MAY 1972 / $2

AIR FORCE

PUBLISHED BY THE AIR FORCE ASSOCIATION

MAGAZINE

1972
ALMANAC
ISSUE


ED ANDERSON

Head in the sky, heart in the clouds and several miles off course.

If the romance of yesteryear in aviation tugs at your heartstrings, you are not alone. Who doesn't yearn now and then for the days when a skilled and courageous pilot was the one and only answer to the success of a dangerous mission?

Some things return, but some are gone forever. Drones may be fearless, but romantic they are not. And so we address ourselves to the hard fact that there will never be a Clark Gable-type movie about our latest avionics system.

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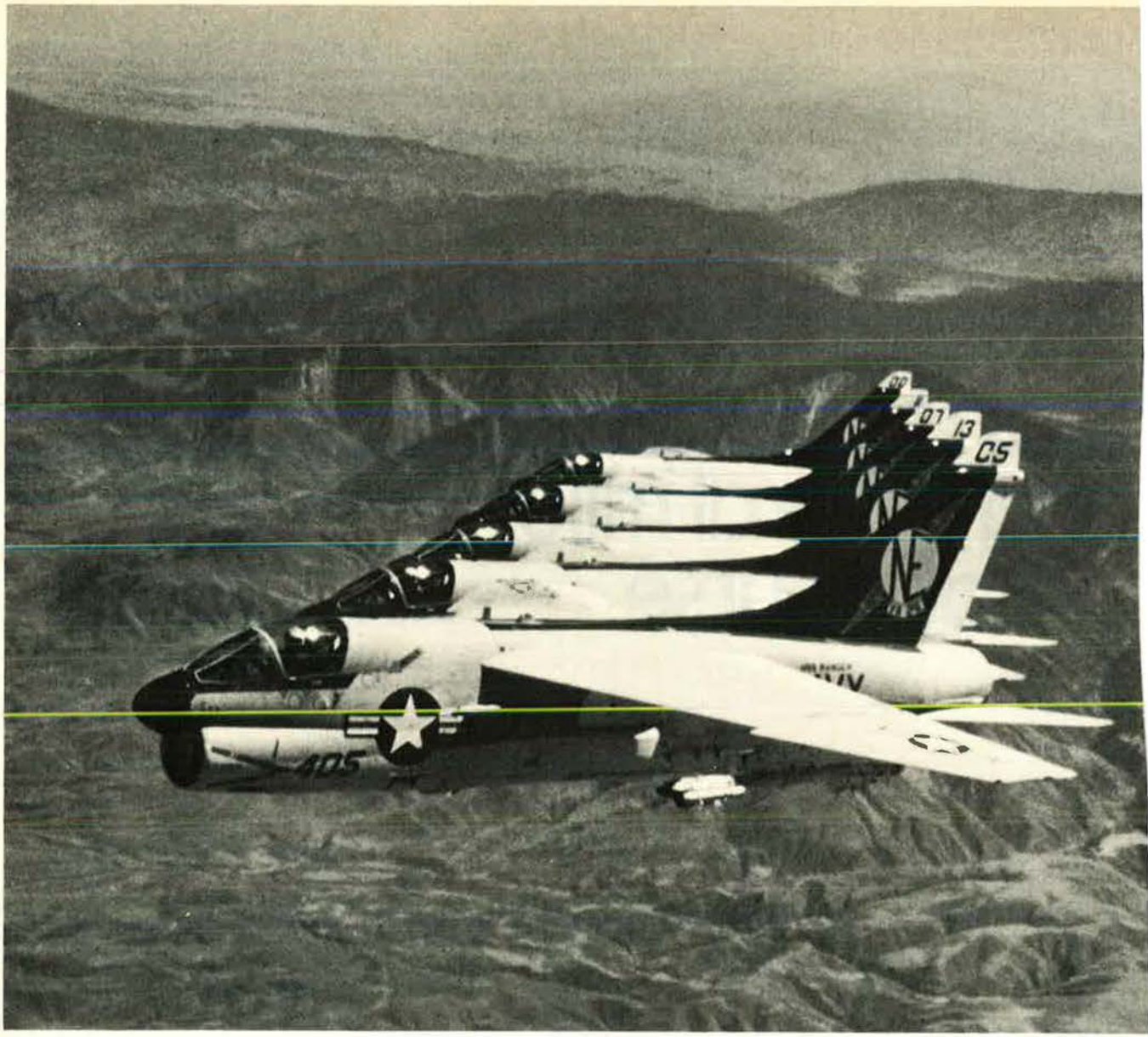

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A lot more airplane than anyone bargained for.

Its mission is close support and interdiction. Its accuracy is unprecedented.

The Navy A-7E is equipped with an advanced avionics package which includes a central digital computer, an improved Doppler, inertial platform, forward looking radar, projected map display and an eye-level head-up display.

The A-7's systems are so skillfully integrated that it's an easy aircraft to fly. Programmed navigation aids and ordnance releases give the pilot vital freedom to concentrate on his target and evasive maneuvers.

It can deliver up to 15,000 pounds of mixed ordnance with better than 10-mil accuracy. Destroying hard targets in one-third the number of sorties required with other available systems.

In service, pilots are discovering mission capabilities that weren't even written into the books. So while it's making pilots more versatile and accurate, they are making it a lot more airplane than anyone bargained for.

VOUGHT AERONAUTICS

Visit the LTV Aerospace Corporation Exhibit transpo Dulles International Airport, Washington, D.C. May 27-June 4, 1972

AIR FORCE
PUBLISHED BY THE AIR FORCE ASSOCIATION MAGAZINE

VOLUME 55, NUMBER 5

MAY 1972

THIS MONTH

THE DEPARTMENTS

THIS MONTH'S COVER

This annual Almanac Issue marks USAF's Twenty-fifth Anniversary year as a separate service. The reports herein present a capsule history of remarkable achievement during a turbulent quarter century.

BPA Circulation audited by Business Publications Audit

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AIR FORCE Magazine (including SPACE DIGEST) is published monthly by the Air Force Association, Suite 400, 1750 Pennsylvania Ave., N.W., Washington, D.C. 20006. **Phone:** (202) 298-9123. Second-class postage paid at Washington, D.C. **Membership rate:** $10 per year (including $9 for one-year subscription). **Subscription rate:** $10 per year; $2 additional for foreign postage. Single copy $1. Special issues (Spring and Fall Almanac Issues) $2 each. **Change of address** requires four weeks' notice. Please include a recent mailing label. Publisher assumes no responsibility for unsolicited material. Trademark registered by Air Force Association.

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Aft Baggage Compartment Capacity	410 lbs., 62 cu. ft.
Useful Load	4,772 lbs.
Number of Seats	8 to 15
Cruising Speed @ 10,000 ft.	248 kts.
Range @ High Cruise Power @ 21,000 ft.	1,212 Naut. Mi.
Range @ Maximum Range Power @ 21,000 ft.	1,340 Naut. Mi.
Engine Type	Two 680 SHP Pratt & Whitney PT6A-28 with Hartzell Four Bladed Propellers.

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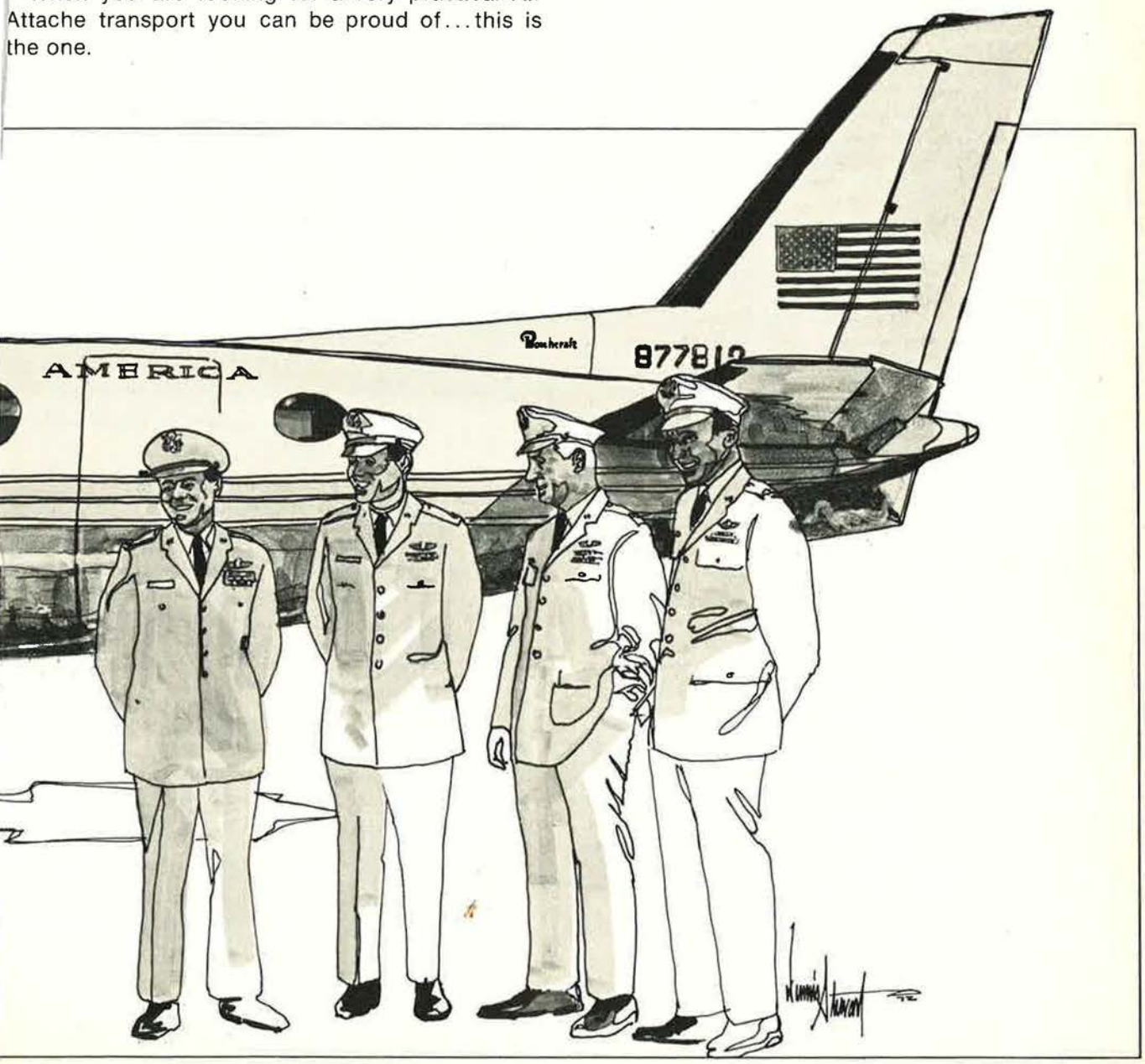


An Editorial

THE ROCK AND THE HARD PLACE

By John F. Loosbrock
EDITOR, AIR FORCE MAGAZINE

"BETWEEN the rock and the hard place" is a folksy but accurate way of describing the plight of the Air Force as it faces the ominously austere shadows of Fiscal Year 1973. The rock is the urgent need to get on with force modernization while simultaneously maintaining a meaningful level of combat readiness. The hard place is the number of dollars likely to be available to get both of these important jobs done. Right now, it looks like a clear case of "you can't get there from here."

On the face of it, the $24.4 billion in total obligational authority that has been requested for the Air Force in FY '73 looks like a lot of money, and it is. The same figure for FY '64 was only $20 billion. But the same thing has happened to the AF dollar that has confounded the pocketbooks of all of us. The ravages of inflation have shrunk purchasing power by about one-third. In terms of constant dollars, that $24.4 billion is actually $6.4 billion *less* than in 1964, the last year of "peace." That's one.

Two is the jump in personnel costs over the same time period, from thirty-three percent of the budget to forty-six percent. This has come about through long overdue adjustments to a pay scale that was woefully inadequate—and no one begrudges the blue-suiters a dime of it. Indeed, its store of experienced and dedicated people is the only stretchable resource the Air Force has to fall back on, and for the moment it is people who are taking up the slack, with projected military personnel strength at its lowest ebb, 717,000, since 1950.

Strong measures are being taken to bridge the dollar gap, and their implications for combat readiness—which, after all, is the name of the game—are scary.

Crew ratios (ratio of crews to aircraft) have been cut. Flying hours have been reduced an average of more than five percent. Fewer new pilots are being trained. Flying training has been cut, in the case of Undergraduate Pilot Training (UPT) students, from 240 hours to 208½ hours.

Nowhere is the crunch being felt more heavily than in Aerospace Defense Command, where flying hours are down thirteen percent, a number of control facilities are being phased out, and two fighter-interceptor squadrons have been transferred to the Air National Guard. Dollars are being saved, sure. But at the cost of a reduced alert commitment, which is a dicey way to save a buck.

It is through such draconian measures that the Air Force hopes to squeeze out the money to modernize its equipment. After all, you can't have it both ways. If you are to do more with less, then what you do it with becomes overridingly important. So little has been done toward force modernization over the past decade that a lot of bills are coming due at once. There is the initial procurement of the F-15, USAF's first new fighter since 1964. Likewise for AWACS (Airborne Warning and Control System), and AABNCP (Advanced Airborne Command Post). Procurement and deployment of Minuteman III, Shrike, Maverick, and SRAM must go forward. Still in the RDT&E stage are the vitally needed B-1 strategic bomber, the A-X close-support aircraft, the Advanced STOL (short take off and landing aircraft), and the lightweight fighter prototypes.

From where we sit, there just isn't enough money in the combat readiness pot to safely pilfer any more of it for force modernization. As we have noted, combat readiness is the name of the game. For today. But it continues to be the name of the game over the next decade and beyond. That's why force modernization can't be postponed either. The rock and the hard place.

What's the answer? A less than five percent boost in the Air Force budget for FY '73 would do it—half for readiness measures; half for construction, procurement, and R&D. Logical but not likely. Not in an election year in a frigid political climate.

Stretch out the new systems now in development? Operationally risky and financially unproductive. You won't have them when you need them, and they'll cost more in the long run.

Cancel one or more large programs? You make that decision. You may feel like shooting crap with the country's future. We don't.

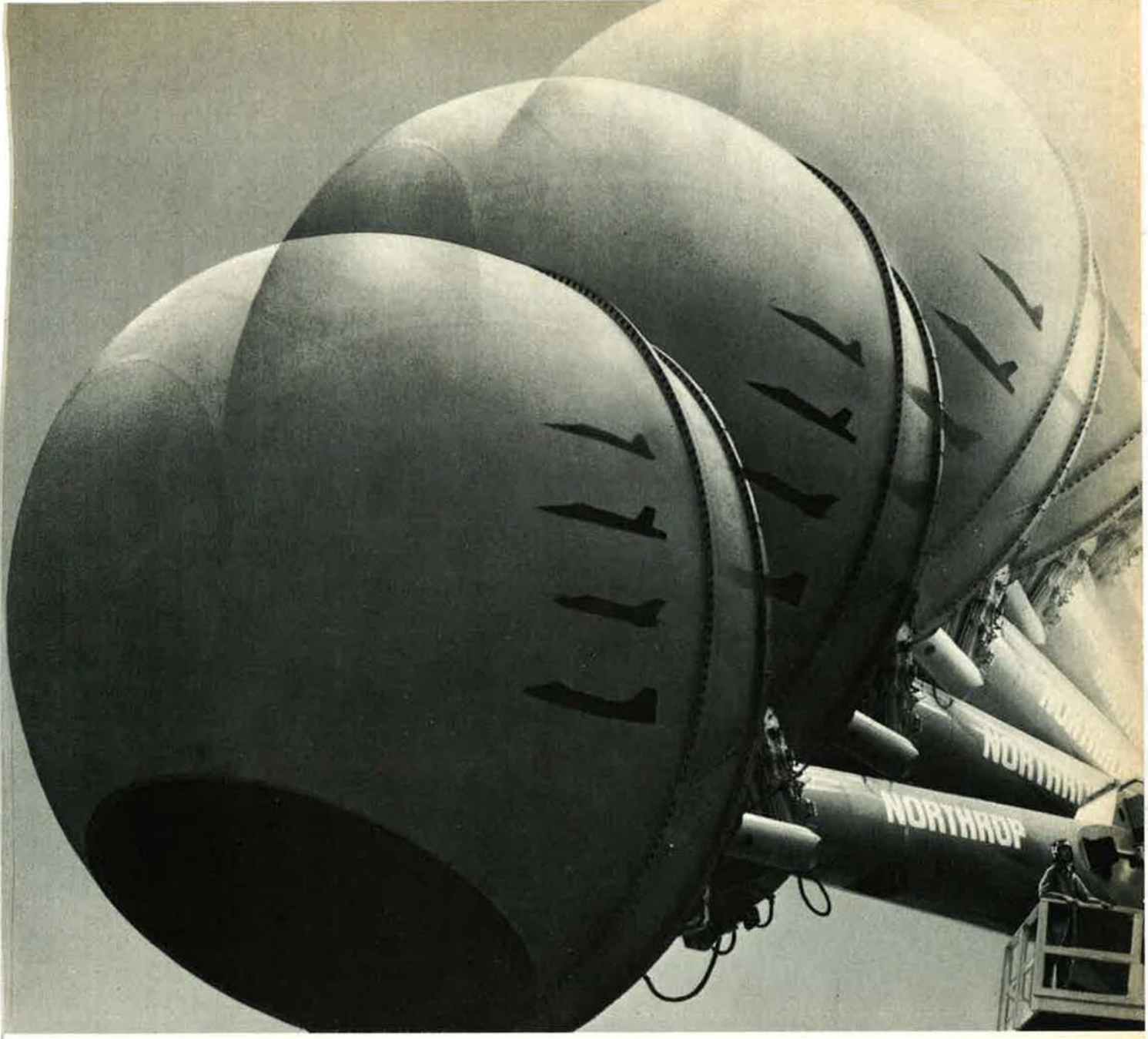
Consolidate and close some bases? In an election year?

Cut back research and development? That's like feeding next year's seed corn to this year's cattle crop. It may get you through the winter, but then what?

So, no matter how you slice it, a number of calculated risks are going to have to be taken simultaneously, and the balance between the calculation and the risks is bound to be a precarious one. There is a synergistic factor in this kind of situation, whereby the total of the risks may well be greater than the sum of the individual ones. It is not an enviable time to be running the Air Force, from the view of either the Secretary or the Chief of Staff.

The makers and shapers of national policy will have to keep these facts carefully in view when it comes to commitments that may lay added tasks upon a force that is shrinking at the same time it is rebuilding. Becoming a second-class military power takes a bit of getting used to. Without a willingness to put our money where our mouth is, the only answer may be in the immortal words of the late Gen. Emmett (Rosy) O'Donnell, to "speak stickily while carrying a big soft."

But is that any way to live? ■



Our aircraft designers have a ball.

They can "fly" new concepts while they're still on paper.

This ball is the business end of our new advanced aircraft simulator. Test pilots say it has uncanny abilities to reproduce flight conditions.

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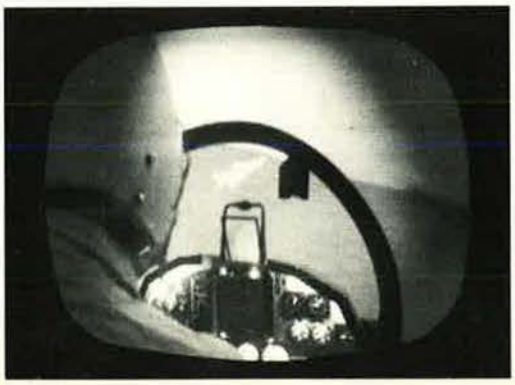
Ideas get thoroughly wrung out. Proven or debunked. We've already "flown" our P-530, A-9A and other advanced designs. Just think of the savings in time and money.

Northrop is famous for doing this kind of homework. In exhaustive wind tunnel testing. In detailed studies of actual combat histories. We apply our heritage of fighter technology not just to simplify, but to make more effective.



Our F-5/T-38 family of supersonic aircraft now serves 17 nations. 2,200 have been built. They and the new F-5E are flying proof that high performance can be bought at low cost.

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Harrier changes all that.

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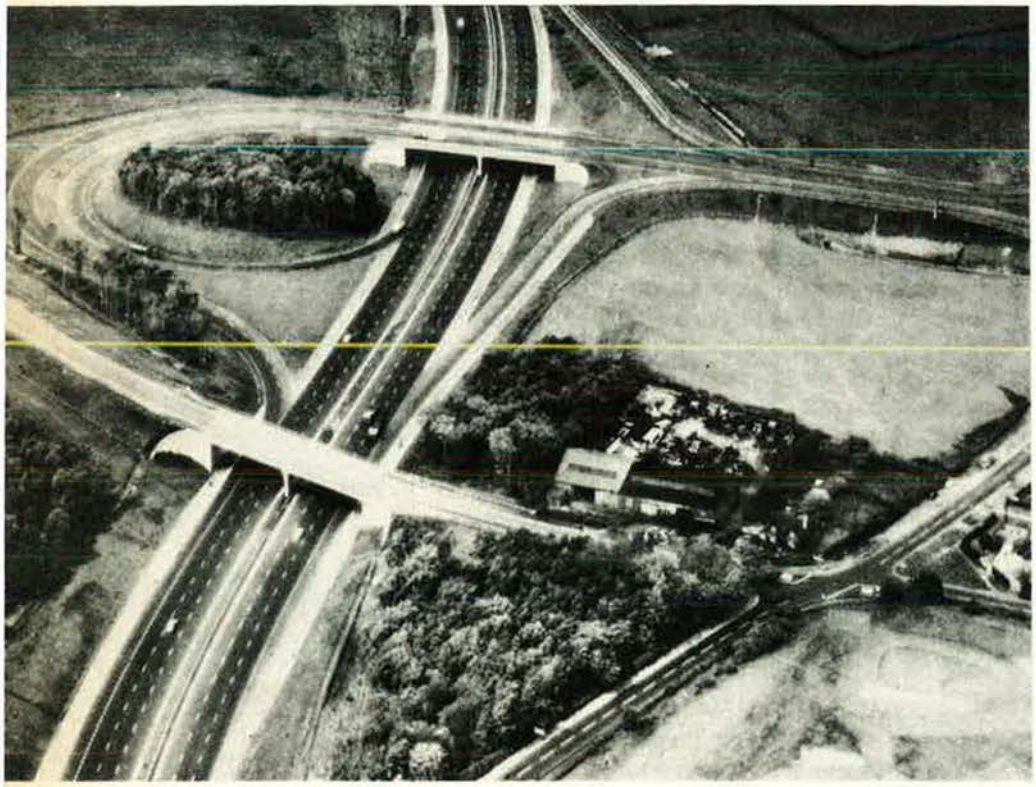
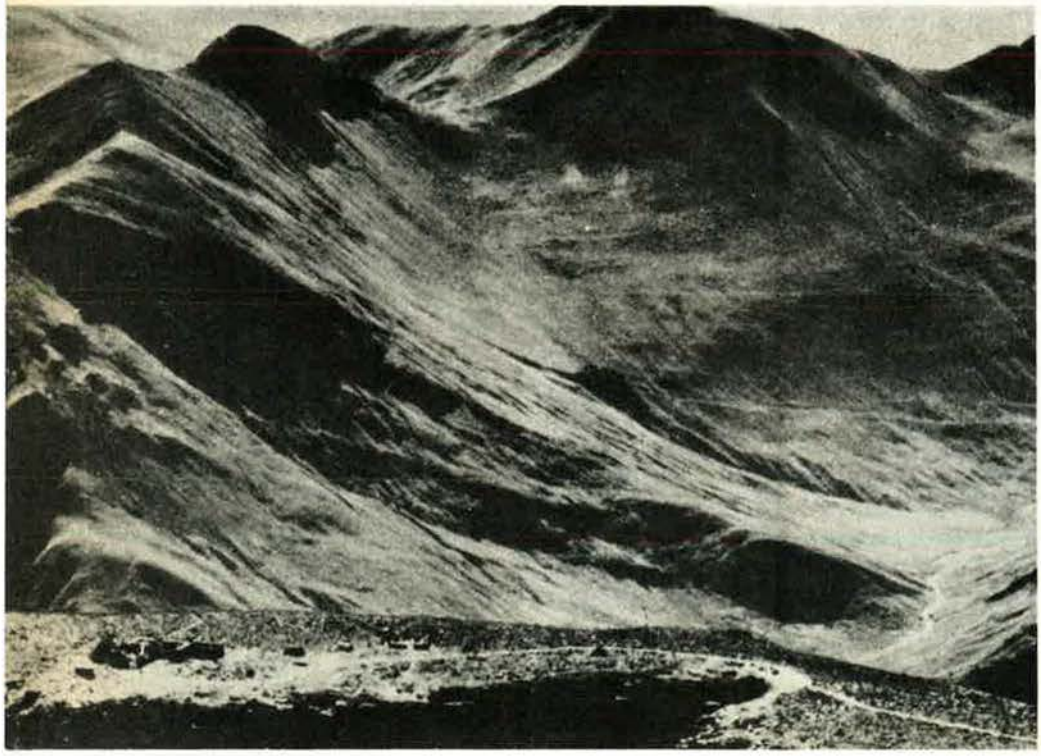
It can be quickly and easily despatched into one of a number of pre-selected dispersed sites minimum advance notice.

It can operate effectively from either unprep strips or V/STOL sites, whether they're woods, f farm or park.

The sites need no air defence, minimum sup and are virtually undetectable from the air.





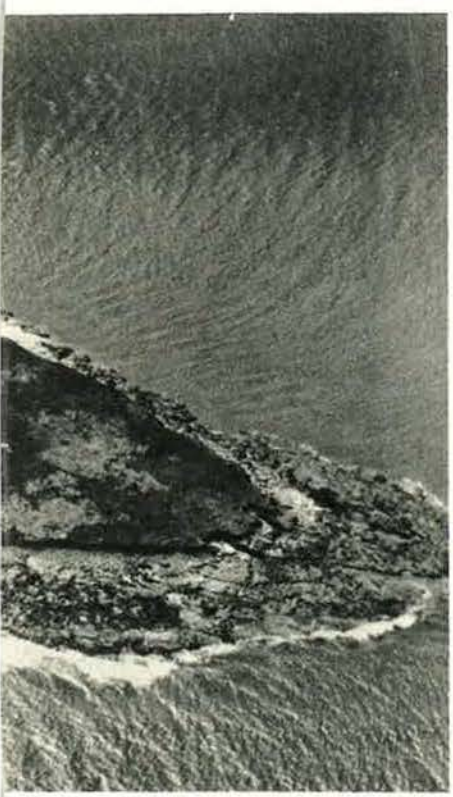
or an opposing battle commander, Harrier presents
blems. His tactical knowledge, built on fixed, static
s, is of little use. His enemy now is elusive and
een.
Harrier strikes from out of nowhere, when and as it
nts. And the opposing commander has to disperse
force to search for it. The attacker becomes the
acked.

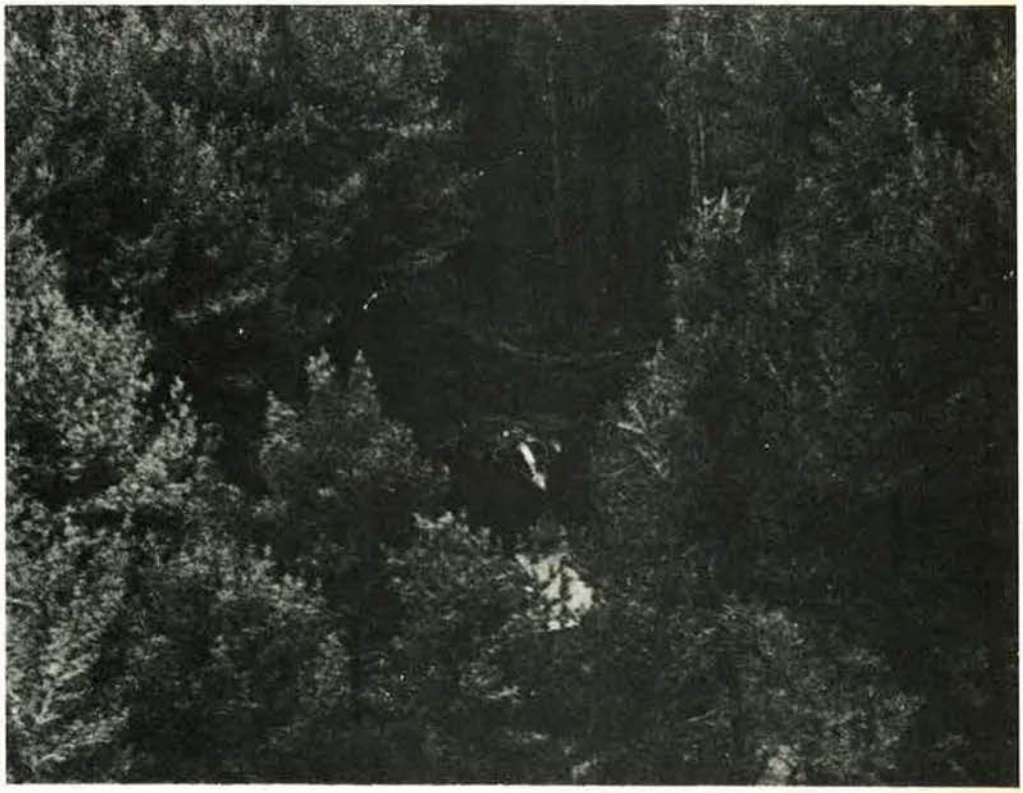
The Harrier is an important breakthrough.

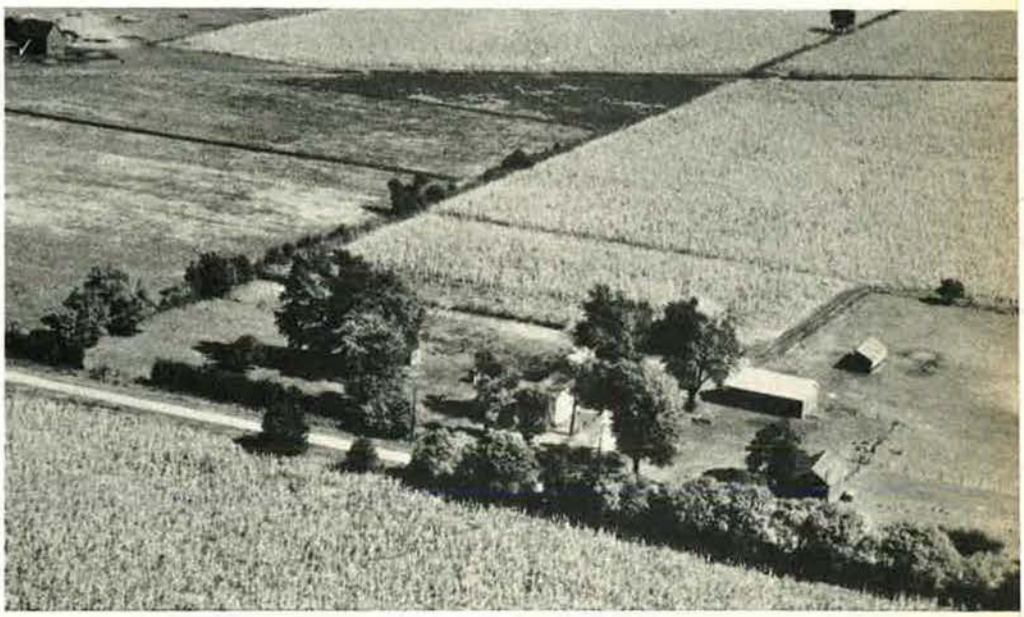
It alters the traditional concept of airpower and its function. And it's already in fully operational service with both the Royal Air Force and US Marine Corps.

Take a closer look at the Harrier for yourself. Because you can't afford to be left behind.

Harrier. It changes everything.







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Airmail

Blue-Water Neutral

Gentlemen: Reference your editorial, "Blue-Water Booby Trap," in March.

Since I am a "neutral" civilian who has worked with both the Air Force and Navy, I would like to point out several considerations Mr. Frisbee may have missed.

Item 1—the majority of current aircraft carriers are well beyond the obsolescent period and useful life stage that is equivalent to a B-52D. If the Air Force needs new equipment, then so does the Navy.

Consider as Item 2 the age and fatigue life of the aircraft used on the smaller carriers (F-8J, RF-8G, E-1B).

Item 3 can only be discussed by pilots (Navy or Air Force exchange) who have made an approach and landing on a small, old carrier, in an old tired aircraft, on a foggy night. The only thing I can add is that Mr. Frisbee should try it sometime before paying lip service to balanced forces while making a grab for the lion's share of the money (again!). Navy is still using World War II ships—where are the equivalent Air Force bombers? It will take several years of full Navy spending to make up the gap between Air Force and Navy budgets over the last few years. Let's give Navy a chance; they waited for it and earned it the hard way.

JAMES E. HAGAN, JR.
FPO New York, N. Y.

• *To take Item 3 first, during more than twenty years as an Air Force pilot, the author of the editorial made quite a few approaches to a 10,000-foot runway on foggy nights, in tired old Air Force aircraft. His hat is off to the Navy pilots who have to hit a bobbing postage-stamp deck under those conditions. They're terrific.*

The point of the editorial is something else. It's simply this: Before our policy-makers consider limiting US military options by concentrating the bulk (or all) of our strategic and tactical deterrent forces at sea—as urged by supporters of a Blue-Water Strategy—they should be very sure that the realities of force survivability and responsiveness require us to do so. Today, this country is confronted by the largest and most sophisticated array of military power in its history—the Soviet armed forces. Any decision to drastically alter US defense strategy, made either consciously or inadvertently foreordained by budgetary means, is potentially a life-and-death decision so far as the nation is concerned. It should be—but has not been—publicly examined in detail.

Although the editorial focused on two particular weapon systems, it was addressed to a much broader issue.—THE EDITORS

Undetected "Invasion"

Gentlemen: I was extremely pleased with Claude Witze's fine article in the March issue entitled "The Gaps in Our Air Defense."

He has presented, in very convincing fashion, the message we at ADC have been trying to convey to the American public for several years. I, for one, appreciate all the homework done in gathering factual material which enabled him to tell the air defense story objectively.

I also want to add a note of thanks to AIR FORCE Magazine itself for its continuing support and understanding of the air defense mission. You have assisted us in the past and I know you will continue to do so in the future.

Again, my thanks and praise for a fine job of reporting. . . .

LT. GEN. THOMAS K. MCGEHEE
Commander
Hq. Aerospace Defense Command
Ent AFB, Colo.

Super SLUF

Gentlemen: "That Super-Accurate SLUF," by Capt. Thomas G. Ryan, was a fine article on the A-7 and gave the readers a good idea of the capabilities of their machine. However, I feel, as an A-7 pilot, that not enough "horn blowing" was done on its *extreme* accuracy.

The "black boxes" in the SLUF have made the A-7 the most accurate weapon system in the world. We in the "Dragon Squadron" (the 357th TFS) have proven this fact in daily bombing missions. For example, Capt. Harry Brown *lost* a night dive-bombing competition mission with a CEA of a mere eight feet. Not bad for night bombing. Only a few weeks ago, Capt. Charlie Harr, with less than 100 hours in the A-7, made six dive-bomb passes and each bomb found its mark in the middle of the bull's-eye for a CEA of zero feet. Not bad for a beginner.

We are proud of our SLUF and are waiting to go anywhere in the world to show the deadly accuracy of the "Short Little Ugly Fellow."

MAJ. DAVID R. BROWN
Tucson, Ariz.

Mil-stone 'Round Our Necks

Gentlemen: In Capt. Tom Ryan's report on the A-7D you quote him as saying "We watch [our bombs] hit the target with better than ten mile accuracy. . . ." This was no doubt a typographical error. Accuracy like that would cause the "friendlies" to run for cover. I'm sure he meant ten mil accuracy.

Otherwise, Captain Ryan's article was superb. It made a lot of guys like me awfully envious.

CAPT. WARREN C. BLANCHARD, JR.
Selma, Ala.

Gentlemen: Thank you for the A-7D (SLUF) article in your March issue. The interservice rivalry regarding effectiveness of close air support should be ended once and for all.

Your honesty in admitting the true USAF CAS capability (ten mile accuracy) is commendable. Seriously, as a Marine aviator, I find your publication informative and occasionally humorous. Keep up the good work.

MAJ. W. K. PARKER, USMC
Quantico, Va.

Gentlemen: "A miss is as good as a mil."

I hope all of your readers noticed that there apparently is an "e" missing from a word in the above sentence. I know where it is. It's on page 31 of last month's [March] issue.

In your otherwise excellent story on the capability and accuracy of the Air Force's new A-7D attack fighter, you unfortunately indicate that a bomb run was made with better than ten mile accuracy. I'm sure you, and any experienced reader, realizes it should have read ten *mil* accuracy.

Ask any SLUF driver—he'll tell you.

V. R. KREGEL
Manager Customer Relations
Vought Aeronautics Co.
Dallas, Tex.

• We *knew it was supposed to be "mil," and we even knew that mil is a unit of angular measurement. The copy was correct, but the typesetter—*

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How World War II was fought

on land, sea and in the air!

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This is a huge book: 768 pages, 53 full-page maps, 8,700-word index. Published at $12.50, you may take it as one of your 4 introductory volumes, all for 98¢ with trial membership.

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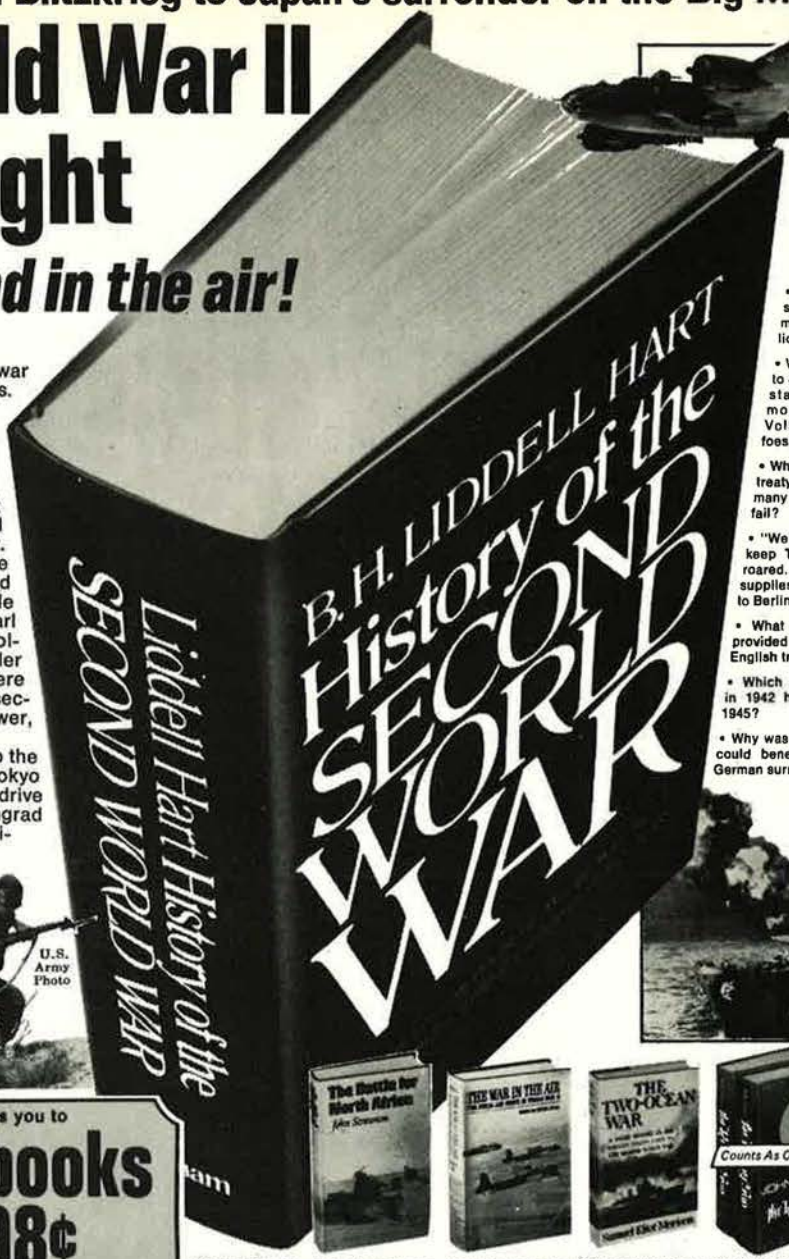

U.S. Air Force Photo

Think you know all about World War II?

Then try these out.

- What simple change of strategy in Sept. 1944 might have saved half a million Allied lives?
- What tricks did Rommel use to outsmart his enemies? (For starters, "the Desert Fox" mounted dummy tanks on Volkswagens to frighten his foes.)
- Who tried to negotiate a peace treaty between Russia and Germany *in 1943* — and why did they fail?
- "We'll win your --- war, if you'll keep Third Army going". Patton roared. Why did Ike refuse him the supplies he needed to plunge on to Berlin?
- What was the real "miracle"—provided by Hitler—that saved the English troops at Dunkirk?
- Which one of the Allied *defeats* in 1942 helped us win the war in 1945?
- Why was Stalin the only leader who could benefit from an unconditional German surrender?

U.S. Navy Photo

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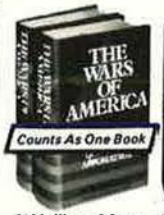

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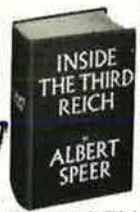

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doing us a "favor"—set it "mile." We changed it back to mil, and it stayed that way right up to just before press-time, when a last-minute correction had to be made to some battered type in the same column of the same page 31. Then, an over-zealous proofreader happened to see "mil" and, without consulting us, again did us a "favor" by changing it to mile. The same kind of thing frequently happens with "attitude," which too often comes back "altitude." There's an old rule in the typesetting business that says the linotype operator is supposed to "follow the copy—even if it blows out the window." The rule just wasn't followed in this case.—THE EDITORS.

"Community College" Comments

Gentlemen: I want to express appreciation to you for the fine article on "A Community College for the Air Force." Those of us who have had experience as I did with the Air Force, heading the Operations Analysis section, Fourth Air Force, World War II, and with the community college, are pleased to see this sort of development you reported in the March AIR FORCE Magazine.

We know the advantages of accreditation, having helped establish the Western Association of Schools and Colleges after World War II to establish transferability of our institutions literally throughout the world. If there are ways in which we can help with this process, we stand ready to do so for we know that the leaders in the four-year college movement have close connections with the Executive Secretary for community colleges for the western area.

We are active in two other movements which might interest you in your connection with the industrial program and where you would be most welcome for first-hand observation. The Southern California Industry Education Council is one such movement which, since 1956, has been a real force for bringing industry and education together in a constructive way to solve mutual problems. We have county groups, such as that for the San Bernardino-Riverside area, which is meeting . . . with similar county groups scattered from Ventura to San Diego.

The second and less well-known group is the College Federal Council, which has existed for twenty-three years on the assumption that the federal government is the most important single employer, numerically, in the area and needs to be better known as such on our college campuses. This group will be meeting in San Diego May 11 and 12. . . .

Less directly related, but with many of the same concerns, is the California Council on Economic Education. It has a heavy emphasis in the business and banking community, but shares many similar objectives and has an informed membership which might be very helpful to a developing community college in the Air Force.

I have enjoyed AIR FORCE Magazine and find that, as in the instance of [this] article, much is of value to us in the public school sector. I was particularly appreciative of the fine tribute paid recently to Bart Leach, whose work did much to bridge between the military and educational establishments which have so much in common.

STANLEY WARBURTON,
SUPERINTENDENT
Chaffey Community College District
Alta Loma, Calif.

Gentlemen: I have just finished reading Captain Correll's very noteworthy article "A Community College for the Air Force." . . . We at Midwestern University (MU) congratulate the USAF, the Sheppard Technical Center, the AFA's Aerospace Education Foundation, the U. S. Office of Education, and General Simler in particular for his very fine approach in providing civilian recognition and accreditation of USAF training. The subject of civilian recognition and accreditation has been discussed for many years by both civilian and USAF educators as desirable, but under General Simler's guidance it's finally being realized.

Now I will get to the purpose of this letter. During the past year, MU has developed cooperative programs with the USAF School of Health Care Sciences (SHCS) at Sheppard AFB, which include the USAF Laboratory Specialist and Radiology Specialist Courses as integral parts of MU's curricula for both Associate of Science and Bachelor of Science degrees in Medical Laboratory and Radiologic Technology.

Under this program, airmen who enroll at Midwestern University at the time of entry into their USAF courses at Sheppard were awarded fifteen semester hours of credit for this training upon successful completion. Also, those who complete the follow-on Phase II clinical and practicum training at USAF hospitals may receive additional semester hours of credit for this Medical Laboratory and Radiology experience.

Our only requirement is that each airman must qualify for entrance to MU and apply for admission just like any other student; and register for an American Government course which is taught in Sheppard classrooms by MU professors. Registering for this single course, which is a State of Texas requirement for all Associate of Science degree candidates, makes an airman a 100 percent college student while undergoing his USAF training.

Upon leaving Sheppard, the student will be provided a degree plan, and when all requirements are met he will be awarded the Associate of Science degree by MU.

The first class of USAF airmen enrolled in the program on February 28, 1972. Since then, three other classes have enrolled, making a total of eighty-eight airmen students as of now. We will continue with enrollments in two-week intervals to meet ATC entrance dates. . . .

We feel that our efforts support those of General Simler's and the USAF Community College. Considering the close proximity to the Sheppard Technical Training Center and the excellent community relations already existing, we plan to continue our cooperative efforts with the Air Force to the extent desired.

By doing so we will not only be providing the educational services to those who need them as required by our charter, but, of greater significance, we will be making our contribution to the all-volunteer force by providing realistic college-level opportunities on a timely basis for those airmen who desire them. . . .

HAROLD F. LAYHEE, DIRECTOR
Inter-Institutional Programs
Midwestern University
Wichita Falls, Tex.

"For America"

Gentlemen: May I ask your help to carry a message to retired Air Force officers? The Committee to Unite America, Inc., "For America," is a nonprofit, nonpolitical, tax-exempt organization, publicly announced in February 1971 by a group of 100 distinguished men and women who compose its National Board. Its major purpose is to bring together in a coordinated entity, patriotic, responsible, and informed Americans who wish to strengthen and defend this nation.

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NATALIE WALES HAMILTON,
PRESIDENT
"For America"
New York, N. Y.

Pinpointed

Gentlemen: I'd bet a nickel the leaf being pinned on the shoulder in the photograph on page 60 ["The Bulletin Board"] of the March issue is upside down!

LT. COL. O. DAVID KULMAN,
USAFR
Atlanta, Ga.

Gentlemen: I realize that I have been off active duty for awhile, but while I was there light colonels did not usually wear their grade insignia in the manner shown on page 60 of the March issue of AIR FORCE Magazine. If Congress sees this, it won't help grade relief.

COL. L. C. PORTER,
USAFR (RET.)
Narragansett, R. I.

• *You're both so right. The photographer and the lieutenant colonel must have been distracted by the pretty girl who was pinning the insignia on.*—THE EDITORS

Young Hopefuls

Gentlemen: Great nostalgic memories brought back by Col. Cal Carpenter's "Lost in the Traffic Pattern." We had the same situation at Douglas, Ariz., Class of 44-E, with Cessna "Bobcats" (AT-8) and the Curtiss "Jeep" (AT-9). They told us the AT-9 was the hottest thing the Air Corps had at the time—even the trim tab was all metal. Came down like an elevator! Only way to land, we discovered, was to pop the stick forward for a wheel landing.

Our class naïvely thought we were transitioning into twin-engine fighters (P-38, A-26, etc.). The announcement at the first formation that most of us would graduate as B-24 copilots almost resulted in the first student protest revolt.

AT-9 buffs might be interested in knowing that 791 "Jeeps" were procured during 1941–42. I wonder if any still exist.

CWO WALTER W. WITT
Appleton, Wis.

UNIT REUNIONS

CBI Hump Pilots Association
The 27th Annual reunion of the China, Burma, India Hump Pilots Association will be held at the Riviera Hotel and Country Club, Palm Springs, Calif., on August 17–20, 1972. Please contact
Herbert O. Fisher
Port Authority of New York and New Jersey
111 Eighth Ave., Rm. 1409
New York, N. Y. 10011
Phone: (212) 620-8396

2d Air Division Association
The 25th reunion of the 2d Air Division Association, 8th AF, will be held at Norwich, England, May 18–22. The 2d included the 44th, 93d, 389th, 392d, 445th, 446th, 448th, 453d, 458th, 466th, 467th, 489th, 491st, and 492d Bomb Groups, the 4th, 56th, 355th, and 361st Fighter Groups, and other attached groups and units. Chartered plane will leave Philadelphia May 18 and return two weeks later. Time between end of reunion and departure date will be used for individually planned tours. A farewell banquet will be held in London on June 1. Write or call
Miss Evelyn Cohen, Secy.
2555 Welsh Rd., Apt. 404
Philadelphia, Pa. 19114
Phone: (215) OR 6-7364

19th Photo Charting Sqdn.
The 30th reunion of the 19th Photo Charting Squadron (LR) will be held at the Hilton Inn, Dallas, Tex., July 27–29, 1972. Please contact
Ted Balon
112 Lakeside Dr.
Andover, Conn. 06232
Phone: (203) 742-8253

29th Air Service Group
The 26th reunion of the 29th Air Service Group will be held at the Speedway Holiday Inn, Indianapolis, Ind., July 12–15. Further information from
Frank Pace, Secy.-Treas.
315 West 15th St.
Dover, Ohio 44622

68th Fighter Squadron
The 11th biennial reunion of the 68th Fighter Squadron, WW II, will be held in Cincinnati, Ohio, in July. Please contact
Raymond B. Coors, Sr.
7651 Pinemeadow Lane
Cincinnati, Ohio 45224

366th Tac Fighter Wing
The 366th Tactical Fighter Wing "Gunfighters" is holding its 3d annual practice reunion in San Antonio, Tex., May 19–21. Persons interested in additional information should write
Gunfighters
Box 555
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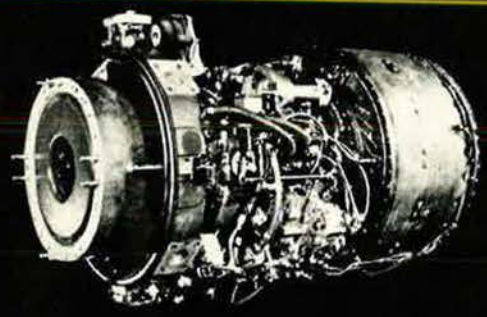

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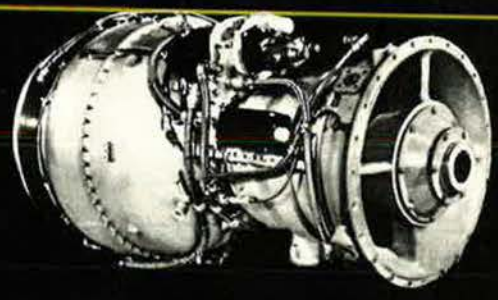

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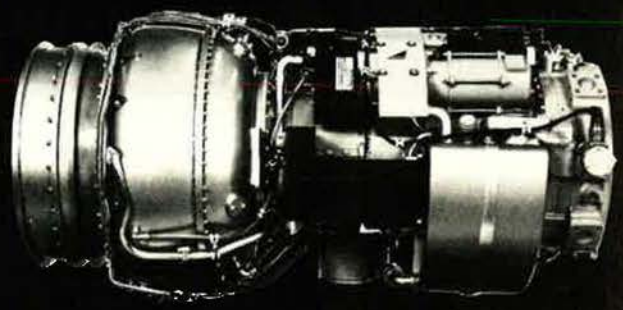

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Airpower in the News

By Claude Witze
SENIOR EDITOR, AIR FORCE MAGAZINE

CAS: The Hardware and the Mission

WASHINGTON, D. C., APRIL 7

The Army's party line, already expressed to Congress by its Chief of Staff, is that the heavily armed Cheyenne helicopter, still on the rough road to development, is not competitive with fixed-wing airplanes in the close-support mission. They call it complementary.

Top Air Force spokesmen, pleading for maximum effort to perfect the A-X, a plane designed specifically for the close-support task, look more skeptically upon the Cheyenne and the Army's determined case for it.

Given the Cheyenne, they point out, logic and history dictate that the Army will begin to move in on the close air support (CAS) mission. The thought was best expressed by Gen. William W. Momyer, Commander of the Tactical Air Command:

"I have a feeling that a part of the close-support mission is being divided off," he told the Senate. "If I subscribed to the view that the helicopter gunship is needed, in essence we have lost part of the mission, and I don't feel that there are limitations in our capability to do the total mission."

The ground forces are making an uninhibited effort to assure General Momyer that their determined advocacy of the heavily armed helicopter does not mean they want to put USAF out of business altogether.

Lt. Gen. Robert R. Williams, who may know more about airplanes than any other man wearing Army green, says he has a strong personal belief that USAF, and USAF alone, should provide CAS with fixed-wing aircraft.

General Williams says USAF should have its A-X. He argues that the Army needs its own armed helicopters as well, to protect itself in an age of Army helicopter mobility, adding that this mobility "has actually increased the Army's demands upon the Air Force for close air support of the classic type."

Gen. William C. Westmoreland, the Army's Chief of Staff, echoes the stand taken by his Assistant for Force Development. He insists that both the projects are needed, and gives top priority to his requirement for the Cheyenne.

In this spring of 1972, there is strong evidence the Westmoreland denial that the Cheyenne and the A-X are competitive has no universal acceptance. To begin with, from the standpoint of both Armed Services and Appropriations committees on Capitol Hill, they are competitive in the budget if not on the battlefield. Congress, as we shall point out, has said so. And Congress wants that competition stopped.

So far as the top command in the Department of Defense is concerned, it does not acknowledge there is a problem. The front office says it does not intend to recommend any changes in roles and missions. Adm. Thomas H. Moorer, Chairman of the Joint Chiefs of Staff, says he does not see any reason for a change, and he agrees with the Army commanders in South Vietnam who have said that USAF's close-support performance there has been "outstanding" and "truly professional."

The subject was aired last October and November at hearings conducted by a special subcommittee of the Preparedness Investigating Subcommittee of the Senate Armed Services Committee. The inquiry was chaired by Sen. Howard W. Cannon of Nevada. The recently published transcript of the hearings, which were held behind closed doors, constitutes a 484-page textbook on close air support. It reviews the roles and missions wrangle back to the National Security Act of 1947 and the subsequent Key West Agreement of 1948, which later became a DoD Directive, 5100.1.

The transcript also goes into the hardware rivalry among USAF's proposed new A-X fighter, designed for the CAS mission, the Army's Cheyenne helicopter, and the Harrier, the British-built V/STOL attack plane favored by the US Marines.

Northrop Corp. entry into competition for Air Force A-X contract has engines in wing root, conventional tail. This is artist's concept of how it will look.

Actual photo of Army's Cheyenne, built by Lockheed Aircraft, was taken prior to evaluation tests that are now under way. The company says that the helicopter is ready for production.

This A-X design, proposed by Fairchild-Hiller Corp., has double tail and rudders, engines mounted over rear of the fuselage.

Senators Barry Goldwater, Strom Thurmond, and Howard Cannon, left to right, played major roles in subcommittee hearings on CAS. Mr. Goldwater filed a minority opinion.

There are sessions on Soviet capabilities, with briefings by intelligence officers, a session devoted to USAF's existing A-7D and the possibility that it can take over the mission, and one meeting at which Sen. William Proxmire turned up in the unlikely role of an airplane salesman. He spoke in behalf of the Members of Congress for Peace Through Law, who recommended that the Cheyenne project be terminated and full reliance be placed on USAF and its A-X.

The subcommittee report says the Pentagon should redefine and assign the roles and missions of close air support, arguing that interservice agreements and advances in helicopter technology have made existing doctrines obsolete. It is not a strong stand, as expressed by the subcommittee, but is one that is consonant with its parallel conclusion that there is a requirement for attack helicopters as well as fixed-wing airplanes.

At least one member of the subcommittee, a man with strong credentials in the area of military aviation, has filed a stern minority opinion. He is Sen. Barry Goldwater of Arizona, who believes the report should have insisted that the assignment of the CAS mission to USAF be reaffirmed by DoD. The heart of his argument is that the nation should not be asked to finance four tactical air forces—Air Force, Army, Navy, and Marines.

During the hearings, Senator Goldwater occasionally intervened to emphasize his concern. He pleaded, in effect, for a clearer definition of the reason for the inquiry in the first place. His argument was that the subcommittee was not out to eliminate overlapping weapon systems, but to find out how many tactical air forces are needed. He expressed it this way:

"I will always admit that the queen of the battle is the Army and you never can win a battle unless somebody sticks a flag in the ground and says, 'This belongs to me.'

"Nor is any airplane pilot going to do that, nor is anyone at sea. I hope we can all keep that in mind, whether we have an Air Force background, Army, Navy, or Marine.

"But in my opinion this is the guts of this whole thing, whether next year we can go before the Senate and the House and defend the costs of the four different tactical air arms. This is the whole problem we have."

On the subcommittee, the Goldwater view turned out to be different from that, for example, of Sen. Strom Thurmond of South Carolina. Both men have been Reserve officers, Mr. Goldwater in USAF, Mr. Thurmond in the Army.

Mr. Thurmond made it clear he would not agree to elimination of the Army's air arm; he said it is the "least duplicative." On this issue, he coaxed General Williams to be more responsive and succeeded in getting the latter to say that the term "separate air force" does not apply to the Army's effort.

"The helicopter is integrated throughout Army combat formations in the same manner as other equipment and weapons," General Williams testified. "It is considered as just another tool with its own distinct capabilities for doing traditional land battle tasks. It is not fought as an air force. It is completely distinct from airpower.

"Furthermore, from a hardware standpoint, the helicopter is distinct in its operating capabilities from the jet fixed-wing fighters which perform the classic close air support function in the other three services.

"To delete it would be to pinch off the least duplicative and the most unique of the aircraft in the close-support equation and deny the Army the ability to capitalize on technology for significant advances in the art of land warfare."

At another point, under questioning by James T. Kendall, chief counsel of the subcommittee, the Army spokesman responded to a reference to the 1970 agreement between USAF Secretary Robert C. Seamans and Army Secretary Stanley R. Resor that recommended continued development of both the A-X and the Cheyenne.

That document, General Williams said, "says the Air Force has a primary responsibility. Primary does not connote totally. The Air Force has many responsibilities, and I certainly hope that primary among those responsibilities will always be close air support. I certainly hope it never becomes a secondary and a second-class role for the Air Force. It has a primary responsibility providing close air support, but it does not give the Air Force the total role or the exclusive role."

Is the General satisfied with the present division of roles and missions, with USAF on fixed wings and the Army on rotary wings?

"That is correct," General Williams said.

Mr. Goldwater, in his minority opinion, declares, "It is mandatory that the Air Force have the full support of all branches of the service in recognizing that the Air Force and it alone should be charged with the responsibility of providing close air support."

The Senator contends that the Unified Commander calls on each service to contribute "the force in which it is expert" to make up his team for battle. He said this is most economical and effective. On top of that, he argues that the helicopter is vulnerable—the Army contends this is not necessarily so—and that it could not survive in a sophisticated battle environment, *e.g.*, in Europe.

In Mr. Goldwater's opinion, the only purpose of the helicopter gunship is for the CAS mission, and it should be terminated. In this, he disagrees with the majority.

Another person the Senator disagreed with was David Packard, Deputy Secretary of Defense, who was the lead-off witness, last October 22. Mr. Packard has since retired, but then was in the spotlight because of his Pentagon responsibility to resolve an issue defined by Congress.

The background on this goes back to the House Appropriations Committee report on the Fiscal 1971 Defense Appropriations Bill. That was dated October 6, 1970. In it, DoD was told Congress would not continue to fund the A-X, the Cheyenne, and the Harrier. The report demanded a review of the situation and a new program that required fewer types of aircraft. This burden was dumped on Mr. Packard's desk and resulted in a report, called the Packard Report, that failed to resolve the issue. Instead of deciding which system, or systems, to eliminate, the Packard Report called for continued development of all three. The disappointment on Capitol Hill spread from the House, where the demand originated, over to the Senate, where the Armed Services Committee is becoming equally agitated by such issues.

On the stand before Senator Cannon's group, Mr. Packard stood firm. He said his review group found each of the three aircraft has "really important characteristics," but they cannot be fully determined without "detailed

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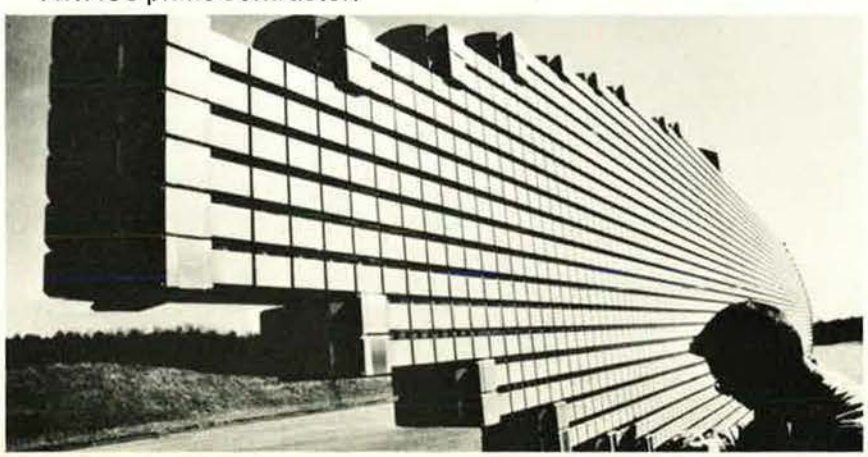

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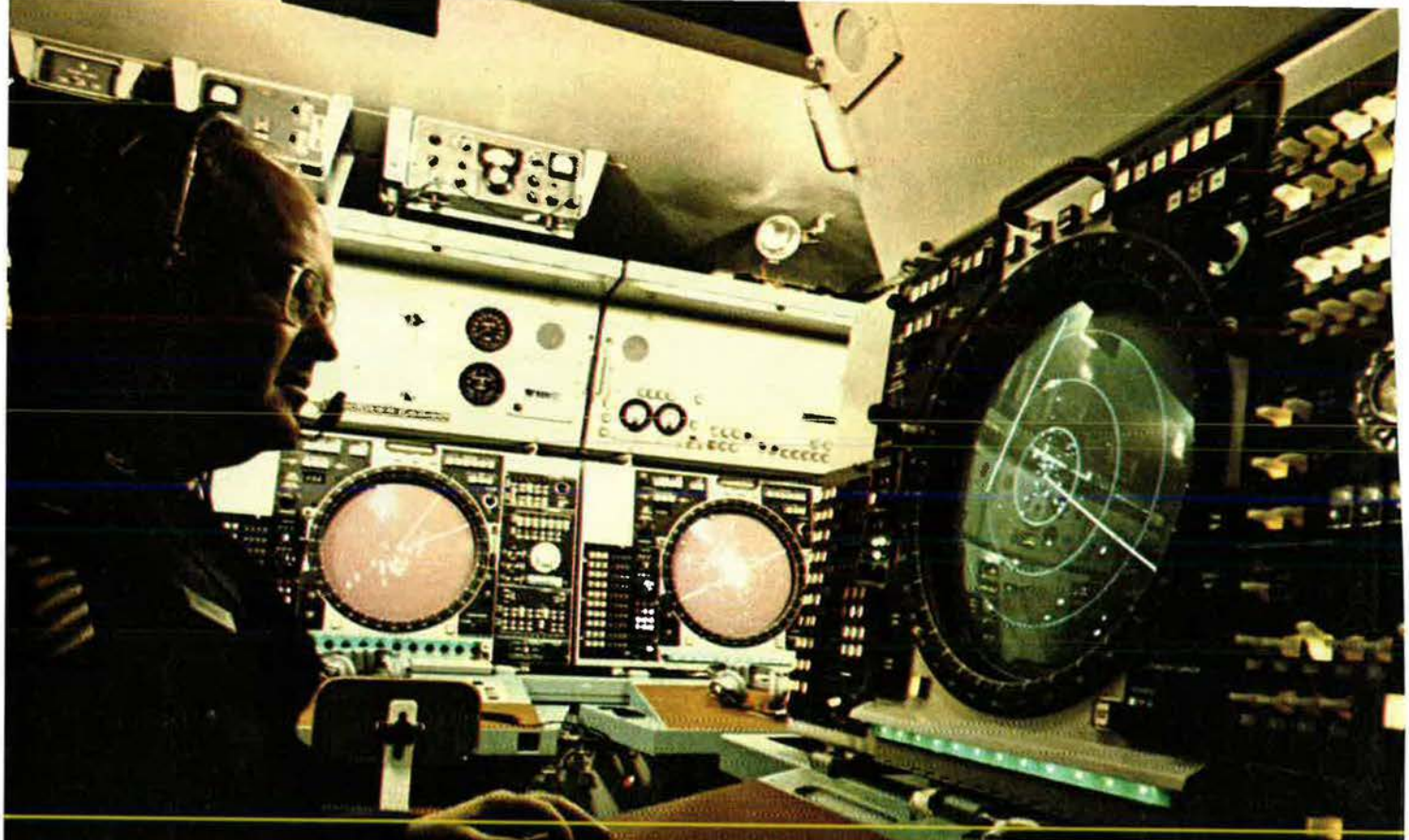

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testing programs." The subcommittee report was more precise. It says the Packard study had a primary defect. It examined the needs for CAS by war-gaming several scenarios of possible conflicts. The trouble is one common to all computerized systems analyses—the simulation of battle was grossly oversimplified.

Says the subcommittee report:

"The simulations basically were one-on-one studies; that is, they pictured one airplane attacking one tank defended by one antiaircraft gun. Systems analysis is unable to cope with all the myriad complexities of the battlefield.

"Omitted were the effects of enemy fighter aircraft, suppression of enemy air defenses, SAM missiles, tactical electronic countermeasures, and the fact that many aircraft will be making multiple passes at a host of enemy targets, while flying through a barrage of antiaircraft fire," the report declares.

This entire subject of enemy antiaircraft defenses was explored in depth. One entire day was spent taking testimony from witnesses for the Defense Intelligence Agency and one of the Army's experts on Soviet ground forces. Out of this, the subcommittee concluded that a war in Europe will find CAS pilots up against severe ground fire. It will come from light, hand-held weapons, heavy antiaircraft fire, and SAM missiles.

"One of the most potent threats," the report says, "is the Soviet Quad-23, a self-propelled 23-mm gun with four barrels mounted on a tank chassis and with radar fire control." This is one of the weapons ground into the Defense Department's computer analysis, with the assumption that an airplane will face fire from only one Quad-23.

It is not a reasonable assumption, particularly to the man in the cockpit. He faces a complex survival problem. The light weapons mentioned above produce a barrage up to 3,000 and 4,000 feet of altitude. The Quad-23 is credited with a 10,000-foot range. The 57-mm gun does better than that, and the SAM missiles outrange the guns by a wide margin. The computer that does not know this, and that the mix of weaponry cannot be forecast, is a computer that cannot give the right answers.

So far as USAF is concerned, it was competently represented by General Momyer, who aired his own problems on the witness stand for one entire day. At least one Senator, Thomas J. McIntyre of New Hampshire, said for the record that the CAS mission should be taken away from USAF. He contends, despite Army testimony to the contrary, that "truthfully the Air Force was completely unable to solve the problem of close-in support with fixed-wing aircraft such as we hope the A-X will be. The helicopter came to the fore as a gunship and took over what I consider to be a mission that probably the Army should have anyway."

Senator Cannon, the chairman, said he would challenge that statement "completely."

When General Momyer got on the stand, he went all the way. Not only did he express concern about losing part of the mission, as quoted earlier, but he said a Cheyenne, used for killing tanks, is exercising airpower, and that is USAF's mission, not the Army's.

If the Cheyenne helicopter were made organic to the Air Force, how would he use it?

The TAC Commander replied that he did not consider

Lt. Gen. Robert R. Williams, US Army, is in charge of force development.

Gen. William W. Momyer, USAF, heads the Tactical Air Command.

AN ELECTION DAY DECISION

Covering the issue of roles and missions in the CAS wrangle, the record includes a long list of laws, agreements, directives, publications and simple statements spread over the years since 1947.

The background of one of these, an agreement reached on November 4, 1952, by Army Secretary Frank Pace and USAF Secretary Thomas Finletter, was discussed before the Cannon subcommittee by the Army's Lt. Gen. R. R. Williams. The agreement is the one that defined Army organic aircraft as helicopters or fixed-wing airplanes with an empty weight of not over 5,000 pounds.

General Williams pointed out that the agreement was dated on Election Day of 1952, and said, "Had it not been Election Day, we might have had a different weight limitation."

He said the two Secretaries had been ordered to set a weight limit to make sure the Army did not expand into the TAC's airpower bailiwick. Then:

"Two action officers, of whom I was one, struggled valiantly trying to find some means of drawing a line of demarcation and we tried lots of rules and ways and we couldn't come up with one and the deadline was such that the two Secretaries insisted upon signing it before the election returns were in because they didn't want to take a chance on signing it after they were lame ducks.

"And in the pressure of the meeting that morning with the two Chiefs of Staff and two Secretaries they said, 'Well, let's take weight.'

"In trying to derive a weight, the Secretary of the Air Force said, 'What's the heaviest fixed-wing aircraft we [the Army] have now?' I said, 'Four thousand pounds.'

"He said, 'This will only be good for one year, so we will give you a 1,000-pound weight growth and let them worry about that after that.'

"That is the derivation of the figure."

the Cheyenne suitable for CAS. The A-X is the proper weapon. He does agree that the development programs should be continued until field tests can be held.

General Momyer was even more forceful when challenged on the stand by Senator Thurmond. The Senator wanted to "establish the premise" that the Army is justified in using helicopters for certain CAS purposes.

The General would not accept this premise. He insisted that CAS is a USAF mission, thus:

"We have demonstrated the professional ability to accomplish the task, and we possess aircraft to do the job. The A-X is being proposed as the optimum vehicle for CAS in the future. I believe the Army must depend upon the Air Force for the primary mission of close air support.

"Existing Army gunships should be considered for use in a permissive environment with specialized forces tailored to those low-level wars, but the existence of these gunships does not establish a justification for the continued duplication of the Air Force mission.

"The Air Force is fully able to perform this role in a low-level war, and the A-X is designed to perform all aspects of the CAS mission, including those missions which the Army says are peculiar to the helicopter."

General Momyer, whose tactical air fighting experience goes back to World War II and includes a tour as Commander of the Seventh Air Force in Vietnam, readily acknowledged that his enthusiasm for the A-X concept represents a departure from former USAF positions. After reviewing some of the history of CAS and how the mission was performed in Southeast Asia—with emphasis on centralized control of airpower—he put his finger on the departure represented by the A-X proposal.

In the past, USAF has developed planes, particularly TAC airplanes, with the idea that they had to serve more than one purpose. All current fighter and attack aircraft have the capability to provide CAS. Looking at the possible problem in Europe over the next few years, however, the General sees the probability that he would have a shortage of high-performance planes to deal with the Soviet threat. He said:

"It didn't appear logical that we could divert the aircraft for close air support. If we couldn't gain air superiority . . . or [at least] air parity . . . it didn't make any difference what the composition of the Air Force was going to be . . . we wouldn't survive."

USAF's new air-superiority fighter, the F-15, could not be diverted to CAS in the European atmosphere. About forty percent of the time the weather gives the pilots less than 4,000 feet and two miles of visibility.

As for other planes in the TAC inventory, General Momyer talked about how he had used the F-4, F-100, A-37, and A-1 for CAS missions in South Vietnam, when all the missions were for that purpose. Then the subcommittee expressed interest in the newer A-7D, the "Short Little Ugly Feller" whose capabilities were discussed in the March issue of this magazine by Capt. Thomas G. Ryan,

THE WAYWARD PRESS

J. L. Robertson

J. L. Robertson, Vice Chairman of the Board of Governors of the Federal Reserve System, recently addressed a meeting of the Independent Bankers Association of America in Florida. His topic was "The Credibility Crisis." Here is an extract from his remarks:

Credibility is what I want to talk about today. We have heard a lot about credibility gaps in recent years. Our society is suffering from a credibility crisis. It affects the political world and the business world. It is a grave problem for our communications media. Our educational institutions and even our family life are touched by the growing lack of trust and confidence.

Some efforts have been made to augment credibility in the business world by enacting legislation. You in the banking business have been touched by this through the Truth in Lending Act, which has been under my wing from its inception. We are now seeing a major governmental effort to get a higher degree of truth in advertising. . . .

I do not know whether this drive for truth in advertising will ever get to the point where a certain newspaper is asked to prove that it really gives its readers "all the news that's fit to print," or whether a certain magazine will be asked to provide the statistics that will show that it really is "the world's most quoted news weekly." Probably not.

One of the strange facets of the tell-the-truth campaign is that it has the enthusiastic support of most of the mass media, as long as it does not apply to them. The media agree that you bankers should be scrupulously honest in informing your customers about your interest charges. At the same time, some of them contend that "freedom of the press" gives anyone who has access to a printing press or a microphone the right to lie and deceive, even if those lies are part of an effort to incite people to perform illegal acts, such as blowing up banks. . . .

We find the communications media being used to undermine the credibility of everyone who represents authority, whether it be the government official, the business leader, the police, the school teacher, or the mere parent. In turn, the credibility of the media is called into question, and the public regards with increasing skepticism what they are told by the press and the broadcasters. An ace political correspondent of the Washington *Post* put it this way:

> The measure of the failure of the newspapers is the open skepticism and even derision with which they are viewed by their customers. The press has as big a credibility gap as any institution in this society.

A well-known liberal academic, with extensive experience in high government positions, Daniel Patrick Moynihan, has voiced deep concern

one of its pilots. The aircraft's weapon delivery capability is winning plaudits from USAF, and the subcommittee later devoted another day of hearings to a report on what it can do.

General Momyer had high praise for the automatic bombing accuracy of the A-7D, but he said that in terms of basing flexibility, maneuverability, and survivability, it is not as suitable as the A-X for the CAS mission.

The subcommittee heard a more glowing report from other USAF witnesses. One of them was Col. Thomas M. Knoles, commander of the 254th Tactical Fighter Wing, who testified that the A-7D has excellent capability for CAS. He said it "is the best airplane for the close support role that the state of the art will provide us with today."

Colonel Knoles said his unit is training for the CAS mission with a regular requirement to work with the Army at Fort Benning, Ga., and Fort Bragg, N. C.

It took Senator Goldwater to make sure the subcommittee record did not indicate any endorsement of the idea that the A-7 should be procured in place of the A-X. At one point he asked General Momyer whether he would have liked the A-7D when he was running the Seventh Air Force. The reply was that if the Vietnam strife continued, the tired F-100s probably would have been replaced by A-7Ds and they would have been valuable in the Vietnam environment. Later, Mr. Goldwater said the A-7D had been discussed because it has vastly improved bombing accuracy, "but it never has been suggested by any witness that these A-7s replace the A-X."

Regardless of what Mr. Goldwater said, the subcommittee report certainly raises the possibility. Says the report:

"The A-X program is well worthy of the prototyping approach to a new development. The subcommittee believes that a thorough operational test and evaluation of the A-X prototypes should be made so that the using command can provide recommendations on the relative suitability of the A-X for the close air support and interdiction missions.

"The subcommittee also recommends that this evaluation include a flyoff with the existing close air support aircraft, the A-7D and the A-4M, so that recommendations can result for the future balance in the force structure of these aircraft.

"The subcommittee recommends that additional A-7Ds should be procured to keep the production line open in the interim period until this flyoff can be made and this force structure question resolved."

A footnote says Senator Symington does not concur in the recommendation for procurement of additional A-7Ds.

At this writing, the issue of what to do about CAS appears to be on the shelf until the Senate Armed Services Committee is prepared to report on the Defense Authorization Bill for Fiscal 1973. There is no secret about the fact that there have been strenuous differences of opinion among members of Senator Cannon's subcommittee, long arguments and clashes of both will and opinion. Even more opinions can be expected from the parent committee, headed by Sen. John Stennis. The authorization report will reflect the final verdict.

So far, it does not appear that anyone in authority, at the Pentagon or on Capitol Hill, has been goaded into the kind of drastic action demanded eighteen months ago by the House Appropriations Committee. ■

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about the degree to which irresponsible behavior on the part of the news media is making it difficult for our government to perform its assigned tasks effectively. . . .

For example, virtually every country in the history of the world, including ours, has always placed high priority on maintaining its ability to defend itself against potential enemies. This priority was well stated by Adam Smith two hundred years ago when he wrote in *The Wealth of Nations:* "Defense is much more important than opulence."

When Smith wrote those words, no one enjoyed much opulence in terms of present-day standards. It is shocking that in a society that has more motor cars, television sets, air conditioners, etc., etc., per capita than any country in the world, the cry is going up that we cannot afford to spend the money required to provide ourselves with an adequate defense against our potential enemies.

We are told that we must reorder our priorities and that national defense must be shoved far down the list. This is not just the cry of some "lunatic fringe." It is a theme that is put forward by serious contenders for high political office. It is supported by influential newspapers and by some of the most influential voices heard on that powerful medium, network television.

I do not question their motives, but I do question their judgment, and I am shocked by some of the methods that they employ to influence public opinion. Let me cite a couple examples of the methodology.

A few months ago one of the best-known TV commentators in the country told his vast audience that *two-thirds* of the regular tax income of this country was spent on the military. He compared this unfavorably with the old state of Prussia, which he said was criticized around the world for spending *half* of its income on the military. The implication was that the United States is more militaristic than Prussia was in its heyday.

The statistics used by this commentator were incorrect. In the last fiscal year, our expenditures on national defense amounted to a little over forty percent of the revenues of the federal government. This year it is estimated that defense expenditures will amount to less than thirty-six percent of federal revenue—a far cry from the figure of two-thirds used by the television commentator.

After his figures were challenged, the commentator attempted a lame justification which made little sense. He and his network refused to correct the misleading impression that was given to the estimated fifteen million people who heard the original broadcast. They refused to even acknowledge the fact that a far more valid measure of the relative defense burden carried by different countries is the ratio of defense expenditures to GNP. They have not informed their audience that in the last fiscal year the total defense expenditures of the United States amounted to just a little over seven percent of our GNP, the lowest this ratio has been for many years.

The commentator in question makes no bones about the fact that in his judgment the United States spends far too much on defense. He is one of those who wants to see our priorities drastically reordered. He appears to overlook the fact that it will not be Americans who reorder our priorities if we so weaken our defenses that we are unable to protect ourselves from an attack. However, he is entitled to his judgment. What he is not entitled to do, in my opinion, is to use his privileged position as a national television commentator to persuade others of the correctness of his judgment by feeding them false information. ■

Aerospace World

News, Views & Comments

By William P. Schlitz

ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE

WASHINGTON, D. C., APRIL 11

The Department of Defense has picked a prime contractor to develop a prototype demonstration program for Site Defense of Minuteman (SDM) intercontinental missiles.

The SDM program is to produce ballistic missile defense components that could be deployed to augment the Safeguard ballistic missile defense system, should the Soviet threat to Minuteman go beyond the capability of the Safeguard defense.

Under the contract, McDonnell Douglas Astronautics Co., Huntington Beach, Calif., was awarded an initial $10 million for the first five months of a sixty-month, cost-plus-incentive-fee contract in the amount of $382 million.

According to DoD, the entire demonstration program could cost between $700 million and $800 million, including funds for government-furnished missiles, and system engineering and technical assistance.

Under the SDM program will be design and fabrication of a prototype radar, linkup of commercial computers for data processing, and integration of a modified Sprint interceptor missile (a Martin Marietta Corp. modification).

The prototype equipment will be installed and tested in the late 1970s at the Kwajalein Missile Range in the Pacific, site of Safeguard tests currently under way.

Assisted by GE, TRW, Braddock, Dunn and McDonald, Inc., Control Data, and GTE, Sylvania, Inc., McDonnell Douglas was selected following a five-month contract definition period. It edged out Raytheon and Hughes Aircraft Co.

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At the end of March, more than 2,200 AFROTC cadets and Angels from institutions of higher learning around the country met in Dallas, Tex., at the twenty-fourth annual Arnold Air Society Conclave. The AAS is the national professional society of AFROTC, and an AFA affiliate.

Many high-ranking Air Force officers attended the Conclave as honored guests. AFA's President Martin M. Ostrow and Executive Director James H. Straubel participated.

After opening ceremonies, the delegates settled quickly into business meetings. West Virginia University was selected as next year's national headquarters chapter. Salt Lake City will be the site of 1973's AAS Conclave.

As for major projects to be undertaken by the Society next year, the delegates voted that, while efforts on behalf of MIA/POWs would be continued, the Society also would initiate a campaign to recruit additional membership.

In national awards ceremonies, the following were honored by the Society:

- Gen. John D. Ryan was awarded the General H. H. Arnold Trophy, given to a member of the USAF for an outstanding contribution to military aviation and aerospace progress.
- David Packard, the Paul T. Johns Trophy for outstanding contribution to aeronautics and astronautics. Mr. Johns was the first National Commander of AAS.
- Capt. David G. Francis, from Arnold Engineering Development Center, Tenn., the General Hoyt S. Vandenberg Trophy for outstanding scientific contributions to aerospace technology.
- Col. Thomas Lamb, Director, AFJROTC, the General Muir S. Fairchild Trophy for outstanding contributions to aerospace education.
- Brig. Gen. Jeanne M. Holm, the Eugene M. Zuckert Trophy for outstanding professionalism.
- The Apollo-15 crew—USAF's Col. David R. Scott, Lt. Col. Alfred M. Worden, and Col. James B. Irwin—the John F. Kennedy Trophy for outstanding contributions to aerospace flight.
- Capt. Richard Merrill, air traffic controller, Castle AFB, Calif., the Lieutenant Theodore C. Marrs Trophy to a junior USAF officer showing outstanding leadership and initiative during his commissioned service. Lieutenant Marrs died in service in 1918.

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AFRES units at eight locations in

AIR FORCE LOGISTICS COMPUTERS

The government is upgrading the Air Force Logistics Command's computer support. The seven-year, $80 million project will enable AFLC "to implement new and advanced management techniques" that are expected "to result in substantial savings over the life of the system when compared to current methods of operation," DoD said.

Control Data Corp., Minneapolis, Minn., is to provide one medium and six large computer systems for the program—known as the Advanced Logistics System (ALS). These will "utilize very high capacity on-line storage devices for logistics and management data to support the logistics system operation at seven locations and will replace approximately ninety computers currently operated by AFLC," officials said.

ALS computer systems will be installed at AFLC headquarters at Wright-Patterson AFB, Ohio, and its Air Materiel Areas located at Tinker AFB, Okla.; Kelly AFB, Tex.; McClellan AFB, Calif.; Robins AFB, Ga.; Hill AFB, Utah; and at the Nuclear Ordnance Supply System at Kelly.

The contract to Control Data was awarded by the General Services Administration.

An Almanac Issue report on AFLC's area of responsibility begins on p. 84.

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AIRCRAFT ENGINE GROUP

GENERAL ELECTRIC

SCIENCE/SCOPE

Flight testing is underway for AWACS, the U.S. Air Force's Airborne Warning and Control System. The system's 3-D radar is designed for vital roles in air-surveillance and command-and-control missions, and will be capable of long-range detection and tracking of enemy aircraft through dense ground and sea "clutter". Two competing systems, one built by Hughes, are being flown aboard two basic Boeing 707-320B aircraft modified to carry a giant radome mounted on struts above the fuselage.

NASA's Pioneer F spacecraft, now speeding along a curving, 600-million-mile path to Jupiter, carries an imaging photopolarimeter (IPP) and an infrared radiometer built by Santa Barbara Research Center, a Hughes subsidiary. Foremost task of the IPP will be to take 10 color pictures of the giant, mysterious planet during the last 20 hours before its closest approach, starting when it is 800,000 miles away. The pictures will be taken from viewing angles impossible to photograph from earth. One of the radiometer's tasks is to determine whether Jupiter has an internal energy source which causes it to radiate more energy than it receives from the sun, thus behaving something like a small star.

The transportable earth station that linked Peking with the world during President Nixon's historic mission was built by Hughes. It has now been flown back to Hughes headquarters in Southern California, where it is being converted from a satellite communications station to a satellite tracking and control station. Following a satellite launch, the unit will provide telemetering and command data essential to the precise positioning of the satellite in space.

Two weeks ahead of schedule, Hughes delivered the first Phoenix missile under its pilot production contract with the U.S. Navy. Air-to-air Phoenix missiles will be carried aboard the Navy's new F-14 fighter aircraft, "Tomcat", which will also carry the Hughes-developed AWG-9 airborne weapon control system.

A computer concept for 1975-85 spacecraft is the object of a Hughes design study now underway for NASA's Astrionics Laboratory. The new computer must be adaptable to manned launch vehicles and unmanned interplanetary spacecraft, which require high component reliability but low computation rates. It must also meet the requirement of large manned earth or lunar orbital stations for very high computation rates but relatively low component reliability. The computer must be "reconfigurable" (i.e., able to respond to the differing requirements of launch, boost, orbit, and coast), and have a life expectancy of at least five years.

TOW anti-tank weapon systems will be purchased from the U.S. Army Missile Command, Huntsville, Ala., by the German Ministry of Defense. The contract follows extensive German Army tests of the wire-guided missile from armored personnel carriers, ground launchers, and helicopters. The Royal Netherlands Army and the Government of Iran will also equip their anti-tank units with TOW. The missiles are now being delivered to the Army in quantity from Hughes' Tucson, Ariz. plant.

the US are undergoing realignment to be equipped with more modern aircraft.

Joining the AFRES inventory will be the F-105 Thunderchief, the first century-series fighter-bomber to do so. With the conversion of three C-124 units to the F-105, the C-124 will be phased out of the AFRES airlift force.

The 904th Military Airlift Group, Hamilton AFB, Calif., began converting to C-130B Hercules transports from C-124s in April, and is redesignated the 904th Tactical Airlift Group. The changes result in a decrease of seventy drill pay spaces and an increase of nineteen Air Reserve technicians/civilians.

The 940th Tactical (formerly Military) Airlift Group, McClellan AFB, Ga., also began to trade its C-124s for C-130s in April. Drill pay spaces will decrease by seventy-nine and technician/civilian slots will increase by five.

The 94th Tactical (formerly Military) Airlift Wing headquarters will relocate from L. G. Hanscom Field, Mass., on July 1, to Dobbins AFB, Ga. Drill pay spaces will increase by thirty-two and technician/civilian slots by two.

The 901st Tactical (formerly Military) Airlift Group, also L. G. Hanscom Field, will trade its C-124s for C-123Ks this fall. With wing headquarters relocating, it will lose thirty-four drill pay spaces and six technician/civilian posts.

AFRES plans to activate a C-130-equipped unit at Keesler AFB, Miss., next spring. It will be authorized 595 drill pay spaces and 317 technician/civilians.

The 937th Military Airlift Group, Tinker AFB, Okla., is currently trading its C-124s for the F-105s. It will be redesignated the 507th Tactical Fighter Group and will add 121 technician/civilian spaces and lose eleven drill pay spaces.

Also trading C-124s for F-105s this summer will be the 916th Military Airlift Group, Carswell AFB, Tex., and that unit is to be redesignated the 506th TFG. It will gain sixty-three drill pay spaces and 133 technician/civilians.

Early in 1973, the 945th MAG, Hill AFB, Utah, will replace its C-124s with F-105s and be renamed the 508th TFG. The unit will net 102 technician/civilians and 177 drill pay spaces.

Maj. Gen. Robert N. Ginsburgh, recently named Director of SAFOI.

Brig. Gen. Slade Nash, newly appointed Deputy Director of SAFOI.

Maj. Gen. Robert N. Ginsburgh has been named Director of the Office of Information, Office of the Secretary of the Air Force. General Ginsburgh, himself the son of a USAF brigadier general who was once Deputy Director of Information, has been serving as Chief of the Office of Air Force History. He is a graduate of the West Point class of 1944 and holds both master of arts and doctorate degrees from Harvard University.

As his deputy, USAF has appointed Brig. Gen. Slade Nash, another West Pointer (1945), and former test pilot. In 1952 General Nash set a world speed record in the F-86D. His most recent service has been as Vice Director, Defense Special Projects Group, at the Naval Observatory in Washington.

General Ginsburgh replaces Maj. Gen. H. L. Hogan III, and General Nash replaces Brig. Gen. Thomas P. Coleman, both of whom are retiring.

General Ginsburgh's father was Brig. Gen. A. Robert Ginsburgh, who became a member of the Pentagon press corps, after retirement, as Military Editor of *U.S. News & World Report* magazine. The elder General Ginsburgh was killed, with a number of other reporters, in the crash of a KC-135 tanker at Westover AFB, Mass., in 1958.

His son started his Army career as a field artillery officer and transferred to USAF in 1949. Since then, he has graduated from the Air Command and Staff College at Maxwell AFB, Ala., as well as the National War College. He has been attached to the office of the Assistant Secretary of Defense for Public Affairs, served as an assistant executive to two USAF Chiefs of Staff and on the Policy Planning Council of the State Department. At the White House, he was Armed Forces Aide to President Lyndon Johnson, and later became Commander of the Aerospace Studies Institute at the Air University.

General Ginsburgh has many published writings. His wife is the former Gail H. Winslow. They have six children.

General Nash is an experienced tactical fighter pilot. More than twenty years ago he was assigned to the Flight Test Center at Edwards AFB, Calif., where he helped in the development of air defense jet interceptors. He also has been in command of tactical units abroad and flew 149 combat missions in the F-4 from Thailand. He was Vice Commander of the Air Defense Weapons Center at Tyndall AFB, Fla. General Nash is a command pilot with more than 6,000 flying hours.

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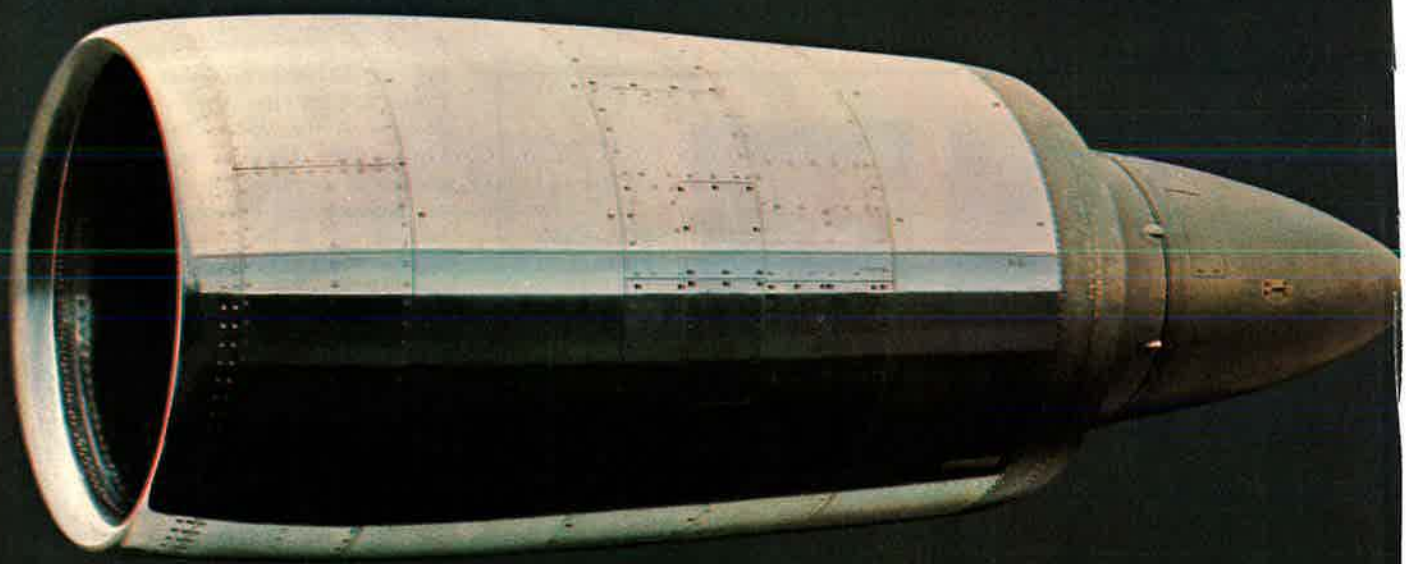
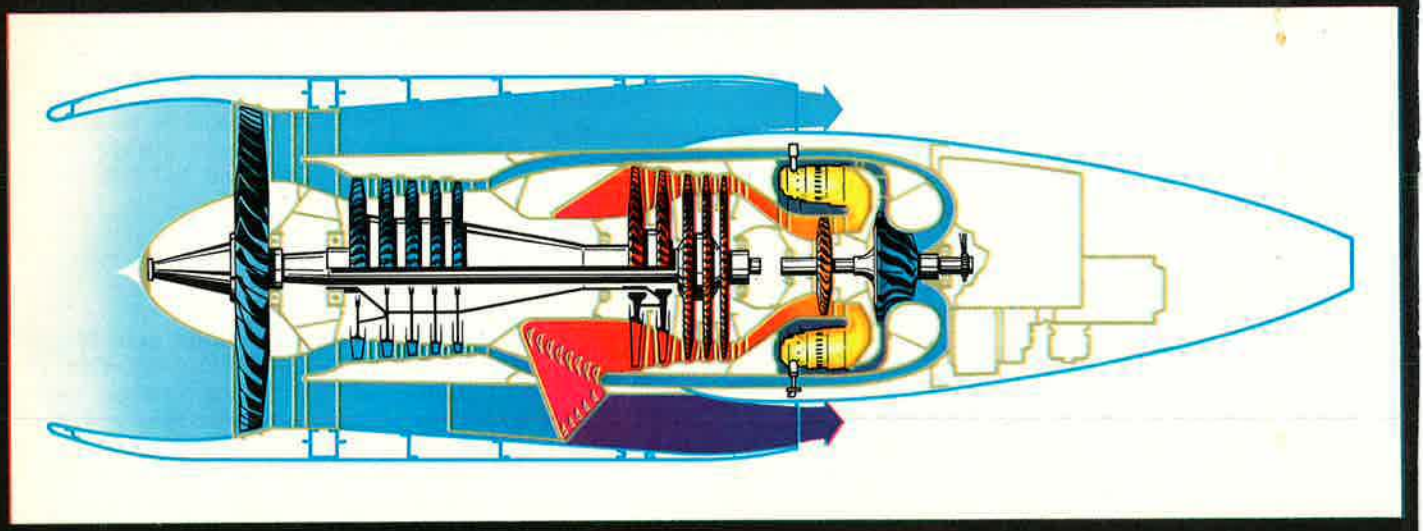
Placed on the retired list as of May 1 is Gen. Bruce K. Holloway, Commander in Chief of the Strategic Air Command since August 1968.

Replacing General Holloway in the top spot at SAC is Gen. John C. Meyer, formerly USAF Vice Chief of Staff. (*The special Almanac Issue*





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report on SAC begins on p. 56 of this issue.)

General Holloway's career dates back to graduation from the US Military Academy in 1937. His assignments have included Director of Operational Requirements, Hq. USAF; Deputy Commander in Chief, US Strike Command; Commander in Chief, US Air Forces in Europe; and Vice Chief of Staff, USAF. During World War II, General Holloway served in China as a "Flying Tiger" with Chennault's American Volunteer Group and remained with that group when it was activated as the AAF's 23d Fighter Group. He later commanded the 23d and during his tour in China was credited with shooting down thirteen enemy aircraft.

General Meyer previously held posts in SAC as an Air Division Commander from 1959 to 1962, and Deputy Director of Plans at Hq. SAC from July 1962 to October 1963. Also a fighter ace, he is credited with thirty-nine and one-half enemy aircraft destroyed during World War II and the Korean conflict.

Vice Chief of Staff since August 1969, General Meyer has served as Commander, Twelfth AF, TAC, and Director of Operations, J-3, the Joint Staff.

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As does USAF, the 2d Air Division Association also celebrates the twenty-fifth anniversary of its founding this year. The 2d Air Division of the Eighth Air Force was headquartered in Norwich, England, during World War II.

In mid-May, many association members will travel to Norwich, where they will participate in commemorative ceremonies at the Norwich Library's American Room, built and maintained with funds contributed by 2d Air Division personnel in 1945.

The 1,000-square-foot American Room, dedicated in June 1963, is a living memorial to those American airmen who lost their lives while based in Britain during the war. It contains well over 3,000 volumes donated through the perpetual trust established by the association. At May's reunion, members plan to add several hundred more books to the collection.

Unique in the courtyard entrance to the American Room is a beautiful fountain, the base of which is a

Joe Foss, former Governor of South Dakota and WW II ace, has been appointed Director of Public Affairs for KLM Royal Dutch Airlines. A long-time AFA member and former President, Mr. Foss will reside in Washington, D. C.

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mosaic composed of colorful rocks that have come from all fifty states and from all of the United States service academies.

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In this year of the Air Force's silver anniversary, many commands and USAF facilities are also planning special tributes. Among them:

• Former members of the Air Transport Command will celebrate its thirtieth anniversary at Las Vegas, Nev., May 19–21. If interested, write James W. Austin, Hughes Tool Co., 250 Park Ave., New York, N. Y. 10017.

• Randolph AFB, Tex., plans three "Alumni Days" of commemoration June 16–18. All those trained at the base and their families are invited. Write "Alumni Days," Office of Information, 3510th Flying Training Wing, Randolph AFB, Tex. 78148.

• The Alaskan Command, with headquarters at Elmendorf AFB, will celebrate the founding of the US's oldest unified command June 28–30.

• Some 600 former WASPs (Women's Auxiliary Service Pilots) are celebrating with a Memorial Reunion at their old home—Sweetwater, Tex.—June 23–25. There will be an air base show, parade, a luncheon featuring Jacqueline Cochran (wartime commander of the WASP), and a dinner with Robert Cummings as master of ceremonies and Sen. Barry

Gen. John W. Vogt, Jr., newly appointed Commander of the Seventh Air Force, South Vietnam.

Gen. John D. Lavelle, previous Seventh Air Force Commander, retired in April.

NEW SEVENTH AIR FORCE COMMANDER

USAF Gen. John W. Vogt, Jr., who received his fourth star on the eve of the appointment, has been named Commander of the Seventh Air Force, with headquarters at Tan Son Nhut Airfield, Saigon. He replaces Gen. John D. Lavelle, who served in the post since July 1971.

General Vogt's selection was disclosed on April 7, as the North Vietnamese offensive into South Vietnam was well under way. The new Commander was shifted from a post as Director of the Joint Staff of the Joint Chiefs of Staff in the Pentagon. Until he was sent to the Seventh AF, General Vogt had been scheduled to become Chief of Staff for Supreme Headquarters of Allied Powers in Europe (SHAPE).

The new chief of the USAF air war in Southeast Asia has been a military pilot for thirty years. He has previously served in the Pacific, on the staff of the Commander in Chief, Pacific (CINCPAC), and in Japan. He has been a fellow at the Harvard Center for International Affairs.

General Lavelle, retiring "for personal and health reasons," has been in the service since 1939 and a pilot since 1940. Before taking over at Seventh AF, he was Vice Commander of the Pacific Air Forces (PACAF) in Hawaii.

Goldwater as speaker. In addition to the WASPs, thousands of spectators are expected. For information write Al Harting, Southwest Airmotive Co., P.O. Box 7086, Dallas, Tex. 75209.

☆

Defense Secretary Melvin R. Laird has ordered a task force to "identify the nature and extent of racial discrimination in the administration of military justice in the Armed Forces."

Specifically, the task force will identify and assess the impact of factors contributing to the disparity in punishment rates between racially identifiable groups as they relate to circumstances prior to entry into the military, and post-entry environment and conditions.

The task force also will look into those racially related patterns or practices that act adversely on the fair administration of military justice or respect for the law. One highlight of this will be a study of the circumstances existing before charges are initiated against a serviceman.

The task force is to report in July.

☆

By early 1973, the Air Force plans to have three additional squadrons equipped with the new A-7D.

The three squadrons of the 18th Tactical Fighter Wing are stationed at Kadena AB, Okinawa. Currently, two of them, the 44th and 67th TFS, fly F-4 Phantoms, while the 12th TFS is equipped with F-105 Thunderchiefs.

The A-7D is also serving with units at Myrtle Beach AFB, S. C., and Davis-Monthan AFB, Ariz.

Built by Vought Aeronautics Co., the A-7D is a subsonic aircraft designed primarily for a close air support role; it also has interdiction capabilities. Called SLUF (for "Short

Index to Advertisers

Aerospace World

Little Ugly Feller") by those who fly it, the aircraft has unique handling characteristics. For a firsthand report, see the March 1972 issue.

☆

The Air Force has initiated several new programs to bring about voluntary cuts in its manpower to bring it in line with Fiscal 1973 budget commitments.

The programs are designed to reduce USAF officer spaces by 4,900 and enlisted personnel by 8,494. By June 30, 1973, total Air Force strength will stand at 116,814 officers and 595,979 enlisted personnel.

In outlining its proposal, the Air Force said: "The early release or retirement provisions apply to nonflying support officers, except medical and legal officers, who are surplus to Air Force needs and who desire to leave active duty. Separation or retirement in lieu of reassignment, including assignment to Southeast Asia, will be allowed."

Newly promoted field-grade officers, who previously were required to serve two years in their new grade, will be allowed out after six months TIG. (Officers overseas must have served at least twelve months of their tours before release.)

"In the airman category," USAF said, "senior noncommissioned officers may retire in lieu of reassignment, and their two-year commitment for promotion to the top three NCO grades may also be waived." Six months TIG will be required for retirement.

Under the new programs, applications for release or retirement will be considered "according to Air Force needs on an individual basis," Air Force said.

☆

NEWS NOTES—Apollo-15's **Scott, Irwin,** and **Worden,** and NASA's Robert R. **Gilruth** are to receive the **Robert J. Collier Trophy** for 1971.

The fifth **Eurospace** (European industrial space study group) conference will be held in **San Francisco May 22–25.**

Four **SAC** B-52s will participate in the RAF Strike Command's **bombing and navigation competition** May 14–20 in England.

The twenty-sixth annual convention

of the **Armed Forces Communications and Electronics Association** will take place June 6–8 in Washington, D. C.

USAF recently announced that **AFROTC scholarships** had been awarded to a record number of **1,057 students** on some 173 college campuses.

NASA announced that it will use **solid-fuel rocket engines** in the recoverable booster stage of its **space shuttle,** currently under development. ■

Senior Staff Changes

Col. (B/G Selectee) Ranald T. Adams, Jr., from Asst. DCS/Ops, Hq. ADC, to Asst. DCS/Ops, NORAD/CONAD, Hq. ADC, Ent AFB, Colo., replacing B/G James M. Fogle . . . **M/G William W. Berg,** from Dir., Manpower & Organization, DCS/P&R, to Asst. DCS/Programs & Resources, Hq. USAF, replacing M/G Ernest T. Cragg . . . **B/G (M/G Selectee) Frederick C. Blesse,** from Asst. DCS/Ops, to DCS/Ops, Hq. PACAF, Hickam AFB, Hawaii, replacing M/G Robert L. Petit . . . **Col. (B/G Selectee) Rupert H. Burris,** from Dir., Comm-Electronics, Hq. ADC, Ent AFB, Colo., to Cmdr., Southern Communications Area, AFCS, Oklahoma AFS, Okla. . . . **B/G Joseph J. Cappucci,** from Dir. of Special Investigations, OTIG, and Cmdr., AF Office of Special Investigations, to Dir., Defense Investigative Service, Washington, D. C. . . . **M/G Martin G. Colladay,** from Asst. C/S, J-3, UN Cmd/US Forces, Seoul, Korea, to Vice Dir., Jt. Staff, OJCS.

B/G (M/G Selectee) Harold E. Collins, from IG, Hq. AFSC, Andrews AFB, Md., to Dir., Development & Acquisition, DCS/R&D, Hq. USAF, replacing William J. Evans . . . **M/G Ernest T. Cragg,** from Asst. DCS/Programs & Resources, Hq. USAF, to V/C, 2d AF, SAC, Barksdale AFB, La. . . . **Col. (B/G Selectee) Clyde R. Denniston, Jr.,** from Chief, Strategic Forces Div., Directorate of Aerospace Programs, to Dep. Dir., Aerospace Programs, DCS/P&O, Hq. USAF . . . **Col. (B/G Selectee) Walter D. Druen, Jr.,** from Cmdr., 1st TFW, TAC, MacDill AFB, Fla., to Chief, Air Security, MAAG, Teheran, Iran . . . **M/G Rene G. Dupont,** from Asst. DCS/P for Military Personnel, and Cmdr., AFMPC, Randolph AFB, Tex., to Asst. DCS/P, Hq. USAF, replacing M/G John L. Locke.

M/G William J. Evans, from Dir., Development & Acquisition, DCS/R&D, to Asst. DCS/R&D, Hq. USAF, replacing M/G Henry B. Kucheman, Jr. . . . **B/G John H. Germeraad,** from Dir. of Ops for Airlift, 7th AF, PACAF, Tan Son Nhut Airfield, Vietnam, to IG, Hq. MAC, Scott AFB, Ill. . . . **B/G (M/G Selectee) James V. Hartinger,** from Asst. DCS/Plans, to DCS/Plans & Programs, J-5, NORAD/CONAD, Ent AFB, Colo., replacing M/G William W. Wisman . . . **Col. (B/G Selectee) Richard C. Henry,** from Cmdr., 33d TFW, TAC, Eglin AFB, Fla., to IG, Hq. TAC, Langley AFB, Va. . . . **B/G Guy Hurst, Jr.,** from Cmdr., 23d Air Div., ADC, with add'l duty as Dep. Cmdr., 23d NORAD/CONAD Region, Duluth Int'l Airport, Minn., to Cmd. IG, Hq. ADC, Ent AFB, Colo. . . . **B/G John R. Kern, Jr.,** from Dep. Dir., to Dir., Manpower & Organization, DCS/P&R, Hq. USAF, replacing M/G William W. Berg.

M/G Henry B. Kucheman, Jr., from Asst. DCS/R&D, Hq. USAF, to Dep. Cmdt., Industrial College of the Armed Forces, Fort McNair, Washington, D. C., replacing retiring M/G Russell K. Pierce, Jr. . . . **Col. (B/G Selectee) Louis G. Leiser,** from Cmd. Dir., Cmd. Dir. & Crews, Dir./Ops & Training, NORAD/CONAD, Ent AFB, Colo., to Cmdr., 23d Air Div., ADC, with add'l duty as Dep. Cmdr., 23d NORAD/CONAD Region, Duluth Int'l Airport, Minn., replacing B/G Guy Hurst, Jr. . . . **M/G Homer I. Lewis,** Chief, USAFR, Washington, D. C., assigned further duty as Cmdr., AFRES, Robins AFB, Ga., with no change in duty station . . . **B/G Solomon E. Lifton,** from Cmd. Surgeon, Hq. AFLC, Wright-Patterson AFB, Ohio, to Cmd. Surgeon, Hq. AFSC, Andrews AFB, Md. . . . **M/G John L. Locke,** from Asst. DCS/P, Hq. USAF, to Cmdr., HEDCOM, USAF, Bolling AFB, Washington, D. C.

Col. (B/G Selectee) Robert L. Moeller, from V/C, to Cmdr., 437th MAW, MAC, Charleston AFB, S. C. . . . **M/G Arthur G. Salisbury,** from C/S, Hq. ADC, Ent AFB, Colo., to Cmdr., USAFSO, Albrook AFB, Canal Zone . . . **Col. (B/G Selectee) Carl G. Schneider,** from V/C, 314th Air Div., PACAF, Osan AB, Korea, to Asst. C/S, J-3, UN Cmd/US Forces, Seoul, Korea, replacing M/G Martin G. Colladay . . . **Col. (B/G Selectee) Richard H. Schoeneman,** from Cmdr., Task Force Alpha, PACAF, Thailand, to Asst. DCS/Ops, Hq. PACAF, Hickam AFB, Hawaii, replacing B/G Frederick C. Blesse . . . **B/G Robert V. Spencer,** from IG, Hq. TAC, Langley AFB, Va., to Cmdr., 832d Air Div., TAC, Cannon AFB, N. M. . . . **B/G Kenneth L. Tallman,** from Dep. Asst. DCS/P for Military Personnel, and Dep. Cmdr., AFMPC, to Asst. DCS/P for Military Personnel, and Cmdr., AFMPC, Randolph AFB, Tex., replacing M/G Rene G. Dupont.

Col. (B/G Selectee) William A. Temple, from Special Asst. to Cmdr., AF Office of Special Investigations, to Dir. of Special Investigations, OTIG, and Cmdr., AF Office of Special Investigations, Washington, D. C., replacing B/G Joseph J. Cappucci . . . **B/G Eugene F. Tighe, Jr.,** from DCS/Intelligence, Hq. PACAF, Hickam AFB, Hawaii, to DCS/Intelligence, Pacific Cmd., Pearl Harbor, Hawaii . . . **Gen. John W. Vogt, Jr.,** from Dir., Jt. Staff, OJCS, to Cmdr., 7th AF, and Dep. Cmdr. MACV for Air Ops, Tan Son Nhut Airfield, Vietnam, replacing Gen. John D. Lavelle, who has retired . . . **Gen. Horace M. Wade,** from C/S, SHAPE, Belgium, to Vice C/S, USAF, Hq. USAF . . . **M/G William W. Wisman,** from DCS/Plans & Programs, J-5, NORAD/CONAD, Ent AFB, Colo., to Special Project Officer, Static War, Hq. SHAPE, Belgium.

PROMOTIONS: To be **General:** John W. **Vogt,** Jr.

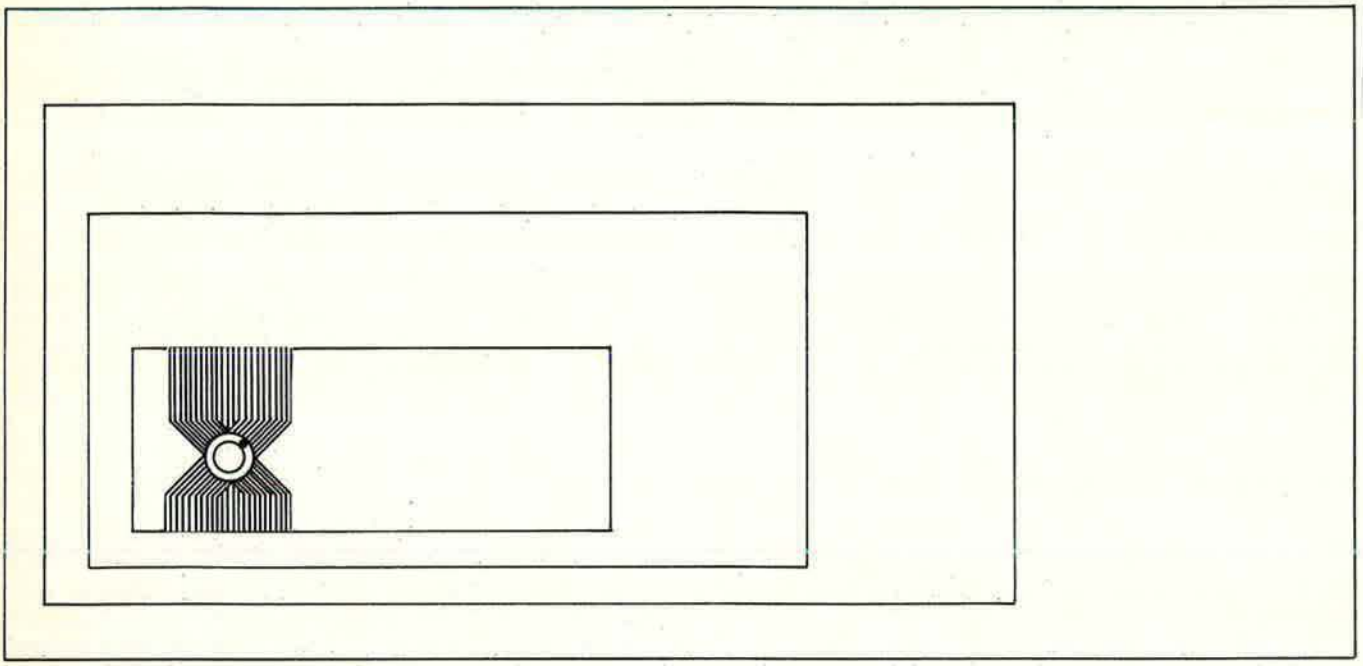
(Air Force Reserve) To be **Major General:** John W. **Hoff;** Robert B. **Mautz.** To be **Brigadier General:** Vincent S. **Haneman,** Jr.; Gilbert O. **Herman;** Edwin R. **Johnston;** William J. **Reals;** Joseph M. F. **Ryan,** Jr.

(Air National Guard) To be **Major General:** William C. **Smith;** Charles S. **Thompson,** Jr.; Joseph D. **Zink.** To be **Brigadier General:** William J. **Crisler;** Francis R. **Gerard;** Malcolm E. **Henry;** Ralph E. **Leader;** Paul D. **Straw.**

RETIREMENTS: Gen. John D. **Lavelle;** M/G Russell K. **Pierce,** Jr.; M/G Kenneth O. **Sanborn.** ■

Coming . . .

July AIR FORCE Magazine



AEROSPACE ELECTRONICS

a special report

In the July issue of AIR FORCE Magazine the editors are planning a series of reports on current and projected applications and requirements of Aerospace Electronics including:

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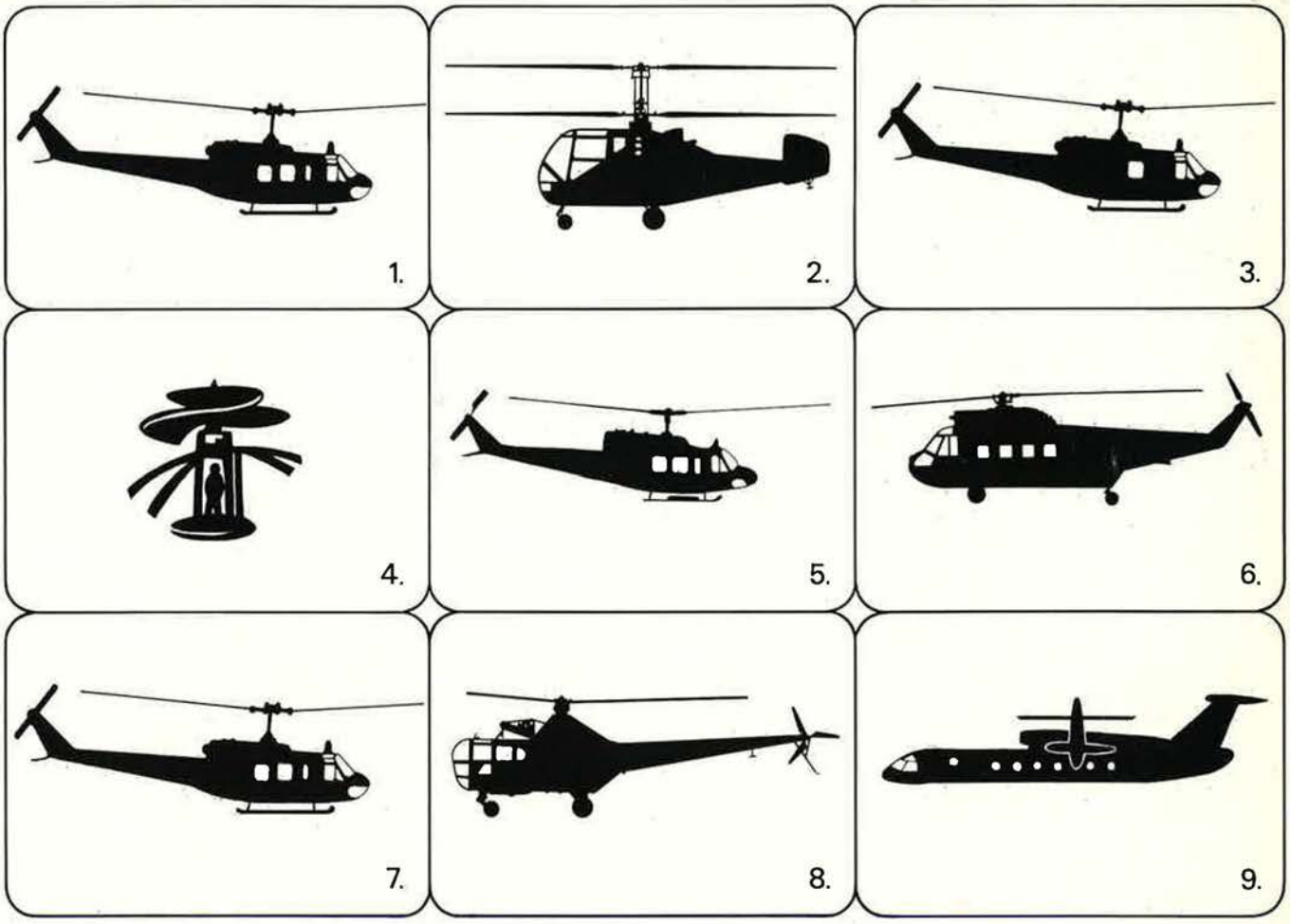

The Air Force chooses Numbers 1,3,5,7. They're made by Bell and they're all over the world. Performing all types of missions. **1. Bell's TH/UH-1F.** Since 1964, it's been used in missile support for SAC and training for MAC. **2. Russian Kamov K-17,** early version of the Kamov K-18. **3. The UH-1P.** The first Special Operations Force Helicopter for use in Southeast Asia. This Bell has been handling special missions since 1966. **4. DaVinci's Helio Screw.** Never got off the ground. **5. The UH-1N.** Bell's twin powered helicopter used by Special Operations Forces and in VIP/utility missions since 1970. Also allocated for local base rescue. **6. Japanese Mitsubishi S-62.** Coastal Patroller. **7. The Bell UH-1H.** Starting this year, it will be used as a replacement for local base helicopters for MAC. **8. British Westland WS-51.** Air-Sea Rescue. **9. The Bell Model 300.** A tiltprop rotor to power a concept demonstrator that will lead the way for the next generation of vertical takeoff and landing vehicles. This is the Bell that could open a whole new variety of roles and missions in the late 1970's Air Force.

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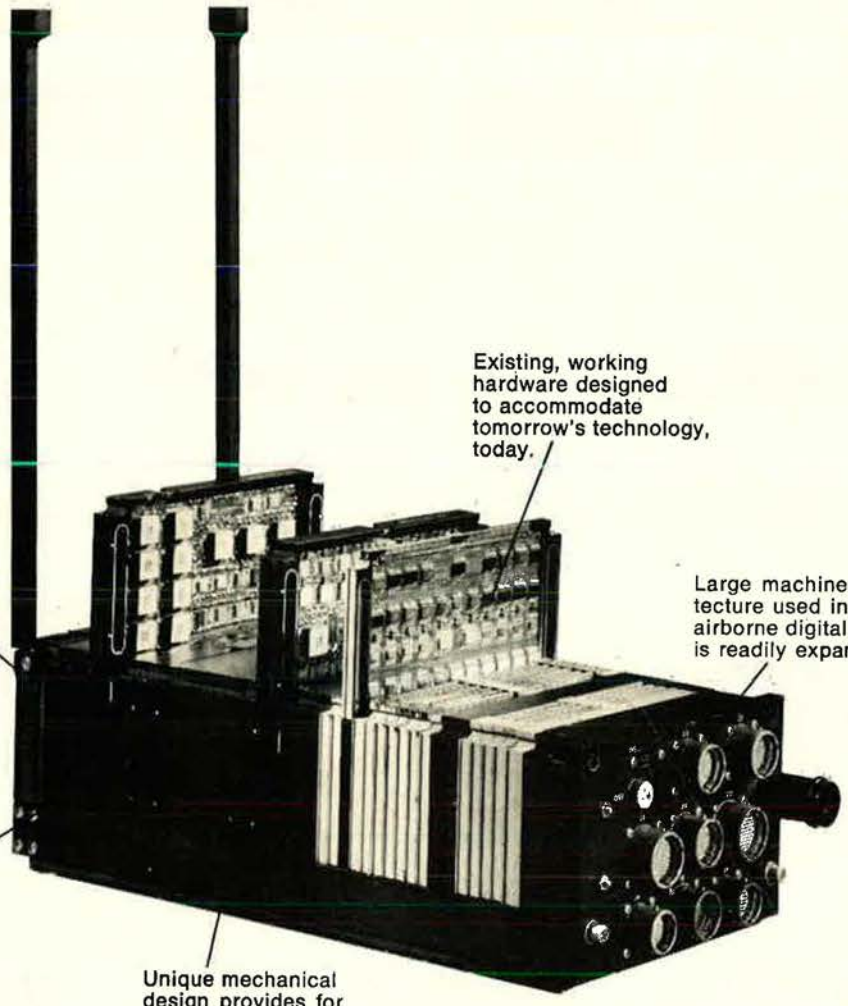

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Instructions	99 total long & short
Address Modes	Direct, indirect, relative, immediate
Average Execution Times For 1.9μ sec memory (LSI)	Add-2.125μ sec, multiply -5.875μ sec Divide -5.875μ sec
Memory words directly addressable	131,072

Interview with AFSC's Commander

The shape of tomorrow's Air Force is being determined today by the technologies and weapon systems under development by the Air Force Systems Command and aerospace industry teams. Two principal issues of current concern are the role of the intercontinental ballistic missile in the decades ahead and the Air Force's capabilities and contributions with respect to control of the sea and antisubmarine warfare. In an exclusive interview with AIR FORCE Magazine, the head of AFSC talks about . . .

STRATEGIC OPTIONS AND TOTAL FORCE CONCEPTS

By Edgar Ulsamer
SENIOR EDITOR, AIR FORCE MAGAZINE

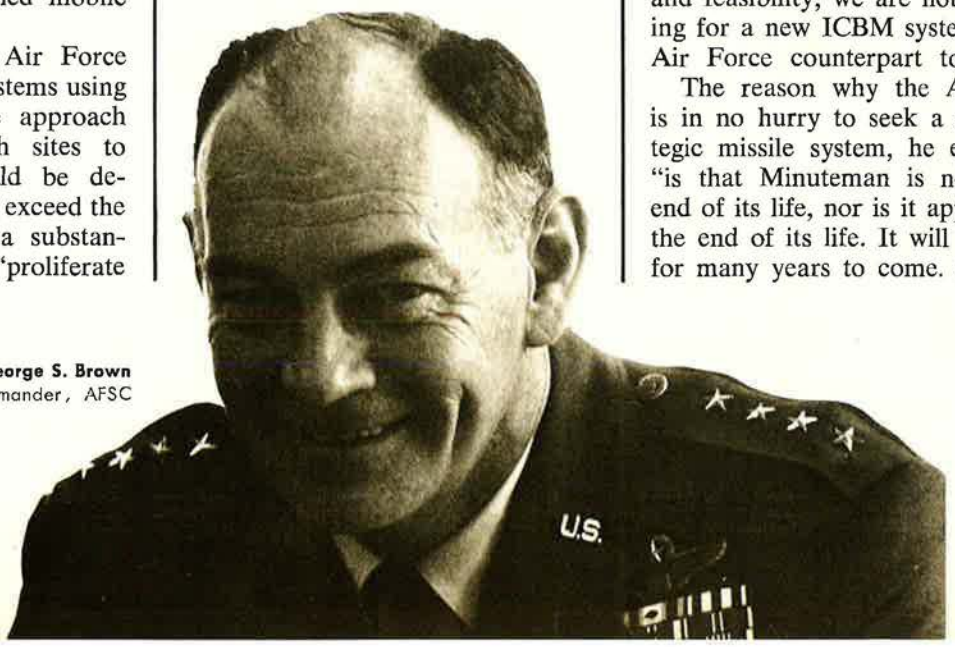
THE Air Force is energetically exploring several concepts for new intercontinental missile systems, but at this time sees no pressing need to pursue an effort comparable to the Navy's top-priority Undersea Long-range Missile System (ULMS) program, according to Gen. George S. Brown, Commander of the Air Force Systems Command.

In a wide-ranging interview with AIR FORCE Magazine, General Brown pointed out that "our active and intensive" research with respect to potential follow-on systems to Minuteman "is still in a preliminary status, with the objective of looking at viable options and concepts" that could be ordered into engineering development and production if and when the national leadership should find this necessary. While, for reasons of national security, General Brown declined to discuss the nature of the concepts under study, he concluded that the Air Force is analyzing land- and air-launched mobile mission concepts.

General Brown said Air Force studies of land-mobile systems using the so-called shell-game approach (the number of launch sites to which the missiles could be deployed on warning would exceed the number of missiles by a substantial factor in order to "proliferate the number of the attacker's aim points") uncovered a number of engineering problems. In the main, these problems, not fully appreciated at first, stem from time and distance requirements, he said. The engineering of a ground transporter for the missile with sufficient speed to get out of the lethal zone of an enemy warhead aimed at the point of initial storage "makes this approach less attractive" than originally envisioned and prompted the Air Force to undertake "a number of conceptual studies of other mobile systems, including air mobile. In addition, we are exploring several other interesting approaches, which cannot be discussed" at this time, General Brown said.

He cautioned strongly, however, that "although we study all alternatives and, in the case of the more attractive ones, go into full depth, including some engineering work in order to get a solid grasp on costs and feasibility, we are not out fishing for a new ICBM system" as an Air Force counterpart to ULMS.

The reason why the Air Force is in no hurry to seek a new strategic missile system, he explained, "is that Minuteman is not at the end of its life, nor is it approaching the end of its life. It will be viable for many years to come. Its readi-



Gen. George S. Brown
Commander, AFSC

ness rates and reliability exceed that of the other members of the Triad. It is a highly capable system. So far as Minuteman III is concerned, it is a brand-new weapon, which is just entering the inventory and which is performing far better than we anticipated. In addition, it has enormous growth potential, not only through such associated systems as upgraded silo hardening and Hardsite Defense, but also in terms of warhead design."

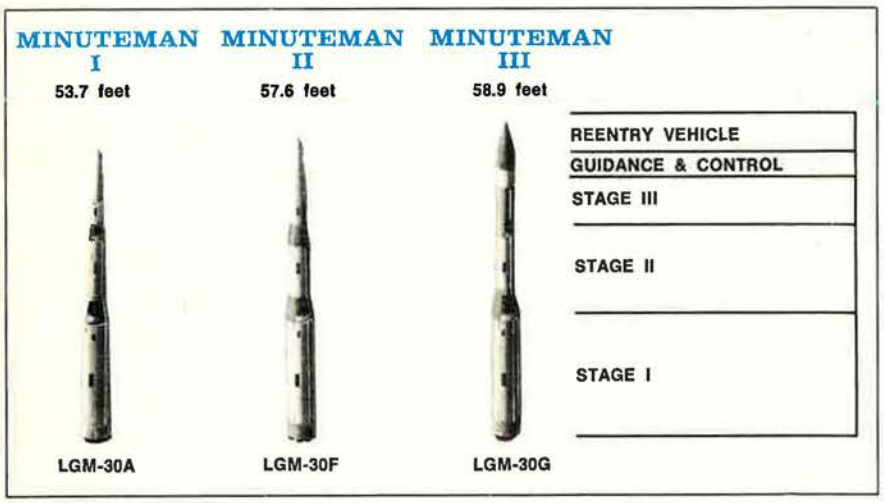
The AFSC Commander added that vast improvements in the Minuteman warhead are possible, which could enhance its ability to penetrate sophisticated enemy defense.

President Nixon last year informed the nation's defense planners that "I must not be limited . . . and my successors must not be limited . . . to the indiscriminate mass destruction of enemy civilians as the sole possible response to challenge." Because of their limited accuracies, the present generation of Polaris and Poseidon missiles cannot be used against hardened targets and, therefore, have no counterforce capability. There are no public statements by Department of Defense and Navy officials to indicate that either ULMS I or ULMS II might have such capabilities.

While SAC's manned bombers, the B-52s, the FB-111s, and the yet to come B-1, have strong damage-limiting capabilities in terms of both size and accuracy of their nuclear weapons, in some instances their long response time would preclude their use as a counterforce weapon. The primary system potentially capable of providing the means for deterring limited nuclear selective attacks on hardened military targets is the land-based ICBM. Yet because of the widely publicized claims that a counterforce capability is tantamount to a first-strike capability, civilian government and military leaders have been reluctant to discuss means for incorporating expanded capabilities into the Minuteman system and USAF's ICBM doctrine.

Asked about these matters by this reporter, General Brown would only say: "We are actively and aggressively pursuing studies of the options the President requested."

The survivability and effectiveness of both the Minuteman system and the Air Force's strategic bombers will receive a considerable boost, General Brown explained, through the introduction of a satellite warning system, which provides the United States with near real-time information about the Soviet ICBM and SLBM launches. "The benefit our ICBM force and our bombers will derive from very high confidence early warning is very dramatic and direct," General Brown said. By contrast, improved warning might not have quite the same beneficial impact on the submarine-based missile force because of command and control functions peculiar to that component of the Triad.



Minuteman, especially the brand-new Minuteman III, is a highly capable, modern weapon system that can undergird US deterrence for many years to come.

An ASW Mission for USAF?

In his Annual Defense Department Report for FY 1973, Secretary Melvin R. Laird unveiled a "new order of Total Force application with regard to protection of sea lanes and sea surveillance. We are at work on plans in which the Air Force would share with the Navy some of the responsibilities for our deterrent posture at sea. If, for example, B-52s can be employed with great effectiveness in a tactical ground support role in Vietnam—a task for which this aircraft was not originally intended—then there is no reason why the Air Force cannot be assigned some major responsibility for control of the seas." USAF/Navy cooperation might involve ASW as well as aerial interdiction of surface ships and the possible operation of USAF aircraft from Naval carriers, according to Department of Defense spokesmen.

General Brown told AIR FORCE Magazine that the two services "have entered into discussions with respect to the ASW problem in order to determine how we [the Air Force] can make the most effective contributions." He said that no decisions have been reached on whether the Air Force's role, in addition to countering land-based enemy naval air, is to include destruction of enemy submarines in time of war, is to be mainly a matter of detection and tracking, or is to be confined to mine laying from the air. Also as yet unresolved is the question of "how would such a force be deployed and who will be in control of what," he said.

Such Air Force aircraft as the B-52, the FB-111, and the F-111 have the capabilities and weapons to kill both surface ships and submarines, and, by using SRAM (Short Range Attack Missile), can do so from a standoff position. "Of course, we don't have the capability to detect submarines in the depth of the ocean. On the other hand, these aircraft, as well as the SR-71, have very capable radars and other detection systems that would permit

us to be highly effective in detecting surface ships at sea. I think, for instance, that our land-based air could be of great assistance in a security role of the Sixth Fleet in the Mediterranean, which is a relatively landlocked sea," General Brown pointed out.

He added that "personally, I don't think we have to be carrier-based to provide this sort of support, but, on the other hand, I don't think there is any good reason why it couldn't be done if necessary. There are Air Force flight crews who have served with the Navy on an exchange basis. Of course, the methods of handling a carrier-based force, the fast turnaround and rearming which the Navy has perfected to such a high degree, would pose a tough challenge."

The Air Force is not a newcomer to the ASW function, but has "had capabilities in this field ever since World War II when we mounted a tremendous ASW effort all along the coastlines of the United States and when we subjected critical harbor areas in the Pacific to aerial mining operations using B-29s," he said.

Test-Ban Treaty Side Effects

Because of the "considerable concern over the effects of electromagnetic pulses (EMP) produced by large nuclear explosions" and because of a lack in understanding of other associated phenomena, Secretary Laird, in January of this year, requested supplemental funding from the Congress for special EMP simulation equipment; for a test program to determine EMP hardness criteria of command, control, and communications systems; and for a specially hardened Advanced Airborne Command Post, a converted Boeing 747 superjet. General Brown commented that these programs were needed because the Nuclear Test Ban Treaty "may have placed the United States at a disadvantageous position with respect to a fuller understanding of the side effects of high-yield nuclear weapons.

"Of course, we have learned a good deal from our underground testing, but we could learn much more through atmospheric testing. We need a better understanding of the effects of nuclear explosions in the atmosphere, and we are worried because the Soviets presumably gained extensive knowledge" by setting off a device with a yield of about sixty megatons just before the treaty went into effect, he said.

"We are going back to the data from some of the tests that were conducted before the treaty was signed, and with the aid of simulation techniques and theoretical findings from laboratory research, we attempt to relate them to the vulnerabilities of our own offensive and defensive weapons," the AFSC Commander explained.

Efforts of this type, he stressed, are not an exact science and often fail to achieve a consensus among the experts, but, nevertheless, "from time to time, there is general agreement within the scientific community on a specific aspect of nuclear weapons' effects, and a concomitant vulnerability, which causes us to engineer a 'fix' and ask for authorization to apply it. We have done this in a large number of cases on the B-52, Minuteman, and all other strategic systems. Secretary Laird's request for funding authorization of the Advanced Command Post is a part of this continuous effort."

The Technological Outlook

General Brown told AIR FORCE Magazine that his command's long-term research efforts, as yet, have not uncovered any particular technologies that "might cause us to envision a revolutionary change in strategic weaponry. We do expect, however, significant advances in the broad area of command and control."

A number of emerging technologies portend significant changes in future conventional and tactical warfare, in the view of the AFSC Commander. An area of great promise, he said, is "tactical control, where tremendous progress is being made which can be expected to have far-reaching impact." Largely premised on advances in information display techniques, data processing, and data management, these innovations appear capable of revolutionizing "the way we use our tactical forces. Commanders, for instance, will have pertinent information shredded out for them automatically and rapidly instead of being swamped by extraneous data. One of the most frustrating experiences for our tactical commanders is the fact that the information they *really* need they can't get, while at the same time they are being drowned in floods of irrelevant information."

Lasers show a "great potential, not just as means of communications but for application to weapon systems," General Brown said. Asked whether the current US effort in laser technology was adequate compared with that of other countries, he replied, "For the time being our research is adequate. I believe, however, that this level of effort should be increased considerably as we bring the basic effort forward. We don't know as yet when we will reach that point." He acknowledged that "the potential offered by lasers is so dramatic that a number of experts believe our efforts should be stepped up right now."

Remotely Piloted Vehicles and Defense Suppression

Intensive efforts by the Air Force and the other services in the area of Remotely Piloted Vehicles *(see the October 1970 issue of* AIR FORCE *Magazine)* are "meeting with great success, and, so far, we have not encountered any technological or operational stumbling blocks," General Brown said. "We feel that the RPV promise is a very real one. We are using some of these devices in Southeast Asia in an operational role. In our current [AFSC test] work we have been using them very successfully in a strike role."

Explaining the rationale underlying the Air Force's interest in RPVs, General Brown said their greatest potential is for operation in heavily defended areas where otherwise "we would have to pay an unreasonable price to make a strike. By this I mean not so much the losses we would sustain but the basic level of effort in terms of defense suppression, escort forces, and general density of forces, in order to get the needed mutual support. For such missions we will need RPVs. We

have developed the techniques and the hardware, and demonstrated [their competence] to perform these tasks."

General Brown said the Air Force is confining all RPV development and flight demonstration work to the air-to-ground role. No efforts to develop an air-to-air RPV vehicle are being made at this time, he said. "The only reason why we need RPVs is that we don't want to expose the man in the cockpit needlessly or expend our resources in getting him to the target. I don't foresee a changeover to an 'RPVed' Air Force at any time."

One of the important determinations currently under review involves the cost-effectiveness of remotely piloted aircraft in the sense of two conflicting requirements: "We consider them expendable, yet at the same time recognize that they need to be able to perform a given mission *reliably*. This leads to difficult choices in the propulsion, guidance, control, and weapons and fuzing of these vehicles," General Brown said. He added that the Air Force did not expect any "psychological problems" to arise from the use of RPVs because "I believe it makes little difference whether you fly an aircraft from the ground, from the air [with the remotely located pilot operating from a mothership], or actually from the cockpit."

In discussing the related field of defense suppression, General Brown said that the Air Force, during the past year, has made "very good progress and fielded some demonstrations that prove that we can tie together existing elements of hardware into a system that can acquire and strike targets with reasonably useful accuracy and reliability."

Early in 1971, AFSC instituted a command-wide, high-priority effort to provide the Air Force with defense-suppression and standoff capabilities effective against varied and sophisticated defenses. The present program, and its precursor, nicknamed "Have Lemon," are both scenario limited, but a follow-on effort, "Have Lime," is studying the entire defense-suppression problem.

While details of present defense-suppression efforts are classified, they are believed to include tech-

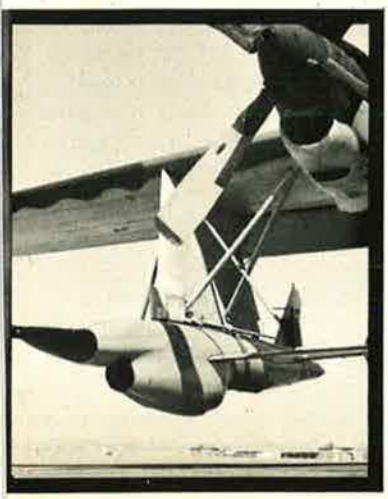
RPVs in foreground use DC-130A for launch and helicopters for recovery.

Teledyne Ryan's Model 147 RPV being readied for launch.

Coming off Teledyne Ryan's production line is Model 147A RPV.

Midair copter recovery of RPV.

RPV ready for air launch.



niques that attempt to make penetrating vehicles invisible, in an optical as well as electronic sense. General Brown commented that "the principle is very simple: An object can be detected electronically or optically because it reflects or generates energy. If we can find a way to absorb the energy that the vehicle we are trying to conceal is reflecting or generating, then we will reach our goal. Work of this sort is going on in our laboratories in order to reduce the visibility of air vehicles to ground observers."

AFSC's Prototyping Programs

Because of past difficulties caused by relying on theoretical assumptions rather than actually demonstrated feasibility of technological concepts, the Department of Defense last year initiated a series of so-called prototype programs. Acting in a lead role *(see October '71 issue of* AIR FORCE *Magazine)*, the Air Force this year was given funding authorization for two prototype development programs: an advanced technology, lightweight fighter; and an advanced technology, medium-sized STOL transport (AMST). General Brown stated that "we are making good progress, not only on the two aircraft, but on two associated engine developments."

Because the Department of Defense views the prototype approach as a "technological pipeline," the Air Force hopes to be able to undertake new efforts on a steady basis, paced by the availability of funding and resources. General Brown said no final decisions have been reached with respect to the next group of projects for which the Air Force might seek authorization. He added, however, "we know of a number of systems and subsystems down the road that we feel should be pursued. While none of them is as dramatic as the two projects currently in the works, we consider the job that we will have to do in the avionics field of tremendous importance."

Explaining that "we may be pricing ourselves out of the game so far as avionics are concerned," he stated that the key to remedying the rapid cost escalations of avionic systems may well be through shifting to "digital techniques, including integrated displays. This would give us commonality between different aircraft, eliminate the multiplicity of analog instruments and displays, do away with much of the wiring in the aircraft that the present systems require, and simplify operations."

While the requisite technologies have not yet evolved beyond the laboratory state, there may be an opportunity to prototype some of the subsystems in the near future, which in turn could provide the basis for the development of a new breed of avionics, General Brown said. "The main barrier that we will have to break down, and which has held back work in this area, is not technological but psychological. There is a natural opposition on the part of aircrews and passengers to entrust their fate to numbers in place of the traditional instruments. Our experience with spacecraft has taught us, on the other hand, that the digital approach works well and reliably. It is just a matter of time before it will replace the current analog systems in aircraft," General Brown said.

Without naming other specific areas, he said additional future prototype efforts will concentrate on the "investigation of high-risk technologies in an effort to reduce them to acceptable levels" and thereby pave the way for their eventual introduction into the operational inventory. The selection process will be "highly competitive because the cost of these projects comes out of the Air Force budget. We are not being given additional funding for these programs," General Brown stressed.

Status of Major Programs

Changes in management approach introduced since 1969 are beginning to pay off in major Air Force weapon systems currently under full-scale development, General Brown said. Two problem areas have not been fully resolved, according to General Brown: "We have not yet been able to determine the precise effects of the C-5's fatigue problems on the aircraft's service life. For this reason, we assembled, about three months ago, a team of experts

from industry, NASA, and the Air Force which, in concert with a steering group of prominent scientists selected by the Air Force's Scientific Advisory Board, is undertaking a one-year evaluation of the C-5. Following this extensive review and analysis of all pertinent data, we expect this team to either confirm the findings by Lockheed [Lockheed-Georgia Co., the prime contractor] and the SPO [the Air Force Systems Command's System Program Office], or to amend them."

The other remaining problem area, General Brown said, centers on the Mark II avionics package of the F-111D, a sophisticated electronics flight director, navigation, and bombing system. Production delays prevented General Dynamics, builder of the F-111, from delivering the aircraft to the Air Force on time. General Brown told AIR FORCE Magazine the Mark II avionics package "is being fabricated to the revised specifications and is now flowing to General Dynamics. But we still have not reached the delivery rates that we hoped for. We expect, however, to make further improvements."

The Air Force's two top-priority weapon system developments, the B-1 and the F-15, are progressing satisfactorily, he reported. "At the moment we are working on the B-1's electronics, the major consideration being the selection of an interface contractor, meaning somebody who can pull all the electronics together. We hope to make a selection very soon."

The Navy has decided to delay production of its F-14B fighter, which was scheduled to use an engine being developed jointly with the one used by the F-15. The USAF and Navy versions of the engine are being developed by a joint engine project office (JEPO) in the F-15 System Program Office at Wright-Patterson AFB. The pricing of both the Air Force and Navy production options was closely interrelated, with the Navy version to be produced first. Because the Navy elected not to exercise its production option, the contract between the Air Force and Pratt & Whitney had to be renegotiated. General Brown informed AIR FORCE Magazine that these drawn-out negotiations "are now completed."

Based on the new contract target prices and projections of out-year quantities, the F-15 budget estimate to completion has increased $552 million. The causes for the increase are: major reduction in military business at Pratt & Whitney (over $1 billion reduction); buying AF engines with high start-up costs, which formerly were to be carried by the Navy; and the USAF now paying for all production tooling costs.

Commenting on the failure of a test outer wing panel, during a recent preproduction design verification test, General Brown emphasized: "This is why we have tests. A minor fix was incorporated, and the wing structure has now successfully completed over five lifetimes [20,000 hours] of fatigue testing and withstood 150 percent of design load. In other words, the test program has accomplished exactly what it was supposed to: A weakness was defined early in the testing, before production release, enabling corrective action that avoids costly production-line retrofit."

The Management Outlook

Asked about the effectiveness of the tightened and streamlined management procedures currently in effect, General Brown commented: "I don't think that we will run into the surprises that we encountered in the past. This is not to say that we won't have some engineering problems, and, as a result, cost problems. This is unavoidable; we deal with people and people make mistakes. But we now have the controls so we can detect trouble at an early stage, and not be surprised. Forewarned is forearmed, and in our business this means that we should be able to fix problems before they become critical."

An area of prime concern is the manning of the system program offices (SPOs), "the cutting edge of the command, our equivalent to a tactical fighter squadron. We are providing 100 percent manning, something not always done in the past," General Brown pointed out.

"If there is one major area we have not come to grips with fully, it is the requirement side of our programs. By this I mean the origin of a project, the exact definition of what is really needed, together with the concept behind what is requested. The next step is that all this has to be expressed in terms understandable to the developer so that he can translate the requirement into actual hardware.

"A related issue that we are pushing hard on is this: As we identify the hardware implications we must be able to go back (to the originator of the requirement) and discuss the implications of the hardware specifications with him—meaning, for instance, that getting the last ten knots of airspeed might cost us a tremendous price. If he understands this, maybe he will be willing to trade this off. We must identify those areas of trade offs and do it early in the development cycle," General Brown said.

He said AFSC's coordination of new requirements with the user commands is intensive and they "participate from A to Z. They are in on the early testing as well as the planning and conduct of the tests. In the case of the A-X [the Air Force's next ground-support vehicle involving the flyoff of two competing designs], for instance, TAC has participated in the planning of the test, which will start this summer, to the extent of bringing in their flight crews who will fly with our own pilots. This sort of coordination is now routine."

One important and promising facet of military R&D and acquisition, in General Brown's view, is the "fact that we have recognized that the average person views the military as a totality; if a project by one of the services gets into trouble, it reflects on all of them. This has propelled us into a very close working relationship with the Navy and the Army on all aspects of management. There is full cross-feed with respect to innovative techniques and new management approaches.

"Because of this, and the quality and dedication of the people in the acquisition business, I am confident that full public confidence in military technology efforts can and will be restored." ■

Almanac

DEDICATION

This being the twenty-fifth anniversary year of the Air Force, our 1972 Almanac Issue is—rightly, we believe—retrospective to a greater than usual degree. Throughout its pages are recalled names and events, linked in the memories of great things done together in the past. This is the stuff of tradition—as indispensable to a spirit of service and sacrifice for the common good as are visions of a future, also to be found here.

What will tomorrow's historians single out as the greatest achievement of the Air Force in its first quarter century? We think it may be the Air Force response to Vietnam.

Throughout this longest and most unpopular of American wars, our airmen have performed with courage, skill, determination, and discipline. These men and women, who did not make the war, have borne its burdens in the field and in the prison camps—their service seldom recognized, often disparaged, sometimes slandered.

In the long course of history, military forces too often have emerged from wars of such unequal sacrifice, broken, embittered, alienated from the society they existed to serve. That this has *not* happened to the United States Air Force is the mark of a professionalism that goes far beyond the simple criterion of excellence in the use of arms.

In the people of the Air Force, we see no bitterness or brooding, but a steady dedication to defending this nation from a growing threat, unprecedented in its history. We are thus encouraged to believe that unity and purpose have not passed from us as a people; that the spirit that lives in our Air Force—in all the military services—will once again inherit the land.

So it is with pride and gratitude that we salute the men and women of the United States Air Force, to whom this Air Force Almanac is dedicated.

—The Editors

In order to reduce the cost of weapons development, the USAF is tailoring its contracts to fit specific programs. Thus, through a variety of approaches to development contracts, the Air Force is combining . . .

Development Flexibility and Cost Discipline

By Robert C. Seamans, Jr.
SECRETARY OF THE AIR FORCE

A former MIT faculty member, senior executive with RCA, and Deputy Administrator of NASA, Dr. Robert C. Seamans, Jr., became the ninth Secretary of the Air Force in February 1969. A Harvard graduate, he holds a doctorate in science from MIT.

SUMMARY OF MAJOR USAF WEAPON SYSTEM PROGRAMS

	ADVANCED PROTOTYPE PROGRAMS	IN DEVELOPMENT		IN PRODUCTION	RECENTLY DEPLOYED OR UNDERGOING DEPLOYMENT		
		DELIVERY SYSTEMS	SENSING & CONTROL	WEAPONS	DELIVERY SYSTEMS	SENSING	WEAPONS
STRATEGIC		B-1 SCAD (decoy)	Airborne Command Post AWACS	SRAM	Minuteman III FB-111	Satellite	
GENERAL PURPOSE	Lightweight fighter STOL transport	F-15 A-X	AWACS	Maverick	Gunships F-111 A-7 C-5		Laser-guided and electro-optical guided bombs

THE Air Force has fulfilled its mission with distinction during the past twenty-five years, thanks to its dedicated people and the effective use of weapons technology. But as we look further into the 1970s and beyond, we see an overriding need to continue modernizing our weapons if we are to maintain the strength required to keep the peace. The key to how well we meet this challenge lies in effective management. Through better management we can provide for technological progress in advanced systems and still have enough resources left to maintain our operational forces.

The necessity for improved management in our modernization efforts is apparent from a consideration of the budget trends. The requested Air Force budget of $24.4 billion for Fiscal Year 1973 provides about $900 million less resources than the '72 budget when the effects of increased pay and price inflation are taken into account. Our funding reached a peak in FY '68, but buying power has fallen back well below the prewar FY '64 level when corrected for past inflation. Obviously, as an increasing percentage of the national budget is earmarked for critical domestic needs, we in the Air Force are going to have to continue to get the job done with fewer resources.

Our most important task will be to manage effectively the pace of technological improvement. If we do not push technology hard enough, we will end up with weapons that are obsolete before they come off the assembly line. On the other hand, if we push technology too hard, the result will be weapons that are too expensive to produce. We are attempting to solve this dilemma by combining flexibility with cost discipline. These are two ingredients that many people thought were incompatible—and, of course, the final returns are not yet in.

In the past, the practice of frequently making changes in our development programs proved to be very costly—so costly, in fact, that it led to a belief that the cheapest way to buy a new weapon system would be with a "total package procurement" contract, which allowed almost no flexibility in the development phase. Unfortunately, we have had to

relearn an obvious truth—that buying a weapon system is not like buying a product of proven technology, as one might purchase a fleet of automobiles. On the contrary, uncertainty is far too great to permit the surrender of flexibility during development.

We must have flexibility to control weapon development programs, but we must structure that flexibility so that it helps reduce rather than escalate the costs. We believe this can be done by tailoring our contracts to fit specific programs. Most major programs will have cost-plus-incentive development contracts with specified milestone decision points. We will emphasize prototypes and hardware testing, and will use competitive development whenever feasible.

The accompanying chart shows the full range of major Air Force programs, from those that have been recently deployed to those that are just starting in development. The former teach us a number of important lessons about the difficulty of our task while the latter illustrate some of our efforts to apply our new policies.

The C-5 Heavy Logistics Transport

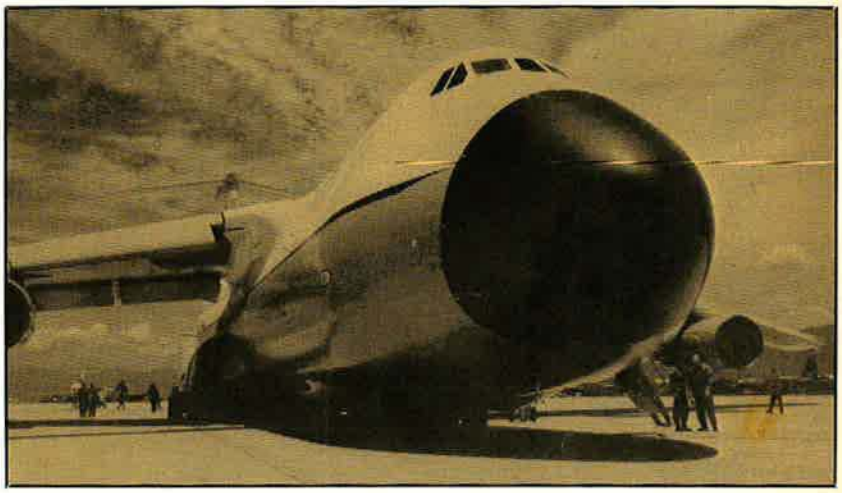
Turning to specific programs, the C-5 is performing the strategic airlift mission well, carrying large payloads and the outsized equipment needed by the Army. More than forty of these aircraft are now operating on transatlantic and transpacific missions. But there are many lessons to be learned from the C-5 program. Its "total package contract" was so comprehensive that the Air Force, in effect, was disengaged from decision-making during the development phase.

Early in the program, Lockheed found that its original design would not meet the contract specifications for short-field operations. The wings had to be lengthened, and, as a result, much of the structure had to be redesigned to keep the weight within limits. These changes sharply increased the costs, especially since there was a great deal of concurrency between development and production.

The Air Force should have had more control over the program and more flexibility to make adjustments and trade offs. Few improvements are so essential that they must be acquired immediately, regardless of cost. The increasing expense of buying the C-5 severely limited the number of aircraft we could afford. Thus, the lack of flexibility in this contract resulted in less overall capability than we might have achieved by making timely trade offs in performance, cost, and schedule.

THE SECRETARIES OF THE AIR FORCE

Stuart Symington	Sept. 18, 1947	Apr. 24, 1949
Thomas K. Finletter	Apr. 24, 1950	Jan. 20, 1953
Harold E. Talbott	Feb. 4, 1953	Aug. 13, 1955
Donald A. Quarles	Aug. 15, 1955	Apr. 30, 1957
James H. Douglas, Jr.	May 1, 1957	Dec. 10, 1959
Dudley C. Sharp	Dec. 11, 1959	Jan. 20, 1961
Eugene M. Zuckert	Jan. 24, 1961	Sept. 30, 1965
Harold Brown	Oct. 1, 1965	Feb. 15, 1969
Robert C. Seamans, Jr.	Feb. 15, 1969	



The AC-130 Gunship

In one of our smaller programs, the AC-130 Gunship, we provided for a maximum amount of flexibility in our management. Estimated costs were low enough so that the Project Director could be given free rein to do whatever was necessary to get the job done within overall target costs. His management team drew up specifications, negotiated contracts, designed new systems, and integrated weapons and sensors. They have handled thirty to forty contracts at any one time, some fixed-price, some cost-plus-incentive—whatever was suitable for a particular job. All deliveries of these aircraft have been early, and the program has run below estimated costs.

The Gunship, with side-firing cannons and advanced optical and electronic sensors, has proven very successful in increasing the effectiveness of our interdiction efforts in Vietnam.

◀

The F-15 Air-to-Air Fighter

The high degree of flexibility used in the Gunship procurement is not feasible in more expensive programs like the B-1 bomber or the F-15 air-to-air fighter. In contrast to about $75 million a year for the Gunship, the F-15 will require $900 million in FY '73—about half for research and development and the other half for production.

The cost-plus-incentive contract for the F-15 permits flexibility in the development phase. It also provides control points in the form of contract milestones. These milestones must be adequately met or the program may be realigned or terminated. We have passed the first seven milestones on time or ahead of schedule.

The first flight is scheduled for this summer, and the next major decision point will follow in November, when we consider contracting some $15 million worth of long-lead-time production. By February 1973, we will have several more of our twenty R&D and test aircraft flying and will decide whether to pick up our option for the first thirty production aircraft.

The flexibility in managing this development allowed us to decide on performance and cost trade offs, which led to a simplified structural design and the elimination of certain avionics capabilities that would not have significantly improved the aircraft's air-to-air combat performance.

Based on our experience with the F-111 and the C-5, we adjusted the F-15 program to allow for more hardware testing. We are conducting extensive structural tests early in the program to identify potential design weaknesses and correct them before extensive retrofitting would be required. This policy paid off when failure in the shear web occurred in a test we ran several months ago. Thus, we were able to increase the thickness of the web and continue fatigue testing to five lifetimes of the test article. That is exactly the kind of trouble we want to detect early, before production is under way, so that we can avoid expensive modifications to several hundred production aircraft.

We used competitive prototype developments for the F-15 fire-control avionics and engine, with Hughes winning the former and Pratt & Whitney the latter. We have now completed the Preliminary Flight Rating tests on the engine with more than 3,000 hours of running time.

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The B-1 Strategic Bomber

The B-1 strategic bomber program was set up to give the Air Force even more management flexibility than it has on the F-15. The R&D phase is completely separate from the production phase. We have contracted for only three flight-test aircraft, the first of which should be ready for first flight in April 1974, with a full year allowed for testing before making the production decision.

North American Rockwell is the prime contractor for the B-1, and General Electric is the engine contractor. A cost-plus-incentive contract is being used in the development phase, as in the F-15, with the Air Force retaining control over the various possible trade offs in performance, cost, and schedule. As a result of trade-off studies already conducted, we have significantly improved the design of the crew compartment, the landing gear, and the tail structure. To compensate for these improvements, we have lengthened the takeoff distance slightly, while decreasing the refueling altitude and the supersonic cruising distance, in order to hold overall costs within the target price.

These small decreases in performance are insignificant in view of the B-1's great increase in overall capability as compared with the B-52. The B-1 will be able to carry nearly twice the load of the B-52, take off in about half the distance, fly considerably faster at both low and high altitudes, and penetrate enemy defenses with a greatly decreased radar cross section and more effective penetration aids.

Although the B-1 contracts have been under way for only two years, we are encouraged by the progress to date. The first major milestone, the Preliminary Design Review, was completed on schedule last July, and the second—the Mockup Review—in October. Over 10,000 wind-tunnel test hours for design validation have been completed, and we are well along with engine tests necessary for preliminary flight rating.

The A-X Close-Support Aircraft

In the A-X close-support aircraft development program, we are providing flexibility through competitive prototypes. Our objective is to obtain a relatively inexpensive, easy to maintain aircraft that can operate from short fields, under low ceilings and poor visibility conditions. Most important, it must have the armor plating and other design features needed to survive in the battle area for long periods.

Since much of the technology for this aircraft is "off-the-shelf," we were able to use fixed-price competition between designs supplied by Fairchild and Northrop. We expect to begin competitive flyoff tests in October of this year, and, after evaluation of the prototypes, the decision will be made on whether to initiate the full-scale development program.

▲

The Airborne Warning and Control System

In the case of AWACS, the Airborne Warning and Control System, we are asking for competitive prototypes in the development of the radar only. We want an aircraft that can remain on station for seven to nine hours, 1,000 miles from its base, equipped with a look-down radar that can detect low-altitude bomber penetrations.

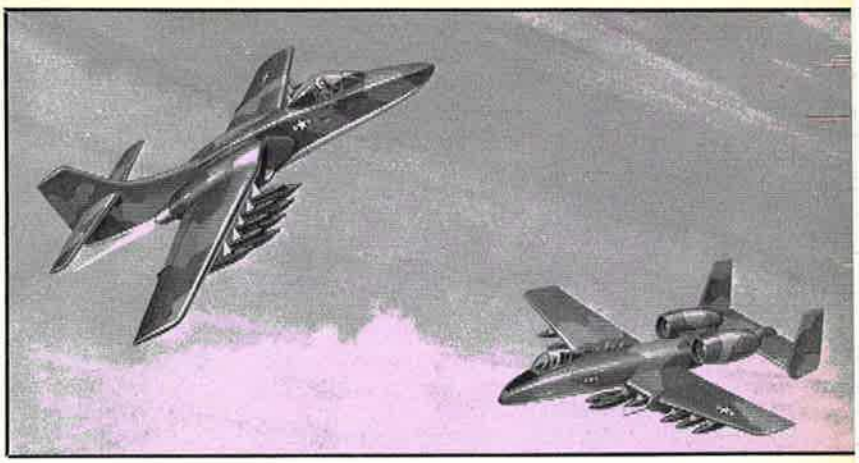
Boeing was selected as the prime contractor, with the commercial Boeing 707 as the basic airframe. Hughes and Westinghouse are participating in the competition for the radar development. Two 707s have been modified as test-bed aircraft, and late this month we plan to begin extensive flight-testing of the radar prototypes. If a decision is made to proceed with this program, the best radar will be selected, and development of the total system will follow.

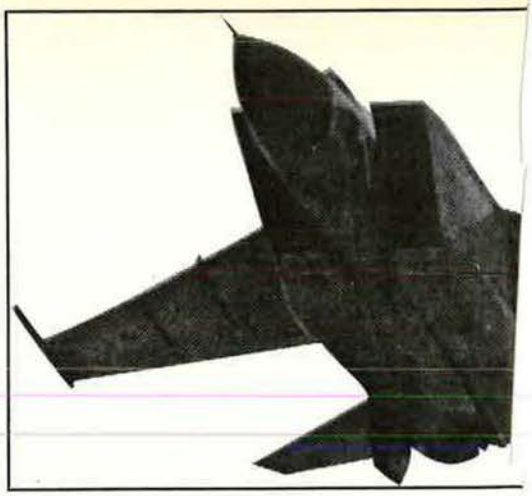
The STOL Transport Advanced Prototype

We are pursuing advanced prototype work in other areas to obtain information on the costs and operational suitability of various concepts before beginning new procurement programs. This approach increases our flexibility by providing additional demonstrated technology and new techniques to meet our weapons requirements.

One example is the STOL transport prototype, which will test the concept of an aircraft about the size of the C-130, able to operate from a 2,000-foot strip. The critical question is the cost of such an aircraft. We expect it will have to stay within a flyaway price of around $5 million to be a serious candidate for full-scale development and possible production. Imagination is needed in this program —not to make things more complicated, but to design a simple aircraft that will have the performance characteristics needed to fulfill its mission. We plan to contract for two competitive prototypes, which will be "bare-bones" models, without the subsystems necessary for an operational system and without all of the engineering needed in a preproduction prototype.

We are now tailoring each of our programs to provide as much flexibility as feasible in the development phase so that we can make the necessary trade offs as we go along. For cost discipline, we are using contract milestones geared to extensive hardware testing. We simply have to keep the life-cycle costs down for our new weapon systems, with special emphasis on production and operating costs. Otherwise, we may not be able to afford production of these systems, even after development is complete. ■



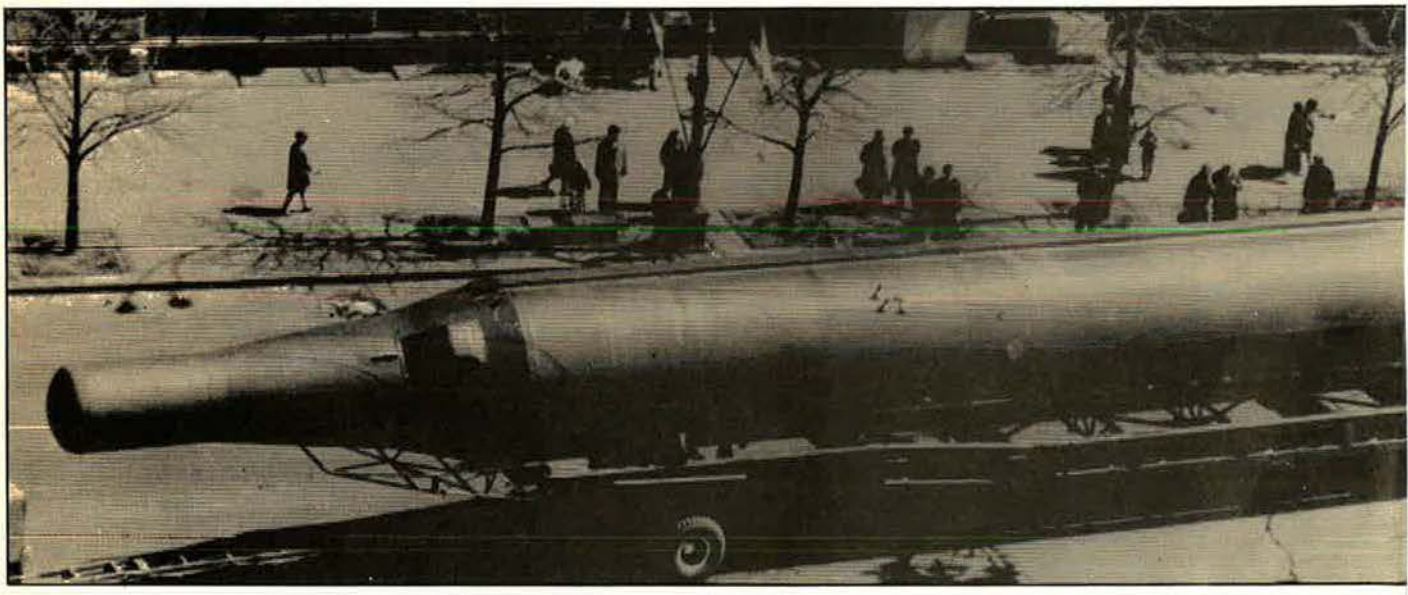


US deterrence must be based on the capabilities—not the estimated intentions—of potential adversaries. Present Soviet weaponry and a growing Russian R&D effort are impelling considerations in . . .

A Rationale for Adequate US Aerospace Forces

By Gen. John D. Ryan, USAF
CHIEF OF STAFF, UNITED STATES AIR FORCE

Gen. John D. Ryan, USAF Chief of Staff since 1969, commanded a B-17 group in Europe during World War II. He has served as Sixteenth Air Force commander, USAF Inspector General, CinC PACAF, and CinC SAC. Prior to assuming his present position, General Ryan was Air Force Vice Chief of Staff.



The world weapon balance does not remain static. Soviet capabilities, exemplified by this SS-9, have expanded rapidly in the past five years.

THE USAF CHIEFS OF STAFF

Gen. Carl A. Spaatz	Sept. 26, 1947	Apr. 29, 1948
Gen. Hoyt S. Vandenberg	Apr. 30, 1948	June 29, 1953
Gen. Nathan F. Twining	June 30, 1953	June 30, 1957
Gen. Thomas D. White	July 1, 1957	June 30, 1961
Gen. Curtis E. LeMay	June 30, 1961	Jan. 31, 1965
Gen. John P. McConnell	Feb. 1, 1965	July 31, 1969
Gen. John D. Ryan	Aug. 1, 1969	

Present Soviet equipment, like this Mach 2-plus MIG-23, is the product of R&D done a decade ago when the USSR's R&D programs were much smaller than today.

The Minuteman ICBM, dominant element in the US deterrent Triad, retains its survivability through silo improvements and some ABM protection.

I BELIEVE the majority of Americans agree that national security must be provided—that security implies an adequate defense organization, and, of course, an adequate Air Force. At the same time, our military programs must not absorb resources beyond those essential to meet our security needs.

I would like to describe how the Air Force decides what is adequate—namely, our rationale for the size and weapons mix of the present and future force. Then I will be specific about some particular weapons and explain how we select them to be part of our adequate—but not overadequate—Air Force.

First, if we want adequate forces, we have to ask: Adequate to do what? The United States's fundamental philosophy and strategy is to deter war. Our forces and policies are designed to keep war from happening by making the cost of war to an aggressor greater than his possible gains.

Our number-one defense priority is the deterrence of global nuclear war. The heart of this deterrence is easily stated: We will deter attacks *if* all possible adversaries know we can survive any attack and then deliver destruction that the attacker would consider totally unacceptable. However, if deterrence were to fail, we must have forces adequate to prevail in a nuclear conflict. This capability would also add to our confidence in deterrence.

Of course, global nuclear war is only one possibility in the spectrum of conflict. Since we want to preserve all our vital national interests, we want forces adequate to deter conventional as well as nuclear wars. This can be done if our general-purpose forces, together with those of our allies, clearly convince a potential aggressor that he would lose more than he would gain by waging a limited war.

The American policy of deterrence of nuclear war has been successful for a quarter century. The simplicity of the concept and the success of the policy have led some to believe that it is easily done—that we need just a few good weapons and some firm statements to keep us secure.

Deterrence: Difficult, Dynamic

Facts suggest the opposite conclusion: That successful and enduring deterrence is neither simple nor easy. It is complex, difficult, and dynamic.

Look at some of the complexities. For one, our strategy depends on influencing the minds of the leaders of potentially hostile nations. We must lead them to conclude that an attack against the United States would be literally self-defeating—that pursuing more peaceful courses of action continues to be in their best interest. Now, measuring our future success in this effort is difficult at best.

We cannot know for certain how other nations will assess relative military strength. Their mistaken assessment of our strength could lead to their failure to appreciate the risk involved in probing for advantages or testing our resolve. Since confrontation may arise from such a mistaken assessment, we prefer to have a margin of safety and to announce our strength and our resolve. If we are ambivalent or unclear on these points, we risk the failure of deterrence.

Because the USSR is our most capable potential adversary, relations between the United States and the Soviet Union will remain the single most important factor in international stability for the foreseeable future. In my judgment, these Great Power relations will depend on how the Soviet leaders measure our intentions and capabilities against their own. We want the Soviets to remain convinced, particularly in a crisis, that peaceful acts are in their best interest. Ultimately, the measure of adequacy for our military forces is a discernible ability to prevail against the threats to our national interests.

Determining Size and Mix

The size and mix of our forces are determined by the character and capabilities of potential adversaries. As a military man, I cannot

speculate on intentions; I must deal in capabilities. For instance, we must have a clear understanding of Soviet military power. If there were a Soviet attack, could our retaliatory weapons survive? Could our surviving forces penetrate the Soviet defenses and still inflict unacceptable damage? Is this capability such that the Soviet leaders understand it? Then what about the future? A weapons balance does not remain static. Our task is not only maintaining adequate force structure for today but also anticipating future improvements so that we can promptly adjust to new capabilities as they are developed.

Soviet forces are growing and improving. Their growth in nuclear weapons has a momentum that is most disturbing. The Soviets are continuing to test advanced long-range missiles, both land- and sea-based. In operational ICBMs, they outnumber us in a ratio of about three to two, and they are still growing. In total payload, they are well ahead and have been for several years.

To deter this force, we currently rely on the Triad, a combination of manned bombers and our land- and sea-launched missiles. Up to now, the distinct advantages and capabilities of Air Force B-52s and Titan and Minuteman missiles in combination with our Polaris-Poseidon submarine force have ensured deterrence.

That is today. The same question must be asked about the future. Based on existing trends, the Soviets could move to a position of clear superiority in a very short time. This current trend, and its implications, are important when deciding what American weapons are needed to support a policy of deterrence. For example:

- We *do* have the ability to deliver more, though smaller, warheads. However, this advantage could be eroded rapidly if the Soviets deploy multiple reentry vehicles on their long-range missiles.
- We *do* have more submarine-based missiles. But, at their present construction rate, the Soviets could pass us numerically next year.
- We *do* have more long-range bombers. But the Soviets' aircraft defense is formidable. To cite a few examples of their capabilities, they have more than 3,000 interceptor aircraft, surveillance radars numbering in the thousands, 10,000 surface-to-air missiles (SAMs), and an Airborne Warning and Control System (AWACS) with a 200-mile detection capability. In addition, the Soviets are now testing a new supersonic intercontinental bomber, which could be in operational service in a year or two.

R&D: A Crucial Element

Furthermore, the Soviet Union is investing immense resources in both research and in development of still better weapons. Their level of effort in military R&D continues to grow—and grow beyond our own levels. While we cannot measure Soviet R&D efforts precisely, we can learn enough about their scientific and technical manpower in defense areas, their budgetary levels, and their facilities to see clear trends. All are moving steadily upward.

What is even more troubling about these trends is that the impressive number and quality of weapons we see the Soviets testing today are the result of their R&D efforts of five or more years ago. At that time their R&D funding and level of effort was substantially lower than it is today. Frankly, we are deeply concerned with what Soviet R&D is working on now. This present level of effort should produce new kinds of major Soviet weapons and capabilities. This will make it difficult for us to maintain an adequate armed force in the foreseeable future. Difficult, but not impossible.

To maintain today's force as an effective deterrent we must protect and improve our present weapon systems. For the future, we must introduce newer and substantially improved weapons; preserve a superior base of defense-related research; and apply that research to new weapons to modernize our force when older weapons can no longer do the job.

Because of the uncertainties of the future, we emphasize flexibility in our forces. We do not know how a war may start, how the enemy would use his weapons, which of our countertactics will work, what opportunities may open to us if the fighting starts, or what expected opportunities the enemy may close off. We cannot foresee all contingencies, much less prepare special tactics or weapons for them all. Our solution is flexibility. In view of these requirements, I'd like to describe some of the actions we are taking and some of the important new kinds of weapons the Air Force is developing.

Improving the Force

We are providing all of our strategic weapons with increased survivability so that it will be clear to an enemy that he cannot destroy them all with a surprise attack. Our B-52s are being given further survivability through dispersion, shorter takeoff time, longer warning, and better communications. Minuteman is also getting added survivability through further hardening and upgrading of some silos and some ABM protection. We are also giving our B-52s and Minuteman missiles improved capability to penetrate enemy defenses and hit the retaliatory targets.

But all weapon systems cannot be kept effective indefinitely. As technology evolves, some

completely new equipment is eventually needed just to stay even. The B-52, great as it is, has certain inherent limits. It cannot be made to fly supersonically, and its radar and infrared signatures cannot be significantly changed. Meanwhile, Soviet homeland defenses improve.

Thus, a new bomber with greater ability to maintain our deterrence credibility and employment flexibility is needed for the 1980s and beyond. The proposed replacement for the B-52, the B-1, is in the engineering development stage. The B-1 will provide us far greater options in speed, either supersonic or subsonic; in altitude, high or low; in payload; and in capability to penetrate enemy defenses. The B-1 will be effective across the full spectrum of conflict.

Another current development, with the flexibility for employment with both strategic and tactical forces, is the Airborne Warning and Control System, called AWACS. The AWACS will lift a complex radar communications system and command and control staff into the air and carry it to the perimeter defenses of our own country or to a foreign battlefield if necessary. The payoff will be in improved control, employment flexibility, and overall greater performance for all our forces in combat. Hence, this system will contribute substantially to deterrence.

Other parts of our tactical forces are being modernized as well. Our recent evaluation of tactical employment doctrine against potential opponents' strength has established the need for and character of a new air-superiority fighter. To fight without air superiority is extremely costly in terms of lives and equipment, not to mention the likelihood of defeat.

Ensuring Air Superiority

Take, for example, the present European theater of operations. The Administration believes that, except for the defense of the US itself, our general-purpose forces have no objective more important than to deter aggression against Western Europe. Now when one looks at the superiority in total numbers and improving quality of the Warsaw Pact and Soviet forces, it becomes apparent that, in order to prevail, US and NATO forces must gain and maintain control of the air above the battle. To counter the new and improved Soviet fighters, we have selected the F-15 to supplement the F-4E in the air-superiority role for the mid-1970s and beyond.

We are pressing to find other methods to improve our ability to fight and thus to deter limited conflicts. For example, we are developing laser-guided and optically guided bombs. Not only is our capability and flexibility dramatically improved by this development, but it also sharply reduces our operating cost. With regard to research and development in the more distant future, some areas we are exploring include more efficient and lighter turbine engines. We are also searching for ways to improve the survival and operation of our equipment under the effects of nuclear attack. These technological programs and others like them help us to maintain first-line weapon systems with a quality edge as well as providing insurance against unpleasant surprises.

Balancing Quality and Quantity

As we seek solutions to tomorrow's military problems, increasing emphasis is being placed on the economics of force structure. Otherwise, prohibitive cost will reduce our capability to a level inadequate to the task of deterrence. A prime example of our response to this fact is our future close air support aircraft —the A-X. The A-X will be the first tactical fighter designed specifically for close air support of ground forces. Compared to other modern fighters, the A-X will be relatively inexpensive because its mission does not call for sophisticated systems.

Economy also means better management of the Air Force. We are improving the management of our development and procurement programs. However, modern high-performance weapons tend to be an order of magnitude more expensive than their World War II predecessors. Since money is limited, we squeeze on numbers so that we can introduce new quality. While the increase in performance compensates in part for the lack of numbers, we must strike a balance between quality and quantity to ensure that we have sufficient numbers of weapon systems.

Nevertheless, an adequate defense will continue to be expensive. Many Americans are tempted to save money on defense if the need is not clearly seen. But if they understand our approach to defense—

- That deterrence of war is our objective;
- That deterrence is neither easy nor simple;
- That adequate deterrent forces depend on the quality and quantity of weapons of our potential adversaries;
- That the Soviet Union in particular has in nine years moved from a position of inferiority to one of rough parity today;
- That the Soviet buildup of military power has a momentum that simply cannot be ignored.

Then I believe that they will concur in our assessment that we must maintain adequate aerospace forces so that our national leadership can continue to convince allies as well as potential adversaries of our capability and resolve to protect our national interests. ■

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(effective May 1)

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An AIR FORCE Magazine Photochart (as of April 15, 1972)

MAJOR AIR COMMAND

SAC—Hard Core Of the US Deterrent

With its retaliatory mix of long-range bombers and intercontinental missiles, the Strategic Air Command over the last several decades has served as a cornerstone of America's defense. As new weapon systems such as the B-1 and SRAM enter its arsenal, basic national security will continue to be the responsibility of . . .

FOLLOWING World War II, Army Air Forces leaders held the firm belief that "airpower was global in nature and long-range bombers must be the hard core of American airpower." They were convinced that their faith in strategic bombing had been vindicated—over Berlin, Tokyo, Hiroshima, and Nagasaki.

In order to perpetuate the airpower superiority that had helped bring Allied victory, their first step was to create the Strategic Air Command, on March 21, 1946. Its mission was to be constantly prepared to conduct long-range operations in any part of the world at any time. It was an impressive mission that would require years of hard work and dedication before the new command could carry out that mandate.

Today, after twenty-six years of development and refinement, SAC stands as a nuclear deter-

The aging B-52 (above), in use since 1955, remains the backbone of SAC's manned strike force. The B-1 (right) is now under development and is scheduled to replace the B-52 toward the end of this decade.

SAC'S LEADERS THROUGH THE YEARS

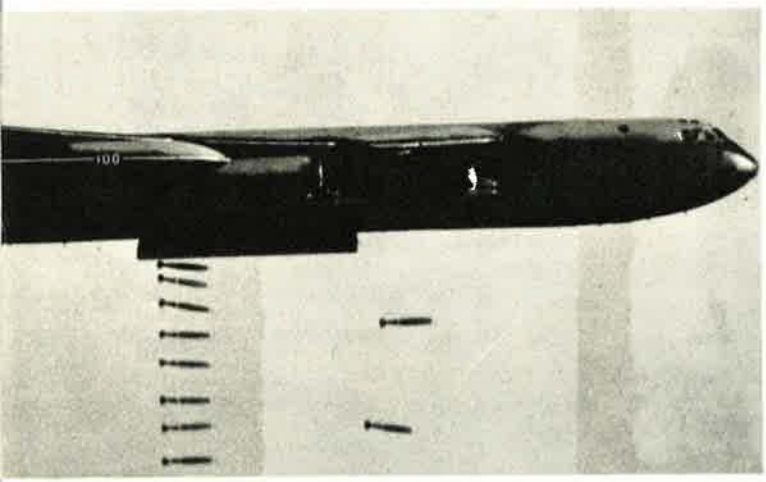
Gen. George C. Kenney	Mar. 21, 1946	Oct. 15, 1948
Gen. Curtis E. LeMay	Oct. 16, 1948	June 30, 1957
Gen. Thomas S. Power	July 1, 1957	Nov. 30, 1964
Gen. John D. Ryan	Dec. 1, 1964	Jan. 31, 1967
Gen. Joseph J. Nazzaro	Feb. 1, 1967	July 31, 1968
Gen. Bruce K. Holloway	Aug. 1, 1968	Apr. 30, 1972
Gen. John C. Meyer	May 1, 1972	

rent force that controls nearly seventy percent of the free world's nuclear firepower. It can operate on a worldwide basis, and maintains a mixture of combat aircraft and intercontinental ballistic missiles that are ready to respond at a moment's notice.

Laying the Foundation

The job of organizing an atomic strike force out of the postwar confusion was given to Gen. George C. Kenney, an early student of the doctrine of strategic bombing who had proved himself a successful commander of bomber forces.

Initially, General Kenney was given 36,800 men, eighteen active bases, and 600 aircraft, of which only 250 were bombers—B-17s, B-25s, and B-29s. He established SAC headquarters at Andrews AFB, Md., in October



1946, and concentrated on building a core of professional, highly trained people to carry out the peacetime deterrent mission and to develop and test new tactics, doctrine, and operational concepts to ensure tactical fluidity.

"Goodwill" training missions were flown from Davis-Monthan Army Airfield, Ariz., to Frankfurt, Germany, on November 13, 1946, and mock raids on cities in the US became commonplace. The polar regions were surveyed and techniques of cruise control were pioneered to stretch bomber range.

Within four months, SAC's first combat-ready atomic delivery unit, the 509th Composite Bombardment Group, dropped an A-bomb from 30,000 feet on seventy-three ships at Bikini Atoll, in the Pacific. The test was successful, sinking five ships and damaging nine.

Knowing the importance of rapid mobility, General Kenney activated the first strategic support squadron in early 1948, giving SAC its own airlift capability. Two new bombers were delivered to SAC in 1948—the B-36 and B-50. By October of that year, SAC had grown to more than 52,000 people and 1,000 airplanes, operating from twenty-two bases.

The LeMay Era

That month, a man whose name would become synonymous with SAC, Gen. Curtis E. LeMay, took command and moved the headquarters to Offutt AFB, Neb. His first order: The command was to prepare itself immediately for global operations, "to be able to counterattack anywhere at any time."

Refining and expanding the most powerful military force in history required programs for the development of weapon systems, facilities, and professional personnel. General LeMay initiated all three and testified bluntly before Congress in support of improvements he knew were essential.

Valuing skilled, dedicated manpower as his most critical resource, General LeMay founded NCO academies to improve the professionalism of enlisted men. A lead crew school was established to act as a training ground for command-wide standardization of tactics and procedures, and requests for new barracks, housing, and recreation and educational facilities were submitted.

When the Korean conflict broke out in the summer of 1950, SAC forces were ready. Nine days after being alerted, B-29 bombers flew their first combat mission. In three months, SAC bombers destroyed every strategic industrial target in North Korea. With the priority targets cleaned up, B-29s continued to hit transportation lines, enemy airfields, and even conducted close-support missions. The bombers flew 21,328 combat sorties and delivered 167,000 tons of iron bombs in three years of combat.

Following the Far East fighting, General LeMay concentrated on building an overwhelmingly superior deterrent force to meet the rising threat of Communist activity. In August 1953, the Soviets exploded the first hydrogen bomb to be used by their growing force of high-performance delivery systems.

All phases of training in the USAF went ahead at full speed. Aerial refuelings occurred at the rate of one hookup every fifteen minutes night and day. The B-47 jet bomber force expanded to 1,200 by 1955 with a total of 3,000 assigned aircraft: B/RB-36s, RB-50s, KC-97s, KB-29s, C-124s, and F/RF-84s. Worldwide maneuvers, large training exercises, and overseas rotations were accomplished to

shake down newer aircraft and "show the flag." All the while, General LeMay continued to press for better and faster aircraft as he foresaw the future of Soviet military strength.

With aerial refueling an established concept for long-range strategic warfare, the need for a jet tanker to keep pace with newer bombers was paramount. By the end of the LeMay era, the KC-97 tanker was being supplemented by the Boeing KC-135, enabling SAC to refuel at high speeds and altitudes both day and night.

In 1955, the B-52 also began to join the SAC force as the primary heavy strategic bomber. At this point, the command had attained one million jet hours of combat-ready flight time. With the introduction of B-52s, the second million hours took only eighteen months.

The development of SAC's intercontinental strength during LeMay's nine years as Commander in Chief was highlighted in January 1957 when three B-52s circled the globe in forty-five hours, nineteen minutes, in an operation dubbed "Power Flight." "Operation Power Flight," said General LeMay, "is a demonstration of SAC's capabilities to strike any target on the face of the earth."

Before becoming the seventh SAC Commander in Chief, on May 1, 1972, Gen. John C. Meyer was Vice Chief of Staff of the Air Force. A leading American ace in Europe during World War II and an F-86 group commander in Korea, he is credited with thirty-nine and a half enemy aircraft destroyed. He has led air defense units, served as SAC Deputy Director of Plans, and commanded TAC's Twelfth Air Force. Before becoming Vice Chief of Staff, General Meyer was Director of Operations, the Joint Staff.

In July 1957, General LeMay left SAC to become Air Force Vice Chief of Staff, and Chief of Staff four years later. His replacement was the man he had personally picked nine years earlier to serve as his vice commander—Gen. Thomas S. Power.

A Mixed Force

General Power, who earlier had headed the Air Research and Development Command, took command of SAC at a time when a new threat loomed—the intercontinental ballistic missile (ICBM). Before the first Soviet missile was successfully launched in August 1957, SAC had already planned the development of a mixed-force posture of bombers and missiles.

During his seven years as SAC Commander, many developments took place that today are routine throughout the command. Insisting that SAC needed adequate warning, fast reaction, and a sound detailed war plan, General Power instituted the airborne command post in 1961, and put a part of the bomber force on ground alert.

In 1958, to further increase readiness and reaction time, he announced the airborne alert concept that was used until missiles made possible its discontinuance in recent years.

The buildup of the missile force was one of General Power's great achievements. He saw the first Atlas ICBM become operational in 1959, and, with the solid-fuel Minuteman on the drawing boards, he guided the transformation of the command from an all-manned force to a mixed force of bombers and missiles. He insisted that SAC maintain its credibility as a true deterrent force. "It is my job," he said, "to make sure that every morning the Communist military planners check the latest reports on SAC, consider their own scheme for sudden attack, and decide that this isn't quite the right day."

In 1962, the Cuban crisis put the power of SAC to the test. The clandestine introduction of Soviet missiles into Cuba was detected by the command's reconnaissance flights. With

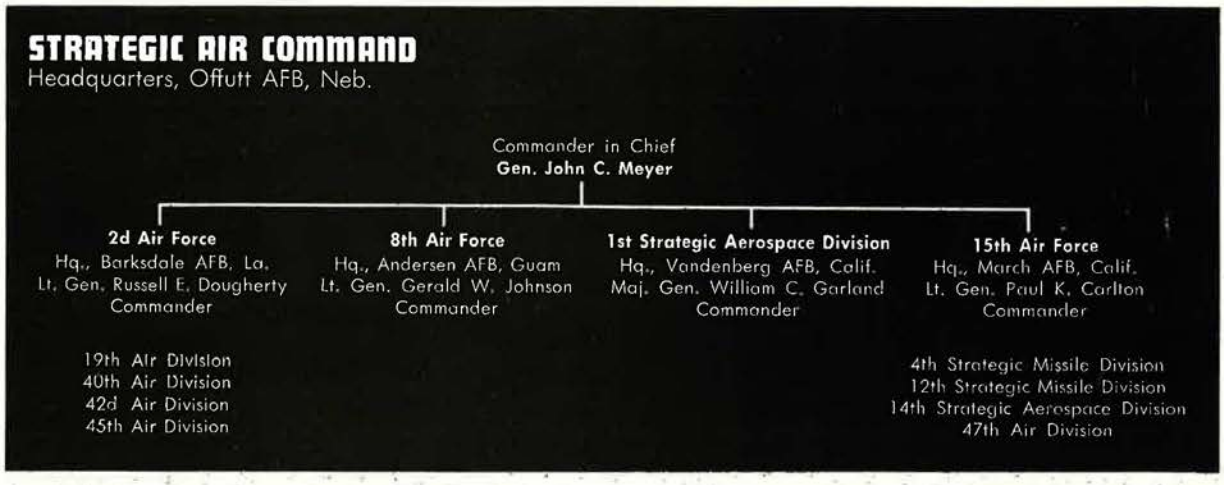
The B-36 (above), introduced in 1948, never flew in combat but played a prime deterrent role in SAC for a decade. The FB-111 (left) medium-range swingwing bomber supplements the SAC B-52 force.

President Kennedy demanding the removal of all offensive weapons from the island, SAC went into increased readiness, expanded its airborne alert, dispersed its medium bomber fleet, and brought its missile force up to maximum alert.

In thirty days the missiles were on the way back to Russia, and the credibility of SAC's nuclear power had been one of the primary reasons.

On October 16, 1963, a SAC B-58 took off from Tokyo and landed at London—8,028 miles distant—in eight hours and thirty-five minutes for an average speed of 937 mph, setting five speed records, some of which still stand today.

By the time General Power retired from SAC in 1964, the command had grown to more than 259,000 people, 2,050 aircraft, 875 ICBMs, and operational control of fifty-two bases worldwide. The B-58 supersonic bomber and Titan II ICBMs had been added to the inventory and operational test launches of the Minuteman ICBM had been successfully completed.



The ICBM Buildup

In December 1964, Gen. John D. Ryan assumed command. A long-time nuclear weapons expert, he had commanded every level of SAC combat unit from wing to numbered air force. As SAC Director of Materiel, he had worked on the early logistics planning for SAC's ICBM force.

The task facing General Ryan in 1964 was that of welding SAC's diverse array of weapons and responsibilities into a unified strategic force. Although still busy refining its ICBMs, the command was also gaining new secondary missions in the wake of important developments. B-52s were being deployed to the Pacific for the first time and others were dropping conventional bombs in tests at Eglin AFB, Fla. In June 1965, they flew their first strikes against the Viet Cong, and SAC bombs once again fell on enemy targets after twelve years of peacetime operations. By the end of the year, more than 100 conventional bomb missions had been flown.

It was also a busy year for KC-135 crews which, during the last six months of 1965 alone, flew 4,000 sorties supporting B-52s and Air Force fighters and reconnaissance aircraft in Southeast Asia.

During General Ryan's command, both missile and aircraft systems were undergoing change. Accelerated phase out of the B-47 and KC-97 took place, and the first older-model B-52s were retired. In 1966, the Mach 3 SR-71 reconnaissance aircraft was delivered to SAC and the announcement was also made that the FB-111, a medium-range, swingwing bomber, would be developed to eventually supplement the aging B-52 force.

On February 1, 1967, General Ryan assumed command of Pacific Air Forces, and Gen. Joseph J. Nazzaro became the fifth commander of SAC.

Vice Commander since December 1964, General Nazzaro had served in the command's various elements for more than twenty years. Under his leadership, SAC's conventional and deterrent capabilities increased. The tempo of activity in Southeast Asia was stepped up as SAC continued to support US military actions with B-52 conventional bombing missions and air refueling.

June 18, 1968, marked the third anniversary of SAC bombing in Vietnam. More than 35,000 sorties had been flown during that three-year period, with 886,000 tons of con-

ventional bombs dropped. In that same period, SAC tankers had flown some 80,000 sorties, offloading better than three and one-half billion pounds of fuel to more than 350,000 receiver aircraft.

The ICBM buildup reached 1,054 missiles in operation in 1967. A new program to increase effectiveness of missile crews was also introduced—the annual Missile Combat Competition, which was held at Vandenberg AFB, Calif., in April of that year. Eighteen combat crews, six Minuteman targeting and alignment teams, and three Titan II alignment teams participated in the competition.

To test the readiness of the missile force, General Nazzaro initiated a no-notice missile exercise in February 1968 called Olympic Play. It tested all ICBMs assigned to the command and verified the alert readiness and launch capability of the SAC missile force.

Gen. George C. Kenney was General MacArthur's air commander in the South Pacific during World War II. After the war, he organized SAC and was its first commander. First SAC headquarters was at Andrews AFB, Md., and of the command's 600 aircraft, only 250 were bombers.

SAC's most famous commander, Gen. Curtis E. LeMay, later became USAF Chief of Staff. Its bomber force routinely refueling at high speeds and high altitudes, day and night, SAC acquired an awesome global capability in line with LeMay's first order to the command: "Be able to counterattack anywhere at any time!"

SAC and the Changing Balance

A new and improved Minuteman III missile was test-launched in late 1968—just two weeks after Gen. Bruce K. Holloway became SAC's sixth Commander in Chief.

As a Flying Tiger during World War II, General Holloway had shot down thirteen Japanese aircraft in the China theater. After the war he became commander of the first jet-equipped fighter group and a key figure in pioneering tactical jet aircraft techniques. Prior to taking command of SAC, he had served as Director of Operational Requirements at Headquarters USAF; Deputy Commander in Chief of the US Strike Command; Commander of the US Air Forces in Europe; and Vice Chief of Staff of the Air Force.

Under General Holloway, the FB-111A swingwing medium-range bomber was delivered to SAC in 1969, just as the B-58s were being retired after ten years of service as the world's first supersonic bomber. Plattsburgh AFB, N. Y., and Pease AFB, N. H., were named as the two bases to receive FB-111 combat wings.

In order to further increase the survivability of the bomber force, SAC began testing its Satellite Basing Program in late February 1969. Designed to disperse bombers and tankers to satellite bases for ground alert, the program has gradually expanded and now stands at thirteen bases in use.

Because of budget cuts and modernization, a major reorganization in command structure was announced by Secretary of the Air Force Robert C. Seamans, Jr., in 1969—SAC's Eighth Air Force headquarters at Westover AFB, Mass., would close by April 1, 1970. The realignment of command functions saw 3d Air Division headquarters on Guam inactivated and Hq. Eighth Air Force relocated there, to preserve the heritage and lineage of SAC's most distinguished combat organization.

The Minuteman III missile, introduced into the inventory in 1970, provides SAC with a new solid-fuel ICBM capable of instant reaction. Employing an improved third stage and new reentry system, Minuteman III is capable of deploying Multiple Independently Targeted Reentry Vehicles (MIRVs) together with penetration aids such as chaff and decoys.

The first Minuteman III wing at Minot AFB, N. D., was declared fully operational in December 1971, and by the mid-1970s, 550 Minuteman IIIs will be programmed as part of the command's missile force.

Currently, the B-1 bomber is scheduled to replace the aging B-52s that serve as the backbone of the strategic manned strike force. Under development by North American Rockwell Corp., the B-1 will be two-thirds the size of a B-52, but will carry a greater payload, be capable of speeds in excess of Mach 2, and have greater penetration capability.

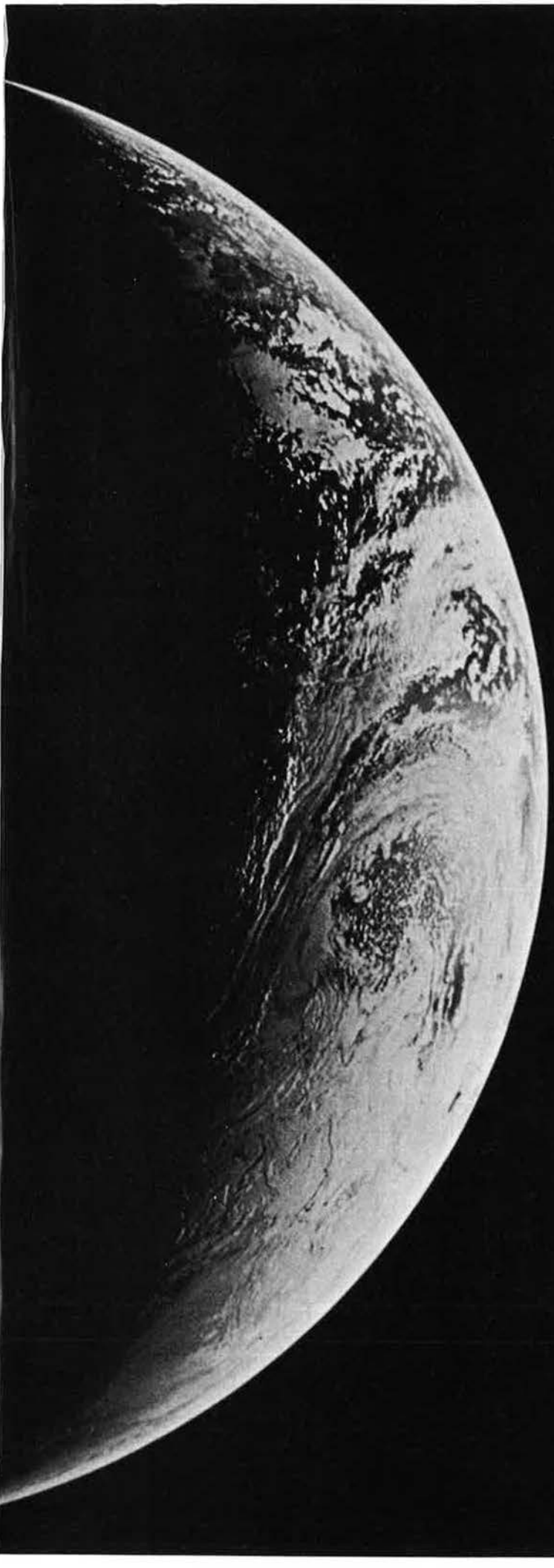
Because of its swingwing design, it will operate effectively at both high and low altitudes, use shorter runways, and have a quicker reaction time than the B-52. It will also incorporate modern technology for low-altitude penetration and weapon delivery. It will be able to carry both the Short Range Attack Missile (SRAM) and the proposed Subsonic Cruise Armed Decoy (SCAD).

First flight of the B-1 is planned for April 1974 and, if a production decision is made on schedule, the first new bombers could be delivered to SAC in 1978.

Other advances in weaponry and command control are foreseen by SAC commanders as necessary if credible deterrence is to be maintained throughout the crucial decade ahead. Electrovisual sensors for the B-52, improved warning systems, an advanced airborne command post, airborne data automation, and ground sensors for aircraft security are just some of the programs being tested for the future.

SAC's greatest concern in the last few years has been the growing strategic offensive and defensive forces of the Soviet Union. Largely unnoticed by the American public, the Russian buildup in ICBMs, sea-launched ballistic missiles, and heavy bombers has produced a dramatic shift in the US–Soviet nuclear balance.

The US strategic Triad of land-launched missiles, manned bombers, and sea-launched ballistic missiles is the most effective means of continued deterrence. As Gen. John C. Meyer became SAC's seventh Commander in Chief on May 1, 1972, dedicated professionals continue to be one of SAC's key elements—just as they have been for the past twenty-six years. ■



It is 1953. People who know what is going on are alarmed. For the first time atomic weapons have been joined to rockets. Enemies suddenly have a new and startling access to the free world — the vast, unguarded corridor of space. To help deter the use of this gigantic passageway, the Air Force develops Minuteman.

Now it is 1972. The corridor has not been used. TRW Systems Group is proud to have been so closely associated with the Air Force in the origin, development and deployment of Minuteman. Because of its presence, space is still a peaceful place.

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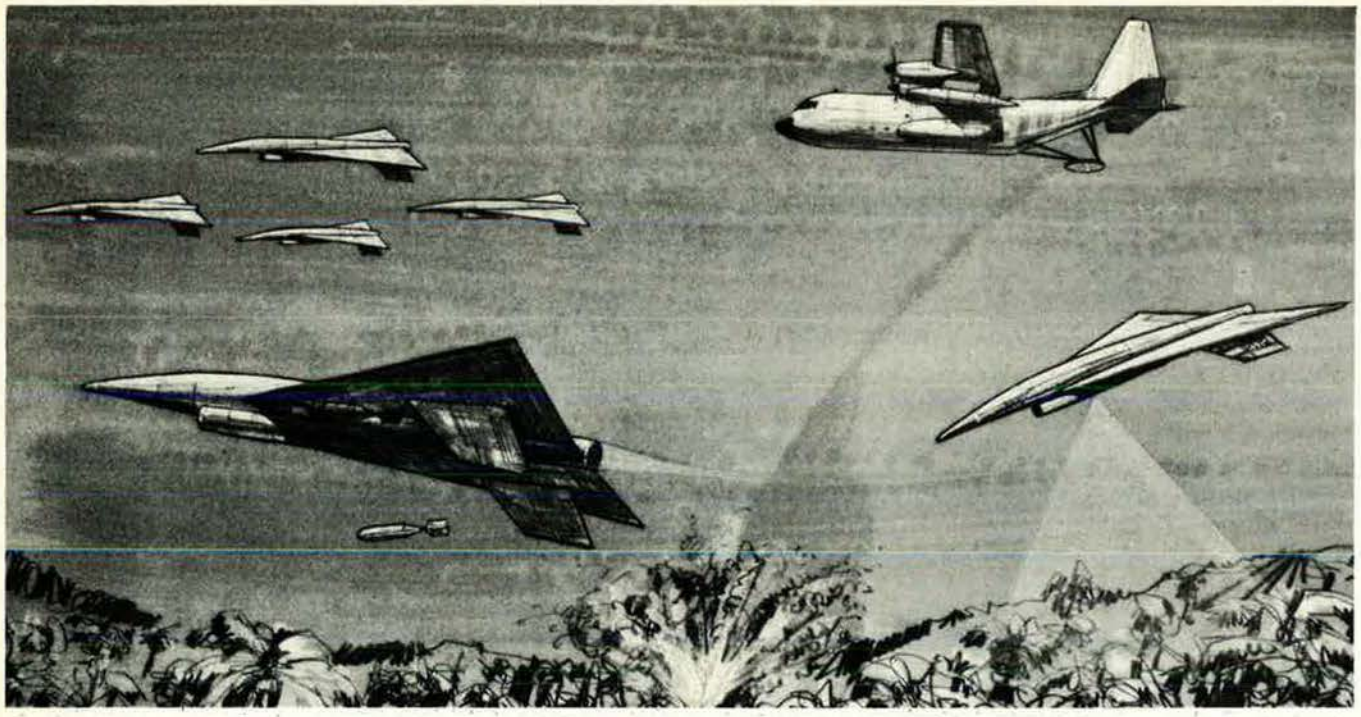


multi-RPV

Motorola's all-new drone control system is the only one designed from the ground up that will successfully provide full IFR capability for multi-RPV command, control and housekeeping data on spatial orientation. The system simultaneously controls dozens of unmanned Remotely Piloted Vehicles.

Motorola's is the *only* system with a built-in Mil-Spec computer compatible with graphic displays used for multiple drone control missions. Further, a PCM data format keeps multiple control from becoming a controller's nightmare. If that were all Motorola's system offered, it would be the finest system available. But there is more.

The AN/TSW-10 control station commands multiple RPV's at more than 250 nautical miles. It is one of five Motorola-built control stations, part of an integrated drone control system, AN/USW-3.

The system is also compatible with ECCM equipment, wide-band sensor links and a variety of other capabilities your future requirements may dictate. Remember, this is the *only* proven, solid-state system you can buy today. It is cost effective; it was developed by the government agencies to fly both single and multiple drones. Choose from a variety of both ground and airborne control stations currently in use.

If you have a requirement to operate multi-RPV's, ask us for a briefing. We can probably save you R & D time and money—with a system which represents today's "art." For a system overview brochure write: Motorola Government Electronics Division, Drone Electronics Group, 8201 E. McDowell Rd., Scottsdale, AZ 85257. Or phone (602) 949-3263.

MOTOROLA

Supersabres, once positioned in Turkey by rotational units of USAFE, stream past a minaret. The last of the F-100s, which were also flown in England, Spain, and Italy, left the command this spring.

A MAJOR AIR COMMAND

The year 1972 marks the thirtieth year that American airmen have been stationed continuously on European soil. Considering the chronic unsettled state of the world—and our links with NATO—it can be assumed that the United States Air Forces in Europe will continue as an essential overseas command . . .

USAFE—AMERICAN AIR SHIELD FOR EUROPE

As THE US Air Force celebrates its Silver Anniversary, the United States Air Forces in Europe (USAFE) proudly traces its lineage back through thirty years of continuous air operations in the skies over Europe.

The commitment of US airpower to the defense of Western Europe, and subsequently to NATO, dates back to May 11, 1942. That date marked the arrival in the British Isles of the first contingent of US Army troops under independent command. They were thirty-nine officers and 384 enlisted men of the US Army Air Forces' Eighth Air Force.

The Eighth subsequently came under the US Strategic Air Forces in Europe, established early in 1944 and headed by Gen. Carl A. Spaatz.

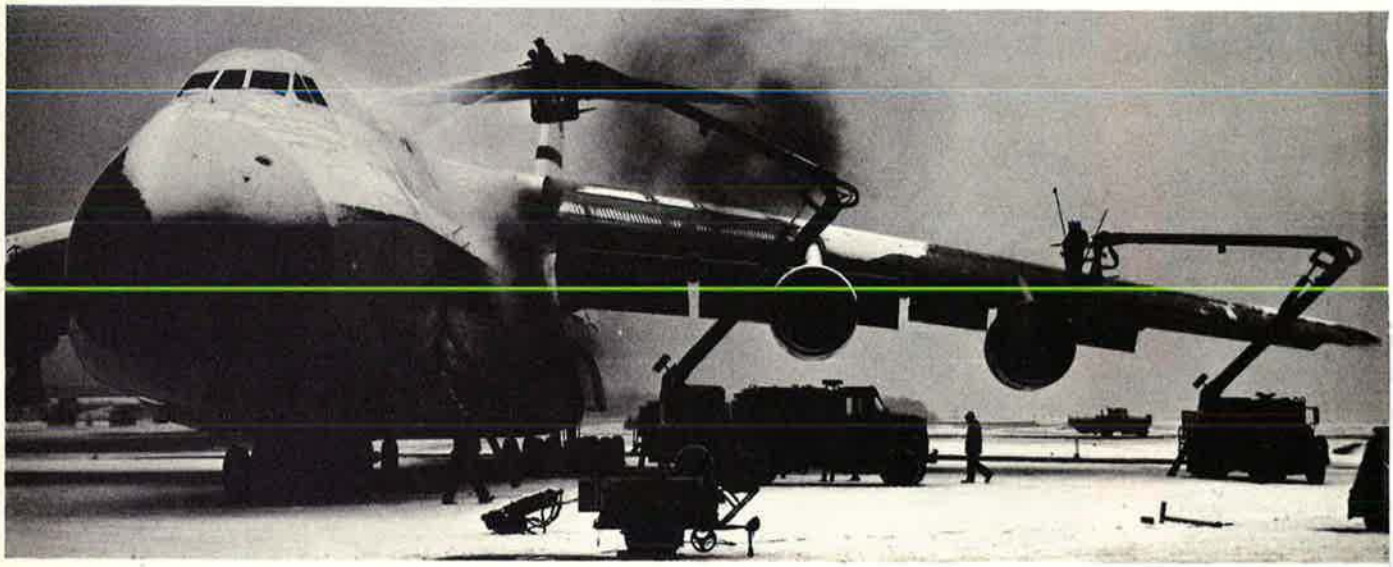
USAFE'S LEADERS THROUGH THE YEARS

Lt. Gen. John K. Cannon	Aug. 16, 1945	Mar. 2, 1946
Maj. Gen. Idwal H. Edwards	Mar. 2, 1946	Aug. 14, 1947
Brig. Gen. John F. McBlain	Aug. 15, 1947	Oct. 20, 1947
Lt. Gen. Curtis E. LeMay	Oct. 20, 1947	Oct. 15, 1948
Lt. Gen. John K. Cannon	Oct. 16, 1948	Jan. 20, 1951
Gen. Lauris Norstad	Jan. 21, 1951	July 26, 1953
Lt. Gen. William H. Tunner	July 27, 1953	June 30, 1957
Gen. Frank F. Everest	July 1, 1957	July 31, 1959
Gen. Frederic H. Smith, Jr.	Aug. 1, 1959	June 30, 1961
Gen. Truman H. Landon	July 1, 1961	July 31, 1963
Gen. Gabriel P. Disosway	Aug. 1, 1963	July 31, 1965
Gen. Bruce K. Holloway	Aug. 1, 1965	July 31, 1966
Gen. Maurice A. Preston	Aug. 1, 1966	July 31, 1968
Gen. Horace M. Wade	Aug. 1, 1968	Jan. 31, 1969
Gen. Joseph R. Holzapple	Feb. 1, 1969	Aug. 31, 1971
Gen. David C. Jones	Sept. 1, 1971	

The name of that organization was changed to the United States Air Forces in Europe on August 7, 1945. A month after its activation, USAFE moved its headquarters from France to Wiesbaden, Germany, where it is located today.

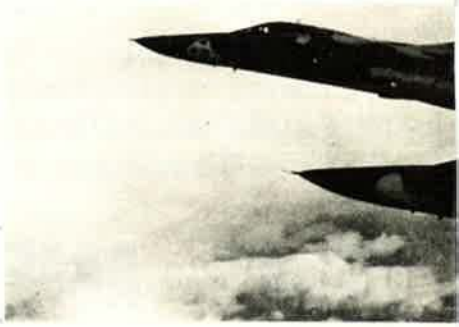
Hot and Cold War

June 1972 marks the thirtieth



"Fat Albert" has a lot of surface that collects snow and ice. Without the help of cherry pickers, cleaning off this C-5 would be an even colder job, and considerably more hazardous.

The last of the F-100s now gone, USAFE's tactical force is composed entirely of F-111s (below) and F-4s.



A C-97 drops food over Tanganyika in 1962. USAFE humanitarian missions have frequently aided neighboring countries in distress.

An Air National Guard boom operator talks to the pilot of a following USAFE fighter, jockeying the aircraft into position for air-to-air refueling.

year that American airmen have been operating continuously in Western European skies—first with wartime Allies, and since 1949 with North Atlantic Treaty Organization (NATO) peacetime partners in the greatest deterrent force ever assembled for the defense of Europe.

It all began in late June 1942, when the first US heavy bombardment group flew to England. Maj. Cecil P. Lessig became the first American pilot in US uniform to fly a mission over German-held territory in World War II when he accompanied an RAF fighter squadron over France in one of thirty-six Mark V, prop-driven Spitfires.

Three decades later, USAFE pilots flying the most modern, sophisticated weapon systems in the world—supersonic F-4 Phantoms and Mach 2.2 swingwing F-111 fighter-bombers—range the sky from bases extending along a perimeter of free nations embracing a quarter of the globe. Within this perimeter are fifteen countries, extending along a giant arc from the British Isles through Western Europe to Turkey.

Transition to peace was the keystone of events in Western Europe in 1945, when USAFE was formed. In less than three years, however, the command was called upon to help counter Communist pressures that threatened the peace and security of the free nations of the West.

Gen. John K. Cannon, then a lieutenant general, became USAFE's first commander in those postwar years. USAFE, as a newly constituted command, provided the air component of the United States Forces, European Theater, then under the command of Gen. Dwight D. Eisenhower.

In the immediate postwar period, Allied forces were being rapidly reduced, and the redeployment of hundreds of thousands of servicemen was a major concern of American forces. However, formidable tasks remained in Europe. These included assistance in the reconstruction of war-torn countries and the occupation and rehabilitation of the defeated powers.

USAFE shared in the duties of occupation, with responsibilities centered in the American zones of Germany and Austria. Its tasks included disarming the remnants of the Luftwaffe, and the inventory and disposition of vast quantities of US war materials.

By 1947, these tasks were nearing completion and USAFE was engaged in routine occupational duties. It had dwindled from an August 1945 strength of 230,923 to 15,000. Largely an administrative force, it had virtually no combat capability.

In 1947, Army Gen. Lucius D. Clay became Commander in Chief of United States Forces, European Theater, and Military Governor of Germany. Lt. Gen. Curtis E. LeMay became Commander in Chief of USAFE.

Events in which USAFE soon became involved underscored the changing political and military complexion of the postwar world. In the spring of 1948, the command helped Greece suppress a Communist-sponsored revolt by lending support to the Royal Hellenic Air Force. Success of this action, however, was overshadowed by the fall of Czechoslovakia.

When the Communists blockaded Berlin in June 1948, the West took resolute action. General Clay ordered the Berlin Airlift. General LeMay set the historic operation in motion by ordering the first flight, which took off from Wiesbaden Air Base and landed at Berlin's Tempelhof Airfield.

Almost two and a half million

The sun breaks through clouds over Germany, a welcome event for this flight-line mechanic.

UNITED STATES AIR FORCES IN EUROPE

Headquarters, Lindsey AS, Wiesbaden, Germany

Commander in Chief
Gen. David C. Jones

3d Air Force
Hq., South Ruislip, England
Maj. Gen. William F. Pitts
Commander

By July 31, 1972, Hq. 3d AF will be at RAF Mildenhall

16th Air Force
Hq., Torrejon AB, Spain
Maj. Gen. Edward A. McGough, III
Commander

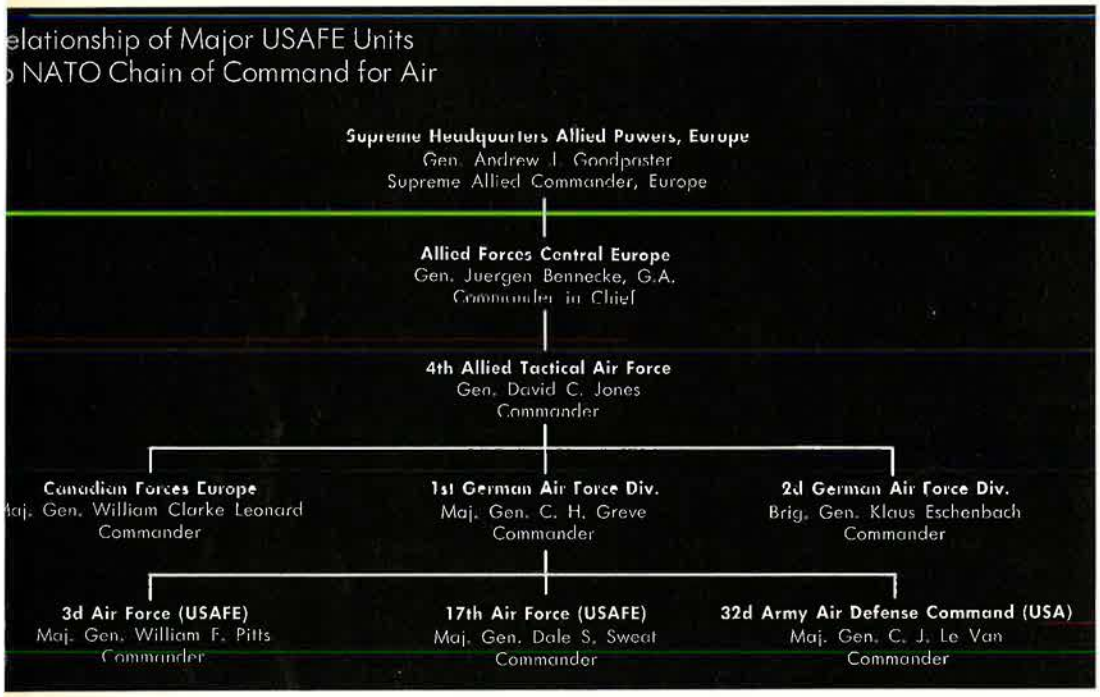
17th Air Force
Hq., Ramstein AB, German
Maj. Gen. Dale S. Sweat
Commander

tons of supplies were flown into Berlin in nearly 300,000 flights during a period of fifteen months. Soviet authorities lifted the blockade on May 12, 1949, but the Airlift continued through September 1949 to safeguard West Berlin through adequate stockpiling of supplies.

The crisis in Berlin, the first of recurring tensions in the former German capital, had brought the ideological conflict between the forces of world communism and the democratic countries into the open. swiftly to establish a unified Allied command, the Supreme Headquarters Allied Powers Europe (SHAPE), to ensure that national forces allocated by NATO countries were properly trained and could be assembled into an effective, integrated defense force.

In January 1951, as USAFE prepared for its military role in NATO, the Twelfth Air Force, dating back to World War II operations in North Africa, was reactivated and assigned to the command. At the 1953, and the 322d Air Division (Combat Cargo) was activated in 1954 as USAFE's airlift support arm. The United States Logistics Group (TUSLOG), later a major subcommand, was organized in Turkey in 1955.

On November 15, 1959, headquarters of USAFE's Seventeenth Air Force was transferred to Ramstein, Germany, from Wheelus Air Base, Libya, where it had been located since moving from Morocco in August 1956. The Seventeenth



Gen. David C. Jones has been CINCUSAFE since 1971. He previously commanded SAC's Second Air Force, was DCS/Operations and Vice Commander of Seventh Air Force in Vietnam, and was Vice CINCUSAFE before assuming his present position.

It was soon clear that USAFE's international responsibilities had not ended with the Airlift. In mid-1948, a US fighter-bomber wing had been deployed to Furstenfeldbruck, Germany, and now, as cold-war pressures continued, USAFE's mission rapidly changed.

USAFE and NATO

The exact nature of this mission became apparent after the formation of NATO in April 1949, and the establishment in late 1950 of an international military organization for the defense of Western Europe.

General Eisenhower, designated commander of NATO forces, moved same time, the 3d Air Division, which had been active in England since the Berlin Airlift, was assigned to USAFE.

From this point, USAFE's buildup was rapid, as one tactical unit after another arrived or was activated within the command to meet NATO requirements.

In May 1951, the 3d Air Division in England was redesignated Third Air Force and became a major USAFE subcommand. Eventually, USAFE was assigned units and responsibilities in Morocco, Libya, Saudi Arabia, Greece, Turkey, Italy, and Spain.

The Seventeenth Air Force was formed in Rabat, Morocco, in April assumed operational control of tactical units in France and Germany, while USAFE reconsolidated its command headquarters at Lindsey Air Station, Wiesbaden, and inactivated the Twelfth Air Force, its advanced headquarters.

A year later, control of the 7272d Air Base Wing and weapons training activity at Wheelus Air Base, Libya, was transferred from USAFE headquarters to the Seventeenth Air Force.

In mid-1961, a new crisis in Berlin focused world attention on Communist pressures, which led to building of the infamous Berlin Wall. During this period, Seventeenth Air Force acquired an additional five

bases in France. Four of these were brought to full operational status for use by Air National Guard and Air Reserve units deployed to Europe in a history-making transatlantic augmentation. The crossing was made by seven fighter squadrons and a tactical reconnaissance squadron, all equipped with F-84 aircraft. A complete tactical control group accompanied the 200 planes to Europe. Three additional tactical squadrons with F-104s were moved to Spain for alert duty.

The F-84 augmentation remained on alert until mid-1962, when their aircraft and mission were assumed by regular Air Force units activated in USAFE.

USAFE shared in another history-making transatlantic deployment of combat-ready forces in October–November 1963, when Exercise Big Lift moved the entire 2d Armored Division from Texas to Europe.

In April 1964, USAFE's tactical airlift functions were reassigned to Military Air Transport Service (now the Military Airlift Command). The 322d Air Division, USAFE's air logistical arm for a decade, was transferred to MATS and redesignated 322d Air Division (MATS).

At the end of 1964, the 65th Air Division was inactivated after completing a training program that prepared the Spanish Air Force for a final take-over of the air defense system in Spain.

Modernization Begins

In 1965, arrival of the first RF-4C Phantom reconnaissance aircraft touched off a long sequence of improvements in USAFE's tactical capabilities. The same year, two new tactical organizations were activated—the 26th Tactical Reconnaissance Wing and the 25th Tactical Reconnaissance Group—and the 86th Air Division was reassigned to make it directly responsible to Hq. USAFE instead of to Seventeenth Air Force.

By April 1966, USAFE had acquired its third numbered air force, the Sixteenth, based at Torrejon, Spain.

In the period 1965–72, organizational changes and speeded-up aircraft modernization streamlined USAFE into a highly versatile, tightly managed, combat-ready tactical air force unequaled in its long illustrious history.

From the first jet, the F-80 Shooting Star, introduced into Europe in mid-1948, the USAFE inventory had included F-84s, F-86s, F-100s, F-101s, F-102s, and F-105s, plus C-130s and C-131s for transportation and aeromedical evacuation, and the B-66 tactical bomber. The F-100 Supersabre, added in 1956, remained the backbone of USAFE airpower until the modernization of the '70s.

In 1965 the powerful F-4C Phantom entered the inventory and a new era of aircraft weaponry began its domination of USAFE airpower in Europe. Phantom D and E models were introduced to the command as the F-100s, F-101s, F-102s, and F-105s were phased out.

August 1971 saw the 20th Tactical Fighter Wing in England become the first overseas wing to be completely equipped with the newest weapon in the Air Force arsenal—the swingwing F-111. By early spring 1972, the last of the F-100s had left the command. USAFE had become an all-Phantom and F-111 tactical air force, and represented the most powerful air commitment in the history of NATO.

During this period, two events occurred that caused further realignment of forces—the withdrawal from France and Libya. The 1967 withdrawal from France inaugurated the dual-based concept under which tactical units earmarked for USAFE are based in the US, with frequent deployment for training to assigned bases in Europe. The Wheelus AB evacuation in 1970 closed USAFE operations in North Africa. In further actions, the 86th Air Division was merged with the Seventeenth Air Force at Ramstein, placing fighter and air defense capabilities under one command.

The Look of the '70s

In more recent actions, USAFE reorganized TUSLOG into a "mini" wing-level-type headquarters and, in January 1972, announced the reorganization of its three numbered air forces—the Third, Sixteenth, and Seventeenth. The move will reduce the three headquarters by more than 400 staff personnel and reassign them to combat units. The reorganization shifts the personnel center of gravity further toward combat units, with more than ninety-five percent of USAFE's manpower employed at wing level and below.

Volumes could be written about USAFE's special missions—the humanitarian actions that have won for it an enviable reputation. Beginning with the Berlin blockade's "Operation Vittles," there was the Suez crisis; Hungarian revolution; Lebanon assistance; earthquakes in Morocco, Turkey, Iran, Greece, and Sicily; floods and famine in Kenya, Somalia, and Italy; and medical aid to the Congo and Jordan, to name a few.

The USAFE of the 1970s bears little resemblance to the USAFE of previous decades. It is a streamlined, tightly managed, NATO-committed force with a greatly improved combat-readiness posture. It is better manned, better equipped, and more capable of performing its primary mission than ever before in the history of its commitment to NATO. The force modernization it has undergone in the past two years has considerably improved its firepower and weapon systems and multiplied its combat capability—at a lesser cost in money and personnel.

USAFE's present Commander in Chief, Gen. David C. Jones, is the command's sixteenth commander in a long line of illustrious leaders who have guided USAFE through postwar years and cold-war crises. Assuming command on September 1, 1971, General Jones heads up a major air command that is older in overseas service than the life span of its parent, the US Air Force. As a major air power in the NATO structure, USAFE has earned a niche in the European environment with its motto, "Vigilance for Freedom," and has made a lasting contribution to the peace and security of the NATO Alliance. ■

A MAJOR AIR COMMAND

While focusing on the action in Southeast Asia during the past few years, Pacific Air Forces has also met its responsibility for maintaining air superiority in an area that encompasses more than one-third of the earth's population. Support of national security in this huge realm will remain the mission of . . .

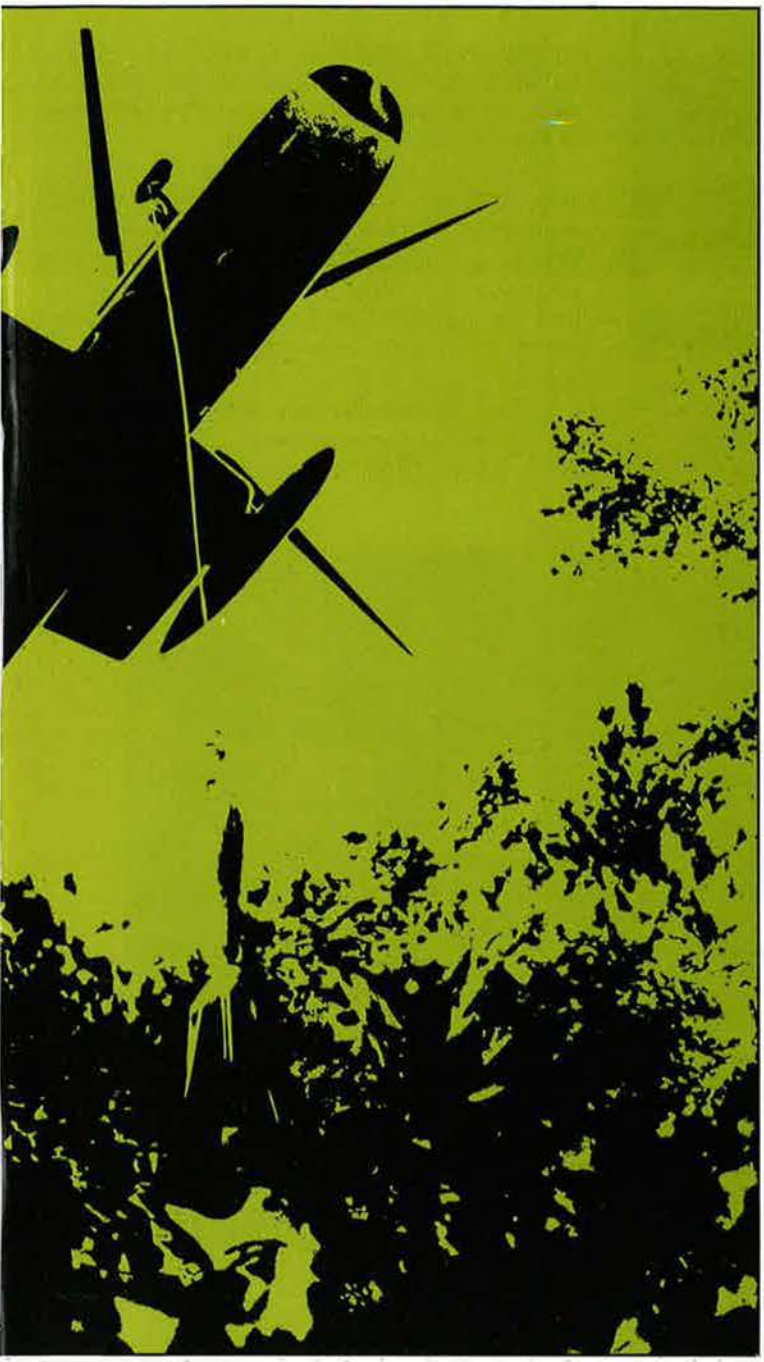
PACAF—AIR SUPERIORITY IN THE PACIFIC

A Vietnamese youngster receives an inoculation from a visiting USAF civic-action team. In addition to medical and dental programs like this, civic action encompasses road building, help to schools, and construction projects.

SINCE the birth of the United States Air Force as an independent military department in 1947, airpower has grown dramatically in the Pacific area.

The unfolding of what is today called the Pacific Air Forces (PACAF) actually began before the Japanese bombed Pearl Harbor. The United States air component in the Pacific was then known as the Far East Air Force (FEAF). Forced to disband during the early stages of World War II, FEAF was later reestablished as the overall headquarters of the Fifth, Seventh, and Thirteenth Air Forces.

During the postwar years and at the time the Air Force was being established as a separate service, FEAF was undergoing several major



A "Jolly Green Giant" helicopter lowers a jungle penetrator to a downed aircrew member in the war zone. These rescue helicopters have saved many flyers down in hostile territory.

organizational changes. Perhaps the single most important change was naming FEAF the theater air force for the Far East Command (FEC). For the first time all US Air Forces in the Far East and the Southwest Pacific were placed under one Air Force commander.

On the eve of the Korean War in June 1950, FEAF consisted of Fifth Air Force in Japan; Thirteenth Air Force headquartered in the Philippines; Twentieth Air Force at Okinawa; and the Far East Air Materiel Command (FEAMCOM) in Japan.

Korean War

Far East Air Forces was involved in the Korean War even before official United States entry into that conflict. Air transports began evacuating civilians from Seoul and other areas within hours after the North Koreans struck across the thirty-eighth parallel. A Fifth Air Force F-82 pilot, patrolling the skies over Seoul and Inchon Harbor, shot down the first Communist aircraft during the initial twenty-four hours of the conflict.

For FEAF the Korean conflict was a curious mixture of conventional and jet warfare. The war required rapid buildup of units, equipment, and personnel, with all the complex problems of changing from peacetime to wartime footing. Fifth Air Force units, whose post-World War II mission had been air defense, once again became a combat tactical air force. Fifth moved to Korea December 1, 1950, and assumed direction of the air war.

One major addition to FEAF resources during the early days of the Korean conflict was a bomber command. World War II B-29s were rapidly transferred from the United States and sent into combat within hours after arrival.

During the Korean conflict, FEAF fighter pilots in F-86 Sabrejets destroyed Communist MIGs at a ratio of ten to one, creating a new breed of fighter pilot—the "jet ace." In more than 625,000 combat sorties flown before the July 27, 1953, truce, Fifth Air Force pilots and crews destroyed nearly 1,000 aircraft—808 of them MIGs—and damaged another 925.

At the end of the Korean War, FEAF reverted to its peacetime mission, keeping its resources ready to cope with any future emergency.

PACAF Organized

On July 1, 1957, Far East Air Forces was reorganized as Pacific Air Forces and its headquarters moved from Japan to Hickam AFB, Hawaii. All USAF combat forces in the entire Pacific, with the exception of Strategic Air Command forces, were placed under a single commander, and PACAF became the air component of the unified Pacific Command (PACOM).

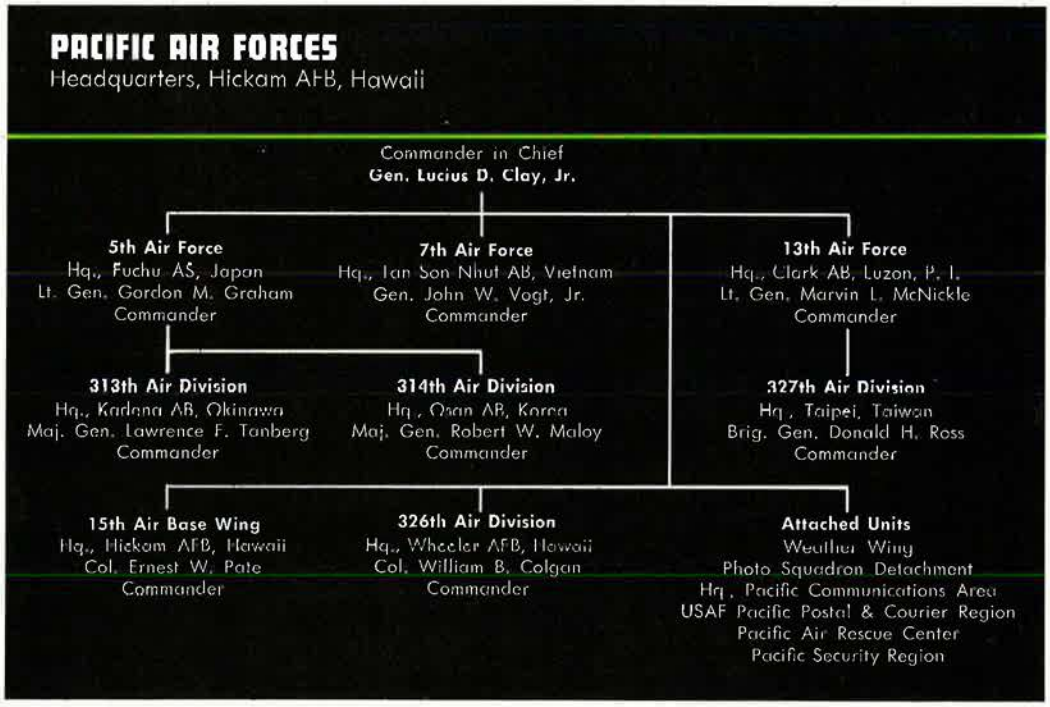
Pacific Air Forces began to take an active part in South Vietnam air operations in November 1961 when the 2d ADVON, later re-

Twenty years ago: F-86 Sabrejets stand flight-line vigil, awaiting the next day's missions over North Korea. The Air Force's first sweptwing fighter gained world recognition in Korea with more than 800 MIG kills. F-86 pilots destroyed ten MIGs for every lost Sabrejet.

named the 2d Air Division, was formed in the Republic of Vietnam. Most of the personnel were on temporary duty from PACAF units or from Tactical Air Command.

To combat the ever-worsening military situation in South Vietnam, airpower in Southeast Asia grew steadily during the ensuing years. Following Communist attacks against US naval vessels in the Gulf of Tonkin, additional squadrons of tactical fighter, bomber, and reconnaissance aircraft were deployed to Southeast Asia in August 1964.

Heavy fighting in early 1965 increased 2d Air Division's commitment for air support. On February 8, 1965, USAF strike aircraft flew



Gen. Lucius D. Clay, Jr., has been Commander in Chief, PACAF, since August 1, 1971. Previously, he headed Seventh Air Force in Vietnam. During World War II, General Clay was a bombardment group commander in Europe. Postwar assignments included Pentagon duty as a Deputy Chief of Staff, and a number of posts in SAC. He is a former commander of TAC's Twelfth Air Force and Vice CINCPACAF.

their first missions over North Vietnam. Joining with them were Vietnamese Air Force (VNAF) A-1 Skyraiders. Later that month, USAF F-100 Supersabres and B-57 Canberras hit Viet Cong strongholds in South Vietnam, the first combat missions for USAF jet aircraft within the borders of the republic.

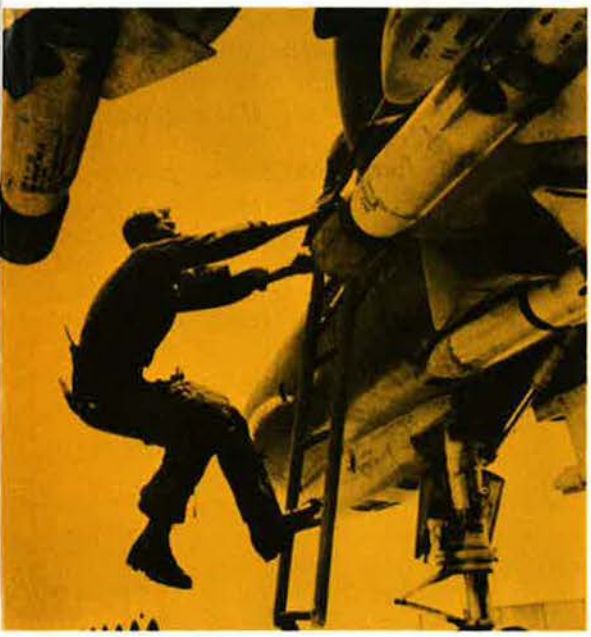
Air Force pilots in F-105 Thunderchiefs and F-4 Phantoms flew missions over North Vietnam on a continuing basis starting March 2, 1965.

SEA Buildup

With the step-up of American participation in Vietnam, the Air Force more than tripled

its logistic, fighter, and ground support to meet ever-increasing demands. On April 1, 1966, the 2d Air Division was replaced by Seventh Air Force, which had been deactivated when PACAF was organized in 1957, and, as the buildup of US forces in Vietnam continued, additional USAF aircraft and resources were committed to the war.

During 1966, pilots struck interdiction targets throughout North Vietnam and Laos, and most of the industrial complexes in and around Hanoi. The first occupied North Vietnamese airfield was struck when USAF fighter-bombers, launched from bases in Thailand, bombed Hoa Loc Airfield April 24, 1967. Unofficial reports indicated some fourteen MIGs were destroyed on the ground during the raid. May



In "Mount Up and Move Out," PACAF photo competition winner SSgt. Rick Diaz captures the urgency of an air defense alert as an F-4 pilot scrambles aboard his aircraft.

1967 was the biggest "MIG-kill" month of the war. Twenty MIGs were downed, six of them on May 20.

During the January-February Communist Tet offensive in 1968, instantaneous air operations were launched against the North Vietnamese and Viet Cong. As the war continued in Vietnam, PACAF also deployed airpower to the Republic of Korea in the wake of the USS *Pueblo* seizure by the North Koreans in January.

One of the biggest tactical airlift operations of the Vietnam War began January 21, 1968, when Khe Sanh, a US Marine stronghold, came under heavy enemy attack. US Air Force, Navy, and Marine strike aircraft flew around-

An F-4 Phantom prepares to take on fuel from a KC-135 tanker over Southeast Asia. This dependable fighter has proved itself in a variety of roles.

the-clock support of the embattled installation. During a four-day period the aircraft flew 1,615 tactical air strikes against enemy positions around Khe Sanh.

With the cessation of the bombing of North Vietnam, November 1, 1968, USAF aircraft resources were concentrated against the continuing Communist buildup in the south. Infiltration routes from Laos and Cambodia into the Republic of Vietnam continued to be prime interdiction targets.

In April through May 1970, US forces entered Cambodia in a limited action to attack enemy supply routes and troop-concentration areas. PACAF strike and reconnaissance aircraft provided the cover for that operation and assisted the Cambodian refugees with airlift out of the fire zones.

PACAF aircraft are still striking the Ho Chi Minh Trail in Laos. Aided by Strategic Air Command B-52s operating primarily from Thailand, they are severely restricting the enemy's capability to take significant military action.

Throughout the years of the Vietnam conflict, nearly every major USAF command, including Air Force Reserve and Air National Guard units, has supported the MACV mission.

Vietnamization

One of the most important tasks undertaken

PACAF'S LEADERS THROUGH THE YEARS

Lt. Gen. George E. Stratemeyer	Apr. 26, 1946	May 20, 1951
Lt. Gen. Earle E. Partridge (acting)	May 20, 1951	June 9, 1951
Gen. O. P. Weyland	June 10, 1951	Mar. 31, 1954
Gen. Earle E. Partridge	Mar. 26, 1954	May 31, 1955
Gen. Laurence S. Kuter	June 1, 1955	July 31, 1959
Gen. Emmett O'Donnell, Jr.	Aug. 1, 1959	July 31, 1963
Gen. Jacob E. Smart	Aug. 1, 1963	July 31, 1964
Gen. Hunter Harris, Jr.	Aug. 1, 1964	Jan. 31, 1967
Gen. John D. Ryan	Feb. 1, 1967	July 31, 1968
Gen. Joseph J. Nazzaro	Aug. 1, 1968	July 31, 1971
Gen. Lucius D. Clay, Jr.	Aug. 1, 1971	

by the USAF in Vietnam has been to assist and train the Vietnamese Air Force.

Although the advisory role was in effect throughout the war, a blueprint for further expansion of the VNAF was established in December 1968, when the US Department of Defense approved the Improvement and Modernization Program. This multiphased program of training and equipment acquisition was designed to make the VNAF totally self-sufficient in their defense of their own country, thus allowing disengagement of the US Air Force.

The program proved successful, and the VNAF of today is a professional, well-balanced force capable of meeting the daily demands of a modern air power. The VNAF now numbers more than 38,000 personnel and some 1,100 aircraft. Programmed to grow to 52,000 people by late 1973, the VNAF also is scheduled to acquire additional aircraft to bring its total to 1,300 planes.

Although PACAF's prime area of concern over the past few years has centered in Southeast Asia, this is only a portion of its broad responsibilities. As the air component of PACOM, it is responsible for aerospace operations from Southeast Asia to Northeast Asia, the Indian Ocean, the Bering Sea, and throughout the entire Pacific. Within this area live more than one-third of the people on earth, under thirty-five different flags.

America's first jet ace was Jim Jabara, shown here in full flying gear following a mission over North Korea in his F-86 Sabrejet. Jabara shot down fifteen MIGs, possibly destroyed three others, and damaged eight during the conflict. Jabara, then a captain, wrote a first-hand account of his experiences in "We Fly MIG Alley" for the June 1951 issue of AIR FORCE Magazine.

PACAF Today

To meet the challenging mission of air superiority in this area, today's PACAF is manned by more than 78,000 men and women. Their responsibility is magnified when one recalls that less than three years ago PACAF's strength totaled nearly 178,000.

PACAF's structure consists of three numbered air forces, four air divisions, and one separate reporting air base wing, directed from PACAF Headquarters at Hickam AFB, by Gen. Lucius D. Clay, Jr., and his staff.

Also located at Hickam is the 15th Air Base Wing, charged with supporting all PACAF central Pacific activities, including the areas of Hawaii and Johnston Island. It responds directly to the PACAF Commander in Chief.

Fifth Air Force, headquartered at Fuchu AS, Japan, serves as PACAF's first line of air defense in the Far East. Its area of responsibility is nearly as large as the continental United States and includes Japan, Korea, Okinawa, and the seas surrounding these land areas. Fifth's presence in Japan, which has been substantial over the past twenty-five years, is steadily being reduced. Tactical aircraft once based at Misawa and Yokota Air Bases have been relocated to bases outside of Japan. At present, further unit and mission consolidations are under way or planned.

Seventh Air Force, with headquarters at Tan Son Nhut AB near Saigon, is responsible for all US Air Force operations in Vietnam. Its commander also serves as Deputy Commander for Air, Military Assistance Command, Vietnam (MACV). In this role he is responsible for coordinating the combined airpower of all allied forces in Vietnam. As the VNAF assumes more and more of the in-country air war, Seventh units are being deactivated and bases turned over to the VNAF. In mid-1969, USAF strength in the Republic of Vietnam was more than 60,000. By May 1, 1972, it was slated to be reduced to 16,000.

Thirteenth Air Force, known as the "Jungle Air Force" since its birth in 1943, is headquartered at Clark AB, Republic of the Philippines. Its units, which are based in Thailand and Taiwan as well as the Philippines, stand combat-ready and capable of instant mobility to ensure the continued freedom of people living within the Southwest Pacific and Southeast Asia.

Thirteenth's units provide air defense for an area three times as large as the continental United States, populated by more than 250,000,000 people. Their mission is fourfold: to support units involved in the Southeast Asia conflict; to assist the armed forces of the Philippines in the air defense of their homeland; to provide air defense for Guam and New Zealand; and to remain combat-ready to meet the needs of a general war should it occur.

Another organization playing a vital role in the air war in Southeast Asia is Deputy Commander, 7/13th Air Force, headquartered at Udorn Royal Thai AB, Thailand. The mission and organization of 7/13th are unique. Not only is the commanding officer a deputy commander of two numbered air forces, but he is also the senior PACAF representative in Thailand. The 7/13th supervises the operational mission of USAF aircraft based in Thailand, as directed by Seventh Air Force headquarters. These aircraft were significantly involved with the earlier bombing of North Vietnam, and are presently continuing reconnaissance and interdiction missions along the Ho Chi Minh Trail. The command is additionally responsible to Thirteenth Air Force for base resources, personnel, and other key support areas.

In continuing to accomplish its goals in support of national policy, PACAF of the future will take shape around a very capable though widespread force, augmented when required by forces deployed from the continental United States. PACAF's mission will remain the defense of US interests in the Pacific Ocean area. ■

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Somehow, most project managers have never even *heard* of our FW series of apogee/upper stage motors.

That's surprising, because FW's have already successfully placed 48 payloads in space in 49 flights. We feel that's an exceptional achievement.

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We have a succinct presentation that tells you all about them. It gives you the facts, the figures, and the background. (If you don't have time for that, we'll send you a list of our flights and you can take it from there.) Write and tell us if you're interested.

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United Technology Center
DIVISION OF UNITED AIRCRAFT CORPORATION
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SUNNYVALE, CALIFORNIA 94088

mod radio

"MOD" can stand for modern, or modular, or these days just plain "mod."
RCA's ARC-1152 UHF Airborne Command Radio — modern it is! Modular it is! But is it mod?

MODern Technology. RCA's ARC-1152 is a modern, state-of-the-art radio . . . with design technology derived from 37,600 hours of ARC-144 testing . . . which has demonstrated over 1000 hours *use* MTBF.

MODular Design. The common-avionics design of the ARC-1152 permits interchanging radios and interchanging modules . . . so one basic radio can serve many uses. By choice of plug-in modules, you get just the airborne radio needed to do the job . . . basic command radio, plus optional communications modes — Satellite Communications and/or FSK and FM Data Communications.

MODifications. *NONE.* The ARC-1152 directly replaces existing command radios, simply and quickly *without* modifications to aircraft wiring or installation.

MODerate Expense.

- Modular design — select the most *economical* radio for the job.
- No installation modifications — move up *economically.*
- Modular interchangeability — *reduce cost* of logistics support.
- High reliability — *reduce cost* of maintenance.

But is it MOD? Well, if you mean up-to-date and ultra-functional, the ARC-1152 definitely qualifies! All electronic receiver tuning . . . 7000 channels . . . broad band "no-tune" transmitter.

For more information on RCA's Airborne Command Radio, write RCA Communications Systems Division, Government Communications Systems, Camden, New Jersey 08102.

RCA
Government and Commercial Systems

From providing large-scale logistical support to conducting air rescue missions—air transportation is the job of the Military Airlift Command. Our modern Air Force, and to a substantial degree the other services, could not function in their global roles without MAC . . .

During WW II, C-46s (above) routinely flew the Hump between India and Burma, a feat unheard of in prewar days. Much progress in airlift technology lay ahead, though, before the C-5 (below) entered service.

MAC—ITS MIDDLE NAME IS AIRLIFT

A MAJOR AIR COMMAND

THE MIDDLE name of MAC may be "airlift," but its mission is not that simple. The primary mission is the strategic airlift of combat forces and equipment, but MAC is responsible for a number of other major missions that serve the Air Force and the Department of Defense.

Logistical resupply of deployed forces; airdrop of troops and battle equipment, aeromedical evacuation; aerial search and recovery of downed flyers and space hardware; weather sampling and forecasting; documentary photography and audiovisual services are all part of this command's worldwide responsibility.

MAC's earliest roots go back further in history than the twenty-five years the US Air Force has been a separate branch of the military establishment—back to May 1941, when the Air Corps Ferrying Command was established to ferry aircraft to the eastern seaboard and to transport essential personnel and mail to the United Kingdom. Later, the mission was expanded to include the delivery of aircraft as well as personnel and critical supplies to American Allied bases.

In June 1942, the Air Transport Command (ATC) was formed and compiled an enviable war record in keeping open the critical logistics

pipelines and developing aeromedical evacuation techniques.

Cold and Hot Wars

After World War II, Secretary of Defense James Forrestal directed that on June 1, 1948, the Air Force and Navy air transport services be consolidated, and thus the Military Air Transport Service (MATS) brought to the newly established US Air Force another major command as well as a Department of Defense agency.

The Berlin Airlift soon tested the capability of the new command. Maj. Gen. William H. Tunner, MATS Deputy Commander, was selected to command the Combined Airlift Task Force, which included British, French, and American elements. By the end of July 1949, they had delivered 2,231,600 tons of fuel and food in 266,644 trips into Berlin from West Germany.

On June 25, 1950, the North Korean Army attacked South Korea. The United States, backing the United Nations, opposed the aggression. Immediately, the Air Force established two airlifts; the first, transpacific, to Japan; the second, a Japan–Korea, intratheater airlift. MATS also supplied aeromedical evacuation of the wounded and sick from the theater.

Air Rescue Service aircraft were sometimes the first link in this chain, recovering wounded personnel even from behind enemy lines and carrying them to hospitals behind the front. From there, the wounded were flown to hospitals in Japan by theater aircraft, and from Japan more than 66,000 personnel were evacuated to the US on MATS air transports. These procedures, developed in the 1950–53 era, were brought to a fuller application during the Southeast Asia (SEA) conflict.

A Douglas C-54 passes over the heads of some of the 2,000,000 beleaguered West Berliners to land at Tempelhof Air Base with life-sustaining supplies during the 1948–49 Berlin Airlift.

In 1956, the Department of Defense, in the interests of economy and efficiency, put long-range air transportation under single managership, naming the Secretary of the Air Force as the single manager and MATS the implementing agency. DoD further prescribed that users of airlift would budget and pay for it under an industrial-fund operation beginning in Fiscal Year 1959.

In 1958, MATS again demonstrated its reason for existence. When the President of Lebanon asked the United States for assistance, MATS was directed to dispatch C-124 aircraft to help in airlifting theater forces to Beirut. While this airlift was in progress, MATS was also called on to assist in the deployment of Air Force units to Taiwan.

Although successful, these operations underscored the need for more modern airlift systems. To demonstrate the point, a test exercise —Big Slam/Puerto Pine—was conducted, involving the airlift of about 21,000 troops with some 11,000 tons of equipment to staging areas in Puerto Rico, then flying them back to "employment" areas in the US.

Refining the System

Big Slam/Puerto Pine, conducted in March 1960, focused public and congressional attention on the need for modern aircraft. As a result, funds were made available in the spring of 1960 to reequip MATS with off-the-shelf C-135 and extended-range C-130E aircraft, and to develop a modern long-range jet cargo aircraft, which emerged as the C-141 StarLifter.

The Civil Reserve Air Fleet (CRAF) had been created by Executive Order in 1951 to fulfill a need for civil augmentation airlift to support DoD requirements in emergencies. Notably absent from the program was a provision for calling into federal service parts of the CRAF for situations short of war. This was solved in 1963 by modifying the contracting procedures to provide for incremental call-up of CRAF elements.

The Cuban missile crisis of 1962 brought MATS airlift immediately into action because many of the resources required for possible armed intervention had to be quickly assembled at staging bases. Marine forces were airlifted into Guantanamo, Cuba, and to US stations within easy striking distance of Cuba.

MAC's wartime mission, which included the airlift of troops and equipment within combat areas, was one reason Military Airlift Command (MAC) was deemed a more appropriate name than Military Air Transport Service. Congress agreed, and redesignation was effected on January 1, 1966.

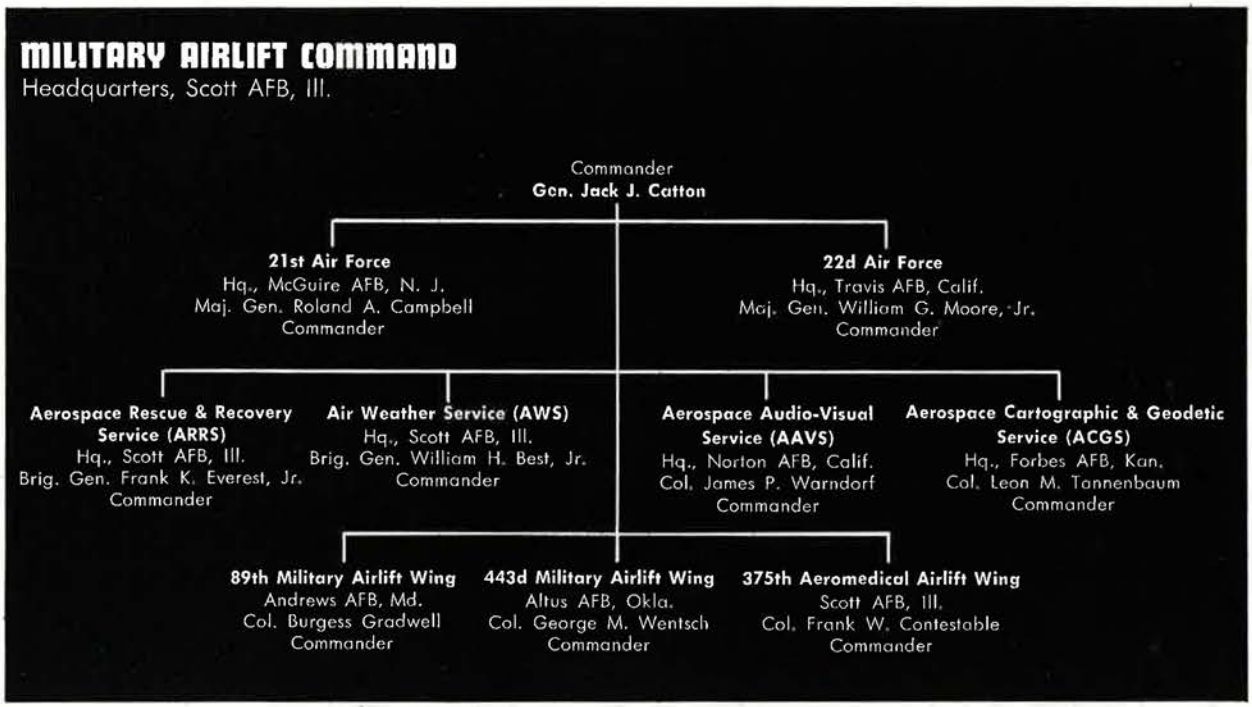
Other redesignations changed MATS's Eastern Transport Air Force (EASTAF) to

Twenty-first Air Force, Western Transport Air Force (WESTAF) to Twenty-second Air Force, Air Rescue Service (ARS) to Aerospace Rescue and Recovery Service (ARRS), and Air Photographic and Charting Service (APCS) to Aerospace Audio-Visual Service (AAVS).

Vietnam

The buildup of US armed forces in Southeast Asia, which began in late 1965, resulted in a tremendous increase in airlift requirements for troops, patients, cargo, and mail. C-141 StarLifter operations into SEA were inaugurated on August 5, 1965. By 1966, C-141 productivity was demonstrated by Operation Blue Light, the airlift of 3,000 troops and nearly 5,000 tons of equipment from Hawaii to Pleiku, Vietnam, in only seventeen days.

In November 1967, MAC began Eagle Thrust, the largest and longest military airlift ever attempted into a combat zone. C-141s and C-133s airlifted 10,024 troops and 5,357 tons of equipment of the 101st Airborne Division



Gen. Jack J. Catton, MAC Commander since August 1969, previously headed SAC's Fifteenth Air Force. A veteran of World War II bomber missions in the Pacific, he was USAF's youngest brigadier general when he took command of the 817th Air Division in 1959. He later served in Hq. USAF Plans, and became DCS/Programs and Resources in 1967. General Catton has more than 13,000 flying hours.

from Fort Campbell, Ky., to Bien Hoa, Vietnam.

When North Korea seized the USS *Pueblo* in January 1968, Air Force Reserve airlift units were called to duty to complement the active MAC airlift force. A massive airlift—Combat Fox—was launched to move men and material to Korea.

At the same time, C-141 StarLifters cut the cost of delivering a ton of cargo from the East Coast to Southeast Asia by more than fifty percent and reduced delivery time from ninety-five to thirty-eight hours as compared with prop-driven aircraft. StarLifters carried the major portion of priority cargo airlifted to Southeast

Asia. By mid-1969, more than seventy percent of MAC's effort was concentrated in Southeast Asia.

The C-141 was joined by the C-5 Galaxy—the world's largest aircraft—on December 17, 1969, the anniversary of the Wright brothers' first flight sixty-six years earlier. The ability of this all-jet carrier to transport heavy, outsized combat equipment can be teamed with the StarLifter's troop/cargo carrying capabilities for major operations.

MAC's unique ability to perform this strategic airlift mission is demonstrated annually during such exercises as Reforger/Crested Cap. The exercises clearly demonstrate that the North Atlantic Treaty Organization can be supported by US-based forces without materially reducing operational readiness in Europe.

A C-141 StarLifter delivers supplies to Antarctica. In missions ranging from rapid troop-deployment exercises to moving men and materiel in and out of the war zone, MAC has continually demonstrated its strategic airlift capability.

MAC helped test the "dual-based" concept by airlifting 15,500 Army and Air Force men from the US to Germany in 1969; more than 13,000 in 1970; and approximately 11,000 troops and more than 1,000 tons of cargo and equipment in 1971.

In March 1971, C-141 StarLifters airlifted 800 combat-equipped paratroopers from Pope AFB, N. C., to the Republic of Korea during Exercise Freedom Vault. The exercise, which duplicated Exercise Focus Retina in 1969, equaled history's longest parachute assault operation—8,500 miles.

Humanitarian Airlifts

The airlift force is frequently used to meet small crises and relieve suffering caused by natural disasters. MAC played a major humanitarian role in typhoon-swept Guam in 1962; drought-stricken Pakistan in 1964; the Alaskan earthquake in 1964; the Arizona blizzards of 1967; aeromedical evacuation of Veterans' Administration Hospital patients in Mississippi during Hurricane Camille in 1969; and patients from the US Naval Hospital at Corpus Christi, Tex., damaged by Hurricane Celia in 1970. MAC aircraft also rushed helicopters from the US to East Pakistan in late 1970 when that area was devastated by a massive tidal wave. Worldwide rescue and aeromedical airlift of the sick and injured are also performed by MAC.

Aeromedical Evacuation System

The aeromedical evacuation system, an integral part of MAC's combat airlift role, is divided into three subsystems—domestic, Pacific, and European. This combination today is capable of delivering a patient from anywhere in the world to a specialized medical facility in the US within thirty-six hours.

StarLifters completing overseas missions are refitted to accommodate stretcher and walking patients for evacuation to the US. The domestic system, operated by the 375th Aeromedical Airlift Wing, at Scott AFB, Ill., is responsible for moving patients within the US using the C-9 Nightingale (Flying Hospital). The C-9 is also now being used for intratheater aeromedical evacuation in the Pacific and in Europe.

Technical Services

The Air Weather Service (AWS), largest of the MAC services, dates from 1937 and provides meteorological support to all elements of the Air Force and the Army through its network of observing and forecasting stations. Other functions include weather reconnaissance to locate and monitor tropical storms and to

sample the atmosphere for radioactive contamination. Still other missions of AWS include support of space shots, cold fog dissipation, and climatology.

In 1956, the Air Rescue Service became responsible for the Inland Search and Rescue Program. The command also became increasingly involved in the recovery of astronauts and their equipment, a mission that led to a change of name to Aerospace Rescue and Recovery Service (ARRS) in 1966.

ARRS has rescued more than 22,000 people while providing help for 85,000 persons involved in accidents or incidents. In 1971 alone, ARRS saved 733 people, 431 of whom were civilians. Of the total saves, 143 were from combat areas in SEA.

The Aerospace Audio-Visual Service (AAVS), formerly the Air Photographic and Charting Service (APCS), took over the entire Air Force commercial motion-picture program in March 1962. Space programs expanded both the photomapping/geodetic function and photographic function. On May 15, 1963, AAVS for the first time photographed a Mercury shot at Cape Kennedy from an aircraft. Responsibilities of AAVS expanded further to include maintaining a pictorial record of Air Force combat and support activities around the world.

The Aerospace Cartographic and Geodetic Service (ACGS), headquartered at Forbes AFB, Kan., provides DoD and other government agencies with vital aerial cartographic photography and aerial and ground geodetic data. Highly trained personnel, especially instrumented aircraft, and a spectrum of sophisticated equipment are used in the collection of this information.

Today, Gen. Jack J. Catton directs the global MAC organization from headquarters at Scott AFB, Ill. The command consists of two Air Forces—the 21st AF at McGuire AFB, N. J., responsible for airlift operation in the hemisphere east of the Mississippi River, and the 22d AF, Travis AFB, Calif., operating in the hemisphere west of the Mississippi River. In addition to MAC's technical services—AAVS, ARRS, AWS, and ACGS—the command has three specialized wings: the 89th Military Airlift Wing at Andrews AFB, Md., which operates special airlift missions for US and foreign dignitaries, including the President of the United States; the 443d Military Airlift Wing at Altus AFB, Okla., which provides advanced aircrew training in the C-141 and C-5; and the 375th Aeromedical Airlift Wing at Scott AFB, which operates the domestic aeromedical evacuation system.

MAC's global mission is an integral part of the defense establishment and an instrument of national policy. In the words of General Catton, "You just cannot do the things this nation wants to do without the Military Airlift Command." It lives up to its motto—"Global in Mission—Professional in Action." ■

MAC aeromedical evac flights (left) can carry patients anywhere in the world in thirty-six hours. Below, an ARRS "Jolly Green Giant" rescues a pilot downed in the water.

MAC'S LEADERS THROUGH THE YEARS

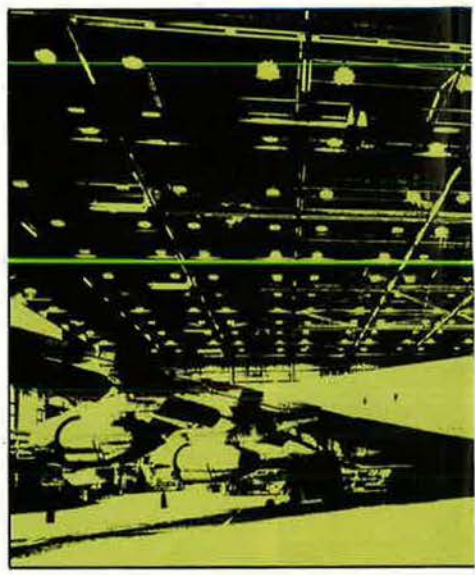
Lt. Gen. Laurence S. Kuter	June 1, 1948	Oct. 28, 1951
Lt. Gen. Joseph Smith	Nov. 15, 1951	June 30, 1958
Lt. Gen. William H. Tunner	July 1, 1958	May 31, 1960
Gen. Joe W. Kelly, Jr.	June 1, 1960	July 18, 1964
Gen. Howell M. Estes, Jr.	July 19, 1964	July 31, 1969
Gen. Jack J. Catton	Aug. 1, 1969	

Formerly Military Air Transport Service (MATS). Redesignated as MAC Jan. 1, 1966.

A MAJOR AIR COMMAND

In its role of harnessing advanced technology for Air Force purposes, the Air Force Systems Command has the task of overseeing the development of weapon systems through their delivery to operational commands. With the prospect of what tomorrow may bring as the motivating force, the command's personnel keep . . .

AFSC—A STEP AHEAD OF HISTORY



SYSTEMS management is the driving force behind the scientific and technological advancements of the Air Force Systems Command (AFSC).

In his State of the Union message to Congress this year, President Nixon said:

"Science and technology represent an enormous power in our life—and a unique opportunity. It is now for us to decide whether we will waste these magnificent energies—or whether we will use them to create a better world for ourselves and for our children."

From the inception of the command and its predecessors, AFSC has worked toward the ideal stated by the President. The effort has become more difficult through the years. Science and technology have advanced more rapidly in the past fifty years than they had in the previous 5,000. Ideas that a few years ago were found in fiction now form the core of scientific and technical publications.

The so-called "technological explosion" has shown AFSC planners, scientists, and engineers that they must look at least twenty years ahead just to keep abreast of a swiftly changing world of technology. It is this need to see well beyond man's immediate horizons that first fostered the establishment of the Air Force's creative research organization which evolved into Air Force Systems Command, now responsible for development, test, engineering, production, and delivery of weapon systems to the operational commands.

Organizing for the Future

Ballistic missilery and some of the weapon systems that followed were still embryonic when, in 1944, Gen. H. H. Arnold asked Dr. Theodore von Kármán, chairman of the prestigious Scientific Advisory Group, to conduct a survey of technological problems that would concern the Air Force.

Two special studies, "Where We Stand" (1945) and "Science, the Key to Air Supremacy" (1945), were completed. They defined the policies, organizational changes, and major facilities required to achieve the technological goals foreseen by military leaders at that time.

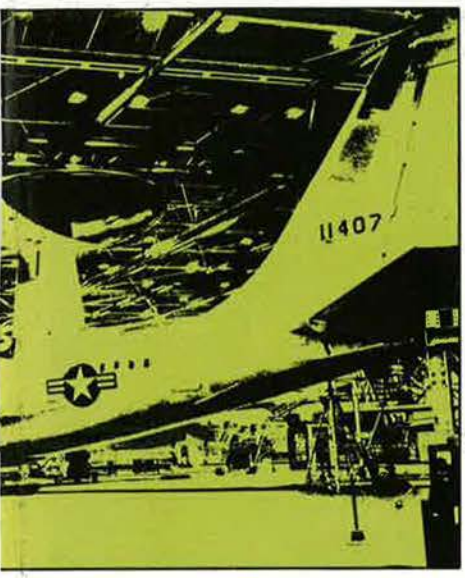
Air Force research and development was again examined five years later by two separate groups, which reached the same conclusion: Too many commands and staff agencies handled basic and applied research, and the division of duties and responsibilities was not clear.

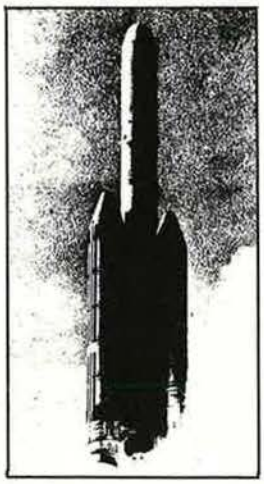
AFSC'S LEADERS THROUGH THE YEARS

Maj. Gen. David M. Schlatter	Feb. 1, 1950	June 24, 1951
Lt. Gen. Earle E. Partridge	June 24, 1951	June 20, 1953
Lt. Gen. Donald L. Putt	June 30, 1953	Apr. 14, 1954
Lt. Gen. Thomas S. Power	Apr. 15, 1954	June 30, 1957
Maj. Gen. John W. Sessums, Jr.	July 1, 1957	July 31, 1957
Lt. Gen. Samuel E. Anderson	Aug. 1, 1957	Mar. 9, 1959
Maj. Gen. John W. Sessums, Jr.	Mar. 10, 1959	Apr. 24, 1959
Gen. Bernard A. Schriever	Apr. 25, 1959	Aug. 31, 1966
Gen. James Ferguson	Sept. 1, 1966	Aug. 30, 1970
Gen. George S. Brown	Sept. 1, 1970	

Formerly Air Research and Development Command (ARDC). Redesignated as AFSC Apr. 1, 1961.

At left, in November 1971, a full-scale mockup of the B-1 was unveiled at North American Rockwell's Los Angeles Division. The graceful lines of the new heavy bomber belie its 150-foot length. Below, the modified Boeing 707-320 with its thirty-foot rotodome is one of two test aircraft that AFSC will use to evaluate competing radar designs for AWACS.





The Titan III-C space booster, designed and built under management of AFSC's Space and Missile Systems Organization (SAMSO), has put nearly sixty satellites into orbit.

The reports emphasized that a single agency should be responsible for the total Air Force research and development program. As a result, the Deputy Chief of Staff for Research and Development, Hq. USAF, and the Air Research and Development Command (ARDC) were officially established on January 23, 1950.

As weapons development and acquisition became more complex and sophisticated, further organizational refinement was necessary. On April 1, 1961, ARDC was redesignated the Air Force Systems Command (AFSC). The new command retained all the functions of the old ARDC except basic research, which was assigned to the newly created Office of Aerospace Research (OAR). AFSC also gained systems production responsibilities. On July 1, 1970, OAR was merged into AFSC, thus giving AFSC responsibility for the full range of Air Force research, development, test, and evaluation.

AFSC is responsible for carrying out basic research, exploratory development, advanced development, and the development and acquisition of aerospace systems within the guidelines established by the Department of Defense, the Secretary of the Air Force, and Hq. USAF.

AFSC Today

Through the years AFSC continued to streamline its internal organization, striving for more effective, efficient management of its resources. The command now has six divisions, four centers, two test ranges, fourteen in-house laboratories, and the Air Force Office of Scientific Research. Headquarters for the command is at Andrews AFB, near Washington, D. C.

The three product divisions—Space and Missile Systems Organization (SAMSO), Los Angeles AFS, Calif.; Aeronautical Systems Division (ASD), Wright-Patterson AFB, Ohio; and Electronic Systems Division (ESD), L. G. Hanscom Field, Mass.—develop, test, and procure systems and equipment.

The missions of the other three divisions have less similarity. The Foreign Technology Division (FTD), Wright-Patterson AFB, Ohio, analyzes and evaluates technological threats; the Aerospace Medical Division (AMD), Brooks AFB, Tex., conducts biotechnology research, development, and education programs; and the Air Force Contract Management Division (AFCMD), Los Angeles, Calif., provides a vital link between government and industry in procurement of major space and weapon systems and in acquisition of research and development services.

The four centers are the Arnold Engineering Development Center (AEDC), Arnold AFS, Tenn.; Air Force Flight Test Center (AFFTC), Edwards AFB, Calif.; the Armament Development and Test Center (ADTC), Eglin AFB, Fla.; and the Air Force Special Weapons Center (AFSWC), Kirtland AFB, N. M.

National ranges are the Air Force Eastern Test Range, Patrick AFB, Fla., and the Space and Missile Test Center, Vandenberg AFB, Calif., operating the Western Test Range. The centers and ranges provide development, test, and evaluation facilities for systems and components developed by the command.

The centers have such specialized facilities as rocket test stands, wind tunnels and simulators, sled test tracks, and electronic and other test ranges. The two national ranges have the capability to form a single global tracking network for ICBMs, space satellites, launch vehicles, and space probes.

The laboratories and the Air Force Office of Scientific Research (AFOSR) provide the vital research and development support required to improve the foundation of technology necessary to enhance our military defense posture.

But as the command grew, with the proliferation of responsibilities and the subsequent addition of special organizations to oversee them, the wisdom of the early study groups is still apparent today.

Four of the 1961 divisions illustrate the point:

- Ballistic Systems Division (BSD) was composed of elements of the Air Force Ballistic Missile Division (AFBMD) and the Air Materiel Command's (AMC) Ballistic Missiles Center (BMC).
- Space Systems Division (SSD) consolidated the space programs of

the AFBMD and other Air Force agencies.

- Aeronautical Systems Division at Wright-Patterson AFB combined Wright Air Development Division and AMC's Aeronautical Systems Center.
- Electronic Systems Division at L. G. Hanscom Field joined the Air Force Command and Control Development Division and AMC's Electronic Systems Center.

The first two divisions, BSD and SSD, were combined in July 1967 into the present Space and Missile Systems Organization, thus bringing the missile and space effort under the control of a single manager.

AFSC and NASA

AFSC, as a partner with the National Aeronautics and Space Administration (NASA) in the space program, has been notably successful in developing versatile launch vehicles, creating a worldwide tracking and control network, and developing and placing into orbit a wide range of spacecraft aimed at advancing man's knowledge of communications, navigation, geodesy, and meteorology.

Until NASA developed the Saturn for the Apollo program, manned and unmanned spacecraft used in previous space programs were launched by Air Force crews and sent aloft by modified military missiles. Air Force Atlas missiles boosted the Mercury orbital flights, and Titan was the launch vehicle for the Gemini missions.

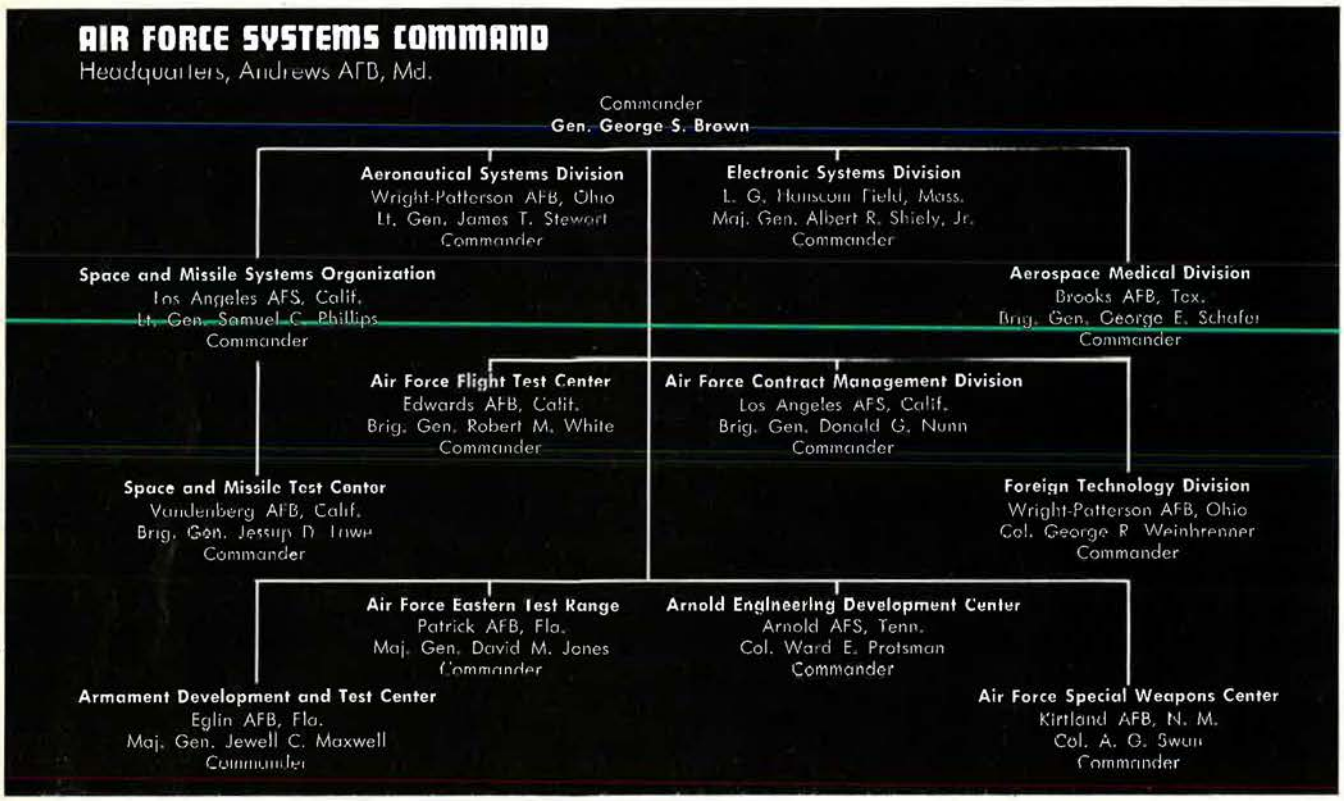
Additionally, the Air Force has played a major role from launch to splashdown in every NASA mission, mapping, tracking, monitoring, and otherwise supporting the space agency with military units, aircraft, medical personnel, and rescuemen.

The great Atlas and Titan boosters followed in the trail of the Thor, the first of the Air Force ballistic missiles that later served as space rockets. Earlier this year, the last of the Thors that had been placed in Great Britain more than a decade ago as intermediate-range ballistic missiles (IRBMs) was modified for space exploration. Thor missiles were assigned to the space mission in 1958, and have been launched 426 times with a ninety-six percent record of success. With its various upper stages, Thor orbited many important scientific experiments for both the Air Force and NASA, including the Pioneer and Discoverer series, Echo 1, Orbiting Scientific Observatory, and the Nimbus weather satellite.

Diversity makes it possible for Air Force boosters now to place spacecraft weighing from fewer than 300 pounds to as many as 25,000 pounds into a variety of earth orbits. And the record of successful launches has been better than ninety percent. The Air Force has played a major role in more than three quarters of all US space launches and in orbiting more than three-quarters of all free-world spacecraft.

Developing the ICBMs

Although the glamor of space and



the almost incomprehensible achievements of man in an alien environment fired the imagination of the world, AFSC did not neglect its major responsibility — finding the means to attain strategic deterrence.

Strategists today discuss the Triad —the mix of strategic bombers, and land- and sea-launched ICBMs —as being the nation's major deterrent force in the future. This present strategy can be traced back to the Air Force's early success with manned bombers and then with ICBMs.

Gen. George S. Brown assumed command of AFSC in 1970 after duty as Commander, Seventh Air Force, and Deputy Commander for Air Ops, MACV. A West Point graduate and WW II bomber pilot, he has been Executive to the Air Force Chief of Staff; Assistant to the Secretary of Defense; and Assistant to the Chairman, JCS.

In 1951, the year following the birth of the forerunners to AFSC, the first intercontinental ballistic missile program—the Atlas—was established. Three years later the program got solid impetus when it became clear that technical know-how was available, that a thermonuclear breakthrough promised a feasible warhead, and that the Soviet Union was becoming a major missile power. As the Atlas program was being stepped up, the Scientific Advisory Board began thinking about an alternate backup system.

Planners felt a two-stage design was necessary to accelerate and strengthen the ICBM program. In 1955, the Air Force began to develop a two-stage ICBM that would carry the heaviest possible payload over the greatest distance — the Titan. In two years, the Titan outgrew its backup role and gained the status of a major new weapon system on its own.

While the Atlas was our first ICBM, and the Titan the largest and most powerful, the backbone of our land-based missile force was to be—and is—the Minuteman, the US's first ICBM propelled by solid fuel.

The formal Minuteman program was approved toward the end of 1958, a year after the Soviets had stunned the US by successfully launching man's first artificial satellite, Sputnik I.

Within four years, the first Minuteman missile was operational and in its silo at Malmstrom AFB, Mont. In the interim, formidable problems in guidance, materials, propulsion, and shutdown had to be resolved. Today a force of 1,000 Minuteman I, II, and III missiles wait in their silos as our strategic "ace in the hole."

Across-the-Board Deterrence

The success of the new AFSC, its forerunners, its allied civilian scientists, and the technicians, and strong contributions of US industry was obvious, but greater challenges were already a reality. Strategic deterrence was by now almost a household word, and the nation needed not only more sophisticated missilery, but more advanced fighters and bombers, heavy-lift transports, and advanced avionics, electronics, and communications systems that would ensure that the nation was at least a step ahead of our potential adversaries.

Systems management was, as always, an integral component. Efficiency, effectiveness, cost, schedules, production, development, test, and evaluation are all disassociated until they are marshaled for a predetermined purpose.

As new weapon systems became more complex and costs rose in tremendous tides, the entire development/acquisition management system came under closer scrutiny, not only from Congress and the public but also from within the military and associated industries.

Better ways were sought to acquire new weapon systems with the understanding that the cost growth of new systems often comes from factors over which no one has any control.

For instance, development programs require a long period of time —up to ten years in some cases— and in that time the whole concept of how the system is to be used can change. Then, too, the nature of the threat often changes, as does the state of the technological art and the purchasing power of the dollar.

Inflation, the fact that the enemy isn't content to sit tight on his technology, and the tremendous upsurge in human knowledge, all contribute to the systems management problem.

The B-1 strategic bomber, the F-15 air-superiority fighter, the Airborne Warning and Control System (AWACS), the A-X ground-support aircraft; the nuclear-armed, air-to-ground, Short Range Attack Missile (SRAM), and the television-guided, air-to-ground Maverick missile all demand the best in management innovation, as do the 1,300 other AFSC projects under development and acquisition.

As Gen. George S. Brown, AFSC Commander, has said, the Air Force is demanding "demonstrated performance (fly-before-you-buy) and prototyping." They are key words in the modern management methods that have evolved from past successes and failures.

"It is within this framework that those of us in the weapon systems acquisition business must live," he continued. "Success requires that we manage the acquisition and testing of new systems in a way that avoids past mistakes and misfortunes."

Through prototyping, the Air Force is in the process of streamlining the acquisition process. The system itself is not new—P-40s, P-80s, and other aircraft were the result of more primitive prototyping methods. But the present method of prototyping at an advanced development stage that will ensure the best possible chance of system success, and the fact that procedures for approving and contracting for these advancements have been radically streamlined, is new—and exciting.

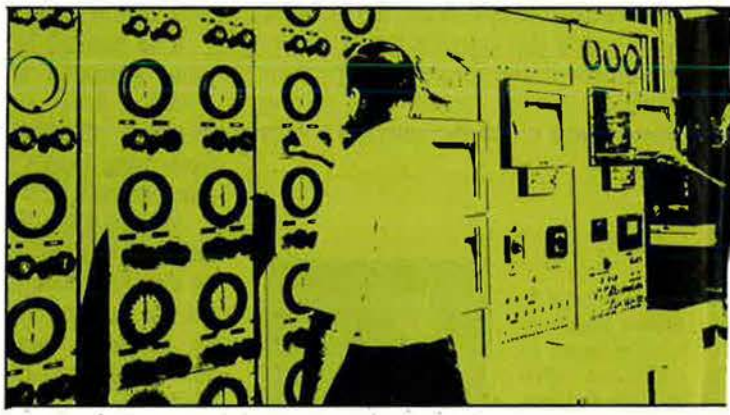
As in the past, Air Force Systems Command sees itself as a step ahead of history, and a full stride into the future. ■

A MAJOR AIR COMMAND

The Air Force Logistics Command has the mission of providing the worldwide technical support that enables USAF to keep its aerospace weapon systems at peak efficiency. Standing squarely behind its motto is . . .

AFLC—LIFELINE OF THE AEROSPACE TEAM

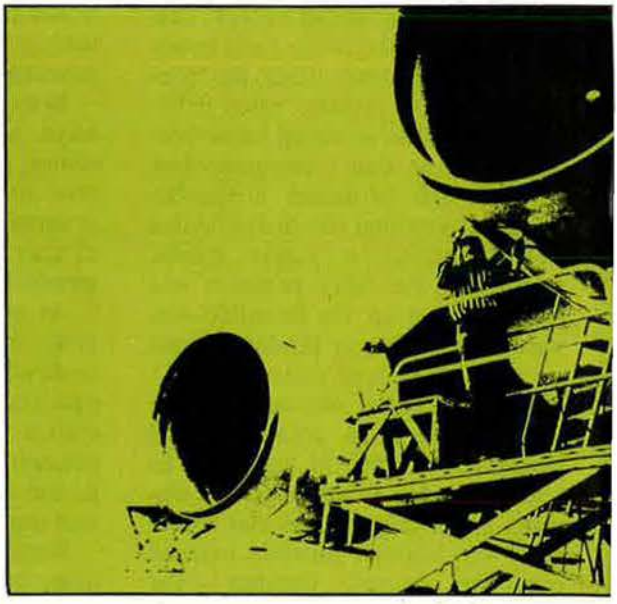
IT WAS during this Air Force twenty-fifth anniversary year that the Air Force Logistics Command (AFLC) adopted its official motto: "Lifeline of the Aerospace Team." Emphasis might be placed on the word "team,"



This autoclave, a "king-size pressure cooker" at Robins AFB, Ga., is used in the final bonding process in the assembly of parts requiring modern adhesives.

Maintenance employees at the Sacramento Air Materiel Area work on an F-105 in a repair stand. SMAMA is the worldwide materiel manager for the Thud.

An AFLC employee at the San Antonio Air Materiel Area, Kelly AFB, Tex., works on the huge TF39 engine of the C-5 Galaxy.



AFLC'S LEADERS THROUGH THE YEARS

Gen. Joseph T. McNarney	Oct. 14, 1947	Aug. 31, 1949
Lt. Gen. Benjamin W. Chidlaw	Sept. 1, 1949	Aug. 20, 1951
Gen. Edwin W. Rawlings	Aug. 21, 1951	Feb. 28, 1959
Lt. Gen. William F. McKee	Mar. 1, 1959	Mar. 14, 1959
Gen. Samuel E. Anderson	Mar. 15, 1959	July 31, 1961
Gen. William F. McKee	Aug. 1, 1961	June 30, 1962
Gen. Mark E. Bradley, Jr.	July 1, 1962	July 31, 1965
Gen. Kenneth B. Hobson	Aug. 1, 1965	July 31, 1967
Gen. Thomas P. Gerrity	Aug. 1, 1967	Feb. 24, 1968
Lt. Gen. Lewis L. Mundell (acting)	Feb. 24, 1968	Mar. 28, 1968
Gen. Jack G. Merrell	Mar. 29, 1968	

Formerly Air Materiel Command
Redesignated as AFLC Apr. 1, 1961.

for the command's primary function is to support the combat and other operational forces.

Actually, AFLC's history and traditions go back to the early days of military aviation. The command celebrated its fiftieth anniversary last year. AFLC traces its origins to the Office of Property, Maintenance and Cost Compilation, which was established by the Office of the Chief of the Air Service at Fairfield, Ohio, on July 14, 1921. The site is now Wright-Patterson AFB, which continues to be the location of AFLC headquarters.

While AFLC has gone through many reorganizations, redesignations, expansions, and contractions over the years, there has been continuity in the fact that Wright-Patterson has been and continues to be the center for logistical support of the Air Force. Sophisticated programs to improve that long service to the operational commands are being studied and developed as the Air Force enters its second quarter century as a major member of the nation's military organization.

Air Force Logistics Command's mission is "to provide worldwide technical logistic support to Air Force's aerospace weapon systems. Its vital task is to ensure that all air commands have the technical support required to maintain their aircraft, missiles, and equipment at top efficiency. This mission includes support to all Air Force and Reserve Force activities, Military Assistance Program (MAP) countries, and other US government agencies where it has been determined to be technically and economically in the best interest of the agencies concerned."

Organization

Historically, the United States has carried out its logistical support of combat forces through an extensive network of depots located both at home and overseas. However, in recent years, progress in transportation, computer technology, communications, and management techniques make such a far-flung organization unnecessary.

AFLC closed out its depots in the Pacific and Europe in 1962, and now carries out its global logistical support from only five Air Materiel Areas, or depots, all located in the continental United States. Each Air Materiel Area (AMA) continues to have a responsibility to provide assistance within its designated geographical location, but basically the philosophy has shifted to assigning worldwide responsibilities for supporting specific weapon systems to each of the AMAs.

AFLC's Air Materiel Areas and some of their support assignments are as follows:

- Oklahoma City AMA, Tinker AFB, Okla., supports our B-52 and KC-135 strategic bomber combination, plus decoy and attack missiles, several jet engines, command and control systems, and hydraulics and instruments.
- Ogden AMA, Hill AFB, Utah, has logistical responsibility for the F-4 Phantom, the F-101, strategic missiles, all conventional air munitions, photographic equipment, wheels, brakes, and landing gear. It also manages the Wendover Test Range.
- San Antonio AMA, Kelly AFB, Tex., has worldwide responsibility for the C-5, F-106, and other aircraft, aircraft systems, nine engines, life-support systems, nuclear ordnance, fuels and lubricants, and marine equipment.
- Sacramento AMA, McClellan AFB, Calif., supports the F-111, F-105, and other aircraft, three missiles, all airborne detection systems, and air defense tracking systems.
- Warner Robins AMA, Robins AFB, Ga., handles the F-15, C-141, and other airplanes, helicopters, tactical missiles, bombardier-navigation systems, airborne fire-control systems, and communication systems.

In addition to the AMAs, AFLC has three specialized units. They are:

- Aerospace Guidance and Metrology Center, Newark, Ohio, is the central agency in the Air Force for the repair of aircraft and missile inertial guidance systems, and for the maintenance of Air Force measurement and calibration standards and devices.
- Military Aircraft Storage and Disposition Center, Davis-Monthan AFB, Ariz., is a part of AFLC and is the Department of Defense's manager for the storage, reclamation, or disposition of all aircraft not required in the current operational inventory of the Air Force, Army, Navy, and Coast Guard.
- Air Force Contract Maintenance Center, located at Wright-Patterson, is the command organization responsible for administering hundreds of millions of dollars worth of contracts with private companies for overhaul and maintenance of aircraft and other equipment and USAF facilities.

Size and Scope

AFLC has on its rolls just over 100,000 people, about ninety percent civilians. Each of the AMAs is either the largest or second largest industrial employer in the state in which it is located. At any given time, the assets managed by AFLC amount to nearly $9 billion. AFLC supplies, maintains, and/or supports about 14,000 USAF aircraft, nearly 6,000 aircraft of sixty foreign nations, nearly 40,000 jet

engines, more than 1,000 strategic missiles, plus a wide variety of radar and communication systems and other equipment.

The size of AFLC's workload at any given time is determined by the size and utilization of USAF operations and by the age of our weapon systems. New systems, when they pass to AFLC's responsibility, typically require a great deal of initial maintenance and modification. Aging systems, which is one of our major problems today, also tend to require extensive maintenance and modification to extend their combat effectiveness.

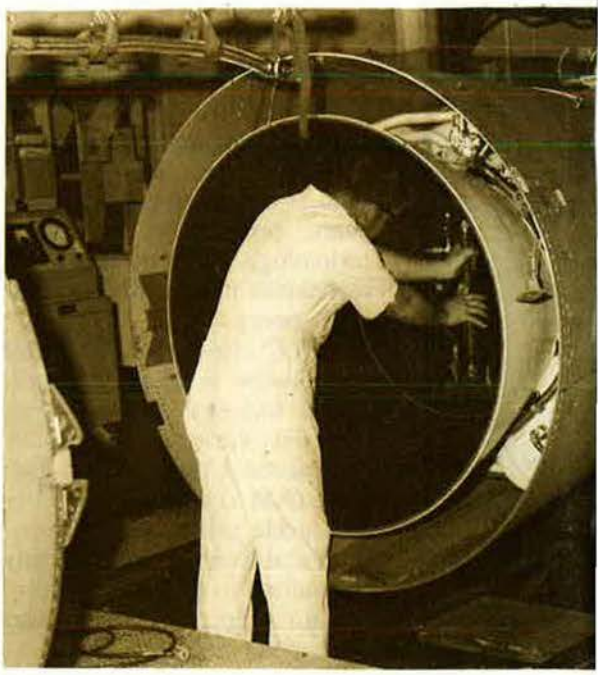
Gen. Jack G. Merrell has been Commander of AFLC since 1968. Previously, he was Vice Commander in Chief, USAFE. During World War II, he served in Europe as commander of the 389th Bomb Group. Afterward, he held command and staff positions in military airlift organizations, and was a planner at Hq. USAF. He became Director of the Budget in 1962, and in 1964, USAF's Comptroller.

Logistical Functions

AFLC divides the logistical function into four traditional areas: Maintenance, Materiel Management, Procurement, and Distribution. Maintenance is the largest of the four and consumes the largest segment of manpower and budget. Maintenance facilities at AFLC depots encompass more than 28,000,000 square feet of building and ramp area.

In a typical year, AFLC will overhaul or otherwise repair more than 6,000 aircraft and 10,000 engines, in addition to missiles and a wide variety of aerospace and related equipment. This total AFLC maintenance mission is accomplished through a combination of the command's depot facilities, contract with private concerns, and interservice resources.

Materiel Management is concerned with integrating all facets of worldwide logistics for weapon systems and commodity support. This includes such functions as planning the buying program and the operating budget, determining requirements for maintenance, and testing and storing data. Technical engineering is an important part of Materiel Management in that



A mechanic at Ogden Air Materiel Area, Hill AFB, Utah, checks the roundness of a Minuteman second-stage exhaust nozzle.

AFLC provides for the modification of each system throughout its operational life. Managing 800,000 spare parts is also a complex job of Materiel Management.

The predominant expenditures of AFLC procurement funds are for the purchase of spare parts for aircraft and engines, and for maintenance, modifications, and repair services beyond operational unit capability. Procurement dollars are also expended for missile parts, radar equipment, munitions, aerospace ground equipment, chemicals, fuels, nuclear ordnance devices, and communications equipment. In FY '72, AFLC will procure supplies and services costing in excess of $2 billion.

An important part of procurement contracting involves working closely with the Small Business Administration to ensure that a portion of AFLC contracts are awarded to small or minority-owned businesses, and to hard-core unemployment areas. AFLC exceeded its small business participation goal in FY '71 and expects to repeat this accomplishment in FY '72.

Distribution includes warehousing, packaging, and transportation of materiel to the customer. At any given time, AFLC depots will have about one million tons of materiel in storage. About one-third of shipments to customers around the world go by air, the remainder by surface. Air transportation within the continental US is provided by AFLC's Logistic Airlift System (LOGAIR), operated by private carriers under contract. The LOGAIR system flies about 16,000,000 air miles per year.

Problems and Solutions

Like any other organization, AFLC has had its problems over the past fifty years. Some of those of the past concerned the ups and downs of rapid demobilization and buildup. However, since strategic realities now require us to maintain the forces that will meet our needs at any given moment, those concerned with logistics can take an orderly approach to continually modernize our support systems and make them more efficient and cost-effective.

AFLC is doing that as fast as economics and manpower allow. The entire process of weapons acquisition and support is now being carried out under the concept of life-cycle costing. This recognizes that a system is not a good system unless it is reliable and economical to support throughout its operational life.

Some of the programs in early stages of development are:

• **Integrated Logistics Support:** A major goal of the Department of Defense is to provide for maximum system and equipment readiness and minimize the total cost of ownership. This goal is being attained in part with a management technique called Integrated Logistics Support. The ILS concept requires a close interplay between system design and the logistics support management process. Early integration of logistics aspects with the design and development process is being pursued by AFLC through placement of logisticians in major program offices of the Air Force Systems Command. This will allow logistical considerations to be incorporated into systems design from the outset.

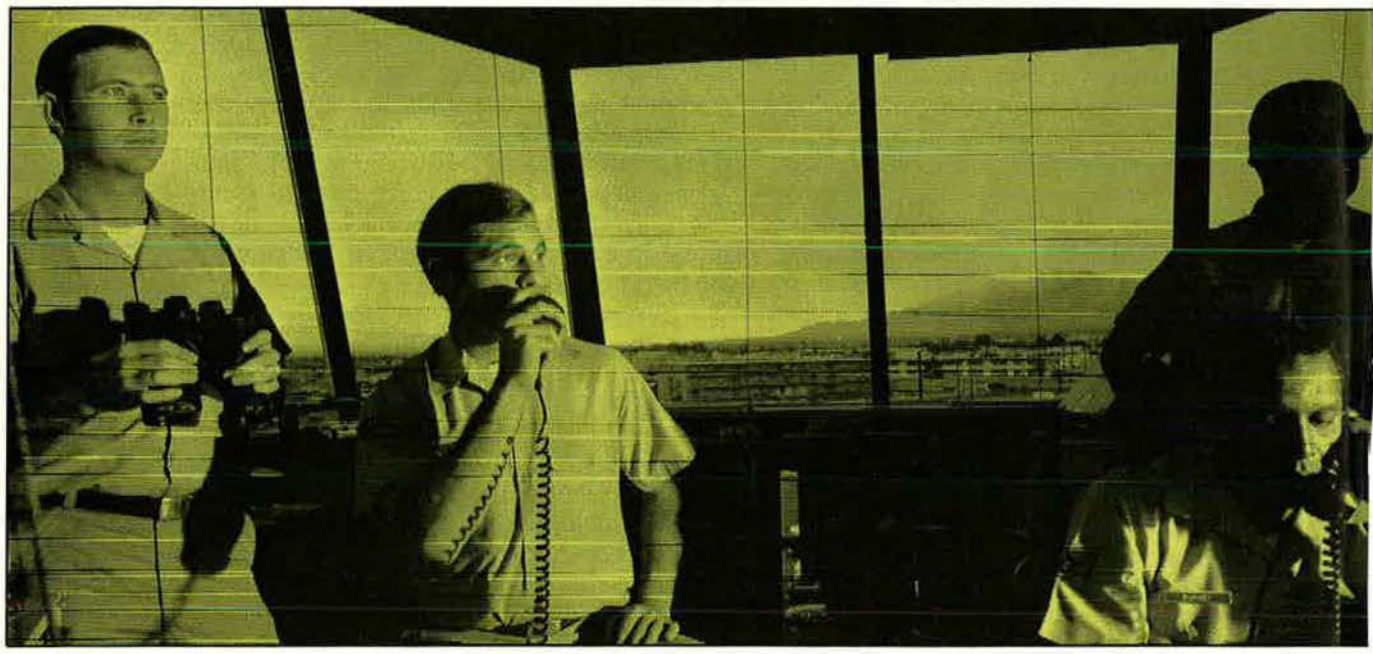
• **Increased Reliability of Operational Systems:** This program is to identify through study of maintenance data those components of systems already in the inventory that are consuming a disproportionate share of money and man-hours. Once such a component is identified, a decision is made as to whether resulting savings would justify a modification of the system. This program, too, has resulted in design modifications that have been highly effective in reducing the drain on our resources. The program also provides data that will enable designers to avoid similar design faults in future systems.

• **Advanced Logistics Systems:** AFLC currently uses more than 400 individual data systems to move and keep track of the vast amount of materiel flowing through its arteries. A program is under way to reduce these to six third-generation computer systems—one located at headquarters and one at each of the AMAs. When completed, this system will considerably enhance the speed and efficiency of operations by permitting the retrieval of data and the location of items almost instantly.

• **Depot Modernization:** One of AFLC's major problems is the fact that maintenance and overhaul facilities at the depots are inadequate and some of the machinery is obsolete. Most of it was obtained during World War II, some of it during World War I. Recent appropriations have authorized the start of a program to modernize these facilities.

Because of these programs and others, AFLC will be able to fully meet the requirement to logistically support the sophisticated new weapon systems that will be entering the operational inventory in the years just ahead. As in the past, AFLC's progress will match that of the operational Air Force. The command is accomplishing these programs despite the continued heavy demands in Southeast Asia and the necessity to remove and redistribute large amounts of materiel from Vietnam.

AFLC has come a long way from the days of a half century ago, when it was a small, makeshift, screwdriver and monkey-wrench installation at Fairfield, Ohio. Today, it can rightly claim to be the "Lifeline of the Aerospace Team." ■



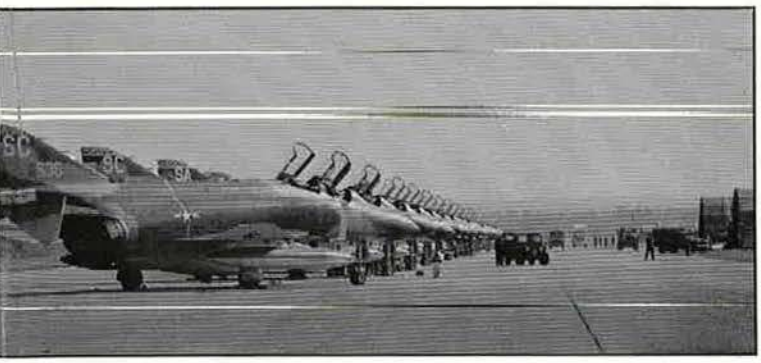
An average of 450 takeoffs and landings a day keeps the men at the Nellis AFB, Nev., control tower and ground controlled approach (GCA) busy twenty-four hours a day.

A 353d Tactical Fighter Squadron crew chief and pilot finish last-minute coordination before this A-7D Corsair II departs the flight line at Myrtle Beach, AFB, S. C.

The Tactical Air Command, to function effectively in its deterrent role, is gearing up for the rapid and mobile response that battlefields of the future can be expected to demand. New doctrines, techniques, and weapon systems are all part of the evolving plan that is helping to get . . .

TAC— OFF ON A NEW TACK

A MAJOR AIR COMMAND



In a successful test of the Bare Base concept, these F-4s were poised and ready within hours of arrival at this "instant airfield."

This jeep, air-dropped by a C-130, will land undamaged, ready for use by ground troops.

TAC'S LEADERS THROUGH THE YEARS

t. Gen. E. R. Quesada	Mar. 21, 1946	Nov. 23, 1948
Maj. Gen. Robert M. Lee	Dec. 24, 1948	June 20, 1950
Maj. Gen. Glenn O. Barcus	July 17, 1950	Jan. 25, 1951
;en. John K. Cannon	Jan. 25, 1951	Mar. 31, 1954
;en. O. P. Weyland	Apr. 1, 1954	July 31, 1959
en. Frank F. Everest	Aug. 1, 1959	Sept. 30, 1961
;en. Walter C. Sweeney, Jr.	Oct. 1, 1961	July 31, 1965
;en. Gabriel P. Disosway	Aug. 1, 1965	July 31, 1968
;en. William W. Momyer	Aug. 1, 1968	

TACTICAL Air Command, the focal point of United States tactical airpower for the past quarter century, has recently climaxed twenty-six years of readiness to support national objectives.

"From its beginning as a planning staff," TAC Commander Gen. William W. Momyer recently remarked, "TAC has grown steadily in size and responsibility, and I believe this growth is a reflection of the increasing importance of tactical airpower."

TAC's early years did not accurately illuminate what the future would bring, since those were times of uncertainty and shifting emphasis. However, the outbreak of the Korean conflict in mid-1950 helped to prompt a reassessment of priorities that focused attention on tactical airpower. Thus, TAC became a central figure in a changing pattern.

Since that time, the command has served as the nerve center for developing new tactics and techniques, doctrine, and weapon systems for tactical airpower. In addition to these responsibilities, TAC has been the prime training agency for providing combat-ready personnel to support US tactical air forces around the world.

Enter the Jet Age

TAC played a key role in ushering in the age of jet-powered fighter aircraft, first with the P-80 and then the F-84 and F-86. Jet fighters added more than increased effectiveness in battlefield close support, interdiction, air superiority, and reconnaissance. They led the way to worldwide mobility and rapid response to distant crises.

Despite its heavy commitment during Korea, TAC continued to press forward with new concepts and techniques, emphasizing air-ground operations. The 1950–56 period was one of steady growth and progress during which in-flight refueling was refined, and marked improvements in command and control communications occurred.

The first supersonic tactical fighter, the F-100 Supersabre, was introduced during this period of dynamic progress, as was the Composite Air Strike Force (CASF). Under this concept, tactical air strike forces specifically designed for a wide range of overseas contingencies were earmarked for immediate deployment to any crisis area.

In 1955, the Nineteenth Air Force was organized to serve as TAC's mobile command element for planning and executing contingency operations involving CASF. This unique role gained the Nineteenth the nickname "Suitcase Air Force." The Nineteenth Air Force and the CASF concept were firmly established and ready when the Middle East (Lebanon) and Far East (Formosa Strait) crises erupted in 1958.

That same year witnessed other significant advancements. The KB-50J aerial tanker was equipped with jet booster engines and became the forerunner of the jet-powered KC-135. The powerful F-105 was introduced. TAC and the Continental Army Command drew closer together as combat partners.

By 1961, TAC's previous years of preparing for expanded responsibilities were paying important dividends. That year marked the

beginning of the "General Purpose Force" doctrine, which accentuated the importance of nonnuclear, limited war forces. TAC had to respond quickly to greatly increased responsibilities, with accent on joint air-ground operations, command and control, and to a change in TAC's traditional role as a training and support command organization.

An avionics instrument specialist completes an equipment adjustment in the cockpit of an A-7D. The Corsair II is a superbly accurate attack fighter.

That same year, TAC became the air component of the newly created US Strike Command—now known as the US Readiness Command. Thus, for the first time, TAC had a direct combat planning and operational role for Strike's area of responsibility—the Middle East, Africa south of the Sahara, and a portion of southern Asia—and in support of other overseas theaters. A similar role came later under the US Atlantic Command, which was fully activated for the first time during the 1962 Cuban crisis.

Crises of the '60s

Also in 1961, TAC became heavily involved in the Berlin crisis when approximately 26,000 Air Force Reserve and Air National Guard personnel were called to active duty. Within a few weeks after the buildup, a force of 210 ANG fighter and reconnaissance aircraft moved to Europe in response to the emergency.

In 1962, TAC found itself totally committed to the Cuban crisis as an air arm of the Atlantic Command. TAC aerial reconnaissance helped to expose the facts of Cuban missile activity, and more than 1,000 aircraft were sent to bases in southern Florida to prepare for whatever response might be needed.

Concurrent with its early 1960 activities in Europe and the Caribbean, TAC was providing expertise and training, through its newly created Special Air Warfare Center in Florida, for specialists who were advising the South Vietnamese Air Force during the early stages of the Vietnam conflict. As the intensity of that conflict increased, TAC units became actively involved, providing fighter, reconnaissance, and combat airlift forces.

As the US became more deeply enmeshed in Southeast Asia operations, TAC men and equipment were called on to respond quickly and effectively. To meet the pressing need for additional combat-trained aircrews and maintenance personnel, TAC established a network of Replacement Training Units (RTUs) in all phases of tactical air operations.

TAC's global responsibility brought additional requests for assistance during this same time period. In the Congo rebellion of 1964, TAC air-dropped a battalion of Belgian paratroops into the heart of the rebel-held territory and provided humanitarian airlift that rescued some 1,500 refugees. During the Dominican Republic crisis of 1965, TAC airlift demonstrated remarkable skill in combining humanitarian and operational missions.

New Equipment and Techniques

The mid-1960s might well qualify as the most dynamic growth period in TAC's history. With the increasing importance of tactical airpower, accentuated by the Vietnam conflict, the command almost doubled in size and strength from 50,000 personnel and thirteen combat fighter, reconnaissance, and airlift wings to more than 100,000 people and twenty-three wings. Special operating centers for each of TAC's traditional roles were created to develop new tactics and techniques and to test new equipment.

During this period, new weapon systems joined the inventory, such as the versatile F-4 Phantom II and its reconnaissance version, the RF-4. The all-weather F-111 fighter-bomber was introduced. Forward air controllers received new and improved aircraft: the O-1, O-2, and OV-10. The Special Operations Force, an outgrowth of the earlier center, developed and perfected the gunship weapon system, which began with the aging C-47 and

advanced to the AC-119 and AC-130. New techniques in aerial reconnaissance were devised along with the development of new equipment.

In keeping with TAC's historic concern for force in light, air-transportable, collapsible, and reusable shelters. The entire package, including weapon systems, munitions, and POL, is designed to immediately deploy for short- or long-term operations, requiring only landing

TACTICAL AIR COMMAND

Headquarters, Langley AFB, Va.

Commander
Gen. William W. Momyer

9th Air Force
Hq., Shaw AFB, S. C.
Maj. Gen. Roger K. Rhodarmer
Commander

Pope AFB, N. C.
839th Air Div.
317th Tactical Airlift Wing (839th AD)

MacDill AFB, Fla.
1st Tactical Fighter Wing

Shaw AFB, S. C.
363d Tactical Recon Wing
507th Tactical Control Gp.
68th Tactical Air Support Gp.

Seymour Johnson AFB, N. C.
4th Tactical Fighter Wing

Homestead AFB, Fla.
31st Tactical Fighter Wing

Myrtle Beach AFB, S. C.
354th Tactical Fighter Wing

England AFB, La.
4403d Tactical Fighter Wing

Langley AFB, Va.
316th Tactical Airlift Wing (839th AD)

Eglin AFB, Fla.
33d Tactical Fighter Wing

Eglin AAF, No. 2, Fla.
55/th Civil Engineering Sqdn.

19th Air Force
Hq., Seymour Johnson AFB, N. C.
Maj. Gen. William E. Bryan, Jr.
Commander

Langley AFB, Va.
4500th Air Base Wing
1st Aerial Port Gp.
2d Aircraft Delivery Gp.
480th Recon Technical Gp.

Pope AFB, N. C.
1st Aeromedical Evacuation Gp.

Nellis AFB, Nev.
USAF Tactical Fighter Weapons Center
57th Fighter Weapons Wing
USAF Aerial Demonstration Sqdn.

Eglin AFB, Fla.
USAF Tactical Air Warfare Center

Eglin AAF, No. 9, Fla.
(Hurlburt Field)
USAF Air-Ground
Operations School

Eglin AFB, Fla.
USAF Special Operations Force

England AFB, La.
4410th Special Operations Training Gp.

Eglin AAF, No. 9, Fla.
(Hurlburt Field)
1st Special Operations Wing
USAF Special Operations School

12th Air Force
Hq., Bergstrom AFB, Tex.
Maj. Gen. Gordon F. Blood
Commander

George AFB, Calif.
35th Tactical Fighter Wing

McConnell AFB, Kan.
23d Tactical Fighter Wing

Cannon AFB, N. M.
832d Air Div.
27th Tactical Fighter Wing (832d AD)

Bergstrom AFB, Tex.
67th Tactical Recon Wing
602d Tactical Control Gp.
71st Tactical Air Support Gp.

Nellis AFB, Nev.
474th Tactical Fighter Wing
820th Civil Engineering Sqdn.

Little Rock AFB, Ark.
834th Air Div.
314th Tactical Airlift Wing (834th AD)

Forbes AFB, Kan.
313th Tactical Airlift Wing (834th AD)

Luke AFB, Ariz.
58th Tactical Fighter Training Wing

Mountain Home AFB, Idaho
347th Tactical Fighter Wing

Dyess AFB, Tex.
516th Tactical Airlift Wing (834th AD)

Davis-Monthan AFB, Ariz.
355th Tactical Fighter Wing

Holloman AFB, N. M.
49th Tactical Fighter Wing

Gen. William W. Momyer has commanded TAC since August 1968. A WW II fighter ace, he commanded a fighter group in the Korean War, and later all USAF units in Korea. He has held key Air Staff and TAC headquarters positions, headed Air Training Command, and was Seventh Air Force commander in Vietnam before his present assignment.

increased mobility and rapid response to worldwide contingencies, the "Bare Base" concept and capability were developed in the late 1960s. Basically replacing the older Composite Air Strike Force principle, Bare Base essentially packages elements of a tactical air strike strips, taxiways, parking areas, and a source of water that can be made potable.

TAC Mobility

In addition to the wing/squadron Bare Base

program, TAC has initiated an additional mobility project termed "a second phase in the development of better mobility for tactical airpower." During this phase, selected TAC units will receive lightweight, reusable, air-transportable equipment and vehicles required to support a tactical unit performing its mission away from its home base.

Each set of equipment, called a Mobility Support Set (MOSS), contains operations buildings, maintenance shops, and administrative shelters specifically designed to augment the larger Bare Base packages.

General Momyer, Commander of TAC, has stressed the importance of highly mobile tactical forces: "Maintaining sufficient tactical airpower in position to meet all contingencies is an appropriate action; but it is a costly action, and at times diplomatically impossible," he said. "Mobility can bridge this gap. With fast-reacting tactical airpower, forces and facilities can be immediately deployed to critical areas for the time needed, then recalled."

The true versatility of TAC through the past quarter century is best exemplified by airlift. The veteran C-130 Hercules, a long-time supporter of troops in combat, has also been called upon many times over the years to help alleviate human suffering following a natural disaster or conflict. In combat, the Hercules proved its value at the historic battle of Khe Sanh in 1968. Tactical airlift received credit for ensuring victory. It kept the lifeline open to American troops under siege, delivering supplies and reinforcements in the face of enemy guns.

Humanitarian Operations

Survivors of earthquakes and hurricanes in South America are the most recent recipients of TAC airlift relief. Within a ten-day period in July 1971, more than 40,000 pounds of blankets, sleeping bags, rubber boots, and heating equipment were airlifted to remote areas of Chile following an earthquake. In September of the same year, nearly 160,000 pounds of supplies were airlifted to people in Nicaragua after a hurricane devastated coastal regions of that country.

Perhaps TAC's most challenging relief operations occurred in southern Texas in the summer of 1971. From July 8 to August 7, TAC forces supported the US Department of Agriculture by conducting massive aerial spray flights against mosquitoes carrying Venezuelan equine encephalomyelitis (VEE), a disease deadly to horses. Eighteen TAC aircraft, under operational control of the Special Operations Force, sprayed 3,500,000 acres along the Mexico-Texas border and as far north as Houston.

For years, TAC forces have been used around the globe in relief operations or to counter threats of aggression, but 1971 will be remembered as the year when the forces at home began to seriously face a different challenge—the pollution crisis in the physical environment.

During that year, TAC moved aggressively forward, combating pollution and enhancing the ecology. More than $18 million was programmed to fight water and air pollution, with particular emphasis on eliminating man-made combustion pollutants, and to reduce aircraft noise irritants.

Looking Ahead

By any standard, TAC has had a busy and useful twenty-five years as the hub of US Air Force tactical airpower. TAC has been engaged in a wide range of activities.

"While we respect the past and are proud of what has been accomplished, it is to the future that we must dedicate our efforts," General Momyer recently stated. "I am confident TAC will continue to play a key role in support of the national interest. For this reason, I feel a modernization of tactical forces is extremely important if future commanders at all levels in TAC are to be able to get their job done.

"Fortunately, we plan to receive two additions to our inventory that could make substantial contributions toward our modernization. The Airborne Warning and Control System (AWACS) would be relatively economical, using the Boeing 707, and would give us good surveillance and command and control capabilities near and over a battle area. And the F-15, which we hope to receive in the near future, is a true air-superiority fighter.

"While these two new weapon systems could fill a gap within our structure, we must also keep in mind that a major contributor to our close air support capabilities—the F-100—is being phased out of the active forces. In time, we hope to have the A-X to ensure continued advancement in our close air support capabilities. We have, of course, the F-4 for close support as well as air superiority and interdiction, and the newer A-7D, a specialized close-support aircraft. Additionally, we are receiving substantial numbers of F-111s.

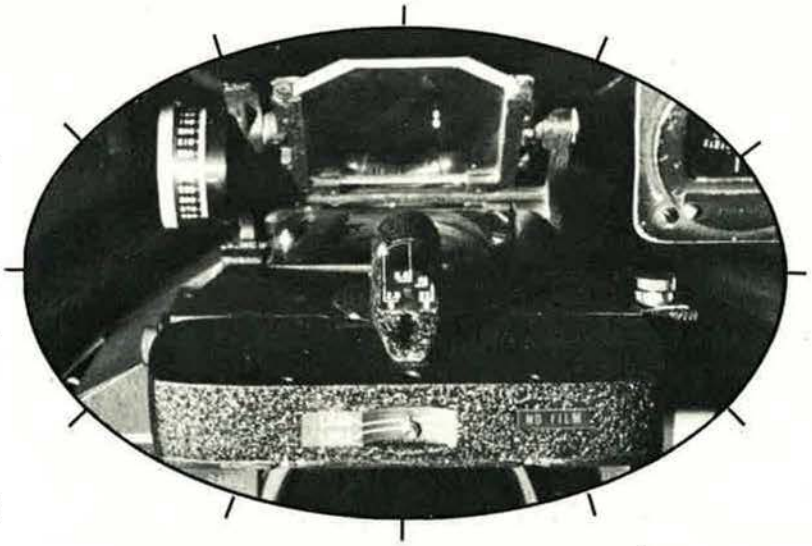
"Finally, in discussing force modernization, we can't overlook a replacement for the C-130. This aircraft has established a proud record of service, but it, too, is aging and will need a replacement. We think a good candidate would be a short takeoff and landing (STOL) airframe."

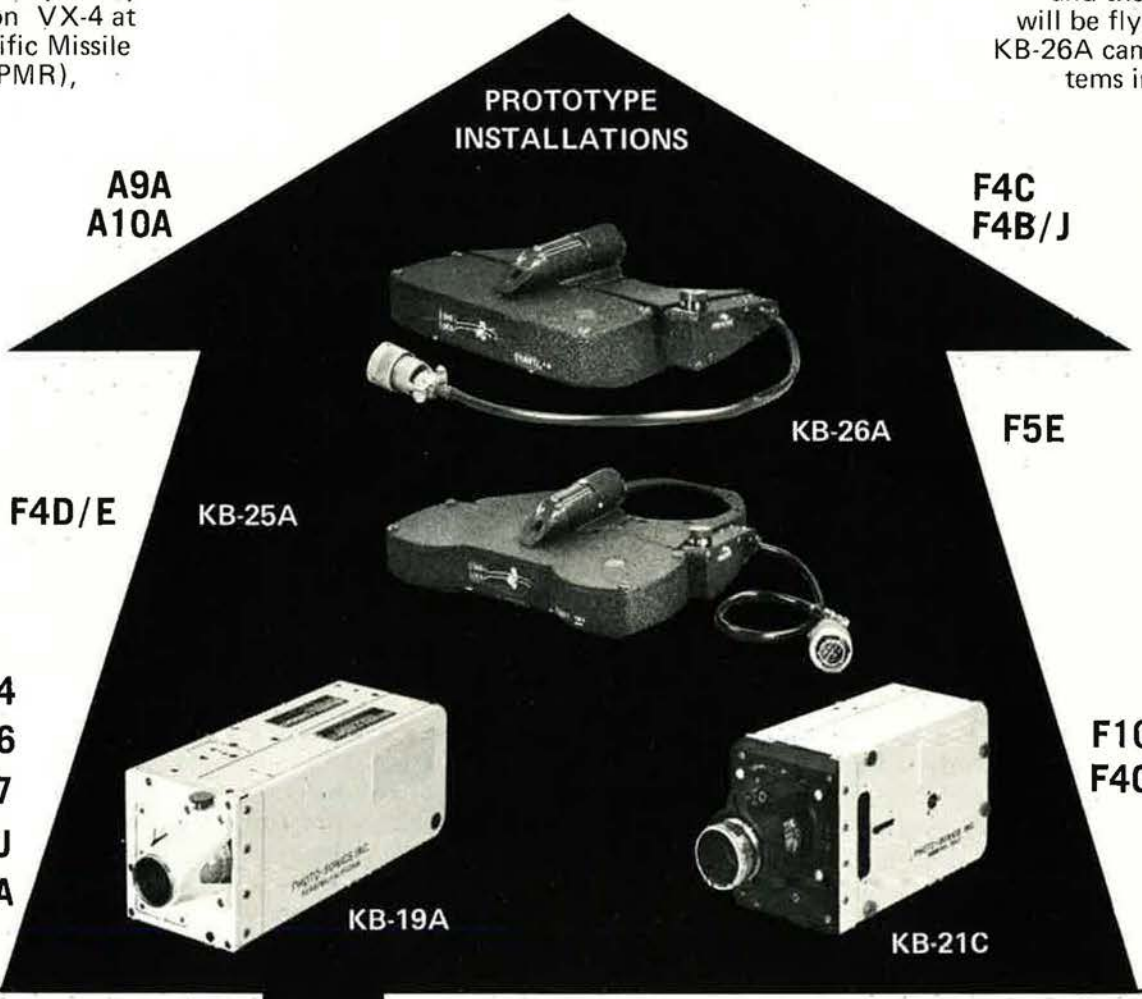
TAC's first quarter century was a dynamic period in which the command met current responsibilities while preparing for the future, in anticipation of increased obligations. ■

SCORE AGAIN!

with proven 16mm camera installations by Photo-Sonics, Inc.

Photo-Sonics has installed Gunsight/ Heads-Up-Display cameras on operational and test aircraft.
The U.S. Air Force has purchased the KB-25A camera for the F-4E aircraft. This same camera interfaces with the ASG-22A gunsight used on the F-4D aircraft.
The F-4B/J gunsight camera is being evaluated by Navy Squadron VX-4 at the Pacific Missile Range (PMR), Pt. Mugu, California.
Grumman Aerospace Corporation is installing two new gunsight cameras for use on the F-14 flight test program at Pt. Mugu.
Photo-Sonics has delivered a gunsight camera for the F-4C aircraft which is in use at Edwards AFB by the 6510th Test Wing.
Both AX prototypes, the A-9A, and the A-10A, will be flying with KB-26A camera systems installed.





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ADC'S LEADERS THROUGH THE YEARS

Lt. Gen. George E. Stratemeyer	Mar. 21, 1946	Nov. 30, 1948
Maj. Gen. Gordon P. Saville	Dec. 1, 1948	Dec. 31, 1950
Lt. Gen. Ennis C. Whitehead	Jan. 1, 1951	Aug. 25, 1951
Gen. Benjamin W. Chidlaw	Aug. 25, 1951	May 31, 1955
Maj. Gen. Frederic H. Smith (acting)	May 31, 1955	July 19, 1955
Gen. Earle E. Partridge	July 20, 1955	Sept. 17, 1956
Lt. Gen. Joseph H. Atkinson	Sept. 17, 1956	Aug. 15, 1961
Lt. Gen. Robert M. Lee	Aug. 15, 1961	July 31, 1963
Lt. Gen. Herbert B. Thatcher	Aug. 1, 1963	July 31, 1967
Lt. Gen. Arthur C. Agan	Aug. 1, 1967	Feb. 28, 1970
Lt. Gen. Thomas K. McGehee	Mar. 1, 1970	

Formerly Air Defense Command.
Redesignated Aerospace Defense Command Jan. 1, 1968.

A MAJOR AIR COMMAND

Providing security in the airspace over the continental US is an invisible umbrella maintained by personnel of the Aerospace Defense Command. Their electronic eyes are constantly on the alert to give us those vital minutes to counter an attack by enemy aircraft or missiles . . .

ADC—Detection and Defense

As THE United States Air Force celebrates its Silver Anniversary, the Aerospace Defense Command (ADC) witnessed one of the first defense milestones of the year—the rollout and first flight of two Airborne Warning and Control System (AWACS) radar testbed aircraft.

As envisioned, AWACS will enable ADC and its Commander, Lt. Gen. Thomas K. McGehee, to better fulfill its mission of providing aerospace defense in support of the joint US-Canadian North American Air Defense Command (NORAD).

AWACS would complement the trio of basic air defense tools the command has relied on for twenty-six years. These tools include radar to provide all types of surveillance for North America, a command and control organization to analyze radar data and direct the air battle, and the weapons to defend against any intruder.

Buildup and Decline

The beginnings of ADC's current computerized and highly refined defense system were exceedingly modest. In 1946, there was a squadron of P-61s at McChord Field, Wash., and a squadron of P-47s at Mitchell Field, N. Y. These World War II leftovers were virtually the entire air defense force for many months.

During the 1950s, work proceeded rapidly throughout the country in building radars and establishing command and control facilities, at that time called MCCs or manual control centers. The P-61 and P-47 squadrons were first succeeded by the F-82 Twin Mustang and later by a succession of jets. The F-84, F-89, F-94A and C, F-86, and F-86D and L were the mainstays of defense until 1956 when the first century-series all-weather fighter-interceptor, the F-102, entered the force. This fighter was closely followed by the F-101 and F-106.

In 1957, the command had more than 1,500 interceptors in sixty-nine squadrons, and more than 100,000 people. A year later, the semiautomatic ground environment (SAGE) system was put into operation. SAGE, which today remains as the command's first line of command and control, is a sophisticated system of radars tied together by a computer system for aircraft detection and interception.

By 1961, the Air Defense Command consisted of forty-two regular and twenty-five Air National Guard fighter-interceptor squadrons, twenty-one SAGE centers, and 127 long-range and eighty-nine gap-filler radars feeding SAGE.

Following a review of force requirements, defense budget needs, and directed new economies, the force was further reduced to a force posture of six SAGE centers, eleven active-duty F-106 squadrons, fifteen Air National Guard F-102 and F-101 squadrons, and fifty-seven long-range radars.

New assets gained during this period, which remain today, include five Bomarc squadrons of unmanned interceptors and twelve backup intercept control, or BUIC, centers. In essence, BUIC is a transistorized SAGE command and control system capable of nearly all SAGE functions. In the event a SAGE system is out

Mission completed, two ADC pilots walk from their F-106s to debriefing. The Air Force plans to transfer four active Delta Dart squadrons to the Air National Guard.

of commission, either or both of two assigned BUICs could take over.

Another realignment planned for the near future will include the transfer of four active Air Force F-106 squadrons to the Air National Guard, and the phase out of five Bomarc squadrons.

While ADC's total force is smaller during this twenty-fifth anniversary year, the tasks of detection, identification, interception, and—if necessary—destruction, are still needed and capably performed.

Proposed Modernization

To continue to perform this mission, ADC is optimistic about a modernization program proposed by the Department of Defense.

AWACS, mentioned earlier, is a vital part of the modernization program. AWACS aircraft will carry radar equipment able to monitor air activity over a wide area and to overcome the possible advantage an intruder has today if he chooses to employ a low-level approach toward North American borders. In addition to the AWACS look-down radar capability, the system will get the command and control staff and equipment off the ground, becoming, in effect, an airborne equivalent of today's SAGE or BUIC center.

Placing our air defense nerve centers into aircraft and in the air offers defense planners new options. It will give ADC greatly increased dimensions in mobility, system survivability, and cost-effectiveness. AWACS can be used to cover wide areas of surveillance that are now reached by fixed radar sites of more than 100 men each.

AWACS need not be in the air at all times. Options include full activation only when a warning is sounded by another element of the modernization program, over-the-horizon backscatter (OTH-B) radar. The Department of Defense has established a requirement for the over-the-horizon backscatter radar. The Air Force and ADC are now in the initial stages of developing OTH-B into an operational system.

OTH-B will enable ADC to launch its interceptors and AWACS aircraft into position to meet an enemy attack as far away from North American borders as possible. OTH-B is a system using the reflective properties of the ionosphere to reflect radar beams, which in turn detect penetrators. The system would detect aircraft at distances far exceeding the several-hundred-mile range of conventional radars, whose line-of-sight transmissions are limited in range by the curvature of the earth. OTH-B, coupled with AWACS aircraft, could preclude a detection "gap" such as the Florida-to-California opening cited by Chairman F. Edward Hébert of the House Armed Services Committee in January.

Improved Manned Interceptor

A new weapon to be used in conjunction with progressive surveillance and command and control facilities is also on the horizon. DoD has recognized the need for an improved manned interceptor—an aircraft capable of longer range, high maneuverability, and greater versatility. Air Force and ADC planners are examining the possibilities of employing F-15-type aircraft for the air defense role.

The Air Force's twenty-fifth anniversary theme, "Pride in the Past—Faith in the Future," takes on added significance as ADC maintains a viable defense posture while working toward a modernized defense force.

For the present, ADC provides the majority of resources available to NORAD for protecting the North American continent from bomber attack and warning it of missile attack. The Commander, General McGehee, is also responsible to the Chief of Staff for organizing, training, and administering these forces.

ADC's 44,000 men and women are spread around the globe. The systems they maintain today include the Ballistic Missile Early Warning System (BMEWS), the Distant Early Warning (DEW) Line, the Sea-Launched Ballistic Missile (SLBM) Detection and Warning network, the Spacetrack network of radar and optical sensors, the over-the-horizon (OTH) forward-scatter radar detection system, and the Airborne Early Warning and Control (AEW&C) system. These are in addition to ADC's SAGE and BUIC centers and the fighter squadrons.

Handling the Air-Breathing Threat

First-echelon detection radars for the air-breathing (bomber) threat are located above the Arctic Circle with the DEW Line, a 3,600-mile radar fence, manned around the clock. Closer in, Canadian radars cover the northern approaches while ADC radar covers the coasts and the northern border.

The six SAGE centers tie radars and interceptors into a meaningful system to conduct an air battle in defense of the continent. These six centers, with their component parts, make up the six air divisions of ADC.

ADC's global flight activities to defend against the air-breathing threat are vested in the 552d Airborne Early Warning and Control Wing. The wing is composed of EC-121 Super Constellations, the forerunner of the envisioned

A flight of F-106s poses for a photo en route to a practice intercept mission. This 1,400-mph, first-line interceptor is now twelve years old.

Ground crews of the 48th Fighter Interceptor Squadron, winner of the Hughes Trophy, prepare an AIM-4 missile for removal from storage containers and loading aboard a waiting F-106.

at the Air Defense Weapons Center there. Weapons controllers, the men who direct fighter-interceptors from the SAGE and BUIC centers, are trained at the 3625th Technical Training Squadron, an Air Training Command unit at Tyndall.

Space Mission

Another, and rapidly expanding, part of the ADC mission lies in space and near-space. The Ballistic Missile Early Warning System (BMEWS) is one component of the space system and is designed to provide warning and impact prediction of intercontinental ballistic missiles targeted on the United States. There are three of these radar detection systems, located at Clear, Alaska; Thule, Greenland; and Fylingdales Moor, United Kingdom. Detection of a missile by BMEWS would provide about fifteen minutes of warning to the United States through the NORAD command and control system.

In addition to BMEWS, ADC also operates the Sea-Launched Ballistic Missile (SLBM) detection and warning network. This is a system that scans the waters off the United States from eight different locations on the east, west, and southern coasts. Seven sites have been in operation since mid-1970. The eighth, located at Moorestown, N. J., became operational early this year.

In addition to BMEWS, as a missile detection system, is ADC's forward-scatter, over-the-horizon radar. This system, which also uses the reflective properties of the ionosphere, provides the US with approximately thirty minutes of warning time in the event of an ICBM attack.

An intermediate headquarters of ADC, the Fourteenth Aerospace Force, operates a world-

AWACS. The wing rotates crews from its home station at McClellan AFB, Calif., to Southeast Asia, Korea, and Iceland. Today, this wing graphically forecasts the flexibility of AWACS in the future.

To evaluate the effectiveness of the bomber defense system, ADC operates a target fleet of EB-57 target aircraft, equipped with numerous jamming devices to test the command's defensive response. These aircraft fly "intruder" missions against the ADC radars and interceptor force.

The training of many ADC people, as well as the testing of air defense systems, is conducted at Tyndall AFB, Fla. ADC's F-106 aircrew training, along with air defense weapons evaluation, testing of new systems, and development of new tactics, are all conducted

Lt. Gen. Thomas K. McGehee has been ADC Commander since 1970. Previously, he was Commander of Fifth Air Force and US Forces in Japan. During World War II, he was a bomb group commander in Europe and assistant operations officer, Eighth Air Force. From 1958 to 1968, he held increasingly important command and staff positions in ADC, and was then named Assistant DCS/ Programs and Resources at Hq. USAF.

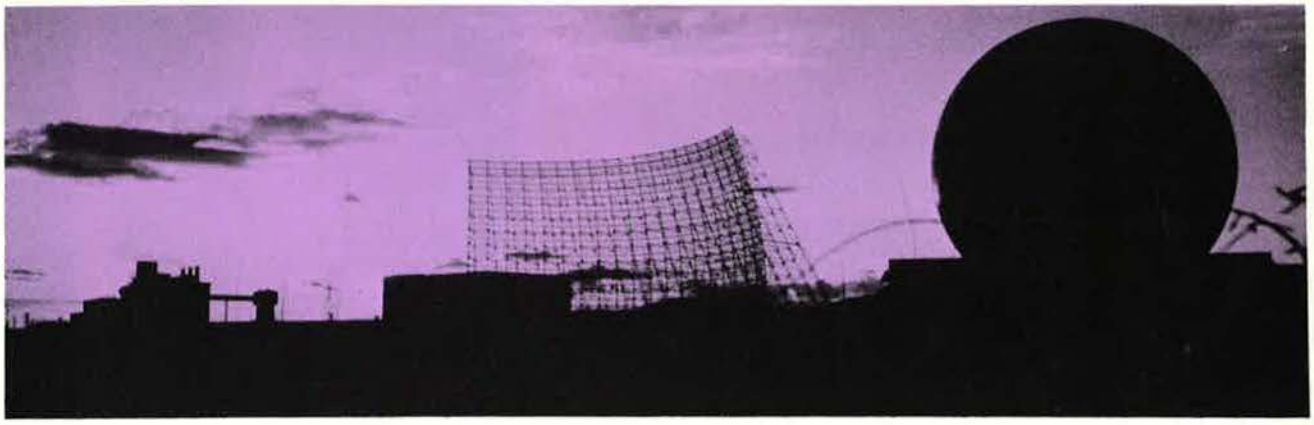
wide network of sensor sites called the USAF Spacetrack system. Fourteenth Aerospace Force personnel assemble and analyze data in the Space Defense Center (SDC), an ADC-operated section in NORAD's Cheyenne Mountain Combat Operations Center near Colorado Springs, Colo.

ADC personnel maintain catalogs of the position of objects that have been launched into space. Their data comes from a worldwide network of radars and optical sensors—including the scientifically oriented Baker-Nunn camera—located throughout the world.

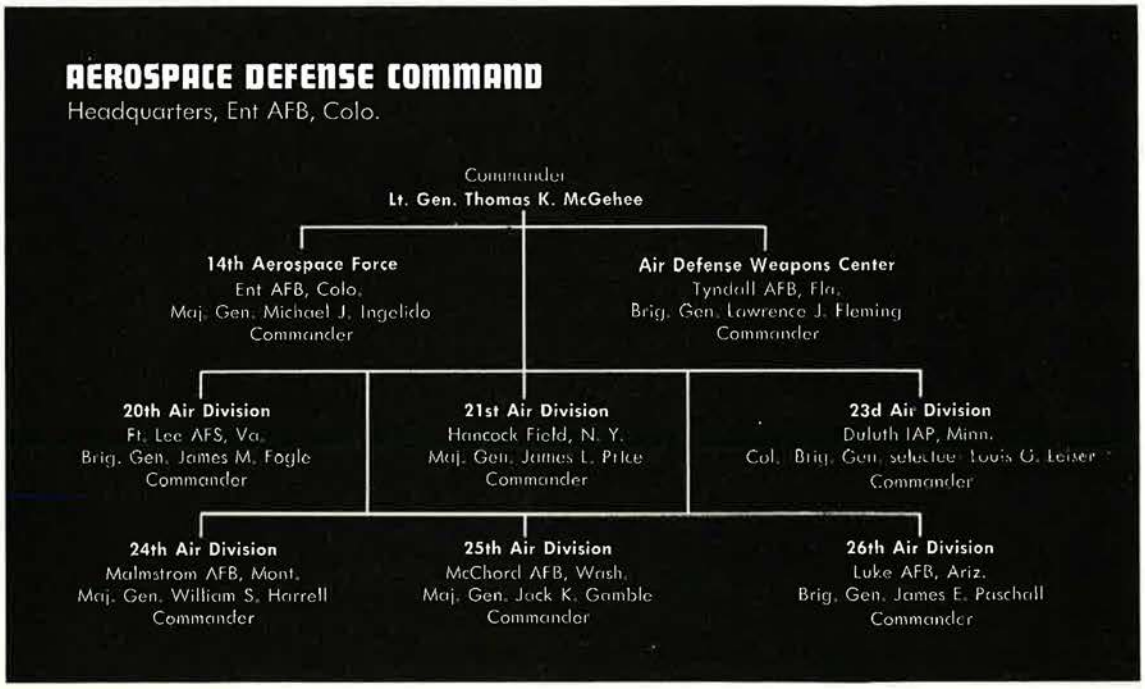
Last year these sensors kept track of several thousand objects—both payloads and debris. This included thirty-eight payloads launched by the United States, ninety launched by the Soviet Union, and ten launched by other nations during 1971. Such scorekeeping is absolutely vital to defense analysts, and is also essential to planning manned spacecraft launches.

ADC is a vital segment of the national defense force. In the face of increasing Soviet ICBM deployment, their continued construction and deployment of missile-launching submarines, and the current bomber threat, ADC continues to support NORAD with the men and equipment it has today, while looking toward the equipment of the future.

Hopefully, as we have "Pride in the Past—Faith in the Future," ADC, as a component of NORAD, will improve its capability to defend the North American continent. ■



A tree and some brittle grass poking from the snow frame this Clear, Alaska, BMEWS site. Visible are tracking radar (right), detection radar screen (center), and power plant (left). Such missile detection sites provide a slender edge of fifteen minutes of warning.



In ATC, as with other Air Force units, strong emphasis is being placed on increasing intercultural understanding and communication. Special courses have been introduced.

A MAJOR AIR COMMAND

ATC'S LEADERS THROUGH THE YEARS

Lt. Gen. John K. Cannon	Apr. 1946	Oct. 15, 1948
Lt. Gen. Robert W. Harper	Oct. 14, 1948	June 30, 1954
Maj. Gen. Glenn O. Barcus	July 1, 1954	July 25, 1954
Lt. Gen. Charles T. Myers	July 26, 1954	July 31, 1958
Lt. Gen. Frederic H. Smith, Jr.	Aug. 1, 1958	July 31, 1959
Lt. Gen. James E. Briggs	Aug. 1, 1959	July 31, 1963
Lt. Gen. Robert W. Burns	Aug. 1, 1963	Aug. 10, 1964
Lt. Gen. William W. Momyer	Aug. 11, 1964	June 30, 1966
Lt. Gen. Sam Maddux, Jr.	July 1, 1966	Aug. 30, 1970
Lt. Gen. George B. Simler	Sept. 1, 1970	

The Air Training Command, the second largest command in USAF, has a multifaceted mission that extends from producing pilots to turning out skilled mechanics. The constant effort that goes into reevaluating training programs and equipment is what keeps . . .

ATC— IN STEP WITH THE TIMES

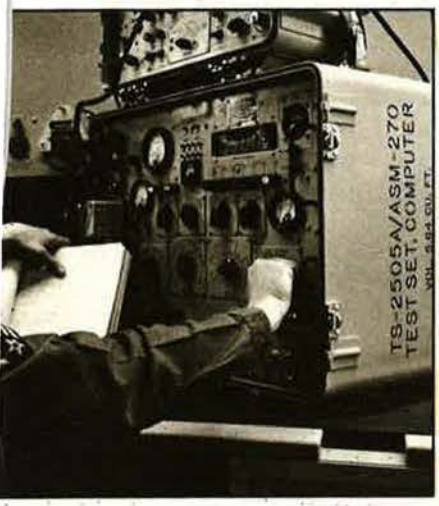
Since 1950, ATC has graduated some 65,000 foreign students.

IN THIS twenty-fifth anniversary year of the Air Force, Air Training Command is building on tradition to advance the state of the art in military training methodology.

When W. Stuart Symington was sworn in as the first Secretary of the

ATC trains the men who will maintain the complex electrical systems of Air Force aircraft and missiles.

The latest in sophisticated techniques are taught to airmen who ultimately will be responsible for equipment worth millions.



ATC instruction includes such specialties as hospital operating-room techniques.

Air Force on September 18, 1947, ATC had been in existence in various forms since the early 1900s.

As Secretary Symington and Gen. Carl A. Spaatz, USAF's first Chief of Staff, began managing the newly formed Air Force, ATC and its predecessors had already produced more than 200,000 pilots, 100,000 observers, and 300,000 gunners.

Commanded by Lt. Gen. George B. Simler, ATC today operates sixteen bases and has field training detachments (FTDs) at some ninety-one locations throughout the world. The command offers more than 3,600 technical training courses.

Since it became a major command in 1947, ATC has trained nearly 9,000,000 men and women. Its population during recent years has averaged 140,000. Its assets exceed $2.8 billion, and today it is the Air Force's second largest command.

During the current fiscal year, the command will graduate more than 600,000 students from courses in its military, technical, and flying training systems.

Today, ATC is the single largest producer of flying hours in the entire US Air Force. This is a far cry from the days when the first flying training school was established, in 1911. However, it was only after establishment of the Air Corps Training Center at San Antonio in 1926 that most flying training was conducted under a single command.

Technical training also has its roots in the early part of the century. The Enlisted Mechanics Training Department was begun in 1917. This organization continued to grow and later became the Air Corps Technical School.

Flying and technical training were finally combined into one massive training organization with the establishment, in 1943, of the Army Air Forces Training Command, headquartered in Fort Worth, Tex. The name was changed to Air Training Command, with the establishment of the Air Force as a separate service in 1947.

New Training Techniques

The main thrust within ATC during the past decade has been to provide better training in the complex skills required by the modern Air Force, while developing ways to do it with fewer resources.

One of the most important innovations has been the Instructional System Development (ISD) program. ISD has been in use in ATC for about eight years, but the most significant period of its growth, as applied to technical training courses, has been within the last two years.

The purpose of ISD is to design courses to satisfy job performance standards. Tools such as occupational surveys, specialty training standards, evaluation data, and field visits are used to gather job per-

formance information. This is then analyzed to determine which elements require training.

Next, behavioral objectives are developed and stated in terms of student performance. Then decisions are made regarding pacing, and course materials are written and validated to assure that objectives are actually attained.

Between 1964 and 1969, seven instructional systems were completed. During 1970, sixteen more were ready, and, by the end of 1971, more than fifty instructional systems were operational.

"ISD pays off in the form of an improved product—a better trained airman," General Simler has said, "but there's more to it than that—it also results in dollar savings. If you can reduce the numbers of people, reprogram your money, bring it back into better balance, and increase the quality of your students, that's the optimum situation." The ATC Commander pointed out that, by the end of FY '74, a total of more than 200 prime courses are scheduled for ISD completion.

Another educational innovation established by ATC in 1969 was the "learning center." Presently used in flying training, learning centers feature individual learning carrels. These cubbyholes have multimedia capabilities so the student can receive individualized instruction. All flying training bases are expected to have such facilities before the end of 1972.

The establishment of learning centers has not been the only upgrading of pilot training. As the Air Force has updated its weapon systems, ATC has updated the aircraft used in its Undergraduate Pilot Training (UPT) program.

Aircrew Training

Hardly had the Air Force's jet-powered F-80 Shooting Star become operational in the mid-1940s when the need for a two-place jet trainer was felt. By modifying the F-80, the Air Force developed the Lockheed T-33, a two-seat trainer.

The Air Force, however, realized the limitations of the T-33 and began to develop follow-on trainer aircraft. The first of these was the Cessna T-37, which joined the command in January 1958.

The T-37 is an excellent trainer, but ATC needed a supersonic training plane. This need was met with the addition of the Northrop T-38 Talon in March 1961. Northrop delivered the last of 1,187 T-38s to ATC on January 31, 1972.

In 1968, ATC began a long-range study to examine the future of the UPT program. Initially, ATC drew up a Required Operational Capability aimed at the 1975–1990 time period, and submitted it to Headquarters USAF. It covered requirements to determine the types of aircraft to be built, corresponding simulators and other ground equipment, and their maintenance, new UPT syllabi, support personnel, and so on. This program is under review by a study committee that will make recommendations to determine the future of the pilot training program.

Prior to joining ATC, Lt. Gen. George B. Simler was Vice Commander in Chief, USAFE. Before that he served as Director of Operations at Hq. USAF and at Seventh AF, Vietnam. During World War II, General Simler flew two combat tours in Europe.

The past year witnessed major events in development of hardware for the Undergraduate Navigator Training Program. First there was the award of a $18.9 million contract for advanced simulators to be installed at Mather AFB, Calif., by 1974. That news was followed shortly by the announcement that nineteen T-43A aircraft (modified Boeing 737s), due to begin arriving at Mather in 1973, will replace most of the existing fleet of ninety-nine prop-driven T-29 Flying Classrooms. The cost of the new aircraft with installed equipment is estimated at $118.7 million.

Still other changes that will affect ATC's recruiting and technical training responsibilities are in progress. The US Air Force Recruiting Service, another ATC responsibility, has undergone major reorientation in preparation for zero draft. Recruiter benefits have been improved, and guaranteed AFSCs, or specialty codes, in certain fields are being offered to prospective recruits.

Human Relations

ATC has not focused solely on refining instructional technology and techniques. It has also launched a massive effort to improve its people programs and to solve some of the pressing sociological problems of today's world.

During the summer of 1971, a command human-relations team visited ATC bases to determine the depth and scope of human-relations problems and racial tensions throughout the command. As a result, in August 1971, a nine-hour block of Human Relations Training was introduced in Basic Military Training at Lackland AFB, Tex. In September 1971, a Human Relations Instructor/Adviser course was begun at Lackland AFB. It taught ATC personnel how to conduct the ATC base-level Human Relations Training program.

In October, responsibility for conduct of all social programs—race relations, equal opportunity, drug abuse, etc.—was consolidated under the newly formed Wing- and Center-level Social Actions offices.

While command programs were designed to prevent potential social disruptions that could interfere with mission accomplishment, other steps were taken to deal with individuals whose social behavior had already proved unacceptable. In April 1971, the 3415th Special Training Group was established at Lowry AFB, Colo., to provide a test program for rehabilitating airmen subject to administrative discharges for cause under AFM 39-12.

In July, in conjunction with the President's national program to curb drug abuse, a Special Treatment

Center (STC) for drug abusers was established at Lackland AFB, Tex., as part of the overall Air Force Drug Rehabilitation Program. At the end of 1971, 575 patients/students had entered STC. Of those released from the Center, about thirty-seven percent have been returned to active duty.

To further enhance the Air Force role as a national resource of trained manpower for the civilian economy, in January 1972, ATC established the 3301st School Squadron (USAF Skill Center) at Forbes AFB, Kan. The skill center offers vocational training to those airmen leaving the Air Force whose military specialties are not compatible with—or marketable in—the current civilian labor market.

In addition, ATC has been a leading force in the development of the Community College of the Air Force (CCAF), established under ATC auspices on April 1, 1972. The Community College is responsible for documenting the education of graduates of the Air Force's technical schools so that they receive civilian recognition for their training.

The CCAF is working toward civilian accreditation for Air Force technical schools. The aim is to grant academic credits for skills learned in Air Force courses. Ultimately, these credits will be combined into a transcript that will be issued to airmen when they return to civilian life to assure recognition for the work done in the service.

Organizational Evolution

The path from those pioneering days early in the century through the transformation of 1947 and subsequent development of modern training technology and philosophy has been a complicated one from the standpoint of organizational structure.

A major reorganization of the Air Training Command occurred in the fall of 1949 when the administration of the entire training system, consisting then of seventeen active bases, became centralized under Headquarters ATC, and moved from Barksdale AFB, La., to Scott AFB, Ill.

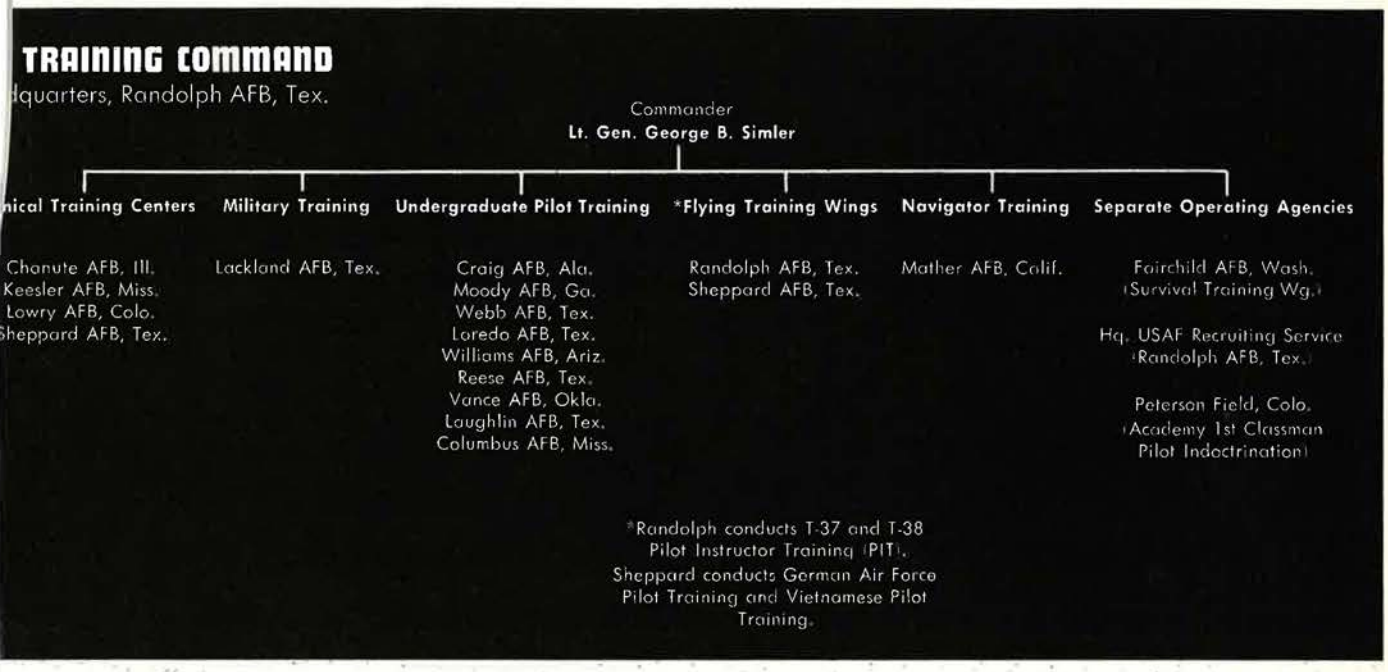
With the outbreak of the Korean conflict in 1950, US Air Force expansion resulted in skyrocketing training requirements, and subcommands were set up within ATC.

The Hq. Flying Training Air Force was activated at Waco, Tex., in May 1951; the Hq. Technical Training Air Force at Gulfport, Miss., in July of that year; and the Hq. Crew Training Air Force was created at Randolph AFB, Tex., in March 1952. Three years after the start of the Korean action, ATC's bases had increased in number from seventeen to forty-three.

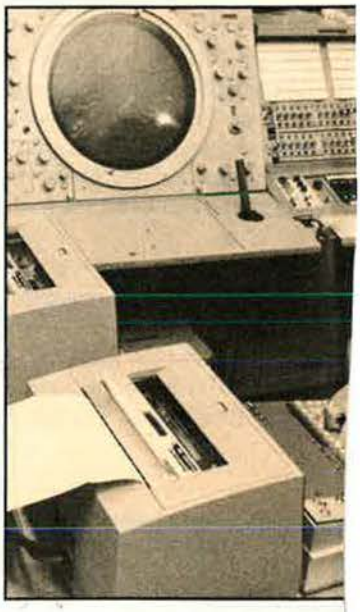
During 1950, ATC began management of the Air Force Military Assistance Program (MAP) for training conducted in the continental United States. Since that time, more than 65,000 foreign students have been graduated. They, in turn, have trained additional thousands of their countrymen after returning to their homelands.

In 1954, ATC assumed recruiting responsibilities for the Air Force. With that addition, ATC began the mission it essentially has today—recruiting, basic training, technical training, flying training, and survival training.

The three subordinate commands were discontinued by mid-1958. Their responsibilities were assumed at that time by reorganized command headquarters, which moved from Scott AFB to Randolph AFB. Today, ATC has an efficient and simplified organizational structure, without intermediate headquarters, to manage one of the Air Force's most complex missions. ■



A control tower crew chief sends the latest flight information to the Air Route Traffic Control Center (ARTCC) while his partner stays in touch with an aircraft commander.



New alphanumeric keyboards transmit flight information.

A MAJOR AIR COMMAND

The globe-straddling communications net established and maintained by the Air Force Communications Service is a marvel of the modern world. In it is being integrated the most sophisticated of automated equipment. But as AFCS sees it, speedy and efficient communications are simply the means to an end; helping others get their jobs done is the major function of . . .

A B-52 passes a brightly checked ground controlled approach van. GCA is among the numerous services provided by AFCS communications squadrons.

AFCS—Conduit for Command

AFCS'S LEADERS THROUGH THE YEARS

Maj. Gen. Harold W. Grant	July 1, 1961	Feb. 15, 1962
Maj. Gen. Kenneth P. Bergquist	Feb. 16, 1962	June 30, 1965
Maj. Gen. J. Francis Taylor, Jr.	July 1, 1965	Oct. 31, 1965
Maj. Gen. Richard P. Klocko	Nov. 1, 1965	July 2, 1967
Maj. Gen. Robert W. Paulson	July 15, 1967	Aug. 1, 1969
Maj. Gen. Paul R. Stoney	Aug. 1, 1969	

THE Commander of the worldwide Air Force Communications Service (AFCS) is the first to point out that communications, unto itself, is not the mission of his people.

"Our job is to make it possible for other organizations to control their resources, to get their job done. So 'responsiveness' is our real mission."

That's how Maj. Gen. Paul R. Stoney explains the function of his 53,000-man organization. And it has always been that way.

Through the years—as far back as 1909, when the military accepted its first aircraft—communicators of AFCS and its predecessor organizations have worked hard to meet the ever-increasing demands imposed by globally operating aerospace elements.

But the efficiency and reliability associated with the job today are a far cry from, say, 1934, when some means of communications to control the needs of military aviation were originally conceived.

In those days, Henry H. "Hap" Arnold—who later became the first General of the Air Force—probably muttered, "This is no way to run a railroad." He had just returned from a near disastrous flight during which he had run into weather conditions and hazards that played havoc with his mission. Immediately, he began a campaign to develop a communications system that would meet the needs of fast-growing military aviation.

His drive was successful. Four years later, in 1938, the Army Airways Communications System (AACS) was activated. That system grew into the Airways and Air Communications Service by 1946, and on July 1, 1961, the Air Force Communications Service became the newest major command, responsible for providing worldwide communications, air traffic control, and navigational aid services and facilities for the entire US Air Force.

Although the growth of communications has kept pace with the growth of the Air Force, even as recently as World War II the military services still depended on single-channel voice, and telegraph and tape relay point-to-point communications equipment operating over low- and high-frequency radio and wire carriers.

Today's headlines of aerospace travel announce men walking on the moon and cameras taking pictures of Mars. But in the background are just as many exciting achievements in the field of communications. Among them, improved communications satellite systems with greatly increased power and expanded bandwidth.

More than five years ago, the first of eight of an eventual twenty-six satellites in the Defense Satellite Communications System were launched. Through that system, critical communications are handled between Washington and the Republic of Vietnam or almost any other point on earth. Not only voice, but teletype, data, and reconnaissance photo transmissions are handled as well.

AFCS is involved in the military's first Tactical Satellite Communications system using small, highly mobile ground and aircraft terminals, rather than larger, relatively fixed earth stations.

A third development will provide a navigational satellite so that supersonic aircraft and other fast-moving vehicles can pinpoint their positions.

Each of these advances was unimaginable twenty-five years ago.

Sophisticated Service

Despite its worldwide operations, particularly its large commitment to the Defense Communications System (DCS), the vital services performed by AFCS are for the most part taken for granted. Thousands of daily aerospace operations around the world require instantaneous, diversified, and reliable communications. AFCS provides on-base communications, long-line communications, engineering and installation, navigational aids, air traffic control, and emergency mission support.

The AFCS worldwide mission was greatly expanded when the Ground Electronics Engineering Installation Agency (GEEIA) was merged into AFCS in 1970. The merger extended one step further the USAF single-manager concept for communications-electronics. AFCS is now capable of performing engineering, installation, operations, and maintenance of all communications-electronic-meteorological services.

Installation squadrons have already completed such projects as installation of radio and teletype systems at Cape Kennedy in support of NASA's Apollo space missions. Recently, EI units gave assistance to Peace Ruby, a $65 million, foreign military sales project for the Iranian Air Force.

The use of computers has drastically changed the way the Air Force accomplishes its mission in all functional areas. Automation within the Air Force has been phenomenal, and AFCS, in conducting its role as communicator, is directly involved.

Three major systems—Automatic Digital Network (AUTODIN), Automatic Voice Network (AUTOVON) and Automatic Secure Voice Communications Network (AUTOSEVOCOM)—carry the bulk of the command's communications.

• AUTOVON is a leased-line, customer-to-customer telephone service that handles voice traffic within the continental US. The system provides the Department of Defense with worldwide communications through both voice and graphics media by linking together more than a million telephones, teletypes, and high-speed data equipment.

• AUTODIN, pioneered and developed by the Air Force, is the world's largest, most advanced digital communications system. It provides a global capability for handling more than 40,000,000 punched cards, or the equivalent of nearly 600,000,000 words daily. Nineteen automatic switching centers make up the system, with AFCS operating the Air Force's ten centers.

• AUTOSEVOCOM consists of automatic and manual switches, security devices, subscriber terminals, and ancillary equipment that provides the means for voice communications up to and including Top Secret. The three systems can be used by commanders under any conceivable condition to exercise instant global command and control of their forces.

Air Traffic Control

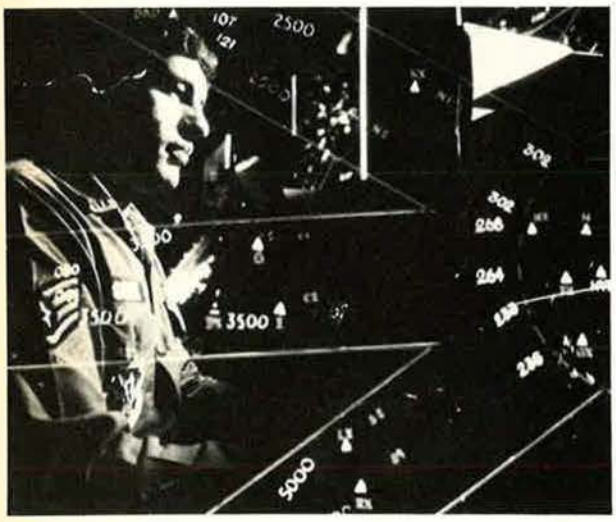
Automation has also brought about major changes within the field of air traffic control. Recently, AFCS took its first step in that direction by installing the first USAF Flight Data Entry and Printout (FDEP) system at Scott AFB, Ill. FDEP permits AFCS air traffic controllers to handle aircraft flight-plan information automatically instead of manually. The heart of the system is the large Air Route Traffic Control Center (ARTCC) computer, which quickly computes best routes of flight and estimated times between aircraft reporting points.

In 1971, AFCS controllers were called upon at least forty-nine times to provide service above and beyond their normal course of duty. Involved in aircraft "saves" were thirty-four military and fifteen civilian aircraft valued at $77,762,420. The 120 persons involved were crew members and passengers aboard those aircraft. Since AFCS was activated in 1961, its controllers have been credited with saving 1,188 aircraft worth almost $1.29 billion and carrying 4,387 crew members and passengers.

As part of its worldwide air traffic control mission, AFCS operates a highly specialized air traffic control operational evaluation program. Through a system of no-notice evaluations, dual-rated pilot/controllers in the command's facility checking squadrons evaluate the effectiveness of air traffic controllers throughout the world.

One of the latest advances in the air traffic control field is the development of the AN/TPN-19 Landing Control Central, designed for use with mobile tactical units and permanent bases. Presently undergoing initial testing, it is scheduled to replace the present ground controlled approach (GCA) system in the USAF inventory. It can also provide a backup to Instrument Landing Systems (ILS).

AFCS technological advancements have been made in the Instrument Landing Systems to add to flight safety accomplishments. The Air Force's first automatic, minimum-visibility Instrument Landing System is on the air at Travis AFB, Calif. The new system, accurate to lower minimum weather conditions than the old, will be installed at ten more bases across the country and overseas. The automatic system of vertical and horizontal radio beams for the pilot to follow while making his final approach to a landing strip eliminates the need for continuous voice contact with radar air traffic controllers at the destination, allowing the controller to handle other duties.



The air corridors to Berlin are superimposed on an AFCS technician as he works in the Berlin Air Route Traffic Control Center. This center provides coordination for all western flights into Berlin.

Mobility

Communications are not always available where they are needed. To meet the job of setting up communicative facilities on a temporary basis, AFCS has five mobile communications groups stationed strategically around the world. These units, with about 5,000 highly qualified personnel, are geared to set up needed equipment on an anywhere-anytime basis. They have supported contingency requirements, disaster, and humanitarian projects around the globe.

AFCS is also responsible for managing the Air Force's Military Affiliate Radio System (MARS). Primarily designed to supplement normal military communications channels and provide communications for domestic emergency plans, MARS has the secondary mission

AIR FORCE COMMUNICATIONS SERVICE

Headquarters, Richards-Gebaur AFB, Mo.

Commander
Maj. Gen. Paul R. Stoney

PACIFIC COMMUNICATIONS AREA

Hq., Wheeler AFB, Hawaii
Brig. Gen. George J. Iannacito
Commander

1st Mobile Communications Group
Clark AB, Luzon, P. I.

1867th Facility Checking Squadron
(Service Evaluation)
Clark AB, Luzon, P. I.

TACTICAL COMMUNICATIONS AREA

Hq., Langley AFB, Va.
Col. John M. Bolger
Commander

4th Mobile Communications Group
Altus AFB, Okla.

5th Mobile Communications Group
Robins AFB, Ga.

EUROPEAN COMMUNICATIONS AREA

Hq., Lindsey AS, Germany
Brig. Gen. William W. Gilbert
Commander

1868th Facility Checking Squadron
(Service Evaluation)
Wiesbaden AB, Germany

2d Mobile Communications Group
Sembach, Germany

NORTHERN COMMUNICATIONS AREA

Hq., Griffiss AFB, N. Y.
Col. (Brig. Gen. selectee) Robert E. Sadler
Commander

1931st Communications Group
Hq., Elmendorf AFB, Alaska
Lt. Col. James Kahl
Commander

SOUTHERN COMMUNICATIONS AREA

Hq., Oklahoma City AFS, Okla.
Col. (Brig. Gen. selectee) Rupert H. Burris
Commander

1840th Air Base Wing
Richards-Gebaur AFB, Mo.

1866th Facility Checking Squadron
(Service Evaluation)
Richards-Gebaur AFB, Mo.

3d Mobile Communications Group
Tinker AFB, Okla.

1978th Communications Group
Albrook AFB, Canal Zone

Maj. Gen. Paul R. Stoney was AFCS Vice Commander before becoming Commander in 1969. His long career in the field of military electronics includes participation in early studies that led to formulation of standard instrument flying techniques in the Air Force. He has held a series of Air Force and joint communications posts, including direction of SAC's communications systems.

of enabling thousands of servicemen in Southeast Asia and elsewhere to call loved ones in the United States. AFCS personnel have made more than 750,000 phone patches between Vietnam and the States since the first station began operation at Tan Son Nhut Air Base in 1965.

Backing up the AFCS active-duty units are Air National Guard and Air Force Reserve personnel who have contributed significantly to the command's outstanding record of success. They comprise 183 communications-electronics-meteorological units and one medical services flight—a total strength of 14,500 personnel. These units are organized and equipped in a manner similar to their active-duty counterparts. Upon mobilization, they are prepared to deploy anywhere in the world to augment AFCS active-duty forces, whether the assignment is dismantling a communications site or supporting the Apollo space missions.

AFCS men and women are serving at more than 600 locations around the globe. They are responding to the need for efficient, instantaneous, accurate worldwide communications. For the Air Force commander, they are "providing the reins of command." ■

The Air University Library's Audio-Visual Section stocks hundreds of lecture aids.

The Air Command and Staff College's small seminars make trading viewpoints easy.

A MAJOR AIR COMMAND

Early in its history, USAF recognized that professionalism in the military service could only come as an outgrowth of an educational process. To assist in this process, a comprehensive educational system—Air University—was founded. With a quarter century of experience now behind it, a valuable contribution toward leadership continues to be made by . . .

AU—POLISHING THE PROFESSIONALS

AU'S LEADERS THROUGH THE YEARS

Maj. Gen. Muir S. Fairchild	Mar. 15, 1946	May 17, 1948
Maj. Gen. Orvil A. Anderson	May 17, 1948	Oct. 15, 1948
Gen. George C. Kenney	Oct. 16, 1948	July 27, 1951
Lt. Gen. Idwal H. Edwards	July 28, 1951	Feb. 28, 1953
Maj. Gen. John DeF. Barker (acting)	Mar. 1, 1953	Apr. 14, 1953
Lt. Gen. Laurence S. Kuter	Apr. 15, 1953	May 31, 1955
Lt. Gen. Dean C. Strother	June 1, 1955	June 30, 1958
Lt. Gen. Walter E. Todd	July 15, 1958	July 31, 1961
Lt. Gen. Troup Miller, Jr.	Aug. 1, 1961	Dec. 31, 1963
Lt. Gen. Ralph P. Swofford, Jr.	Jan. 1, 1964	July 31, 1965
Lt. Gen. John W. Carpenter III	Aug. 1, 1965	July 31, 1968
Lt. Gen. Albert P. Clark	Aug. 1, 1968	July 31, 1970
Lt. Gen. Alvan C. Gillem II	Aug. 1, 1970	

Many nationalities attend the Air War College. Besides USAF and USMC officers are, from left, German, Australian, and British students.

AU's Maj. J. C. Sathrum uses a visual aid in making a point.

Air War College students listen to a discussion by a State Department panel.

A NEW sense of urgency fills the air at Air University, as the professional military education center of the United States Air Force begins its second quarter century.

Classrooms at the Air War College, the Air Command and Staff College, and Squadron Officer School are full for the first time since the fall of 1967. During the height of US involvement in Southeast Asia, enrollment at the schools was reduced nearly fifty percent.

Taken together, these three schools form the heart of the command's Professional Military Education (PME) system. Here on the academic circle at historic Maxwell AFB, Montgomery, Ala., students and faculty, free from other operational requirements, can devote their efforts exclusively to academic pursuits. More than 70,000 officers, their professional skills sharpened by the interface between student and instructor and by the stimulation of nationally prominent guest lecturers, have returned to progressively more responsible positions as staff officers and commanders.

"Our job," observes Lt. Gen. Alvan C. Gillem II, Air University's twelfth commander, "is to match today's course content and objectives with tomorrow's requirements as we now know them, and to remain responsive to new requirements as we identify them."

Keeping Pace

Throughout its years of operation, Air University has been responsive, updating its programs to keep pace with technological, managerial, and educational advances. Computer technology, for instance, now is taught routinely in each of the PME schools, and emphasis has been placed on the Department of Defense decision-making process.

Recognizing the urgent impact of social and cultural changes on national security, Air University now includes instruction in contemporary social problems—including human relations, race relations, and drug abuse—both in its PME schools and in a new Wing/Base Commanders Seminar program.

Response to changing requirements is clearly evident in the command's AFROTC programs conducted on leading college and university campuses throughout the country. Air Force scholarships, the flexibility of two-year and four-year programs, and a junior program in high schools came with the ROTC Vitalization Act of 1964. Recent congressional action increased cadet subsistence and authorized additional scholarships. Such program modernization and incentives have helped AFROTC remain viable in the face of both recent campus reaction and the goals of an all-volunteer force.

Intensified national and international interest in technology has focused even greater attention on the Air Force Institute of Technology, a major element of the Air University, located at Wright-Patterson AFB, Ohio. Confronted with the growing complexity of global logistics, expanding operations in space, and the demand for technologically oriented specialists, the Institute has kept pace by adding programs in these vital areas. In addition, programs have recently been developed to ensure a flow of graduate degree holders to instructional duties within the command and throughout the Air Force.

Not unlike other leading educational institutions, Air University, during the past twenty-five years, has developed comprehensive research facilities. Construction of a new wing to the Air University Fairchild Library to house the official files of the USAF Archives will be completed this spring. Its facilities

and the facilities of the Fairchild Library, already renowned for its extensive holdings, provide essential research facilities for both students and faculty.

Global Reach

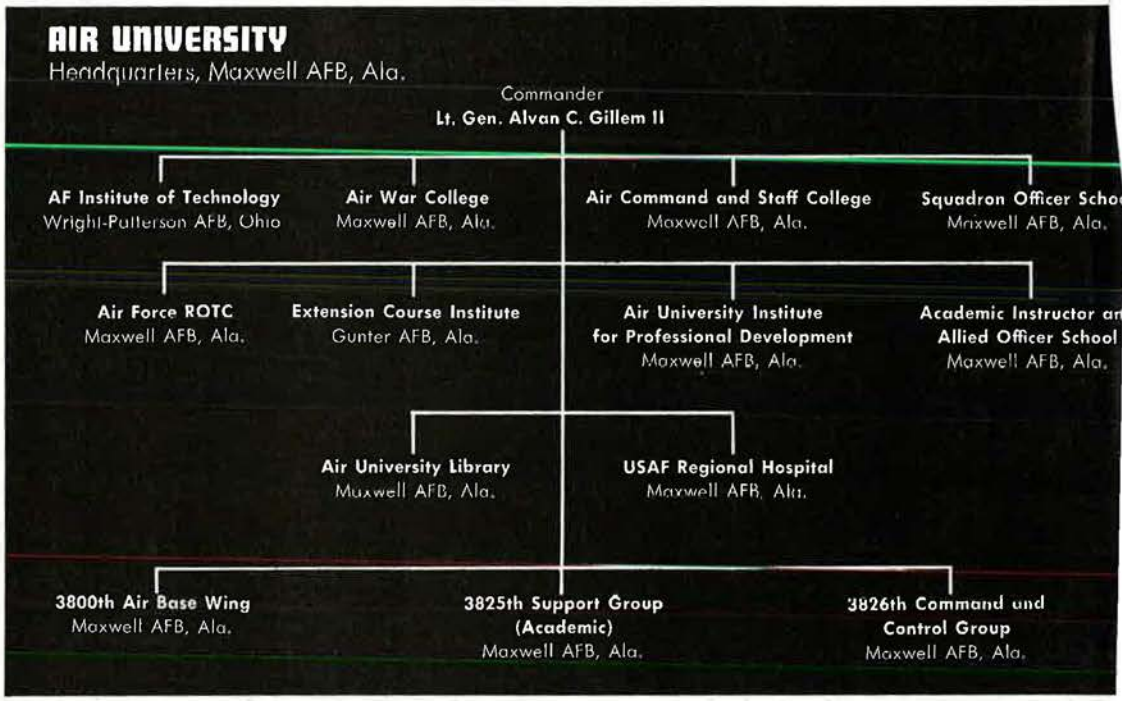
Air University's influence reaches out to many of the world's free nations, providing, under the auspices of the Military Assistance Program, allied officer programs that contribute to a better appreciation of America's goals and aspirations for a free society. Distinguished graduates now serve their countries as ambassadors, attachés, military commanders, and school commandants.

Among its growing responsibilities, Air University offers specialized courses in such fields as aerospace warfare systems, personnel management, comptrollership, and military law. Nearly half of the Air Force's chaplains have attended the Air Force Chaplain School.

Because of the mounting pressure to do more with less in terms of both manpower and money, Air University also operates one of the world's largest correspondence schools to permit upgrading in skill levels even at isolated outposts. And, because quotas are not sufficient to provide in-residence attendance at the PME schools for eligible officers, seminar and associate programs are now available at selected Air Force installations.

Concurrently with its in-house activities, Air University is beginning to play an increasing role within the civilian educational community. Recent activities include participating membership in two education consortia involving leading colleges and universities in Alabama and Ohio. And each year Air University's several advisory boards, composed of leading educators and administrators, contribute significantly to the development of educational policies within the command.

Lt. Gen. Alvan C. Gillem II became Commander of AU in August 1970. Earlier, he commanded the Eighth AF on Guam. In WW II, he was a fighter pilot in North Africa. He has commanded both fighter and bomber units.



A Growing Heritage

Air University enjoys a rich heritage of service to the Air Force. Early pioneers in aviation selected Maxwell for the site of an educational command headquarters partly because of its close links with aviation history. The Wright brothers introduced aviation to Montgomery in 1910, when they operated an early flying school on the base. During the ensuing years, Maxwell functioned in various roles—as a repair depot during World War I, the home of the Air Tactical School in the 1930s, and a flying training center in World War II.

Late in 1945, the Army Air Forces School was moved from Orlando, Fla., to Maxwell AFB and, in March 1946, following a meeting of top air officials on the overall educational program, the school was renamed Air University. Maj. Gen. Muir S. Fairchild was appointed its first commander.

General Fairchild's academic philosophy embodied new theories and concepts, discarding the outmoded doctrine and rigidity of thought that had characterized military education in the past. His farsighted policies and the unique organizational structure that permitted focusing uninterrupted energy toward the single educational mission have made it possible for Air University to make valuable contributions to the nation's military leadership, doctrine, and research.

Air University stands ready for tomorrow and the next quarter century. ■

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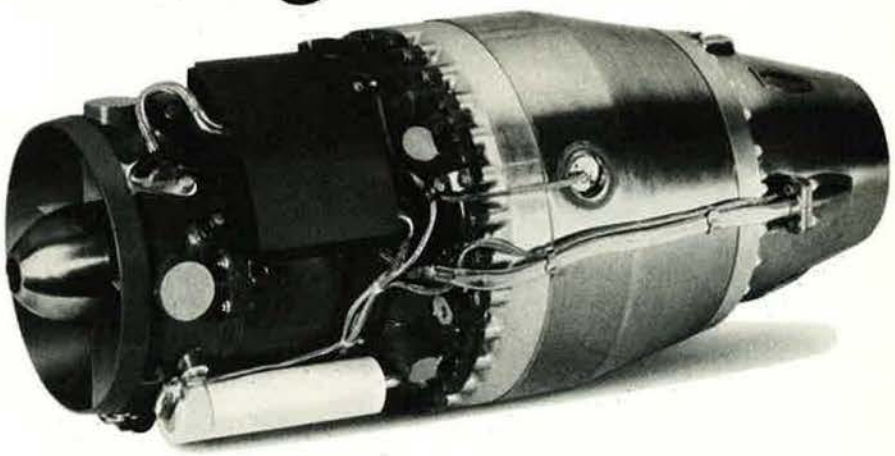

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are no machined airfoil surfaces in our engine. We've replaced many weldments with one piece brazements. And we've further stationized assembly operations. This allows workers to become extremely proficient in a narrower range of duties. Which means improved assembly, quality, compact work area and fewer man hours.

Just as important, we can easily produce engines in the quantities required by current and upcoming programs for expendable and limited life engines with an improved response time to boot.

But please don't get the impression we've gone Detroit on you. If you don't start out with a sound design, all the nifty manufacturing methods in the world won't bail you out.

We're fortunate because our engineers can draw on about 25 years experience in small turbine engine design and manufacture. Ours. So we're not exactly beginners.

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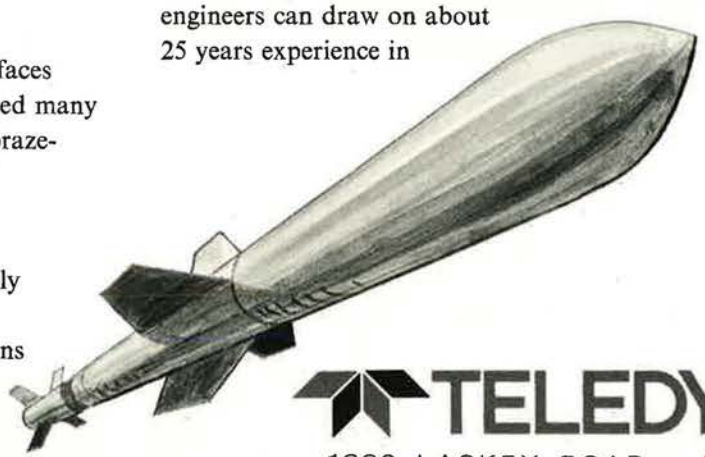

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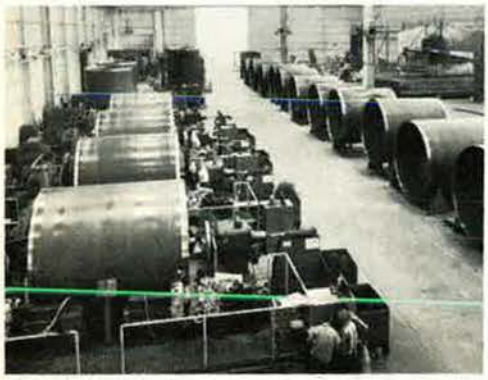

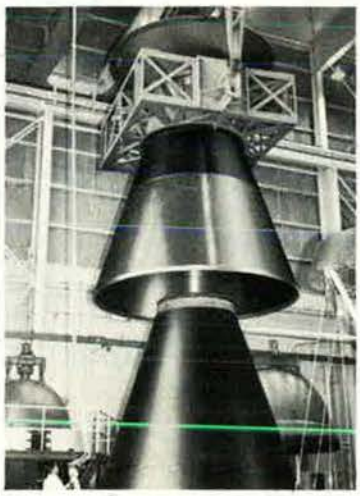

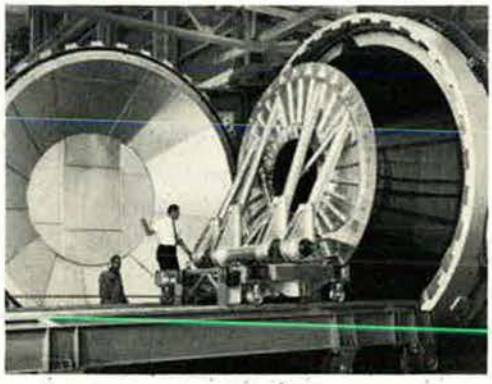

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Frank Nickols, Aerospace Marketing Manager,
Chula Vista, California 92012

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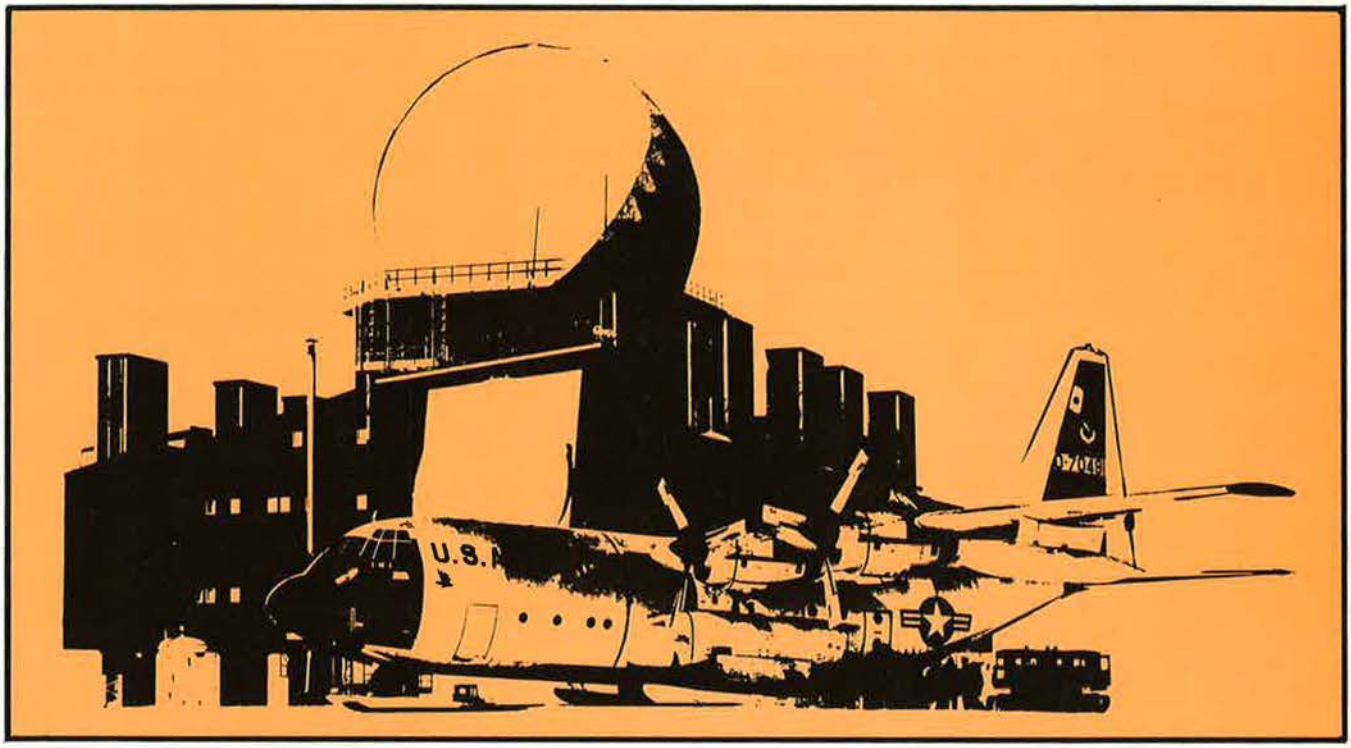
AEROSPACE SYSTEMS GROUP

A MAJOR AIR COMMAND

An essential component of those forces charged with the security of the continental heartland is the Alaskan Air Command. The Air Force's oldest major command stands astride America's last frontier as the guardian of our northern skies . . .

AAC's ski-equipped C-130s provide the only supply link for early warning sites on the Greenland ice cap.



AAC—TOP COVER FOR AMERICA

THE Alaskan Air Command (AAC), oldest of the United States Air Force's major air commands, stands ready on America's last frontier, providing "Top Cover for America." Commanded by Maj. Gen. Joseph A. Cunningham, Alaskan Air Command's mission includes the conduct, control, and coordination of air operations according to the tasks assigned by the Commander in Chief, Alaska (CINCAL).

An equally important task is to provide combat-ready air defense weapon systems, aircraft control and warning elements, and air defense forces within Alaska for employment under the operational control of the Commander, Alaskan NORAD (North American Air Defense) Region.

As a component of the unified Alaskan Command, the AAC Commander is the senior adviser to CINCAL on the appropriate employment of aerospace power. He plans for, conducts, controls, and coordinates tactical air operations, employing AAC or augmentation aerospace forces made available to CINCAL.

As a major air command, AAC exercises control over all assigned Air Force units, activities, and installations within CINCAL's area of responsibility. In carrying out this responsibility, the command provides tactical airlift support within Alaska as required or directed by Hq. USAF.

The command has two main bases—Elmendorf AFB, near An-

chorage, and Eielson AFB, near Fairbanks. Two forward operating bases, at King Salmon and Galena, provide vital extensions for command and control of interceptor weapon resources.

The multiple mission of the Alaskan Air Command is further typified by its thirteen remote installations. They are designed to enhance both the air defense and the tactical air operations roles levied on the command. Five of these installations serve as NORAD Surveillance Stations, providing for the earliest possible detection of manned bomber penetration of US airspace.

Inland, five NORAD Ground Control Intercept Stations and three NORAD Control Centers serve as weapons control facilities to expedite the intercept of any air-breathing intruders. All these units also stand ready to act as combat reporting posts in support of tactical operations.

World War II Beginnings

AAC was created when the Eleventh Air Force was redesignated the Alaskan Air Command on December 21, 1945, two years before the US Air Force became a separate service. However, the command's history dates back to October 17, 1941, when its predecessor, the Alaska Defense Command, was organized. Three months after its initial organization, the command was renamed the Alaskan Air Force, and one month later became the Eleventh Air Force.

AAC's first headquarters was located at Davis AFB on Adak Island. In 1946, the headquarters was moved to Elmendorf. Through the years, since its beginning on Adak, AAC has been the most forward line of aerial defense for the US industrial heartland.

The radar eyes of the command constantly search the skies for possible signs of intruding aircraft. These units include surveillance stations, NORAD ground control intercept stations, Distant Early Warning (DEW) Line stations, and NORAD control centers. AAC provides instantaneous information to battle commanders both in Alaska and at NORAD's control center inside Colorado's Cheyenne Mountain.

The command's history spans an era from relatively slow propeller-driven aircraft to jet tactical fighters capable of flying more than twice the speed of sound. Today, supersonic F-4 Phantoms of the 43d Tactical Fighter Squadron guard the northern skies against intruders. The versatile Phantom also provides close air support for the Army.

Diversity the Keynote

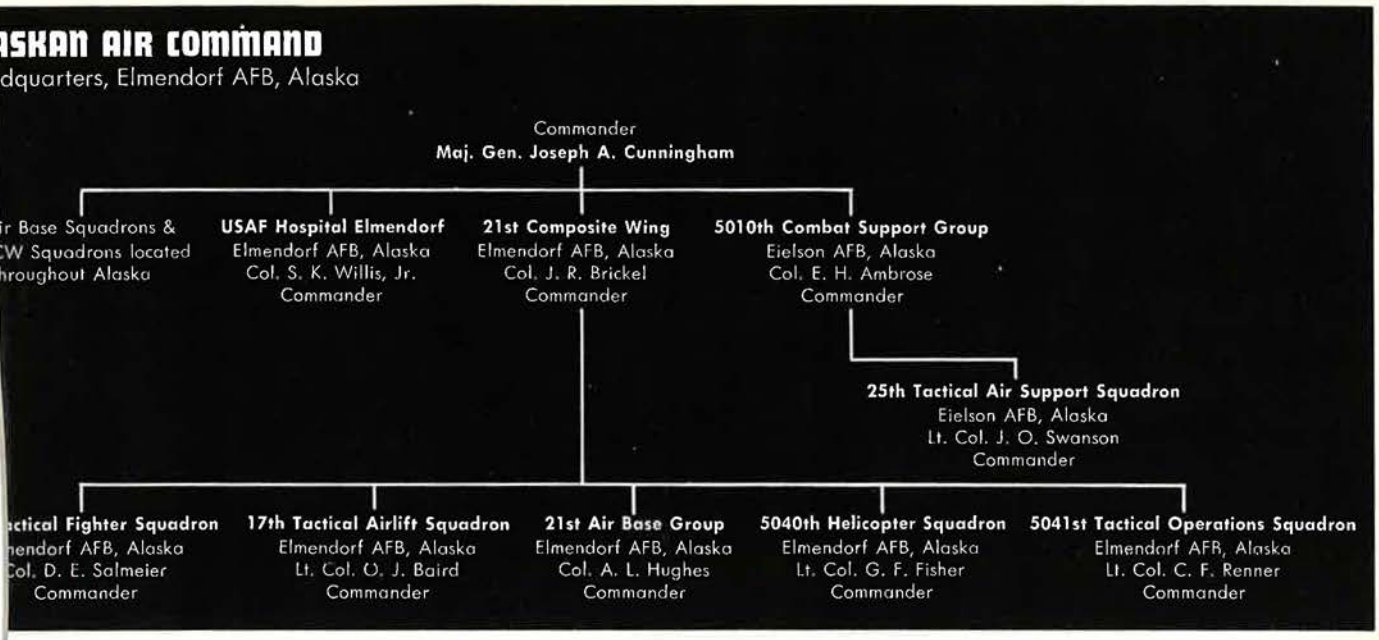
Search and rescue is a major humanitarian mission of AAC, under the guidance of AAC's Rescue Coordination Center (RCC) at Elmendorf. Since its founding on October 1, 1961, the RCC has been credited with saving the lives of more than 2,329 Alaskans. During that time, another 6,000 residents were assisted by the RCC.

During 1971, the RCC conducted or assisted with 416 search and rescue or emergency evacuation missions—the highest yearly total since 1966. Eighty-nine lives were saved through the combined efforts of military and civilian pilots in Alaska, where the airplane leads all other means of transportation. The Anchorage Chamber of Commerce recognized the outstanding work of the RCC over the past ten years by awarding it the Chamber's coveted Gold Pan Award. The award is presented annually for distinguished service in government.

AAC has always had a diverse inventory of aircraft. Presently, in addition to the O-2 forward air control aircraft, HH-3 helicopters, and F-4 interceptors, the command has T-33s and EB-57s for intercept training, and C-124s, C-118s, and C-130s for airlift. Flying the C-130, the 17th Tactical Airlift Squadron (TAS) carries the biggest share of AAC's airlift mission. In addition to its primary mission of providing airlift of Army units, the squadron has the unique task of supporting Arctic operations in Greenland. Using ski-equipped C-130 Hercules aircraft, the 17th TAS provides the only physical link between the DEW stations on the Greenland ice cap and the outside world. Other Alaska-based C-130s of the 17th are used for supplying remote stations within Alaska, most of which have only gravel strips for runways. Resupply of AAC's remote stations is also the primary mission of the 5040th Helicopter Squadron.

Perhaps the most diverse mission and inventory of aircraft belongs to the 5041st Tactical Operations Squadron. Officially activated on October 1, 1971, the squadron uses five different types of aircraft. Two C-124 Globemasters are used primarily for transporting oversized cargo to and from the sixteen remote stations in AAC. A T-39 Sabreliner is available for rapid transportation when the need arises. Three C-118s provide airlift of passengers, cargo, and medical evacuations throughout Alaska and

The C-123 (top) was used for tactical airlift until 1971. AAC's F-4Es (above) provide intercept capability for NORAD and tactical support for the Army. The HH-3 helicopter (below) is used for search and rescue missions throughout Alaska.



the mainland US. Eight T-33 jet trainers and two EB-57 Canberras provide electronic countermeasures (ECM) training for remote site radar installations and the men of the 43d Tactical Fighter Squadron by acting as simulated enemy aircraft.

Maj. Gen. Joseph A. Cunningham, AAC Commander since 1969, previously headed ARRS and was Deputy Director, Civil Disturbance Planning and Operations.

Joint Exercises

AAC participates in a continuing series of joint exercises, to provide Arctic training for Air Force and Air National Guard units from bases elsewhere in the US. These exercises are conducted in the frigid Alaskan interior near Eielson AFB and include air-to-air and air-to-ground training with live bombing and strafing at a nearby practice range. Other joint exercises, simulating enemy ground attack, are conducted with the US Army, Alaska.

Support of Military Airlift Command's airlift of men and equipment to and from Southeast Asia continues, but at a reduced pace due to the reduction of activities in SEA. The giant C-5 has joined the C-141 in making regular refueling stops at Elmendorf, but aeromedical evacuation flights through that base were discontinued during 1971. Since November 1965, more than 40,000 flights have been routed through Elmendorf.

After more than a quarter century of service on America's last frontier, AAC continues to blanket the 586,400 square miles of Alaskan terrain, providing "Top Cover for America." ■

AAC'S LEADERS THROUGH THE YEARS

Maj. Gen. Frank A. Armstrong, Jr.	Feb. 20, 1949	Jan. 9, 1951
Maj. Gen. William D. Old	Jan. 10, 1951	Nov. 30, 1952
Maj. Gen. George R. Acheson	Feb. 26, 1953	Feb. 14, 1955
Lt. Gen. Joseph H. Atkinson	Feb. 24, 1955	July 16, 1956
Lt. Gen. Frank A. Armstrong, Jr.	July 17, 1956	Oct. 24, 1956
Maj. Gen. James H. Davies	Oct. 24, 1956	June 27, 1957
Lt. Gen. Frank A. Armstrong, Jr.	June 27, 1957	Aug. 31, 1957
Brig. Gen. Kenneth H. Gibson	Sept. 1, 1957	Aug. 24, 1958
Maj. Gen. Conrad F. Necrason	Sept. 1, 1958	June 30, 1961
Maj. Gen. Wendell W. Bowman	Aug. 1, 1961	Aug. 1, 1963
Maj. Gen. James C. Jensen	Aug. 15, 1963	Nov. 14, 1966
Maj. Gen. Thomas E. Moore	Nov. 15, 1966	July 31, 1969
Maj. Gen. Joseph A. Cunningham	Aug. 1, 1969	

THE US Air Forces Southern Command (USAFSO), commanded by Maj. Gen. Arthur G. Salisbury, is an Air Force major command and the air component of the unified US Southern Command (USSOUTHCOM). USAFSO, with headquarters at Albrook AFB, Canal Zone, has a geographical area of responsibility second in the Air Force only to that of PACAF. The vast area included in USAFSO's mission responsibility is approximately two and one-half times the size of the continental United States, extending from the southern border of Mexico to the southern tip of South America.

In addition to providing air defense for the Panama Canal area, USAFSO furnishes assistance and training to Latin American Air Forces (LAAFs) in order to promote Western Hemisphere security and solidarity. USAFSO also assures logistic and administrative support in various Latin American nations for USAF mission/Air Force sections of US military groups; MAAGs; air attachés; and the USAF section, Joint Brazil-US Military Commission. The command's 24th Special Operations Wing (24th SOWg), in conjunction with the Military Airlift Command, supports these functions.

A MAJOR AIR COMMAND

Although its primary missions are to defend the Panama Canal area and assist in training Latin American airmen, the Air Forces Southern Command is best known as a goodwill ambassador without portfolio. When disaster strikes, or in day-to-day matters that require an effective civic action program, many Latin American countries look to . . .

The A-37 Dragonfly tactical attack fighter is flown by pilots of Southern Command's Special Operations Unit.

USAFSO— SAMARITAN SOUTH OF THE BORDER

USAFSO'S LEADERS THROUGH THE YEARS

Brig. Gen. Emil C. Kiel	Nov. 6, 1950	July 31, 1953
Maj. Gen. Reuben C. Hood, Jr.	Aug. 1, 1953	June 20, 1956
Maj. Gen. Truman H. Landon	July 31, 1956	July 31, 1959
Maj. Gen. Leland S. Stranathan	Aug. 3, 1959	Aug. 24, 1963
Maj. Gen. Robert A. Breitweiser	Sept. 14, 1963	July 31, 1966
Maj. Gen. Reginald J. Clizbe	Aug. 8, 1966	June 14, 1968
Maj. Gen. Kenneth O. Sanborn	June 15, 1968	Apr. 30, 1972
Maj. Gen. Arthur G. Salisbury	Apr. 30, 1972	

The 24th SOWg, located at Howard AFB and scheduled for streamlining and realignment this summer under an overall USAFSO reorganization, is uniquely oriented and equipped to perform its special operations tasks in the Canal Zone and Latin America. Tactical aircraft of the 24th SOWg include the A-37, the C-123K, and the UH-1N helicopter. These aircraft are similar to those used in many

USAFSO Commander Gen. Arthur G. Salis was previously Chi Staff, ADC. A fighter commander in Africa Europe during W War II, his recent as ments have included as DCS/Plans, ADC, several JCS posit

Latin American countries. To assist the 24th SOWg, and in support of USCINCSO requirements, a detachment of Tactical Air Command C-130s is deployed in the Canal Zone. Also, MAC has a search and rescue detachment at Howard AFB, which uses HH-3 helicopters for SAR and humanitarian airlift operations. A USAFSO Rescue and Coordination Center is located at Albrook AFB.

Civic Action

In addition to joint training exercises with other US services and combined activities with Latin American allies, USAFSO participates extensively in host country civic-action and nation-building programs. Primary efforts are directed toward providing airlift, training, equipment, and technical assistance to LAAFs to help them initiate or continue their own programs. As the USSOUTHCOM air component, USAFSO also provides airlift support for US Army and US Navy civic-action assistance projects.

Important civic-action contributions are made by USAFSO in support of individual country programs to develop transportation networks. These networks assist industrial expansion, improve communications, facilitate commerce, and enhance educational opportunities by linking remote regions with metropolitan areas. C-130s and C-123s provide essential airlift of road-building equipment and other construction materials in many of these projects.

Among other civic-action and humanitarian efforts undertaken by the command were extensive flood-relief projects in Panama, Costa Rica, and Colombia, and large-scale airlift of supplies to remote Bolivian areas. The greatest effort in recent years was a massive program to bring relief to victims of the disastrous earthquakes that struck the Chimbote area on Peru's coastline in 1970. From June 2 until July 3 of that year, USAFSO aircraft and TAC's C-130s under operational control of USAFSO airlifted 250,000 pounds of emergency supplies from the Canal Zone to Lima.

From Lima's Jorge Chavez Airport, USAFSO airlifted 1,250,000 pounds of supplies to the Chimbote area, accomplished 501 medical evacuations, and carried 2,827 passengers. This in-country relief project was carried out under austere operating conditions. The 24th SOWg was presented the Air Force Outstanding Unit Award for this exceptional achievement in Peru.

Training Programs

Training officers and airmen of the Latin American Air Forces is an important USAFSO function. The Inter-American Air Forces Academy (IAAFA) at Albrook carries out much of the formal training administered by USAFSO under the Department of Defense Military Assistance Program. USAF formally established the school in 1948; however, aeronautical courses for Latin Americans have been taught at Albrook since 1943.

IAAFA is composed of two schools: The Officer Professional Education School and the Airmen Technical Training School. Various courses are presented to officers throughout the year and include subjects such as special air operations, air intelligence, academic instruction, and aircraft maintenance. Although patterned after courses taught in the United States, they are modified to meet the specific needs of the LAAFs. The Airman Technical Training curriculum is flexible, and courses may be added or dropped to meet current training needs. IAAFA has graduated more than 10,400 airmen from its technical training courses and 200 officers from its officer program. Translating USAF training materials into Spanish for use both in the school and in on-the-job training programs is also an activity performed at IAAFA.

USAFSO operates two other types of training programs for Latin American military personnel. These are the Familiarization Job Training Program, where students work directly with their USAF counterparts at Albrook and Howard Air Force Bases, and the Mobile Training Team Program, in which USAFSO specialists go to the various Latin American nations to instruct. Instruction in a wide variety of technical and nontechnical skills is offered in these two programs—for example, tactical operations, personnel, administration, first aid, and parachute rigging.

A special Tropic Survival School for training US military personnel is operated by the Air Training Command at Albrook AFB.

The Chiefs' Conference

The Commander, US Air Forces Southern Command, is the representative of the Chief of Staff, USAF, in matters relating to the System of Cooperation Among the Air Forces of the Americas. He also assists in planning and conducting the annual Conference of Chiefs of the Air Forces of the Americas, held alternately in the US and Latin America. Seventeen member air forces and three observers (Canada, Costa Rica, and Mexico) participate in the conference. This year, marking USAF's Twenty-fifth Anniversary, the Chiefs' Conference will be held in May at Randolph AFB, Tex. ■

A MAJOR AIR COMMAND

Headquarters Command, in its operational support of Hq. USAF and other governmental agencies, is famous for its diversity. Its tasks vary from acting as USAF's mailman to greeting foreign VIPs. The command also flies a lot of airplanes . . .

HEDCOM— MULTI-MISSION MANAGERS

THE mission of Headquarters Command, USAF (HEDCOM), is to provide operational support to Hq. USAF, the Joint Chiefs of Staff, the Office of the Secretary of Defense, and to other governmental agencies. HEDCOM's responsibilities extend from its central headquarters at Bolling AFB, D. C., to more than 800 locations throughout the world.

The scope of this support ranges from supervising the Air Force flying program in the Washington area to maintaining supervision on manning of units established by the JCS in such diverse locations as Saudi Arabia and Taiwan.

The start of flying activities in the Washington area predates the activation of the command by more than thirty years. In 1917, the Giesboro Depot (old Bolling Field) was turned over to the Aviation Section of the Signal Corps for development as a landing field "in defense of Washington and as a location for proficiency flying." More than fifty years of flying activities from the base came to an end in 1968 when all Washington-area Air Force flying activities were consolidated at Andrews AFB, Md.

Varied Activities

HEDCOM's support activities also extend to units of international defense alliances, unified commands, and other governmental agencies. The Directorate of Budget administers funds amounting to approximately $272 million annually in support of the command's mission.

HEDCOM is the parent command to approximately 29,000 personnel, representing the greatest variety of job specialties in the Air Force. Nearly one-third of these people are in overseas locations. Twenty thousand are under the administrative control and personnel management of the command and are assigned to Air Force field extensions and special activities units throughout the world.

Another 6,500, assigned to newly established separate operating agencies (SOAs), receive major command support. These new SOAs, established in January of this year, include the Air Force Office of Special Investigation, Washington, D. C., and the Air Force Inspection and Safety Center and the Air Force Audit Agency, both headquartered at Norton AFB, Calif.

In addition, the command has recently been given operational control of the USAF Postal and Courier Service and the 1135th Special Activities Squadron, which was activated to provide administrative support for joint military schools, including the Inter-American Defense College and Board, National War College, and Industrial College of the Armed Forces, all at Fort McNair, D. C.; the Armed Forces Staff College, Norfolk, Va.; Air Force Information and Education Program, University of Oklahoma; and the Defense Weapons Management Center, Fort Belvoir, Va.

Other special activities units of the command perform special duties with unified commands and other agencies outside the Air Force. For instance, the Air Force astronauts, scientists, engineers, and controllers on duty with the National Aeronautics and Space Administration (NASA) are assigned to the 1st USAF Special Activities Squadron.

Field extensions that are supported by HEDCOM include the 1127th USAF Field Activities Group, the 1070th Medical Service Group, the 1035th USAF Field Activities Group, and the 1132d USAF Field Extension Squadron. These units are under the direct operational control of the Air Staff.

Other organizations supported by HEDCOM special activities units include the Supreme Headquarters Allied Powers Europe, North Atlantic Treaty Organization, North American Air Defense Command, Alaskan Command, US Readiness Command, Pacific Command, Federal Aviation Administration, Defense Supply Agency, Defense Intelligence Agency, Defense Nuclear Agency, and the Military Assistance Advisory Groups.

Approximately 9,000 personnel are assigned to units under the direct operational control of HEDCOM. These operational and support units include the 1st Composite Wing and Malcolm Grow USAF Medical Center at Andrews AFB; the 1100th Air Base Wing, the 1139th Comptroller Services Squadron, and the world-renowned USAF Band at Bolling AFB; and Headquarters Civil Air Patrol-USAF (CAP-USAF), Maxwell AFB, Ala.

Host Unit at Andrews

The 1st Composite Wing is the host unit at Andrews AFB. Located eleven miles southeast of Washington, the wing's runways are the "gateway to the capital." More than 12,000 distinguished visitors from around the world arrive at the base each year. However, one of the unit's more important functions is providing executive airlift to all echelons of government, including flights that are frequently directed by the White House or the Secretary of Defense. Subordinate units of the wing also provide a national airborne command post to the JCS and quick-response airlift and emergency evacuation capability in the Washington area.

The wing supports more than twenty Air Force, Navy, and Marine organizations, the largest of which is Hq. Air Force Systems Command. Other tenants include the 89th Military Airlift Wing, which maintains the Presidential aircraft and twenty-six other VIP aircraft for airlifting high-ranking military and civilian dignitaries; the 113th Tactical Fighter Wing of the D. C. Air National Guard; and the 459th Military Airlift Wing as well as Naval and Marine Reserve Units.

The Malcom Grow USAF Medical Center, with its main hospital at Andrews, has clinics at Bolling AFB and the Pentagon. It provides a full range of medical service to military personnel and dependents and is one of the major instructional hospitals in the Air Force, conducting both residency and internship programs.

South of the US Capitol and across the Potomac River from National Airport is Bolling AFB, operated by the 1100th Air Base Wing, which provides administrative and logistical support for HEDCOM. The wing is also the parent unit of the elite USAF Honor Guard. This "showcase" unit regularly performs during ceremonies at official State functions involving national and international dignitaries.

HEDCOM assumed command of CAP-USAF in 1968. A civilian auxiliary of the Air Force with all volunteer members, CAP consists of eight geographical regions, fifty-two wings, and a membership of more than 70,000.

Since February 1961, CAP pilots, under the supervision of Aerospace Rescue and Recovery Service, have flown 126,470 sorties amounting to 236,428 flying hours. These operations have saved more than 1,200 lives and assisted more than 16,000 Americans threatened by danger during natural disasters.

Maj. Gen. John L. Locke was Assistant DCS/P before assuming command of HEDCOM May 1, 1972. He flew 126 combat missions in Europe during World War II. His assignments have included positions in personnel and in fighters, heading the Air Force section, MAAG, Iran, and DCS/Tech Training, ATC.

HEDCOM'S LEADERS THROUGH THE YEARS

Brig. Gen. Morris J. Lee	Oct. 2, 1950	June 13, 1952
Brig. Gen. Stoyte O. Ross	June 14, 1952	July 4, 1956
Maj. Gen. Reuben C. Hood, Jr.	Aug. 1, 1956	June 30, 1959
Maj. Gen. Brooke A. Allen	Aug. 3, 1959	Dec. 31, 1965
Maj. Gen. Rollen H. Anthis	Jan. 10, 1966	Nov. 30, 1967
Maj. Gen. Milton B. Adams	Dec. 1, 1967	June 30, 1968
Maj. Gen. Nils O. Ohman	July 5, 1968	Apr. 30, 1972
Maj. Gen. John L. Locke	May 1, 1972	

The USAF Postal and Courier Service handles 182,000 tons of mail a year. This load is from Vietnam.

CAP also operates a comprehensive aerospace education and youth-motivation program for the benefit of its 36,000 teen-age cadet members.

The USAF Postal and Courier Service, a new addition to the command, operates post offices and courier stations around the globe. The unit handles and processes more than 182,000 tons of mail annually. ■

USAFSS'S LEADERS THROUGH THE YEARS

Col. Roy H. Lynn	Oct. 26, 1948	July 5, 1949
Col. Travis M. Hetherington	July 6, 1949	Jan. 21, 1951
Maj. Gen. Roy H. Lynn	Feb. 22, 1951	Feb. 13, 1953
Maj. Gen. Harold H. Bassett	Feb. 14, 1953	Jan. 3, 1957
Maj. Gen. Gordon L. Blake	Jan. 4, 1957	Aug. 5, 1959
Maj. Gen. John B. Ackerman	Aug. 6, 1959	Sept. 20, 1959
Maj. Gen. Millard Lewis	Sept. 21, 1959	Aug. 31, 1962
Lt. Gen. Richard P. Klocko	Sept. 1, 1962	Oct. 15, 1965
Brig. Gen. Louis E. Coira	Oct. 16, 1965	July 18, 1969
Maj. Gen. Carl W. Stapleton	July 19, 1969	

Since its activation in 1948, the USAF Security Service has grown from a handful of men to an organization of more than 12,000. Its aim is to safeguard a worldwide activity of the Air Force that is vital in peace and war . . .

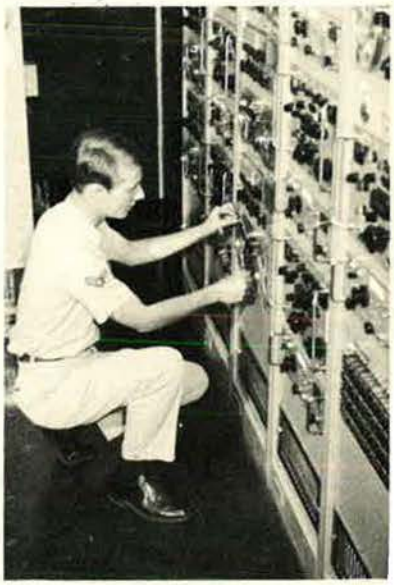
Maj. Gen. Carl W. Stapleton acted as Vice Commander of USAF Security Service before becoming Commander in 1969. During WW II, the General, a West Point graduate, flew two tours in Europe as a fighter pilot. This past decade of his career has been in security.

USAFSS—COMMUNICATIONS SECURITY

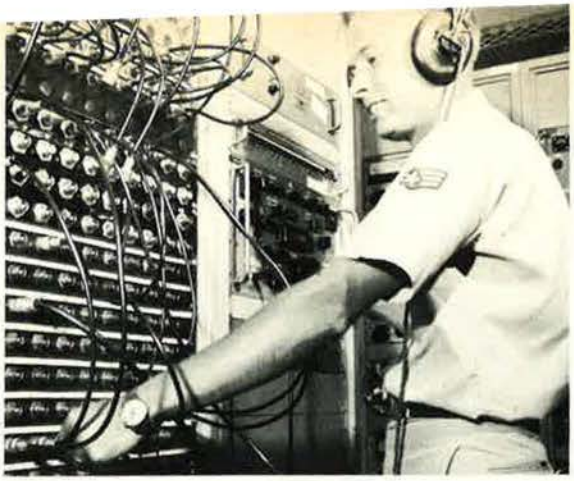
A MAJOR AIR COMMAND

Communications are transcribed as part of the procedure to ensure proper transmission security practices throughout USAF.

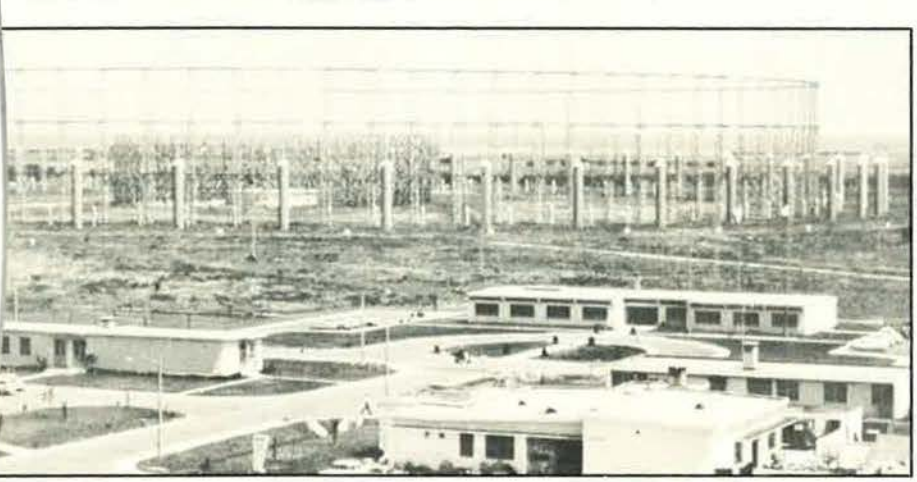
Portable recorder for deployment to USAF units requesting communications security check.



Before analysis, transmissions that are to undergo security evaluation are recorded on tape by this receiver/recorder.



A communications operations specialist changes an antenna coupler on a receiver at a Security Service communications security (COMSEC) operating location.



Referred to as the "Elephant Cage," this circular disposed antenna array is one antenna system employed in USAFSS communications monitoring activities.

ONE YEAR, one month, and two days after the oath of office was administered to the first Secretary of the Air Force, the United States Air Force Security Service (USAFSS) was organized and designated a major air command. USAFSS absorbed an Air Force Security Group cadre established by the Department of the Air Force in June 1948.

USAFSS was activated October 20, 1948, at Arlington Hall Station, Va., with a cadre of only eleven officers and a few enlisted men on loan from the Department of the Army. At that time, USAFSS was assigned its cryptologic mission to perform for the fledgling United States Air Force, a mission previously performed for the Army Air Forces by the Army Security Agency. USAFSS was tasked with providing communications security for the relatively new Department of the Air Force.

Under a joint Army-Air Force Adjustment Agreement signed in December 1948, the Department of the Army transferred to the Department of the Air Force three Radio Squadrons, Mobile (RSMs) and one Radio Security Section (RSS).

On January 29, 1949, these organizations were reassigned to USAFSS. Two of the RSMs were deployed in Japan and Germany, and the other RSM was located at Arlington Hall Station. The RSS was deployed in upper New York state. At that time, the authorized strength of USAFSS had grown to 1,187 personnel, with a 1949 budget of $152,609.

Move to Texas

In May 1949, the Headquarters cadre and the 8th RSM moved from Arlington Hall Station to Brooks AFB, Tex. Here the first concept of operations was developed. This concept, approved by the USAF Chief of Staff in December 1949, envisioned the eventual development and deployment of ten mobile units to support tactical Air Force requirements. However, before this concept could be implemented, USAFSS operations were reoriented considerably by technology, world crisis, and changes in national security policies and command-and-control doctrine.

On October 24, 1952, USAFSS was reorganized to operate with the procedural functions, authorities, and responsibilities of a major command within the policy constraints required by triservice relationships. At that time, USAFSS began functioning as the US Air Force component under technical control of the National Security Agency.

In July 1953, command headquarters and supporting elements moved from Brooks AFB to Kelly AFB, Tex. By Fiscal Year 1954, the command budget had increased to $5,288,000. Command strength had increased to 15,000.

From 1954 to 1967, USAFSS continued to grow in strength and expand its operations throughout the world. By the end of 1967, command strength was almost doubled. USAFSS had more than fifty separate organizations, units, or activities in twelve countries, and the fiscal year operating budget was in the tens of millions.

Current Missions

Current USAFSS missions dictate the use of the most sophisticated electronic and cryptographic equipment available. The USAFSS equipment inventory ranges from small, inexpensive cryptographic items through modern computers to specially designed antennae that cover acres of land and extend more than 100 feet in the air. Because of the type of equipment used and the deployment pattern required to perform assigned missions, USAFSS units also perform direction-finding and range-estimation functions for USAF search-and-rescue operations.

Since 1948, USAFSS organizations have earned eighty Air Force Outstanding Unit Awards, two Presidential Unit Citations, the Navy Meritorious Unit Commendation, and two special awards for outstanding contributions to the national cryptologic effort.

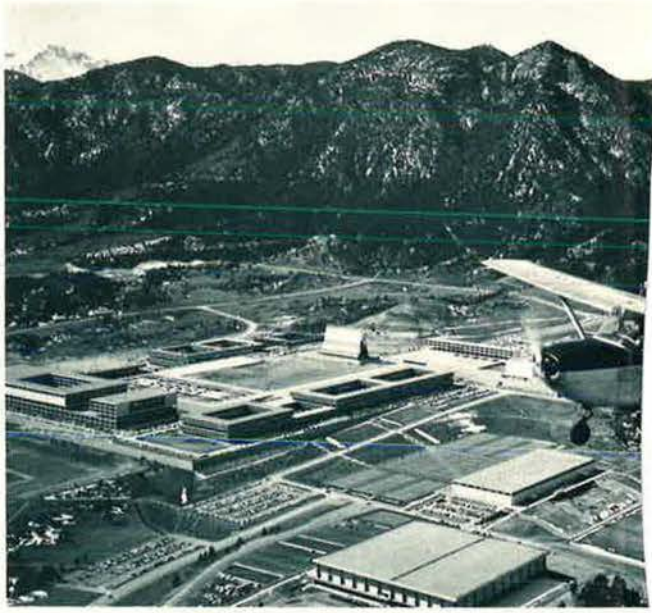
Maj. Gen. Carl W. Stapleton is the current Commander. ■

A SEPARATE OPERATING AGENCY

With the graduation of the first class of cadets from the Air Force Academy in June 1959, a dream of many Air Force founders came true: the continuous production of a solid core of professional officers motivated toward lifetime careers. Today, Academy graduates earn a commission and B.S. degrees in one of twenty-eight majors offered by . . .

USAFA— A MATTER OF DEGREES

USAFA Superintendent Lt. Gen. Albert P. Clark, a USMA graduate and World War II fighter pilot, was Air Force Director of Military Personnel, Vice Commander of TAC, and Commander of Air University before assuming his present duties in August 1970.



About sixty percent of each Academy graduating class goes into aircrew training. Cadets bound for pilot training complete the equivalent of Phase I of Undergraduate Pilot Training, flying T-41s, while at the Academy.

THE mission of the United States Air Force Academy — now headed by its sixth Superintendent, Lt. Gen. Albert P. Clark—is to educate and train career officers for the US Air Force. This is accomplished through a four-year program of academics, leadership, and military training, physical education, and athletics. Cadets graduate with bachelor of science degrees and regular Air Force commissions.

President Eisenhower signed the legislation authorizing an Air Force Academy on April 1, 1954. A site-selection committee of civilian and military leaders screened more than 400 locations and visited proposed sites in twenty-two states. On June 24, 1954, the Secretary of the Air Force selected the site north of Colorado Springs as the permanent home of the Academy. Lt. Gen. Hubert R. Harmon was named the first Superintendent.

The Academy was established in temporary quarters at Lowry AFB in Denver, Colo., until construction was completed at the permanent location, at an initial cost of $142 million. The new service school was dedicated at Lowry on July 11, 1955, when the first class of 306 cadets was sworn in.

Laying the Foundation

Responsibility for accomplishing the Academy mission was delegated to the Superintendent and his staff. The Dean of the Faculty implemented the academic program and supervised the development of the faculty. The Commandant of Cadets, given responsibility for the professional education of the Cadet Wing, developed the leadership and military training programs. The Director of Athletics went to work on physical education and intercollegiate athletics. Supervision of candidate information, cadet admissions, records, and counseling was assigned to the Director of Admissions and Registrar.

While a curriculum, tradition, and cadet way of life were hammered out at Lowry, a great community building project got under way sixty miles south. Moving rapidly on the prodigious project, Academy builders had the cadet buildings ready for occupancy by the time the first cadet class reached its final year. On August 29, 1958, the Cadet Wing moved into new quarters at the foot of the Rampart Range of the Rocky Mountains. The first class was graduated at the Academy in June 1959.

For the first few years, cadets graduated as rated navigators and second lieutenants in the Air Force. Under the leadership of Brig. Gen. Robert F. McDermott, the Dean of the Faculty, and Brig. Gen. William T. Woodyard, who succeeded him as Dean on August 1, 1968, the "majors for all" program was developed and expanded. Today each cadet graduates with a commission and a bachelor of science degree in

One of the Academy's falcon recruits undergoes operational training prior to joining the famed team of flying mascots.

Graduation Day. Another 700 newly commissioned lieutenants join the lengthening Blue Line of Academy men, now numbering nearly 7,000, who have graduated since 1959.

one of the twenty-eight majors offered.

In 1962, the Cadet Wing reached its authorized strength of approximately 2,500 cadets. In 1964, Congress voted an annual increase in the size of entering classes until a maximum of 4,417 cadets is reached in 1972. This will equalize enrollment at the Air Force, Military, and Naval academies.

In order to accommodate the increased size of the Cadet Wing, a $38 million expansion was started in 1965 and completed in 1969. Added facilities included a new dormitory, a field house, extensions of the academic buildings and gymnasium, additional athletic fields, recreational lounges, and parking lots.

The Academy's 18,000-acre site, which covers five mesas and intervening valleys, includes two housing areas with community schools, a community center, Prep School, hospital, golf course, 45,000-seat Falcon Stadium, the Visitor Center, and an airfield for airmanship programs in military parachuting, soaring, and lightplane flying. The cadet area is in the northwest quadrant of the reservation.

More Cadet Responsibility

Initially, military training was conducted by Air Force officers assigned to the Commandant's staff. In intervening years, however, many leadership responsibilities and training duties were assigned to the cadets themselves. Under Brig. Gen. Walter T. Galligan, current Commandant, cadets have more responsibility than ever before for the management of the Cadet Wing. Only First Classmen hold cadet officer rank; Second Classmen are high-ranking cadet noncoms; Third Classmen serve as flight and element leaders. Professional military skills are learned partly in the classroom. Field experience is gained through summer military training programs in leadership, basic cadet training, airmanship, Air Force research projects, and survival training. In order to graduate, a cadet must demonstrate aptitude for commissioned service as well as complete the requirements for a B.S. degree.

The T-41 pilot indoctrination program was started in January 1968 and has proved to be a career-motivating activity. It is conducted by the 3253d Pilot Training Squadron (ATC) and Academy personnel at nearby Peterson Field for all physically qualified seniors who plan to enter pilot training after graduation. Cadets complete the equivalent of Phase I of undergraduate pilot training before they leave the Academy.

The Academy has graduated thirteen classes of cadets. When approximately 758 cadets receive their commissions on June 7, 1972, the total of graduates will approach 6,950. As of this date, seventeen Academy graduates have reached the rank of lieutenant colonel.

The Academy curriculum and military training programs reflect Air Force needs in a changing world. Well grounded in physical education and athletics, Falcon varsity teams meet top-flight intercollegiate teams in a wide variety of sports. The US Air Force Academy will continue to develop graduates motivated toward Air Force careers. ■

VITAL ADJUNCT TO THE ACTIVE-DUTY FORCE

Trained to meet the same exacting standards as their counterparts on active duty, Air National Guardsmen are now being equipped with high-performance aircraft in their backup role. These citizen-airmen work hard at keeping . . .

ANG—COMBAT READY . . . ALL WEEK LONG

The last of these Douglas O-38 observation aircraft were procured for the National Guard in the 1930s.

Aviation units of the National Guard were operating as early as 1915. The War Department decided against deploying any of these units for combat during World War I, but most Guard aviators saw service.

Maj. Gen. I. G. Brown, ANG head since 1962, previously served in ADC as DCS/Operations, and as Executive Secretary of the Air Reserve Forces Policy Committee.

THE first federally recognized aviation unit in the National Guard, and the only one before US entry into World War I, was the 1st Aero Company, New York National Guard. This unit was organized on November 1, 1915, under the command of Capt. Raynal C. Bolling. The company was mustered into federal service on July 13, 1916, for the Mexican Border disturbances, remaining on active duty for four months.

Training at the Signal Corps Aviation Station at Mineola, N. Y., the unit employed four military biplanes, purchased through private contributions, and a training plane donated by the Wright Company. In November 1916, seven JN-4 "Jennies" of the 1st Aero Company, under the command of Captain Bolling, made the first National Guard cross-country flight from Mineola to Princeton, N. J., and return.

The War Department decided that no National Guard aviation units would be used during World War I. However, most of the Guard's aviation personnel saw service in the war. Bolling, by then a colonel, was killed in France. (Bolling AFB is named for him.)

During the 1920–21 reorganization of the National Guard, aviation units found a solid place in the organization. In 1920, the first regulations governing the organization of the observation squadrons, balloon companies, and photo sections of the National Guard were issued. Nineteen observation squadrons were authorized, and ten more were added shortly before World War II.

World War II Service

When the National Guard was ordered into federal service in September 1940, it furnished twenty-nine observation squadrons, including 800 officers and 4,000 enlisted men. These Guardsmen were in a high state of readiness, and the Army Air Forces were able to use them to a great extent in providing

command echelons and integral units in its observation groups in the Air Support Commands created in September 1941. Most of the new observation groups were composed in greater part of former National Guard squadrons.

In October 1945, the Secretary of War approved policies relating to the postwar organization of the National Guard, which included provisions for air units in the several states. The Air National Guard as it is known today began when the 120th Fighter Squadron of Colorado became the first National Guard unit to gain federal recognition after World War II. The date was June 30, 1946. The official use of the name Air National Guard dates from the adoption of the National Security Act on July 26, 1947.

In October 1950, the first Air National Guard units to be ordered into active federal service during the Korean War reported to their stations. In less than a year, more than three-fourths of the Air National Guard was on active duty within the US Air Force in Korea, Europe, and CONUS. Four ANG pilots became jet aces.

The Air Guard was partially mobilized for the Berlin crisis in October 1961. More than 21,000 Air Guardsmen were called to active duty. In addition, eight fighter squadrons were called up, comprising more than 200 aircraft. They flew to various bases in Europe in a single, accident-free deployment. The Air Guard contributed a total of nine wings, plus three F-104 squadrons, to the buildup.

Between January 26, 1968, and June 18, 1969, Air Guard units mobilized for the Vietnam War provided four of the USAF's thirteen F-100 tactical fighter squadrons in Southeast Asia (a fifth was ninety percent manned by Air Guardsmen). The Guard-manned squadrons in Vietnam flew nearly 30,000 combat sorties and 50,000 combat flying hours, completing their eleven-month combat tours without a reportable accident due to pilot, material, or maintenance failure (this does not include combat losses).

The Guard Today

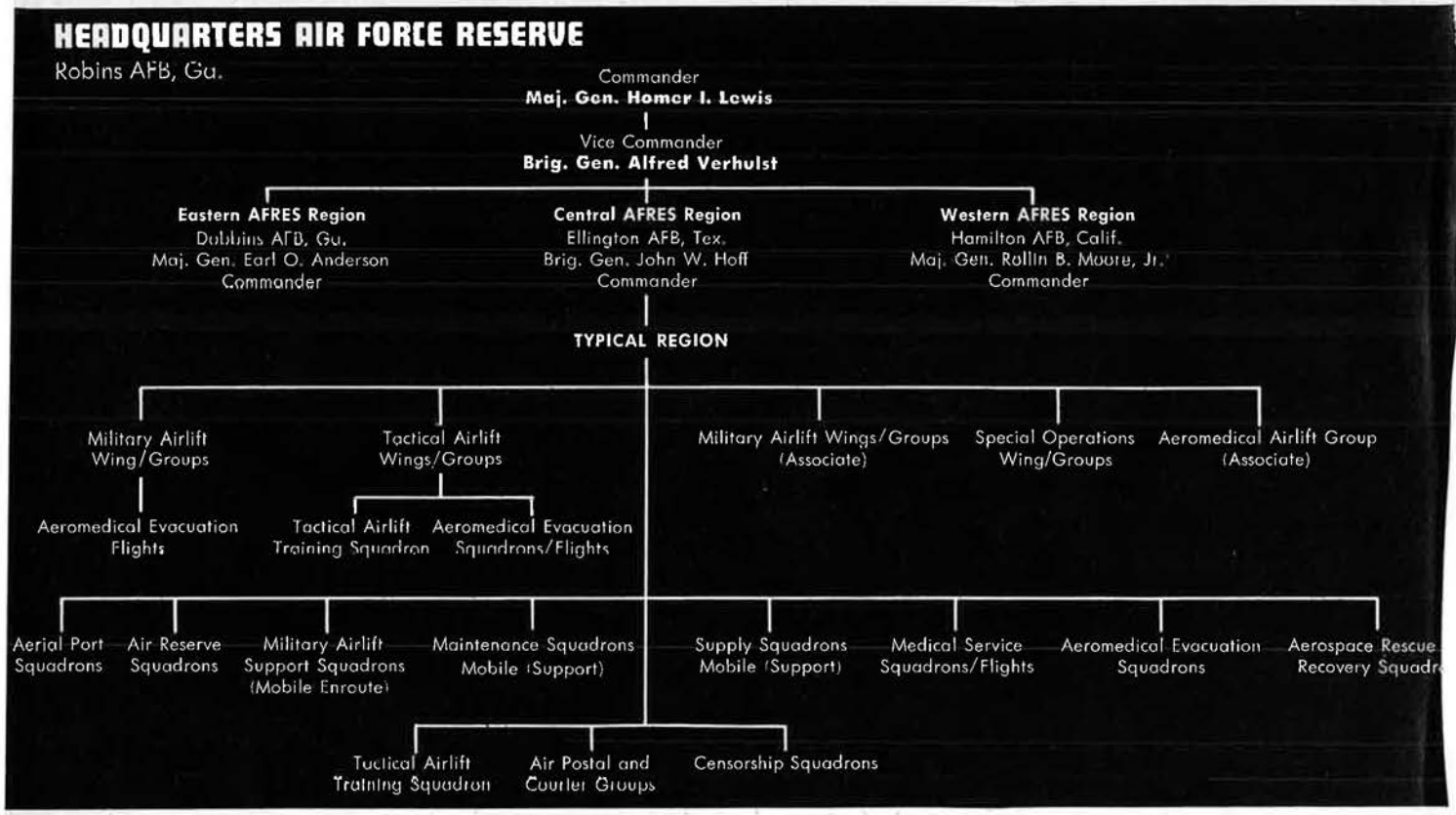
Today, the Air Guard has federal equipment and aircraft valued at more than $2.6 billion, and an annual federal appropriation of about $517 million. The states provide substantial additional support in both funds and facilities.

The Air Guard force structure includes twenty-four wings and ninety-two flying squadrons, plus support units and 297 specialized ground support organizations. The flying squadrons operate twenty-five different types of aircraft, with more than 1,700 mission and 200 support aircraft. Air Guard strength as of January 31, 1972, was 87,249.

A distinguishing feature of the Air National Guard is its dual status as both a federal and state military force—the Air Guard is the only Air Force resource with this dual federal-state mission. Outfitted with high-performance aircraft and modern equipment, members of the Air National Guard are trained to meet the same exacting standards as their counterparts in the US Air Force. Within minutes, these citizen-airmen can respond with equal dexterity to the threat of attack or local emergency.

All Air Guard units are assigned to a major command for supervision of training, standardization, inspection, and safety. The units are a large and integral part of the total force concept in the defense of the United States. As a portion of this total force, each unit has war and contingency roles in conjunction with regular units of the major gaining commands. The Air Guard is involved in many Air Force mission areas, but is most heavily committed to TAC and ADC missions. ■

The Air Guard furnishes sixty percent of ADC's manned force. At right, Guard F-102 Delta Daggers are maintained with exacting standards.



A SEPARATE OPERATING AGENCY

Through its years of evolution, the Air Force Reserve has kept first and foremost its reason for being—to maintain a ready force, professionally trained, and immediately responsive to either total or partial mobilization in times of trouble . . .

AFRES—On-Call Professionals

HEADQUARTERS Air Force Reserve (AFRES) came into existence as a separate operating agency at Robins AFB, Ga., on August 1, 1968, replacing the Continental Air Command. The new agency was created as the field extension of the also-new Office of Air Force Reserve, established on the Air Staff in accordance with Public Law 90-168, the so-called "Reserve Bill of Rights." The Robins headquarters is staffed by a mix of "Section 265" Reserve officers on extended active duty and by active-duty personnel.

To share its burden of command, AFRES is organized geographically into three Air Force Reserve Regions, each commanded by an Air Reserve Technician and manned by a mixture of technicians, active-duty personnel, and civilians. The headquarters of these regions are at Dobbins AFB, Ga.; Ellington AFB, Tex.; and Hamilton AFB, Calif.

The primary mission of AFRES is to command and train a multitude and variety of Air Force Reserve units. The number of units fluctuates with program and equipment changes. On February 1, 1972, there were 588 such units, all with a mobilization mission. Among these are 101 flying units—twelve wings, thirty-seven groups, and fifty-two squadrons. These include military and tactical airlift units, tactical airlift training squadrons, aerospace rescue and recovery squadrons, an airborne early warning and control squadron, and an aeromedical airlift group. In carrying out these diverse missions, Reserve units fly a variety of aircraft, including C-124, C-130, A-37, EC-121, HU-16, HC-97, C-7A, and HH-34 types. There are also six associate military airlift groups and an associate aeromedical airlift group. These fly the C-141 and the C-9, the aircraft of their associated active-duty partners.

In addition to the flying units and their support elements, AFRES also commands and trains assorted nonflying organizations. These include aerial port, civil engineering, communi-

Air Force Reservists assigned to military airlift units (associate) train and fly with active-duty MAC wings, providing maximum utilization of C-141 StarLifters.

cations, air postal and courier, censorship, personnel processing, military airlift support, mobile maintenance, and mobile supply units. There are also several kinds of Reserve medical units: aeromedical evacuation, medical service, tactical hospitals, and dispensaries.

Three major themes have dominated AFRES's early history—conversion and program changes, the "Total Force Concept," and adjustment to the concept of Reservists managing themselves.

Aircraft Conversions

The AFRES story is a chronicle of aircraft conversions. Three and a half years ago, Reserve flying units had only C-124s, C-119s, HC-97s, and HU-16s. The C-130 was just beginning to come into the inventory. Of the fifty-two flying squadrons currently assigned to AFRES, only nine C-124 squadrons have not undergone some kind of program change and aircraft conversion. Several units have undergone more than one conversion as the U-3A, O-1, and O-2 made brief appearances in the inventory. AFRES units log more than 100,000 flying hours a year but have had only two major aircraft accidents in the last three and a half years.

Aircraft conversion has been a way of life for the Air Force Reserve throughout its twenty-seven-year history, and the Reserve units have had no difficulty in achieving transition milestone dates during the 1968–72 conversions. The Reserve has continued to make impressive contributions to the total Air Force mission while engaged in training.

Thus, in the first three fiscal years of AFRES's existence, its Air Force Reserve units flew 177,478 hours on 33,863 missions for DoD and other government agencies, carrying 161,647 passengers, 33,028 patients, and 65,332 tons of cargo. In addition, they dropped 283,236 troops and 702 tons of cargo.

Total Force Concept

So it was, in a sense, that the "Total Force Concept," discussed by Air Force officials in 1969 and dramatically proclaimed as Defense policy in August 1970, was really not a new concept for the Air Force Reserve, since it had been routinely augmenting regular forces long before formalization of the policy.

Formal espousal of the "Total Force Concept" by DoD and Air Force did mean, however, that the gaining commands, with their resources in people and dollars continuing to shrink, looked more and more to their Reserve units. It also meant that AFRES and its Reserve units found themselves increasingly accountable to gaining commands and the Air Force for their operational readiness.

Self-Management

Finally, it was for the Air Force Reserve a period of learning how to manage itself. For, part of the rationale behind Public Law 90-168 had been to place the management of Reserve affairs essentially into the hands of the Reservists themselves.

The resultant reorganization of the management structure of the Air Force Reserve was the culminating step in a twenty-year trend toward assumption of control of their program by Air Force Reservists. Agitation for this responsibility had begun with the revitalization of the program during the Korean War and its mammoth recall. At that time, only the tactical unit commanders, at wing level and below, were Reservists, the entire superstructure being active-duty officers.

Then, in 1958, with the advent of the Air

Maj. Gen. Homer I. Lewis has served in the Pentagon as Chief of Air Force Reserve since 1971. He recently assumed a dual role, and now also commands AFRES. Previously, he held a mobilization assignment as Reserve Deputy to the Commander, HEDCOM.

Reserve Technician program, the flying centers of Continental Air Command gave way as their function was built into the Reserve units' organization and manning documents. Two years later, the numbered air forces were replaced by Air Force Reserve Regions, manned by only a handful of regular officers augmented by Reservists.

The Process Completed

In 1968, the process was completed. At the top, a Reservist Chief of the Air Force Reserve reports directly to the Chief of Staff of the Air Force. Continental Air Command has been replaced by a Reserve separate operating agency, manned with a mix of forty percent Reserves and sixty percent regulars. The full-time staffs of the Reserve Regions have converted to Air Reserve Technician status.

Through it all, though, the Air Force Reserve has never forgotten its main reason for being—to exist as a ready force, professionally trained, on hand when needed for mobilization, whether total or partial. Mobilization was total during the Korean War (1950–53), and partial during the Berlin crisis (1961–62), the Cuban crisis (1962), the two responses to Southeast Asia contingencies in 1968, and in 1970 during the short-lived national postal strike. ■

A SEPARATE OPERATING AGENCY

The Air Reserve Personnel Center, Denver, Colo., has a monumental chore in maintaining up-to-date records on 500,000 Reservists. Keeping the Reserve ready, qualified, and available on demand is the work of . . .

ARPC— THE RESERVE'S HOME OF RECORD

On August 10, 1971, the Air Reserve Personnel Center received the Air Force Outstanding Unit Award. For the ARPC and its Commander, Col. Benjamin S. Catlin III, it was culmination of two years of intense effort to personalize and improve service to the Center's half a million "customers"—the men and women of the Air Force Reserve.

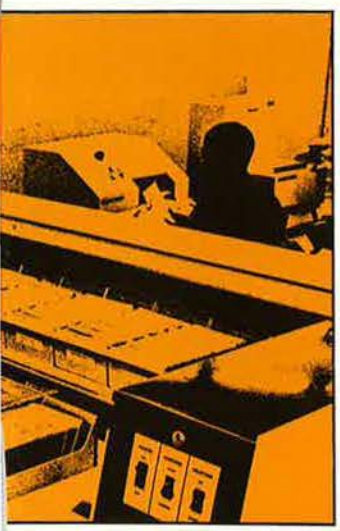
For the employees—many of whom had been assigned to the Center since it officially opened for business on March 1, 1954—it was welcome recognition for their work.

The Air Force was still a very young service when the Korean conflict emphasized the need for a more effective means of mobilizing its Reserves. Thus, 1953 marked the beginning of what is now the Air Reserve Personnel Center.

Until then, master personnel records for the 250,000 Air Force Reservists were maintained in eight widely separated locations throughout the United States. Activation of the Air Reserve Records Center in Denver in late 1953 brought centralization and standardization of the records custody and maintenance. Then began a long process of streamlining, simplifying, and automating the personnel management task involved in keeping the Reserves ready, qualified, and available when needed.

During the next few years, the number of Air Force Reservists climbed steadily, until

Conversion of Air Reserve Forces master personnel records to microfilm has saved space, provided greater security, and added to convenience in handling.



Microfilm readers are used to examine individual documents from the master personnel records. When necessary, hard copies of the documents can be produced on other equipment.

the total force reached more than 500,000, and the Center turned to electronics to help with the tremendous work load. In October 1959, the first electronic data processing system was installed, and essential information from the master records was recorded on magnetic tape. The master tapes were constantly updated to reflect the accurate picture of each man's skills, qualifications, and availability. Preplanned procedures were established to speed the job of mobilization, if and when it was needed.

Put to the Test

A test of the system was not long in coming. In August 1961, the Berlin buildup required the Center to recall 2,666 Reservists to fill vacancies in units called to active duty. Just fourteen months later, the Cuban crisis triggered mobilization of 2,088 officers and 11,976 airmen. The speed and accuracy of the new system had served their purpose.

It became increasingly apparent that the so-called "Records Center" was far more than a records repository. To keep its personnel data accurate and up-to-date—and to assure that needed Reservists would be available—the Center continued to perform all kinds of personnel actions: procurement and recall, classification, assignment and reassignment, monitoring of training points, promotion, and discharge or retirement. The Center also managed the careers of Air Force Reserve Officer Training Corps members during their college careers and until they received their active-duty orders. Selection boards convened by the Center considered Air National Guard as well as Air Force Reserve officers for promotion.

In September 1965, to reflect more accurately the nature of the Center's mission, the name was changed to the Air Reserve Personnel Center.

Each year brought new responsibilities and an even greater work load. The data system was expanded to include administrative support for the Air National Guard. Receiving data from the ANG Consolidated Base Personnel Offices, ARPC compiled strength reports on both the Guard and the Reserve and furnished the information to higher headquarters for use in defense planning.

More Mobilizations

The *Pueblo* incident of January 1968 resulted in two more mobilizations. Fourteen Air Guard units with a total strength of 9,343 and nine Air Force Reserve units with 4,855 Reservists were ordered to report for active duty within twenty-four hours. The second call-up came in April with three ANG units and seven AFRES units given thirty days to report. Again, the Center's automated data system and preplanned procedures made a rapid mobilization possible.

In July 1970, ARPC assumed a new responsibility—management of the individual Reserve program. The Directorate of Individual Reserve Programs was established to assist major commands in meeting their Air Force Reserve recruiting requirements. The ARPC Office of Information took over management of the Air Reserve Information Squadron (ARIS) program. The ARPC Staff Judge Advocate assumed control of the Judge Advocate General Area Representative (JAGAR) program. And the ARPC command chaplain headed the Chaplain Area Representative (CHAPAR) pro-

Col. Benjamin S. Catlin III has commanded ARPC since 1970. A B-29 veteran of World War II, his recent assignments have included Vietnam, where he flew 169 combat missions as Commander of Advisory Team #1, and duty as executive to the Chief of Air Force Reserve.

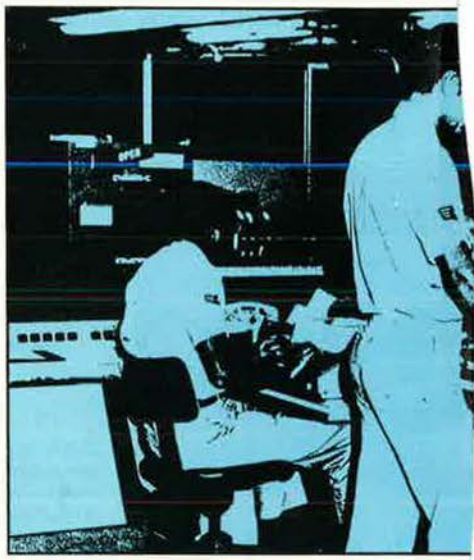
gram. In these professional fields, Reserve information experts, legal officers, and chaplains supplement active-duty counterparts in accomplishing the Air Force mission.

ARPC immediately set out to revitalize the whole individual Reserve program. The first aim was to build better channels of communication and to achieve more active participation by each individual. A series of workshops and conferences helped spread the word. A policy council was established. An "action phone" enabled Reservists to call directly to someone who could help solve their problems. A weekend airlift service brought Reservists to Denver to review their master personnel records in person and get first-hand information about their careers. In all dealings with Reservists, ARPC made every effort to "personalize" the service.

At the same time, the Center continued to search for more efficient methods of handling its growing work load. Conversion to microfilm proved to be one answer, saving space and providing greater security and convenience in handling master personnel records.

All these efforts were recognized in August 1971, when ARPC was cited for "unprecedented revitalization and effective management of the Air Force Reserve Individual Training Program." ■

A SEPARATE OPERATING AGENCY



While the Air Force is placing more and more emphasis on "people programs" to deal with many of its manning problems, it is the Air Force Military Personnel Center, Randolph AFB, Tex., that makes those programs effective . . .

AFMPC— MANAGING USAF'S HUMAN RESOURCES

FROM Air Force entry until discharge, retirement, and beyond, USAF members are affected by the activities of the Air Force Military Personnel Center (AFMPC), Randolph AFB, Tex.

"Air Force people and their assignments, promotions, separation and retirement, personnel services, retention, and records management are our mission," says Brig. Gen. (Maj. Gen. selectee) Kenneth L. Tallman, Commander, AFMPC.

General Tallman commands approximately 1,400 people—about 900 military and nearly 500 civilians—who are assigned to manage USAF "people programs" for Air Force men and women through the grade of lieutenant colonel.

General Tallman has a dual role. As Assistant Deputy Chief of Staff, Personnel, for Military Personnel, he is a key member of the Air Staff, and is directly responsible to the Pentagon-based Air Force Deputy Chief of Staff, Personnel.

A separate operating agency only since December 31, 1971, the Center had operated at Randolph AFB as a headquarters field extension since July 1965. The Air Force's military personnel function moved to Texas after outgrowing its former Pentagon facilities.

Emphasis on the Individual

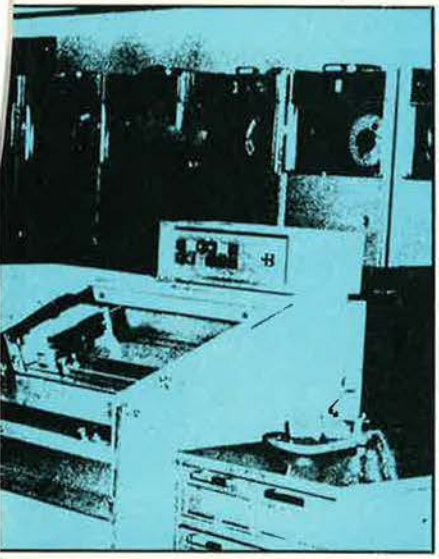
Since then, the Center has "built" and implemented many people-oriented programs to give more individual voice, consideration, and visibility in the assignment process.

"We work with major commands and the other separate operating agencies to place the right man in the right job at the right time—right for him and right for the Air Force," General Tallman says.

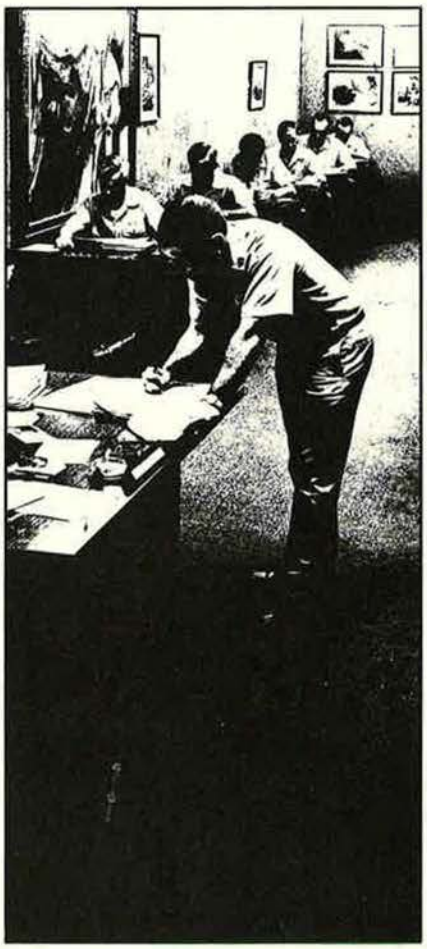
The Center has pioneered many improvements in personnel programs, personnel services, and data systems. An example is the Weighted Airman Promotion System (WAPS), governing advancement to staff sergeant through master sergeant. Based on "weighted" criteria, competition is Air Force-wide within each career field, and each nonselectee is given a score card listing his score for each "weighted" factor, his total score, minimum score for promotion in his career field and grade, and his relative standing in the competition.

Other examples are: the CONUS assignment exchange program, which allows qualified airmen to exchange bases of assignment; the officer career development program and improved AFIT and professional military education selection procedures; and Project Palace Flicks, a series of authoritative, easy-to-understand films and portable, self-service projectors to explain personnel programs to individual Air Force members.

AFMPC has the world's largest automated personnel data system.



Manning technicians, screened and selected for the job, handle airman assignments.



More than 9,000 Air Force people visited MPC over the past year to review their master personnel records.

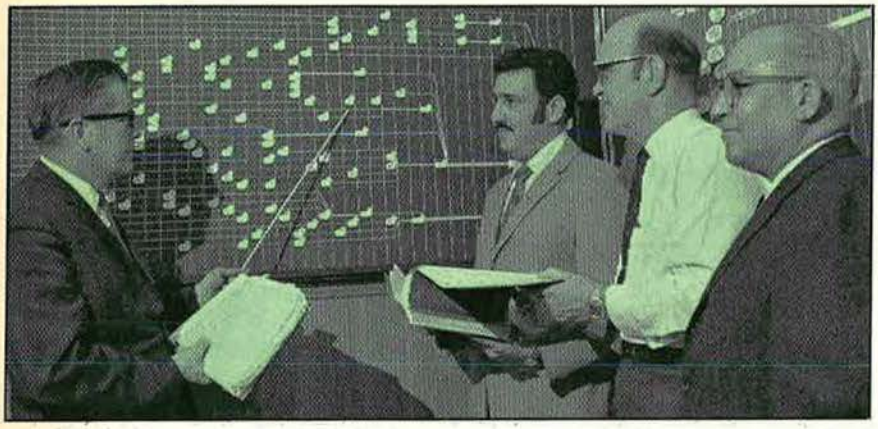
Improving Data Systems

Under development are MICROFORM and Advanced Personnel Data Systems (APDS) projects, which will streamline information flow to and from bases and enable better, faster service to men and women in the field.

MICROFORM involves conversion of personnel records to microfilm and rapid, computerized retrieval of the information they contain. APDS features direct data flow from consolidated base personnel offices (CBPO) and a computerized data base at AFMPC. It is a major system redesign to improve support of USAF personnel management objectives related to a zero draft environment, total force management, and greater participation by the individual in decisions affecting his career.

The mission is people. AFMPC personnel management philosophy recognizes them as a vital Air Force asset, and doing things *for* people—not *to* them—is the theme of the Air Force's people programs. ■

Brig. Gen. (Maj. Gen. selectee) Kenneth L. Tallman, new AFMPC Commander, is also USAF Assistant DCS/P for Military Personnel. He was previously MPC Deputy Commander.



Personnel helping to create a new USAF pay system—called the Joint Uniform Military Pay System—check a program milepost.

Retired Pay per sonnel check f for "special ac tion." While ab 300,000 USAF retired people paid by compu basic documen are retained a backup.

AFAFC tape librarians maintain some 20,000 tapes that contain more than 10,000 miles of current and historical data on financial and accounting operations.

A SEPARATE OPERATING AGENCY

Nowhere in the Air Force has the impact of automated operations been greater than in the extremely complex area of pay and accounting. Relying heavily on computers, the Air Force Accounting and Finance Center continues to develop more efficient fiscal systems. Practical and effective handling of finances is the target of . . .

AFAFC—USAF'S PAYOFF COMMAND

AFAFC's Commander since 1970, Brig. Gen. Larry M. Killpack holds master's degrees from Harvard and from George Washington Univ. He has served in a number of AFSC posts, and has commanded the 8th and 12th Tactical Fighter Wings.

HISTORICALLY, military men have been paid in the coin of the realm ever since armies found that living on the spoils of the lands they conquered did not pay every fighting man equitably. Even our word "salary" is a derivative of the Latin "salarium," from the salt that Roman legions accepted as part of their pay.

In the modern Air Force, the tradition of paying accurately and on time rests with the Accounting and Finance Center (AFAFC), located in Denver, Colo., and their world-

wide force of accounting and finance offices.

Shortly after the formation of the United States Air Force, it became apparent that the finance function would have to be transferred from the Army, and the Air Force Finance Center was founded in 1951. Five years later, the accounting function was transferred from Hq. USAF, and the Denver Center became known officially as the Air Force Accounting and Finance Center.

Just four years ago, the responsibility for systems policy was also transferred from Hq. USAF to the Center, and with this change came an additional title for the Commander of the Center. Thus, Brig. Gen. Larry M. Killpack now wears two hats: Assistant Comptroller of the Air Force for Accounting and Finance, and Commander, Air Force Accounting and Finance Center.

During the past twenty-one years, the Center has continually developed programs of prime significance to the Air Force in areas of pay, accounting, and development of advanced systems to make the handling of finances more effective and practical.

Centralized Programs

The Center's mission covers four major areas: development of advanced systems concepts, specifications, and techniques; concurrent responsibility for policy guidance and technical help to the worldwide network of Accounting and Finance Offices; preparation and reporting of effective fiscal data for USAF fund and program managers, and other federal agencies; and executive management of a number of DoD and USAF centralized accounting and pay programs.

Centralization is basic to the Center's operation. AFAFC centrally pays all allotments deducted from members' paychecks. Allotments may be sent to dependents, banks, savings institutions, commercial or governmental insurance agencies, or to a number of other types of allottees. US Savings Bonds bought by Air Force members, through the payroll-deduction plan, are all issued by the Center. All Air Force Reservists and Air National Guardsmen are paid regularly from the Center, through the centralized Air Reserve Pay and Allowance System (ARPAS). And, during USAF's Silver Anniversary year, Air Force retirees will reach 300,000, each of whom receives a monthly paycheck from AFAFC.

In the area of active-duty pay, thousands of Air Force members in Alaska, Southern Command, Greenland, Iceland, the Azores, and the Caribbean receive their paychecks directly from Denver by airmail. Air Force members in Southeast Asia (SEA) and Europe (USAFE) have their military pay records (MPRs) maintained at AFAFC. Individual pay computations are sent to SEA monthly, and to USAFE semimonthly, for the printing and distribution of the actual paychecks. All of these MPRs are maintained in up-to-the-minute computer storage, with immediate access capability.

Within a year, the maintenance of the MPRs for every man and woman in the Air Force will be done on the large computer at the Denver Center. This program—the Joint Uniform Military Pay System (JUMPS)—will maintain all military pay and leave records centrally at the Center. The leave-accounting portion of the program is already in effect, and the total system will be phased into live operation within the next year. A high-speed, sophisticated network of electronic communications will provide the information link between the worldwide Accounting and Finance Office network and AFAFC, which will maintain nearly three quarters of a million pay and leave records on its giant IBM 360/65 multiplex computer.

Accounting Operations

The Directorate of Accounting Operations is charged with the function of accounting for all congressional appropriations to the Air Force. With a force of only 125 persons, it relies heavily on the computer complex for validation and preparation of accounting reports. These reports, based on data contained in nearly 2,000 monthly submissions, are analyzed, consolidated, and forwarded to many higher levels of the federal government to provide a more effective management of critical funds.

Pay and allotment accounts of all retired Air Force members, as well as pay accounts for the Air Reserve Forces, are maintained by the Directorate of Reserve and Retired Pay. These nonactive-duty accounts, which number nearly 400,000, are also a worldwide program, since Reserve and retired personnel may live anywhere from Australia to Zanzibar.

Remarkable Accuracy

A number of smaller, but nonetheless important, programs are included in the AFAFC mission. The Uniformed Services Savings Deposit Program, in which overseas members may invest savings in a federal plan yielding ten percent interest, is centrally maintained at AFAFC. More than $445 million has been deposited in this program since its start in September 1966. Currently, more than 41,000 members have deposits of some $126 million.

Foreign Military Sales is another program that AFAFC manages for Hq. USAF. With fifty-three countries participating in contracts amounting to more than $3.7 billion, plus nearly 1,000 other international accounts, the program is maintained on the AFAFC computer in an accurate, timely, and effective manner.

As the only agency that directly affects the well-being of every member of the Air Force family, and the pocketbooks of the American taxpayer, AFAFC maintains a record of 99.95 percent in accuracy and 99.97 percent in timeliness in its far-flung pay and accounting functions.

In the centuries from "salt for pay" to space-age electronics, the pay function has undergone many dramatic changes. As the space-age Air Force moves forward with its mission of national defense, AFAFC will continue to drive ahead with even more effective accounting and financial systems as a vital part of the total Air Force mission. ■

A SEPARATE OPERATING AGENCY

Air Force auditors provide an independent, objective, and constructive evaluation of effectiveness and efficiency.

The Air Force Audit Agency examines policies, systems, and procedures relating to the utilization of resources—men, money, and material—in its mission of checking USAF's books . . .

AFAA—EVALUATING USAF EFFICIENCY

Maj. Gen. Harold C. Teubner, Auditor General since 1970, is AFAA's first commander. Previously, he was DCS/ Comptroller, AFSC. He has also held posts in budgeting and electronics.

THE internal audit organization of the Air Force was established July 1, 1948, and is presently completing twenty-four years of direct support to Air Force managers. On December 31, 1971, the audit organization was redesignated as a separate operating agency and the organizational title changed from the Air Force Auditor General to the Air Force Audit Agency (AFAA).

The Commander of the AFAA is Maj. Gen. Harold C. Teubner, who also has the title of the Auditor General, as well as the Assistant Comptroller of the Air Force for Audit. He is assisted by Mr. Trenton D. Boyd, the Deputy Auditor General. The AFAA headquarters is located at Norton AFB, Calif.

Historically, the AFAA has consisted of an approximately even mix of military and civilians reaching a peak of about 3,000 internal and contract auditors in 1965. During that year, contract auditors were withdrawn from the individual service audit organizations and reorganized within the Department of Defense. Since then, the agency has decreased numerically to approximately 1,200 people worldwide.

Measuring Efficiency

The mission of the AFAA is to provide all levels of Air Force management with an independent, objective, and constructive evaluation of the effectiveness and efficiency with which managerial responsibilities are being carried out in financial, operational, and support activities. This broad mission is directed by Public Law, and by the General Accounting Office, the Department of Defense, and Air Force regulations.

Under Public Law, the responsibility for internal audit rests with the Comptroller of the Air Force. He, in turn, has delegated the

authority and responsibility for accomplishing the audit mission to the Auditor General. Although General Teubner reports directly to the Comptroller of the Air Force, he has a direct line of communication to the Assistant Air Force Secretary for Financial Management.

Air Force auditors examine policies, systems, and procedures relating to the consumption of resources —men, money, and material. Particular audit emphasis is placed on areas which have the bulk of the Air Force investment as well as on assets susceptible to loss and/or misappropriation.

To accomplish the AFAA mission, the organization is both independent of, yet responsive to, management. The organization structure consists of a staff at Norton AFB and an office in the Pentagon, headed by the Associate Auditor General, Mr. Orion Y. Row. This office maintains continual liaison with the Air Staff.

Major Divisions

Operationally, the organization has three major divisions and four regions. The regions are comprised of about twenty-five Auditor General Resident Offices (AGROs), which are grouped on a basis of geographical boundaries. The Western Region is responsible for audit activities in the Pacific and the western part of the US. The regional headquarters is located at Norton AFB. The Central Region, responsible for audit coverage at Air Force bases in the central US, is located at Carswell AFB, Tex. The Eastern Region is located at Langley AFB, Va., and is responsible for audits in the eastern part of the US, Puerto Rico, the Canal Zone, and Greenland. The European Region, headquartered at Lindsey AS, Germany, has responsibility for audit activities throughout Europe.

The audit divisions of AFAA are set up according to the functions they audit. The Logistic Systems Division provides audit coverage to AFLC and supervises audits at the five Air Force Air Materiel Areas. Acquisition Systems Division serves AFSC and manages audit efforts at Air Force buying divisions.

The Service-Wide Systems Division, at Norton AFB, centrally directs and manages audits of standard Air Force-wide systems. In addition, this division supervises audit offices at three major centers: the Data Systems Design Center, the Accounting and Finance Center, and the Military Personnel Center.

Making up these divisions and regions are 137 audit offices. One hundred and three are Auditor General Representative or Resident Offices, commonly known as AGROs, and thirty-four are operating locations. A typical region AGRO is staffed with five people, while an operating location normally has two or three auditors assigned. Each AGRO is headed by a military or civilian chief, called a resident auditor. The AGRO is organizationally independent of the base, and reports directly to the Auditor General through its appropriate divisional or regional headquarters.

The Air Force Audit Agency is a service organization that prides itself on performing valuable managerial assistance to all levels of Air Force management. ■

A SEPARATE OPERATING AGENCY

Recognizing the necessity for efficiency in handling the huge amounts of information required in any modern enterprise, USAF, in February 1972, established the Air Force Data Automation Agency . . .

AFDAA— MEETING MANAGEMENT'S DATA DEMANDS

THE AIR Force Data Automation Agency (AFDAA) was established on February 29, 1972, to consolidate selected data automation activities performing related tasks and requiring similar professional capabilities. The AFDAA is a separate operating agency and, through its subordinate centers, provides responsive Automatic Data Processing support to Hq. USAF, major commands, bases, OSD, and other federal and separate operating agencies.

As currently organized, the AFDAA consists of a headquarters element and three subordinate centers—the Air Force Data Services Center, Air Force Data Systems De-

sign Center, and the Federal Automatic Data Processing Simulation Center.

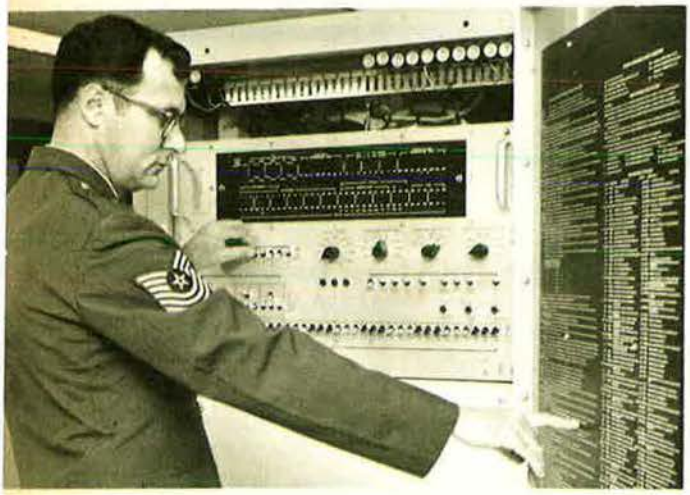
The headquarters of the AFDAA is located at Gunter AFB, Ala. The Air Force Director of Data Automation, located in the Pentagon, serves in a dual capacity, also being the Commander, Air Force Data Automation Agency.

out references to the AFDAA is the normal procedure on matters pertaining to support and services.

The oldest subelement of the AFDAA is the **Air Force Data Services Center.** It was formerly a field extension of the Air Staff and is located in the Pentagon, Washington, D. C. It provides automatic data processing, computing, and

A job goes into "run" status at the G-635 operator's console. Behind are seven-track tape handlers that process tapes—more than 28,000 of them—from the AFDAA library.

Brig. Gen. Jack B. Robbins has directed USAF data automation since 1971. His assignments have included operational positions, OSI, electronics systems, and a variety of jobs in data automation.



This NCO works at the control panel for one of the two G-635 processors. The G-635 is the nerve system of the computer operation.

The operating philosophy of the AFDAA promotes a high degree of autonomy of operation by the three Centers in carrying out their assigned missions. Direct access to the Centers by the activities served ensures prompt response to the users. Direct communication between the offices and agencies supported by the various centers with-

management science services to Hq. USAF, OSD, and other agencies. The Center also plans, designs, develops, and implements computer-based management information systems in support of the above agencies. There has been no change in its operational functions as a result of its organizational realignment with the AFDAA. The Air Force Data Services Center has a current authorization of 381 people.

The second subelement of the AFDAA, the **Air Force Data Systems Design Center,** is located at Gunter AFB, Ala. The Commander of the Air Force Data Systems Design Center has been delegated the additional duty of Vice Commander, Air Force Data Automation Agency. The Center, as an operational element of the AFDAA, is assigned certain responsibilities by Hq. USAF with respect to automated data systems design, development, maintenance, and related matters. This responsibility includes the standard data processing systems within the Air Force. The Air Force Data Systems Design Center was formally established as a separate operating agency in October of 1967. The February 1972 realignment as part of the AFDAA has not changed any of the working relationships and channels of communication between the Center and Air Staff functional deputates. Currently, 840 people are assigned to the Center.

The third subelement of the AFDAA, the **Federal Automatic Data Processing Simulation Center,** is located in the National Capital region. It provides technical support and services throughout the federal government for simulation and analysis of automatic data processing systems. The Air Force, through an interagency agreement, acts as the executive agent for the General Services Administration (GSA) in the operation of the Federal Automatic Data Processing Simulation Center and is reimbursed for funds spent in operation of the Center. All federal agencies are eligible to use the Center for ADP simulation support. The Center has fifty-two spaces.

The recent establishment of the Air Force Data Automation Agency resulted from a need to consolidate and enhance utilization of ADP resources and a need to improve responsiveness to major command data system requirements. It is a significant step forward to capitalize on the potential benefits of a common organizational alignment of similar data automation activities. ■

A SEPARATE OPERATING AGENCY

As an arm of the Air Force Inspector General, the Air Force Inspection and Safety Center, headquartered at Norton AFB, Calif., has the task of keeping USAF equipment and people safe and up to snuff . . .

AFISC—The Eyes and Ears of the Chief of Staff

First AFISC Commander is Maj. Gen. Ernest C. Hardin, Jr. Previously, he was Chief of Staff, PACAF. He has held operational posts in SAC, TAC, and PACAF, and was Vice Commander of Seventh Air Force in Vietnam.

"THE eyes and ears of the Chief of Staff."

This terse phrase is Gen. John D. Ryan's description of the Air Force Inspection and Safety Center (AFISC) at Norton AFB, San Bernardino, Calif.

One of four Pentagon field extensions redesignated as separate operating agencies on December 31, 1971, the Center is still a function of the Air Force Inspector General in Washington, and its Commander still carries the added Air Staff position of Deputy Inspector General for Inspection and Safety, Hq. USAF.

The Center superseded the 1002d Inspector General Group, which had been in existence since January 1950. At that time, Air Force flight safety functions, located at Langley AFB, Va., and readiness inspection activities, headquartered at Kelly AFB, San Antonio, Tex., were brought together under the worldwide mantle of the IG.

Today, the center is the hub of operations for a team of nearly 500 men and women—286 officers, fifty-six airmen, and 156 civilians—including fifty-six persons stationed at Kirtland AFB, Albuquerque, N. M. Together, they provide inspection and safety consultation services to Air Force management, and monitor accident prevention and investigation activities around the world.

AFISC is split into three primary mission directorates—Inspection, Aerospace Safety, and Nuclear Safety—and two support service directorates—Programs and Requirements, and Data Automation. The Commander, Maj. Gen. Ernest C. Hardin, Jr., answers directly to The Inspector General, Lt. Gen. Louis L. Wilson, Jr.

The Directorate of Inspection performs worldwide inspections of Air Force commands, separate operating activities, individual units, and Air Force contractor facilities. Its specialty—and the backbone of the Air Force inspection program—is the "no-notice unit evaluation inspection," a concept inaugurated by General Ryan, himself a former Air Force IG.

The Directorate of Aerospace Safety has global responsibility for preventing and investigating explosives, flight, ground, missile, and space accidents. Its success in these endeavors annually saves the Air Force hundreds of millions of dollars in hardware and estimated scores of lives of Air Force personnel.

The directorate's Education Division publishes more than 200,000 pieces of literature monthly. Included are the Air Force's popular *Driver* and *Aerospace Safety* magazines and the *Safety Officer's Study Kits*. The division also monitors college credit courses for officers of the USAF in flight, missile, nuclear, ground, systems, and command safety at several of America's leading universities, and flight safety courses for personnel of forty-five allied nations.

The Reporting and Documents Division is the nation's only repository for all USAF accident records, its microfilmed files dating back to the first fatal military aircraft mishap in 1908.

The Directorate of Nuclear Safety is homogeneously situated in the nuclear community at Kirtland AFB. It develops and monitors Air Force policies, programs, standards, and procedures for preventing and investigating nuclear weapon system and reactor accidents and incidents. It is the one agency of the Air Force most responsible for the nation's record of never having had a nuclear yield mishap.

AFISC's members, every one handpicked, represent most functional specialties in the Air Force. Their jobs are tough, challenging, often frustrating, sometimes unpopular, but the payoff is big: combat readiness of the Air Force in time of national emergency. ■

Electronic instrumentation is utilized in AFOSI's technical investigations.

Col. (Brig. Gen. selectee) William A. Temple became Director of Special Investigations in the OTIG in April 1972. He previously had served as Deputy Director. Colonel Temple's career began in 1946, when he graduated from the US Military Academy and began pilot training. In varied AF job areas throughout his service, Colonel Temple most recently commanded bomb wings.

A SEPARATE OPERATING AGENCY

OSI's agent trainees, both officers and airmen, receive instruction in the maintenance and use of firearms.

Battling crime, subversion, and sabotage at Air Force installations around the world are agents of the Air Force Office of Special Investigations. Not a law enforcement agency, presenting to Air Force officials the facts on which equitable decisions may be made is the job of . . .

AFOSI—THE AIR FORCE'S PRIVATE EYE

SINCE its inception in 1948, the Air Force Office of Special Investigations (AFOSI) has been the sole investigative organization within the US Air Force responsible for investigating major criminal and counterintelligence matters.

On December 31, 1971, AFOSI was designated a separate operating agency. Prior to that time, it functioned as an activity of Hq. USAF. The Inspector General continues to retain staff supervision over AFOSI, and the basic mission of AFOSI was not altered.

AFOSI is organized on a geographical basis with the headquarters in Washington, D. C. The CONUS and various overseas areas have been divided into district offices, which in turn are divided into detachments and operating locations. AFOSI's mission is to provide counterintelligence, criminal, and special investigative service for all USAF activities worldwide.

In the area of criminal investigations, AFOSI investigates major offenses committed against persons, their property, or the USAF, and which are within the jurisdiction of the USAF. The jurisdiction of the USAF is defined by law, but, in general, it is limited to crimes committed on US Air Force installations by persons subject to the Uniform Code of Military Justice. Minor criminal offenses in the USAF are handled by the Security Police. Crimes committed against the USAF, such as those of illegal procurement and disposal of USAF property, may involve civilians as perpetrators of the crime. In such cases, another federal agency, such as the Federal Bureau of Investigation (FBI), has primary investigative responsibility.

In the area of counterintelligence, AFOSI investigates all instances of espionage, sabotage, treason, sedition, subversion, Communist matters, and major security violations that involve USAF personnel or equipment. In addition to such investigations, AFOSI is the single USAF agency charged with the responsibility of collecting and reporting information that is pertinent to base security. This aspect of AFOSI's

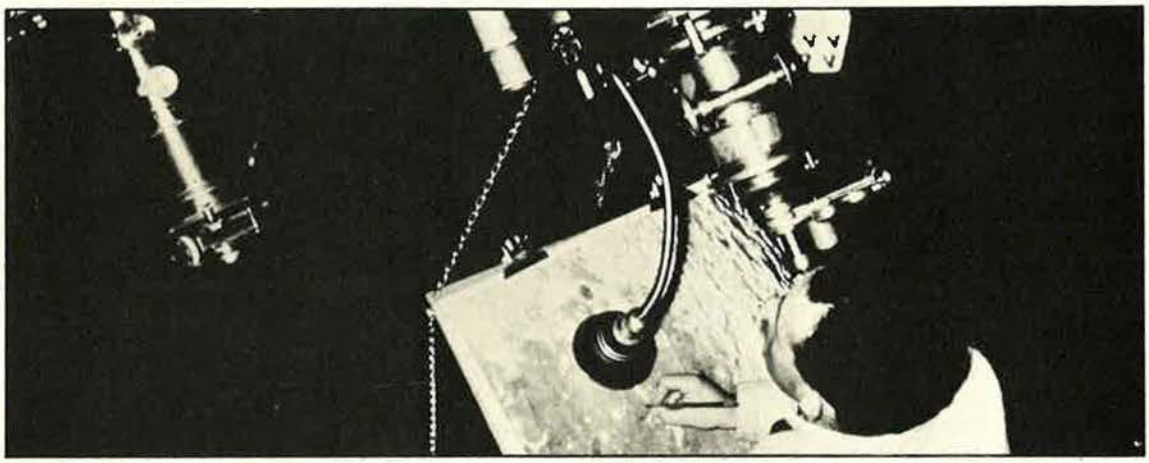
mission is performed through its own operations and by close liaison with both United States and foreign intelligence and counterintelligence agencies.

The AFOSI also conducts personnel background investigations for the USAF and in support of the Department of Defense security-clearance program.

All investigative work is done by Special Agents, who have completed a comprehensive course at the USAF Special Investigations School in Washington. AFOSI Special Agents are carefully selected USAF officers, NCOs, and civilians. Since their military grades have no bearing on their investigative duties, they wear civilian clothes and do not disclose their rank. Agents are not engaged in law enforcement, but rather they provide an investigative instrument to USAF commanders.

As a fact-finding agency, AFOSI presents the results of its investigations to the requesting authority, and it is this authority—not AFOSI—that determines what action, if any, should be taken. ■

A SEPARATE OPERATING AGENCY



During the early days of lunar chart production, ACIC cartographers sketched lunar observations from the telescope at Flagstaff, Ariz.

The demand for its products is enormous—about one million items annually. Customers of the Air Force Aeronautical Chart and Information Center range from moon walkers to Navy pilots. In its work, the Center utilizes sixty-five special skills . . .

ACIC—MAPPING EARTH AND SKY

THROUGHOUT the twenty-five-year history of the USAF, the Aeronautical Chart and Information Center has provided cartographic support to the men who fly. In fact, the Chart Center celebrated its twenty-fifth anniversary last year. Although the lineage of the organization antedates US entry into World War II, its official establishment as a military headquarters was in March 1946.

Prior to 1943, one map unit existed to serve the Army Air Corps, but as the war progressed, the need for the Army Air Forces to have an aeronautical chart production facility became apparent. Thus, the Aeronautical Chart Plant was established in St. Louis, Mo.

During the war, the map section provided supporting charts and graphics for Allied air operations. While names and organizational arrangements changed a number of times, the unit always existed as a staff agency of Headquarters, Army Air Forces.

At the end of the war, the Aeronautical Chart Service was placed under the Air Transport Command. Later, it became part of SAC,

Col. Byron L. Schatzley has commanded ACIC since August 1970. During WW II he served as a bombardier in Europe, and since has held various intelligence posts. From 1967 to 1970, he was Deputy Commander, 548th Reconnaissance Technical Group in PACAF.

then of Air Materiel Command, and finally of the Military Air Transport Service.

In 1960, the Aeronautical Chart and Information Center was designated a separate operating agency. It is in this status that the organization has continued to the present day.

Global Operations

During the Korean War, a number of domestic and overseas elements were established, principally to expedite the flow of charts and aeronautical information.

The airbrush technique is used to create the crater features of the lunar surface on a precisely detailed charting product.

Today, ACIC has detachments and squadrons located in Washington, D. C., Alaska, Hawaii, Germany, England, Canal Zone, the Philippines, Okinawa, and Japan.

The main production facility and headquarters are located in St. Louis, Mo., on the grounds of an old Civil War arsenal.

DEFENSE MAPPING AGENCY

The Aeronautical Chart and Information Center, along with a number of mapping organizations from USAF and the other services, will become part of the new Defense Mapping Agency (DMA) on July 1, 1972. DMA will provide a consolidated mapping, charting, and geodesy program for the Department of Defense.

The Center production is geared to the needs of users who may be other Air Force commands, military organizations of the DoD, civil aviation, or space agencies. The Chart Center publications are developed concurrently with new weapons or support systems.

Throughout the past twenty-five years, rapid changes and growth in Air Force navigation and weapon systems have brought about equally significant changes in the nature of cartographic and geodetic products. Revolutionary changes in raw materials, equipment, and capabilities of ACIC personnel have been required to meet these developments.

Although individual functions have been added, modified, or dropped from time to time, the basic mission of the organization has remained essentially the same throughout the years. That mission is to produce the planning, navigation, and target graphics, devices, and associated information required by the operation of the user.

The Space Age

Just under one hundred million copies of the thousands of separate items ACIC publishes are distributed throughout the world annually.

In addition to support of the USAF strike forces, ACIC supplies virtually all of the aeronautical chart and flight information publications used by US Navy and Army forces operating in or supporting SEA operations.

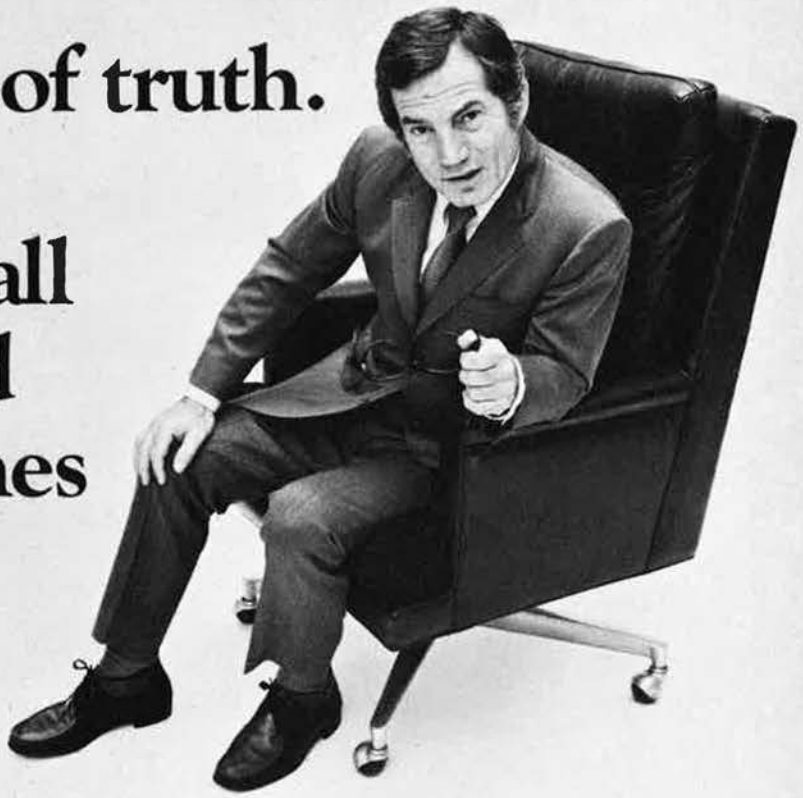
Most of the major sciences and approximately sixty-five special skills are involved in today's charting process: from simple arithmetic to complicated math, from simple to sophisticated photographic processes, and from the science applied to the charting of the earth to the science required for the development of space reference systems.

Research and scientific and technical development are continually taking place within the Center in an effort to remain one step ahead of the users' demands.

ACIC has not only supplied cartographic support to the nation's military forces during peace and war, but has also been a prime contributor to the nation's space program. For the Apollo manned space missions—including the historic first landing on the moon—ACIC has produced hundreds of cartographic items at the request of NASA. Graphics aid in lunar mission operations—lunar orbit, landing, and surface exploration phases. Earth orbit and recovery operations are also supported by ACIC charts.

Past, present, or future, ACIC has been, is now, and will be ready to provide its service to the Air Force and the nation in their aerospace charting programs. ■

Okay Mike. The moment of truth. So how come Stresskin's on all four advanced military engines and not us?



Well, as a matter of fact, Stresskin has some pretty good things going. Like their diffusion bonded titanium honeycomb for fan and engine cases. It can take temperatures over 600°F. And sonic levels above 170 db. And everybody knows it's great when it comes to weight and rigidity considerations.

Then they've got those nickel based super alloys for the high temperature nozzle components like flaps and seals. That stuff has been taking up to 1500°F and 165 db's. How do you beat that?

The engineers know that Stresskin components can save them up to 40% on weight over conventional methods of construction.

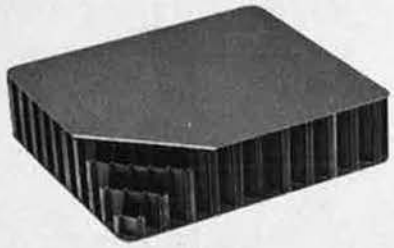
Another thing. You know how we say we've got to design and build the complete component. Well, Stresskin says, go ahead, make your own parts if you want, we'll sell you the material. But if you want us to build it, great, we will.

Then there's the way they make Stresskin. Their core has a flange top and bottom that's *welded* to the facing panels. Gives them positive metal-to-metal attachment. Better for reliability and failure resistance. It just doesn't come apart, even with severe temperature and load changes.

To make it even tougher, most of the major primes and subs have already made components from Stresskin. And without a lot of money for special facilities. If they can bend metal, they can work Stresskin. What more can I tell you?

Stresskin Products Company
(A Division of Tool Research and Engineering Corporation)
3030 South Red Hill Avenue
Santa Ana, California 92705
Telephone: (714) 540-4121

Stresskin®



A Gallery of USAF's First Line Weapon Systems

AIR FORCE Magazine presents a Gallery of USAF's major weapon systems. Dedicated to peace through the recognized ability to deny victory to any aggressor, these weapons and the Air Force men and women who operate and support them remain the dominant element of this nation's deterrent power.

Full-scale mockup of the North American Rockwe B-1.

The Lockheed trisonic SR-71 (top). Below, Boeing Minuteman II in its silo.

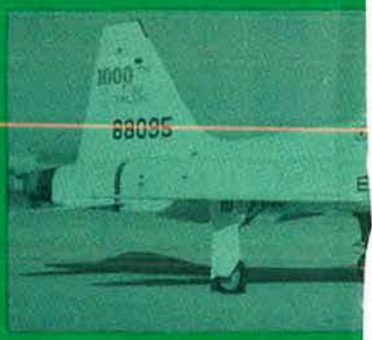
Boeing B-52s, some SRAM-armed (top) remain the backbone of USAF's strategic bomber force until the B-1 joins SAC. The General Dynamics FB-111 (below) gives SAC a supersonic capability.

Gallery

An LTV A-7D Corsair II refuels over Alaska.

F-111 prepares for a mission.

Northrop T-3



A pair of McDonnell Douglas F-4Es.

cDonnell Douglas F-15, to fly this year.

Sikorsky HH-53C, a rescue hero of Vietnam.

Fairchild Hiller F-105 "Thud."

These TAC, ADC, MAC, and ATC aircraft—designed for air superiority, interdiction, close support, airlift, and training missions—extend the spectrum of USAF's deterrent capability to include limited war and insurgency.

eneral Dynamics
-106 (center) and
ockheed C-5.

The fantastically accurate Lockheed AC-130 gunship.

USAF's Bases at Home and Abroad—

A Concise Guide

Altus AFB, Okla. 73521; 2 mi. NE of Altus. Phone: (405) 482-8100. MAC base; military airlift wing; transition training for C-141, C-5 pilots, navigators, and flight engineers. Formerly SAC base; SAC's 2d AF continues tanker operations as tenant. AFCS's 4th Mobile Communications Group has tenant status. Base activated Oct. 1953.

Andrews AFB, Md. 20331; 11 mi. SE of Washington, D. C. Phone: (301) 981-9111. Headquarters Command base; high-priority airlift for HEDCOM; military airlift wing, MAC; also proficiency flying for HEDCOM, AFRES, ANG, Navy, Marines. Hq. Air Force Systems Command. Base activated May 2, 1943; named for Lt. Gen. Frank M. Andrews, military air pioneer, killed in an aircraft accident, May 3, 1943.

Arnold AFS, Tenn. 37389; 12 mi. E of Tullahoma. Phone: (615) 455-2611. AFSC station; site of Arnold Engineering Development Center. Station activated Jan. 1, 1950; named for Gen. H. H. "Hap" Arnold.

Barksdale AFB, La. 71110; 3½ mi. ESE of Shreveport. Phone: (318) 456-2252. SAC base; heavy bomber and tanker operations. Hq. 2d AF, SAC. Base is also site of AFRES military airlift group. Base activated Feb. 2, 1933; named for Lt. Eugene H. Barksdale, WW I airman.

Beale AFB, Calif. 95903; 11 mi. SE of Marysville. Phone: (916) 634-3000. SAC base. Heavy bomber, tanker, reconnaissance operations, 15th AF. Originally US Army's Camp Beale, became AFB in early 1948; Beale is the only USAF base having SR-71 strategic recce aircraft.

Bellows AFS, Hawaii (APO San Francisco 96333); approximately 12 mi. NE of Honolulu. Phone: (808) 262-0810. PACAF base. It is a closed airfield presently used by the Marine Corps as a tactical maneuver area, by the Army for a Nike missile site, and by the Air Force as a radio-transmitter site.

Bergstrom AFB, Tex. 78743; 7 mi. SE of Austin. Phone: (512) 385-4100. TAC base; tactical reconnaissance wing. Hq. 12th AF, TAC. Base activated Sept. 19, 1942; named for Capt. John A. E. Bergstrom, first Austin serviceman killed in WW II.

Blytheville AFB, Ark. 72315; 4 mi. NW of Blytheville. Phone: (501) 763-3931. SAC base; heavy bomber and tanker operations, 2d AF. Base activated June 1942; deactivated Oct. 1945; reactivated June 1955.

Bolling AFB, D. C. 20332; 3 mi. S of the US Capitol. Phone: (202) 574-5110. Hq. Headquarters Command, USAF. Base activated July 1, 1918; named for Col. Raynal C. Bolling, Ass't Chief of Air Service, killed during WW I.

Brooks AFB, Tex. 78235; 7 mi. SE of San Antonio. Phone: (512) 536-1110. AFSC base; home of Aerospace Medical Division and USAF School of Aerospace Medicine. Base activated Dec. 5, 1917; named for Cadet Sidney J. Brooks, Jr., killed Nov. 13, 1917, on his final solo flight before commissioning.

Cannon AFB, N. M. 88101; 8 mi. W of Clovis. Phone: (505) 784-3311. TAC base, site of 832d Air Division and F-111 tac fighter wing. Also site of forward air controller training. Activated Aug. 1942; named for Gen. John K. Cannon, WW II Commander of all Allied Air Forces in Mediterranean.

Carswell AFB, Tex. 76127; 7 mi. WNW of downtown Fort Worth. Phone: (817) 738-3511. SAC base; heavy bomber and tanker operations, 2d AF. Base is also the site of AFRES military airlift group. Activated June 28, 1942; named Jan. 30, 1948, for Maj. Horace S. Carswell, Jr., native of Fort Worth; WW II B-24 pilot and posthumous Medal of Honor winner.

Castle AFB, Calif. 95342; 7 mi. NW of Merced. Phone: (209) 726-2011. SAC base; heavy bomber and tanker operations and training of all SAC B-52 and KC-135 crews, 2d AF. Activated Dec. 1, 1941; named for Brig. Gen. Frederick W. Castle, WW II B-17 pilot and posthumous Medal of Honor winner.

Chanute AFB, Ill. 61866; adjoining Rantoul; 14 mi. N of Champaign. Phone: (217) 893-3111. ATC base; provides technical training in missile and aircraft maintenance and weather school. Base has museum, Chanute Technical Training Display Center. Base activated May 21, 1917; named for Octave Chanute, aeronautical engineer and glider pioneer.

Charleston AFB, S. C. 29404; 10 mi. N of Charleston. Phone: (803) 747-4111. MAC base; 21st AF. C-141 associate reserve squadrons. Base activated Mar. 1, 1955.

Columbus AFB, Miss. 39701; 9 mi. N of Columbus. Phone: (601) 434-7322. ATC base; undergraduate pilot training. Base activated in 1941 for pilot training.

Craig AFB, Ala. 36701; 5 mi. SE of Selma. Phone: (205) 874-7431. ATC base; undergraduate pilot training. Base activated Aug. 1940; named for Bruce K. Craig, flight engineer for B-24 manufacturer, killed in 1941.

Davis-Monthan AFB, Ariz. 85707; 4 mi. SE of Tucson. Phone: (602) 793-3900. SAC base; strategic recon, 15th AF; Titan II ICBM support base; TAC A-7D combat crew training; A-7D tactical fighter wing. Also site of AFLC's Military Aircraft Storage and Disposition Center. Base activated in 1927; named in 1928 for two Tucsonan accident victims—2d Lt. Samuel H. Davis, killed Dec. 21, 1921; and 2d Lt. Oscar Monthan, killed Mar. 27, 1924.

Dobbins AFB, Ga. 30060; adjacent to Marietta, 10 mi. NW of Atlanta. Phone: (404) 428-4461. AFRES base; Hq. Eastern AFRES Region; AFRES military airlift wing. Also site of ANG and Naval Air Reserve. Base activated in 1944; named for Capt. Charles Dobbins, WW II pilot killed in action.

Dover AFB, Del. 19901; 2 mi. SE of Dover. Phone: (302) 734-8211. MAC base; air transport units, 21st AF; C-141 reserve associate squadron; houses fighter-interceptor unit, ADC. Dover is largest air freight terminal on East Coast. Base activated Feb. 1951.

Duluth International Airport, Minn. 55814; 5 mi. NW of Duluth. Phone: (218) 727-8211. ADC base; Hq. 23d Air Division, ADC; ANG fighter-interceptor squadron; SAGE region control center, NORAD.

Dyess AFB, Tex. 79607; 6 mi. SW of Abilene. Phone: (915) 696-0212. SAC base; heavy bomber and tanker operations, 2d AF. Tactical airlift base, TAC, 12th AF. Base activated Sept. 1, 1955; named for Lt. Col. William E. Dyess, WW II fighter pilot killed in accident Dec. 1943.

Edwards AFB, Calif. 93523; 18 mi. E of Rosamond. Phone: (805) 277-1110. AFSC base; AF Flight Test Center. Also trains aerospace test pilots, engineers, and project managers. Base houses NASA Flight Research Center, concerned with supersonic and transonic flight research, and is home for Army's Aviation Test Activity. Base activated Sept. 1933; named for Capt. Glen W. Edwards, killed June 5, 1948, in crash of a YB-49 experimental bomber. The base, with 301,000 acres, is one of the largest in the US.

Eglin AFB, Fla. 32542; 2 mi. SW of Valparaiso. Phone: (904) 881-6668. AFSC base; research and development testing. Site of Armament Development and Test Center. Eglin also houses TAC's Special Operations Force (formerly Special Air Warfare Center), USAF Tactical Air Warfare Center, and an F-4 tactical fighter wing. Base activated in 1935 named for Lt. Col. Frederick I. Eglin WW I flyer, killed in aircraft accident Jan. 1, 1937.

Eielson AFB, Alaska (APO Seattle 98737); 26 mi. S of Fairbanks. Phone: (907) 377-2289. AAC base; serves as tanker base for SAC. Also houses weather recon for MAC, air defense and search and rescue for AAC, and communications for AFCS. Activated Oct. 1943; named for Carl B. Eielson, Arctic aviation pioneer.

Ellington AFB, Tex. 77030; 17 mi. SE of Houston. Phone: (713) 487-1400. AFRES base; AFRES and ANG training and operations; Hq. Central AFRES Region; ARRS detachment; USCG air station; AWS detachment; Lunar Landing Training Vehicle (LLTV) facilities; facilities for NASA's Manned Spacecraft Center. Base activated Nov. 27, 1917; after several reactivations through the years, transferred to AFRES in 1958; named for Lt. Eric L. Ellington, killed in crash Nov. 24, 1913.

Ellsworth AFB, S. D. 57706; 10 mi. NE of Rapid City. Phone: (605) 342-2400. SAC base; heavy bomber and tanker operations; Minuteman ICBM support base, 15th AF; SAC post-attack command and control system squadron. Activated June 1942 named for Brig. Gen. Richard E. Ellsworth, killed Mar. 18, 1953, in crash of RB-36.

Elmendorf AFB, Alaska (APO Seattle 98742); adjacent to Anchorage. Phone: (506) 754-9125 or 754-9121. AAC base; Hq. Alaskan Command and Hq. Alaskan Air Command. Base has mission to defend Alaska and North American continent. Tactical fighter squadron of F-4E Phantoms. Base houses detachment of Alaskan Communication System, a public utility; also 1931st Communications Group, AFCS. Base activated Dec. 12, 1940; named for Capt. Hugh M. Elmendorf, killed in air accident Jan. 13, 1933.

England AFB, La. 71301; 6 mi. NNW of Alexandria. Phone: (318) 448-2100. TAC base; tactical fighter wing and the 4410th Special Operations Training Group. Base activated in 1939; named for Lt. Col. John B. England, WW II ace, killed Nov. 17, 1954.

Ent AFB, Colo. 80912; with Colorado Springs. Phone: (303) 634-8911. ADC base; though no flying operations (see Peterson Field), Ent is home of three major commands—North American Air Defense Command, Army Air Defense Command and Aerospace Defense Command. Ent also supports the Cheyenne Mountain complex where NORAD's Combat Operations Center is located. Hq. 14th Aerospace Force (ADC). Base activated January 1951; named for Maj. Gen. Uzal G. Ent, WW I leader, who died Mar. 5, 1948.

Fairchild AFB, Wash. 99011; 11 i. WSW of Spokane. Phone: (509) 17-1212. SAC base; heavy bomber id tanker operations, 15th AF. so houses ATC combat crew train- g wing which conducts survival aining. Base activated Mar. 1, 942; named for Gen. Muir S. Fair- ild, USAF Vice Chief of Staff at s death in 1950.

Forbes AFB, Kan. 66620; 7 mi. S Topeka. Phone: (913) 862-1234. AC base; C-130 tactical airlift wing. so location of MAC's Aerospace artographic & Geodetic Service. ase activated Aug. 22, 1942; named r Maj. Daniel H. Forbes, Jr., WW recon pilot, killed June 5, 1948.

Francis E. Warren AFB, Wyo. 2001; adjacent to Cheyenne. Phone: 07) 775-2510. SAC base; Minute- an ICBM support base, 15th AF. ase activated July 4, 1867; under my jurisdiction until 1947 when assigned to USAF. Home of first las-D ICBM missile wing (1960– 5); named for Francis Emory War- n, Wyoming senator and early overnor. Base has 7,600 acres, us 200 missile sites distributed er some 8,300 sq. mi.

George AFB, Calif. 92392; 6 mi. of Victorville. Phone: (714) 269- 110. TAC base; F-4 tactical fighter ing and combat crew training. ase activated in 1941; named for ig. Gen. Harold H. George, WW I ghter ace largely responsible for loption of "Off We Go" as official song; killed in Australia in air- aft accident Apr. 29, 1942.

Glasgow AFB, Mont. 59231; 18 i. N of Glasgow. Phone: (406) 524- 469. SAC base; heavy bomber satel- te operations, 15th AF. Also houses rmy Safeguard ABM depot. Base, eactivated in June 1968, was re- pened Jan. 1972.

Goodfellow AFB, Tex. 76901; 2 i. SE of San Angelo. Phone: (915) 53-3231. USAF Security Service se; training for USAFSS. Base ac- ated Aug. 17, 1940; named for Lt. John J. Goodfellow, Jr., WW fighter pilot killed in combat Sept. , 1918, in France.

Grand Forks AFB, N. D. 58201; 15 . W of Grand Forks. Phone: (701) 4-6011. SAC base; heavy bomber d tanker operations, Minuteman BM support base, 15th AF. so houses ADC fighter-interceptor uadron. Base activated Sept. 1958.

Griffiss AFB, N. Y. 13440; 2 mi. E of Rome. Phone: (315) 330- 10. SAC base; heavy bomber and anker operations, 2d AF. Major enant is Rome Air Development Center (RADC), part of AFSC. Base ouses Hq. of AFCS's Northern ommunications Area; also houses DC fighter-interceptor operations. Base activated Feb. 1, 1942; named or Lt. Col. Townsend E. Griffiss, illed in aircraft accident Feb. 15, 942.

Grissom AFB, Ind. 46970; 8 mi. S of Peru. Phone: (317) 689-2211. SAC base; tanker operations, 2d AF. Base activated June 22, 1954; named for Lt. Col. Virgil I. "Gus" Grissom, killed Jan. 27, 1967, with other Astronauts Edward White and Roger Chaffee, in Apollo capsule fire.

Gunter AFB, Ala. 36114; 4 mi. E of Montgomery. Phone: (205) 279-1110. AU base; home of USAF's Extension Course Institute; Hq. Air Force Data Automation Agency and site of AF Data Systems Design Center. Base activated Aug. 27, 1940; named for William A. Gunter, former Mayor of Montgomery who died in 1940.

Hamilton AFB, Calif. 94934; 6 mi. NNE of San Rafael. Phone: (415) 838-1110. ADC base; fighter-interceptor operations. Also houses Hq. Western AFRES Region, Western Aerospace Rescue and Recovery Center, MAC; 41st Aerospace Rescue and Recovery Squadron, MAC; and ADC's NCO Academy. Base activated Dec. 1, 1934; named for 1st Lt. Lloyd A. Hamilton, first American in WW I to fly with Royal Flying Corps; killed in action Aug. 24, 1918.

Hancock Field, N. Y. 13225; 10 mi. NNE of Syracuse. Phone: (315) 458-5500. ADC base; 21st Air Division, ADC; SAGE region control center, NORAD. Base activated Sept. 1941.

Hanscom Field (see Laurence G. Hanscom Field).

Hickam AFB, Hawaii (APO San Francisco 96553); 8 mi. W of Honolulu. Phone: (808) 444912. PACAF base. Hq. Pacific Air Forces; location of 15th Air Base Wing, support organization for Air Force units in Hawaii and throughout the Pacific; ANG fighter group (ADC). Base activated May 31, 1935; named for Lt. Col. Horace M. Hickam, air pioneer killed Nov. 5, 1934.

Hill AFB, Utah 84401; 8 mi. S of Ogden. Phone: (801) 777-7221. AFLC base; Hq. Ogden Air Materiel Area. Furnishes logistic support for ICBMs; manager for F-101 and F-4 aircraft; Aerospace Rescue and Recovery Service training. Base activated Dec. 1, 1939; named for Maj. Ployer P. Hill, killed Oct. 30, 1935, test-flying the first B-17.

Holloman AFB, N. M. 88330; 11 mi. SW of Alamogordo. Phone: (505) 473-6511. TAC base; F-4 tactical fighter wing. Base conducts and supports test and evaluation of airborne missiles, drones, recon systems, and missile reentry vehicles, and operates Central Inertial Guidance Test Facility, AFSC track facility, and Radar Target Scatter site (RATSCAT). Activated 1942; named for Col. George V. Holloman, guided-missile pioneer, killed in crash Mar. 19, 1946.

Homestead AFB, Fla. 33030; 5 mi. NNE of Homestead. Phone: (305) 257-8011. TAC base, F-4 tactical fighter wing. Homestead is site of ATC sea-survival school; also houses AFRES airlift squadron. Base activated Jan. 1955.

Hurlburt Field, Fla. 32544 (Eglin AFB Auxiliary Field #9); 6 mi. W of Ft. Walton Beach; part of Eglin AFB reservation. Phone (904) 881-6668. TAC base; home of 1st Special Operations Wing; Special Operations combat crew training; and maintains combat-ready Special Operations squadrons. Also site of USAF Air-Ground Operations School and Special Operations School. Base activated Mar. 1942; named for 1st Lt. Donald W. Hurlburt, WW II bomber pilot killed Oct. 2, 1943, in crash near Hurlburt.

Indian Springs AF Auxiliary Field, Nev. 89018; 45 mi. NW of Las Vegas. Phone: (702) 879-3345. TAC base; provides range support for TAC operations from nearby Nellis AFB. This installation supports the Las Vegas Bombing and Gunnery Range, with more than 3,000,000 acres, the largest reservation in the USAF inventory. Here the Atomic Energy Commission has conducted most of its tests, supported by a detachment of the AF Special Weapons Center. The base was activated in 1942.

Keesler AFB, Miss. 39534; located in Biloxi. Phone: (601) 377-1110. ATC base; communications and electronics training and personnel and administrative courses. Also provides pilot training under Military Assistance Program for foreign students. Base activated June 12, 1941; named for 2d Lt. Samuel R. Keesler, Jr., WW I aerial observer, killed in action Oct. 9, 1918.

Kelly AFB, Tex. 78241; 5 mi. SW of San Antonio. Phone: (512) 925-1110. AFLC base, Hq. San Antonio Air Materiel Area; Hq. USAF Security Service; inland aerial port of embarkation, MAC; USAF Environmental Health Laboratory; training operations, Texas ANG. Base activated May 7, 1917; named for 2d Lt. George E. M. Kelly, first Army pilot to lose his life in military aircraft; killed May 10, 1911.

Kincheloe AFB, Mich. 49788; 20 mi. S of Sault Ste. Marie. Phone: (906) 495-5611. SAC base; heavy bomber and tanker operations, 2d AF. Base first activated 1941; named for Capt. Iven C. Kincheloe, Jr., jet ace of Korean War and later X-2 test pilot, killed July 26, 1958, in F-104 crash.

King Salmon Airport, Alaska (APO Seattle 98713); 250 mi. SW of Anchorage. Phone: (907) 721-3550. AAC base; furnishes air defense and aircraft warning for Alaskan Air Command. Activated in 1951.

Kingsley Field, Ore. 97601; 5 mi. SE of Klamath Falls. Phone: (503) 882-4411. ADC base; fighter-interceptor dispersed operating base. Formerly a naval air station, base was activated by AF in April 1956; named for 2d Lt. David R. Kingsley, WW II B-17 bombardier and Medal of Honor winner, killed June 23, 1944.

Kirtland AFB, N. M. 87117; borders the southern edge of Albuquerque. Phone: (505) 247-1711. AFSC base; furnishes nuclear and civil engineering research, development, and testing for USAF. Hq. AF Special Weapons Center and Air Force Weapons Laboratory, AFSC. Base houses N. M. ANG fighter group, AFSC NCO Academy, 58th Weather Recon Squadron, and USAF Directorate of Nuclear Safety. Base activated Jan. 1941; named for Col. Roy S. Kirtland, air pioneer who died in 1941.

K. I. Sawyer AFB, Mich. 49843; 23 mi. S of Marquette. Phone: (906) 346-6511. SAC base; heavy bomber and tanker operations base, 2d AF; also houses fighter-interceptor squadron, ADC. Base activated 1956; named for Kenneth I. Sawyer, who proposed site for a county airport, died in 1944.

Lackland AFB, Tex. 78236; 12 mi. W of San Antonio. Phone: (512) 671-1110. ATC base; provides basic military training for airmen, precommissioning training for officers; technical training of basic, advanced security police personnel; sentry dog/handler courses; training of instructors, recruiters, and career-motivation counselors; USAF marksmanship training and competitive teams. Also site of USAF Epidemiological Lab; USAF Personnel Research Lab (AFSC); Defense Language Institute English Language School, under US Army. Known as "The Gateway Base" for its role in providing basic training and indoctrination since activation in 1941; named for Brig. Gen. Frank D. Lackland, early commandant of Kelly Field flying school, died in 1943.

Langley AFB, Va. 23365; 3 mi. N of Hampton. Phone: (703) 764-9990. TAC base; Hq. Tactical Air Command; tactical airlift base. Also houses fighter-interceptor unit, ADC; and Hq. Tactical Communications Area, AFCS. Base, activated Dec. 30, 1916, is the oldest continuously active AFB in the US; named for aviation pioneer and scientist Samuel Pierpont Langley.

Laredo AFB, Tex. 78040; 3 mi. NE of Laredo. Phone: (512) 723-9121. ATC base; undergraduate pilot training in T-41, T-37, and T-38 aircraft. Base activated Aug. 1, 1942.

Laughlin AFB, Tex. 78840; 8 mi. E of Del Rio. Phone: (512) 298-3511. ATC base; undergraduate pilot training. Base activated Aug. 15,

1942; named for 1st Lt. Jack T. Laughlin, killed in action Jan. 29, 1942.

Laurence G. Hanscom Field, Mass. 01730; 17 mi. W of Boston. Phone: (617) 864-4441. AFSC base; Hq. Electronic Systems Div., AFSC. Also site of AF Cambridge Research Laboratories, AFSC, providing basic and applied research in electronics and geophysics. AFRES airlift operations. Joint federal-state use of the base began in 1946; named for Laurence G. Hanscom, pre-WW II advocate of private flying, killed in 1941 in a lightplane accident. Hanscom Field is a state airport, and USAF is present on long-term-lease arrangement.

Little Rock AFB, Ark. 72076; 15 mi. NE of Little Rock. Phone: (501) 988-3131. TAC base; 834th Air Division; tactical airlift wing and combat crew training; also serves as SAC Titan ICBM support base, used as a satellite base for SAC. Home of Arkansas ANG tactical recon group. Base activated Aug. 1, 1955.

Lockbourne AFB, Ohio 43217; 11 mi. SSE of Columbus. Phone: (614) 492-8211. SAC base; SAC air refueling wing; home of Ohio ANG fighter wing; also houses ANG/AFRES missions. Base activated June 1942.

Loring AFB, Me. 04750; 2 mi. W of Limestone. Phone: (207) 999-1110. SAC base, heavy bomber and tanker operations, 2d AF. Base activated Feb. 25, 1953; named for Maj. Charles J. Loring, Jr., WW II pilot killed Nov. 22, 1952, in North Korea; posthumously awarded the Medal of Honor.

Los Angeles AFS, Calif. 90045. 1 mi. S of LA Int'l Airport. Phone (213) 643-1000. AFSC support base. Hq. AFSC's Space and Missile Systems Organization (SAMSO); manages the development, production, test, and delivery of most of DoD's space and ballistic systems. Has 28 other tenant units. Base activated June 1964.

Lowry AFB, Colo. 80230; 5 mi. ESE of Denver. Phone: (303) 388 5411. ATC base; technical training center. Base activated Oct. 1, 1937; named for 1st Lt. Francis B. Lowry, killed in action Sept. 26, 1918.

Luke AFB, Ariz. 85301; 20 mi. WNW of Phoenix. Phone: (602) 935-7411. TAC base; furnishes F-4 tactical fighter crew training, 12th AF; Luke houses SAGE region control center, NORAD, and Hq. 26th Air Division, ADC. Because of its 2,500,000-acre Gila Bend gunnery range, Luke is the largest fighter training base in the free world. Programs include training USAF pilots in F-4 and F-100; training West German students in F-104G; and MAP training in F-5 (at nearby Williams AFB). Base activated in 1941; named for 2d Lt. Frank Luke, Jr., America's No. 2 ace in WW I, winner of Medal of Honor, killed in action Sept. 29, 1918.

MacDill AFB, Fla. 33608; 8 mi. SSW of Tampa. Phone: (813) 830-1110. Hq. US Readiness Command. TAC base; tactical fighter wing for replacement training, using F-4 Phantoms and B-57 Canberras. Base activated Apr. 15, 1941; named for Col. Leslie MacDill, killed in airplane accident Nov. 8, 1938.

Malmstrom AFB, Mont. 59402; 4 mi. E of Great Falls. Phone: (406) 731-9990. SAC base; missile support base, with Minuteman ICBMs, 15th AF. Also Hq. 24th Air Division, ADC; SAGE region control center, NORAD. Base activated July 1942; named for Col. Einar A. Malmstrom, WW II fighter commander killed in T-33 accident Aug. 21, 1954. Site of SAC's first Minuteman wing, 1961.

March AFB, Calif. 92508; 9 mi. SE of Riverside. Phone: (714) 655-1110. SAC base; heavy bomber and tanker operations; Hq. 15th AF. Base also houses military airlift wing, AFRES. Base activated Mar. 15, 1918; named for 2d Lt. Peyton C. March, Jr., who died in US of crash injuries Feb. 18, 1918.

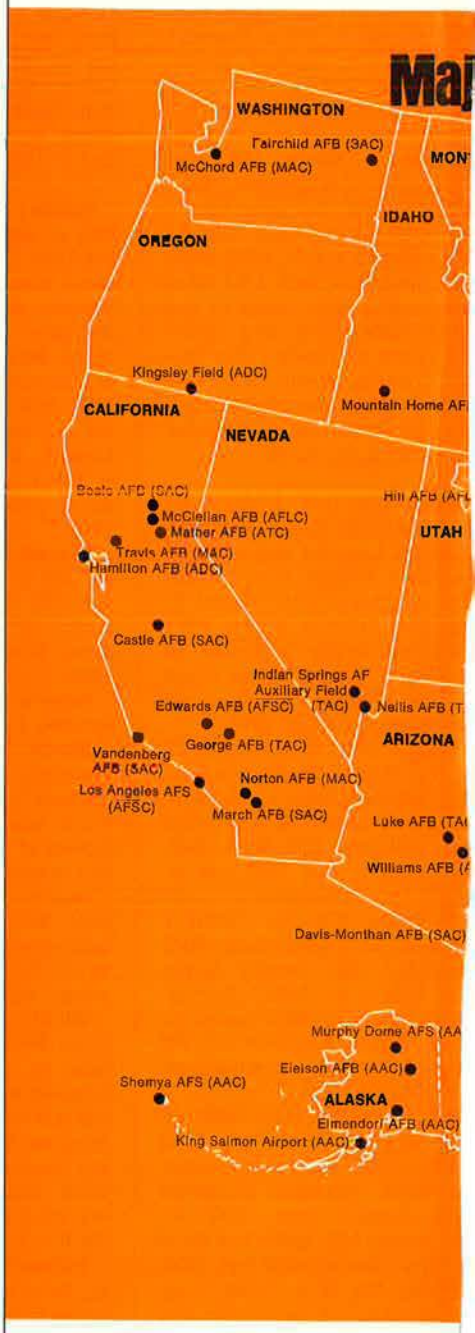
Mather AFB, Calif. 95655; 5 mi. E of Sacramento. Phone: (916) 364-2261. ATC base; is USAF's only training installation for navigators, navigator-bombardiers, and electronic warfare officers. Also houses heavy bomber and tanker units, 15th AF, SAC. Base activated May 2, 1918; named for 2d Lt. Carl S. Mather, killed in US Jan. 30, 1918, in midair collision.

Maxwell AFB, Ala. 36112; 1 mi. WNW of Montgomery. Phone: (205) 293-1110. AU base; Hq. Air University, professional education center for USAF. Site of Air War College, Air Command and Staff College, Squadron Officer School, Academic Instructor and Allied Officer School, AU Institute for Professional Development; Hq. AFROTC; Hq. Civil Air Patrol-USAF. Base activated 1918; named for 2d Lt. William C. Maxwell, killed in air accident Aug. 12, 1920, Luzon, P. I.

McChord AFB, Wash. 98438; 8 mi. S of Tacoma. Phone: (206) 984-1910. MAC base; hq. military airlift wing. Hq. 25th Air Division, ADC; houses a fighter-interceptor squadron, ADC; SAGE region control center, NORAD; site of AFRES military airlift group. Base activated May 5, 1938; named for Col. William C. McChord, killed in crash Aug. 18, 1937.

McClellan AFB, Calif. 95652; 10 mi. NE of Sacramento. Phone: (916) 643-2111. AFLC base; Hq. Sacramento Air Materiel Area; management, maintenance, and supply support of such AF weapon systems as F-111, A-X, F-100, F-105, F-104, and various communications systems. Also houses airborne early warning and control wing, ADC; weather recon wing, MAC; military airlift group, AFRES; USAF Environmental Health Laboratory. Base activated Apr. 29, 1939; named for Maj. Hezekiah McClellan, pioneer in Arctic aeronautical experiments, killed in crash May 25, 1936.

McConnell AFB, Kan. 67221; 5 mi. SE of Wichita. Phone: (316) 685-1151. SAC base; tanker operations, 2d AF; Titan II ICBM support base. Also home of 184th Tac Fighter Group, Kansas ANG. Base activated June 5, 1951; named for Capt. Fred J. McConnell, a WW II bomber pilot who died in crash of a private plane, Oct. 25, 1945; and for his brother, 2d Lt. Thomas L. McConnell, also a WW II bomber pilot, killed July 10, 1943, during attack on Bougainville.



SE of Orlando. Phone: (305) 855-210. SAC base; heavy bomber and anker operations, 2d AF. Also houses irborne early warning and control etachment, ADC. Base activated in 942; named for Col. Michael N. W. IcCoy, project officer for "Lucky ady I," first nonstop round-the-orld flight, killed in US Oct. 9,

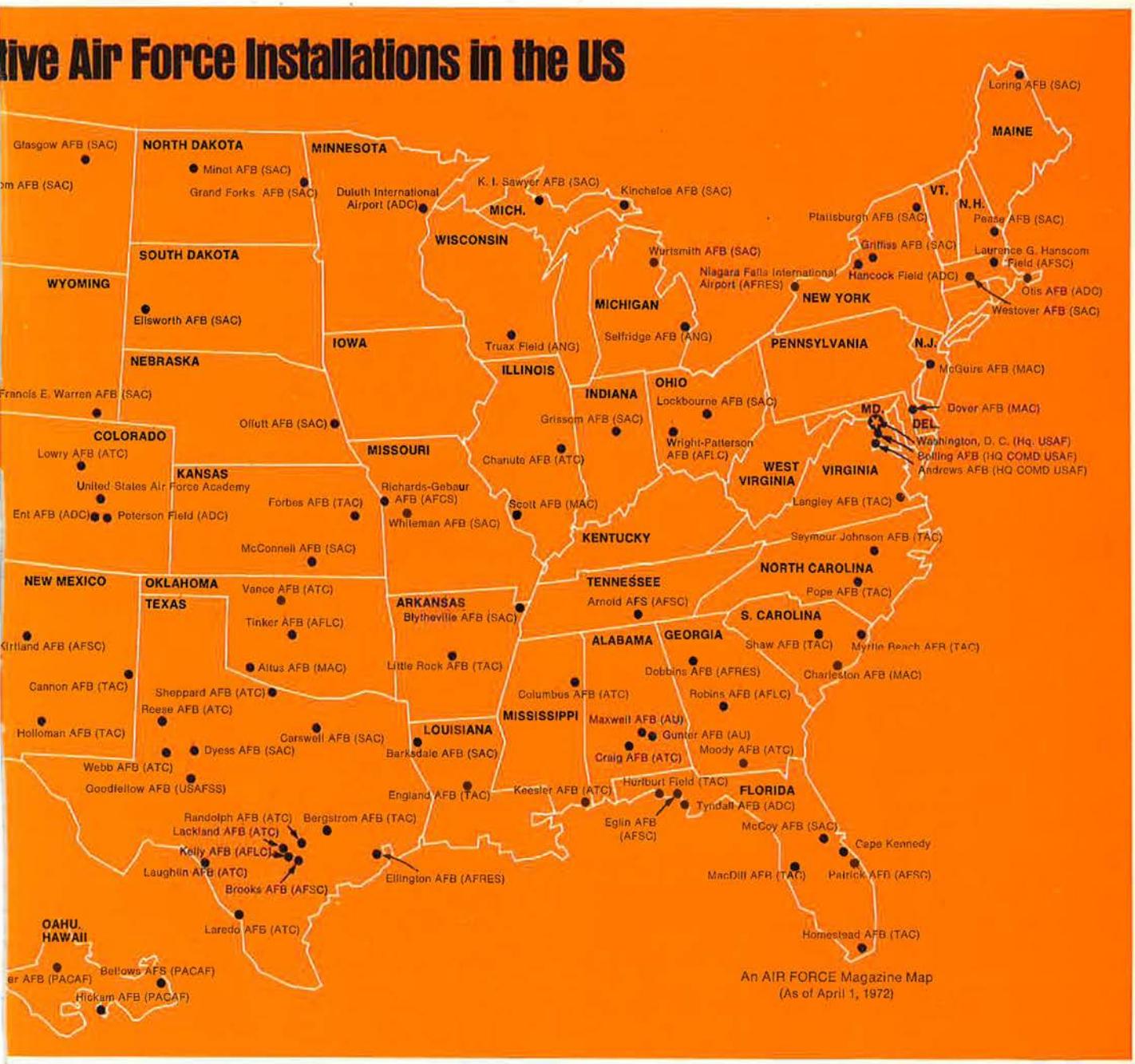
leading US ace of WW II, holder of Medal of Honor, killed in action Jan. 7, 1945.

Minot AFB, N. D. 58701; 13 mi. N. of Minot. Phone: (701) 727-4761. SAC base; heavy bomber and tanker operations, 15th AF; also missile support base, Minuteman ICBM. Also houses fighter-interceptor unit,

10 mi. SW of Mountain Home. Phone: (208) 828-2111. TAC base; F-111 tactical fighter wing; base activated 1943.

Murphy Dome AFS, Alaska (APO Seattle 98750); 26 mi. NW of Fairbanks. Phone: (907) 744-1202. AAC base; air defense activities. Completed in 1951; named for veteran

Nellis AFB, Nev. 89110; 8 mi. NE of Las Vegas. Phone: (702) 643-1800. TAC base; tactical fighter training, including F-111 combat crew training; site of USAF Tactical Fighter Weapons Center for test and evaluation of air tactics and AF equipment. Home of the USAF Thunderbirds aerobatic team. Base



957, when his B-47 jet exploded.

McGuire AFB, N. J. 08641; 18 mi. E of Trenton. Phone: (609) 724-100. MAC base; Hq. 21st AF. Host nit 438th MAW. C-141 associate eserve squadrons. Base also houses ir defense missile unit (Bomarc), DC. Base adjoins Army's Ft. Dix; eactivated 1949; named for Maj. homas B. McGuire, Jr., second

ADC. Base activated Sept. 1, 1958.

Moody AFB, Ga. 31601; 10 mi. NNE of Valdosta. Phone: (912) 333-4211. ATC base; undergraduate pilot training for USAF, ANG, USMC, and allied nations. Base activated June 1941; named for Maj. George P. Moody, killed May 5, 1941, while testing Beech AT-10.

Mountain Home AFB, Idaho 83648;

hard-rock miner John Murphy, who lived and worked in the area before the site was built.

Myrtle Beach AFB, S. C. 29577; 3 mi. S of Myrtle Beach. Phone: (803) 448-8311. TAC base; site of first operational A-7D tac fighter wing; fighter-recon training in T/AT-33 aircraft, 9th AF. Base activated Dec. 1956.

first activated Jan. 25, 1941; named for 1st Lt. William H. Nellis, WW II fighter pilot, killed Dec. 27, 1944, in Europe.

Niagara Falls International Airport, N. Y. 14306; 4 mi. E of Niagara Falls. Phone: (716) 297-4100. AFRES base; houses F-100 group, N. Y. ANG, and AFRES tactical airlift group. Base activated in 1952.

Norton AFB, Calif. 92409; 59 mi. E of Los Angeles, within corporate limits of city of San Bernardino. Phone: (714) 382-1001. MAC base; military airlift wing; Hq. Air Force Inspection and Safety Center; Hq. Air Force Audit Agency. Also houses C-141 AFRES associate unit; Aerospace Audio-Visual Service, MAC. Base activated Mar. 2, 1942; named for Capt. Leland F. Norton, WW II attack-bomber pilot, killed May 27, 1944, in Europe.

Offutt AFB, Neb. 68113; 10 mi. S of Omaha. Phone: (402) 291-2100. SAC base; Hq. Strategic Air Command; SAC recon wing. Base activated 1896 as the Army's Ft. Crook; renamed in 1924 for 1st Lt. Jarvis J. Offutt, WW I pilot who died Aug. 13, 1918, from injuries received from enemy fire over France.

Otis AFB, Mass. 02542; on Cape Cod, 7 mi. NNE of Falmouth. Phone: (617) 968-1000. ADC base; houses air defense missile squadrons, ADC, and ANG training site. Base activated in 1938 as Army's Camp Edwards; turned over to USAF in 1948; renamed in 1949 for 1st Lt. Frank J. Otis, member of Massachusetts ANG, killed Jan. 11, 1937, in crash.

Patrick AFB, Fla. 32925; 1 mi. S of Cocoa Beach. Phone: (305) 494-1110. AFSC base; maintains and operates the AF Eastern Test Range, in support of DoD, NASA, and other agency missile and space programs. Base is airhead for Cape Kennedy AFS, open for drive-through tours on Sundays from 9:00 a.m. to 3:00 p.m., with stopping point at Air Force Space Museum. Named for Maj. Gen. Mason M. Patrick, Chief of AEF's Air Service in WW I and Chief of the Air Service, 1921–1927.

Pease AFB, N. H. 03801; 3 mi. W of Portsmouth. Phone: (603) 436-0100. SAC base; medium bomber and tanker operations, 2d AF. Also houses air rescue and recovery unit, MAC; military airlift group, ANG. Base activated 1956; named for Capt. Harl Pease, Jr., WW II B-17 pilot and Medal of Honor winner killed Aug. 7, 1942, during attack on Rabaul, New Britain Island.

Peterson Field, Colo. 80914; 6 mi. E of Colorado Springs. Phone: (303) 635-8911. ADC base; supports NORAD, Hq. ADC, and Air Force Academy administrative flying activities; USAFA T-41 pilot indoctrination; activated 1942; named for 1st Lt. Edward J. Peterson, killed in aircraft accident, 1942.

Plattsburgh AFB, N. Y. 12903; 1 mi. SW of Plattsburgh. Phone: (518) 565-4500. SAC base; medium bomber and tanker operations, 2d AF. FB-111 combat crew training. Base activated July 14, 1956.

Pope AFB, N. C. 28308; 12 mi. NW of Fayetteville. Phone: (919) 394-4183. TAC base; home of 839th Air Division and 317th Tactical Airlift Wing. Base adjoins Army's Ft. Bragg; activated 1919; named for 1st Lt. Harley H. Pope, WW I flyer killed Jan. 7, 1919, in a crash near Fayetteville.

Randolph AFB, Tex. 78148; 16 mi. ENE of San Antonio. Phone: (512) 652-1110. ATC base; Hq. Air Training Command; T-37 and T-38 pilot instructor training; site of Air Force Military Personnel Center; Hq. USAF Recruiting Service. Base activated June 20, 1930; named for Capt. William M. Randolph, killed Feb. 17, 1928, in a crash.

Reese AFB, Tex. 79401; 8 mi. W of Lubbock. Phone: (806) 885-4511. ATC base; undergraduate pilot training. Base activated in 1941; named for 1st Lt. Augustus F. Reese, Jr., fighter pilot killed in Sardinia May 14, 1943.

Richards-Gebaur AFB, Mo. 64030; 17 mi. S of Kansas City. Phone: (816) 331-4400. AFCS base; Hq. Air Force Communications Service; also houses AFRES tactical airlift wing, ARRS, ADC units, and AFCS NCO Academy. Base activated Nov. 4, 1955; named for 1st Lt. John F. Richards and Lt. Col. Arthur W. Gebaur, Jr. Richards was killed Sept. 26, 1918, while on artillery-spotting mission. Gebaur was killed Aug. 29, 1952, over North Korea.

Robins AFB, Ga. 31093; at Warner Robins, 18 mi. SSE of Macon. Phone: (912) 926-1110. AFLC base; Hq. Warner Robins Air Materiel Area; Hq. AFRES. Also site of heavy bomber and tanker operations, 2d AF, SAC; base houses 5th Mobile Communications Group, AFCS. Base activated Mar. 1942; named for Brig. Gen. Augustine Warner Robins, an early Chief of the Materiel Division of the Air Corps, died June 16, 1940.

Scott AFB, Ill. 62225; 6 mi. ENE of Belleville. Phone: (618) 256-1110. MAC base; Hq. Military Airlift Command; Hq. of two of MAC's services—Aerospace Rescue and Recovery Service, and Air Weather Service; aeromedical airlift base; also houses AFRES aeromedical associate airlift group. Base activated June 14, 1917; named for Cpl. Frank S. Scott, first enlisted man to die in an air accident, killed Sept. 28, 1912.

Selfridge AFB, Mich. 48045; 3 mi. NE of Mount Clemens. Phone: (313) 465-1241. ANG base; ANG tac recon wing; AC&W squadron. Also houses Navy Reserve training and AFRES aerospace rescue and recovery unit; AFRES tactical support wing; US Coast Guard Air Station for Detroit. Base activated July 7, 1918; named for 1st Lt. Thomas E. Selfridge, first Army officer to fly in an airplane and first military fatality of powered flight; killed Sept. 17, 1908, at Ft. Myer, Va., when plane piloted by Orville Wright crashed.

Seymour Johnson AFB, N. C. 27530; 2 mi. SSE of Goldsboro. Phone: (919) 736-0000. TAC base; tactical fighter wing, 9th AF; Hq. 19th AF. Also houses heavy bomber and tanker operations, 2d AF, SAC. Base first activated June 12, 1942; named for Navy Lt. Seymour A. Johnson, killed in 1942.

Shaw AFB, S. C. 29152; 7 mi. WNW of Sumter. Phone: (803) 775-1111. TAC base; RF-4C, and EB-66 recon crew training; home of the 363d Tac Recon Wing; major tenant units include Hq. 9th AF, TAC. Base activated Aug. 30, 1941; named for 2d Lt. Ervin D. Shaw, one of first Americans to see air action in WW I; killed in action July 9, 1918.

Shemya AFS, Alaska (APO Seattle 98736); located at western tip of the Aleutian chain, midway between Anchorage, Alaska, and Tokyo, Japan. Phone: 572-3400. AAC base. Shemya was used as a bomber base in WW II; reactivated in 1958. The International Date Line has conveniently been "bent" around Shemya so that local date is the same as elsewhere in the US.

Sheppard AFB, Tex. 76311; 5 mi. N of Wichita Falls. Phone: (817) 851-2511. ATC base; technical and flying training. Sheppard furnishes undergraduate pilot training for the German and Vietnamese Air Forces. Base activated June 14, 1941; named for Morris E. Sheppard, US Senator from Texas, died in 1941.

Tinker AFB, Okla. 73145; 8 mi. SE of Oklahoma City. Phone: (405) 732-7321. AFLC base; Hq. Oklahoma City Air Materiel Area; furnishes logistic support for bombers, jet engines, instruments, and electronics. Base houses Hq. of AFCS's Southern Communications Area and also 3d Mobile Communications Group, AFCS. AFRES military airlift group. Base activated Aug. 1942; named for Maj. Gen. Clarence L. Tinker. On June 7, 1942, at the end of the Battle of Midway, General Tinker's Liberator crashed on the way back to Hawaii.

Travis AFB, Calif. 94535; at Fairfield, 50 mi. NE of San Francisco. Phone: (707) 438-4011. MAC base; Hq. 22d AF; military airlift wing. Also houses SAC tanker operations. Base activated May 25, 1943; named for Brig. Gen. Robert F. Travis, killed Aug. 5, 1950, in a B-29 accident.

Truax Field, Wis. 53707; 2 mi. E of Madison. Phone: (608) 249-0461. ANG base; accommodates ANG air defense wing. Base named for 1st Lt. Thomas L. Truax, killed in a crash on Nov. 2, 1941.

Tyndall AFB, Fla. 32401; 8 mi. E of Panama City. Phone: (905) 283-1113. ADC base; Air Defense Weapons Center; conducts combat crew training for F-106 pilots. Base activated Dec. 7, 1941; named f 1st Lt. Frank B. Tyndall, WW I fight pilot, killed in crash July 15, 193

Vance AFB, Okla. 73701; 4 mi. of Enid. Phone (405) 237-2121. A base; undergraduate pilot trainin Base first activated Nov. 194 named for Lt. Col. Leon R. Van Jr., Medal of Honor winner, kill July 26, 1944, when air-evac pla returning him to US went down the Atlantic.

Vandenberg AFB, Calif. 9343 10 mi. NW of Lompoc. Phone: (80 866 1611. SAC base; site of 1 Strategic Aerospace Division, pr vides launch facilities and suppo for operational ICBM tests and u manned polar-orbiting space oper tions of USAF, NASA contracto et al. Also site of Space and Miss Test Center, AFSC. Originally Arm Camp Cooke, base was taken ov by USAF June 7, 1957; renamed f Gen. Hoyt S. Vandenberg, USAI second Chief of Staff, died Apr. 1954. It is the only AFB from whi are launched operational ballis missiles in the SAC deterrent for and polar-orbiting satellites in l space program. More than 1,1 launches have taken place fro Vandenberg since Dec. 1958.

Webb, AFB, Tex. 79720; 3 mi. S of Big Spring. Phone: (915) 26 2511. ATC base; undergraduate pi training. Base activated Sept. 1942; named for 1st Lt. James Webb, WW II fighter pilot, kill in a crash in Japan, June 16, 194

Westover AFB, Mass. 01022; 3 r NNE of Chicopee Falls. Phone: (41 557-1110. SAC base; heavy bomb and tanker operations, 2d AF. Wes over also houses AFRES milita airlift group. Base activated Ap 1940; named for Maj. Gen. Osc Westover, Chief of the Air Corp killed Sept. 21, 1938, in aircra accident.

Wheeler AFB, Hawaii (APO S Francisco 96515); located near ce ter of the island of Oahu. PAC base; furnishes administrative a logistic support to the Hawaiian Defense Division (326th Air Di sion); Joint Coordination Center, I East; and 604th Direct Air Supp Squadron. Hq. Pacific Communi tions Area, AFCS; Hq. Pacific Sec rity Region. Base activated June 1923; named for Maj. Sheldon Wheeler, killed July 13, 1921, duri aerial exhibition.

Whiteman AFB, Mo. 65301; mi. S of Knob Noster. Phone: (81 563-5511. SAC base; 15th AF sup port base for Minuteman missil wing. Base activated 1942; name for 2d Lt. George A. Whiteman wh was shot down while taking off in fighter plane from Wheeler Fiel Hawaii, on Dec. 7, 1941, the firs AF casualty of WW II.

Williams AFB, Ariz. 85224; 16 m SE of Mesa; 10 mi. E of Chandl

hone: (602) 988-2611. ATC base; rgest undergraduate pilot training ase. Also provides F-5 combat crew aining for foreign students. Base ctivated Sept. 1941; named for 1st t. Charles L. Williams, killed in rash of a bomber July 6, 1927, uring aerial demonstration.

Wright-Patterson AFB, Ohio 45433; airborn, 10 mi. ENE of Dayton. Phone: (513) 257-1110. AFLC base; Hq. Air Force Logistics Command. AF Contract Maintenance Center, AFLC. Also houses heavy bomber and tanker operations, SAC; Hq. Aeronautical Systems Division and Foreign Technology Division, AFSC; home of the Air Force Museum. Also houses more than 150 other DoD activities and government agencies. Originally separate areas of Wilbur Wright Field and Patterson Field; the two were merged and redesignated Wright-Patterson AFB on Jan. 13, 1948; named for aviation pioneers Orville and Wilbur Wright and for 1st Lt. Frank S. Patterson, killed June 19, 1918, in the crash of a DH-4. The Wright brothers did much of their early flying on Huffman Prairie, now Areas A and C of present base.

Wurtsmith AFB, Mich. 48753; 3 mi. NW of Oscoda. Phone: (517) 739-2011. SAC base; heavy bomber and tanker operations, 2d AF. Base activated 1923; assigned to SAC since 1961; named for Maj. Gen. Paul B. Wurtsmith, killed Sept. 13, 1946, in crash. ■

USAF's Major Installations Overseas

brook AFB, Canal Zone
APO New York 09825
Hq. USAF Southern Command

idersen AFB, Guam
APO San Francisco 96334
Hq. 8th Air Force

ikara AS, Turkey
APO New York 09254
TUSLOG detachment, USAFE

henai Airport, Greece
APO New York 09223
Support base, USAFE

viano AB, Italy
APO New York 09293
Tactical group, USAFE

itburg AB, West Germany
APO New York 09132
Tactical fighter base, USAFE

mp New Amsterdam, The Netherlands
APO New York 09292
Fighter-interceptor base, USAFE

m Ranh Bay AB, South Vietnam
APO San Francisco 96326
Tactical base, PACAF
Airlift and combat support base, PACAF

ning Chuan Kang AB, Taiwan
APO San Francisco 96319
Tactical airlift base, PACAF

ark AB, Philippines
APO San Francisco 96274
Hq. 13th Air Force, PACAF

Nang Airport, South Vietnam
APO San Francisco 96337
Tactical fighter base, PACAF

ling AS, West Germany
APO New York 09060
Fighter-interceptor base, USAFE

nkfurt, West Germany
APO New York 09101
Support base, USAFSS

chu AS, Japan
APO San Francisco 96525
Hq. 5th Air Force, PACAF

ose AB, Labrador, Canada
APO New York 09677
Aerospace defense base, ADC
Strategic bomber base, SAC

ahn AB, West Germany
APO New York 09109
Tactical fighter base, USAFE

igh Wycombe AS, United Kingdom
APO New York 09241
Support base, USAFE

oward AFB, Canal Zone
APO New York 09817
Support, USAF Southern Command

Incirlik AB, Turkey
APO New York 09289
Tactical fighter base, USAFE

Iraklion AS, Crete
APO New York 09291
Support base, USAFSS

Izmir, Turkey
APO New York 09224
Support base, USAFE

Johnston Island AB, Central Pacific
APO San Francisco 96305
Support base, PACAF

Kadena AB, Okinawa
APO San Francisco 96239
Air division base, PACAF
Strategic operations, SAC

Keflavik Airport, Iceland
FPO (US Navy), New York 09571
Fighter-interceptor base

Korat AB, Thailand
APO San Francisco 96288
Tactical fighter base, PACAF

Kunsan AB, South Korea
APO San Francisco 96264
Tactical fighter base, PACAF

Kwangju AB, South Korea
APO San Francisco 96324
Combat support base, PACAF

Lajes Field, Azores
APO New York 09406
Airlift base, MAC

Lindsey AS, West Germany
APO New York 09633
Hq. US Air Forces in Europe
Hq. European Communications Area, AFCS

Misawa AB, Japan
APO San Francisco 96519
Support base, PACAF

Moron AB, Spain
APO New York 09282
Support base, USAFE

Nakhon Phanom Airport, Thailand
APO San Francisco 96310
Special operations base, PACAF

Osan AB, South Korea
APO San Francisco 96570
Air division base, PACAF

RAF Alconbury, United Kingdom
APO New York 09238
Tactical reconnaissance base, USAFE

RAF Bentwaters, United Kingdom
APO New York 09755
Tactical fighter base, USAFE

RAF Chicksands, United Kingdom
APO New York 09193
Support base, USAFSS

RAF Lakenheath, United Kingdom
APO New York 09179
Tactical fighter base, USAFE

RAF Mildenhall, United Kingdom
APO New York 09127
Tactical airlift base, USAFE
Hq. 3d Air Force, USAFE (by Aug. '72)

RAF Sculthorpe, United Kingdom
APO New York 09048
Support base, USAFE

RAF Upper Heyford, United Kingdom
APO New York 09194
Tactical fighter base, USAFE

RAF West Ruislip, United Kingdom
APO New York 09128
Support base, USAFE

RAF Wethersfield, United Kingdom
APO New York 09120
Support base, USAFE

RAF Woodbridge, United Kingdom
APO New York 09405
Tactical fighter base, USAFE

Ramey AFB, Puerto Rico
APO New York 09845
Support base, MAC

Ramstein AB, West Germany
APO New York 09012
Hq. 17th Air Force, USAFE
Tactical reconnaissance base, USAFE

Rhein-Main AB, West Germany
APO New York 09057
Tactical airlift base, USAFE

San Vito dei Normanni AS, Italy
APO New York 09240
Support base, USAFSS

Sembach AB, West Germany
APO New York 09130
Support base, USAFE

Shu-Lin-Kou AS, Taiwan
APO San Francisco 96360
Support base, USAFSS

Sondrestrom AB, Greenland
APO New York 09121
Support base, ADC

South Ruislip AS, United Kingdom
APO New York 09125
Hq. 3d Air Force, USAFE (until July '72)

Spangdahlem AB, West Germany
APO New York 09123
Tactical fighter base, USAFE

Tachikawa AB, Japan
APO San Francisco 96323
Support base, PACAF

Taegu AB, South Korea
APO San Francisco 96213
Combat support base, PACAF

Tainan AS, Taiwan
APO San Francisco 96340
Support base, PACAF

Taipei AS, Taiwan
APO San Francisco 96280
Air division base, PACAF

Tan Son Nhut Airfield, South Vietnam
APO San Francisco 96222
US Military Assistance Command (MACV)

Tan Son Nhut Airfield, South Vietnam
APO San Francisco 96307
Hq. 7th Air Force, PACAF
Combat support base, PACAF
Rescue and recovery base, MAC

Tempelhof Airport, Berlin, Germany
APO New York 09611
Support base, USAFE

Thule AB, Greenland
APO New York 09023
Aerospace defense base, ADC

Torrejon AB, Spain
APO New York 09238
Hq. 16th Air Force, USAFE
Tactical fighter base, USAFE

Ubon Airfield, Thailand
APO San Francisco 96304
Tactical fighter base, PACAF

Udorn Airfield, Thailand
APO San Francisco 96237
Tactical fighter/reconnaissance base, PACAF

U-Tapao Airfield, Thailand
APO San Francisco 96330
Strategic bomber base, SAC
Combat support base, PACAF

Wakkanai AS, Japan
APO San Francisco 96270
Support base, USAFSS

Wiesbaden AB, West Germany
APO New York 09332
Support base, USAFE
Weather base, MAC

Yamato AS, Japan
APO San Francisco 96323
Support base, PACAF

Yokota AB, Japan
APO San Francisco 96328
Support base, PACAF

Yongsan AB, South Korea
APO San Francisco 96301
Hq. United Nations Command/ US Forces, Korea/US 8th Army

Zaragoza AB, Spain
APO New York 09286
Tactical fighter training base, USAFE

Zweibrucken AB, West Germany
APO New York 09052
Tactical fighter/reconnaissance base, USAFE

Airman's Bookshelf

Memoir of the Ugly American

In the Midst of Wars: An American's Mission to Southeast Asia, by Maj. Gen. Edward Geary Lansdale, USAF (Ret.). Harper & Row, New York, N. Y., 1972. 386 pages. $12.50.

Edward G. Lansdale—hero of *The Ugly American*, key figure in the Pentagon Papers, and said to be the model for the nonhero in Graham Greene's *The Quiet American*—is a controversial legend of the struggle against insurgency in the Philippines and Vietnam during the early 1950s.

Lansdale, then a lieutenant colonel, was assigned to the Joint US Military Advisory Group (JUSMAG) in Manila in 1950 to aid the Philippine government in putting down the Communist-led Huk rebellion. He quickly became fast friends with Ramon Magsaysay, the new Secretary of National Defense, who was later to become President of the Philippines.

Magsaysay, with Lansdale as his intimate adviser, set out on a successful program of winning the support of the rural barrios through civic action, ridding the army of corruption and incompetence, promoting free elections, and occasional dirty tricks —like channeling faulty ammunition to Huk ambushers, whose weapons then blew up in their hands. The Huks marked Lansdale for execution, just as Vietnamese insurgents would do later on. His book contains fascinating footnotes on how to stay alive in guerrilla country.

In 1954, Lansdale was sent to Saigon to apply his unique talents in assisting the Vietnamese. Later that year, Ngo dinh Diem became Prime Minister, and, within a few months, he and Lansdale were meeting almost daily. Lansdale's influence was considerable, and he often served as the go-between for Diem's dealings with rebel leaders. Lansdale was not noticeably slowed down by hostility toward him by some of the French, who still ran Vietnam as a colony, and, at times, by other members of the American mission.

Lansdale felt strongly that conventional military forces were an inadequate response to Communist insurgency—an idea that was to have great impact on US thinking long after Lansdale left Vietnam in 1956. Regrettably, he does not report in this book on his experiences as a minister at the US embassy in Saigon, 1965–68, nor comment very extensively on American involvement in the Vietnam War.

Those who disagree with Lansdale's basic thesis—that democracy is exportable—will not like this book. Few will deny, however, that it is an important book and a highly readable personal memoir by a man who figured significantly in recent Southeast Asian history. It is particularly interesting to see key characters of the period in a context somewhat different from that in which they are usually depicted. Furthermore, this book will appeal to anyone who has worked overseas in civic-action efforts, especially in Southeast Asia. I recommend it.

—Reviewed by Capt. John T. Correll, USAF. Captain Correll is assigned to AIR FORCE *Magazine under the Education With Industry (EWI) program.*

Investment in the Future

Dividends from Space, by Frederick I. Ordway III, Carsbie C. Adams, and Mitchell R. Sharpe. Thomas Y. Crowell, New York, N. Y., 1971. 309 pages with appendix, bibliography, and index. $10.00.

US investment in space activity to date, by most accounts, has topped the $40 billion mark. Whether that investment has been good or bad—whether it will pay off in fabulous dividends, some of which are yet to be comprehended—these are questions answered affirmatively with hardly a qualification in *Dividends from Space.* (It should be noted that the credentials of the Alabama-based authors, Ordway, Adams, and Sharpe, qualify them to make their judgments so confidently.)

The spectrum of benefits described is indeed far-ranging. We are almost overwhelmed by the listing of new products and processes derived from the growing fund of technological knowledge identified most closely with space efforts. And there is also much material about the many uses, scientific and otherwise, to which orbiting spacecraft have been or are going to be used. Yes, the evidence presented in *Dividends* is impressively massive.

And yet, one wishes the presentation had been more careful, less prone to grab at anything and everything to buttress conclusions about the lasting worth of our great adventures in space —conclusions that so obviously are beyond refutation. For example, statements on page 58 to the contrary, *vitallium* is *not* an alloy first developed for use in space but rather one first applied to dentures and such in the early thirties and then in WW II in turbine buckets.

An error perhaps more fundamental is the claim that it was the space age that brought forth the "systems approach" to management. Certainly, in Apollo and other great NASA projects, the "systems approach" was successfully employed, but this was use of a kind of engineering management that earlier had been brought to a high state of practical utility by the military services.

Although this volume suffers from a lack of care that the subject deserves, the fact remains that the authors have packed within the covers of a single book a compilation of "dividends from space"—demonstrated and in hand, expected with confidence, anticipated with hope—that does make for fascinating reading.

As S. Fred Singer, himself a much respected pioneer worker in the space sciences, writes in a foreword: "It is probably too early to judge. But in a century studded with all kinds of scientific and technological achievements—electronic, nuclear, genetic, to name a few—surely our exploration away from the Earth and into outer space may rank as the most momentous of all."

—Reviewed by Walter T. Bonney, former Director of Information for NASA, and later for Aerospace Corp.

A Special American Heritage

South to a Very Old Place, by Albert Murray. McGraw-Hill, New York, N. Y., 1971. 230 pages. $7.95.

It is always refreshing to find a blue-suiter demonstrating superior excellence in an unusual field. That is exactly what Maj. Albert Lee Murray, USAF (Ret.), has done in his latest book, *South to a Very Old Place.*

In addition to his Air Force career, Al Murray developed and maintained fruitful relationships with important

figures in the nation's community of arts and letters. He has been a close friend of novelist Ralph Ellison since their college days at Tuskegee, and has had frequent associations with other famous writers—Norman Mailer, William Styron, and Robert Penn Warren. As this book shows, Murray is most proud of his heritage as an American and as a Negro.

No "Uncle Tom," he ably demonstrated this pride in his first book, *The Omni-Americans,* by soundly charging both social scientist and black polemicist with a deplorable lack of insight into black American society. In his new book, he attempts to define his American heritage by returning to his native South wherever he finds it—be it in Harlem, in conversations at Yale, or in his real hometown of Mobile, Ala.

With this in mind, Albert Murray starts south from Harlem by heading north to New Haven to talk with two white fellow Southerners, the novelist Robert Penn Warren and C. Vann Woodward, the historian. Then Murray actually heads south on a tour that takes him through much of the Deep South. At every stop he talks with prominent men, looks philosophically at the advances made by black men in the last two decades, and analyzes the changed attitudes he finds.

Murray's common-sense approach scores most effectively when he insists that young Americans of all races would do well to find a usable past within their own American heritage. Commenting on the young revolutionary polemicists who, metaphorically, run helter-skelter across the seas to find an African past, Murray writes: " 'Man, if you don't know what to do with . . . [your own] black heritage you're not likely to know what to do with any other kind either.' "

Murray avers that the young black who would be a leader must build on the past bequeathed him by his American forebears, because, as Vann Woodward writes, he will otherwise overlook the very large role played by the American Negro in shaping the destiny and culture of this country. Young black men must go beyond the soapbox to show their excellence; they must achieve as Frederick Douglas and Willie Mays achieved, and to achieve they must develop self-discipline.

America's young black people, as Major Murray suggests, need go no further than their own past to find exemplary courage, determination, and discipline. His advice might be heeded well by all young Americans.

—Reviewed by Maj. David L. Carson, Department of English, US Air Force Academy.

AFA's ANNUAL CONVENTION and AEROSPACE BRIEFINGS and DISPLAYS

SEPTEMBER 18-19-20-21
WASHINGTON, D.C.

Proudly saluting the 25th ANNIVERSARY of the United States Air Force

TENTATIVE SCHEDULE OF EVENTS

SATURDAY, SEPTEMBER 16

All Day	USAF 25th Anniversary—National Capital Area Open House & Air Show, Andrews AFB, Md.

SUNDAY, SEPTEMBER 17

All Day	USAF 25th Anniversary—National Capital Area Open House & Air Show, Andrews AFB, Md.
12:00 NN	Registration Desk Open
8:00 PM	USAF 25th Anniversary Concert, Constitution Hall

MONDAY, SEPTEMBER 18

8:00 AM	Registration Desk Open
10:00 AM	Opening Ceremony & Awards
1:00 PM	1st AFA Business Session
7:00 PM	AFA President's Reception

TUESDAY, SEPTEMBER 19

8:00 AM	Registration Desk Open
8:30 AM	2d AFA Business Session
9:00 AM	Briefings & Displays
11:45 AM	Briefing Participants' Buffet Luncheon
11:45 AM	USAF Chief of Staff Reception
12:30 PM	USAF Chief of Staff Luncheon
2:30 PM	Air Force Symposium
6:00 PM	AFA Anniversary Reception

WEDNESDAY, SEPTEMBER 20

8:00 AM	Registration Desk Open
9:00 AM	Briefings & Displays Open
11:45 AM	Briefing Participants' Buffet Luncheon
11:45 AM	USAF Secretary's Reception
12:30 PM	USAF Secretary's Luncheon
2:30 PM	USAF Reserve and Air National Guard Seminar
4:00 PM	Briefing Participants' Reception
7:00 PM	USAF Silver Anniversary Reception
8:00 PM	USAF Silver Anniversary Dinner Dance

THURSDAY, SEPTEMBER 21

9:00 AM	Briefing & Displays Open
11:45 AM	Briefing Participants' Buffet Luncheon
4:00 PM	Briefing Participants' Reception

AFA's 1972 Annual National Convention and Aerospace Briefings and Displays, being held at the Sheraton-Park Hotel, September 18-21, will be highlighted by the 25th Anniversary of the United States Air Force. The Air Force will hold a two-day National Capital Area Open House and Air Show at Andrews AFB, Maryland, on Saturday, September 16 and Sunday, September 17. The special Anniversary observances will also be highlighted by an Air Force Band Concert at Constitution Hall on Sunday evening, September 17.

All reservation requests for rooms and suites should be sent directly to the Sheraton-Park Hotel's Reservation Office, 2660 Woodley Road, N.W., Washington, D.C. 20008. Be sure to refer to AFA's Annual National Convention when requesting your reservations, otherwise, your reservation request may not be accepted by the hotel.

AFA's Annual National Convention activities will include luncheons for the Secretary of the Air Force and the Air Force Chief of Staff, an AFA Reception, and the USAF's Silver Anniversary Reception and Dinner Dance. The National Convention will also include AFA's Business Sessions, an Air Force Symposium, an Air Force Reserve and Air National Guard Seminar, and several other events, including the President's Reception for AFA's Chapter Officers and Official Convention Delegates, The Annual Outstanding Airmen Dinner, and the Chief Executives' Buffet Reception.

With the special observances of the Air Force's 25th Anniversary, a record attendance is expected at AFA's National Convention, and we urge you to make your reservations at the Sheraton-Park Hotel as soon as possible.

AFA'S 1972 EXPOSITION OVER 80% SOLD OUT

AEROSPACE/DEFENSE COMPANIES TO PRESENT THEIR "HARDWARE OF THE SEVENTIES"!

Some 50 companies will present their latest advances in aerospace/defense hardware at the 1972 Aerospace Development Briefings and Displays, to be held in conjunction with AFA's 26th Annual National Convention at the Sheraton-Park Hotel in Washington, September 18-21.

The Briefings and Displays offer a unique combination; the physical presentation of aerospace/defense equipment . . . and . . . informative company briefings, in the booth, to key military, government, and industry personnel. Morning attendees are assembled into parties of 20 persons each and are escorted from briefing to briefing on schedule. Afternoon attendees may select any presentation offered in any order of preference.

Last year, 5,483 persons participated in the Briefings and Displays, including 189 General Officers and Admirals and 549 Colonels and Naval Captains. The Secretary and the Chief of Staff of the Air Force were honored at a reception in the Exhibit Hall, attended by some 2,000 guests.

This year's Convention salutes the 25th Anniversary of the United States Air Force, established in 1947; thus attendance at the 1972 Briefings and Displays is expected to be the largest yet. The Briefing concept was developed by AFA in 1964 and has been widely acclaimed for its ability to guarantee exhibitors an audience in their booth on schedule.

Over 25,000 square feet of display space have already been assigned for 1972. Companies wishing to participate in the Briefing and Display Program should contact AFA as soon as possible. A minimum of 300 square feet is required to conduct briefings; no minimum is required to display only.

To Reserve Briefing/Display Space, Write or Call:

AFA Exposition Headquarters

Attn: Bob Whitener
1000 Connecticut Ave., NW, Suite 1107, Washington, D.C. 20036
Telephone: (202) 833-9440

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Newport Beach, California

By Don Steele
AFA AFFAIRS EDITOR

THE BILLY MITCHELL CHAPTER, Wisconsin . . .

cited for effective programming in support of the mission of AFA, most recently exemplified in its Billy Mitchell Memorial Award Dinner.

Edward D. Williams, center, an aviation reporter with the Milwaukee Journal, *receives the Billy Mitchell Memorial Award from Leonard Dereszynski, left, as Billy Mitchell Chapter President Kenneth Jacobi looks on. (See accompanying story.)*

Milwaukee *Journal* aviation reporter **Edward D. Williams** received the annual **Billy Mitchell Memorial Award** from AFA's **Billy Mitchell Chapter** at its Sixteenth Annual Billy Mitchell Memorial Award Dinner held at the Schlitz Terminal Clubhouse in Milwaukee on February 23.

The award is presented annually to a Wisconsin native who has made an outstanding contribution to aerospace. Mr. Williams was cited for his contributions to the wider understanding of aviation through his frequent articles covering both civilian and military aviation.

Robert Brown, vice president of Delco Electronics, was the featured speaker. Mr. Brown was introduced by **Warren P. Knowles,** former Governor of Wisconsin. **Taylor Benson,** Department of City Development, was master of ceremonies and cochairman. Chapter President and cochairman **Kenneth W. Jacobi** gave the welcoming remarks, and **Leonard Dereszynski,** a Past President of the Chapter and of the Wisconsin AFA, presented awards.

Mr. Williams joins a list of distinguished civilian and military recipients of the Billy Mitchell Memorial Award, which includes **Gen. Nathan Twining,** USAF (Ret.), former Chairman of the Joint Chiefs of Staff; **Gen. Laurence Kuter,** USAF (Ret.), former Commander of the North American Air Defense Command; **Gen. Leighton I. Davis,** USAF (Ret.), former Commander of AFSC's National Range Div.; Astronauts **James Lovell** and **Donald "Deke" Slayton; Brig. Gen. Joseph J. Lingle,** Commander, 440th Tactical Airlift Wing, and a former AFA National Director; and **James H. Straubel,** AFA's Executive Director and Publisher of AIR FORCE Magazine.

AFA is proud of this annual program and, in recognition of the Chapter's outstanding efforts, we are pleased to name the Billy Mitchell Chapter as AFA's "Unit of the Month" for May.

Maj. Gen. John A. Lang, Jr., USAFRES, a former administrative assistant to the Secretary of the Air Force, recently appointed Secretary of Military and Veterans Affairs for the state of North Carolina, was guest speaker at a recent dinner meeting sponsored by the **Pope Chapter** of Fayetteville, N. C.

In his address, General Lang predicted smaller but more productive armed forces for the United States in the future, but warned that America would have to meet the challenge of Soviet advances in weaponry.

"The United States has to be more than strong enough not only to carry on a war against these forces—it has to be strong enough to keep such a war from ever starting," he said.

During the program, **Robert O. Butler,** a Past President of the Chapter, announced that the Chapter would sponsor a scholarship program for graduates of AFJROTC programs in three local high schools. Student representatives of the three schools—**E. E. Smith, Pinecrest, and Terry Sanford High Schools**—were special guests at the meeting.

Col. Arthur Hurr, USAF (Ret.), chairman of the Chapter's membership committee, presented an AFA membership together with an honorary membership in the Chapter to **Lt. Gen. John H. Hay, Jr.,** USA, Commander of the XVIIIth Airborne Corps at neighboring Fort Bragg.

Special guests included **Maj. Gen. George S. Blanchard,** USA, Commander, 82d Airborne Division, Fort

Maj. Gen. John A. Lang, Jr., USAFRES, second from left, guest speaker at the Pope Chapter's recent dinner meeting, visits with, from left, Chapter President Monroe Evans; AFJROTC Cadet Col. Lagoge Graham of E. E. Smith High School; Lt. Col. Richard C. Seuhr, USAF (Ret.), Aerospace Education Instructor at the school; and Col. Billie J. Norwood, Commander of the 317th Tactical Airlift Wing at Pope AFB, N. C.

AFA News

Lt. Gen. James T. Stewart, left, Commander, Aeronautical Systems Division (AFSC), Wright Memorial Chapter President Edward Nett, center, and Past President Gerard Kaufhold admire the "Stewart Open" trophy. Donated by the Chapter, it is on permanent display at the AF Museum and contains the gross and net winners in the annual golf tourney held at Wright-Patterson AFB. Proceeds go to the AF Museum; $2,500 last year. This year's tournament is set for May 24.

Bragg; **Col. Billie J. Norwood,** Commander, 317th Tactical Airlift Wing, Pope AFB; and **Lt. Col. Richard C. Seuhr,** USAF (Ret.), Aerospace Education Instructor at E. E. Smith High School.

The **AF Enlisted Men's Widows and Dependents Home Foundation, Inc.,** Washington, D. C., recently received a $500 check from the Air Force Association in ceremonies at Hq. Air Force Systems Command at Andrews AFB, Md.

The contribution was a portion of the proceeds from the Third Annual Air Force Association **Charity Golf Tournament** held at Norton and March Air Force Bases, Calif., and sponsored by AFA's **San Bernardino Area and Riverside Chapters.**

Maj. Gen. Kenneth W. Schultz, Deputy Chief of Staff for Systems, Hq. AFSC, presented the check to **CMSgt. Dominick N. Masone,** chairman of the foundation. General Schultz served as the chairman of the Air Force advisory committee for the golf tournament while he was assigned to Norton.

In three years, the tournament has raised more than $15,000 for Air Force-oriented charities. In addition to the AF Enlisted Men's Widows and Dependents Home Foundation, recipients include the Air Force Village Foundation, AFA's Aerospace Education Foundation, Welfare and Chaplain's Funds at Norton and March, and the San Bernardino Armed Forces Center.

Maj. Gen. Kenneth W. Schultz, DCS/ Systems, Hq. Air Force Systems Command, presents a $500 check to CMSgt. D. N. Masone, Chairman of the AF Enlisted Men's Widows and Dependents Home Foundation. Looking on, James H. Straubel, left, AFA Executive Director, and CMSgt. William M. Goyer, a member of the Foundation's board.

CROSS COUNTRY:

• More than 120 AFAers and guests attended the **Mt. Clemens Chapter's** annual dinner observing AFA's anniversary. **Dr. Vincent C. Chrypinski,** Professor of Political Science at the University of Windsor, was the guest speaker. Dr. Chrypinski spoke on "New Aspects of International Developments." His remarks included a comparison of military spending by the United States and the USSR. Chapter President **Marjorie O. Hunt** presented POW Awards of Merit to **Mr. and Mrs. L. F. Biddleman** in absentia, and to **Leonard Pellegrom** for their contributions of printed materials to the Chapter's MIA/POW program. Among the many distinguished guests were **Col. George T. James,** Commander, 28th Artillery Group, Selfridge Air National Guard Base; **Col. Leonard Baldock,** Senior Reserve Adviser to Department Chief of Operations and Reserve of the Canadian Armed Forces, and a past president of the Royal Canadian Air Force Association; **Bernard D. Osborne,** Vice President for AFA's Great Lakes Region; and **Richard Mossoney,** Vice President, Michigan AFA.

• At a banquet hosted by AFA's **Santa Monica Chapter,** California AFA President **Floyd Damman** installed the 1972 officers for the **Pasadena, Air Harbor, General L. E. Thomas, Antelope Valley, and Santa Monica Chapters. Robert S. Lawson,** Vice President for AFA's Far West Region, made brief remarks. Special guests included **AFROTC Cadets and Angels** from UCLA; and **Tillie Henion** and **Gordon Meinert,** California AFA Vice President (South) and Treasurer, respectively.

IN SYMPATHY . . . AFA extends its deepest sympathy to the family and friends of **Walter H. Andrews** of Summerville, who died Wednesday morning, March 22, at the Medical University Hospital in Charleston, S. C. Retired from the USAF as a colonel, Mr. Andrews was a charter member of the **Charleston Chapter,** a Past President of that Chapter, and a former Vice President of the South Carolina AFA. He was known as "Mr. AFA" in Charleston, and was the motivating force behind many of the Charleston Chapter's projects. AFA and the Charleston Chapter have lost a dedicated and enthusiastic member.

COMING EVENTS . . . **Florida AFA Convention,** the Tides Hotel & Bath Club, Redington Beach, May 5–7 . . . **Alabama AFA Convention,** Lt. Gen. George B. Simler, Commander, Air Training Command, to be featured speaker, Holiday Inn, Selma, May 12–14 . . . **Washington AFA Convention,** AFA National President Martin M. Ostrow to be featured speaker, Aggies Motel, Port Angeles, May 19–20 . . . **Utah AFA Symposium and Convention,** Salt Lake City, May 25–27 . . . **South Carolina AFA Convention,** Shaw AFB, May 27.

AFA's Dinner honoring the **Outstanding Squadron at the Air Force Academy,** Tennessee Ernie Ford to be the Master of Ceremonies, the Broadmoor, Colorado Springs, Colo., June 3 . . . **Idaho AFA Convention,** AFA National President Martin M. Ostrow to be featured speaker, Boise, June 9 . . . **Texas AFA Convention,** Abilene, June 16–17.

Virginia AFA Convention, Executive Motor Hotel, Richmond, June 17 . . . **Pennsylvania AFA Convention,** Holiday Inn, Sewickley, June 23–24 . . . **New York AFA Convention,** Plattsburgh, June 24 . . . **Michigan AFA Convention,** Ramada Inn, Detroit, September 9 . . . AFA's Twenty-sixth **National Convention and Aerospace Development Briefings,** Sheraton-Park Hotel, Washington, D. C., September 17–21. ■

AFA STATE CONTACTS

Following each state name, in parentheses, are the names of the localities in which AFA Chapters are located. Information regarding these Chapters, or any place of AFA's activities within the state, may be obtained from the state contact.

ALABAMA (Auburn, Birmingham, Huntsville, Mobile, Montgomery, Selma, Tuscaloosa): **John H. Haire,** 2604 Bonita Circle, Huntsville, Ala. 35801 (phone 453-5499).

ALASKA (Anchorage, Fairbanks, Kenai): **Gordon Wear,** Box 777, Fairbanks, Alaska 99701 (phone 452-4411).

ARIZONA (Phoenix, Tucson): **William P. Chandler,** One S. Norton Ave., Tucson, Ariz. 85719 (phone 624-8385).

ARKANSAS (Blytheville, Fort Smith, Little Rock): **Frank A. Bailey,** 605 Ivory Dr., Little Rock, Ark. 72205 (phone 988-3432).

CALIFORNIA (Burbank, Edwards, Fairfield, Fresno, Harbor City, Hawthorne, Long Beach, Los Angeles, Merced, Monterey, Novato, Orange County, Palo Alto, Pasadena, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, Santa Barbara, Santa Clara County, Santa Monica, Tahoe City, Vandenberg AFB, Van Nuys, Ventura): **Floyd Damman,** 11055 Candor St., Cerritos, Calif. 90701 (phone 675-4611, ext. 2274).

COLORADO (Boulder, Colorado Springs, Denver, Pueblo): **Roy A. Haug,** Mt. Bell 1st Nat'l Bank Bldg., Rm. 402, Pikes Peak at Tejon, Colorado Springs, Colo. 80903 (phone 636-4296).

CONNECTICUT (Torrington): **John McCaffrey,** 117 Bridge St., Groton, Conn. 06340 (phone 739-7922).

DELAWARE (Wilmington): **Vito A. Panzarino,** Greater Wilmington Airport, Bldg. 1504, Wilmington, Del. 19720 (phone 328-1208).

DISTRICT OF COLUMBIA (Washington, D. C.): **Tom Turner,** c/o Fairchild Industries, Germantown, Md. 20767 (phone 948-9600).

FLORIDA (Bartow, Broward, Daytona Beach, Ft. Walton Beach, Gainesville, Homestead, Jacksonville, Miami, Orlando, Panama City, Patrick AFB, Redington Beach, Sarasota, Tallahassee, Tampa): **Daniel F. Callahan,** Deputy Director of Administration, Kennedy Space Center, Fla. 32899 (phone 867-3740).

GEORGIA (Athens, Atlanta, Savannah, St. Simons Island, Valdosta, Warner Robins): **H. L. Everett,** 822 Capt. Kell Dr., Macon, Ga. 31204 (phone 929-3035, ext. 5509).

HAWAII (Honolulu): **Hunter Harris, Jr.,** Hilton Lagoon, Apt. 3-G, Honolulu, Hawaii 96815 (phone 949-5941).

IDAHO (Boise, Burley, Pocatello, Twin Falls): **Carl W. Tipton,** 1511 Juanita, Boise, Idaho 83706 (phone 344-0348).

ILLINOIS (Belleville, Champaign, Chicago, Elmhurst, Deerfield, O'Hare Field): **M. Lee Cordell,** 1909 Kenilworth Ave., Berwyn, Ill. 60402 (phone 956-2000, ext. 2129).

INDIANA (Indianapolis): **Oliver K. Loer,** 268 S. 800 W., Swayzee, Ind. 46986 (phone 922-7136).

IOWA (Cedar Rapids, Des Moines): **Ric Jorgensen,** 4005 Kingsmen, Des Moines, Iowa 50311 (phone 255-7656).

KANSAS (Topeka, Wichita): **Earl Clark,** 4512 Speaker Rd., Kansas City, Kan. 66106 (phone 342-7030).

LOUISIANA (Alexandria, Baton Rouge, Bossier City, Monroe, New Orleans, Ruston, Shreveport): **Ralph F. Chaffee,** 4431 Fern Ave., Shreveport, La. 71104 (phone 865-0086).

MARYLAND (Baltimore): **Richard Boyd,** 2101C Town Hill Rd., Baltimore, Md. 21234 (phone 661-7271).

MASSACHUSETTS (Boston, Falmouth, Florence, Lexington, L. G. Hanscom Fld., Taunton, Worcester): **James Fiske,** 514 Lowell St., Lynnfield Ctr., Mass. 01740 (phone 536-2800).

MICHIGAN (Dearborn, Detroit, Kalamazoo, Lansing, Mount Clemens, Sault Ste. Marie): **Stewart Greer,** 18690 Marlowe Ave., Detroit, Mich. 48235 (phone 273-5115).

MINNESOTA (Duluth, Minneapolis, St. Paul): **Victor Vacanti,** 8941 10th Ave., Minneapolis, Minn. 55420 (phone 772-2472).

MISSISSIPPI (Biloxi, Jackson): **M. E. Castleman,** 5207 Washington Ave., Gulfport, Miss. 39501 (phone 863-6526).

MISSOURI (Kansas City, Springfield, St. Louis): **Rodney G. Horton,** 4314 N. E. 53d St., Kansas City, Mo. 64119 (phone 452-7834).

MONTANA (Great Falls): **George Page,** P. O. Box 3005, Great Falls, Mont. 59401 (phone 453-7689).

NEBRASKA (Lincoln, Omaha): **Lloyd Grimm,** P. O. Box 1477, Omaha, Neb. 68101 (phone 553-1812).

NEVADA (Las Vegas): **James K. Johnson,** 880 E. Sahara Ave., Suite 202, Las Vegas, Nev. 89105.

NEW HAMPSHIRE (Pease AFB): **R. L. Devoucoux,** 270 McKinley Rd., Portsmouth, N. H. 03801 (phone 624-4011).

NEW JERSEY (Andover, Atlantic City, Belleville, Chatham, E. Rutherford, Fort Monmouth, Jersey City, McGuire AFB, Newark, Trenton, Wallington, West Orange): **Amos L. Chalif,** 162 Lafayette, Chatham, N. J. 07928 (phone 635-5188).

NEW MEXICO (Alamogordo, Albuquerque): **Bernice S. Barr,** 7413 Vista Del Arroyo, Albuquerque, N. M. 87109 (phone 296-5971).

NEW YORK (Albany, Bethpage, Binghamton, Buffalo, Chautauqua, Elmira, Griffiss AFB, Hartsdale, Ithaca, Long Island, New York City, Patchogue, Plattsburgh, Riverdale, Rochester, Staten Island, Syracuse): **Gerald V. Hasler,** P. O. Box 11, Johnson City, N. Y. 13760 (phone 754-3435).

NORTH CAROLINA (Charlotte, Fayetteville, Goldsboro, Raleigh): **H. Fred Waller, Jr.,** 3706 Melrose Dr., Raleigh, N. C. 27604 (phone 832-6014).

NORTH DAKOTA (Grand Forks, Minot): **John O'Keefe,** P. O. Box 1177, Grand Forks, N. D. 58201 (phone 772-2472).

OHIO (Akron, Canton, Cincinnati, Cleveland, Columbus, Dayton, Toledo, Youngstown): **Robert H. Maltby,** 1112 Wenbrook Dr., Dayton, Ohio 45429 (phone 255-2107 or 2726).

OKLAHOMA (Altus, Enid, Oklahoma City, Tulsa): **Edward McFarland,** Suite 1100, Shell Bldg., Tulsa, Okla. 74119 (phone 583-1877).

OREGON (Corvallis, Portland): **John R. Nall,** 517 S. W. Stark, Portland, Ore. 97201 (phone 648-4204).

PENNSYLVANIA (Beaver Falls, Erie, Homestead, Lewistown, New Cumberland, Philadelphia, Pittsburgh, Washington, Willow Grove): **Robert L. Carr,** 2219 Brownsville Rd., Pittsburgh, Pa. 15210 (phone 884-0400).

RHODE ISLAND (Warwick): **Matthew Puchalski,** Box 102, Charleston, R. I. 02813 (phone 737-2100, ext. 27).

SOUTH CAROLINA (Charleston, Columbia, Myrtle Beach, Sumter): **James F. Hackler, Jr.,** Box 2065, Myrtle Beach, S. C. 29577 (phone 449-3331).

SOUTH DAKOTA (Rapid City, Sioux Falls): **Don Hedlund,** 2701 W. 24th St., Sioux Falls, S. D. 57105 (phone 336-1376).

TENNESSEE (Memphis, Nashville, Tullahoma): **James W. Carter,** Williamsburg Rd., Rt. 3, Brentwood, Tenn. 37027 (phone 834-2008).

TEXAS (Abilene, Austin, Big Spring, Corpus Christi, Dallas, Del Rio, El Paso, Fort Worth, Houston, Lubbock, San Angelo, San Antonio, Sherman, Waco, Wichita Falls): **Herbert G. Bench,** 1507 Pacific, Suite 500, Dallas, Tex. 75201 (phone 747-6001).

UTAH (Brigham City, Clearfield, Ogden, Salt Lake City, Provo): **Glen L. Jensen,** 1293 W. Fifth South, Salt Lake City, Utah 84104 (phone 359-4485).

VERMONT (Burlington): **R. F. Wissinger,** P. O. Box 2182, S. Burlington, Vt. 05401 (phone 863-4494).

VIRGINIA (Arlington, Danville, Harrisonburg, Langley AFB, Lynchburg, Norfolk, Richmond, Roanoke): **Richard C. Emrich,** 6416 Noble Dr., McLean, Va. 22101 (phone 426-3020).

WASHINGTON (Bellevue, Port Angeles, Seattle, Spokane, Tacoma): **Norman D. Rowley,** 7425 Ruby Dr., S. W., Tacoma, Wash. 98498 (phone 593-3713).

WISCONSIN (Madison, Milwaukee): **Gene Grobschmidt,** 4840 S. Howell Ave., Milwaukee, Wis. 53207 (phone 483-6462).

WYOMING (Cheyenne): **Fred Milam,** Box 745, Cheyenne, Wyo. 82001 (phone 634-2134).

AFA'S BOLDEST, NEWES

EXTRA INCOME

THREE PLANS TO CHOOSE FROM

☐ MEMBER ☐ MEMBER & SPOUSE ☐ ENTIRE FAMILY

WHAT IS AFA EXTRA INCOME HOSPITAL INSURANCE?

For every day you (or members of your family, if you have elected family coverage) are hospitalized AFA sends you money for up to 365 days . . . money you can use as you wish, without restrictions of any kind.

WHO IS ELIGIBLE?

Any United States citizen under the age of 60 who is or becomes a member of the Air Force Association is eligible to apply for AFA Extra Income Hospital Insurance for himself, his spouse, and unmarried children more than 14 days and less than 21 years of age.

HOW ARE BENEFITS PAID?

Once AFA receives verification that hospitalization has taken place, you will receive a benefit check within seven days with additional checks thereafter on a weekly basis upon AFA receiving certification of your continued hospitalization.

FIRST TIME OFFERED TO ACTIVE DUTY MILITARY PERSONNEL

HOW MUCH EXTRA INCOME DO YOU NEED? CHOOSE THE BENEFIT AMOUNT YOU REQUIRE FROM THIS FLEXIBLE GROUP PLAN!

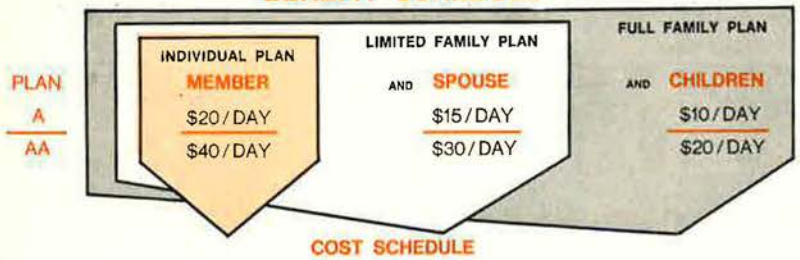
1. You are the key to family finances. How much extra money would your family need if you were hospitalized? Check Plans A-1 and AA-1.

2. Does part of the family income depend on a working spouse? Would a cook, or maid or housekeeper be needed during a wife's hospitalization? How much would this, and other expenses cost? Check Plans A-2 and AA-2.

3. If you have a family, you should consider providing extra income for children's hospitalization. Accidents involving whole families *do* happen, especially with military families living around the world. Check Plans A-3 and AA-3.

And remember: Benefits are paid up to 365 days of hospital confinement for *each* accident or sickness for *each* insured person while the patient is under the care of a legally qualified Doctor of Medicine.

BENEFIT SCHEDULE



COST SCHEDULE

INDIVIDUAL PLAN — PLAN A-1 — *Member: $20 per day*

Member's Age	Annual	Semi-Annual
Under 40	$ 29.00	$15.50
40-49	$ 37.00	$19.50
50-59	$ 53.00	$27.50
60-64	$ 76.00	$39.00

LIMITED FAMILY PLAN — PLAN A-2 — *Member: $20 per day; Spouse: $15 per day*

Annual	Semi-Annual
$ 59.00	$ 30.50
$ 72.00	$ 37.00
$103.00	$ 52.50
$147.00	$ 74.50

FULL FAMILY PLAN — PLAN A-3 — *Member: $20 per day; Spouse: $15 per day; Children: $10 per day*

Annual	Semi-Annual
$ 74.00	$ 38.00
$ 86.00	$ 44.00
$116.00	$ 60.00
$162.00	$ 82.00

PLAN AA-1 — *Member: $40 per day*

Member's Age	Annual	Semi-Annual
Under 40	$ 54.00	$28.00
40-49	$ 68.00	$35.00
50-59	$100.00	$51.00
60-64	$147.00	$74.50

PLAN AA-2 — *Member: $40 per day; Spouse: $30 per day*

Annual	Semi-Annual
$107.00	$ 54.50
$132.00	$ 67.00
$195.00	$ 98.50
$284.00	$143.00

PLAN AA-3 — *Member: $40 per day; Spouse: $30 per day; Children: $20 per day*

Annual	Semi-Annual
$134.00	$ 68.00
$159.00	$ 80.50
$222.00	$112.00
$312.00	$157.00

WHY DO YOU NEED EXTRA INCOME HOSPITAL INSURANCE?

Hospital costs for Non Military Families are climbing out of sight!

In 1966, according to the American Hospital Association, average *total cost* per hospital admission was $380.39 — *up 412%* in just 20 years.

Average 1966 cost per hospital day, over an average hospitalization of 7.9 days, was $48.15 — a figure which includes only basic costs.

And costs are going higher. Other authorities estimate that average cost per hospital day may reach $100 by 1980.

Would your present hospital benefits begin to cover this cost? Do they even cover today's costs?

Military Families Can Have Severe Money Losses Caused By Hospitalization

Military families as well as civilian families can be financially hurt by the indirect expenses of hospitalization and serious illness.

Even if every cent of direct hospital cost is covered by government benefits (or hospital insurance) there may be hundreds or thousands of dollars in indirect losses. For example:

Loss of income, especially when more than one member of the family works

Extra travel expense (sometimes for long distances) for other family members

Cost of housekeeper or "sitters"

Special diets, sometimes for long periods

Expense of special home care.

AFA EXTRA INCOME HOSPITAL INSURANCE PROVIDES THIS MONEY. BENEFITS ARE PAID DIRECTLY TO YOU — AND YOU USE THIS MONEY TO BEST SUIT YOUR NEEDS.

SURANCE PROGRAM

HOSPITAL INSURANCE

Pays CASH benefits up to $40 per hospital day for each insured person!

All AFA members — military and civilian — and their families are eligible.

OTHER BENEFITS

Protected AFA members may continue their coverage at the low, group rate to Age 65, or until they become eligible for Medicare, whichever is earlier. Hospitalization for **all** sicknesses and accidents is covered, except for a few standard exceptions listed under "Exclusions."

LIMITATIONS

Hospital confinements separated by less than three months for the same or related conditions will be considered continuations of the same confinement.

Coverage will continue through the life of the master policy unless terminated for whichever of the following reasons occurs first for the protected person: (a) attains age 65; or (b) becomes eligible for Medicare; or (c) AFA membership dues are due and unpaid; or (d) a premium payment is due and unpaid. For dependents, coverage will continue through the life of the master policy unless terminated for whichever of the following reasons occurs first: (a) such dependent ceases to be an eligible dependent; or (b) the protected person's insurance terminates hereunder; or (c) the dependent spouse either attains age 65 or becomes eligible for Medicare; or (d) any required dependent premium payment is due and unpaid.

EXCLUSIONS

The plan does not cover losses resulting from (1) declared or undeclared war or act of war; (2) service in the armed forces of a country *other than the United States;* (3) acts of intentional self destruction or attempted suicide while sane or insane; (4) pregnancy (including childbirth or resulting complications); (5) confinement in any institution primarily operated as a home for the aged or engaged in the care of drug addicts or alcoholics; (6) illnesses for which the insured has received medical treatment or advice or has taken prescribed drugs or medicines within 12 months prior to the effective date of his insurance. Coverage for such pre-existing illnesses will begin after 12 consecutive months during which he is covered under the policy and receives no such medical treatment or advice and takes no such prescribed drugs or medicine; (7) hospital confinement commencing prior to the date the protected person or eligible dependent becomes insured under this policy.

HOW TO APPLY

Fill out the attached application and mail it to AFA with your first premium payment. You may elect to pay premiums either annually or semi-annually.

APPLICATION

AFA EXTRA INCOME HOSPITAL INSURANCE

*Underwritten by **Mutual of Omaha Insurance Co.** Omaha, Nebraska*

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

DATE OF BIRTH _____ CURRENT AGE _____ HEIGHT _____ WEIGHT _____ SEX _____

PLAN OF INSURANCE

MEMBER ONLY	MEMBER & SPOUSE	MEMBER SPOUSE & CHILDREN
☐ PLAN A-1	☐ PLAN A-2	☐ PLAN A-3
☐ PLAN AA-1	☐ PLAN AA-2	☐ PLAN AA-3

METHOD OF PAYMENT ☐ Annual ☐ Semi-Annual

This insurance coverage may only be issued to AFA members. Please check the appropriate box:

☐ I am currently an AFA member.

☐ I enclose $7 for annual AFA dues (includes subscription ($6) to to AIR FORCE/SPACE DIGEST).

I enclose my initial premium in the amount of $_____ (Refer to premium table to determine correct premium amount.)

Please complete this section only if you are requesting coverage for dependents (Limited Family or Family Plan) and list only those persons for whom you are requesting coverage.

FULL NAME	RELATIONSHIP TO AFA MEMBER	SEX	DATE OF BIRTH
	WIFE (HUSBAND)		
	child		
	child		
	child		
	child		
	child		
	child		

In applying for this insurance coverage, I understand and agree that:

1. coverage shall become effective on the last day of the calendar month during which my application together with the proper premium amount is mailed to AFA.
2. only hospital confinements commencing after the effective date of insurance are covered, and
3. any condition for which I or any of my eligible dependents received medical treatment or advice or have taken prescribed drugs or medicine within twelve months prior to effective date of the insurance coverage will not be covered until the expiration of twelve consecutive months of insurance coverage without medical treatment or advice or having taken prescribed drugs or medicine for such condition.

DATE _____ SIGNATURE _____

Application must be accompanied by check or money order. Send remittance to:

INSURANCE DIVISION, AFA, 1750 PENNSYLVANIA AVE., N.W., WASHINGTON, D.C. 20006

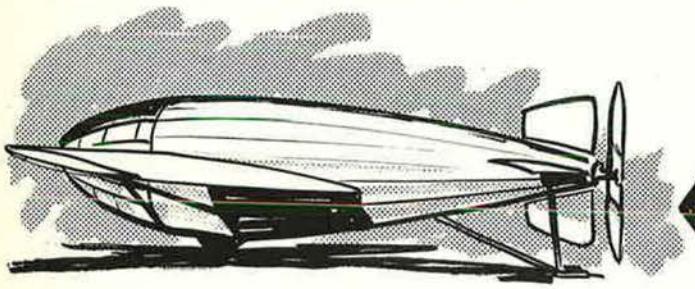
Form 2332MGC App. 5/72

Bob Stevens'

"There I was..."

This month Bob Stevens turns from things
With guns and jets and sweptback wings
To bring us—with his usual knack—
Some rare old birds, for this "Almanack" . . .

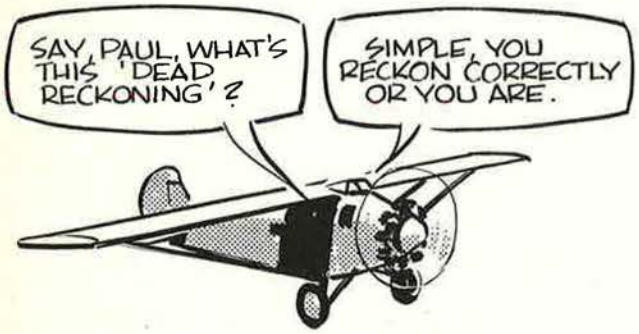
POOR ROBERT'S 'ALMANACK' (Vol. 3)



1912-A BUMPER CROP OF NEW AIRCRAFT COMPANIES SPRING UP. AMONG THE MORE NOTABLE WERE: *'CRUMLEY MULTPLANE CO.', 'PEEKSKILL HYDROSEROPLANE CO.', 'REIFLIN HEADLESS AEROPLANE CO.'* (IT'S A FACT!)

THIS WAS THE 'BULLET' BUILT BY THE GALLAUDET ENGINEERING CO., SAID TO BE CAPABLE OF FLYING ***100 mph!*** (WITH A TAILWIND)

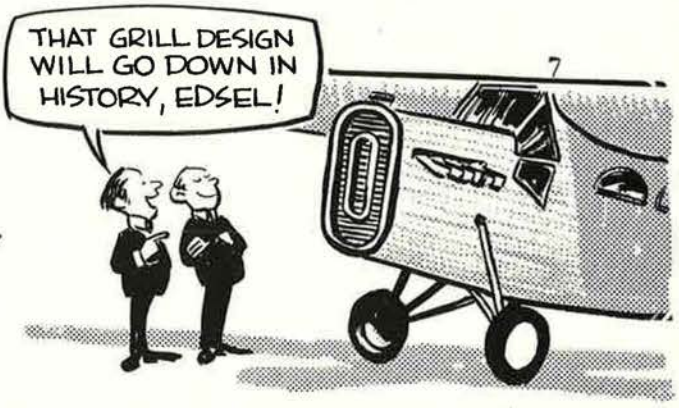
JUNE 2, 1924-U.S. ARMY 'WORLD CRUISERS' BUILT BY DOUGLAS REACH JAPAN (THEY MADE IT CLEAR AROUND THE GLOBE, TOO – *IN 175 DAYS!*)



AUG 17, 1927- MARTIN JENSEN AND CAPT. PAUL SCHLUTER FLYING THE WRIGHT-POWERED 'ALOHA' ARE SECOND - *AND* ***LAST*** – IN THE DOLE OAKLAND-TO-HONOLULU RACE!

(OF 8 ENTRANTS, 4 CRASHED ON TAKEOFF AND 2 WERE LOST AT SEA... HOW ABOUT ***THAT*** FOR ODDS?!)

1929 FORD MOTOR CO., AIRPLANE DIV., EDSEL FORD PRESIDENT, BUILDS 5-AT MODEL TRI-MOTOR - LATEST IN A LONG SERIES THAT STARTED WITH THE LIBERTY-POWERED STOUT 2-AT →



Bob Stevens

In the twisting, turning, gut-pulling world of air superiority, one fighter is designed to out-fly, out-fight and out-fox the rest.

The USAF F-15. Jet-to-jet combat demands blazing dash speeds, turn-on-a-dime agility, and the sting of weapons delivered from miles away or at close-in ranges. This is the world of the air superiority fighter – where the new F-15 will excel. ☐ The McDonnell Douglas F-15 will give U.S. Air Force pilots the capability to acquire, identify, engage and defeat any type of hostile aircraft in any weather. ☐ A carefully balanced design, the F-15 combines high speed, high turn rates, and high rate of climb. It will carry an array of missiles, a rapid-fire cannon, and the most advanced avionics available for navigation, target acquisition, fire control and defensive warning. ☐ Its advanced-technology fanjet engines will provide ample power reserve. And its weight-saving airframe is designed to withstand the G-pulling rigors of air combat maneuvers. ☐ The new F-15 has what it takes. It's a fighter pilot's fighter. **MCDONNELL DOUGLAS**