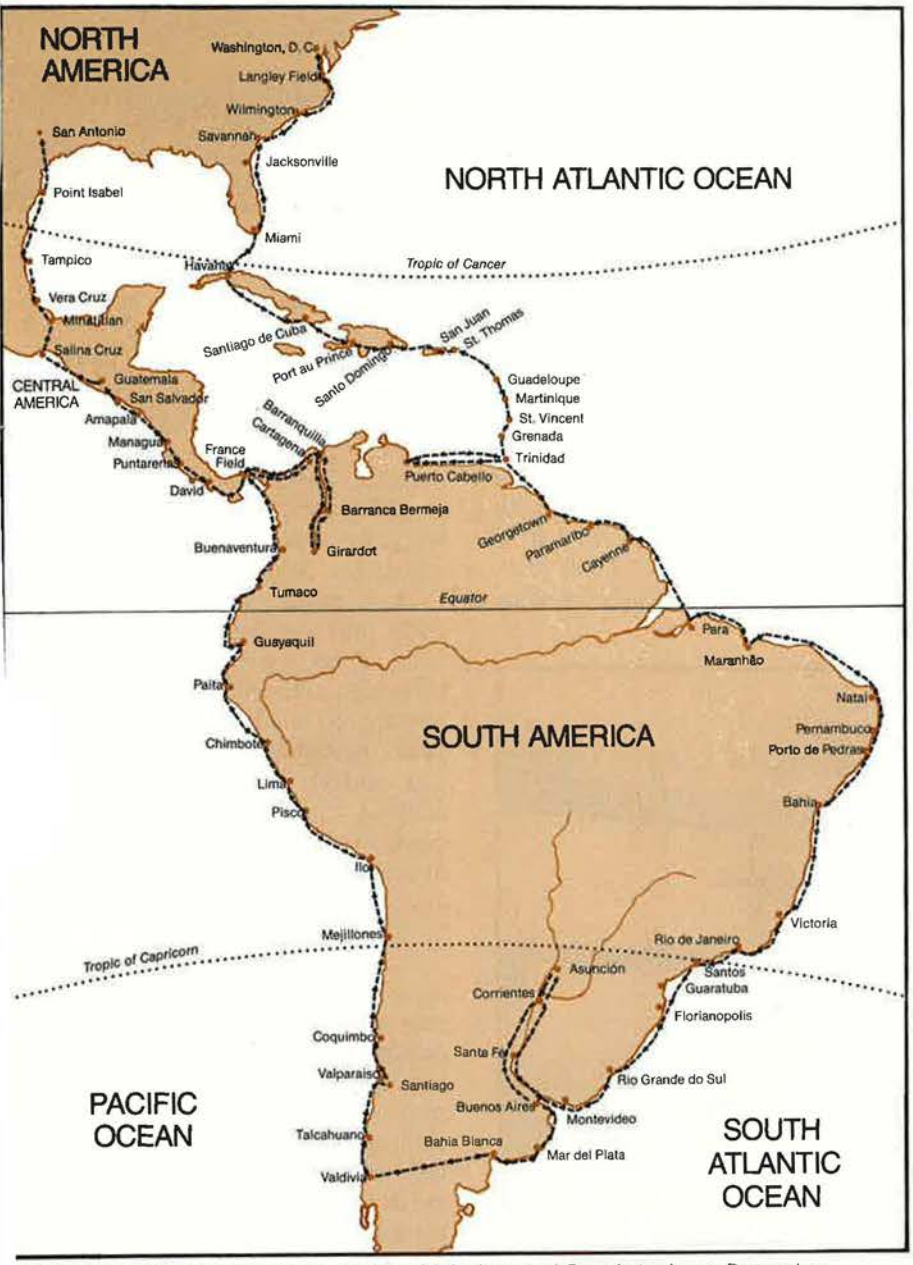
We also received lectures from meteorologists on the climatic conditions to be expected on the flight. This was important since we were leaving the North Temperate Zone in winter, proceeding to the Northern Hemisphere Tropics and, after crossing the equator in Ecuador, passing into the South Temperate Zone in southern Chile, crossing the high Andes, and reversing the process as we flew northward from southern Argentina.

Communications were recognized as a problem, but there was little we could do about that since radios were not installed in aircraft until years later. We did work out a set of hand or plane signals to communicate with each other. These proved invaluable many times in the course of the journey.

## Crash Landings and Close Calls

As I relive the memories of this flight, the principal operational experiences involve a succession of aircraft accidents and mechanical problems. The first occurred when the *New York* crash-landed in Guatemala. We had landed at the sod military field there without difficulty although it was at an elevation of almost 5,000 feet and was only 5,000 feet in length.

We were somewhat apprehensive about the takeoff since the end of the field into the prevailing wind was bordered by an old Spanish stone aqueduct fifty feet high. As Major Dargue, piloting the *New York*, neared the aqueduct in the takeoff run, he was convinced he could not




*The route of the Pan American Flight, which departed San Antonio on December 21, 1926, and landed at Bolling Field, D. C., on May 2, 1927. In addition to its diplomatic achievements, the flight opened the way for commercial routes.*

*Captain Woolsey (right) and Lieutenant Benton were lost when the* Detroit *collided in midair with the* New York *while preparing to land at Buenos Aires.*

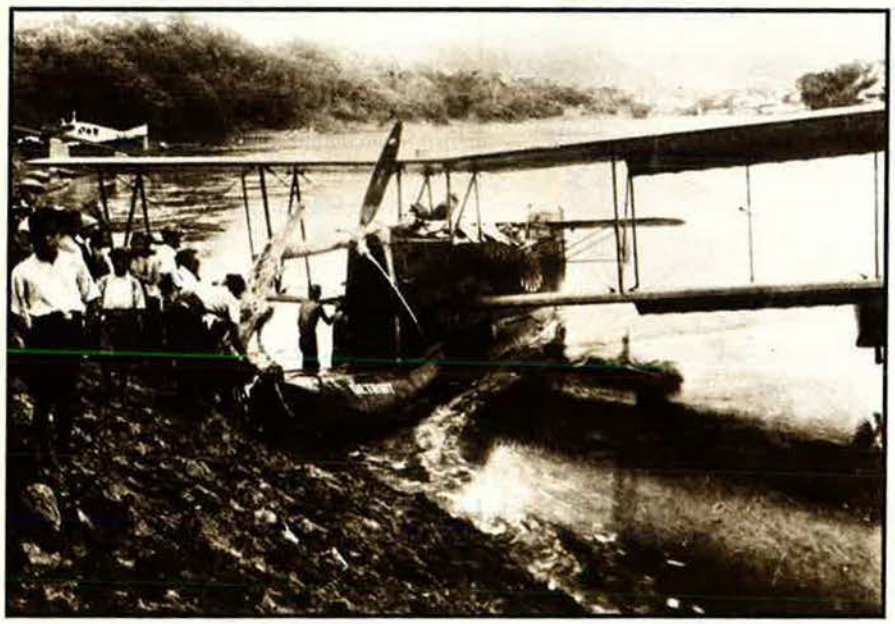
*The author, retired Lt. Gen. Ira C. Eaker, completed pilot training in 1918, and after duty in the Philippines was assigned as Executive Assistant in the Office of Chief of Air Corps. Two years after the Pan American Flight, he was selected as chief pilot of the Question Mark, which, under the command of Maj. Carl "Tooey" Spaatz, set a world endurance record. In the 1930s, he commanded several fighter units, made the first blind transcontinental flight, and, with Gen. H. H. Arnold, wrote three books. During World War II, General Eaker headed successively VIII Bomber Command, Eighth Air Force, and Mediterranean Allied Forces. He flew on the first heavy bomber raid on Occupied Europe and the first shuttle bombing mission from Italy to bases in Russia. In April 1945, he was named Deputy Commander of the Army Air Forces and Chief of Air Staff. General Eaker retired in 1947 with more than 12,000 pilot hours and some thirty US and foreign decorations. He now lives in Washington and writes a syndicated column on defense affairs.*

clear it. He made a turn to the left and crash-landed in a plowed field, shearing off his landing gear and damaging the pontoon.

Through the engineering skill of Captain Woolsey and the combined effort of all of us, the hull was repaired and the plane shipped by rail to a nearby lake, from which it was flown to France Field, Panama, for complete repair. The rest of the flight continued our schedule of visits to the other countries of Central America.

The next plane to have serious difficulty was the *San Antonio.* We were preparing to take off from Tumaco, Colombia. Preflight engine warm-ups were being made, when the *San Antonio*'s engine revealed a defective thrust bearing, necessitating an engine change. A telegram was sent to France Field, requesting an engine and mechanical help. The crew, Captain McDaniel and Lieutenant Robinson, were left behind to guard the plane and follow when the engine change permitted. France Field had difficulty getting shipping to this remote port, and it was nineteen days before the spare engine arrived and a month before the *San Antonio* joined the flight in Brazil.

Next came the turn of the *San Francisco.* From Valdivia, Chile, we were to turn east, flying across Argentina to the east coast city of Puerto Belgrano, near Bahia Blanca. This required a flight over the Andes which, at that point, had peaks rising to 9,000 feet. Our planes, loaded with fuel for the six-hour flight, had a maximum ceiling of 12,000 feet. Since the Andes were expected to be

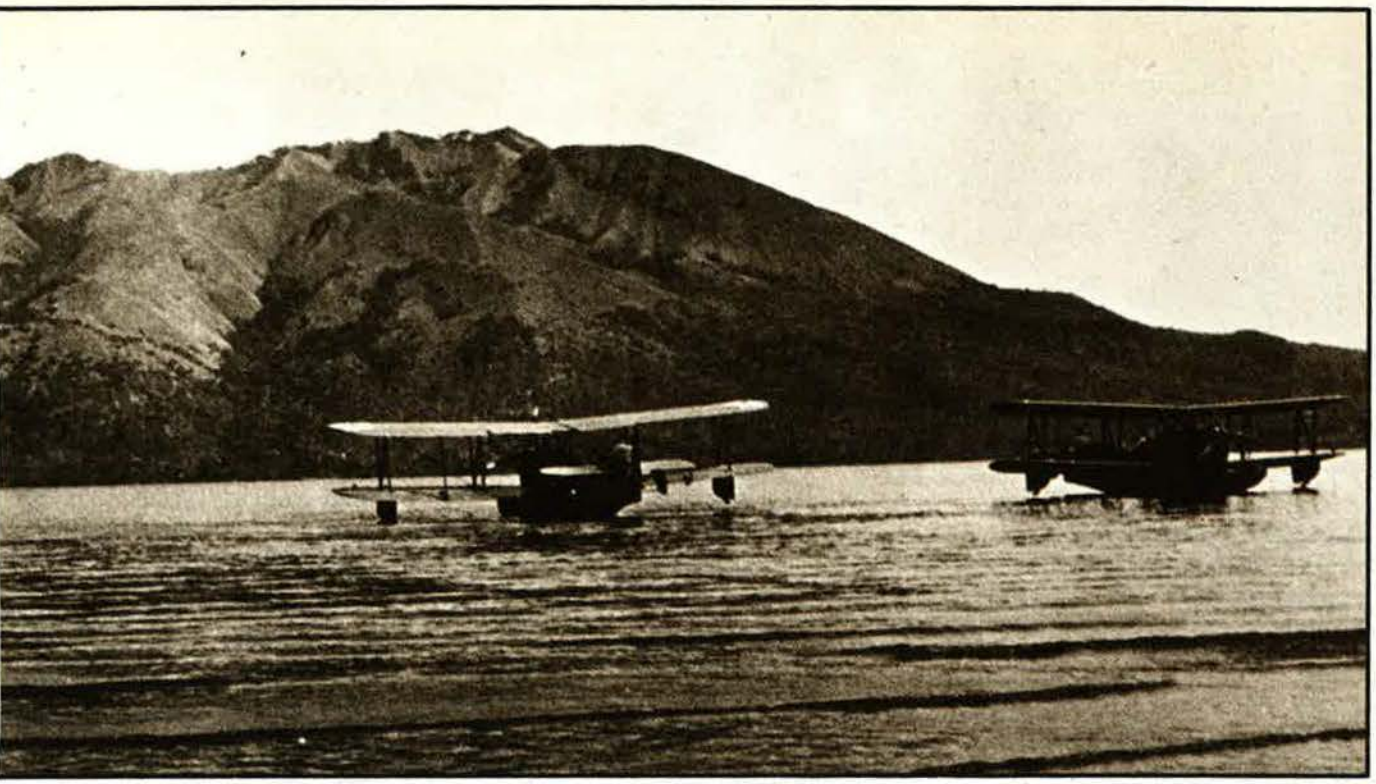


*This mooring in the Magdalena River at Girardot, Colombia, is typical of the primitive conditions in which the crews often had to operate.*

cloud covered, we had agreed not to attempt formation flying, but to negotiate this difficult leg singly.

It was my turn to pilot this leg. I flew south along the coast until maximum altitude was gained, then turned east to make the Andean crossing. There was solid cloud cover as anticipated. After about one hour, when we should have been halfway across the Andes, our engine began to lose power, and we started to settle into the clouds. I asked Fairchild if he wanted to take to his parachute. He shared my view that landing on an ice-covered Andean peak, probably with a broken leg, was scarcely to be preferred over sticking with our plane. I held the plane at seventy miles an hour, just above stalling speed at that altitude, and settled into the clouds, expecting to crash momentarily.

At 7,000 feet we were out in the clear over a lake. Fairchild became very excited. He stood up in the rear cockpit and showed me a crude terrain sketch that contained a lake similar to the one we were over. He shouted, "This looks like the lake on this sketch the British engineer gave me at the banquet last night. He was a member of a survey team exploring a prospective rail route across the Andes. He told me the Andes could be crossed east of Valdivia at



*At Amapala, Honduras, the beach was so soft that the planes had to be left at anchor. Servicing and maintenance were done while standing in the water. It took about three hours to refuel each plane, pumping fuel from steel drums.*

6,000 feet by following the pass containing this lake."

In the meantime, I was flying around the perimeter of the lake trying to bring our coughing engine back to normal power. When the ice in the carburetor melted, we turned east and soon came out over the plains of Patagonia. Four hours later, we joined our companions, who had begun to worry about our delayed arrival, at Bahia Blanca.

### Tragedy Strikes

The most tragic memory of the flight was the loss of Captain Woolsey and Lieutenant Benton at Buenos Aires, when their plane, the *Detroit*, collided with the *New York*. Major Dargue and Lieutenant Whitehead escaped by parachute.

Woolsey and Benton were two of the most popular members of the flight. Captain Woolsey, the engineering officer of the flight, had been of great help to all of us, not only by his expert knowledge of our planes and engines, but for his willingness to spend time and effort with our problems. Benton, an excellent pilot, possessed a cheerful, engaging personality, and could always come up with some humorous observation to turn discord into harmony.

The report of this accident, telegraphed to the Chief of Air Corps the day it occurred, was as follows:

CAPTAIN EAKER FROM POSITION OF VANTAGE IN THE AIR WITNESSED COLLISION DETROIT AND NEW YORK FOLLOWING BRIEF DESCRIPTION AS HE SAW IT QUOTE HAD JUST FLOWN CLOSE FORMATION FOUR PLANES DIAMOND SHAPED OVER ARGENTINA LANDING FIELD BUENOS AIRES MAJOR DARGUE PILOTING COMMA NEW YORK COMMA ROCKED SHIP SIGNALING BREAK UP FORMATION TO LAND PERIOD WOOLSEY IN NUMBER THREE POSITION AND I IN NUMBER TWO POSITION TURNED OUT SIMULTANEOUSLY WOOLSEY TO LEFT AND I TO RIGHT NEW YORK CONTINUED ON AS DID ST LOUIS SLIGHTLY HIGHER AND TO REAR PERIOD DETROIT TURNED UP AND AWAY FROM NEW YORK SEVERAL HUNDRED FEET THEN TURNED BACK TO RIGHT AND WENT INTO SLIGHT DIVE PERIOD AT THIS INSTANT HE WAS ABOVE NEW YORK HENCE PROBABLY DID NOT SEE IT PERIOD NEW YORK STARTED GENTLE DIVING TURN SLIGHTLY TO LEFT PREPARATORY TO LANDING PERIOD DETROITS NOSE STRUCK NEW YORKS LEFT WING PERIOD SHIPS TELESCOPED AND BEGAN SPIN AS ONE PLANE PERIOD VERY SOON ONE PARACHUTE OPENED AT ALTITUDE PROBABLY A THOUSAND FEET SECOND CHUTE OPENED ABOUT FIVE HUNDRED FEET ONLY TWO JUMPED IN CHUTES PERIOD ANOTHER BODY FELL FREE JUST BEFORE PLANES STRUCK GROUND PERIOD COLLISION OCCURRED AT ABOUT FOURTEEN HUNDRED FEET PERIOD I THOUGHT NEW YORK WAS PLANE MOST DAMAGED AND FROM MY POSITION IN AIR THOUGHT TWO WHO ESCAPED WERE DETROITS CREW PERIOD ON LANDING FOUND MAJOR DARGUE AND LIEUTENANT WHITEHEAD HAD BEEN SAVED BY PARACHUTES PERIOD LIEUTENANT BENTON FELL FREE WITHOUT CHUTE AND CAPTAIN WOOLSEY REMAINED IN FRONT COCKPIT OF DETROIT PERIOD DETROIT BURNED NEW YORK DID NOT UNQUOTE FURTHER DETAILS FOLLOW AFTER INVESTIGATION PERIOD MAJOR DARGUE LIEUTENANT WHITEHEAD UNINJURED CAPTAIN WOOLSEY LIEUTENANT BENTON KILLED INSTANTLY.

The genesis of that accident occurred at our prior stop at Mar del Plata, when the *Detroit* broke a landing gear cable. Woolsey decided to fly it with wheels retracted to Buenos

Aires, the next stop, since the plan called for a water landing near an Argentine battleship for an official reception and lunch. Thereafter, we were to fly our planes some twenty miles across Buenos Aires to an Argentine Army flying field, where maintenance and repair facilities were available.

Woolsey knew that the landing gear wheels could be dumped manually by standing on the lower wing while holding onto interplane brace wires. All of us had done it while in training.

After the formation flight across Buenos Aires broke up, at Major Dargue's signal, Benton went out on the wing to dump the wheels, leaving his parachute in the rear cockpit. Woolsey evidently was watching this operation and did not realize that he was flying on a collision course with the *New York*. Woolsey was sitting on his parachute and could have saved himself. Instead, he elected to stay with the plane since Benton was on the wing without his chute. I have never witnessed a more courageous self-sacrifice.

The officials and people of Buenos Aires could not have shown greater sympathy and cooperation if the deceased pilots had been their own.

The remainder of the flight was uneventful, for which we were thankful. We had already experienced our share of tragedy.

## Mission Accomplished

There can be little question that the Pan American Goodwill Flight accomplished its mission. At an estimated cost of about $100,000, it had aroused the aviation interest of millions of Latin American nationals and heads of state. Many of them had never seen airplanes before.

The flight route became the first commercial aviation route in this area. When we landed in Havana, a US citizen came up to me and said, "I am a representative of a group, headed by a Mr. Juan Trippe, which proposes to survey a civil aviation route over much of your Goodwill Flight. Could I borrow your maps?" A few weeks later Pan American Airways began that survey.

Our government recognized the contribution the flight had made to aviation progress, military and civil, by awarding us the first Distinguished Flying Crosses, authorized by Congress just a few months before.

Now, fifty years later, the principal satisfactions I cherish are these:

Gratitude at being privileged to participate. The experience was unforgettable and contributed much to my future career in military aviation.

The opportunity it gave me to be associated with nine remarkable individuals and extraordinarily competent Army Air Corps flyers.

The chance to observe Major Dargue's brilliant leadership of that expedition. He was undoubtedly the best qualified officer in the Air Corps, at the time, for that difficult and many-faceted role.

The particular good fortune of having Lt. Muir Fairchild as my partner pilot. His ability as a pilot had already been demonstrated while he was a test pilot at Wright Field. His competence in engineering and maintenance was proved by the fact that we changed engines three times without help of any kind. It was further evidenced by the fact that our plane, the *San Francisco*, was the only one that completed the entire journey, making every scheduled stop. For that distinction, it is now in the Air Force Museum at Wright-Patterson AFB, Ohio.

The evidence that Army Air Corps leadership of fifty years ago had the wisdom, vision, and resources to conduct such flights. These demonstrations kept aviation alive in those lean years and played a vital part in achieving US air leadership, civil and military. ■

*At Bolling Field, D. C., 133 days after they left San Antonio, President Coolidge awarded the DFC to the flyers. From left to right; Robinson, McDaniel, Whitehead, Dargue, President Coolidge, Eaker, Fairchild, Thompson, and Weddington.*

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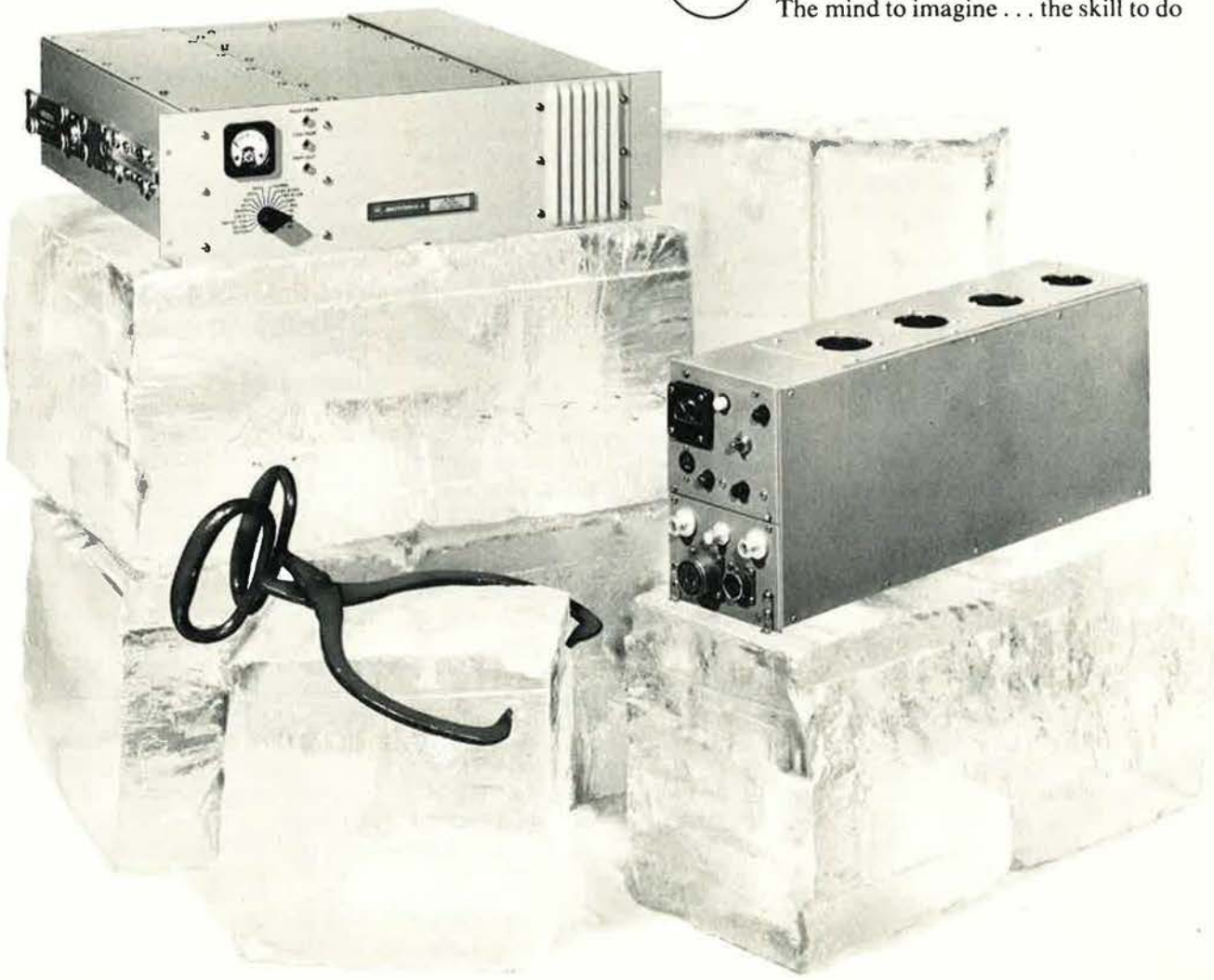

# What They're Saying...

## Soviet Defense Spending

*Maj. Gen. George J. Keegan, Jr., Assistant Chief of Staff, Intelligence, Hq. USAF, to the major air commands, on March 22, 1976:*

Recent congressional budget hearings have sparked new interest in estimates of Soviet defense spending. Unfortunately, critics and supporters alike have shown a lack of understanding of just what the monetary estimates of Soviet defense programs mean. Monetary estimates are important because they provide common measurement of dissimilar weapons and systems. We must use estimates since published Soviet figures are patently false and misleading. There are two methods of making these estimates: in dollars and in rubles. They serve two different purposes.

The dollar estimates provide a common denominator that allows a comparison between the level of military effort of the USSR compared with that of the United States. What the dollar figure for the Soviet Union shows is how much it would cost the US to provide the Soviet forces if we were to field such a force. It does not indicate who outspends whom—it does tell us how much we would have to spend to get a like force. If this is kept in mind, index number problems, exchange rates, relative productivities, and all the other economic jargon are superfluous. Neither the Department of Defense nor the CIA has ever claimed any more than this for the figures. In this regard, then, the results are unchallengeable—it would cost us fifty percent more than we are now spending to field the force the Soviets now possess. This is only one measure of the Soviet level of effort.

It might be possible to provide like estimates of both US and Soviet programs in rubles, but the utility of such a measurement is questionable at least as far as US planners are concerned. How much the two countries spend in rubles is rather meaningless to us, since we don't spend rubles, but it might be of extreme interest in the Kremlin. . . .

Our estimates of Soviet programs in rubles are not for the purposes of making comparisons with US figures; they do provide a relevant yardstick for comparisons within the Soviet Union. Ruble figures can measure the "burden" of the Soviet defense establishment on the Russian people, just as US figures measure the "burden" of US defense on American taxpayers. (Burden here refers to the resources used up in order to provide defense forces.)

There are several ways in which this burden can be expressed to make it meaningful to US policymakers. One is to measure the level of expenditure against some other internal quantity, such as GNP. For instance, in 1975 Soviet defense spending (in rubles) consumed about fifteen percent of their GNP (in rubles), while our defense budget (in dollars) was 5.6 percent of our GNP (in dollars). The Soviet figure has remained consistent at about the same percentage, even though their GNP has grown faster than that of the US. At the same time, the US defense percentage of GNP is about half what it was in 1955.

Another valid measure is to show the trends in growth, and that is indeed the most important measure. As Secretary [of Defense Donald H.] Rumsfeld indicated recently, the absolute levels are not the critical thing. "The trend is what's important—the trend with respect to Soviet levels of effort, and the trend line with respect to the United States levels of effort." In constant terms, Soviet defense spending is increasing at a compound rate of three percent per year; US spending is decreasing at the rate of seven percent per year. If these trends were to continue for both countries for the next ten years, the Soviet armed forces would have grown to the point where it would cost us twice as much to field the Soviet force as it would cost us to field our own reduced force. It is this trend that causes the greatest concern.

Neither the dollar nor the ruble estimate shows relative capabilities. The Soviets are not likely to attack us with rubles nor are we likely to defend ourselves with dollars. There are available numerous examples of relative strengths using weapon systems, manpower, etc., as a means of comparison. The expenditure estimates are an attempt to use an understandable common denominator which can give us an overall appreciation of levels of effort and trends which might not be visible with an enumeration of specific weapon systems only. Any way you measure it, the balance is tipping in a direction that is unfavorable for the United States.

## Cost of WWMCCS

*Air Force Secretary Thomas C. Reed, to the Armed Forces Communications and Electronics Association, on June 8, 1976:*

The WWMCCS [Worldwide Military Command and Control System] Council approved a WWMCCS architecture for the mid-1980s and beyond. The architectural studies concluded that we are headed in the right direction. A collection of baseline programs, already in the five-year plan and costing about $10 billion through 1985, will be the basis for the new architecture. About three-quarters of the programmed investment is allocated to the Air Force, but we have even more of the management responsibility, because of SAMSO's role in space. These baseline programs include various communications, and warning, satellites with their ground stations and processing systems; several airborne and ground-based command posts; new secure voice and message networks, information display systems, and the ELF [extra low frequency] communication system. ■

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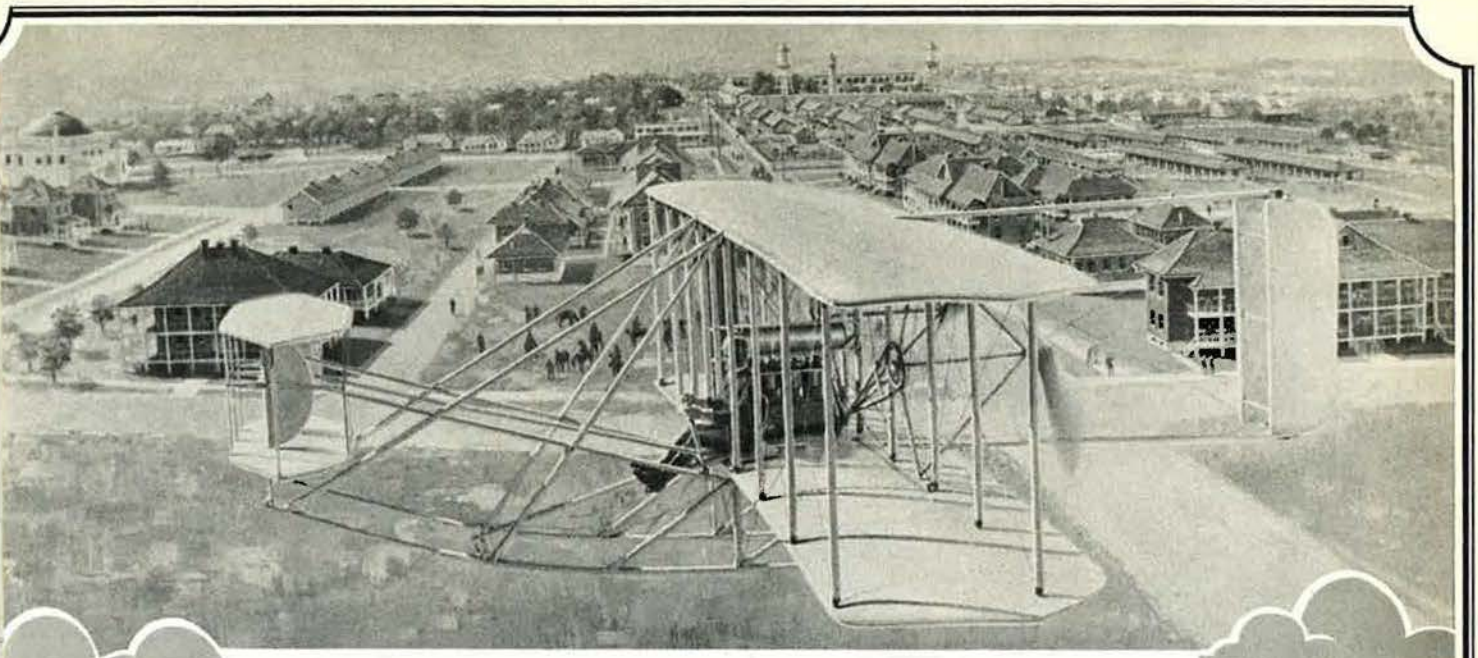
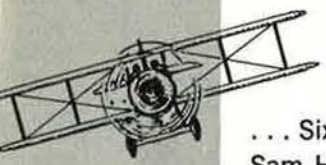
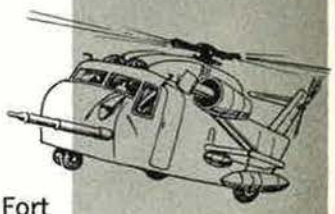


# This Is Where It All Began...





. . . Sixty six years ago, on March 2, above Arthur MacArthur Field, Fort Sam Houston. As a matter of fact, you can see the Quadrangle clock tower in the background as Lt. Benjamin Foulois pilots his airplane through what became the first military flight west of the Appalachians . . . the flight that probably resulted in San Antonio's present status as Home of the Air Force, with Brooks, Kelly, Lackland and Randolph Air Force Bases.

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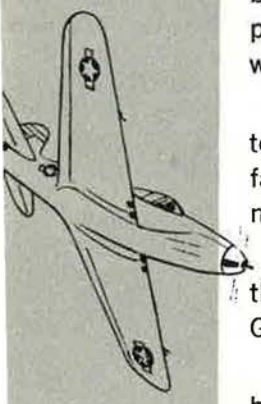

Today, Fort Sam Bank serves as the Worldwide Hometown Bank for thousands of military and civilian families . . . from its location just across Grayson Street from the Fort Sam Houston clocktower.

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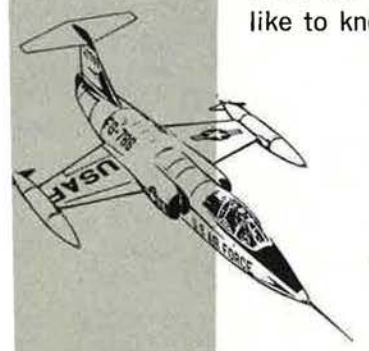

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# Airman's Bookshelf

## Zymogenic Z-Gram

*On Watch: A Memoir,* by Adm. Elmo R. Zumwalt, Jr., USN (Ret.). Quadrangle/New York Times Book Co., New York, N. Y., 1976. 568 pages, with index. $12.50.

Yes, Virginia, and Virginia voters in this year's Senate election, it is true that Candidate Elmo Zumwalt does not like Henry Kissinger and makes no bones about it. From p. 319 of *On Watch,* here is the most provocative statement you will find in a hardback book this year:

"K. feels that U.S. has passed its historic high point like so many earlier civilizations. He believes U.S. is on downhill and cannot be roused by political challenge. He states that his job is to persuade the Russians to give us the best deal we can get, recognizing that the historical forces favor them. He says that he realizes that in the light of history he will be recognized as one of those who negotiated terms favorable to the Soviets, but that the American people have only themselves to blame because they lack stamina to stay the course against the Russians who are 'Sparta to our Athens.' "

Admiral Zumwalt says that this passage is what he wrote in his notebook after an interview with Mr. Kissinger on a train en route home from a 1970 football game. The Admiral says he was pro-Kissinger when he wrote it. He soon was disenchanted.

The Admiral, a now-retired former Chief of Naval Operations, obviously kept extensive written notes all through his career, and the book is heavy with these authentic recollections. There are some, like his Favorite War Story, out of China in 1945, that we could live without, but others are fascinating. Bud Zumwalt was himself a controversial Navy character—some writers have accused him of stimulating mutiny on our ships—and one of the best parts of his memoir is his account of confrontations with that other provocative man in blue, Adm. Hyman G. Rickover. Rick was there as an obstacle, the Big Z writes, "from the start of my watch to the end of it."

This reporter has always had the feeling that there was something in common between Ralph Nader and Hyman Rickover. Admiral Zumwalt, using his notes from the day in 1959 when he was interviewed for a possible assignment in the nuclear part of our Navy, has unwittingly defined this Nader-Rickover commonality. They have a totalitarian approach to everything, scorn for anything that is not Spartan, and complete contempt for individualism. Both pose as experts in unrelated fields where neither has any discernible qualifications.

In Rickover's case, the proof is in nine pages of Admiral Zumwalt's book, in which he reprints an account he wrote at the time of his first face-to-face meeting with Admiral Rickover. The kind of abuse Zumwalt took is scandalous; it was the mental equivalent of the US Marine training programs that have shaken the military family in recent months. Admiral Zumwalt says his report of that interview was passed along the chain of command, up to Thomas Gates, then Secretary of Defense. Every official who read it shook his head and sighed. The author was offered a nuclear post, but turned it down, a gesture that did not help in his future relations with Admiral Rickover.

*On Watch* will make absorbing reading for anyone with even a less-than-serious interest in military matters. Books by retired four-star military men are not uncommon, and many of them are a waste of paper. This is not so for the Zumwalt product.

Again relying on the strong crutch of his notebook, the author provides a blow-by-blow account of the Middle East crisis in the fall of 1973. (Zumwalt was CNO and a member of the Joint Chiefs of Staff at the time.) The emphasis is on those events as a display of Soviet power. There are clues to explain the resentment some of our top military men acquired toward Israel—Adm. Tom Moorer (then Chairman of the JCS) and Gen. George Brown (then Air Force Chief of Staff) are cited by name in this connection—and why the Pentagon was alarmed early about the future of the world's oil supply. In the end, there was a US military alert, and the Admiral tells why. One of the things that upset him was the fact that some of the press and public suspected the call was a political ploy, designed and invoked by a harassed President Nixon, who saw his future in peril because of purely domestic problems of his Administration. People like Robert Strauss and Clark Clifford actually asked the Admiral whether the alert was justified. Defense Secretary James Schlesinger indicated that Mr. Nixon had nothing to do with the call, but men around him, including Mr. Kissinger, did.

There is similar detail about the "Admiral's Spy Ring" story, involving the leak of information about the National Security Council and the Washington Special Action Group during the India-Pakistan war. You may recall that Jack Anderson won a Pulitzer Prize in 1972 for printing material slipped to him, presumably by a yeoman named Charles Radford. The Columbia University trustees said they had reservations about honoring Anderson, in view of how he got his scoop.

*—Reviewed by Claude Witze, Senior Editor.*

## New Books in Brief

*Aircraft in Profile,* Vol. One, Part II, edited by Charles Cain. This part of Volume One covers in detail eleven military aircraft pro-

duced by the US, Britain, France, Germany, and Italy between 1916 and the close of World War II, plus the North American F-86 jet fighter. There are some 250 photographs and color plates, and the texts are done by internationally recognized aviation writers. Doubleday & Co., New York, N. Y., 1976. 144 pages, large format. $11.95.

*The Aircraft of the Swiss Air Force Since 1914,* by Jakob Urech. Available for the first time, this chronology traces design, performance, and technical details of 173 Swiss military aircraft from 1914 to 1974. The two pages devoted to each plane include a photo, three-view drawing, and brief description of events in the aircraft's history. Index, glossary, bibliography. Th. Gut & Co., Switzerland, 1976. Available from: Office du Livre S. A., 1701 Fribourg, Switzerland. 368 pages. $21.60 postpaid.

*F-84F Thunderstreak,* by Paul A. Jackson. First in the *Aviation News* Warpaint Series on famous military and civilian aircraft, this monograph covers several NATO nations' use of the "Streak" and its reconnaissance derivative, the RF-84F Thunderflash. Photos and drawings of camouflage and markings. Alan W. Hall Publications, 2 Sheepfold Lane, Amersham, Bucks., HP79EL, England, 1976. 23 pages. $2.25 postpaid.

*A Mile of Glory,* by Byron K. Enyart. The author, a retired Air Force colonel, spent his boyhood playing along Washington's Pennsylvania Avenue. Here he traces its eventful history from Thomas Jefferson's day to the present and beyond. The twist in the Avenue, the author says, resulted from President Jackson's attempt to protect his stables. In the 1850s, crime was discouraged by parading criminals down the Avenue to the tune of "The Rogue's March." Interestingly, the history of a nation and a city are entwined in this mile stretch leading from the Capitol building to the White House. Photos, maps. Vantage Press, New York, N. Y., 1976. 104 pages. $4.95.

*Military Pedogogy; Military Psychology; Dictionary of Basic Military Terms.* These three are the latest in a series of recent Soviet military writings translated and published under Air Force auspices. *Military Pedogogy* deals with principles of combat, political training, and methods of instruction and education of Soviet soldiers (363 pages. $3.35). *Military Psychology* presents basic principles of Soviet psychology and applies them to the soldier and military collectives (408 pages. $3.65). *Dictionary of Basic Military Terms* is a mini military encyclopedia written for leaders in all Soviet military services. Tactical and operational terms as well as those from Soviet doctrine and strategy are explained (256 pages. $2.90). Superintendent of Documents, US Government Printing Office, Washington, D. C. 20402.

*One Day at Kitty Hawk,* by John Evangelist Walsh. When Wilbur Wright died, much about him perished, too. The author claims that Wilbur was the real aeronautical genius and Orville very much his junior assistant. He believes that, by controlling the Wright archives after Wilbur's untimely death, Orville influenced written history. A fascinating account of the brothers and their times. Bibliography, index, and photos. Thomas Y. Crowell Co., New York, N. Y., 1975. 305 pages. $10.00.

*P-38 Lightning in Action,* by Gene Stafford. Beginning with design development from the XP-38 to the P-38M, text tells the story of the P-38 during World War II. Photos, design drawings. Squadron/Signal Publications, 3461 E. Ten Mile Road, Warren, Mich., 1976. 50 pages. $3.95.

*Political Violence and Insurgency: A Comparative Approach,* edited by Bard O'Neill, Don Alberts, and Stephen Rossetti. Extensive, well-documented analytical examination of insurgency in Northern Ireland, Portugal, Africa, Thailand, Iraq, Uruguay, and Guatemala. Success or failure depends on the relationship of certain variables—popular support, government response, environment, external support, and insurgent organization. Most of the contributors and all three editors are or have been members of the Air Force Academy political science faculty. Appendix, notes. Phoenix Publishing Co., Box 837, Arvada, Colo., 1974. 518 pages. $12.95.

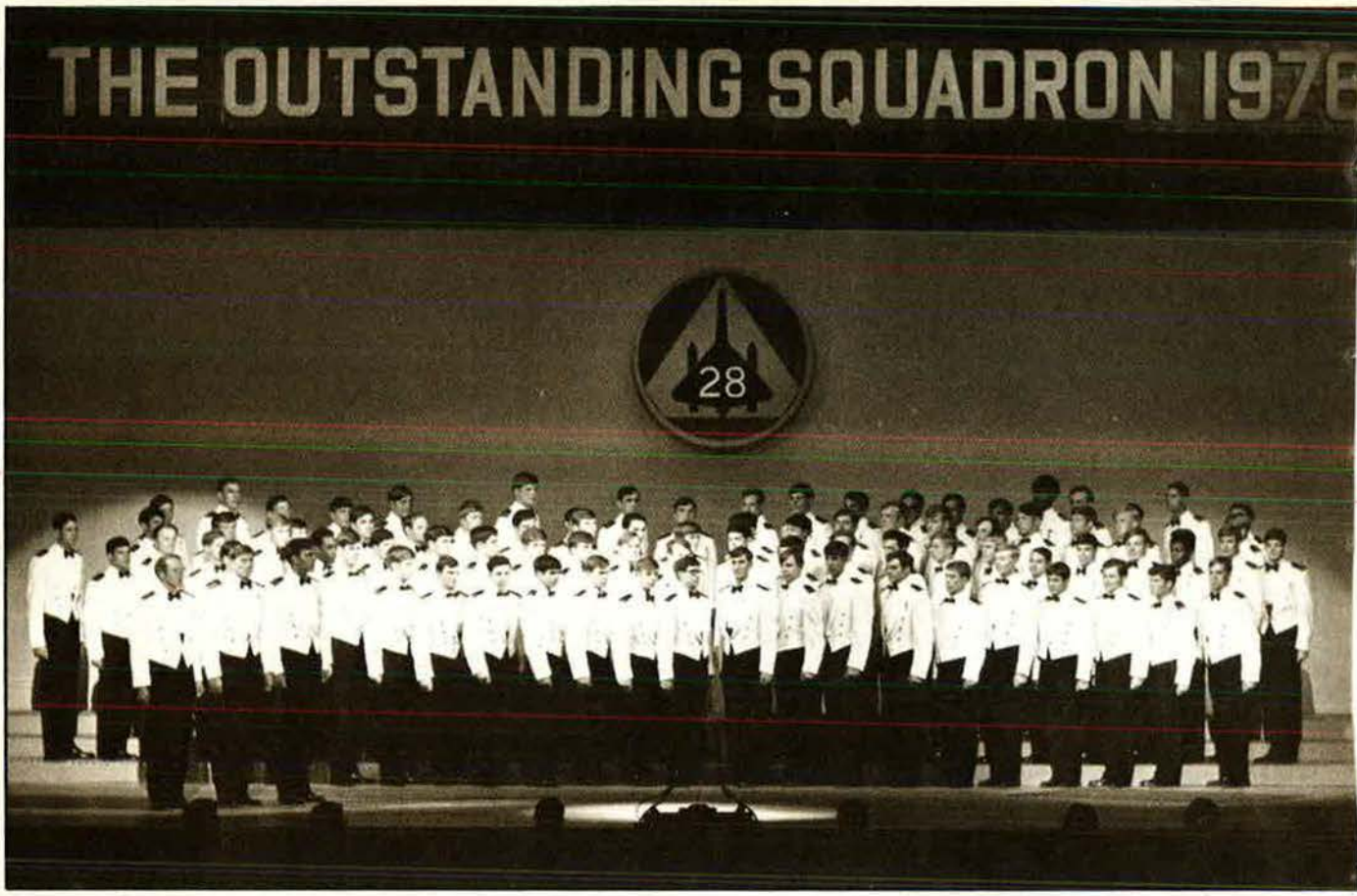
*Retirement in the West,* by Morie Morrison. A retired Air Force Information Officer shares his thoughts and experiences concerning preparing for retirement and spending it in the Western US. Such factors affecting retired life as income, hobbies, housing, and climate are discussed. The author surveys communities in eleven Western states to give the reader an idea of what they offer the retiree. Photos, maps, index. Chronicle Books, San Francisco, Calif., 1976. 224 pages. $4.95.

*Revolutionary Guerrilla Warfare,* edited by Sam Sarkesian. A thorough introduction to revolutionary guerrilla warfare based on analyses of classical and contemporary as well as radical and conservative theorists, including leading political analysts, anthropologists, sociologists, historians, and public officials. Notes, sources for study. Precedent Publishing, Inc., Chicago, Ill., 1975. 623 pages. $13.95.

*SALT II: Promise or Precipice?,* by Robert Pfaltzgraff, Jr., and Jacquelyn Davis. An analysis of the problems facing the US in light of the impressive advances by Russia in strategic nuclear capabilities and general-purpose forces, especially since SALT I. The authors examine differences between Russian and American interests in arms control, focus on problems of cruise missiles and the Backfire bomber, and assess recent US-USSR SALT proposals for the security of America and her alliances in the late 1970s. Appendix. Center for Advanced International Studies, University of Miami, Suite 1213, 1730 Rhode Island Ave., N. W., Washington, D. C., 1976. 45 pages. $3.95.

*The United States Air Force: A Turbulent History,* by Herbert Molloy Mason, Jr. This book is not a history of the USAF. Though it attempts to deal with the period from the Wright brothers to the end of the Vietnam war, many important, complex subjects—such as the Air Corps between the world wars, the Combined Bombing Offensive against Germany, and the B-29 campaign against Japan—are treated inadequately. The book lacks focus, substance, and generally fails to provide new information or fresh insights. Mason/Charter, New York, N. Y., 1976. 327 pages. $12.95.

*—Reviewed by Robin Whittle*




*The cadets of 1976's Outstanding Squadron, the 28th Squadron, assembled on stage to be introduced to the more than 500 guests who gathered in Colorado Springs to salute them for their outstanding accomplishments.*

**For the last seventeen years, one of the highlights of the June Week graduation festivities at the Air Force Academy has been the Outstanding Squadron Dinner, cosponsored by the Air Force Association and its Colorado Springs Chapter. At this spring's dinner, top honors went to the 28th Squadron . . .**

# The Best of the Best

**By Don Steele**
**AFA AFFAIRS EDITOR**

For the seventeenth consecutive year, Air Force, aerospace, and AFA leaders from throughout the country, leaders in the Colorado Springs community, and families and girl friends of many of the cadets, attended the annual dinner cosponsored by the Air Force Association and its Colorado Springs Chapter to honor the Air Force Academy's "Outstanding Squadron." This year, the 28th Cadet Squadron was saluted as the best of the Academy's forty squadrons.

Master of ceremonies was Col. Joe Engle, a former Air Force test pilot who received his astronaut wings when he flew the X-15 research rocket plane to an altitude above fifty miles. Colonel Engle now is assigned to the Manned Spaceflight Program at NASA's Space Center in Houston, Tex., as the commander of one of the two crews for the initial test flights of the Space Shuttle.

Gen. William V. McBride, Vice Chief of Staff of the Air Force, was the featured speaker. Brief remarks were made by Lt. Gen. James R. Allen, Superintendent of the Air Force Academy, and by Lt. Col. Richard E. Hawley, Executive Officer to the USAF Chief of Staff, a member of the Academy's Class of 1964, and a member of the Outstanding Squadron—the 13th Squadron—in 1961, 1962, and 1964. AFA National President George M. Douglas presented AFA Life Memberships to the Squadron's three Cadet Commanders and also presented AFA's Outstanding Squadron Trophy for 1976 to the three Cadet Commanders representing all the members of the 28th Squadron. Cadet Lt. Col. Mark Stoda, the 28th's Winter Term Commander, responded for the Squadron.

Special respect was paid to Capt Lance P. Sijan, of the Class of 1965, the first graduate of the Air Force Academy to be awarded the Medal of Honor. The posthumous award was for conspicuous gallantry while he was a POW during the Vietnam War. Captain Sijan died in captivity. His parents, Mr. and Mrs. Sylvester Sijan, of Milwaukee, Wis., were special guests at the dinner.

Retired Air Force Col. Joe N. Jackson, also a holder of the Med

t. Col. Richard E. Hawley, at the podium, member of the Academy's Class of 1964, as one of the speakers. Seated is Air orce Astronaut Col. Joe Engle, the aster of ceremonies.

f Honor, represented all the men ho have received our nation's ighest award. America's top living ce, retired Air Force Col. Francis Gabby" Gabreski, was on hand, as ere Brig. Gen. Stanley C. Beck, ommandant of Cadets; Maj. Gen. ucius Theus, Commander, Air orce Accounting and Finance Cen- r; Richard Eckert, President, Col- ado Springs Chamber of Com- erce; Ernest H. Manual, President, T Avionics, representing the in- ustrial delegation; and Col. John Clune, Director of Athletics.

The Air Force Academy Band and e Moods in Blue Singers, under e direction of Maj. John McCord, ovided entertainment during the rmal program. The Academy's Ca- t Continental Color Guard, in au- ntic Revolutionary War uniforms presenting Continental Army reg- ents from Maryland, Connecticut, d New York, made a special pre- ntation of the colors. The Color ard consists of Cadets First ass Steve Boyd, Peter Mapes, and ke Byron, and the Narrator and ficer in Charge, Capt. Robert C. hart.

Dancing to the music of the Floyd ame Orchestra rounded out one the most enjoyable evenings in history of the program. ■

*Standing by the Air Force Association's Outstanding Squadron Trophy are the leaders of the cosponsoring organizations, Colorado Springs Chapter President Henry "Kort" Kortemeyer, left, and AFA National President George M. Douglas.*

*Retired Air Force Lt. Gen. Thomas S. Moorman, center, former Superintendent of the Air Force Academy, visits with Brig. Gen. William T. Woodyard, left, Dean of the Air Force Academy, and Mrs. Woodyard.*

*The distinguished head-table guests included, from left, Canadian Forces' Lt. Gen. Richard C. Stovel, Deputy Commander in Chief of NORAD; Gen. William V. McBride, Vice Chief of Staff, USAF; and Lt. Gen. James R. Allen, Superintendent of the Air Force Academy. Hollywood actor Joe Higgins, right, a former AFA National Director and master of ceremonies at several Outstanding Squadron Dinners, was one of the offstage narrators for the program.*

*Also at the head table were, from left, AFA Board Chairman Joe L. Shosid, who represented the many AFA leaders from around the country; Air Force Astronaut Col. Joe Engle; Cadet Lt. Col. David Diener, the Spring Term Commander of the 28th; Cadet Lt. Col. Mark Stoda, who led the Squadron during the Winter Term; Cadet Lt. Col. Larry Engleson, the Fall Term Commander; and AFA National President George M. Douglas.*

# The Bulletin Board

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

## Retired Force on the Rise

The Air Force's retired population is pulling well ahead of the other services. New figures from the Pentagon show USAF with about 406,000 members drawing retired pay, up 36,000 from a year ago. The projection for 1977 is 423,000.

Military retirees of all services now total about 1,150,000, equal to fifty-five percent of the active-duty force. That percentage probably will increase because active-duty manpower is slated to hold near present levels. The retiree breakdown by service, showing current and estimated end-FY '77 strengths, follows:

| | 1976 | 1977 |
|---|---|---|
| Air Force | 405,738 | 423,900 |
| Army | 387,508 | 402,008 |
| Navy | 297,751 | 309,911 |
| Marine Corps | 58,672 | 62,120 |
| Total | 1,149,669 | 1,197,939 |

Other new retiree statistics reveal that:

• The age of military retirees ranges from seventeen to 108. There is one of the former, an enlisted disability retiree drawing $2,435 a year, and one of the latter, a nondisabled EM retiree, whose current annual pension is $4,525.

• The average age of retired officers is 57.9 years, enlisteds 48.7. Interestingly, 230 nondisability retirees, including both officers and enlisteds, are only thirty-five and thirty-six. In other words, they started serving at ages fifteen and sixteen. Their services were not disclosed.

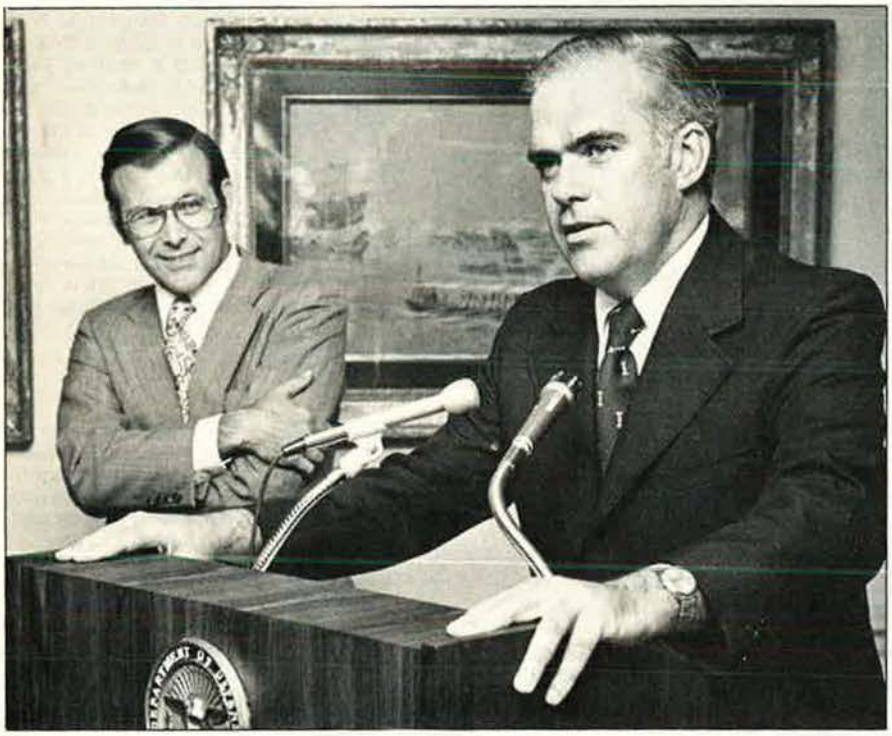
• About fifty-two percent of all retirees are participating in survivor benefit programs, including a few in the old Retired Servicemen's Family Protection plan, but USAF participation lags. While two-thirds of the USAF officer retirees particlpate, only about forty percent of the retired airmen do so. Authorities feel that if long-overdue reforms to the Survivor Benefits Program were invoked, SBP participation would increase sharply *(see item below).*

Elsewhere on the retiree scene:

• Hq. USAF has compiled a list of ideas for improving the retirement process and getting retirees involved with local USAF bases and activities. Officials at major commands have been looking them over prior to planned early adoption Air Force wide. They call for improving retirement ceremonies, focusing attention on providing awards and decorations, beefing up preretirement counseling, and greater retiree participation in management of base recreational projects, NCO councils, youth activities, dining-ins, etc.

• The Senate Appropriations Committee has voted to cut FY '77 retired pay appropriations by $460 million. But even if the action sticks (in the annual military spending bill), the money, if required, will be reinstated in a supplementary financing measure. The cut hinges on the outcome of the one percent "add-on" provision, now under heavy fire in Congress.

• A spokesman for the Third Quadrennial Review of Military Compensation said there is no such thing as an "imputed retirement contribution" made by service members. Thus, he declared, military pay is not depressed to allow for what some quarters say has been an implied seven percent contribution toward retirement. The big QRMC study, meanwhile, has dragged on for more than a year and a half, and the spokesman wouldn't say when a final report



*From Assistant Secretary of the Air Force (Manpower and Reserve Affairs) to the same post in the Department of Defense is the switch negotiated recently by David P. Taylor. He replaced William K. Brehm, who became DoD's legislative affairs chief. Defense Secretary Donald Rumsfeld looks on as Mr. Taylor speaks at his swearing-in ceremony. Mrs. Nita Ashcraft has replaced Mr. Taylor in the USAF manpower post.*

and a slate of recommendations might be expected. There have been rumors that the study is severely bogged down.

### Distaff "USAF Pioneers" Named

The first group of women ever chosen for USAF pilot training includes three Air Force Academy officers—1st Lts. Charlotte Green, Mary E. Donahue, and Shirley L. Popper. The others in the group served in such diverse career fields as weapons controller, weather, nursing, maintenance, and communications. They are Capts. Connie J. Engel, Patricia A. Finegan, Kathy D. Garner, and Kathy La Sauce; 1st Lts. Jean Bogert, Victoria K. Crawford, Kelly S. C. Hamilton, Susan D. Rogers, Christine E. Schott, Sandra Scott, and Ann O. Smethurst; and 2d Lts. Sue E. Hermanson, Mary M. Livingston, Barbara A. Pearce, and Carol A. Scherer. Five of the new trainees hold private pilot licenses.

Half of the selectees began T-41 training at Lackland AFB, Tex., recently and will move to Williams AFB, Ariz., late this month. The others will begin their training in January.

Why were the applicants limited to commissioned officers? Officials told AIR FORCE Magazine that with its sizable overage of qualified male pilot training hopefuls, Air Force could hardly open the distaff program to women from ROTC, OTS, and other civilian sources. Heavy pressure for eventual flying training opportunities, however, could come before long from female cadets, particularly those at the Air Force Academy.

### AFA Urges SBP Changes

AFA strongly supported easing restrictions in the Survivor Benefits Program during late July testimony before the House Armed Services Military Compensation Subcommittee.

The Association supported elimination of the "lock-in" section (which requires lifetime deductions even if the spouse dies before the retired member), reduction of the time required for a new spouse to be eligible for benefits from two years to one, and other improvements contained in a bill the subcommittee is considering. AFA also urged the lawmakers to reduce the integration of military-earned Social Security benefits with the SBP annuity from 100 percent to fifty percent.

These changes, the Association testified, would lead to a dramatic increase in Survivor Benefits Program participation.

### Entitlements Actions

There was midsummer action on several military personnel entitlements, some promising, some not so good.

Congress, in passing the military procurement bill, approved cash rebates of the portion of pay raises earmarked for quarters allowance, for single service people living in government housing. Thus, the first rebates should begin with the October pay raise. However, since the rebate authority was not directed, just "authorized," there was some doubt that the government will actually pay it. The Air Force strongly supports the payments. They would range from about $4.50 for E-1s to $12-plus for E-9s, while a typical O-1 would get more than $8 monthly.

On the commissary front, it appeared that Congress, after much indecision, had agreed to support the stores at their present level for another year. However, a late Senate amendment to phase out commissary appropriations over a six-year period was passed by a whisker. So the on-again, off-again funding issue for FY 1977 was headed for a House-Senate conference.

The tough forty-mile CHAMPUS rule that governs nonavailability statements, meanwhile, was eased a bit. Instructions have gone out to Air Force hospital commanders. They were told, among other things, to set up procedures allowing certain patients to secure nonavailability statements by phone or letter.

On Capitol Hill, there was action on the long-stalled GI Bill amendments, with a favorable new twist. The House, it will be remembered, last year voted to end GI Bill education entitlements for persons entering the services in the future. This triggered concern: The services feared the plan would hurt recruiting.

Various Senators were reluctant to end the program, so the House-passed bill gathered dust. More recently, however, the Senate Veterans Affairs Committee trotted out a new plan. It would let military people entering service after January 1, 1977, contribute $50 to $75 a month toward their post-service education—up to $2,700 over a three-year period.

The government, in turn, would match the individual's contribution two to one. Thus, a member who contributed $1,000 would wind up with $3,000 for his eventual schooling. Persons already in service would not lose their present GI Bill entitlements.

The new plan, sponsored by Committee Chairman Vance Hartke (D-Ind.), has considerable appeal, although the Defense Department opposes it on the ground that it would encourage talented people to shed their uniforms for mufti. Supporters expect the measure, which also includes an eight percent cost-of-living increase in current GI Bill payments, to receive formal Committee approval late this summer and have a good chance of becoming law.

At least one entitlement—payment of accrued leave—was trimmed recently. This occurred when Congress, in passing the authorization measure, eliminated the portion of such payment that was based on quarters and subsistence allowances. Reducing leave payments, the lawmakers held, "will encourage military people to take leave rather than accumulate it."

### That Wait for O-4

The Air Force is currently promoting officers to major (those chosen the first time they're in the primary zone) at about the 11½-year service point. Since they make captain with four years of service, the 7½-year wait for gold leaves can seem endless. Also, that gap is longer than in the other services, and it stretches beyond the DOPMA "window" of nine to eleven years for making O-4.

But USAF, with a long list of selectees waiting for O-4 vacancies, is in no position to accelerate advancements. A year's speed-up could be accomplished by reducing the opportunity for making O-4 from the present eighty percent to from forty-five to fifty percent. But that would send passovers soaring and is strongly opposed by most junior officers, a Hq. USAF official said.

The House Armed Services Committee, in approving the DOPMA

# The Bulletin Board

*New USAF Family Services volunteer uniform consists of a blue skirt or pants, a blue "topper," and a long- or short-sleeve white blouse. They may be bought for volunteers with fifty hours of service since January. Models are Randolph AFB's Connie Orlandi, left, and Mary Ann Morris.*

measure, reduced O-6 and O-5 grade ceilings requested by the Pentagon by three percent. But it rejected a similar cut in the O-4 limit because it would lengthen the promotion delay and compound the difficulty of meshing promotions to major and appointment in the Regular service at the eleven-year service point.

DOPMA at midsummer still lacked Senate approval. The measure's permanent grade ceiling, or an extension of the present temporary ceiling which expires September 30, 1976, is needed to prevent the loss of several thousand USAF field-grade spaces a year later. But officials said that serious RIF and demotion plans won't have to be drawn up until early 1977. Meantime, the balky Senate is expected to take some action by then to prevent any RIF-demotion catastrophe later next year.

### PME System Expands

USAF's flourishing Professional Military Education system is expanding still further with the recent creation of two new base-level courses. It gives the service a five-phase noncommissioned officer PME setup in addition to the Air University officer schools. Another recent addition to the PME effort is the Leadership and Management Development Center (LMDC) at AU.

The NCO package is designed to prepare airmen to take on added responsibilities as they advance in grade. Leadership, management, and human relations are stressed. The five planks, moving from the bottom up, follow:

1. NCO Orientation Course. Mandatory for new E-4 senior airmen eyeing sergeant status, this eighteen-hour course is a required stepping-stone to NCO rank under the enlisted force overhaul (*see last month's issue for more details*). Given at bases.

2. Air Force Supervisors' Course. This fifty-three-hour workshop for sergeants and staff sergeants is given shortly after their first reenlistment. This "Phase II" training deals in greater detail with the management process, leadership, and interpersonal relationships. Given at bases. For numerous civilians, too.

*Ed Gates . . . Speaking of People*

## "Up-or-Out" System Appears Here-to-Stay

The "up-or-out" promotion system, though much maligned and frequently under fire during its long history, isn't about to disappear from the military scene. In fact, its basic tenets were reaffirmed recently as the House Armed Services Committee approved DOPMA—the Defense Officer Personnel Management Act.

DOPMA tampers with the up-or-out procedure ever so slightly. At the same time, the Armed Services Committee report accompanying the landmark measure applauded the up-or-out concept. It called it "the fundamental concept for the management of officer personnel . . . and has served the country well."

The system, the Committee report said, has given the US armed forces what they never before had in peacetime—a youthful, vigorous, fully combat-ready officer corps. That's an appraisal Defense Department leaders generally subscribe to. The up-or-out system, for those who may have forgotten, provides that certain officers, failing of promotion after two or more tries, must separate.

For those lacking sufficient service, this means departure with a one-time payment, not the cherished lifetime retirement and all that accompanies it. Others, though retirement-eligible, or in the eighteen- to twenty-year sanctuary, must depart short of attaining the rank called for in their career game plans.

The system can be rough, and challenges to it are not surprising. The new congressional and Pentagon endorsements of up-or-out have appeared simultaneously with attacks on it from former Army officers challenging their ousters, the Reserve Officers Association (ROA), and the Defense Manpower Commission (DMC).

Some of the ex-officers have objected to the use of up-or-out as a RIF measure and to being exited on the verge of entering the eighteen-year sanctuary. Insufficient Reserve officer representation on Army promotion boards is another criticism.

The DMC, in its recent report to the President and Congress on military manpower reforms (*see June '76 "Bulletin Board"*), said the up-or-out arrangement is "failure oriented" and "conveys the message to service members not selected for promotion that they can no longer contribute to the mission. . . ."

The DMC would overhaul the system, divorce separation actions from the promotion process, establish a promotion system based on "years of service ranges of eligibility," eliminate the "phase point" feature, and halt below-the-zone advancements.

Basic to DMC's approach is what it calls a "careful selection into the career force," something Air Force has been doing for a long time. "It is inconceivable," DMC continued, "that a service member who has been screened many times . . . [by various promotion, school, and other boards] is suddenly of no further value . . . simply because the service does not have enough promotions to go around."

ROA, meanwhile, struck out at DOPMA in general and its up-or-out system in particular. It said the latter has caused the release of "thousands of officers qualified for promotion, many with irreplaceable combat experience. . . ." And

3. NCO Leadership School. This extends the scope of the career NCO to include world affairs, military studies, and social issues. There are forty-four such schools distributed among thirteen commands.

4. Command NCO Academy. There are eleven of these in ten commands (MAC has two), and a new one may be opened soon in USAFE. All provide more in-depth study.

5. Senior NCO Academy. Located at Gunter AFB, Ala., this nine-week course is the NCO's "war college." Students get a broad perspective of the role and functions of the Air Force.

Completion of the latter two schools is an important springboard to supergrade rank. For example, in the recent selection of E-7s for senior master sergeant, 1,193 of the 1,899 successful competitors had completed the Senior NCO Academy, and 535 were graduates of command NCO academies. Unfortunately, the Gunter school can accommodate only 200 students at a time, or 1,150 annually.

The recently established LMDC, meanwhile, has received some favorable notices. Staffed by sixty-six people, its job is to improve leadership and management at all levels throughout the USAF. It develops curricula for the various programs and rides herd on PME instructors to ensure that quality prevails. The LMDC also assists commanders and supervisors in identifying and solving management problems at unit level.

### Human Relations Training Required

Getting under way USAF-wide this month is a new ten-hour course titled "Discipline and Human Relations" that is mandatory for the following: E-4 sergeants through E-9s, all officers, all civilians who write performance reports on military or civilian employees, and Senior Airmen and below who write performance reports.

This is a new phase of the service's overall Human Relations Education program. It will cover discipline, human relations, communications and supervisory behavior, utilization of USAF women, and affirmative actions. The course will be given over the next fourteen months.

### New Civilian Office Set

Air Force expects to achieve modest savings from the establishment of the Office of Civilian Personnel Operations at the USAF Military Personnel Center, Randolph AFB, Tex. The first 100 staffers, including forty from Hq. USAF and twenty from Wright-Patterson AFB, Ohio, opened the new activity in July. The buildup will continue until 1979 when 400 civilian employees, all "from within existing Air Force resources," will be in place. Officials forecast more management efficiency, an ultimate cut in travel and communications outlays, and other savings. The transfer of employees from Hq. USAF also ties in with congressional pressure on the services to decentralize administrative activities.

At Wright-Patterson, meanwhile, Logistics Command headquarters has launched a six-month test of the "Flexitime" daily work program

DOPMA will eliminate "many safeguards" for officers now operating, the ROA added.

The Armed Services Committee, echoing official service thinking at least in part, has taken an entirely different view. Up-or-out, the Committee's DOPMA report underscored, "should be recognized as a competitive system where only the most outstanding are selected," with the actual numbers picked varying with service requirements at selection time.

Explaining further, the report noted that the system's main function "is to provide at each grade more officers who are qualified to serve in the next grade than the billets require." This, in turn, assures the "selectivity" the services need and makes "it inevitable that capable officers are going to be passed over from time to time. They are simply not quite as high on the competitive list as someone else."

The Committee report next made the point that promotion passovers should not be considered a stigma. It put the matter this way: "Only one man can be chosen quarterback, although many others might be outstanding players." The lawmakers added that labeling officers separated for passovers or RIF failures does them "a great disservice" when in fact they are "an outstanding group of Americans who served their country with skill and courage."

Also cited as a contributing factor to the unhappiness over up-or-out force-outs is the sharp reduction in the size of the military forces in recent years. Far fewer officers are needed, and under any kind of a thinning-down process a "goodly number of capable" persons must be removed.

The only alternative, the report noted, is to keep many more officers, particularly higher-ranking ones, on active duty than are needed. But such a course is out of the question; Congress is pressuring the services more and more to trim, not increase, officer billets.

In the DOPMA report, for instance, the Committee has directed the Pentagon to draw up a plan for reducing the number of officers serving in agencies outside the Defense establishment. The Committee set the deadline for submission of the plan at six months after enactment of DOPMA.

Similarly, the Armed Services Committee promised to make the services justify their general and flag officer positions in the very near future.

DOPMA alters the present up-or-out process only to the extent that related changes require. For example, with DOPMA's single promotion list, "out" will normally occur following two promotion nonselections; currently, regular officers have four chances at promotion. A second example: O-5s twice failing to make O-6 will be retired at twenty-six instead of the present twenty-eight years of service, unless chosen for extended duty under a new "continuation" rule.

That the government aims to play fair with officers who fall victim to the up-or-out and RIF actions is clear from the House Committee's decision to increase separation pay. This is a long overdue change, which raises maximum exit pay from $15,000 to $30,000 (less healthy tax bites).

This correction, however, serves to accentuate the government's dereliction in not providing enlisted members separation pay of any kind.

The DOPMA payoff formula for officers, if okayed by the Senate, will provide a sum equal to ten percent of annual basic pay for each year of service, up to $30,000. Under current pay scales, O-4s with sixteen years of service and above would qualify for the full amount.

An O-3 with ten years of service would draw $15,970, or just $970 more than under the current formula. However, a save-pay proviso will permit officers to elect the old, rather than the DOPMA, severance pay formula if it provides more money.

Attacks on the up-or-out system will doubtless continue, but it appears headed for a long life nonetheless. It's a finely honed tool for managing the officer force, and, for those who survive the stiff competition, it injects extra pride of accomplishment. ■

# The Bulletin Board

that is used in a few government agencies. Flexitime allows employees, within certain limits, to choose their own working hours. Thus, some may elect to work from 6:30 a.m., take a half hour for lunch and depart by 3:00 p.m. Others could start late and stay late. It is up to supervisors to assure that an ample force is on hand during normal business hours.

Flexitime, some supporters claim, results in reduced sick and annual leave by accommodating personal needs.

Conceivably, the Flexitime idea could spread to many Air Force and other government civilian staffs. The AFLC test ends next January. A few years ago Air Force tested a four-day work week among some civilian employees, but that plan fizzled.


*Comedian Bob Hope and AFA National Director Edward A. Stearn, left, present the Association's Arno H. Luehman Award to Capt. Scott A. Weeker of the Aerospace Audio-Visual Service, Norton AFB, Calif., at the "Salute to Bob Hope" luncheon cohosted by the San Bernardino Area and Riverside Chapters, and respective Chambers of Commerce. The scholarship program, first established in 1962, is given by AFA each year to an Air Force information officer who has compiled an outstanding overall military and academic record. The award is in honor of Maj. Gen. Arno H. Luehman, USAF (Ret.), a former director of USAF information. It includes a grant of $500 for advanced study in public relations/communications. Captain Weeker has produced several DoD news film competition winners. He serves on the team that produces the renowned monthly film, "Air Force Now."*

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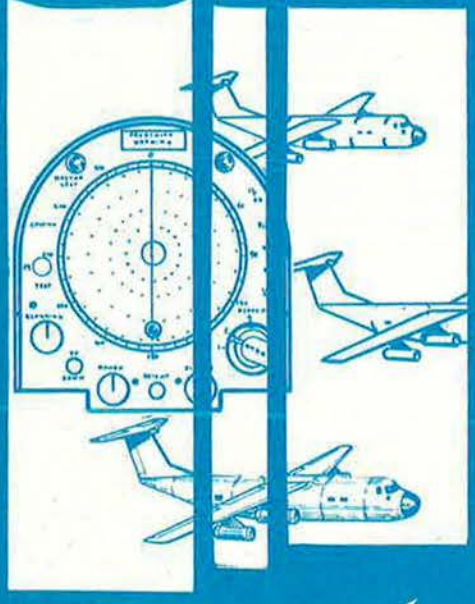
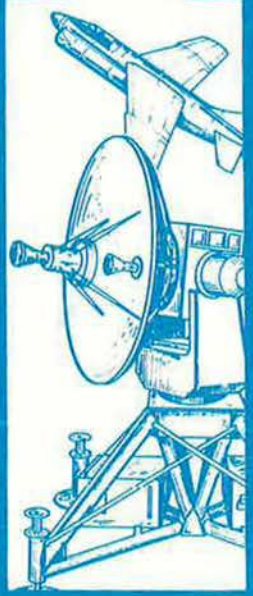


Sierra Research Corporation has applied its advanced radar technology to furnish the U.S. Air Force with two unique systems for improved operational efficiency.

The AN/APN-169A Stationkeeping Set (SKE) provides the Military Airlift Command's C-130 airlift aircraft with a capability of maintaining flight formation regardless of visibility. The AN/APN-169B, also being produced by Sierra for MAC, extends this capability to C-141 aircraft and includes a compatible Zone Marker AN/TPN-27 for IFR air drop operations.

Sierra's latest contribution is the AN/TPB-1B Air Support Radar, a highly mobile system that enhances the Tactical Air Force's capability to *FLY* and *FIGHT*. Sierra will soon deliver the AN/TPB-1C with added capabilities, including skin tracking.



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### Commissioning in the Components

The Air National Guard commissioned 155 airmen in FY '76 under three different entry programs, while the Air Force Reserve elevated nineteen NCOs to second lieutenant under its "deserving airman" project.

In the Air Guard, thirty-eight airmen, all thirty or over, came in as first lieutenants and captains under that component's "exceptionally well qualified" commissioning avenue. This was well below the quota of 100 authorized appointments. A college degree is not required in this category.

The other 117 ANG appointees made second lieutenant. Eighty-three had college degrees, the National Guard Bureau reported.

The Air Reserve's annual quota remains at 100 authorized appointments. The recent twenty appointments came out of thirty-five applicants. Though applicants up to age thirty-six are eligible and appointees may fill first lieutenant and captain billets, the commissions are limited to second lieutenant. College degrees are mandatory.

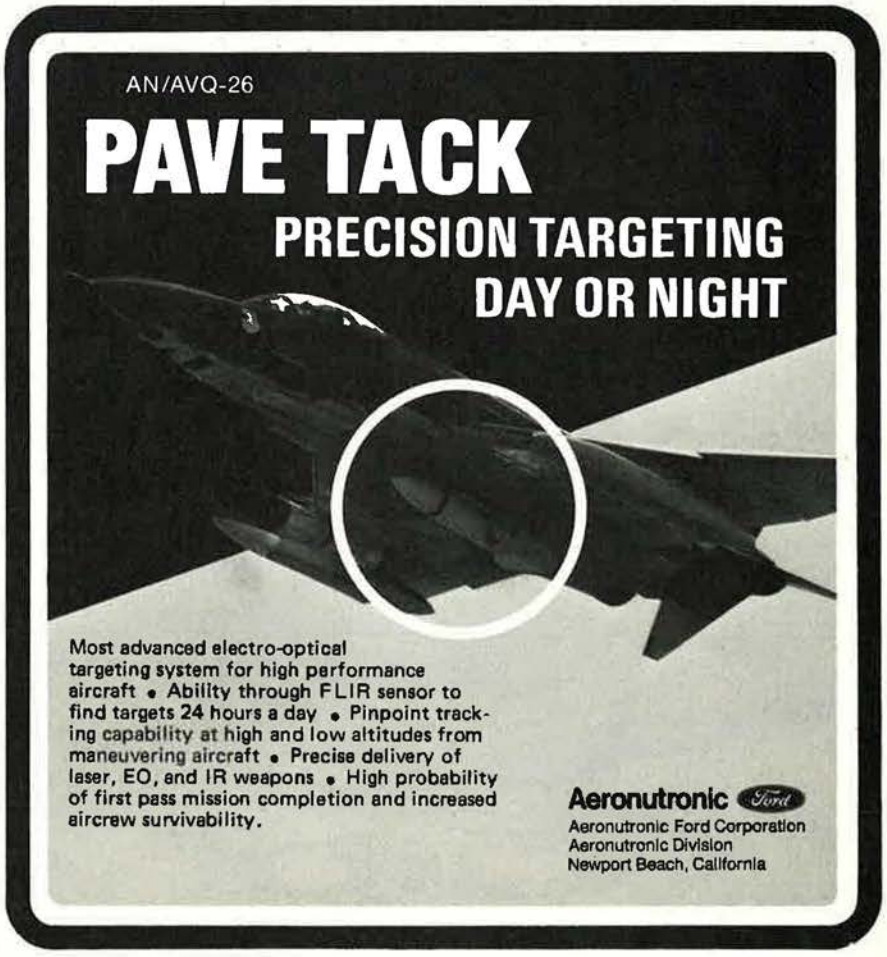
The new AFRES appointees, all former staff, technical, and master sergeants, are Knute A. Adams, Frederick W. Adriance, Grady L. Broxton, Jr., James L. Carter, Bernard J. Clements, James C. Dorsey, George A. Easter, George C. Frazier, Donald F. Grant, Paul F. Harrison, William P. Hirner, Kenneth L. Huffman, Steven P. Irish, Peter P. Kay, James F. Merker, William D. Opperman, Gary L. Restico, Stephen R. Silen, and Leon J. Sill, Jr.

### Short Bursts

"The most glaring [promotion] inconsistency among the services" —that's what the House Armed Services Committee has called the Navy's unique authority to promote its new flag selectees not to one-star rank, but to two-star status. Though they start off with one-star pay, they move to O-8 pay rapidly and very few admirals retire at the one-star pay level. Only five did so the past two years, compared to seventy-seven Army and sixty-four Air Force officers who retired as BGs. But the equalizer is near—the DOPMA measure **establishes the one-star Navy rank of "commodore admiral"** and a selection system similar to the other services.

The General Accounting Office,





# The Bulletin Board

which is the congressional watchdog on federal spending, is exercised that the military services spent $91 million last year for **quarters money for bachelors to live off base.** Actually that's peanuts compared to BAQ paid to married members.

The GAO also recently recommended that Congress **eliminate the one-percent add-on** in federal-military retired pay. One of the agency's arguments: a 1974 study of 1,800 private pension systems, which shows that only four percent had any provision for pension increases tied to living costs.

Another spate of Hq. USAF messages to field points stresses **discipline, productivity, maintaining high standards, keeping trim,** etc. Stiff penalties for noncompliance were also underscored. Example: Officers who don't shape up appearance-wise may soon become ex-officers.

What happens to airmen of the **Air Reserve Forces who skip drills?** Until late last year, Defense required that they serve up to two years involuntarily on active duty. But the Pentagon reduced that to forty-five days on a trial basis. Now, the forty-five-day rule has been extended a year. The tour is performed at the delinquent member's Air Guard or Air Reserve unit site. And if he still doesn't show? Units "will process him into AWOL status and subsequent deserter status," the new instructions say.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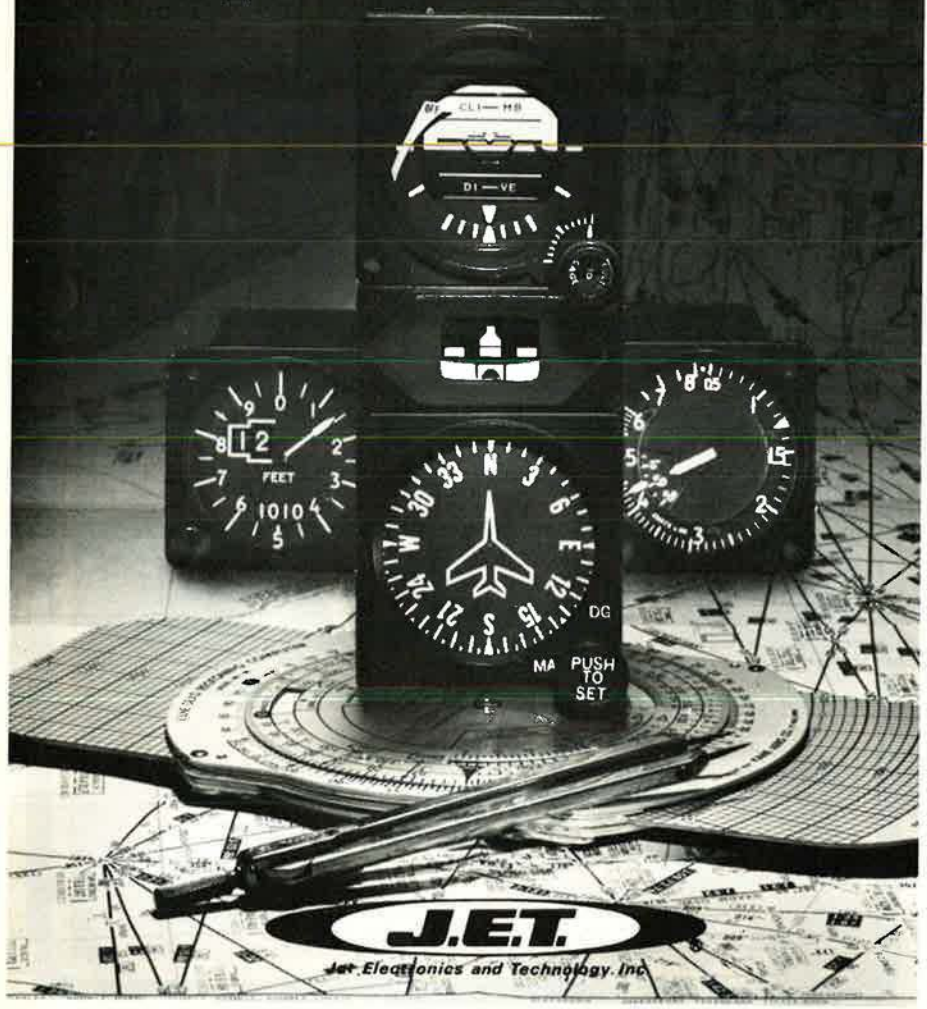



## Senior Staff Changes

**CHANGES: M/G (L/G selectee) Andrew B. Anderson, Jr.,** from C/S, Hq. SAC, Offutt AFB, Neb., to DCS/Plans & Ops., Hq. USAF, Washington, D. C. . . . **B/G Emil N. Block, Jr.,** from V/C, 21st AF, MAC, McGuire AFB, N. J., to Sp. Asst. to DCS/R&D, Hq. USAF, Washington, D. C. . . . **B/G Donald J. Bowen,** from C/S, Hq. AFCS, Richards-Gebaur AFB, Mo., to Cmdr., Southern Comm. Area, AFCS, Oklahoma City AFS, Okla. . . . **B/G George C. Cannon, Jr.,** from Cmdr., 23d Air Div., ADCOM, Duluth IAP, Minn., to Dep. Cmdr., 22d NORAD Region, North Bay, Ontario, Canada, replacing B/G David W. Winn . . . **B/G William D. Curry, Jr.,** from DCS/Log., Hq. TAC, Langley AFB, Va., to Cmdr., 355th TFW, Davis-Monthan AFB, Ariz. . . . **B/G Sidney L. Davis,** from Dep. Cmdr., 5th ATAF, Vicenza, Italy, to Dep. Dir., J-3, US REDCOM, MacDill AFB, Fla. . . . **B/G Howard M. Estes, Jr.,** from DCS/Data Auto. (Asst. for Advanced Log. Sys.), Hq. AFLC,

Wright-Patterson AFB, Ohio, to DCS/Comptroller, Hq. AFLC, Wright-Patterson AFB, Ohio . . . **B/G Harry Falls, Jr.,** from Asst. DCS/Ops., Hq. ATC, Randolph AFB, Tex., to Dep. Cmdr., 5th ATAF, Vicenza, Italy, replacing B/G Sidney L. Davis.

**M/G Edgar S. Harris, Jr.,** from V/C, 15th AF, SAC, March AFB, Calif., to C/S, Hq. SAC, Offutt AFB, Neb., replacing M/G (L/G selectee) Andrew B. Anderson, Jr. . . . **M/G Hilding L. Jacobson, Jr.,** from Dep. Dir., DMA, Naval Observatory, Washington, D. C., to Cmdr., 3d Air Div., SAC, Andersen AFB, Guam . . . **B/G John H. Jacobsmeyer, Jr.,** from Dep. Dir., Plans and Programs, DCA, Arlington, Va., to DCS/Comm.-Elect., J-6, NORAD, and DCS/Comm.-Elect., Hq. ADCOM, Ent AFB, Colo. . . . **B/G David M. Mullaney,** from DCS/Dev. Plans, Hq. AFSC, Andrews AFB, Md., to Dep. Asst. C/S-Intel., Hq. USAF, Washington, D. C. . . . **B/G Waymond C. Nutt,** from Asst. DCS/Log., Hq. TAC, Langley AFB, Va., to DCS/Log., Hq. TAC, Langley AFB, Va., replacing B/G William D. Curry, Jr. . . . **B/G George W. Rutter,** from DCS/Acq. Log., Hq. AFLC, Wright-Patterson AFB, Ohio, to V/C AF Acq. Log. Div., Hq. AFLC, Wright-Patterson AFB, Ohio . . . **M/G Robert E. Sadler,** from Dep. Dir. (Comm. & Elect.), J-3, Joint Staff, OJCS, Washington, D. C., to Dep. Dir., Plans & Programs, DCA, Arlington, Va., replacing B/G John H. Jacobsmeyer, Jr. . . . **L/G Ray B. Sitton,** from Dir., J-3, Joint Staff, OJCS, Washington, D. C., to Dir., Joint Staff, OJCS, Washington, D. C. . . . **B/G Fred A. Treyz,** from Dep. Dir., J-3 (NMCC), Joint Staff, OJCS, Washington, D. C., to V/C, AF Mil. Training Center, Lackland AFB, Tex. . . . **B/G Robert F. Winger,** from Comdt., ACSC, AU, Maxwell AFB, Ala., to Asst. Dep. Dir. (Force Devel. & Strat. Plans), J-5, Joint Staff, OJCS, Washington, D. C.

**B/G David W. Winn,** from Dep. Cmdr., 22d NORAD Region, North Bay, Ontario, Canada, to C/S, Hq. ADCOM, Ent AFB, Colo. . . . **M/G James A. Young,** from USAF Clinic McChord, MAC, McChord AFB, Wash., to Dep. Dir., DMA, Naval Observatory, Washington, D. C., replacing M/G Hilding L. Jacobson, Jr. . . . **B/G William R. Yost,** from Cmdr., Northern Comm. Area, AFCS, Griffiss AFB, N. Y., to V/C, Hq. AFMPC, Randolph AFB, Tex., Mo. . . . **B/G Charles D. Youree, Jr.,** from Dep. Dir. for Politico Mil. Affairs, J-5, Joint Staff, OJCS, Washington, D. C., to DCS/Ops. Plans, Hq. MAC, Scott AFB, Ill.

**SENIOR ENLISTED ADVISOR CHANGES: CMSgt. Robert D. Harrison,** from AFSC, Los Angeles AFS, Calif., to Hq. AFSC, Andrews AFB, Md., replacing retiring CMSgt. Frank W. Roper . . . **CMSgt. Otto Lensch,** from MAC, Scott AFB, Ill., to Hq. MAC, Scott AFB, Ill., replacing CMSgt. Joe Ward . . . **CMSgt. Theodore J. Severson,** from AFMPC, Randolph AFB, Tex., to Hq. AFMPC, Randolph AFB, Tex., replacing retiring CMSgt. L. E. Young.


# AFA News

**By Don Steele, AFA AFFAIRS EDITOR**

**Unit of the Month**

THE SKY HARBOR CHAPTER, ARIZONA, cited for effective programming in support of the mission of AFA, most recently exemplified in its sponsorship of the first Arizona Air Force Ball.

## First Arizona Air Force Ball

More than 400 members and guests, including many leaders of the Air Force, AFA, and the community, attended the Sky Harbor Chapter's First Arizona Air Force Ball, a black-tie, fund-raising event held recently in Phoenix. Some fifty percent of those attending were active-duty military personnel—multiservice and international.

The guests of honor included Gen. Robert J. Dixon, Commander, Tactical Air Command; Medal of Honor holder Joe Foss, former governor of South Dakota, retired USAF brigadier general, Marine ace of WW II, and a former AFA National President and Board Chairman; the Canadian Forces' Lt. Gen. Richard C. Stovel, Deputy Commander in Chief, NORAD; and Col. Francis S. Gabreski, USAF (Ret.), the leading living United States ace; and their wives. AFA National President George M. Douglas and Mrs. Douglas headed the AFA representation.

Also on hand were Phoenix Mayor Margaret Hance; Rear Adm. Norman Coleman, USNRes, and Mrs. Coleman; retired Maj. Gen. and Mrs. Edward McNeff; retired Rear Adm. James Cohn; Brig. Gen. Harry Falls, Deputy DCS/Ops at Hq. ATC; Brig. Gen. Robert Waltz, USAF (Ret.), and Mrs. Waltz; Col. William Henderson, Commander, 82d PTW, Williams AFB, and Mrs. Henderson; Roy Haug, Vice President for AFA's Rocky Mountain Region, and Mrs. Haug; William Chandler, Vice President for AFA's Far West Region, and Mrs. Chandler; Colorado State AFA President-elect Ed Marriott and Mrs. Marriott; Arizona State AFA President Robert Borgmann and Mrs. Borgmann; and Colorado State AFA Secretary Shirley Cleland and her husband.

The Honorary Chairmen were Gen. Seth J. McKee, USAF (Ret.), and State Senator and Mrs. John C. Pritzlaff, Jr.; Chapter President C. W. Swindell was the General Chairman. The Jazz Ensemble of the Air Force Band of the Southwest, under the leadership of CMSgt. Ronald Hauer, provided music for listening and dancing.

Net proceeds from the event benefited the Arizona Wheelchair Pilots Association, an organization established in 1973 to pursue specific aviation goals for wheelchair-bound individuals. Today, the group has seven licensed pilots and fifteen student pilots who operate a specially equipped Cessna Cardinal aircraft; other members work in aviation-related areas.

In recognition of its effective support of AFA's mission, most recently exemplified in its sponsorship of this ball, AFA President Douglas named the Sky Harbor Chapter of Phoenix, Ariz., as the "AFA Unit of the Month" for September. ■

*Distinguished guests included, from left, Brig. Gen. Fred Haeffner, Commander, 58th Tactical Fighter Training Wing (TAC), Luke AFB; Mrs. Swindell; Chapter President C. W. Swindell; Gen. Robert J. Dixon, Commander, Tactical Air Command; Mrs. Dixon; AFA President George M. Douglas; and Mrs. Douglas.*

*From left are Brig. Gen. Robert McMath, USAF (Ret.); Mrs. Foss; Mrs. Wally Schirra; Brig. Gen. Joe Foss, USAF (Ret.); and Mrs. McMath.*

*Among the representatives of the 26th Air Division (NORAD), Luke AFB, were, from left, A1C Bill Douglas; A1C Virginia Cronin, Airman of the Month; A1C Robert Beckley; Sgt. Kay Bardett, Airman of the Year; Brig. Gen. Thomas Clifford, Commander of the Division; Mrs. Clifford; TSgt. Clyde Reed, NCO of the Year; and Mrs. Reed.*

# chapter and state photo gallery

The San Bernardino Area and Riverside County Chapters, Calif., jointly sponsored a "Salute to Bob Hope" luncheon "to give due recognition to Mr. Hope's years of support to the AFA, particularly to the San Bernardino Area and Riverside County Chapters through his participation in their annual charity golf tournament." More than 800 members and guests attended. During the program, San Bernardino Area Chapter President Jay Golding, left, presented Bob Hope, a national honorary member of AFA, a plaque designating him Honorary President for Life of the San Bernardino Area and Riverside County Chapters, dubbed the "Bob Hope Chapters." CMSgt. David C. Noerr, Air Force Inspection and Safety Center, Norton AFB, and Chairman of AFA's Enlisted Council Executive Committee, was the master of ceremonies.

During the Michigan State AFA's 1976 Convention, recently held at the Hillcrest Country Club in Mt. Clemens, AFA charters were presented to two newly established chapters. Shown following the chartering ceremonies are, from left, Michigan State AFA President Dorothy Whitney; Clinton E. Wallace, President, PE-TO-SE-GA Chapter of Petoskey; AFA National President George M. Douglas; Leonard W. Isabelle, President, James H. Straubel Chapter of Southfield; and AFA Executive Director James H. Straubel, for whom the Straubel Chapter is named. Mr. Douglas was the convention banquet speaker and presented the charters; Mrs. Whitney was reelected for another term as President of the State AFA.

Chartering a chapter "Texas style" is no easy task, as Texas State AFA President Vic Kregel can tell you—but it sure attracts a crowd! Vic recently presented the newly organized Commerce Chapter its charter—a normal duty for AFA State Presidents—but the last charter member insisted on signing the charter application upside-down while flying inverted over the Commerce Municipal Airport, with Vic at the controls. The member, Duane Cole, is an internationally famous aerobatic pilot who always makes his "mark" upside-down, flying or otherwise. Safely back on the ground, Vic, right, shows Cole's inverted signature to Chapter President Carl Eckman, left, before presenting him the charter.

—PHOTO BY FRANK ZAK

The Pennsylvania State AFA's 28th Annual State Convention was held recently at the Airport Hilton Inn, Pittsburgh. Principals in the convention banquet program were, from left, Maj. Gen. Otis C. Moore, Assistant Deputy Chief of Staff/Plans and Operations, USAF, the guest speaker; Judge John Brosky, AFA National Director and the master of ceremonies; Willard Rockwell, President, Rockwell International, the guest of honor; Capt. Pat Logan, Jr., Reese AFB, Tex., the master of ceremonies at the convention luncheon; and Steel Valley Chapter President Pat Logan, Convention Chairman. AFA National President George M. Douglas was the speaker at the Friday night dinner honoring the ladies in AFA.

# AFA News

—OFFICIAL USAF PHOTO

*A dinner dance recently cosponsored by five organizations at Scott AFB, Ill., netted more than $1,200 for the Air Force Enlisted Widows Home (AFEWH). Representatives of three of the sponsoring organizations presented a check for the proceeds to Col. Maurice Padden, 375th Air Base Group Commander. They are, from left, Sgt. John Sellers, President, Scott Chapter, NCOA; Mrs. Eunice Mullens, Second Vice President, Scott NCO Wives Club; Colonel Padden; Mrs. Maria LaChey, President, Scott NCOWC; and Hugh Enyart, President, Scott Memorial Chapter, AFA. The two sponsoring organizations not represented are the Scott Chapters of the Air Force Sergeants Association and NCO Academy Graduates Association. Donations to the Enlisted Widows Home are tax deductible and may be mailed to: Enlisted Widows Home, 354 Woodrow St., Fort Walton Beach, Fla. 32548.*


—USAF PHOTO BY MAJ. RICHARD F. QUINBY, JR.

*At the kickoff of AFA's 1976 membership drive, officials of Loring AFB, Me., and AFA's Spudland Chapter are shown admiring the plaque received by the Chapter for attaining its 1975 membership goal. They are, from left, Ed Crawford and Mike Bull, Chapter Secretary and Treasurer, respectively; Col. Larry S. DeVall, 42d Bomb Wing Commander; Chapter President Al Cyr; and Col. Russell S. Morton, Base Commander. The Chapter's drive at Loring AFB attained its membership goal for the third consecutive year.*

—OFFICIAL USAF PHOTO BY A1C M. R. NELSON

*Four outstanding young men at the Mount Laguna AFS, Calif., were honored by AFA's San Diego Chapter at its Fifth Annual Awards Dinner. Shown with the President of the Chapter are, from left, TSgt. Millard Cronister and Sgt. Allen Zayatz, NCO and First-Term Airman of the Year, respectively, for Detachment 4, 14th Missile Warning Squadron; Chapter President Muriel Tierney; SSgt. Lawrence L. Westcott and Sgt. William R. Brown II, NCO and First-Term Airman of the Year, respectively, for the 751st Radar Squadron.*

# photo gallery

—USAF PHOTO BY SGT. PETE KULLMAN

*AFA National President George M. Douglas recently was promoted to the rank of major general in the Air Force Reserve. Shown pinning on his second star are his wife, Lee, and Maj. Gen. James E. Paschall, Vice Commander in Chief, Aerospace Defense Command. General Douglas' Air Force Reserve assignment is mobilization assistant to General Paschall.*


*The Hon. Donald G. Sanders, Deputy Assistant Secretary of Defense for Legislative Affairs, was the guest of honor and speaker at the New Mexico State AFA's 1976 Convention, held in the Kirtland AFB Officers' Club. Shown presenting the Secretary the "Official Red Carpet Welcome" are, from left, New Mexico State AFA President Harry Gogan, who was reelected during the business session; Secretary Sanders; Mr. Dean Irwin, Albuquerque Chamber of Commerce; and Albuquerque Chapter President Ken Sarason.*

—USAF PHOTO, ROBINS AFB

*AFA's Middle Georgia Chapter, Warner Robins, recently donated an automobile to the Vietnamese Refugee Group sponsored by the Robins AFB Chapel. Shown during the presentation ceremony are, from left, Col. Walter H. Mattison, Installation Chaplain, Robins AFB; Chapter President Butch Strawser; Mr. Tran Dunh Lang; CMSgt. Jack Steed, Senior Enlisted Adviser and Chairman, Refugee Finance Committee, Robins AFB; Mr. Manh Pham Cong; and Mr. Dung Le Duy. The group will use the auto for transportation to their respective places of employment.*

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# 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.*

## 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.

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**CMSgt. David C. Noerr**
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Norton AFB, Calif.

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Information regarding AFA activity within a particular state may be obtained from the Vice President of the Region in which his state is located.

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San Antonio, Tex.
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(512) 341-1056
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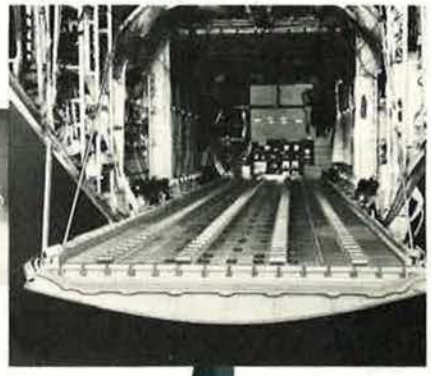
*Military mobility . . . the ability to quickly and effectively move necessary manpower and material to troubled areas, regardless of terrain, climate or accessibility . . . is an important requirement in today's world. Air transport and delivery is one of the most significant parts of this requirement.*

Brooks & Perkins has been designing, developing and manufacturing aircraft cargo equipment and restraint systems to provide greater expediency in air logistics and air delivery for over 15 years. The first cargo handling system, a dual restraint rail, roller/conveyor-type for the Lockheed C-130 "Hercules aircraft", was designed, tested, manufactured and standardized by B&P in the early 1960's. Designated the Dash 1, it has since progressed through the Dash 4 and Dash 1A Systems to today's sophisticated Dash 4A System.

In addition to cargo handling systems for the C-130, Brooks & Perkins has designed and produced similar equipment for many types of other aircraft including the C-141 Starlifter, C-5 Galaxy, the de-Havilland Buffalo, Aeritalia G-222 and even the CH-53G helicopter. B&P is also participating in the AMST program with a newly proposed system.

For more information on Brooks & Perkins complete line of air cargo equipment for military use, contact R. D. Dunn, Military Requirements, Brooks & Perkins Advanced Structures Division, 12633 Inkster Road, Livonia, MI 48150.



The Dash 4A System for the C-130 aircraft is suited to all modes of cargo delivery . . . air landed, high aerial delivery or low altitude parachute extraction delivery (LAPES).

Brooks & Perkins has designed and produced the cargo handling system for the G-222, Aeritalia's STOL utility aircraft. This mock-up shows the dual rails with restraint locks and the roller conveyors as they appear in the plane.

For load preparation and handling, a full range of air cargo pallets and platforms, compatible with B&P Systems, are also available.

The CH-53G helicopter is an assault-type aircraft used primarily for transporting cargo. Brooks & Perkins has also designed a cargo restraint and handling system for this craft to provide safer, faster and easier deployment.

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# AIR FORCE ASSOCIATIO

## Bigger Benefits in Personal and Family Coverage . . . Same Low Cos
## These Figures Tell the Story!

**Choose either the Standard or High-Option Plan**

**The AFA Standard Plan**

| Insured's Age | New Benefit | Old Benefit | Extra Accidental Death Benefit* | Monthly Cost Individual Plan |
|---|---|---|---|---|
| 20-24 | $75,000 | $66,000 | $12,500 | $10.00 |
| 25-29 | 70,000 | 60,000 | 12,500 | 10.00 |
| 30-34 | 65,000 | 50,000 | 12,500 | 10.00 |
| 35-39 | 50,000 | 40,000 | 12,500 | 10.00 |
| 40-44 | 35,000 | 25,000 | 12,500 | 10.00 |
| 45-49 | 20,000 | 15,000 | 12,500 | 10.00 |
| 50-54 | 12,500 | 10,000 | 12,500 | 10.00 |
| 55-59 | 10,000 | 10,000 | 12,500 | 10.00 |
| 60-64 | 7,500 | 7,500 | 12,500 | 10.00 |
| 65-69 | 4,000 | 4,000 | 12,500 | 10.00 |
| 70-75 | 2,500 | 2,500 | 12,500 | 10.00 |

**The AFA High-Option Plan**

| | | | | |
|---|---|---|---|---|
| 20-24 | $112,500 | $100,000 | $12,500 | $15.00 |
| 25-29 | 105,000 | 90,000 | 12,500 | 15.00 |
| 30-34 | 97,500 | 75,000 | 12,500 | 15.00 |
| 35-39 | 75,000 | 60,000 | 12,500 | 15.00 |
| 40-44 | 52,500 | 37,500 | 12,500 | 15.00 |
| 45-49 | 30,000 | 22,500 | 12,500 | 15.00 |
| 50-54 | 18,750 | 15,000 | 12,500 | 15.00 |
| 55-59 | 15,000 | 15,000 | 12,500 | 15.00 |
| 60-64 | 11,250 | 11,250 | 12,500 | 15.00 |
| 65-69 | 6,000 | 6,000 | 12,500 | 15.00 |
| 70-75 | 3,750 | 3,750 | 12,500 | 15.00 |

**Optional Family Coverage**
(May be added either to the Standard or High-Option Plans)

| Insured's Age | Spouse Benefit New | Spouse Benefit Old | Benefit, Each Child** | Monthly Cost Family Coverage |
|---|---|---|---|---|
| 20-24 | $10,000 | $6,000 | $2,000 | $2.50 |
| 25-29 | 10,000 | 6,000 | 2,000 | 2.50 |
| 30-34 | 10,000 | 6,000 | 2,000 | 2.50 |
| 35-39 | 10,000 | 6,000 | 2,000 | 2.50 |
| 40-44 | 7,500 | 5,250 | 2,000 | 2.50 |
| 45-49 | 5,000 | 4,050 | 2,000 | 2.50 |
| 50-54 | 4,000 | 3,000 | 2,000 | 2.50 |
| 55-59 | 3,000 | 3,000 | 2,000 | 2.50 |
| 60-64 | 2,500 | 2,250 | 2,000 | 2.50 |
| 65-69 | 1,500 | 1,200 | 2,000 | 2.50 |
| 70-75 | 750 | 750 | 2,000 | 2.50 |

*In the event of an accidental death occuring within 13 weeks of the accident, the AFA plan pays a lump sum benefit of $12,500 **in addition** to your plan's regular coverage benefit, except as noted under AVIATION DEATH BENEFIT, below.

**Each child has $2,000 of coverage between the ages of six months and 21 years. Children under six months are provided with $250 protection once they are 15 days old and discharged from the hospital.

**AVIATION DEATH BENEFIT:** A total sum of $15,000 under the Standard Plan or $22,500 under the High-Option Plan is paid for death which is caused by an aviation accident **in which the insured is serving as pilot or crew member of the aircraft involved.** Under this condition, the Aviation Death Benefit is paid in lieu of all other benefits of this coverage.

**AFA'S DOUBLE PROTECTOR**—now with substantial benefit increases—gives you a choice of two great plans, both with optional family coverage. Choose either one for strong dependable protection, and get these advantages:

**FAMILY PLAN.** Protect your whole family (no matter how many) for only $2.50 per month. Insure newborn children as they become eligible just by notifying AFA. No additional cost.

**Wide Eligibility.** If you're on active duty with the U. S. Armed Forces (regardless of rank, a member of the Ready Reserve or National Guard (under age 60), A Service Academy or college or university ROTC cadet, you're eligible to apply for this coverage. (Because of certain limitations on group insurance coverage, Reserve or Guard personnel who reside in Ohio, Texas, Florida and New Jersey are not eligible for this plan, but may request special applications from AFA for individual policies which provide similar coverage.

**No War Clause,** hazardous duty restriction or geographical limitation.

**Full Choice of Settlement Options,** including trusts, are available by mutual agreement between the insured and the Underwriter, United of Omaha.

**Disability Waiver of Premium,** if you become totally disabled for at least nine months, prior to age 60.

**Keep Your Coverage at Group Rates to Age 75,** if you wish, even if you leave the military service.

**Guaranteed Conversion Provision.** At age 75 (or at any time on termination of membership) the amount of insurance shown for your age group at the time of conversion may be converted to a permanent plan of insurance, **regardless of your health at that time.**

**Reduction of Cost by Dividends.** Net cost of insurance to AFA insured persons has been reduced by payment of dividends in 10 of the last 13 years. However, dividends naturally cannot be guaranteed.

**Convenient Premium Payment Plans.** Premium payments may be made by monthly government allotment, or direct to AFA in quarterly, semi-annual or annual installments.

**EFFECTIVE DATE OF YOUR COVERAGE.** All certificates are dated and take effect on the last day of the month in which your application for coverage is approved. AFA Military Group Life Insurance is written in conformity with the insurance regulations of the State of Minnesota. The insurance will be provided under the group insurance policy issued by United of Omaha to the First National Bank of Minnesota as trustee of the Air Force Association Group Insurance Trust.

**EXCEPTIONS.** There are a few logical exceptions to this coverage. They are:

**Group Life Insurance:** Benefits for suicide or death from injuries intentionally self-inflicted while sane or insane shall not be effective until your coverage has been in force for 12 months.

**The Accidental Death Benefit and Aviation Death Benefit** shall not be effective if death results: (1) From injuries intentionally self-inflicted while sane or insane, or (2) From injuries sustained while committing a felony, or (3) Either directly or indirectly from bodily or mental infirmity, poisoning or asphyxiation from carbon monoxide, or (4) During any period a member's coverage is being continued under the waiver of premium provision, or (5) From an aviation accident, either military or civilian, in which the insured was acting as pilot or crew member of the aircraft involved, except as provided under AVIATION DEATH BENEFIT.

**PLEASE RETAIN THIS MEDICAL INFORMATION BUREAU PRENOTIFICATION FOR YOUR RECORDS**

Information regarding your insurability will be treated as confidential. United Benefit Life Insurance Company may, however, make a brief report thereon to the Medical Information Bureau, a nonprofit membership organization of life insurance companies, which operates an information exchange on behalf of its members. If you apply to another Bureau member company for life or health insurance coverage, or a claim for benefits is submitted to such a company, the Bureau, upon request, will supply such company with the information in its file.

Upon receipt of a request from you, the Bureau will arrange disclosure of any information it may have in your file. (Medical information will be disclosed only to your attending physician.) If you question the accuracy of information in the Bureau's file, you may contact the Bureau and seek a correction in accordance with the procedures set forth in the federal Fair Credit Reporting Act. The address of the Bureau's information office is P.O. Box 105, Essex Station, Boston, Mass. 02112, Phone (617) 426-3660.

United Benefit Life Insurance Company may also release information in its file to other life insurance companies to whom you may apply for life or health insurance, or to whom a claim for benefits may be submitted.

# Increase in Premium
# ILITARY GROUP LIFE INSURANCE

## APPLICATION FOR AFA MILITARY GROUP LIFE INSURANCE

United of Omaha

Group Policy GLG-2625
United Benefit Life Insurance Company
Home Office Omaha Nebraska

Full name of member _____
Rank Last First Middle

Address _____
Number and Street City State ZIP Code

| Date of birth Mo. Day Yr. | Height Weight | Social Security Number |
|---|---|---|
| | | |

Please indicate category of eligibility and branch of service.

- ☐ Extended Active Duty
- ☐ Ready Reserve or National Guard
- ☐ Air Force
- ☐ Other _____ (Branch of service)
- ☐ Air Force Academy
- ☐ _____ Academy
- ☐ ROTC Cadet _____ Name of college or university

Name and relationship of primary beneficiary

Name and relationship of contingent beneficiary

This insurance is available only to AFA members

- ☐ I enclose $10 for annual AFA membership dues (includes subscription ($9) to AIR FORCE Magazine).
- ☐ I am an AFA member.

Please indicate below the Mode of Payment and the Plan you elect.

| HIGH OPTION PLAN | | | STANDARD PLAN | |
|---|---|---|---|---|
| Members Only | Members and Dependents | Mode of Payment | Members Only | Members and Dependents |
| ☐ $ 15.00 | ☐ $ 17.50 | **Monthly** government allotment. I enclose 2 months' premium to cover the period necessary for my allotment to be established. | ☐ $ 10.00 | ☐ $ 12.50 |
| ☐ $ 45.00 | ☐ $ 52.50 | **Quarterly.** I enclose amount checked. | ☐ $ 30.00 | ☐ $ 37.50 |
| ☐ $ 90.00 | ☐ $105.00 | **Semiannually.** I enclose amount checked. | ☐ $ 60.00 | ☐ $ 75.00 |
| ☐ $180.00 | ☐ $210.00 | **Annually.** I enclose amount checked. | ☐ $120.00 | ☐ $150.00 |

| Names of Dependents To Be Insured | Relationship to Member | Dates of Birth Mo. Day Yr. | Height Weight |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Have your or any dependents for whom you are requesting insurance ever had or received advice or treatment for: kidney disease, cancer, diabetes, respiratory disease, epilepsy, arteriosclerosis, high blood pressure, heart disease or disorder, stroke, venereal disease or tuberculosis? Yes ☐ No ☐

Have you or any dependents for whom you are requesting insurance been confined to any hospital, sanitarium, asylum or similar institution in the past 5 years? Yes ☐ No ☐

Have you or any dependents for whom you are requesting insurance received medical attention or surgical advice or treatment in the past 5 years or are now under treatment or using medications for any disease or disorder? Yes ☐ No ☐

IF YOU ANSWERED "YES" TO ANY OF THE ABOVE QUESTIONS, EXPLAIN FULLY including date, name, degree of recovery and name and address of doctor. (Use additional sheet of paper if necessary.)

I apply to United Benefit Life Insurance Company for insurance under the group plan issued to the First National Bank of Minneapolis as Trustee of the Air Force Association Group Insurance Trust. Information in this application, a copy of which shall be attached to and made a part of my certificate when issued, is given to obtain the plan requested and is true and complete to the best of my knowledge and belief. I agree that no insurance will be effective until a certificate has been issued and the initial premium paid.

I hereby authorize any licensed physician, medical practitioner, hospital, clinic or other medical or medically related facility, insurance company, the Medical Information Bureau or other organization, institution or person, that has any records or knowledge of me or my health, to give to the United Benefit Life Insurance Company any such information. A photographic copy of this authorization shall be as valid as the original. I hereby acknowledge that I have a copy of the Medical Information Bureau's prenotification information.

Date _____, 19 ____ _____
Member's Signature

**9/76**
Form 3676GL App

Application must be accompanied by check or money order. Send remittance to: Insurance Division, AFA, 1750 Pennsylvania Avenue, NW, Washington, D.C. 20006

Bob Stevens'

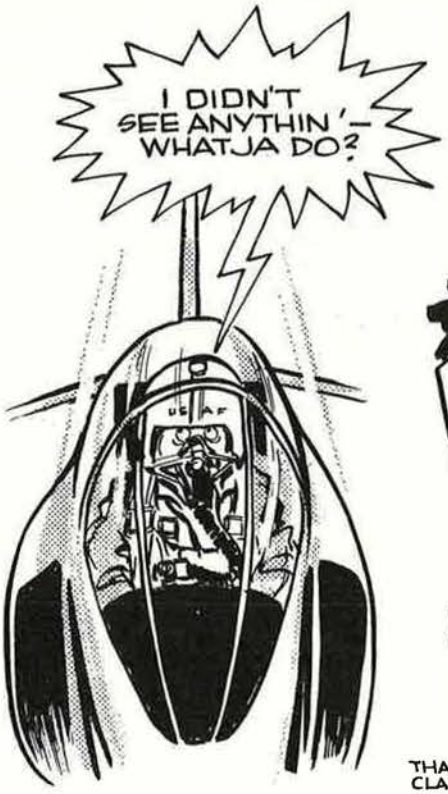
# "There I was..."

DURING THE MOST RECENT UNPLEASANTNESS, F-4s ESCORTING B-52s WOULD OFTEN DO AILERON ROLLS AROUND THEIR CHARGES-


FIGHTER PILOTS, BEING FIGHTER PILOTS, ARE WONT TO ENGAGE IN AEROBATICS - AT THE DROP OF A BOMB - TO IMPRESS THEIR BRETHREN IN THE BIGGER IRON BIRDS. THE "BIG FRIENDS" HAVE A FEW IMPRESSIVE MANUEVERS OF THEIR OWN:

FINALLY, ONE OL' '52 COMMANDER COULD STAND IT NO LONGER-

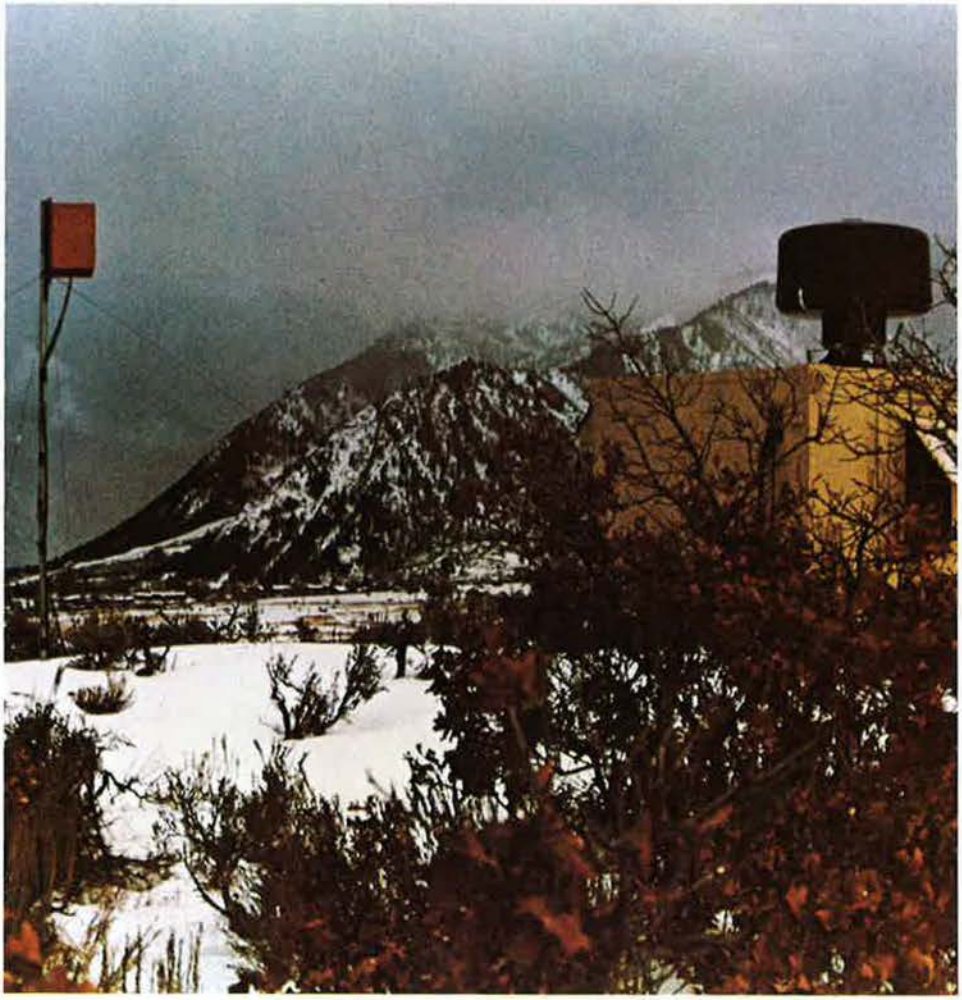






THANKS TO CAPT. S.G. PORTER CLARK AB, PHILIPPINES.

Bob Stevens



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E-Systems TACAN (Tactical Air Navigation) systems have been guiding military aircraft over land and sea for many years. And our portable units have made landing in remote areas a safe procedure. And now, TACAN is finding civilian usage. Last year, an airline in Colorado flew over 10,000 more skiers into Aspen than in previous years by using

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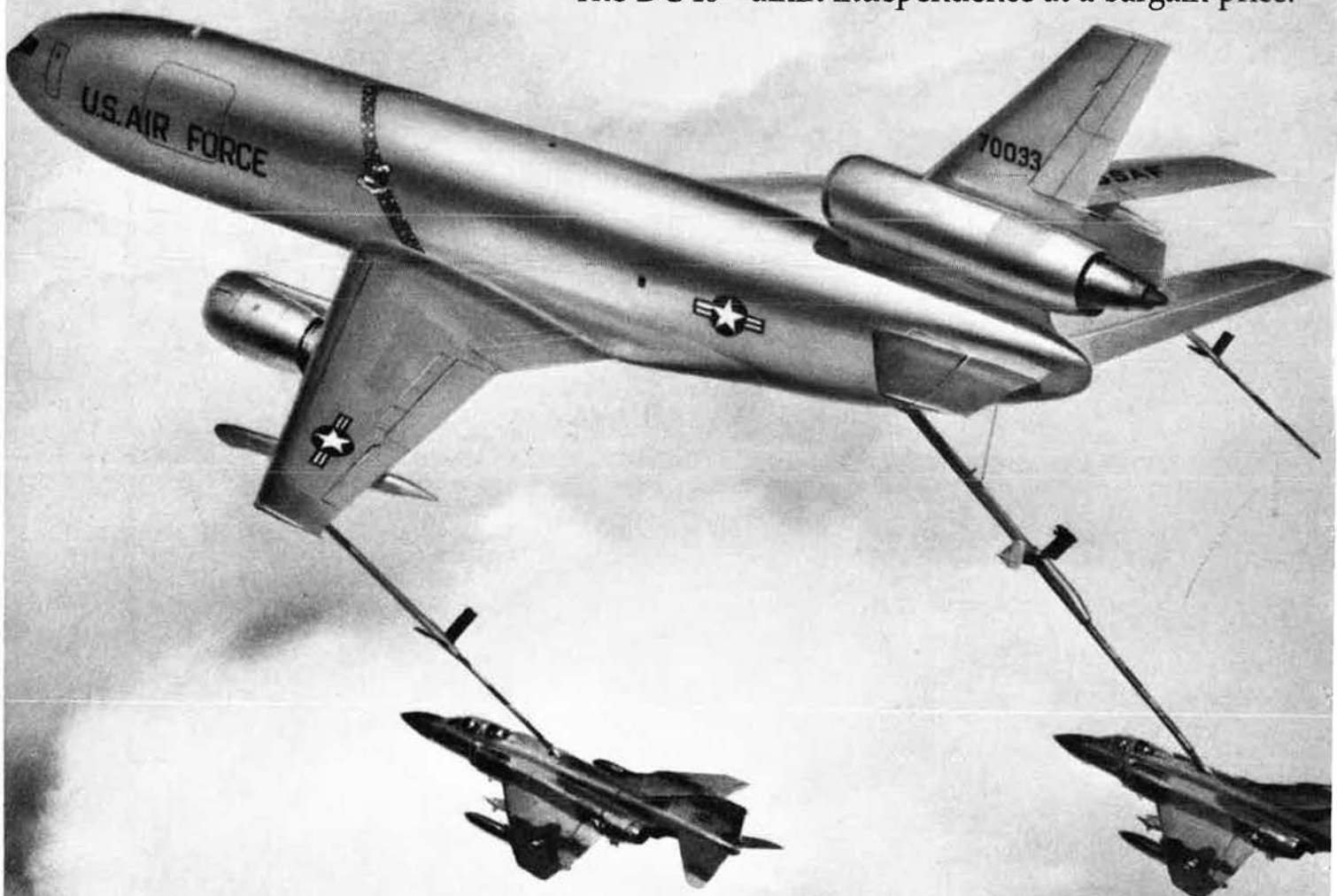


**The DC-10 ATCA**
**MCDONNELL DOUGLAS**