MAY 1970/ $1.25

AIR FORCE

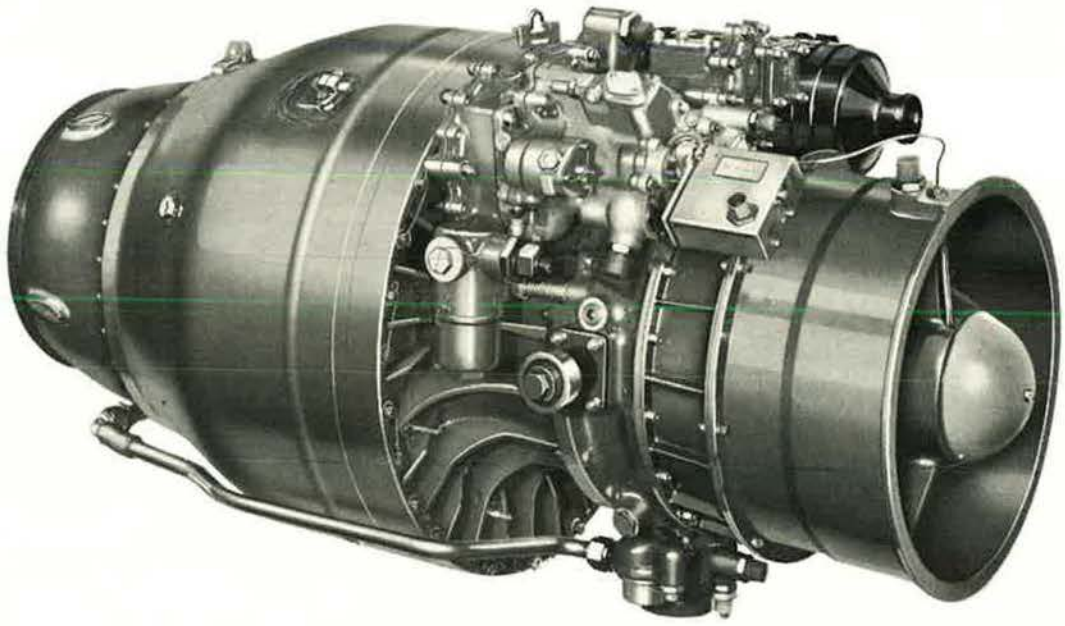
and SPACE DIGEST

The Magazine of Aerospace Power / Published by the Air Force Association

—F-4s Over Southeast Asia. A painting by Keith Ferris from the Air Force Art Collection

20th Annual Air Force Almanac

the power behind the drone



Our YJ69-T-406 turbojet engine has successfully completed its flight test program in the supersonic Firebee II target drone. The BQM-34E reached a speed of Mach 1.1 at sea level and Mach 1.5 at 60,000 feet. This same engine will also power the BQM-34F.

Naturally, we're proud of this performance. But it sure didn't come as any big surprise. We've been producing turbojet engines for unmanned aircraft ever since 1956. Of course, in those days our name was Continental Aviation and Engineering (CAE).

Today our name is Teledyne CAE. But guess what. We're still the same people who've been producing turbojet engines for unmanned aircraft ever since 1956.

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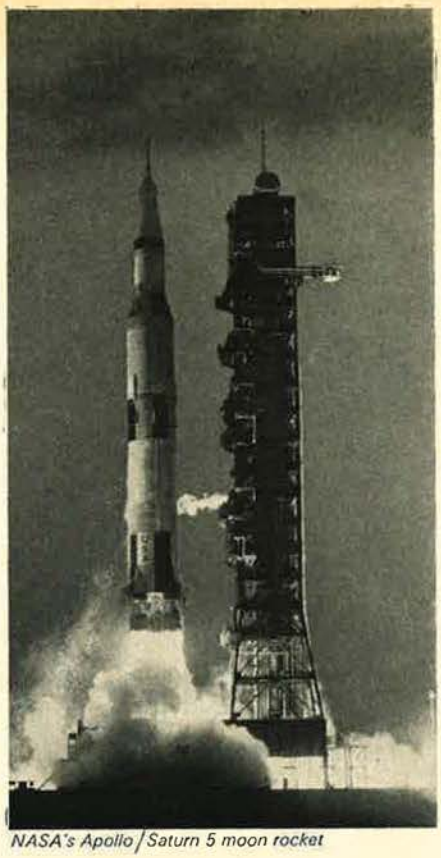
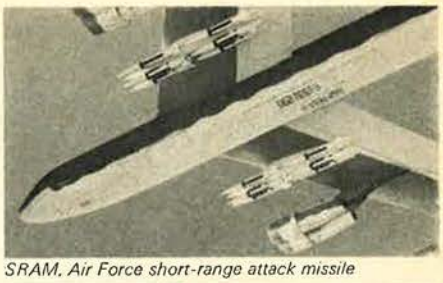
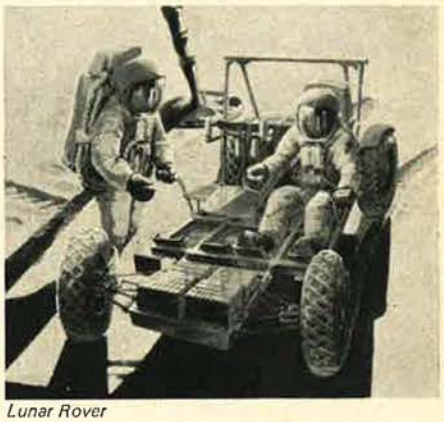
Boeing helicopter



NASA's Apollo/Saturn 5 moon rocket



SRAM, Air Force short-range attack missile



Lunar Rover

Twin turbine helicopters, built by Vertol Division, are deployed to Vietnam. They serve with U.S. Army, Navy, Marine Corps.

Burner II, USAF's new Boeing-built upper stage vehicle, is smaller, less costly than other upper stages. It's applicable to almost all USAF launch vehicles, also scientific experiments, weather, navigation or communications satellites.

NASA's Apollo/Saturn 5 moon rocket, largest, most powerful in world, launches Americans on voyages to the moon. Boeing builds the first-stage booster, integrates Saturn 5 with Apollo command, service and lunar modules, and performs systems engineering, launch and integration support for NASA on entire Saturn 5 system.

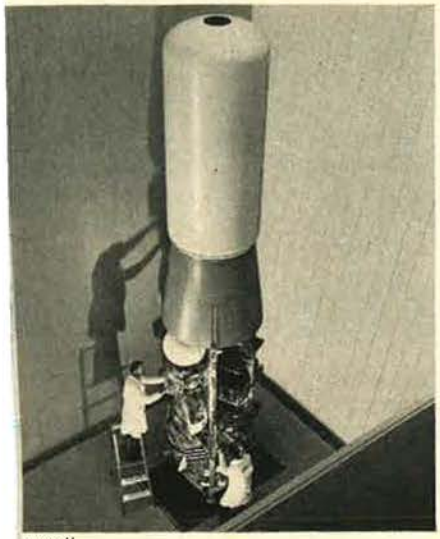
Boeing B-52 global nuclear weapons carrier and missile-launcher-bomber has demonstrated its versatility by carrying out conventional bombing missions against the Viet Cong.

SRAM. A Boeing B-52H is shown carrying U.S. Air Force short-range attack missiles. Now being flight tested, SRAM is an air-to-surface bomber-launched missile. It is designed to provide stand-off capability to assist in penetration of sophisticated enemy defense systems.

Lunar Rover. Sometime in 1971, two astronauts will set off to explore the moon surface in a Boeing two-seater Lunar Rover. The vehicle, one of four now being designed and built by Boeing for NASA, will be carried to the moon in the storage bay of a manned lunar module.

Minuteman is U.S. Air Force's quick-firing, solid-fuel ICBM. Boeing is weapon system integrator, responsible for assembly, test, launch control and ground support systems.

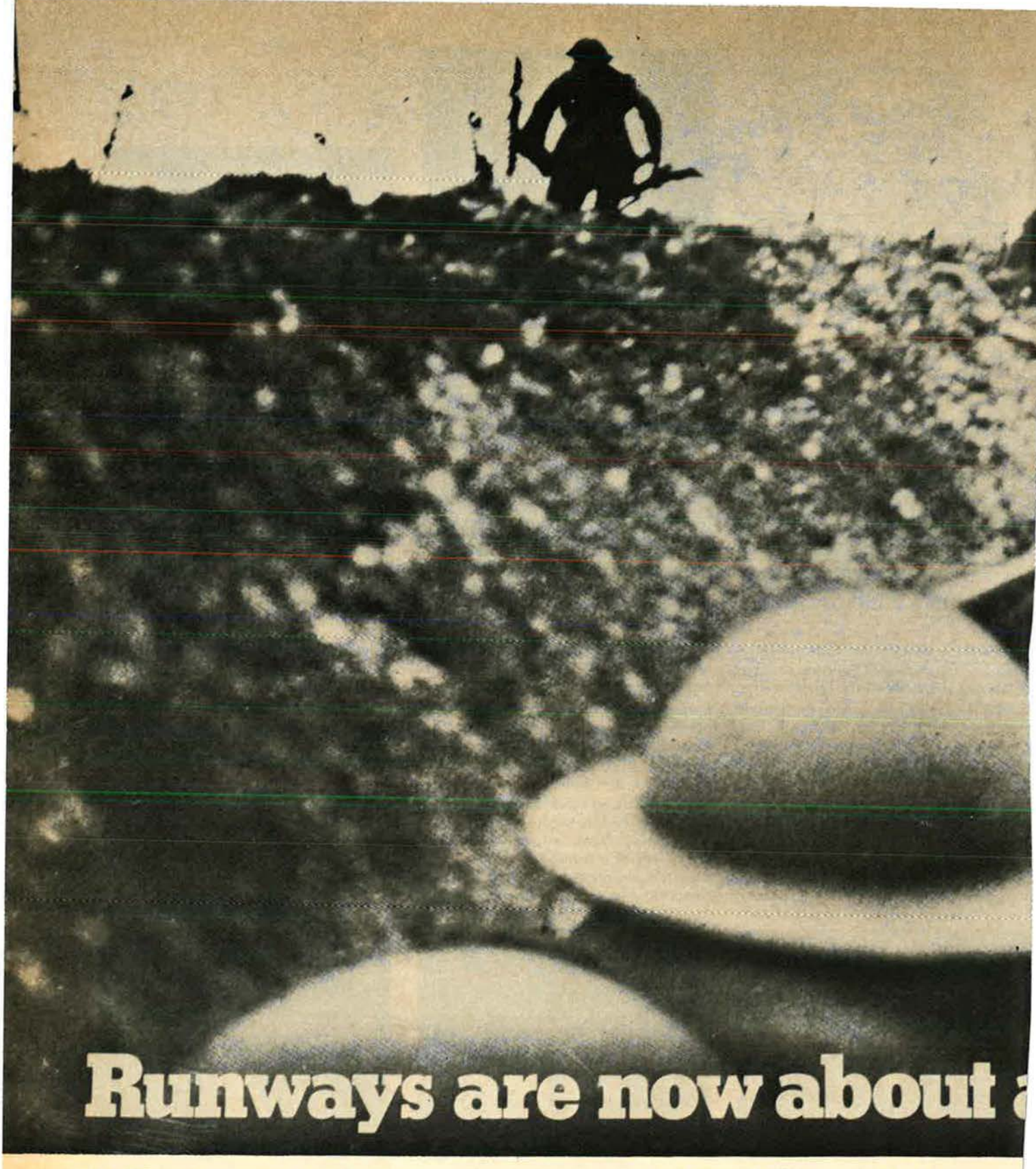
BOEING



urner II

B-52 eight-jet stratofortress

U.S. Air Force Minuteman ICBM



Runways are now about a

Just like trenches, runways are static, easily identified targets. They severely limit tactical mobility.

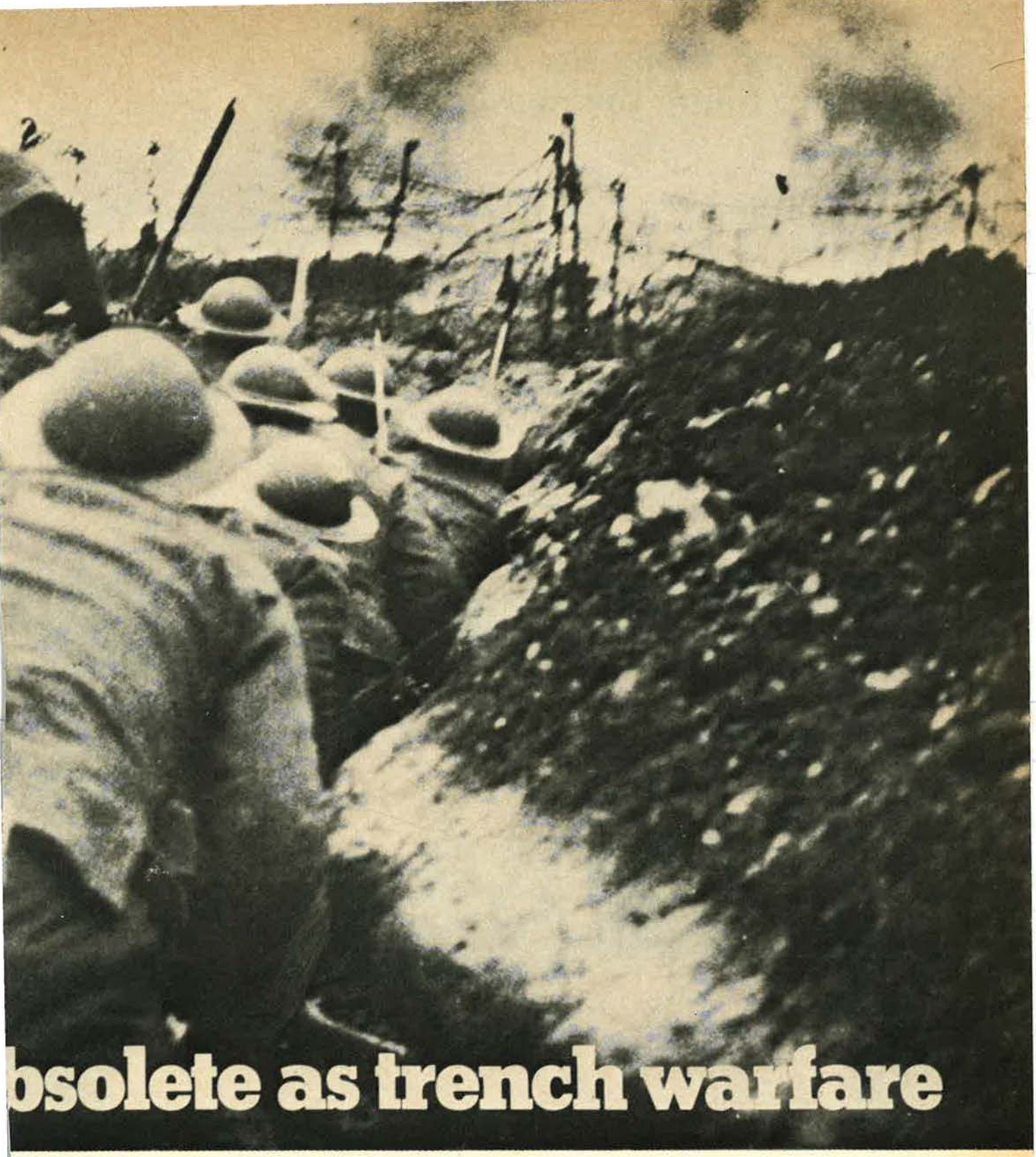
Dependency on runways means that aircraft must operate at considerable distances from battle areas. Even so, they are still dangerously vulnerable.

Missiles, or 'concrete dibber' bombs on the runway, and a multi-million dollar strike force becomes so much cannon-fodder.

Alone in the world, the Hawker Siddeley Harr vertical and short take-off and landing aircraft (V/S is immune from such first strike tactics.

Its vectored thrust Rolls-Royce Bristol Pegasu engine enables it to operate in secrecy from sma

Hawker Siddeley–the largest aerospace group in Euro



bsolete as trench warfare

earings. This gives it complete tactical flexibility;
can deliver a 6000 lb warload from as close as
miles to the battle area. And deliver faster, and
th greater frequency.

The Harrier is a tactical revolution; it can mean
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The HS Harrier

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While exploring the Data Age, we found the missing link.

It's a digital communication terminal called the AN/UYA-7.

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Then you discover something fast: You've got more information and fewer foul-ups than ever before.

You've found the missing link in command and control communication.

What's so hot about the UYA-7?

Look at it this way: What's your big communication problem?

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Range? The UYA-7 talks directly from outpost to outpost or continent to continent.

Accuracy? Imagine a data terminal that's practically goof-proof. That's what the UYA-7 amounts to. Has error detection and correction. Provides a record copy. Nothing's lost in translation.

Speed? Data rate ranges from 75 to 2,400 BPS.

Compatibility? The UYA-7 will work with other data-link systems like AUTODIN, with airborne navigation systems, communications satellites, modems and I/O equipment.

Mobility? UYA-7 weight and volume are one-fourth that of comparable equipment. Install the terminal in a jeep, plane, or ship. A suitcase version is man-transportable.

Commonality? The UYA-7's add-on modules give you exactly what you need: A jeep installation, a semi-permanent terminal, or a major control center for a large operation.

Sure it's hard to believe.

But the AN/UYA-7 is operating now in Southeast Asia. And you can see a demonstration. At NAECON, 18 to 20 May, or at AFCEA, 2 to 4 June. Or call us and we'll arrange a special show.

After all, you don't know how much you need it till you use it.

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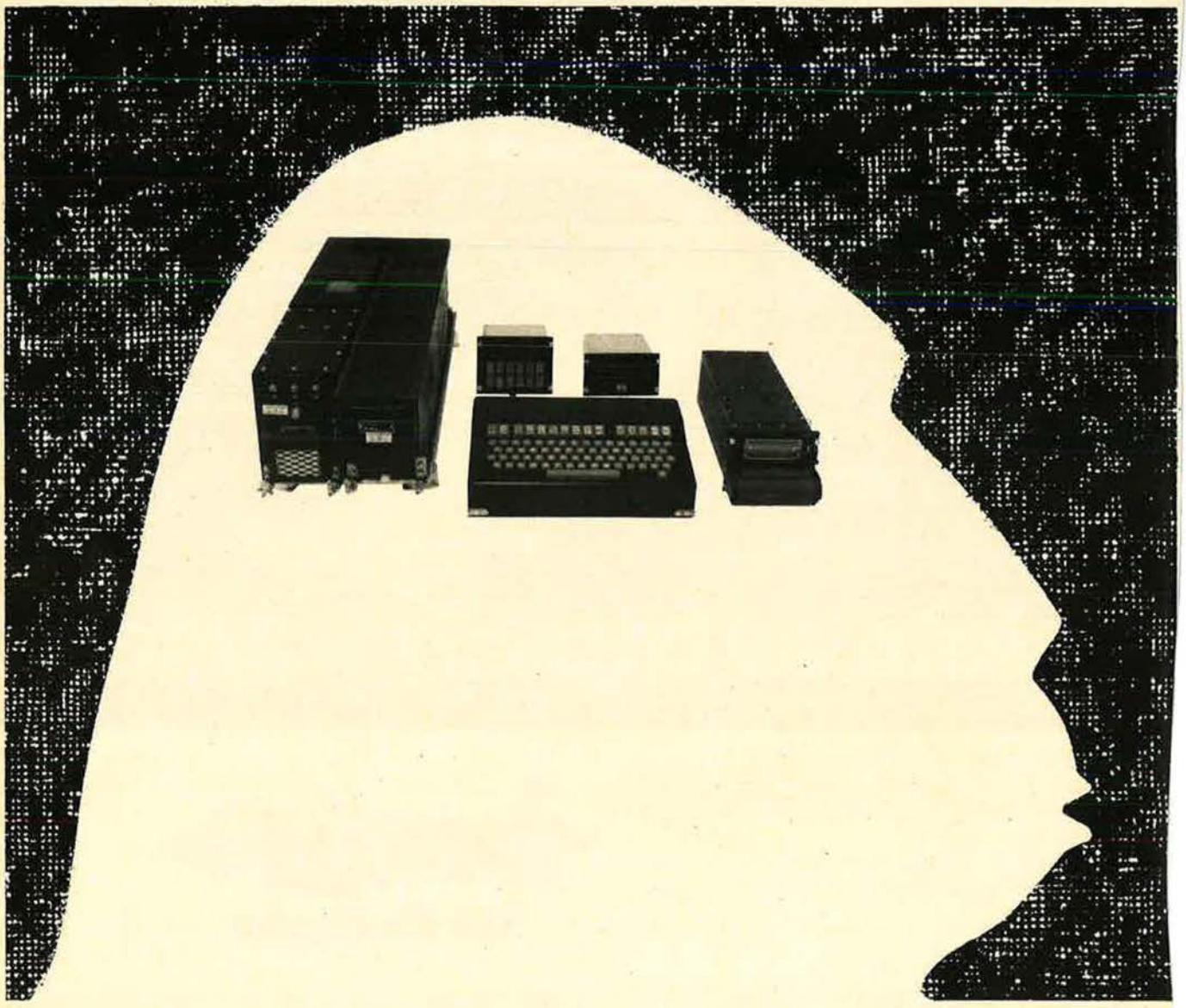

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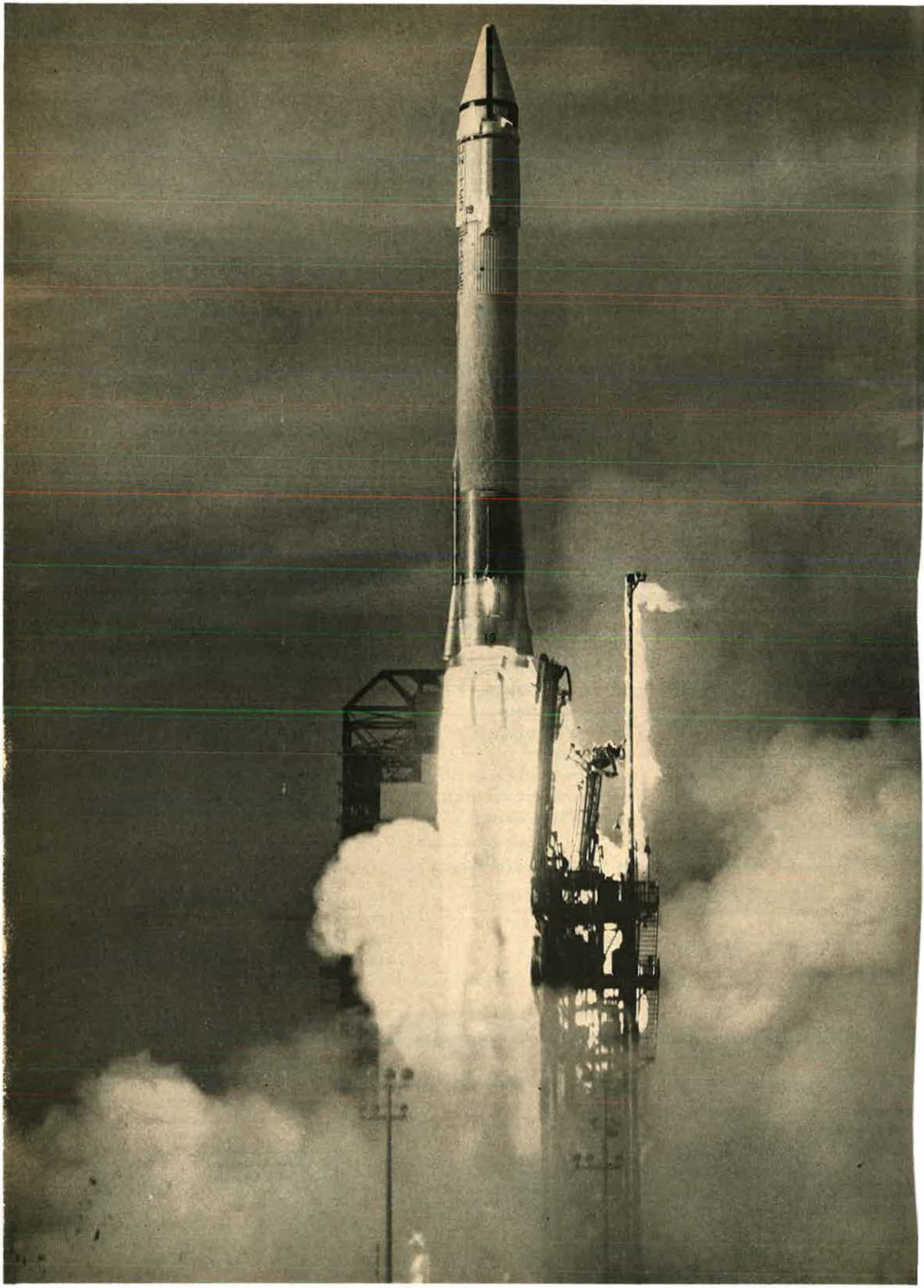
VOLUME 53, NUMBER 5 **MAY 1970**

TWENTIETH ANNUAL AIR FORCE ALMANAC

DEPARTMENTS



It will keep on outdoing itself through the 1970's.

General Dynamics will probably build a more versatile space vehicle one day. But right now, our Convair division's Atlas-Centaur stands all alone in bringing off the tough, varied jobs assigned to it.

Designed as an ICBM

Versatility was bred into Atlas from the start. Developed as an ICBM, it proved capable of launching human payloads —the Mercury astronauts—into earth orbit years ahead of any other U.S. booster.

In all, Atlas has logged more than 380 launches. And with Centaur, the nation's first high-energy upper stage, it has thrust seven Surveyors to the moon and two Mariners toward Mars.

With a record like this, Atlas-Centaur has now been selected to boost the INTELSAT IV series of communications satellites into orbit beginning in 1971.

What's next?

Proved reliable, accurate and cost effective, Atlas and Centaur, working together or in combination with other launch vehicles or upper stages, will boost new astronomical satellites into earth orbit, send interplanetary missions to Venus, Mercury and Mars, and send the first U.S. spacecraft to Jupiter.

General Dynamics' commitment to continuing work on a variety of space programs includes not only Atlas and Centaur, but scientific satellites, reusable space transportation, space experiment modules, and expandable space antennas as well. At General Dynamics we put technology to work solving problems from the bottom of the sea to outer space...and a good bit in between.

GENERAL DYNAMICS

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An Editorial

Seed Corn for Survival

By John F. Loosbrock

EDITOR, AIR FORCE/SPACE DIGEST

WE SPENT the years of the Great Depression growing up in a small town in southern Iowa. Among the most vivid of our recollections are those years when the cruelties of nature compounded the cruelties of a broken-down economic system—when there not only was no money, there was no rain, and the chinch bugs and the grasshoppers ate up what little corn survived the burning droughts. This was in the days before science had come up with standardized hybrid seed corn, and a farmer had to pick out the best ears from his puny crop to save for next year's planting.

Those were desperate times, and the nadir of desperation was when you had to use your precious seed to keep your animals alive over the winter and only hope that you could beg or borrow more when plowing and planting time came along next spring. If you lost your seed corn, you'd had it. Seed corn was synonymous with survival; the lack of it spelled disaster.

In these more prosperous but no less dangerous days, the seed corn of national survival is research and development. There is ample evidence that the United States is neglecting its future crop of technology, not from necessity, as did the desperate farmer, but from choice. This is bad, in and of itself. It is doubly bad when one realizes that the R&D growth rate of our Soviet competitors is continuing to climb while that of the United States has turned downward.

Over the past ten years the Soviet research and development rate of growth has averaged between ten and thirteen percent per year. Over the same period the R&D growth rate in the United States has hovered at around four percent. This is barely enough to offset inflation, and in the past two years the trend actually has turned downward. In more absolute terms, this year the Soviets are investing between $16 and $17 billion in defense-related research and development. The United States is investing between $13 and $14 billion.

Granted, the Soviets had some catching up to do. Ten years ago the US R&D activity level was much higher than was theirs. But when one looks at what they got for their R&D rubles in present-day capability, the future harvest they can reap from today's bigger investment becomes a very legitimate cause for concern indeed. As Air Force Secretary Seamans points out on page 38 of this issue, already the Soviets have not only more intercontinental missiles than we do but also a wider range of missile capability with more than twice as much missile-payload capacity. At the moment only SAC's aging bomber fleet gives us any strategic edge at all.

The point is that the Russians got this strength from a relatively low research and development effort of a decade ago. Secretary Seamans says, "It takes a long time for R&D to be translated into weapons. But if the Soviet Union is successful in adding technological superiority to its growing strategic programs, our national security could be severely jeopardized." We'd put it even stronger. If the Soviet research and development effort continues to grow and that of the United States continues to shrink, there must come a point at which both technological superiority and strategic superiority will inevitably pass to the USSR.

There are those who say that this is not important, that our first responsibility is to improve the quality of life in our own country, that the Soviets will not be any more interested in using their superior strength to blow up the world than we have been. And all this might be true if one viewed the two countries—and their politico-economic systems—as not very different after all, as mirror-image benevolent despotisms with basically the same goals for their peoples and for the world.

Those who hold this view generally are those who believe, often with sincerity, that the American military-industrial complex is a greater danger to ourselves than is the Soviet military-industrial complex; those who would obtain domestic tranquility at the expense of national security; who would abandon friends and allies to political, economic, and military domination by the Soviets if that is what it took to make American air purer and American water sweeter.

But the quality of life, which we hear so much about, is more than clean air, clear water, good housing, secure jobs, improved education, social justice, and all the good things we have not yet fully achieved in the United States. Sweden has many of these, we are told, and yet has the highest suicide rate in the world. There is more to quality of life than creature comforts.

It is simplistic and even chauvinistic, in our view, to seek the good life for Americans today while risking the loss of it for ourselves, and the chance of it for the rest of the world, in the future.

What it all boils down to is whether Soviet military superiority over the United States is a good thing or a bad thing, whether we can improve the quality of American life in a physical sense without also protecting the political environment that makes the good life both possible and worthwhile. We happen to think that the Soviet threat is as real as the filth in the Potomac.

The question is not one of the good life *or* security; it is a question of both. Asking the American people to make an either/or choice is more than unfair. It is asking them to take a long road toward the twilight of what still is man's best hope for everything that the word "humanity" signifies.—END

This 20 Watt Solid State 3500 Channel UHF Transceiver...

keeps your system options open.

CM-520: 20 WATT, 3500 CHANNEL TRANSCEIVER.
An advanced design, 5000 hour MTBF, completely solid state, 20 watt transceiver, the 19-inch rack mounted CM-520 weighs only 65 lbs. and is equally suitable for fixed or mobile installations. Any 24 of the 3500 50kHz spaced channels may be preset for automatic tuning.

OPTION 1: 40 WATT, 3500 CHANNEL TRANSCEIVER.
Need 40 watts of transmitter output power? A solid state plug-in amplifier does the job without changing in any way the appearance or the basic circuitry of the CM-520.

OPTION 2: 3500 CHANNEL RECEIVER.
Want a separate or additional multichannel UHF receiver in its own package? A repackaged version of the CM-520 receiver section fills the bill.

OPTION 3: 20 WATT, 3500 CHANNEL TRANSMITTER.
Want a multichannel UHF transmitter to work in combination with option #2? We have repackaged the transmitter portion of the CM-520 as a separate unit.

OPTION 4: 40 WATT, 3500 CHANNEL TRANSMITTER.
Need 40 watts of power in a multichannel transmitter? We add the plug-in solid state amplifier from option #1 to option #3 and there you are.

To find out more about Motorola's complete family of VHF/UHF equipment write or call Communication Systems Office, 8201 E. McDowell Rd., Scottsdale, Arizona 85252, phone (602) 949-2798

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With 7,500,000 fighting hours behind its proven airframe design this new Huey follows the Bell tradition in ease of maintenance and its twin pac insures higher mission completion reliability.

Power? The "N" utilizes the Pratt and Whitney T400CP400 Turbo "Twin Pac" Engines in this series power over 1100 corporate and commuter turbo-prop twins.

The package of two turboshaft power sections coupled to a single output combining gearbox delivers 1,800 SHP flat-rated to 1,250 SHP for takeoff and 1,100 SHP for continuous operation.

One engine can deliver 900 SHP for 30 minutes or 765 SHP continuously—plenty to cruise, even at max gross weight.

In passenger configuration—13 plus 2 pilots. As a cargo ship—220 cu. ft. interior or external load of 4,000 lbs.

Missions? Special operation forces—local base rescue—VIP transport—med/evac—utility transport—command and control—and with versatility enough for many others.

The Huey's big brother—this Huey Twin—is the proud start of a new generation; destined by the services to do its job in the Bell tradition.

The UH-1N—from the combat know-how generation of Bells.

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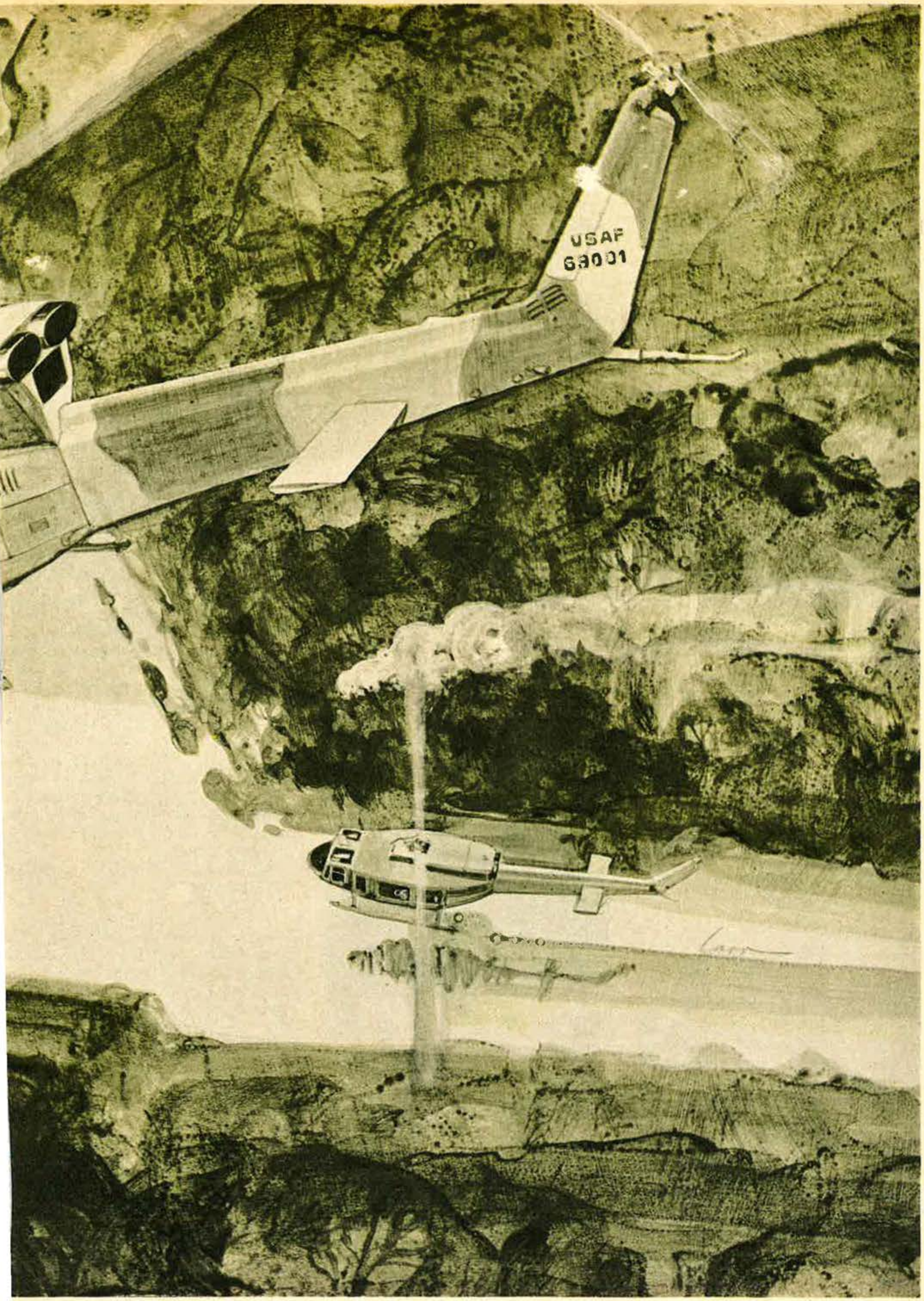
USAF
69001

AIRMAIL

"Chappie's" New Role

Gentlemen: Bravo on the article on General "Chappie" James [March issue]. It sounds like we put the right man in the right job. Let's hope that he's allowed to get very *public* because that's his forte. Number one, he'll tell it straight, something we need more of, and two, he has the charisma that it takes to be symbolic.

He's got a big job—we all have—so, as the "cat" said, "Let's all work a little harder and participate a little more."

LT. COL. W. SCHWEISFURTH
San Antonio, Tex.

Dunham, not Durham

Gentlemen: It is unfortunate that in noting the closeout of the distinguished career of Brig. Gen. William D. Dunham (March issue, page 25) your fine publication could not have demonstrated greater familiarity with General Dunham by spelling his name properly.

Just thought you'd like to know.

ROBERT F. BROOKS
Information Officer
Hq. 63d MAW
(MAC)
Norton AFB, Calif.

• *An unfortunate typo. Proof that we know better was demonstrated on page 30, same issue, in "Staff Changes," where we did manage to spell General Dunham's name correctly.*—THE EDITORS

AC-119 Project

Gentlemen: Your February article by Maj. William R. Casey ["AC-119: USAF's Flying Battleship"] was well written and a welcome sight. It was more timely than you may have realized as the total Gunship III program was two years old in February. While the planning started in late 1967, the contract was let to Fairchild Hiller Corp. on February 17, and modified aircraft were first delivered in May, less than 100 days later.

Less than eleven months after the go-ahead, the AC-119G was in combat halfway around the world. Only twenty-one months elapsed for the first K to enter combat. Both aircraft have compiled an outstanding record in their respective efforts.

Therefore, you see, WRAMA is particularly proud of these aircraft, for the AC-119 is a totally WRAMA-managed effort. The aircraft is unique in this respect in that we borrowed some ASD Gunship II (AC-130) technology and systems and created the AC-119 completely in-house. This is a first for AFLC and an AMA on a project of this magnitude.

MAJ. KENNETH B. RICHARDSON
C-119 System Manager
Hq. WRAMA (AFLC)
Robins AFB, Ga.

Not a General's Decision

Gentlemen: Once again AIR FORCE/SPACE DIGEST has chosen to propitiate its reputation as *the* hard-line service-related journal. John L. Frisbee's editorial in the March edition ["The Mythical Menace of Militarism"] is characteristic of this tradition.

Critics who comment on American society's militarism are lamenting not civilian adulation or imitation of the military. Rather, they are concerned for the most part with the (some would say disproportionate) economic weight that the services wield. With so many businesses as dependent as they are on military contracts and guaranteed markets, the fear is that a general's decision may influence much more than the defense posture of this country; it may play havoc with our economy.

Some argue that there is a growing interdependence between the military and corporate sectors of our society, visible on an obvious level when retired generals are hired as salesmen because of their service contacts. Even more crucial are the instances when retired officers are hired for administrative positions based on their demonstrated prowess—in the military context. Is it not conceivable that they will attempt to establish in the business world methods familiar to them, methods which will be passed on to their subordinates?

The weakness inherent in an economy such as ours, which is heavily beholden to the military for much of its health, is clear. What should be equally clear is that although the militarism which Mr. Frisbee so aptly describes is not presently a threat, it could very well become one if the merging of military with economic interests continues.

LT. ALEX. P. MAVRO, JR., AFRES
Gainesville, Fla.

• *Generals do not make the kinds of decisions that Lieutenant Mavro apparently has in mind. Their recommendations on strategy, weapons requirements, and procurement practices are subject to approval by civilian superiors in the military departments, the DoD, the Administration, and finally by elected representatives in Congress who control the purse strings. So long as our system of government, with its checks and balances and civilian control of the military (and with a free press) remains substantially unaltered, it's difficult to see how American society could become dominated by the military unless it so chooses. Hence, the issue essentially is one of civilian attitudes, which*

(Continued on page 15)

Where are these men now? The three mechanics of the 418th Squadron, 100th Bomb Group, Eighth Air Force, were stationed at Thorpe Abbotts, England, in August 1944. From left to right they are "Slim," "Pop," and "Shorty." Their plane, *Royal Flush*, piloted by Lt. Alf Aske, was shot down at Villacoublay, France, near Paris, on August 11, 1944—about a week after this photo was taken. Lieutenant Aske and three crew members were killed. The crash was witnessed by a young Frenchman, Léon Croulebois, who has recently contacted some of the survivors and is now anxious to correspond with anyone else connected with *Royal Flush*. Send information to AF/SD's Managing Editor.

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As the most experienced practitioner in the field of communications, we have hundreds of examples of time saved in all kinds of operations—from single phones in better locations to entire communications systems.

Call us so we can agree on the best time to talk with you about time. In the meantime, may we suggest you read our column on the facing page.

certainly are not militaristic. And neither is the attitude of the military.

The defense budget clearly has tremendous impact on the American economy. That is not a matter of whim or intrigue, but rather of necessity. The dangers the lieutenant suggests are not newly discovered. They have been the subject of extensive preventive legislation. One example: Retired military people are prohibited by law from selling to any agency of the DoD.—THE EDITORS

WW II Bombing Raid

Gentlemen: As an avid reader of your magazine I was surprised at the gross inaccuracy of the picture caption on page 24 of the March issue.

This is a very famous photo taken of a bombing attack on *Dagua* airdrome in New Guinea on February 3, 1944, by the 501st Bomb Squadron, 345th Bomb Group—*not* Clark Field.

As my son says, "Everybody makes mistakes!" Please, not you! Let's not let time distort history.

NATHAN GOLDMAN
(345th Bomb Group)
El Paso, Tex.

• *You're right, of course. We were caught off base by faulty caption material furnished by Hq. PACAF, in their release of January 23, 1970. Needless to say, we've passed the word on to PACAF.*—THE EDITORS

The Crowded Skies

Gentlemen: I read with interest the article, "Room Enough to Fly," by Associate Editor Edgar E. Ulsamer. Without any question, one of the problems facing both the DOT and the DoD is the wise and efficient use of premium airspace. Certainly some segregation of airspace by aerodynamic performance, pilot proficiency, or avionics capability is now accepted as inevitable by all the thoughtful planners in both the defense and civil community.

The financial burden of complying with the FAA's "ticket of admission to controlled airspace" is being accepted by the general-aviation community with essentially the same combination of reluctant good grace as Mr. Ulsamer describes for the Department of Defense—"unstinting and costly." About 8,000 of the 30,000 military aircraft, or 26.6%, are reported to have been equipped with identity-code capability to comply with FAA requirements. About 35,000 of the 125,000 estimated units in the general-aviation active fleet have been equipped with the same expanded transponder identity-code capability to date, or a penetration of our fleet of some twenty-eight percent.

It appears probable that some residue of both the defense and general-aviation fleets will never be equipped —primary trainers, crop dusters, etc. But it is interesting to note that through completely different disciplines we are achieving about the same rate of compliance with ground rules which appear to be realistic and justified.

G. V. QUINCY, Vice President
NARCO AVIONICS, Division of
NARCO Scientific Industries
Fort Washington, Pa.

Gentlemen: . . . I cannot help but feel more than a little concerned with regard to the article entitled "Room Enough to Fly," by Edgar E. Ulsamer, in the March issue. . . .

I have no quarrel with the apparent trend toward requiring increased pilot proficiency for flight in high-density traffic areas. I find that the majority of my high-proficiency pilot acquaintances agree with the need for increased competence requirements.

In the light of the disturbing anti-military movement now burgeoning in this country, especially on university campuses, a request for *more* airspace from the military is not quite reasonable. Not only does this furnish fuel for the fires these people seek to build under our system of democratic free enterprise, [but] such a demand goes against the grain of all civilian pilots and aviation-related persons.

In view of the growing importance of the aviation industry to the nation, it would appear much more reasonable for the Air Force to seek practice areas in locations which interfere to the smallest possible extent with civilian air traffic. Many of the civilian pilots would like to remind you that the owners of civilian aircraft pay an outsized portion of the bills.

Somehow it seems unreasonable to suppose that there is no way for military aviation and civilian aviation to coexist without each hampering the other. The record of general aviation [does not] indicate a need for curtailment of its growth at any conceivable future time.

JOSEPH C. AINSWORTH, JR.
Portales, N.M.

• *The article was not meant to be an evaluation of the DoD and USAF positions, but rather a straightforward report of fears expressed by qualified officials of these departments. There*

(Continued on following page)

AIRMAIL

was no intent to referee the general vs. commercial vs. military aviation issue. The article neither stated nor implied that the military is seeking additional airspace, and only warned of the danger of further reduction or curtailment of military airspace and ground facilities.—THE EDITORS

3,000-Mile Error

Gentlemen: In the March issue the caption to the photo on page 13 states that the German Azur satellite was launched from Cape Kennedy. This is approximately 3,000 miles in error. The Azur was launched from Vandenberg AFB, Calif., on November 7, 1969.

The satellite was launched aboard a Scout Booster that was assembled, tested, and launched by the Standard Launch Vehicle #1 (SLV-1) Military Launch Team of the 6595th Aerospace Test Wing. The men of the team are justifiably proud of the part they played in the launch and the opportunity they had to participate in this international effort.

I'm sure you will rectify this error and give credit where credit is due.

1ST LT. ANDREW R. DONOVAN, JR.
SLV-1 MLT
Vandenberg AFB, Calif.

• *Thanks for calling this to our attention. We're happy to give credit where credit is due.*—THE EDITORS

Static Militarism

Gentlemen: I am writing in regard to the editorial, "Survival in a Hostile Environment," by John L. Frisbee, in the February issue. I would like not only to disagree with him on several specific counts but to affirm his conclusion in a slightly different way.

First, it is oversimplification to say that the Vietnam War solved the "potential leadership problem." Quite the contrary. It only frustrated the situation further in that few future leaders remained long enough in SEA to become fully capable combat commanders. At present, the personnel policy of the Air Force insists on rotation to and from SEA as quickly as possible in order to placate emotions. I think it has only resulted in producing many young men skeptical of Air Force Staff leadership. These men may eventually come into similar circumstances as commanders but right now those prospects are very remote.

Secondly, Mr. Frisbee attributed, I think a little too heavily, the anti-military reaction today to the nation's domestic problems. I don't think that the accusations from the public were drummed up out of thin air. Unfortunately, the military has an inherent propensity to be "reactionary, self-centered, inefficient, out of touch with the times," and, in a very general way, irresponsible. I think today's large military establishment is somewhat guilty of these traits, but I don't think the mood of the nation is cause enough to blame. The editorial itself is an example of how the military man squirms and lashes back when his sacred profession is questioned. However, this leads to where I would agree with Mr. Frisbee.

The Air Force is people and, even as the Vice Chief of Staff said in AF/SD in January, it's a young service. The pressures and mentality of our society cannot but affect these young men within the service. So it is here that the problem of the Air Force lies. "Another part of the solution is wholly in the hands of Air Force leaders who, through their own dedication, patience, and compassion must sustain *esprit* and the sense of corporate responsibility that has become an Air Force tradition." That is what is most important, but the present management concept of the USAF seems to be one of statics. These leaders today must create an atmosphere in which the young officers and future commanders can bring up their understanding of the modern society and thus with it a better public acceptance.

RANDOLPH S. REYNOLDS
Enid, Okla.

Biog of "Gabbie"

Gentlemen: I am writing the biography of Col. Francis Gabreski, and would like to hear from anyone who knows him and could supply personal recollections during his tour with the 56th Fighter Group in the ETO and the 51st Fighter Wing in Korea.

KEVIN V. BROWN
9060 Palisade Ave. (703)
North Bergen, N.J. 07047

Frontal Assault

Gentlemen: It is most gratifying to see the efforts under way to publicize the plight of US prisoners of war in North Vietnam. I take strong exception, however, to the approach being employed. It is a sorry situation when the leadership of the strongest nation in the world must recommend that the already long-suffering wives and relatives of the POWs write letters to Hanoi, visit Paris to plead for information, and work on their own to en-

CONTINUED

list support from the American public.

After one year of fighting the VC on the ground and another 100 missions by air over the North, I feel qualified to say that this approach to the POW problem is but another display of weakness, in keeping with the Bay of Pigs, the *Pueblo,* and our downed EC-121.

I am sorry but I shall write no pleading letters to the Communists. But I will make one more trip to Hanoi . . . by land . . . by sea . . . or by air . . . for I am your number-one volunteer to help go in and get those guys out. And I am sure that I will have lots of company.

LT. COL. ALAN G. NELSON
FPO New York

Friends of the 431st

Gentlemen: During World War II I was manager of the Ba Hotel in Fiji, 1942-44, and had the pleasure of meeting and caring for many thousands of men of the US Forces. I became particularly friendly with officers and men of the 431st Heavy Bombardment Squadron who came to Fiji as soon as they had time to lick their wounds after Pearl Harbor.

My wife and I hope to visit the United States sometime in August or September 1970 and would like to contact, if possible, some of our old friends.

I am wondering if the 431st has an Association to which I could write to ascertain the present whereabouts of men such as Bob Clifford, who came from Perth Amboy, N.J., and Charles (Tex) Defee of Houston, Tex.

Any assistance in my efforts to contact my friends of the 431st will be greatly appreciated.

C. SORENSEN
P.O. Box 704
Port Moresby, Papua, New Guinea

UNIT REUNIONS

Confederate Air Force
The Confederate Air Force Flying Museum, based at Rebel Field, Harlingen, Tex., will conduct its second annual "Seminar on WW II Combat Aviation," June 25-29. Some of the great names in American aviation, past and present, will attend as speakers and guests. For further information write or call
Confederate Air Force Flying Museum
Harlingen, Tex. 78550
Phone: (512) 425-1057

Disabled Officers Association
The National Convention of the Disabled Officers Association will be held at the Sheraton-Biltmore Hotel, Atlanta, Ga., June 25-27. Officers interested in attending write
Disabled Officers Association
1612 K St., N.W.
Washington, D.C. 20006

1st Air Commando Squadron
The reunion of the 1st Air Commando Squadron will be held May 22-23, at Colorado Springs, Colo. Further information from
Maj. Raymond H. Armstrong
1297 Hathaway Dr.
Colorado Springs, Colo. 80915
Phone: home (303) 597-1269
office (303) 635-8911, ext. 3186

18th Pursuit Squadron
A reunion of the 18th Pursuit Squadron will be held in Denver, Colo., at the Cosmopolitan Hotel, 18th and Broadway, July 16-18, 1970. If you have not been located and received notice, phone Carl F. Riecke in Laramie, Wyo. (307) 745-3219, or write
William Schmidt
Rte. 2, Box 44
Dickenson, N.D. 58601

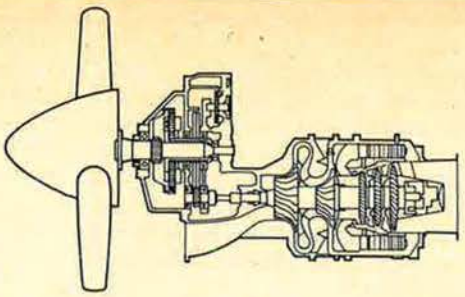
22d Bombardment Group
The 2d, 19th, 33d, 408th, and Headquarters Squadrons of the 22d Bombardment Group, 5th Air Force, WW II, will hold a twenty-first annual reunion July 20-August 1, at Grand Hotel, Anaheim (Disneyland), Calif.
Jack A. Jones
2476 Sierra Dr.
Upland, Calif. 91786
Newsletter: Walt Gaylor
105 Grove St.
Oakland, N.J. 07436

98th Bomb Group (H)
Known as "The Pyramiders," members of the 98th Bomb Group attached to the 9th and 12th Air Forces in North Africa and the 15th Air Force in Europe, 1942-45, have set July 21-23, 1970, for a reunion at Fairborn, Ohio. Former members are urged to contact
Gomer Wolf
1 Public Square
Mount Vernon, Ohio 43050
or Al Schimmoeller
Route 1
Ft. Jennings, Ohio 45844

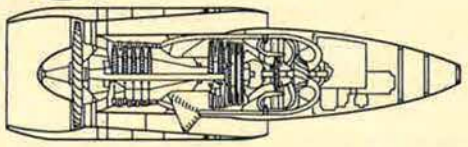
384th Bomb Group
On July 10-12, the 384th plans to hold its second reunion at the Palmer House in Chicago. More than 300 are expected. Tex McCrary will be emcee, and Walter Cronkite, CBS News, will be the principal speaker. All former 384th personnel should write
384th Bomb Group, Inc.
P.O. Box 766
Wall Street Station
New York, N.Y. 10005
or call
Frank A. Celentano, V.P.
(212) 344-9200
or
Robert C. Chapin, Sec'y
(215) 546-1383

614th Bomb Squadron
The 614th Bomb Squadron (England), 401st Bomb Group, will hold a reunion in Dayton, Ohio, July 31-Aug. 1, 2. We've misplaced a few members, so please get in touch with
Edward J. Disken
6173 Farmborough Dr.
Dayton, Ohio 45424

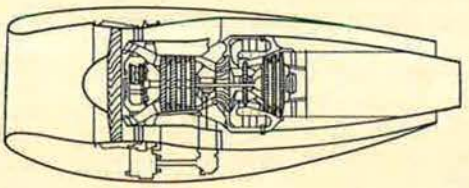
Who builds a family of turbine engines for small to medium aircraft?



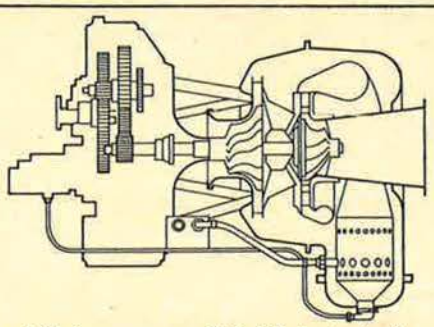
The TPE 331 turboprop has over 1½ million hours in the air.



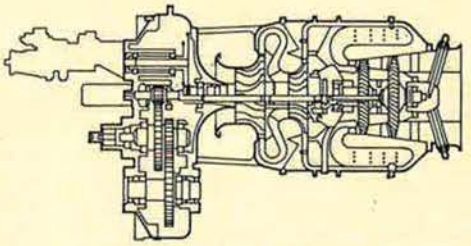
The new ATF 3 turbofan delivers a new low specific fuel consumption of 0.45.



The new TFE 731 turbofan gives 6 to 12-place compact jets longer range.



The 240 horsepower TSE 36 turboshaft provides small helicopters with smooth operation.



The TSE 231 turboshaft is designed for helicopters and provides 474 shaft horsepower.

Today a great need exists for engines to provide more economical and efficient propulsion for small to medium size transport aircraft.

Garrett is meeting that need with its family of turbine powerplants. These engines include advanced turbofan engines from 2,700 to 8,000 pounds thrust—turboshaft and turboprop engines from 240 to 840 shaft horsepower.

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AIRPOWER IN THE NEWS

By Claude Witze
SENIOR EDITOR, AIR FORCE/SPACE DIGEST

Economy or Folly?

WASHINGTON, D.C., APRIL 13

A prominent American physicist recalled recently that in 1933 a number of Oxford University students took a pledge that they would not "fight for King and country." It was not many years later that some of them were piloting Spitfires and Hurricanes in the defense of London.

That is one example of how attitudes toward national security can be changed, quickly, by something done by another nation. It is a curious fact that here in the latter half of the twentieth century, in an era when technology has bestowed so many blessings and curses, the pendulum of our interest in technology also is sensitive to what others do. The prize example is our space program, which grew largely in reaction to achievements by the Russians. Had it not been for Sputnik, Cape Kennedy would probably still be Cape Canaveral and Walter Cronkite might not even know where it is.

This is a proper subject for discussion in the 1970 "Almanac Issue" of our magazine. Dr. John S. Foster, Jr., Director of Defense Research and Engineering, has pointed out that our freedom of today has been secured, for the most part, by weaponry based on research and development efforts of the 1940s, '50s, and '60s. And if the freedom is to continue, it will be because of the R&D accomplishments of the 1970s and '80s. Dr. Foster does not believe we can do this with technological parity. Superiority is required.

He has warned that our potential enemies do their R&D behind curtains of secrecy, which means they can pursue a new and revolutionary project and we will not know about it until a prototype appears. The Russians are putting record resources into R&D. In 1955, if we add the R&D budgets of military import listed by the Defense Department, NACA, and the Atomic Energy Commission, the US spent $3.1 billion. The Soviet Union spent $2.1 billion. By 1969, the US effort had risen to about $14 billion and the Russians had upped their expenditures to $14.8 billion. This means they have been increasing their outlay ten percent per year. Ours grows at the rate of about four percent a year. For Fiscal 1970, Congress has been asked to put up $13.9 billion, and Dr. Foster is far from optimistic that it will be authorized. The Soviets are expected to spend $16 billion. Their aim is technological superiority.

The Defense Department concern is that it will take another Sputnik to reverse the trend in Congress, and the next Sputnik probably will not be a peaceful mechanism. It could bring a crisis and near disaster to the US.

There have been many manifestations, in recent months, of a congressional determination to curb R&D expenditures. For approved weapon systems, those that have become authorized programs, there is little room for fiscal flexibility. If we are going to have an improved missile or airplane or submarine, development funding is a basic requirement. In the more primitive area of technological unknowns, however, the budget-cutters feel they have found real vulnerability.

Some of this arises from the kind of approach that was best typified by Charles Wilson, when he was Secretary of Defense in the Eisenhower Administration. Mr. Wilson is credited with a remark to the effect that "basic research is what you do when you don't know what you're doing." There also was a widely quoted comment that he had no interest in what made grass green. Certainly he was in the forefront of the technological skeptics, despite his extensive background in the automobile industry.

Now, in 1970, comes Senator William Proxmire, a Democrat from Wisconsin, who has discovered that contractors to the Defense Department and NASA undertake some research on their own initiative. And that the Pentagon funds this work, picking up the tab for $685 million worth in 1968. In the same year, NASA spent $131 million on research.

This money is defined, in the Armed Services Procurement Regulations, as funding for "Independent Research and Development" (IR&D), which means it is R&D not sponsored by a contract, grant, or other agreement.

This kind of work is common to all industry. The product may be television sets or safety razors for the public market. It may be aircraft, electronic components, or weapon systems, or hardware for the space program. IR&D is the effort of industry to provide better products, and the expense of doing it is a recognized cost of doing business. Normally this cost is included as part of the price of the goods sold. It is the customer who pays the cost of developing color TV and the most improved razor blade that happens to hit the market this month.

In the case of defense contracting, the government, of course, places contracts for a great amount of R&D in areas where it knows what it wants to achieve. An example would be a contract with an engine company to develop

(Continued on following page)

S.3003: What it Does

S.3003 is a bill introduced in the Senate last October by Senator William Proxmire. Its most important clauses provide for amendment of Chapter 137 of Title 10, United States Code, with these new sections:

"Research and development costs.

"(a) No costs for research and development shall be allowable under any negotiated contract entered into by the agency concerned unless provision for such costs [is] specifically provided for in the contract; and no research and development costs shall be allowable under any such contract unless such costs provide a direct or indirect benefit to the work being performed under the contract.

"(b) Whenever funds are authorized under any negotiated contract for carrying out one or more independent research and development projects, the contractor or subcontractor shall be required to submit to the agency concerned a technical appraisal of each such project. A technical appraisal submitted pursuant to this subsection shall be prepared in accordance with regulations issued by the agency concerned.

"(c) Any research and development costs determined not to be of direct or indirect benefit to the work being performed under the contract may not be allowed as an overhead expense under the contract.

"(d) As used in this section, the term 'research and development' includes (1) either research or development, or both, and (2) any other work or service generally identified or classified as 'other technical effort.'"

a powerplant with improved thrust, or a reverse capability. On the other hand, left to its own devices, the same firm might experiment with some exotic new fuel and come up with a concept that the customer did not know was possible. It is the competition in this technological area that contributes most heavily to US technological superiority.

Dr. Foster says he considers IR&D "a proper and essential component of defense technology" and that "we get more than a dollar's worth of work for the dollar we expend" on IR&D.

In the face of this, Senator Proxmire, an advocate of stern economy, holds that any advancement that comes out of IR&D "would occur by accident at best." He charges that the government is paying contractors for work that benefits only the contractors. He calls IR&D "a back-door boondoggle" whose benefits are "at best, indirect, transitory, and evanescent and, at worst, nonexistent."

The Senator has his own definition of IR&D. He says it is "an amount of money." The money, he asserts, is used to "pay the salaries of engineers and other technical employees" for work unrelated "to any contract they have with the government." He can think of "no redeeming argument in favor of the present method by which DoD and NASA pay for IR&D." Further, he accuses the Pentagon and its contractors of usurping the prerogatives of Congress, because some of the products of IR&D meet new military requirements.

Out of this conviction, the Senator has produced a bill, S.3003, that would ban the funding of contractor-initiated research not related to the work being performed under contract. The entire amount of money involved, by current standards, is slightly in excess of $800 million a year, a small percentage of the government's total R&D effort. At the same time, the Defense Department and industry consider the IR&D program both essential and economical.

This spring, two inquiries are under way on the Proxmire proposal. In the House of Representatives, an *ad hoc* Subcommittee on IR&D of the House Armed Services Investigating Subcommittee is headed by Rep. Philip J. Philbin, a Democrat from Massachusetts. On the Senate side, there is a parallel subcommittee of Armed Services, of which the chairman is Senator Thomas J. McIntyre of New Hampshire, also a Democrat. Witnesses have been appearing at hearings on both sides of Capitol Hill from the General Accounting Office, industry, the Defense Department, and Congress itself.

Mr. Proxmire, of course, was the leadoff witness on the Senate program. He defended his proposal with a heated statement, liberally sprinkled with accusations—the military-industrial complex has "printed the checks and filled in the blanks themselves"—viewing IR&D as everything from immoral to illegal. What he advocates is:

"Necessary and direct research and development now given [*sic*] under IR&D should be converted to R&D contracts. Companies should be paid for 'allocable' expenses directly connected with their specific defense contract. They should be paid for research and development on weapon systems which Congress specifically authorizes and funds."

An example of the kind of project Mr. Proxmire has in mind is the Sikorsky S-64 Flying Crane helicopter. The concept was a Sikorsky idea that originated in the late 1950s. At that time, and for several years after, the Army did not have a requirement for such an aircraft and could not ask Congress to fund the research. The company went ahead, using IR&D money. Much of this was company money, but a negotiated part of it came from the Defense Department. In 1964, the Army changed its mind, in view of the war in Vietnam, and bought six Flying Cranes for trial. Later there was a production order. The S-64 proved itself from a cost-effectiveness point of view. The Army estimates that in its aircraft-retrieval role alone, S-64s have brought back some $200 million worth of aircraft.

The usually economy-minded Senator Proxmire is not impressed. He says that $20,299,000 of R&D funds went into the S-64—claiming he got his figures on this Army project from the Air Force—and that it should not have been made available because the Army had no requirement and there was no authorization from Congress. He would prefer to "take the IR&D funds, determine precisely what R&D we needed, convert them into regular R&D contracts, and have them performed by companies not now doing defense business." He does not explain how you could get a Flying Crane this way.

Facing the McIntyre subcommittee, it was clear that Mr. Proxmire had a skeptical audience and one that was well prepared to challenge his thesis. The questions were critical and probing. He frequently fumbled for answers. The chairman disagreed with the idea that IR&D is illegal. The witness was accused of including a great many "drastic oversimplifications" in his prepared statement. Senator George Murphy, of California, a subcommittee member, made it clear he holds Mr. Proxmire's degree of expertise in low regard, declaring the IR&D funding system is "most productive."

A second Senator appeared as a witness. He was Alan Cranston of California, who declared at the outset that IR&D "is the most economical long-run program to guarantee the security of the United States in an era of rapid technological innovation." Mr. Cranston said Mr. Proxmire's bill, S.3003, is based on the idea that it is wrong to give money to industry for research not supervised by the government. He said this is erroneous for two reasons:

The first is that the government, like the individual customer, pays for IR&D whenever it buys a product in the marketplace. He cited the example of funding for anti-

(Continued on page 23)

Some Products of IR&D

The Defense Department, in a study of nine weapon system development histories, has identified 300 technological advances. Of these, thirty-four percent occurred in in-house laboratories. Another fifty-five percent came out of industry effort, and eleven percent from universities. At least forty-four percent "were initially financed by funds controlled internally by the performing organization." Among major advances attributed to IR&D are:

The ruby laser.
SYNCOM, Early Bird, and Comsat satellites I, II, and III.
The MANPACK short-wave radio.
Nonmetallic armor for men and aircraft.
Boron composite structure.
Electron beam welding.
Automatic photomapping.
The TV camera used on Apollo.
The transistor.
The Klystron tube.
High-pressure rockets.
Fuel cells.
V/STOL propellers.
The segmented solid booster.
Interferometer terrain-following radar.
Strapdown inertial-guidance system.
Flying Crane helicopter.

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is a dual-tandem, ducted propeller flight research system. Its variable stability system permits changing of flight characteristics while airborne to simulate various V/STOL configurations. The X-22A has completed more than 200 test flights.

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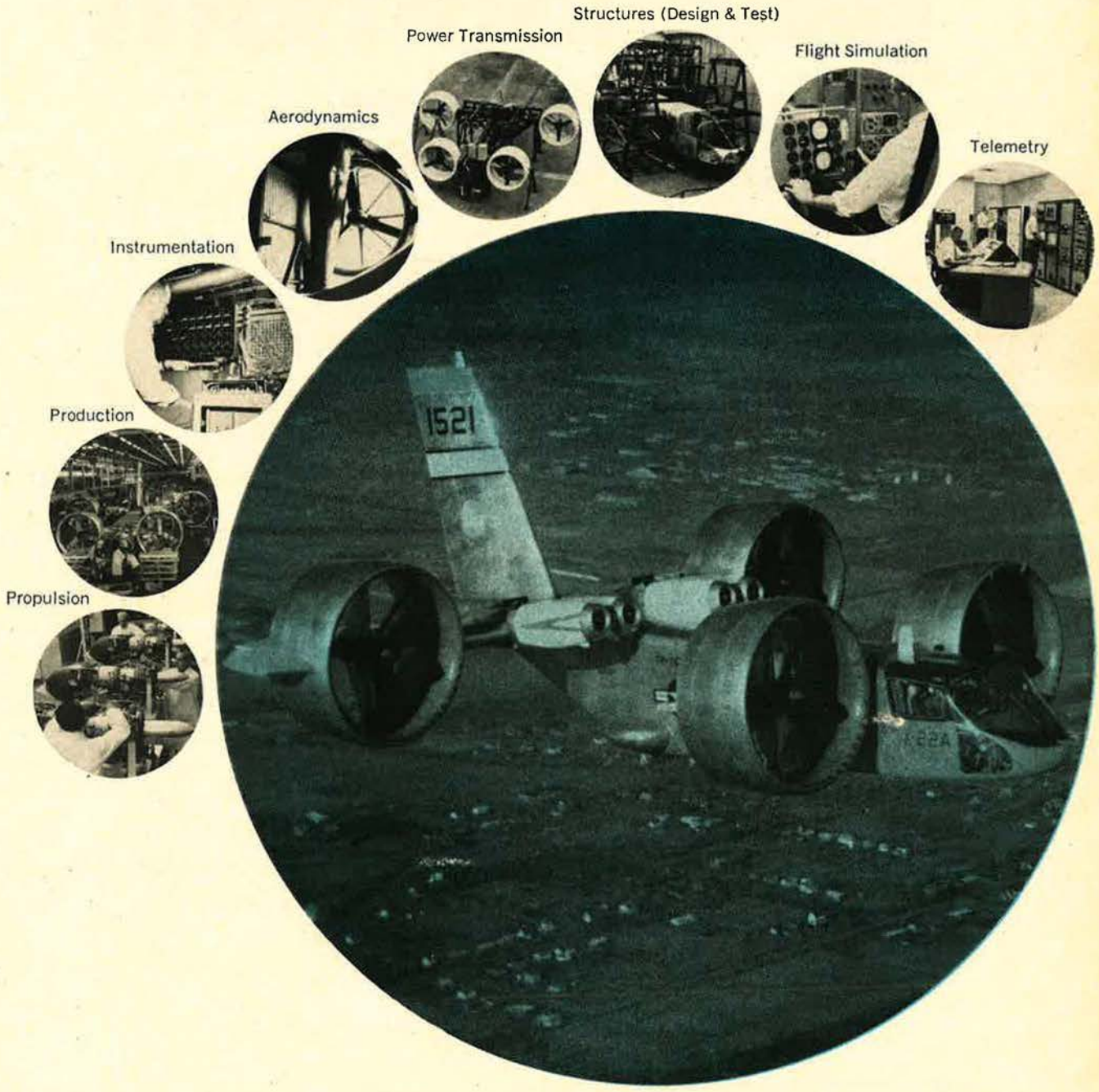

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And EDC is an expanding service Western Union offers to meet the communications needs of the Federal Government.

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The U.S. Air Force, Army and Navy; the G.S.A., F.B.I., N.A.S.A., F.A.A., S.S.A., V.A. and the Post Office all use Western Union EDC.

Government agencies know how much they have benefited from electronic data processing. They are finding out how much they can benefit from electronic data communications.

Western Union, the EDC company.

western union

pollution research included in the price of a 1970 automobile. It doesn't make any difference whether the car is bought by Uncle Sam or one of his taxpayers. The research involved, Mr. Cranston said, is not of direct or indirect benefit to the car purchased; it is a legitimate cost of doing business.

"If a corporation does a substantial amount of business with the government under negotiated contracts," the Senator declared, "it must be able to conduct independent technical efforts like its competitive brothers. The only alternative . . . is technological stagnation and eventual corporate death."

Mr. Cranston's second argument is that, contrary to the Proxmire thesis, industry should try to meet unanticipated defense needs. And, he added, it cannot do this if its research is completely controlled by the government, as would be required by S.3003. He pointed out that we would have no polio vaccine today if every research project had to be cleared by a bureaucrat. The government thought Dr. Jonas Salk was wrong; a private foundation provided the funds. If the government did try to administer every research project, he added, the effort would swamp the agencies in charge, and "innovative drive would be discouraged."

Dr. Foster, the top Pentagon expert, has appeared before both the House and Senate subcommittees. In addition to viewing IR&D as a bargain, he was critical of S.3003 and insisted that the Defense Department has adequate control over IR&D allocations.

The witness argued, first, that defense contractors are forced to keep IR&D costs within reasonable limits, because if they do not, they may lose new business. Competition forces them to invest wisely in technological effort. He considers this pressure about as effective as any control DoD could impose.

On top of this, the present system lets DoD play the role of a customer who broadly specifies his own needs and lets industry respond. Contractors are forced to plan their IR&D programs in advance and figure out how much of the cost is recoverable. DoD negotiates a dollar ceiling before the costs are incurred. The agreements are carried out through the tri-service negotiation committee, with technical assistance from the Armed Services Research Specialists Committee. The government, he also emphasized, uses its power during negotiations, when past performance is reviewed, and helps to establish the new level of support.

Dr. Foster can wax eloquent on this subject, as he did during cross-examination. Senator McIntyre, at one point, asked whether Dr. Foster doubted the wisdom of letting Congress exercise its constitutional authority by deciding how much should be spent on R&D. The witness then held forth on the controls already held by the Pentagon. He said it is not feasible to set up machinery that can pick a number and make sure we stick to it. The costs of the machinery, he said, "far outweigh any value that I, for one, have seen advanced." In addition, if Congress puts a limit on what DoD can spend, the Pentagon would be in constant danger of violating the rule. Later, he continued:

"I recognize that throughout the country there is a cry for control, control of the military. I am deeply concerned about this because I do not understand the substance behind it. Frankly, I feel there may be none. . . .

"What concerns me is the fact that in the late '50s and the early '60s . . . we found out that some of our concerns about the Soviet Union were not warranted. . . . It was very clear that one had to watch very carefully that this great power, this great effort [of the US] did not get out of control. . . . It was put in control. But, unfortunately, the atmosphere and the attitudes associated with that time are perpetuated, in my view, as a myth, a myth that lives on with a life of its own, that is not influenced by facts. So, I want to know what it is that we have in the way of strong reasons why this independence, so vital to our security, must all of a sudden be controlled?

"I have not seen that case made. . . . I do not see why we are fighting to control something whose independence is vital. . . . We cannot afford these additional controls and maintain our security."

While Dr. Foster fears a bill such as S.3003 could be detrimental to both government and industry, he does see room for improving the present system. He favors expanding the present advance agreement system to cover the hundred largest defense contractors. The present number is about half that. He would strengthen the present review and evaluation of contractor programs with new procedures. He agrees that a data bank may provide a useful repository for cost and technical information. He would expand application of the DoD formula for control to a number of smaller companies who recover IR&D costs.

There has not, within memory, been a heated issue up for debate and possible legislative action that has involved so little money and so much highly critical technological substance as IR&D. The industry is aware of this, the scientific world knows it, and the Pentagon is painfully aware of the peril. It is not likely that Senator Proxmire will find important support for his thesis that IR&D is a "bonanza," "unpoliced," practiced for reasons "without merit."

The Wayward Press (cont.)

After a long, but not unreasonable, amount of deep consideration, Congress last year passed a law (PL 91-129) creating a new Commission on Government Procurement.

Under the law, the Commission is directed to "study and investigate the present statutes affecting government procurement; the procurement policies, rules, regulations, procedures, and practices followed by the departments, bureaus, agencies, boards, commissions, offices, independent establishments, and instrumentalities of the Executive branch of the Federal government; and the organizations by which procurement is accomplished, to determine to what extent these facilitate the policy."

On or about the morning of March 25, 1970, copies of this bill, quoted above, and of a House report favoring its adoption, were given to a representative of the Washington *Post,* Bernard D. Nossiter. This transaction took place in Room B373, Rayburn House Office Building.

In the Washington *Post* the next morning, under the byline of Mr. Nossiter, there is mention of the new Commission on Government Procurement. Mr. Nossiter refers to it only as the "commission on military waste."

This is a deliberate misrepresentation, suggesting a mission that is not proposed in the law.

* * *

In *The Nation* for April 6 there is an article on the plight of the Lockheed Aircraft Corp. by Peter D. H. Stockton. Mr. Stockton is identified by the editors as "a specialist in defense matters working in the office of Rep. William S. Moorhead."

The author refers in his essay to "Senator Russell, Chairman of the Armed Services Committee."

Any "specialist" who does not know that Senator Stennis heads the Armed Services Committee should have his credentials lifted.—END

AEROSPACE WORLD

News, Views & Comments

By William P. Schlitz
NEWS EDITOR, AIR FORCE/SPACE DIGEST

WASHINGTON, D.C., APRIL 14

In mid-1970, construction will begin at the Air Force's Cheyenne Mountain complex near Colorado Springs, Colo., to house the control center of the proposed Safeguard Ballistic Missile Defense System.

The facility, to be known officially as the Ballistic Missile Defense Center, will be contained in a three-story steel building deep inside the granite mountain.

The center will be controlled operationally by the Continental Air Defense Command (CONAD), responsible for the air and space defense of North America, under the North American Air Defense Command (NORAD).

Safeguard will be manned by the Army Air Defense Command, the US Army component of CONAD. Phase I of Safeguard's deployment is scheduled to be completed in four years at two bases—Malmstrom AFB, Mont., and Grand Forks AFB, N.D.—to protect the Minuteman sites in those areas.

Making up each Safeguard position will be two radars—for long- and short-range detection; two missiles for high- and low-altitude intercept (Spartan and Sprint); and electronic data-processing equipment.

As for additional deployment of the Safeguard system, Defense Secretary Melvin Laird recently announced details of the program's Modified Phase II being recommended to the Congress by President Nixon.

Secretary Laird referred to the considered next step in Safeguard deployment as "the minimum we can and must do, both in cost and in system development, to fulfill" national security objectives, in light of the postponement of work on offensive systems to enhance prospects for the Strategic Arms Limitation Talks (SALT) with the Soviet Union.

Under Modified Phase II, Congress is asked to authorize funds in Fiscal 1971 for an additional Safeguard site at Whiteman AFB, Mo., and for advanced preparatory work for five other sites without a deployment commitment being made. The sites would be in the Northeast, Northwest, National Capital Area, Warren AFB, Wyo., and Michigan/Ohio.

Additional Sprint sites would be added to the Phase I projects mentioned above, under Modified Phase II.

Modified Phase II is seen as giving the President the option of moving to a twelve-site Full Phase II in the late 1970s or curtailment, depending on the SALT negotiations.

US Green Berets and Vietnamese Civilian Irregular Defense Group soldier with a captured enemy twelve-barrel 107-mm rocket launcher. The potent weapon is part of a huge cache of arms found in a complex of bunkers forty-five miles from Saigon. One of the 22d Tactical Air Support Squadron FACs noticed suspicious activity in the area, and, after aerial surveillance, requested a search.

☆

North American Air Defense Command will soon have a system of radars to detect ballistic missiles being launched by enemy submarines off the continental coasts.

The Sea-Launched Ballistic Missile Defense System, made up of three radars on each coast and one in Texas to cover the Gulf Coast, will give NORAD for the first time the capability to detect such an attack.

The radars have been converted from the SAGE antibomber defense network. They will be operated by ADC's Fourteenth Aerospace Force, which also mans NORAD's missile and satellite-detection equipment.

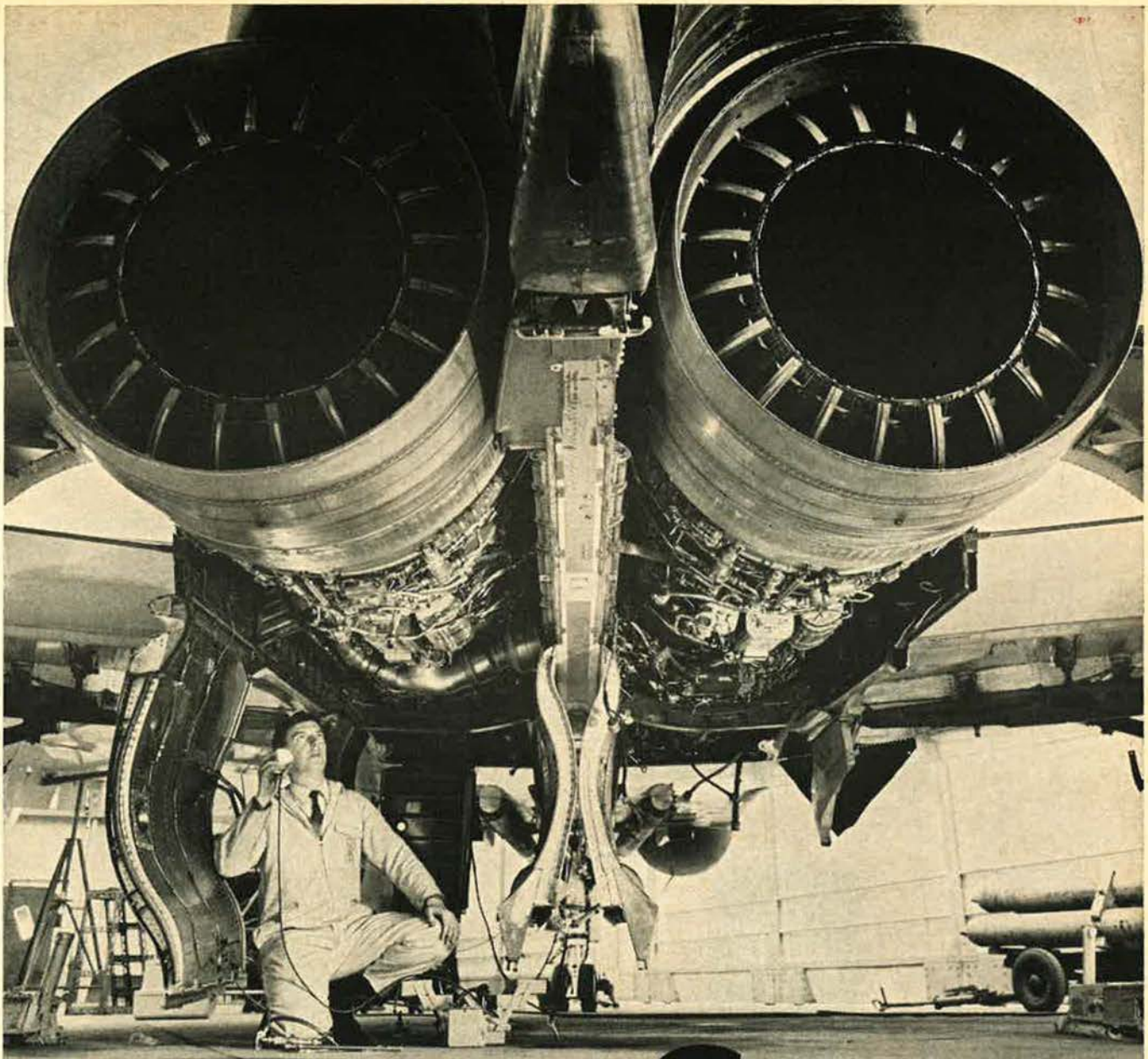
Defense Secretary Laird, in reference to Soviet submarine capability, said, "We believe that they are now building a ballistic missile submarine force which will be roughly comparable in numbers to our present Polaris fleet."

☆

The aircraft hijacking epidemic is continuing to spread worldwide, although it has slackened recently in the US. From January 1 to March 31, 1969, fourteen US planes were victims, while for the same period this year the figure declined to three. Foreign aircraft seizures, however, are going strong; last year alone eight countries experienced their first hijackings. In addition to the US, thirty-eight other countries have had hijackings.

Desperation on the part of airline and government officials is mounting. Japan, still smarting after the recent pirating of one of its commercial aircraft to North Korea, is pressing for stiff legislation to contend with hi-

(Continued on page 27)



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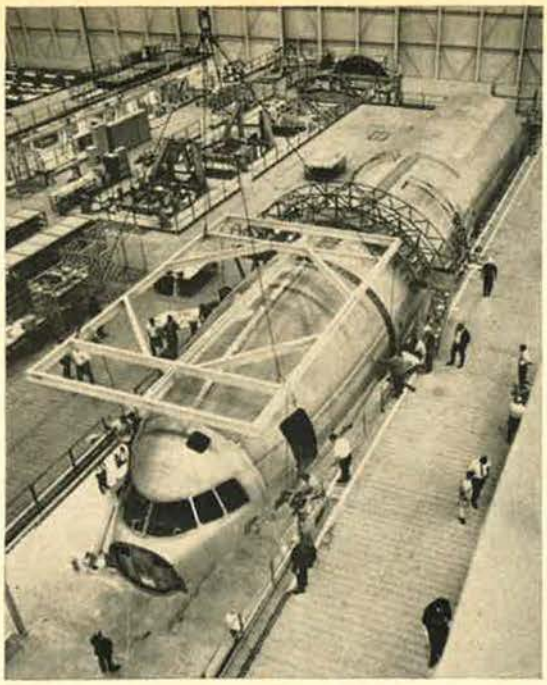

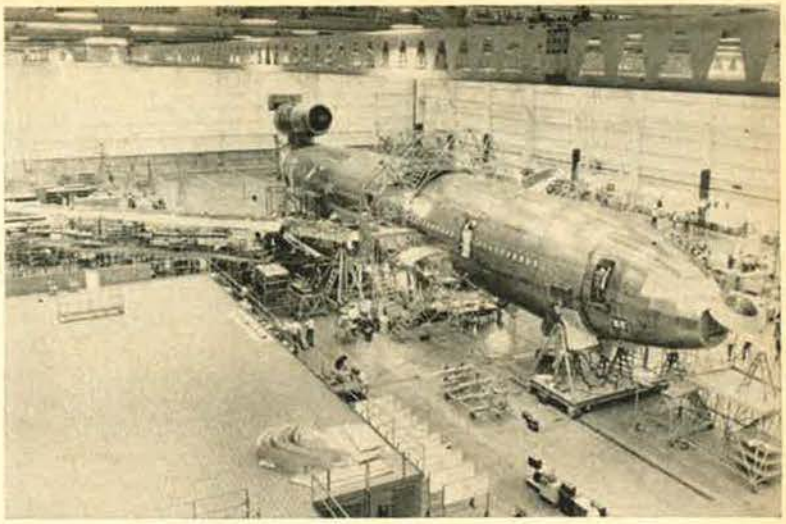

Left, the flight station and forward fuselage of the first L-1011 TriStar jetliner are prepared for mating at Lockheed-California's plant at Palmdale, Calif. Rollout is set for September. Above, a milestone in McDonnell Douglas's DC-10 tri-jetliner is reached as the aft section joins the forward and center assembly at Douglas Aircraft Co.'s plant at Long Beach, Calif. A mid-July rollout is expected.

jacking and plans to introduce weapon-detecting devices at airports. Japan Air Lines said it would put a karate expert aboard each flight as security personnel.

In the US, Civil Aviation Board Chairman Secor D. Browne said recently that the day-to-day responsibility for dealing effectively with hijacking and crimes against aircraft ultimately falls on the individual air carrier management. Mr. Browne declared that while he did not advocate arming aircrews, "it is apparent that the pilot can carry any weapon," and "there is good law that the captain . . . has the authority to subdue any threat to passengers or cargo." He urged airlines to "make better use of their delegated authority to provide some sort of cabin enforcement." Without being specific, he said he "simply is trying to suggest a very strong, very immediate attitude." Arming aircraft crews has been opposed by airline pilot groups.

The installation of an antihijack system by major airlines possibly accounts for the decline in incidents in the US. FAA Administrator John H. Shaffer said that airlines are beginning to find discarded weapons in boarding areas where the system is in use, and that the system has actually spotted passengers with weapons. Details remain secret, however, "in the interests of security," a government official said.

The system is based on behavioral traits common to hijackers, combined with a passive weapon-screening device. None of the screened flights has been hijacked, the official said. TWA recently extended use of the system to its operations at London's Heathrow Airport.

Hijackers also are being punished, he said. Of forty-four apprehended, eighteen have been convicted, with sentences up to twenty years. Sentencing is pending in twenty cases.

While some progress has been made on an international level to discourage hijacking and establish extradition and prosecution agreements, international pilots' organizations have threatened to boycott countries without such agreements.

From the Air Line Pilots Association in the US came warning of a possible shutdown of the entire air system if "something concrete" isn't done about the hijacking situation.

Among on-board security measures that will probably be required in the future are bulletproof shields for cockpit bulkheads.

☆

The Federal Aviation Administration's highest honor, the Award for Extraordinary Service, has been presented to Eastern Air Lines Capt. Robert W. Wilbur, Jr., by Secretary of Transportation John A. Volpe.

A similar award is to be made posthumously to First Officer James Hartley.

The award has been made only eight other times in history.

Captain Wilbur was shot in both arms by a gun-wielding passenger aboard a New York-to-Boston flight in mid-March. First Officer Hartley was mortally wounded in the struggle but managed to wrest the gun from his assailant and shoot him before collapsing.

Although severely wounded, Captain Wilbur brought the DC-9 jetliner to a perfect landing at Boston, coolly going through such routine landing procedures as turning on the "No Smoking" and "Seat Belt" signs, an action that helped calm the passengers. Seventy other people were aboard the plane.

☆

The Air Force has selected three contractors to further define the AIM-82 short-range tactical air-to-air missile (*see April AF/SD, page 17*).

Chosen for the ninety-day definition phase were General Dynamics Corp.'s Pomona, Calif., Division; Hughes Aircraft Co.'s Missile Systems Division, Canoga Park, Calif.; and Philco-Ford Corp.'s Aeronutronics Division, Newport Beach, Calif. Each has been funded with about $1.5 million.

Since the Navy has a similar requirement for a new air-to-air missile of the AIM-82 type, a decision will be necessary by Defense Secretary Laird on how best to develop a missile suitable for both services.

AIM-82 is visualized as a short-range weapon for use in rapid-maneuver dogfight situations. If Secretary Laird approves it, it will probably go into the new F-15 and F-14 and

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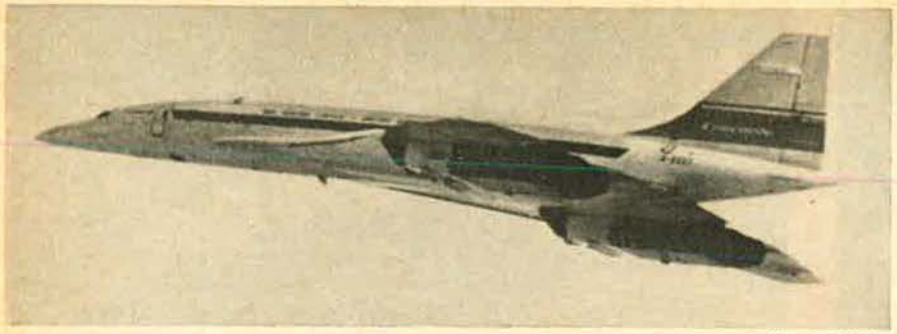


—Wide World Photos

Aircraft performance was "even better than we had expected," said test pilot John Cochrane of the Anglo-French's supersonic Concorde 002 jetliner after a recent flight during which the aircraft broke the sound barrier for the first time.

A Hawker Siddeley Harrier V/STOL fighter shepherds Britain's HMS *Eagle* during a recent exercise. Harriers flew sixty sorties from the carrier, and completed the program five days before schedule.

such existing aircraft as the F-4 Phantom, the A-7, and F-111.

☆

Judge L. Howard Bennett, Acting Deputy Assistant Secretary of Defense for Civil Rights, has singled out Udorn RTAFB, Thailand, as having attained "healthy and wholesome race and intergroup relations" between white and black servicemen, which are better than at other SEA installations.

Judge Bennett's analysis follows an extensive fact-finding tour throughout Southeast Asia to ascertain the status of race relations in the area. There had been past evidence of strain among the races in some instances.

The positive factors leading to race harmony at Udorn can be applied as working policy by virtually all military units, according to Judge Bennett. Udorn's "highly complimentary social situation" is the result of:

- An Equal Opportunity Council, "though deficient in regard to the representative character of its membership," provides a forum for the men to discuss their problems, and clearly has a "very beneficial" effect on the racial situation.
- A cross-racial stock of literature at the base library, containing such subjects as Afro-American history, is asked for increasingly by black and white servicemen alike.
- Activist chaplains, including a black chaplain, who move constructively in race relations, including organizing group discussions.
- Command leadership that makes the men aware that the base commander is concerned about their problems and gives them sympathetic attention. The commander also communicates a no-nonsense attitude to subordinate officers concerning equal treatment and opportunity.
- A communication program of formal and informal talks among the men contributes to mutual understanding, as well as instills a desire for constructive citizen participation after release from service.

A highlight of social activities was a dinner dance given by Udorn's interracial club, attended by the base commander and several senior officers. "Both black and white military personnel eagerly seek" membership in this club, Judge Bennett says.

He concludes that where such positive factors are operating, the probability of harmonious race relations will be high.

☆

Construction of a new home for the Air Force Museum at Wright-Patterson AFB, near Dayton, Ohio, began in April (*see story page 157*).

A new design concept will provide considerably more enclosed display space than the previously planned structure (*see AF/SD, March 1969, page 102*).

The Museum, established in 1923, has had increasing numbers of visitors each year. In 1969 the count was 643,000, up 100,000 from the previous year. The Air Force Museum is considered Ohio's largest tourist attraction.

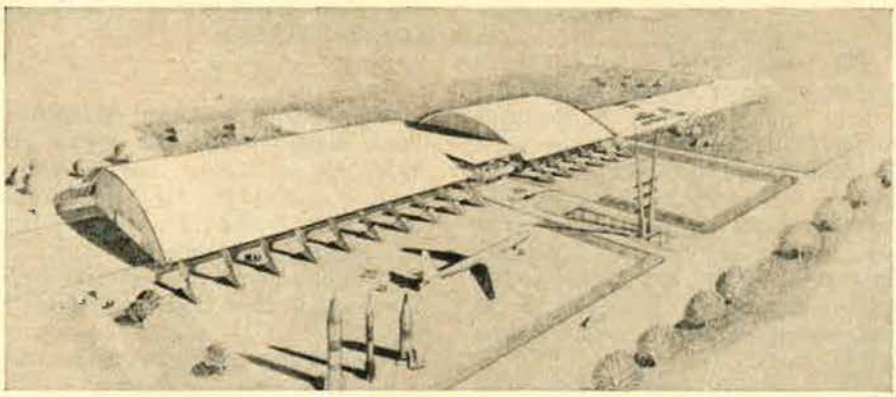
The building should be completed in a year and ready to receive visitors by early summer 1971. The internal display area will house up to 200 aircraft, twice the numer able to be housed inside the Museum's present temporary structure.

☆

On April 8, two Vela satellites, the last in the series, were orbited from Cape Kennedy by a Titan IIIC booster, the first operational launch of that giant.

Vela ("watchman" in Spanish) satellites are used to detect any violation of the nuclear test ban treaty in outer space or on earth. They also help the space program by alerting NASA (and the other agencies with an interest in atmospheric conditions) to

(Continued on page 31)



Architect's concept of a new home for the Air Force Museum at Wright-Patterson AFB, Ohio. It is under construction and scheduled for completion next year.

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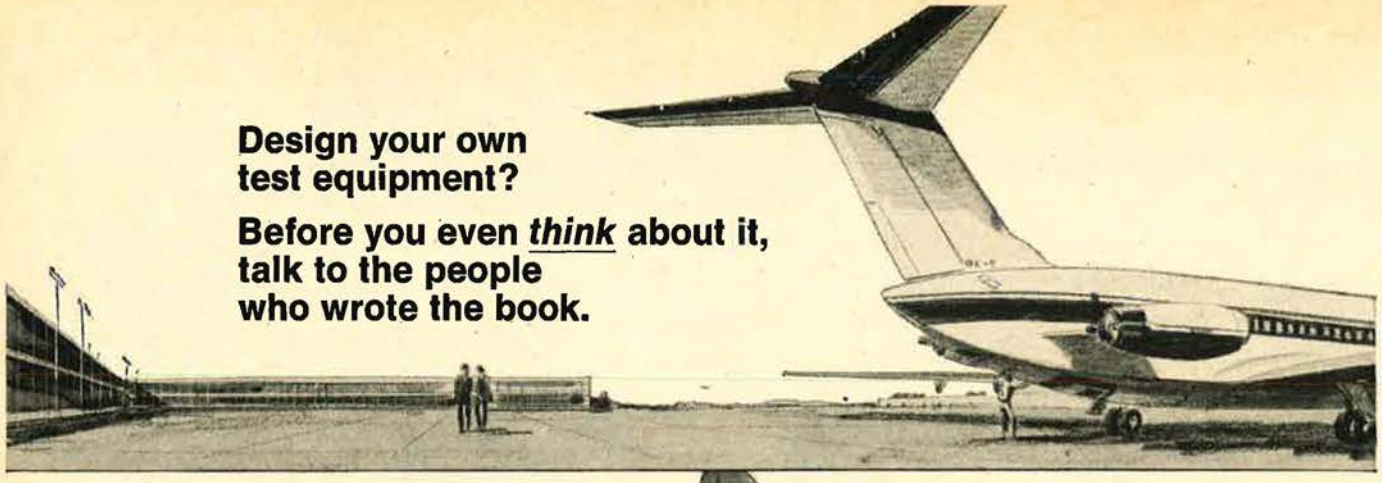

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The Vela program has been acclaimed as most successful, having achieved 100 percent of its objectives since its inception in 1963.

Also on April 8, from the Vandenberg launch complex on the West Coast, NASA launched a Nimbus-4 advanced meteorological spacecraft accompanied by a piggyback US Army mapping satellite. Nimbus-4 is designed to make the most comprehensive study of earth ever attempted from space. Scientists say that, if successful, the project might help them predict the weather perhaps as much as two weeks in advance.

☆

In this age of concern for quality environment, the Federal Aviation Administration has spoken out against a growing eyesore at many of the nation's airports: junk aircraft—the counterpart of the derelict cars that clutter many city streets.

A new FAA program to persuade airport operators to eliminate junk planes "is aimed both at improving the appearance of our airports and maintaining public confidence in aviation," FAA Administrator John H. Shaffer said. The junk aircraft tend to convey "the erroneous impression to both the flying and nonflying public that aviation is inherently unsafe," he said.

Among several program provisions, the FAA would help airport managements identify such aircraft, and specify time limits under which the aircraft would be removed at owner's expense or repaired and returned to the flight line.

☆

The first NATO communications satellite was launched from Cape Kennedy by the Air Force in mid-March. The satellite project, to eventually cost $50 million, is being financed jointly by the participating NATO-member countries.

NATO 1 is in orbit about 22,000 miles over the eastern Atlantic. It will provide hot-line linkage among NATO headquarters at Brussels, Belgium, NATO national capitals, and NATO land and sea commands. The comsat will make possible the relay of hundreds of telephone and telegraph messages simultaneously between points as distant as Ankara, Turkey, and Washington, D.C.

As part of the communications net, twelve ground terminals are to be constructed—one each in the US, Canada, Great Britain, Norway, Denmark, West Germany, The Netherlands, Belgium, Italy, Greece, Turkey, and Portugal.

The comsat system is intended as a greatly improved method of military communications, but will also upgrade existing communications facilities for political consultation and crisis management.

☆

A bitter irony was the final result in the crash of a West German Starfighter early in March. Killed in the accident was Joachim von Hassel, only son of lower-House Speaker Kai-Uwe von Hassel.

The accident-prone F-104G fighter —designed by the US and built in Germany—have been in service since 1961 and to date have suffered 117 crashes, with young von Hassel being the fifty-fifth flyer killed.

In the summer of 1966, the senior von Hassel came under heavy fire from West Germany's Social Democratic Party, which demanded his resignation as defense minister because of the growing number of Starfighter crashes. The resulting political crisis led to a shake-up in Germany's armed forces, when several top military leaders resigned. Von Hassel dismissed the criticism; his own son flew an F-104G, he said.

☆

The Aviation/Space Writers Association (AWA) has named AF/SD's Associate Editor Edgar E. Ulsamer the recipient of the 1970 James J. Strebig Memorial Award, its principal award, which recognizes the best aviation writing in any print media during a given year.

AWA also named Mr. Ulsamer for its annual award recognizing excellence in aviation writing in an aerospace magazine.

Professor Willi Messerschmitt chats with USAF Col. J. J. Burns, Commander, Luke AFB, Ariz. The aircraft designer visited recently to discuss Luke's methods of maintaining its F-104G Starfighters.

An AF/SD staff member since 1964, he is a former staff correspondent of United Press International and had also worked for the Washington *Star*.

A special AWA citation also was awarded to AF/SD contributing writer Louis R. Stockstill for his widely noted exposé concerning the American POWs in Vietnam, which appeared as the cover story of the October 1969 issue of AF/SD and was reprinted as the lead article of the November issue of *Reader's Digest*.

Three other AF/SD staff members

(*Continued on following page*)

—Staff Photo by Mo Lien

AF/SD's Associate Editor Edgar E. Ulsamer, who recently won AWA's James J. Strebig aviation writing award.

have won AWA's top overall awards in either aviation or space writing in previous years: Senior Editor Claude Witze, Senior Editor William Leavitt, and Technical Editor J. S. Butz, Jr. In addition, Mr. Witze has won AWA awards three times, and Mr. Leavitt and Mr. Butz once each in the aerospace magazine category.

☆

The Air Force has successfully utilized its new Backup Interceptor Control (BUIC) III computerized command-and-control system in the test launch of a Bomarc B guided missile from Tyndall AFB, Fla.

The BUIC III control center at Tyndall is equipped to provide high-speed, up-to-the-minute data on any airborne threat picked up by radar. Parallel to this is the center's capability to direct air defense weapons against enemy aircraft.

Bomarc is capable of hitting supersonic targets at 70,000-foot altitudes and at ranges of more than 400 miles. Its 2,000-mph speed is attained by a solid-propellant booster. Cruise is maintained by two ramjet engines.

Prior to BUIC III, Bomarc command and control was provided by the Semi-Automatic Ground Environment (SAGE) system for initial positioning. Within target proximity, the missile automatically switches to its own homing system for terminal guidance.

☆

NEWS NOTES — Secretary of Transportation John A. Volpe announced the appointment of **William M. Magruder,** formerly of Lockheed-California Co., as **Director of the Supersonic Transport** Development Program, and transfer of the program from the FAA to the Office of the Secretary.

The **School of Systems and Logistics,** Air Force Institute of Technology, Wright-Patterson AFB, Ohio, announced that, in cooperation with the Society of Logistics Engineers, it has established a program to certify qualified military and Civil Service **logistics managers** of DoD. Similar programs for those not in DoD are in preparation at various universities and will be announced in the future.

The **Electronics Research Center,** Cambridge, Mass., will be used for **transportation research,** it was announced. The center, once sponsored by NASA but abandoned because of budget limitations, will become a major facility to study mass transportation problems—including air traffic control, DOT said.

Air Force Systems Command has issued requests for proposals to Philco-Ford Corp.'s Aeronutronic Division and General Electric Co.'s Armament Department for follow-on development of the GAU-7/A improved **Aerial Gun System** that will use caseless ammunition and eventually will go into the F-15.

On Armed Forces Day, Keesler AFB, Miss., will dedicate **McClelland Hall,** in memory of Maj. Gen. Harold McClelland, regarded as the father of Air Force communications electronics. The facility will be used to train **communications electronics technicians.**

Major **Air Force commands** and separate operating agencies have been invited to submit nominees for consideration by the Air Force in selecting the **Outstanding Airmen for 1970.** The USAF recognition program is run in conjunction with the AFA, which will host the Outstanding Airmen at its annual Convention in Washington, D.C., in September.—END

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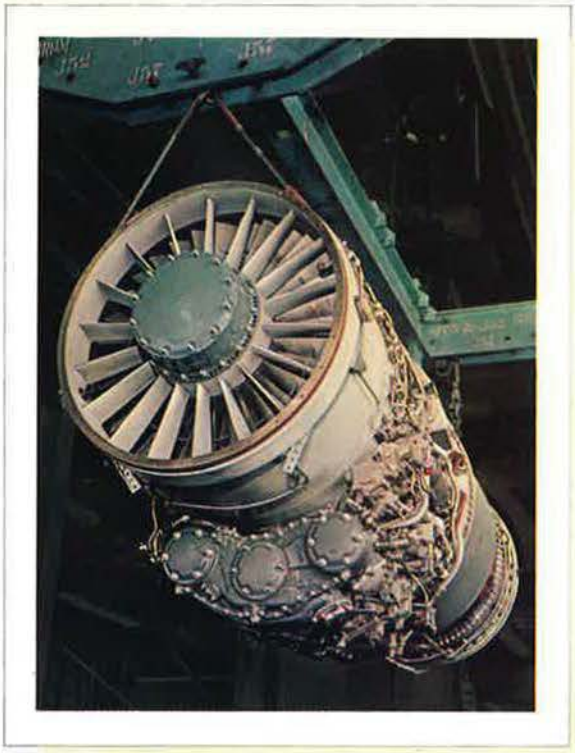

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P-8A	1966	9,300	4.4
P-408	1970	11,200	4.8

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Twentieth Annual

AIR FORCE ALMANAC

THIS is the twentieth time that we have put together our annual special issue devoted to the structure, the purpose, and the accomplishments of the United States Air Force.

Back in 1951, when we published our first "Air Force Almanac," the war in Korea was still being fought, and Jim Jabara had just become America's —and history's—first jet ace. The intercontinental ballistic missile had not even entered the military vocabulary, let alone the inventory. The atomic bomb was measured in kilotons, and Edward Teller was far from being a household word. Harry S. Truman was President of the United States and had made history by refusing to spend $800 million that had been appropriated for new aircraft. Gen. Hoyt S. Vandenberg was Chief of Staff of the Air Force, and the Secretary was Thomas K. Finletter.

The changes in twenty years have been many and far-reaching, but some things have remained the same—like the courage, the dedication, the sacrifices of the men and women of the United States Air Force. They continue to serve their country in faraway places and hazardous ways. To them, as we always have, we dedicate this annual Air Force Almanac issue.

—THE EDITORS

The Soviet Union is in a major buildup in virtually all categories of military power—a buildup that is bigger and faster than earlier estimates had indicated. Here, the Secretary of the Air Force gives his views on this threat and what's needed to cope with it . . .

The Growing Soviet Threat and What To Do About It

BY ROBERT C. SEAMANS, JR.
Secretary of the Air Force

AFTER years of frustrating war in Southeast Asia, most Americans would prefer to turn their attention to our serious domestic problems. And many feel that the money to solve domestic problems could be obtained by the simple expedient of cutting the military budget.

Certainly, as the Vietnamese people take over their own security, we can reduce military expenditures, as we are doing. But at the same time, there are other defense needs that must be met. As President Nixon pointed out in his "State of the World" message to Congress, ". . . there is an irreducible minimum of essential military security: for if we are less strong than necessary, and if the worst happens, there will be no domestic society to look after."

With respect to strategic capabilities, we are facing a rapidly changing balance of forces. And there is a real possibility that neglect in that area could someday greatly increase the risk of nuclear war. We hope that the Strategic Arms Limitation Talks with the Soviets will lead, through limitations on weapons, to less danger of attack. We will continue to strive toward that objective. But in the absence of effective agreements, we must not unilaterally limit the forces that are required for our security.

Maintaining a proper strategic balance will depend on how well we perform two basic tasks:

First, we must analyze the threat. We must study as best we can the capabilities of potential enemies. Not as a scare tactic. Not to produce a panic reaction. But because the capabilities of potential enemies are, after all, the true measure of the forces we really need.

Our *second* major task is to act on our assessment of the threat by developing the forces we need to prevent an attack. In essence, we do not prepare to carry on a war of revenge or of conquest, but we must be strong enough to deter anyone else from starting a war. Some people argue that it doesn't make sense to worry about what happens after our own country has already been largely destroyed. They miss the point. If our weapons can survive to retaliate, then it is not likely that we would be attacked, and there would be no destruction. We must make certain that an attack on the United States would be a very unprofitable business.

Looking at the threat, we find that the Soviets are engaged in a continuing major buildup in virtually all areas—a buildup that is exceeding almost all our earlier estimates of what was likely.

They have more ICBMs than we do. And although we still have a greater number of sub-launched missiles, they have more than *twice* as much missile payload as we do, counting both ICBMs and SLBMs—and payload could turn out to be one of the most important gauges of the threat, since it determines the number of multiple warheads that can be carried.

They are improving their older missiles and are continuing to expand their force. The most serious threat to our Minuteman seems to be the large SS-9s more than 230 of which are now operational or under construction. That missile has been tested with three multiple warheads—and each of these was many times the size of our own Minuteman warheads. It has been judged that if we do nothing to improve the survivability of our missiles, in a few years SS-9s wit

Dr. Robert C. Seamans, Jr., ninth Secretary of the Air Force, was born in Salem, Mass., in 1918. A Harvard graduate, he holds a doctorate in science from MIT where he also taught and managed several research projects. In 1955, Dr. Seamans joined RCA, serving as Chief Engineer of the Missile Electronics and Controls Division until joining NASA in 1960 as Deputy Administrator. Dr. Seamans became Secretary of the Air Force in February 1969.

Dr. Robert C. Seamans, Jr., ninth Air Force Secretary: a rare combination of scientist, administrator, and humanist.

multiple warheads might be able to destroy most of our land-based force. And this does not include the other types of Soviet missiles, many of which may soon be accurate enough to assist in such an attack.

But this is not all the Soviets are doing. At the same time, they are working hard on air and missile defense systems. They have already deployed an ABM system on a limited scale and have in operation thousands of antiaircraft missile launchers. They also maintain some 3,000 interceptor aircraft, which they are continually modernizing, compared to our own force of fewer than 700, including the Air National Guard.

We retain a lead in heavy bombers, but not in total heavy and medium bombers.

The longer range prospects are no less disturbing. We know that in the last five years Soviet space programs and military research and development taken together have been increasing more rapidly than our own. In fact, it appears that in the past few years their annual effort in these programs began to exceed ours in absolute terms. We have not yet seen the full results of this extensive Soviet research and development program. It takes a long time for R&D to be translated into weapons. But if the Soviet Union is successful in adding technological superiority to its growing strategic programs, our national security could be severely jeopardized.

The ultimate danger in all this is that some group of future Soviet leaders might believe they have a first-strike force capable of destroying or disrupting so many of our retaliatory weapons that their defenses could take care of the remainder. Should that point be reached, the danger of an attack or of nuclear blackmail would be serious indeed. We are not near that point today, but we cannot preclude it as a possibility some day in the future.

So we must come back to a very basic idea: The best way to prevent nuclear war is to ensure that there is no doubt at all in anyone's mind about our capability to withstand an attack and still strike back effectively. If we are to continue to meet the objective in spite of the increasing threat, we must modernize our forces.

One important program for countering the 2-to-1 Soviet advantage in missile payload is the Safeguard ABM system, which will help us to protect our missile force from attack. In addition, programs such as Minuteman III and Poseidon are being developed so that our surviving missiles will be able to penetrate Soviet defenses.

We are also working on other measures to ensure that more of our forces could survive an attack. We are developing a new satellite early-warning system that will detect missiles as they are launched from land or sea. This satellite system will significantly increase our warning compared to current systems, making our retaliation more certain and thus strengthening deterrence.

Another area in which we are working is detection of approaching enemy bombers. For the most part our present radars are ground-based. Consequently, they have a poor low-altitude detection capability and are vulnerable to enemy missile attack. Both of these weaknesses can be solved by an Airborne Warning

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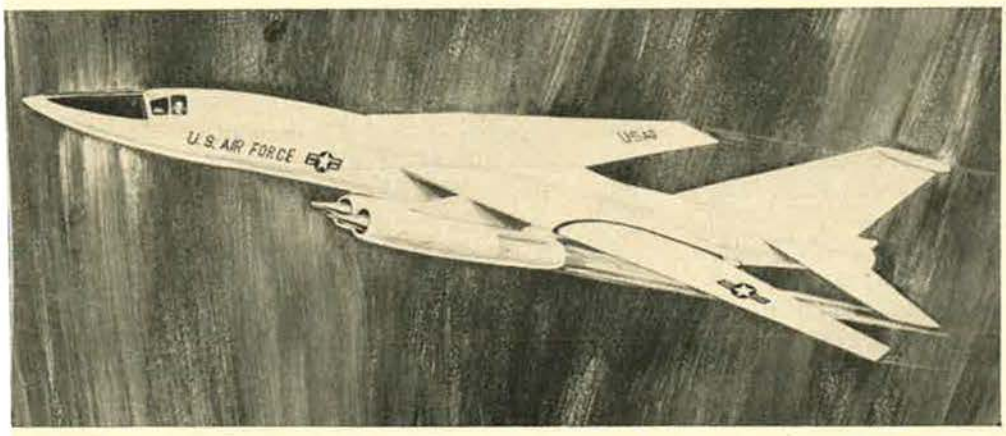
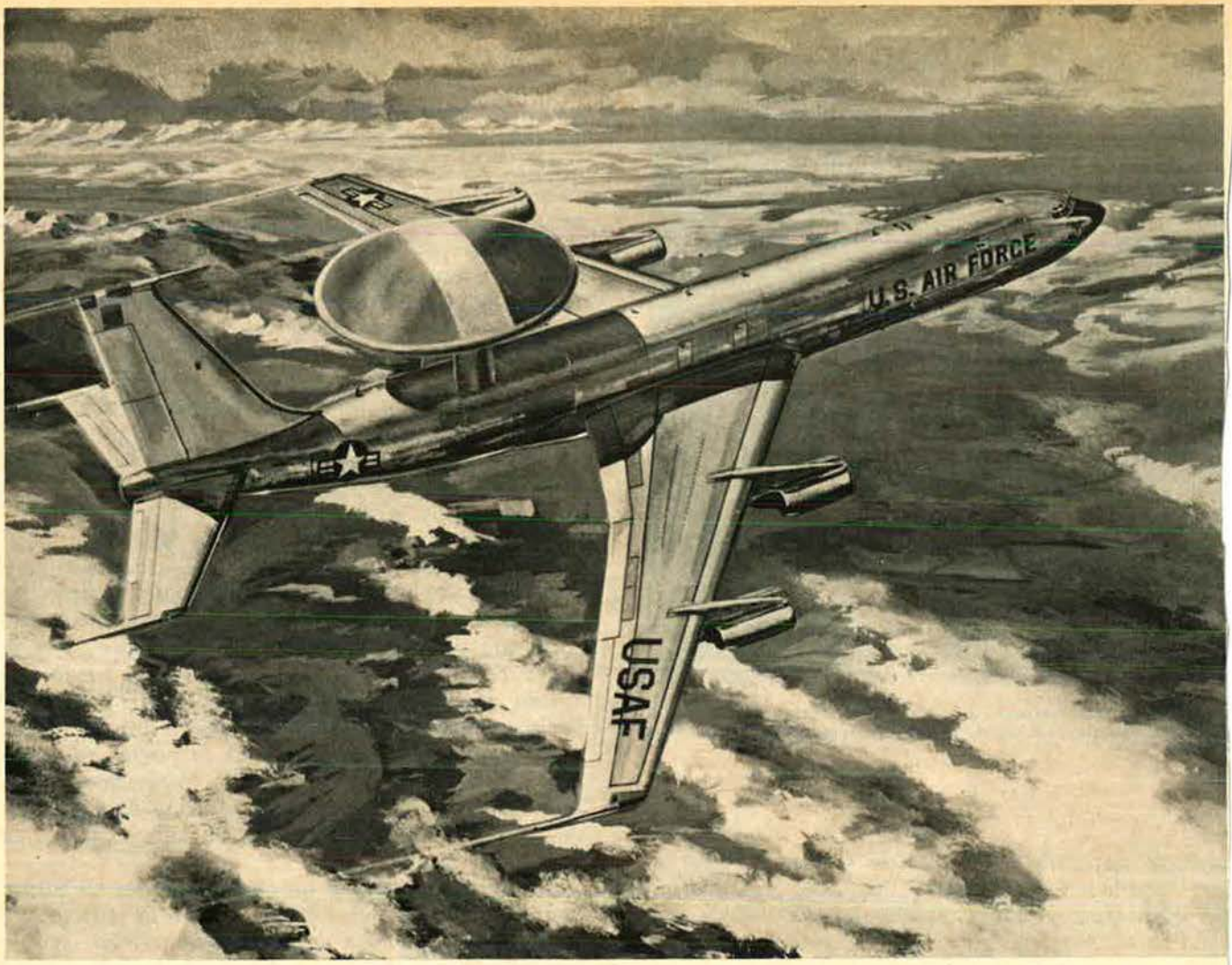


An artist's concept of the B-1, an essential element of future deterrent forces. The Air Force will announce the winner of competition for the B-1 development contract in mid-May. Smaller than the B-52, new technology gives the B-1 greater speed, bomb load, penetration capability, and basing flexibility.



The Soviet bomber threat remains formidable. An artist's concept of AWACS, needed to improve low-altitude detection. See also the article on page 42, by General Ryan, for his discussion of the AF need for a tactical AWACS.

and Control System, called AWACS. With the capability to go rapidly on airborne alert, AWACS will be much less vulnerable to ICBM attack. In addition, its radar will be above the surface looking down, able to spot intruders at any altitude.

We must also modernize our strategic bomber force. If we let our security depend on missiles alone, a major breakthrough in Soviet missile defense systems could undercut deterrence. Adding strategic bombers to our missile force helps ensure against such a disaster. Since an enemy must deal with three different forces—land-based missiles, sea-based missiles, and bombers—he must divide his efforts and is less likely to be able to neutralize even one, let alone all three.

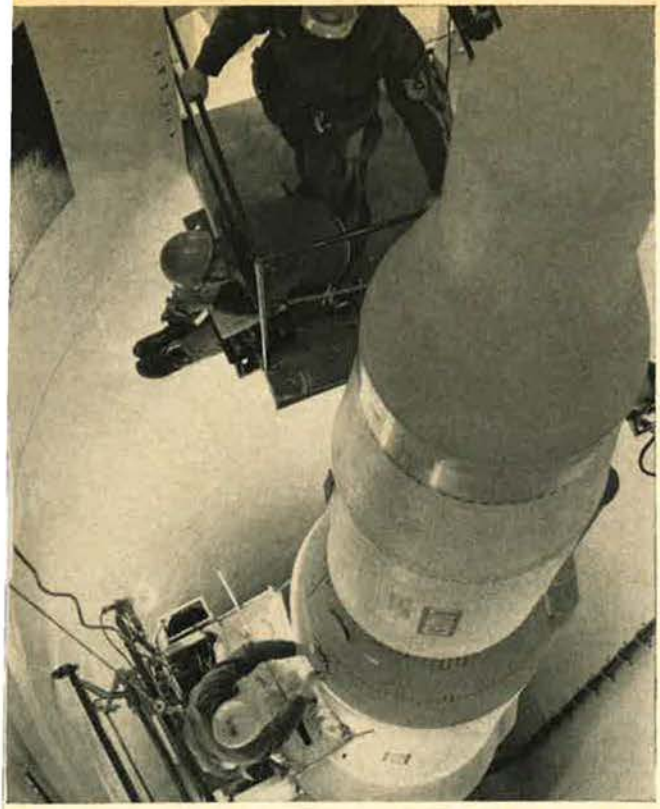
The B-52 aircraft has been the backbone of our bomber deterrent force for more than a decade. The prototype B-52 was based on technology of the late 1940s and first flew in 1952. The latest models were built in 1962. Eventually technology changes so much that either potential new developments cannot be incorporated into old aircraft or it is simply not economical to do so. Then it makes sense to produce a modern aircraft that can handle the threat and will have growth potential for future developments.

As I mentioned, the Soviets are improving their defenses as well as their offenses. The star of the Domodedovo Air Show of 1967 was the Foxbat interceptor. Regardless of tactics and penetration aids, it is asking a lot to assign a bomber the task of taking on a fighter that is fifteen years younger—on the fighter's home grounds.

For all these reasons, we are now developing a new strategic bomber, to be known as the B-1. This aircraft will take advantage of the many technical advances made during the past decade. It will be lighter than the B-52 and will have other characteristics necessary to operate from austere dispersal bases. With wider dispersal it will be harder for the enemy to target, and the B-1 will be able to take off faster, thus reducing its chance of being caught on the ground.

The B-1 will also have a reduced infrared signature and smaller radar cross section, which will make detection and interception more difficult. In addition, its capacity to carry more penetration aids and its improved electronic countermeasures will increase the chance of getting through even after discovery.

We in the Air Force recognize that we must a



The accuracy of Minuteman II and III missiles provides a capability against a variety of targets. Less accurate, shorter-range missiles are limited to area-type targets.

complish the modernization I have outlined at a time when the defense budget can be expected to decrease. We are thus working in every possible way to achieve maximum security at lowest possible costs. We are streamlining our management techniques and cutting back overhead costs wherever possible. For example, personnel strength in all Air Force headquarters above wing level will be cut nearly fifteen percent by this summer. This includes the Pentagon, the rest of the Washington area, all of our major commands, and numbered air force and air division headquarters throughout this country and overseas. And it is perhaps significant that our planned procurement of new aircraft for the coming year is down to 390—the lowest number in any one year since 1935.

In view of past experiences with cost growth, we do not intend to go ahead with production of the AWACS or the B-1 until test aircraft have flown successfully. At that point we should have eliminated most of the development risks and should have a clear picture of those that remain. As a result, it should be possible to minimize costly changes after production has begun.

We also hope to reduce costs by decentralizing management. The program director will be given greater authority and responsibility for his program, thus speeding up day-to-day decisions that can cause expensive delays when they are not made in a timely fashion. At the same time, we will make sure that summary information is available for effective high-level review of technical performance, schedules, and costs.

In conclusion, I believe we must carefully study the growing Soviet strategic forces. We must consider the possible long-term effects of their 2-to-1, and still increasing, missile payload advantage; their large programs in submarine construction, ABM development, and air defense forces; and their growing research and development efforts. In the light of this threat, we must ensure that our land- and sea-based missiles and our strategic bombers can survive and retaliate effectively—and thus deter nuclear war. We must continue with Safeguard to help protect our land-based missiles, with our satellite warning system, with AWACS, with our new penetration capabilities for Minuteman and Poseidon, and with development of the B-1.

We in the Air Force do not want to be alarmists, nor do we lack confidence. We only want to face the facts. Our strategic programs must be viewed against the background of rapidly growing Soviet capabilities. —END

An F-102 (now operated by ANG) looks over a Soviet Bear off the North American coast. Since 1965, our active-duty interceptor force has been cut by two-thirds to fewer than 300, the newest of which—the F-106—is now a decade old. The USSR is believed to have about 3,000 interceptors, including the Mach 3 Foxbat.

Only by combining the very best of people with sound operating concepts and superior equipment can the Air Force continue to perform the kind of job that the national interest demands of it. The Chief of Staff here examines a pertinent case history and then looks to the future . . .

Quality Is the Key to Force Effectiveness

BY GEN. JOHN D. RYAN, USAF

Chief of Staff, United States Air Force

THE severe constraints on defense spending that apply today are causing the Air Force to give more and more attention to another important military fact of life. From now on, as we move toward lower force levels and smaller inventories, the key index to effectiveness in our deterrent role and in our preparations for combat operations will be *quality*.

On this score, I refer in part to quality in the sense of highly trained people with superior skill and ability, an asset that is now also the subject of intensive study at top levels of defense management. In addition, and as my primary topic, I refer to the growing importance of quality in terms of updated concepts and modernized equipment.

To illustrate this point, I could examine any area of mission responsibility—strategic, tactical, or airlift. I have decided, however, to focus on tactical air operations, because this is one field in which we have gained a high level of experience in training, test, and combat operations.

Looking first at the need for updating our concepts of tactical air operations, I think it is fortunate that we have now begun to take greater advantage of two sound operating principles that were proved out in the early stages of World War II. The first and most basic principle stressed the importance of assigning responsibility for coordinating the operations of all tactical air units in a combat zone to one commander. The second principle stressed the need for quality in a system of tactical air control to ensure close and continuous liaison between the cooperating elements of air and ground combat forces.

In the postwar years that followed, however, little success was achieved in sustaining a program of follow-up action to improve the quality and effectiveness of our tactical effort. There were several reasons for this. As one example, at the beginning of the Korean War, we still lacked a firm, joint service agreement on a single air management concept as the best means o shifting and concentrating our forces, especially to con duct interdiction and close air support operation. A a result, we were in the late stages of that conflict be fore an almost *ad hoc* reevaluation of this problem brought the tactical air elements of the Air Force Navy, and Marine Corps back into line with the oper ating principles that we had validated some ten year earlier. This move boosted the efficiency of our com bined tactical air forces to a point that clearly substan tiated the need for an official joint doctrine on air ground operations.

In the post-Korea period, follow-up action to obtai such an agreement again became sidetracked. We were several years into the Southeast Asia conflict before single air management again became a reality. The pressures toward a solution were stronger than ever in Vietnam because of the supplementing functions of tactical air in conducting airlift, escort, and herbicide operations. These pressures were also increased by the intensive air support operations needed to break the siege of Khe Sanh.

There can be little doubt about the essentiality o single air management at Khe Sanh. In that high-density operation, the air resources of all US military service and the Vietnamese Air Force saturated available air space. Strike sorties were flown around the clock b

Gen. John D. Ryan became USAF's seventh Air Forc Chief of Staff on August 1, 1969. A native of Iow General Ryan completed flight training in 1939, a ye after graduating from West Point. During World War he flew fifty-eight missions over Europe in B-17s. Most General Ryan's postwar career has been in SAC, whi he commanded before moving to Hawaii as CinC, PACA in 1967. He also has served as USAF Inspector Gener and was the Air Force Vice Chief of Staff prior to assu ing his present position.

Gen. John D. Ryan, seventh Air Force Chief of Staff. A good man at the controls when there's rough flying ahead.

Marine, Navy, and Air Force tactical aircraft, as well as by B-52s, against targets in an extremely small area. This situation was complicated still further by the extremely heavy air transport activities plus support operations by forward air control (FAC) aircraft and gunships.

On the basis of this total experience, we have a right to assume that we have learned the lesson of single air management well enough to avoid a repetition of the lapses that occurred in the aftermaths of World War II and the Korean conflict. If we have learned that lesson, we should also be able to accelerate progress in developing a fully effective Tactical Air Control System (TACS) based on that concept.

Past progress in acquiring the personnel and hardware elements of a TACS has paralleled fairly closely the ups and downs of joint adherence to the principle of single air management. During the intervals between major conflicts, we had no adequate provisions for maintaining the levels of skill and experience that are requisite for an effective control system. To a like degree, we had no highly efficient provisions for conserving and improving our resources, especially ground-based elements of the system and FAC aircraft.

These deficiencies, prior to Vietnam, had imposed significant penalties on our overall effectiveness in tactical air operations, especially close air support. In that conflict, we have already scored major improvements in the various components of our TACS. We have also been successful in refining our techniques to gear these components into a single system that is reliable and responsive to the multiple requirements of control.

In the airborne element of the TACS, we have progressed from an improvised family of assorted light aircraft to the OV-10, a system which combines an advanced communications capability with enough armament to perform in a limited role of close air support.

In the category of modernized communications and electronics equipment, we are acquiring many new control components of high capacity and mobility under an open-ended development program called 407L. This program, which has been in effect for several years, is designed to satisfy a broad range of new requirements that continually arise from the evolutionary nature of tactical forces and concepts. Through 407L, we should be able to achieve progressive modernization of many related types of communications equipment and facilities in the TACS.

Looking at our needs in this field several years ahead, we are also developing a Tactical Airborne Warning and Control System (Tactical AWACS) which will be an important part of the TACS. With advanced sensor and communications equipment, the Tactical AWACS will enable surveillance and command and control far

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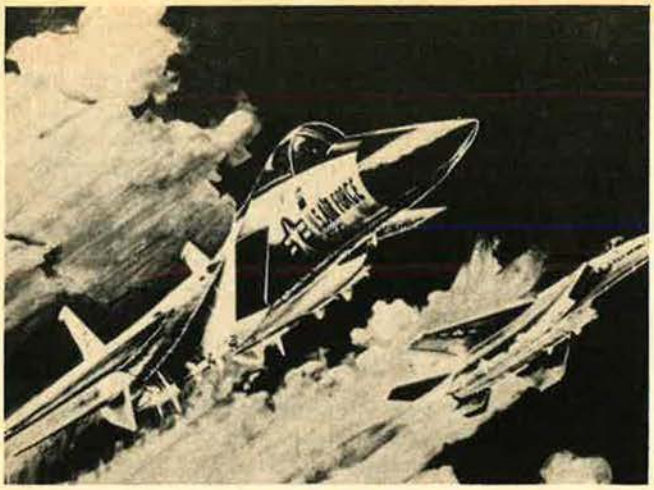
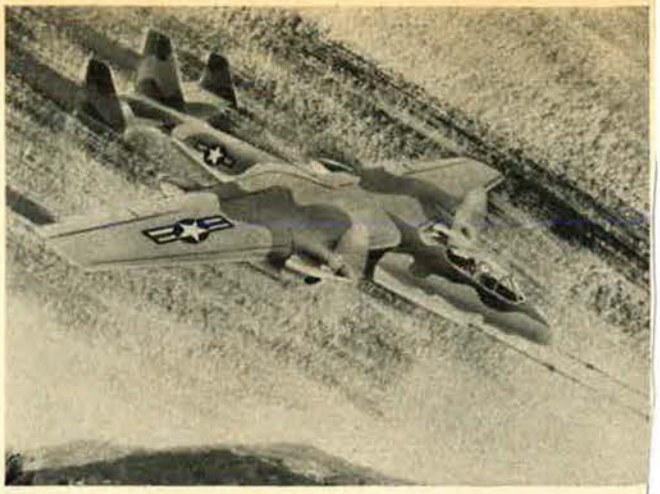
An outstanding Air Force technical achievement has been refinement of the Tactical Air Control System. This is a Direct Air Support Center developed by AFSC's Electronic Systems Division. The inflatable shelters house display and communications equipment. The DASC is part of the 407L Tactical Air Control System, an open-ended development program that has improved the quality of tactical air operations.



An artist's concept of the F-15 air-superiority fighter being developed by McDonnell Douglas. It will combine high speed and maneuverability with flexible firepower.



The A-X—a turboprop, close-support aircraft—may look something like this. It will feature survivability, long loiter time, short-takeoff capability, and easy maintenance.

beyond the capability for existing ground-based elements of the TACS. This aircraft will be available for quick deployment with tactical forces anywhere in the world.

Operating within the TACS, we are developing an integrated family of aircraft with some members already in operation and others just coming into the inventory or under development. This family will provide an improved capability across the spectrum of tactical fighter operations—air superiority, close air support, and interdiction. In developing these aircraft, the emphasis is on quality to obtain desired results. Each type of aircraft is specialized for a particular role, but has the ability to perform one or more supplementary roles. We will achieve maximum combat effectiveness of the tactical force by ensuring a suitable overlap of aircraft capability.

For example, we will have the F-15, specialized for air superiority. Combining power and high speed with the maneuverability and ease of handling of the early pre-jet fighters, it will be a "fighter pilot's fighter plane." The F-15 will be supplemented in the air-superiority role by the F-4.

We will have several aircraft specialized for different ground-support missions. Our primary night and all-weather deep-interdiction aircraft will be the F-111. It will also have a close air support capability and will be supplemented in the interdiction role by the A-7 and F-4. At first, the A-7 will be used primarily for close air support. Equipped with an internal gun, a Doppler inertial navigation and weapon delivery system, forward-looking radar, and improved survivability features, the A-7 will provide increased accuracy in weapons delivery. Eventually the A-7 will be used largely for battlefield interdiction and will have a back-up role in close air support. The highly successful F-4,

An A-7D takes off with very nearly two B-17 loads of bombs. A tough plane with sophisticated electronics, the A-7D will provide extremely accurate close support and effective battlefield interdiction. Along with the F-15, F-4, F-111, and an A-X—all under an advanced Tactical Air Control System—this team will be unequaled in quality by any other nation. And that goes double for the men and women behind the hardware!

now the backbone of the tactical force, will be employed in all three tactical roles. We are planning now to introduce the A-X as our primary close air support aircraft, backed up by the F-4 and the A-7. The A-X will be the first USAF aircraft specifically designed for the close air support role.

Close air support, always a primary Air Force mission, becomes more intricate and complex as ground forces become more mobile. The close air support mission now entails more than simply "putting your bombs where the smoke is." Today, close air support can be broken into at least three subareas: close support of troops in battle, armed escort of troops moving on the ground or transported in the air, and armed reconnaissance in the battlefield area.

As Vietnam experience has shown, close air support aircraft now must be able to do more than "zip in, zap 'em, and zip out." (And we have been doing more than that, as attested to by reports from satisfied Army commanders in the field.) A review of stated Army requirements shows we need a responsive aircraft, capable of identifying, attacking, and destroying targets in extremely close proximity to friendly ground troops. It should be highly survivable and able to operate in poor weather. Its systems should be simple to maintain, it should be able to operate in austere forward areas without elaborate fixed facilities, and it should have radio equipment compatible with both Army and Air Force command and control systems. Existing aircraft can meet many of these requirements, but no single aircraft in the inventory can fill them all. The Air Force A-X is being developed to do all these things.

With its high cruising speed (above 300 knots) and long loiter time, the A-X can be immediately available over the battlefield, or, at the most, a few minutes away when scrambled from an austere forward operating base. It will carry a mixed ordnance load, including a 30-mm gun, all types of conventional bombs, napalm, cluster bomblet units, and, for that matter, any existing or proposed weapons suitable for close air support. It will have two engines, redundancy of control systems, and heavy armor, increasing its survivability and enabling it to fly attack patterns lower and slower. This will permit a higher degree of accuracy and weapon density in ordnance delivery.

The A-X will have a small turning radius, survivability features, ordnance delivery system, and the types of munitions enabling it to perform in close proximity to ground troops and in conditions of extremely low ceiling and visibility. Operation from short airfields within 100 miles of the battle area will be SOP since the A-X, even when carrying a full ordnance load, will be able to take off in about 2,200 feet. Its simple systems will not require sophisticated support equipment.

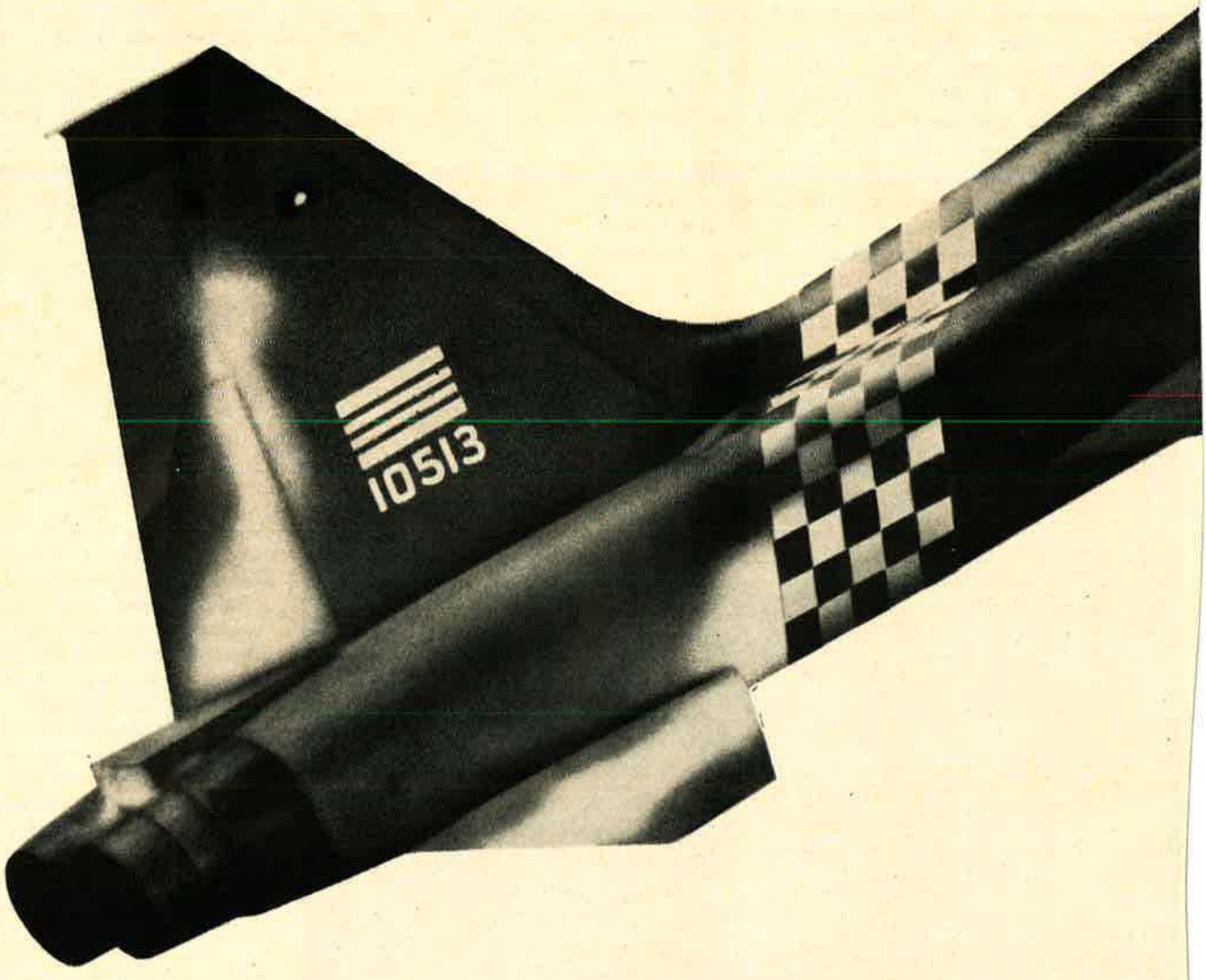
Communications equipment will include both UHF and VHF-FM radios, enabling A-X pilots to communicate directly with supported ground forces as well as with elements of the TACS.

It will be capable of carrying more ordnance the same distance as an F-4, remain on station two and a half times as long, and deliver its ordnance more accurately under more adverse conditions. Its cost will be about half that of an F-4. There is no existing aircraft with comparable performance, even at twice the price.

All of these programs advancing the modernization of both the tactical air control and aircraft elements of our Tactical Air Forces are based on one primary conviction. Only by combining personnel of superior quality with operating concepts and equipment of superior quality can the Air Force continue to do an effective job.—END

Across-the-board quality has been the key to Air Force effectiveness in Southeast Asia. Among the unsung heroes of Vietnam are the men who support remote sites, like the C-7 crew delivering supplies to this jungle strip. Without excellent command and control systems, air superiority, and suppression of ground fire, their job—always difficult—often would be impossible.

The F-5's Mission



A proven idea that gets better with the times.

n five years of service the F-5 has become the most idely-used high performance aircraft in the Free World on duty with 15 nations. It is the supersonic backbone air forces in six Asian countries.

Day after day, it serves these highly capable air forces an air superiority fighter, as a fighter-bomber, as an terceptor, as a recon-issance aircraft.

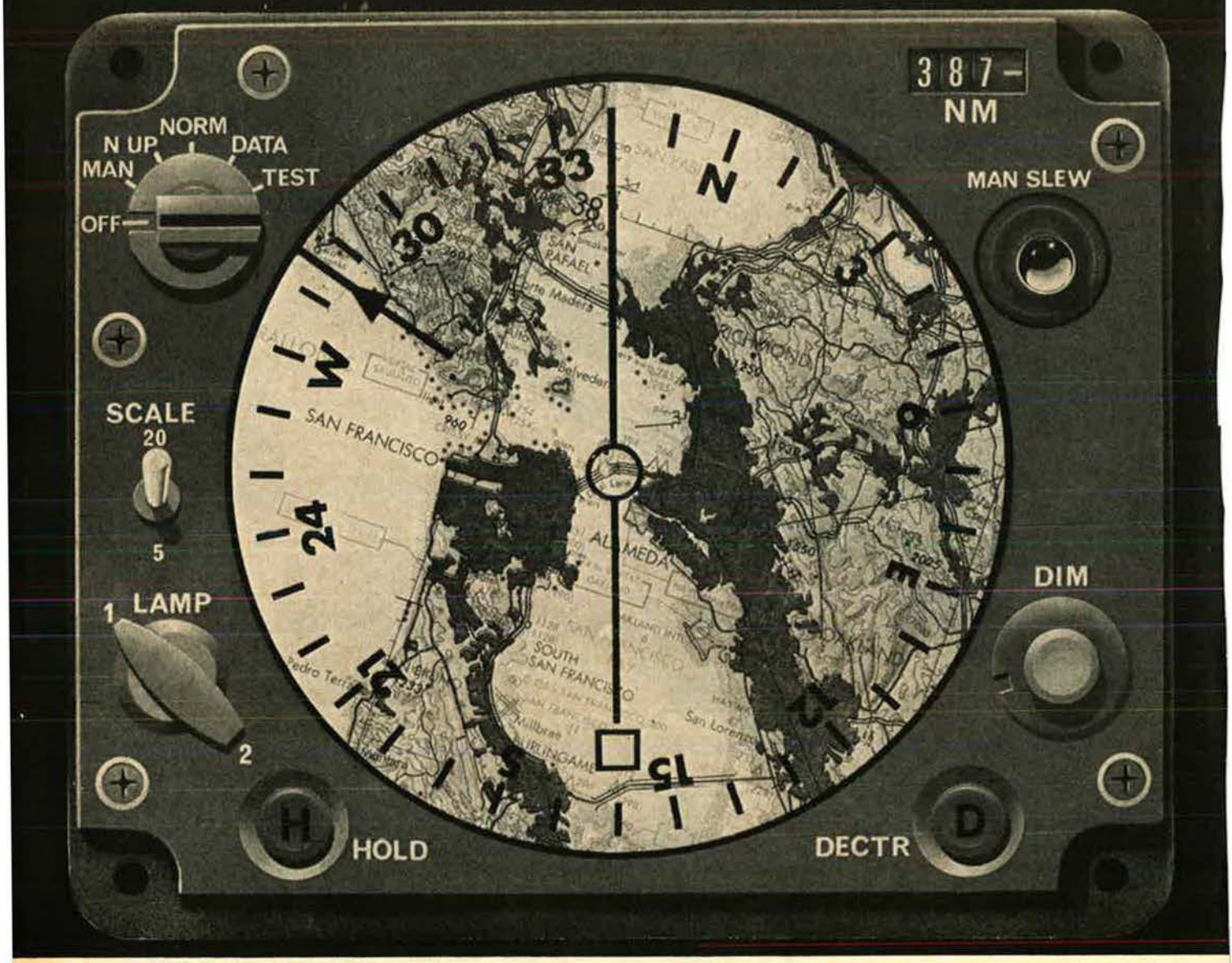
The mission of the F-5 s been to perform these ks effectively and to it with a minimum of n, money and mate-ls. This is a vital mis-on in today's world, en the real measure of a nation's strength is the effectiveness with which it can use its resources.

A newer version of the aircraft carries this principle forward into another decade. Known as the F-5-21, it has been underway for over a year. Its more powerful engines have been tested since March 1969, and it brings together many aerodynamic improvements in service on other F-5 versions. The net result: Significantly greater performance and maneuverability.

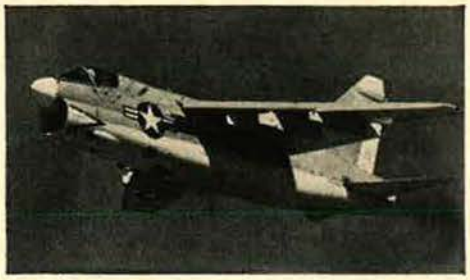
Fully compatible with F-5's now in operation, this new fighter can be put into service quickly and efficiently. It can be a key factor in helping Free World nations maintain independent strength on into the future.

NORTHROP

Pilots shouldn't have to follow maps.



Maps should follow pilots.



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Hq. Offutt AFB, Neb.
Gen. Bruce K. Holloway
Commander in Chief

41

United States Air Forces in Europe
Hq. Lindsey AS, Germany
Gen. Joseph R. Holzapple
Commander in Chief

42

Pacific Air Forces
Hq. Hickam AFB, Hawaii
Gen. Joseph J. Nazzaro
Commander in Chief

43

Military Airlift Command
Hq. Scott AFB, Ill.
Gen. Jack J. Catton
Commander

44

Air Force Systems Command
Hq. Andrews AFB, Md.
Gen. James Ferguson
Commander

50

Alaskan Air Command
Hq. Elmendorf AFB, Alaska
Maj. Gen. Joseph A. Cunningham
Commander

51

Headquarters Command USAF
Hq. Bolling AFB, D.C.
Maj. Gen. Nils O. Ohman
Commander

52

United States Air Forces Southern Command
Hq. Albrook AFB, Canal Zone
Maj. Gen. Kenneth O. Sanborn
Commander

53

Air Force Communications Service
Hq. Richards-Gebaur AFB, Mo.
Maj. Gen. Paul R. Stoney
Commander

54

United States Air Force Security Service
Hq. Kelly AFB, Tex.
Maj. Gen. Carl W. Stapleton
Commander


18

Chief Scientist
John J. Welch, Jr.


19

Chief Master Sergeant of the Air Force
CMSgt. Donald L. Harlow


20

Chief, Office of Air Force History
Maj. Gen. Richard A. Grussendorf


21

Director, Air Force Board Structure
Col. Dean H. Schuyler


22

Director of Administration
Col. John F. Rash


23

Secretary of the Air Staff
Col. William E. Atwater


29

Surgeon General
Lt. Gen. Kenneth E. Pletcher


30

Assistant Chief of Staff, Intelligence
Maj. Gen. Rockly Triantafellu


31

Assistant Chief of Staff, Studies and Analysis
Maj. Gen. Glenn A. Kent


32

Chief of Air Force Reserve
Maj. Gen. Tom E. Marchbanks, Jr.


33

Chief, National Guard Bureau
Maj. Gen. Winston P. Wilson


36

DCS/Programs and Resources
Lt. Gen. George S. Boylan, Jr.


37

DCS/Plans and Operations
Lt. Gen. Russell E. Dougherty


38

DCS/Research and Development
Lt. Gen. Otto J. Glasser


39

DCS/Systems and Logistics
Lt. Gen. Harry E. Goldsworthy

OMMANDS


45

Air Force Logistics Command
Hq. Wright-Patterson AFB, Ohio
Gen. Jack G. Merrell
Commander


46

Tactical Air Command
Hq. Langley AFB, Va.
Gen. William W. Momyer
Commander


47

Air University
Hq. Maxwell AFB, Ala.
Lt. Gen. Albert P. Clark
Commander


48

Air Training Command
Hq. Randolph AFB, Tex.
Lt. Gen. Sam Maddux, Jr.
Commander


49

Aerospace Defense Command
Hq. Ent AFB, Colo.
Lt. Gen. Thomas K. McGehee
Commander

THE SEPARATE OPERATING AGENCIES


55

United States Air Force Academy
Colorado
Lt. Gen. Thomas S. Moorman
Superintendent


56

Air Force Reserve
Hq. Robins AFB, Ga.
Maj. Gen. Rollin B. Moore, Jr.
Commander


57

Office of Aerospace Research
Hq. Arlington, Va.
Brig. Gen. Harvey W. Eddy
Commander


58

Air Force Accounting and Finance Center
Hq. Denver, Colo.
Brig. Gen. Edwin S. Wittbrodt
Commander


59

Air Reserve Personnel Center
Hq. Denver, Colo.
Col. Benjamin S. Catlin, III
Commander


60

Air Force Data Systems Design Center
Hq. Washington, D.C.
Col. Jack M. MacGregor
Commander


61

Aeronautical Chart & Information Center
Hq. St. Louis, Mo.
Col. Edwin L. Sterling
Commander

Strategic Air Command

WHEN THE Strategic Air Command (SAC) was conceived in the final months of World War II, farsighted military planners were able to predict clearly the need for such a credible nuclear deterrent force. Over the past twenty-four years, SAC has improved its effectiveness through the development of its organization, weapons, and tactics. This evolution has been stimulated by science, the Communist threat, and the developing role of the United States as a leader of free nations. Most of all, it has been paced by the ingenuity and drive of SAC's professional manpower.

Though the men and machinery necessary to carry out its deterrent mission have changed, the primary mission of the command has remained the same. Briefly stated, SAC's peacetime mission is to maintain a force capable of deterring aggression. Should deterrence fail, then SAC, the only specified command of the Joint Chiefs of Staff, must fight—and win.

The global concept of operations, the flexibility of its bombers and missiles, the tried and tested qualities of command, control, and communications, and its professional personnel have long been central to SAC. Together, they add up to the primary role of the command—deterrence—and they are basic to its secondary mission.

This "secondary" task is to meet the demands imposed by nonnuclear war. Under the cover of SAC's nuclear deterrent, bombers and tankers have continued their significant contribution to the Vietnam War. SAC has always had the potential for delivering conventional weapons, but until the B-52s actually began dropping

Command and control of the worldwide Strategic Air Command is exercised from headquarters near Omaha, Neb. Symbolic of SAC's missile force in today's climate of instant response is the Minuteman "shell" mounted in permanent display before the headquarters facility. It also reflects the major role assigned to the command since its inception following World War II—deterrence through the threat of massive retaliation.

Before he assumed command of the Strategic Air Command in August 1968, Gen. Bruce K. Holloway served as USAF Vice Chief of Staff. Upon graduation from the US Military Academy in 1937, he undertook pilot training at Kelly Field, Tex., receiving his wings in 1938. Shortly after the US entered World War II, General Holloway joined the "Flying Tigers" in China and remained with them when they were redesignated the 23d Fighter Group, becoming its Commander before returning to the US in 1944. In 1946, he assumed command of USAF's first jet fighter group. After graduation from the National War College in 1951, General Holloway held key staff posts at Headquarters USAF, and with Tactical Air Command and US Strike Command. He was named chief of USAFE in July 1965 and served in that position until becoming USAF Vice Chief of Staff in August 1966. A fighter ace with thirteen kills, General Holloway holds among his decorations the Distinguished Service Medal, the Silver Star, the Legion of Merit, Distinguished Flying Cross, and Air Medal.

Members of a SAC combat crew race toward their perennially ready-and-waiting B-52 heavy bomber. Forty percent of the SAC bomber and tanker force is on continuous ground alert, set to head for predetermined targets within the warning time provided by the Ballistic Missile Early Warning System. One of the bomber's two nuclear, air-to-ground, standoff Hound Dog missiles is shown in the foreground. The weapon has a range of more than 500 miles.

bombs on targets in Vietnam five years ago, the image of the command was nuclear. The B-52's greatest asset has been its tremendous bomb-carrying ability—one Stratofortress can carry thirty tons of 500- and 750-pound bombs. The precision that the crews bring to the operation enables them to deny the enemy sanctuary, to give direct support to ground troops locked in battle, and to interdict the supply areas and lines.

SAC's historic use of the strategic bomber force in support of tactical ground operations is one of the outstanding examples of the flexibility of airpower.

The bombers are only one part of the SAC operation in Southeast Asia. The other role is filled by the KC-135 air-refueling jet tankers. The crews of these aircraft are among the not-so-loudly sung heroes of the war. They have done an outstanding job. Their presence has made this the first conflict in which fighter-bomber and fighter-interceptor operations are not limited by fuel supply. The Stratotankers have also engaged in emergency refuelings to save men and aircraft, and they play an invaluable role in providing airlift for deployment to and redeployment from Southeast Asia.

To carry out its deterrent mission, SAC utilizes missiles as well as aircraft. The command's intercontinental ballistic missile (ICBM) force is comprised of fifty-four Titan IIs and 1,000 Minuteman missiles. The liquid-fueled Titan IIs have the heaviest warhead in the missile inventory. The solid-fueled Minuteman force is constantly being updated. Minuteman IIs have been added to the force and some of the original Min-

(Continued on following page)

STRATEGIC AIR COMMAND

Headquarters, Offutt AFB, Neb.

Commander in Chief
Gen. Bruce K. Holloway

2d Air Force
Hq., Barksdale AFB, La.
Lt. Gen. David C. Jones
Commander

19th Air Division
40th Air Division
42d Air Division
45th Air Division
47th Air Division
817th Air Division
823d Air Division

8th Air Force
Hq., Andersen AFB, Guam
Lt. Gen. Alvan C. Gillem II
Commander

1st Strategic Aerospace Division
Hq., Vandenberg AFB, Calif.
Maj. Gen. William C. Garland
Commander

15th Air Force
Hq., March AFB, Calif.
Lt. Gen. Paul K. Carlton
Commander

4th Strategic Aerospace Division
12th Strategic Aerospace Division
14th Strategic Aerospace Division
17th Strategic Aerospace Division
810th Strategic Aerospace Division
821st Strategic Aerospace Division

A Titan II intercontinental missile roars out of its underground storage silo in a practice launch. A basic heavyweight in SAC's arsenal, Titan II plays a major role in the command's mission because of its nuclear warhead and range of more than 9,000 miles. The fifty-four-missile force of Titan IIs is to continue in operational status well into the current decade.

uteman Is are undergoing modernization. Those Minuteman Is that are not being modified will be replaced by Minuteman IIIs when that system becomes operational. These newer missiles will have an increased throw weight, greater accuracy, and a larger number of selectable target options.

Minuteman III, now in flight testing and slated to become operational later this year, will be a further step in force modernization. The first missile with the operational capability to carry Multiple Independently Targeted Reentry Vehicles (MIRV), Minuteman III can also carry penetration aids to confuse enemy defenses.

SAC missile combat crews, for the third time in missile history, met in a Missile Combat Competition at Vandenberg AFB, Calif. During April, missile crews and maintenance teams representing the finest of each Titan II and Minuteman wing competed in the week-long "Olympic Arena." This competition demonstrated the importance of the missile in the overall defense posture and helped sharpen the SAC missile force.

The strategic sufficiency the United States has today rests largely on the SAC bomber force. The manned strategic bomber force is able to respond to changing combat conditions and to provide several options to the National Command Authority. The core of this force is the B-52. Since 1965 the total bomber force has been reduced by the retirement of older models, from about 750 B-52s and B-58s to a current total of approximately 450 strategic bombers. The B-58, the nation's only supersonic bomber, was phased out of the bomber inventory early this year.

For the past thirteen years, SAC has maintained a sizable ground alert force. A further refinement of this continuous alert posture was tested last year. Known as Satellite Basing, bombers and tankers are dispersed to more bases to reduce vulnerability to missile attack. This dispersal further reduces the time required to launch the force and ensures a more credible deterrence.

This spring, the Air Force will consider design proposals on an Advanced Manned Strategic Bomber, the B-1. This aircraft has been identified as a possible replacement for the aging B-52 fleet. It would be capable of delivering large payloads, both nuclear and conventional, to long-range targets, at supersonic or subsonic speeds. The B-1 would also have the capability to penetrate enemy defenses in either full-scale or limited-war action. If approval for full-scale production is granted, the aircraft could be flown by SAC crews as early as 1977.

The FB-111 medium bomber is scheduled to become a part of SAC's operational bomber force in the near future. Operational units will be located at Plattsburgh AFB, N.Y., and Pease AFB, N.H.

EC-135C airborne command post aircraft stand ready to take charge should SAC ground facilities become inoperative. EC-135Cs are airborne twenty-four hours a day.

A missile crew stands alert at one of SAC's Titan II missile complexes. Should it become necessary, the weapon can be launched from its silo home in less than a minute.

A B-52D Stratofortress releases its 60,000-pound load of bombs on enemy targets in Vietnam. Because it can strike from high altitudes without warning, the aircraft has deterred the enemy from assembling large-scale units for major assaults on ground bases. The B-52 bomber force is aging, however, and is already scheduled to be replaced by the upcoming B-1.

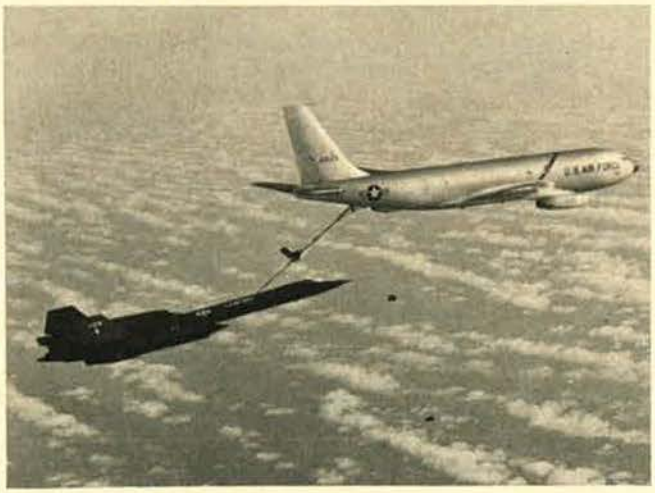
The air-refueling tankers, the KC-135s, continue to meet worldwide refueling requirements. SAC, as the single manager of the USAF jet tanker fleet, refuels Air Force tactical and strategic aircraft as well as US Navy combat aircraft.

Four SAC bombers competed in the RAF Strike Command Bomber-Navigation Competition in May and, this fall, all SAC bomber units will take part in the SAC Bombing-Navigation Competition. The realistic training and evaluation of flight crew and maintenance teams in a competitive atmosphere make the competition a valuable tool in the further refinement of the SAC bomber force.

One of the most significant command organization changes in SAC's history occurred in April 1970 with the reduction of SAC's three numbered air forces in the United States to two. The command functions of Eighth Air Force, Westover AFB, Mass., were assumed by Second AF, Barksdale AFB, La., and Fifteenth AF, March AFB, Calif. The action was a result of budget cuts and the modernization and realignment of the strategic bomber forces. This reorganization resulted in all SAC missile and reconnaissance units being assigned to a single numbered air force—the Fifteenth. Though some bomber and tanker units are assigned to the Fifteenth, the majority of the aircraft force are under the command of the Second AF.

SAC's 3d Air Division, Andersen AFB, Guam, was inactivated in April 1970 and redesignated Eighth AF. Thereafter, all SAC units in the western Pacific and Southeast Asia came under the operational control of Eighth AF.

Strategic Air Command's greatest resource is the same as the nation's—its people. Using the weapon systems now in the inventory and planning for the future, they still maintain SAC's nuclear deterrent. It is still the primary mission, but with the success of the strategic bombers in Southeast Asia, SAC will continue to have an important role in conventional warfare.—END



An SR-71, the world's most advanced strategic reconnaissance aircraft, is refueled by a KC-135 Stratotanker. The SR-71 can fly at more than three times the speed of sound.

A three-stage, solid-fuel Minuteman ICBM is launched from a test silo at Vandenberg AFB, Calif. Six wings of the solid-propellant missile totaling a force of 1,000 form the backbone of SAC's missile strength. Minuteman III versions are designed to employ Multiple Independently Targeted Reentry Vehicle (MIRV), capable of carrying up to seven nuclear warheads to assigned targets.

A Major Air Command . . .

US Air Forces in Europe

UNITED States Air Forces in Europe (USAFE) will celebrate its twenty-fifth anniversary on August 7, 1970. The command was organized shortly after the end of World War II, in 1945.

Today USAFE is a lean, combat-ready command. Its airplanes are modern, and its aircrews are professional and experienced.

USAFE's job is the same as it was when the North Atlantic Treaty Organization was formed in 1949—to train and equip Air Force units pledged to NATO, and to aid other NATO nations in developing the combat effectiveness of their air forces. USAFE operates throughout Western Europe and the Middle East, covering an area that embraces roughly a quarter of the world.

Gen. Joseph R. Holzapple has been USAFE commander since January 1969. General Holzapple also commands the Fourth Allied Tactical Air Force (4ATAF), the international command to which the great bulk of USAFE's combat-ready units are committed for NATO control. Tactical air elements of the Royal Canadian and West German Air Forces are also assigned to 4ATAF, which is the largest of NATO's numbered tactical commands.

Completion of a vast conversion program that saw older aircraft give way to the sophisticated F-4 Phantom resulted in a streamlined organization geared to improving USAFE's tactical-airpower capabilities. The F-4E is the latest version of the McDonnell Phantom to be accepted by the Air Force. It is an all-weather, twin-engine jet fighter-bomber with a crew of two, which does double duty as an interceptor, has a top speed of more than 1,600 mph, and an altitude ceiling of nearly 60,000 feet.

The first USAFE unit to complete transition from F-102s to the F-4 Phantom was the 32d Tactical Fighter Squadron based at Camp New Amsterdam, The Netherlands. Following the 32d were three other squadrons of F-102 interceptors. The four squadrons retain their primary air defense mission. USAFE has also activated the 86th Tactical Fighter Wing, November 1, 1969, and taken over Zweibrucken Air Base, Germany. The wing will have a dual mission with a reconnaissance squadron of RF-4Cs (already in place) and a tactical fighter squadron of F-4s.

The first F-4s to arrive in Spain replaced F-100s of the 401st Tactical Fighter Wing at Torrejon Air Base in January 1970.

The swingwing F-111 is scheduled to come into the USAFE command inventory later in the year. The 20th Tactical Fighter Wing at RAF Upper Heyford, England, will be the first unit to receive the multipurpose aircraft. The F-111 can reach speeds of Mach 2.5 at altitudes of 60,000 feet and is considered superior to other US tactical fighters with respect to its unrefueled transoceanic range, bomb-carrying capability, all-weather strike capability, and single-ship penetration capability. Until conversion, the 20th will retain its F-100 aircraft.

USAFE's strike capability consists of the F-4s, and two wings of F-100s. Reconnaissance wings are equipped with RF-4s.

USAFE is a component of the United States European Command (USEUCOM), which consists of the US Army, Navy, and Air Force in the European

Prior to being assigned in January 1969 as Commander in Chief, US Air Forces in Europe, and Commander, Fourth Allied Tactical AF, Gen. Joseph R. Holzapple served as Deputy Chief of Staff, Research and Development, Headquarters USAF. A 1938 graduate of Bradley University, he received his wings in 1941. During the war General Holzapple flew ninety-one combat missions in Africa and Europe and commanded the Twelfth Air Force's 319th Bombardment Group. After assignments in planning and development work following the war, he attended the National War College in 1954-55 and, on graduation, became Commander of the 47th Bombardment Wing in England. In 1956 General Holzapple joined USAFE as Deputy Chief of Staff for Operations and later became its Chief of Staff. The late 1950s and early '60s found him again in the US engaged in supervising various USAF research projects. He was named Deputy Chief of Staff for Research and Development in September 1966. A command pilot, he holds the DSM, the Silver Star, Legion of Merit, DFC, and Air Medal.

Defending the skies over Europe is a relative newcomer to this theater—the F-4 Phantom, an all-weather, twin-jet, two-man fighter-bomber. It does double duty as an interceptor and has a top speed of more than 1,600 mph. F-4s have an altitude ceiling of 60,000 feet. They are replacing older aircraft in both US and allied squadrons.

theater. USAFE is responsible to the Commander in Chief, USEUCOM, and, in addition, comes under the Air Force Chief of Staff on questions of Air Force policy and on administrative matters that relate to the command over assigned units.

USAFE's NATO missions are directed by the Supreme Allied Commander, Europe (SACEUR).

Three numbered air forces assist in carrying out USAFE's mission—one each in England, Spain, and Germany. The Third Air Force with headquarters at South Ruislip, England, is a combat-ready tactical force. In the event of hostilities, its tactical air units would come under operational control of NATO's Fourth Allied Tactical Air Force.

The Sixteenth Air Force at Torrejon Air Base, Spain, is USAFE's southernmost European command. It has operational control of one tactical fighter wing with three squadrons. The Sixteenth Air Force has no NATO commitment. However, in time of war, Sixteenth's 401st Tactical Fighter Wing would be deployed outside Spain and become NATO-committed.

The Sixteenth Air Force has administrative command of The United States Logistics Group (TUSLOG), which has its headquarters at Ankara, Turkey. TUSLOG, formerly one of USAFE's major subcommands, has a primary mission to provide logistic support for US forces, representatives, and activities in Turkey, Greece, and Crete, as well as in other areas of North Africa, the Middle East, and Asia. It also provides operational support for two NATO-committed tactical fighter squadrons on rotational assignment from other bases in Europe. Assignment of administrative command of TUSLOG to the Sixteenth Air Force provides better, more efficient command control and minimizes supply and logistics problems previously encountered throughout the Mediterranean areas where USAFE bases are located.

The Seventeenth Air Force, with headquarters at Ramstein Air Base, Germany, has both offensive and defensive capabilities, and in the event of hostilities would respond to the command of the Fourth Allied Tactical Air Force.

The gunnery range operated by the 7272d Flying Training Wing at Wheelus Air Base, Libya, ceased operations in early September 1969. Withdrawal of all military, dependents, and civilian employees of the wing is programmed for completion by June 30, 1970.

In the fall of 1969, the electronic-warfare capability of USAFE was beefed up with the assignment of the 39th Tactical Electronic Warfare Squadron to Spangdahlem Air Base, Germany. The 39th is equipped with

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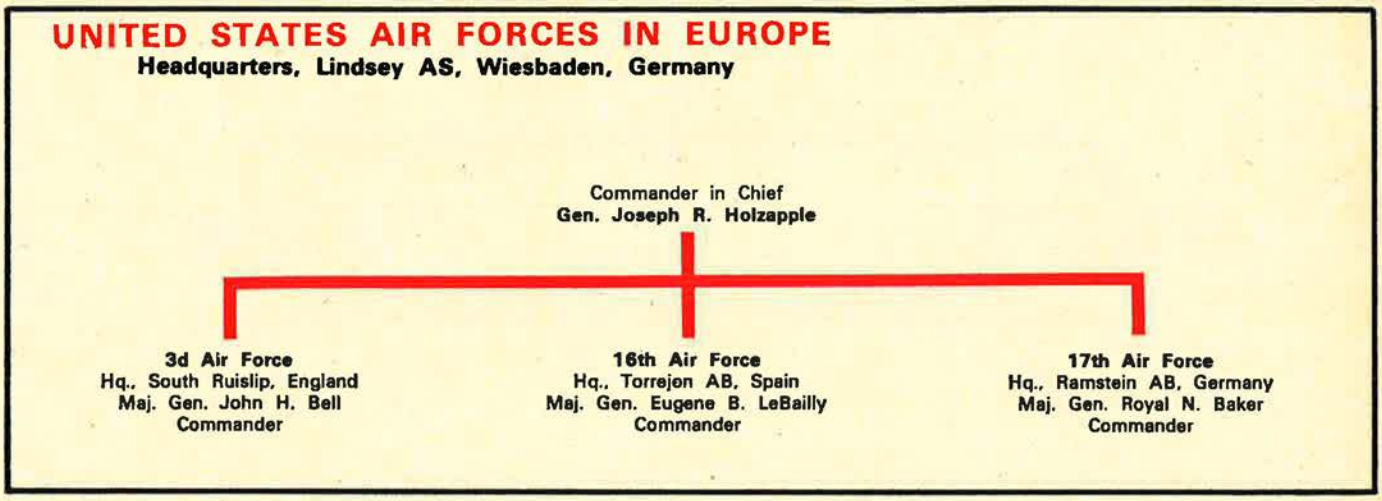


Douglas EB-66 aircraft—a twin-engine turbojet. The squadron represents a major upgrade of the electronic-warfare capabilities of tactical aircraft in the European area.

The European Communications Area, a component of the Air Force Communications Service, provides extensive communications support. A significant move to decrease overloading of communications systems was the introduction in Europe of the Automatic Digital Network (AUTODIN), the world's largest and most advanced digital communications system.

Installation of the AUTOVON (Automatic Voice Network) system in June 1969 linked USAFE with the Defense Communications System and greatly improved military telephone service in Europe.

In 1969 USAFE acquired the responsibility for tactical airlift in Europe. Previously USAFE's airlift function was managed by the 322d Air Division, Military Airlift Command (MAC), under a joint USAFE-MAC plan for coordinated control. With control of airlift operations turned over to USAFE, the Airlift Control Center, formerly located at High Wycombe, England, was moved to Wiesbaden. The 322d Air Division was inactivated. MAC then activated the 435th Military Airlift Support Wing and moved the headquarters to Rhein-Main Air Base, Germany, to support strategic airlift missions to and within Europe.

USAFE has two tactical airlift wings—one at RAF Mildenhall, England (the 513th), and one at Rhein-Main Air Base, Germany (the 322d). Both have C-130 Hercules, with the Tactical Air Command rotating aircraft and crews periodically.

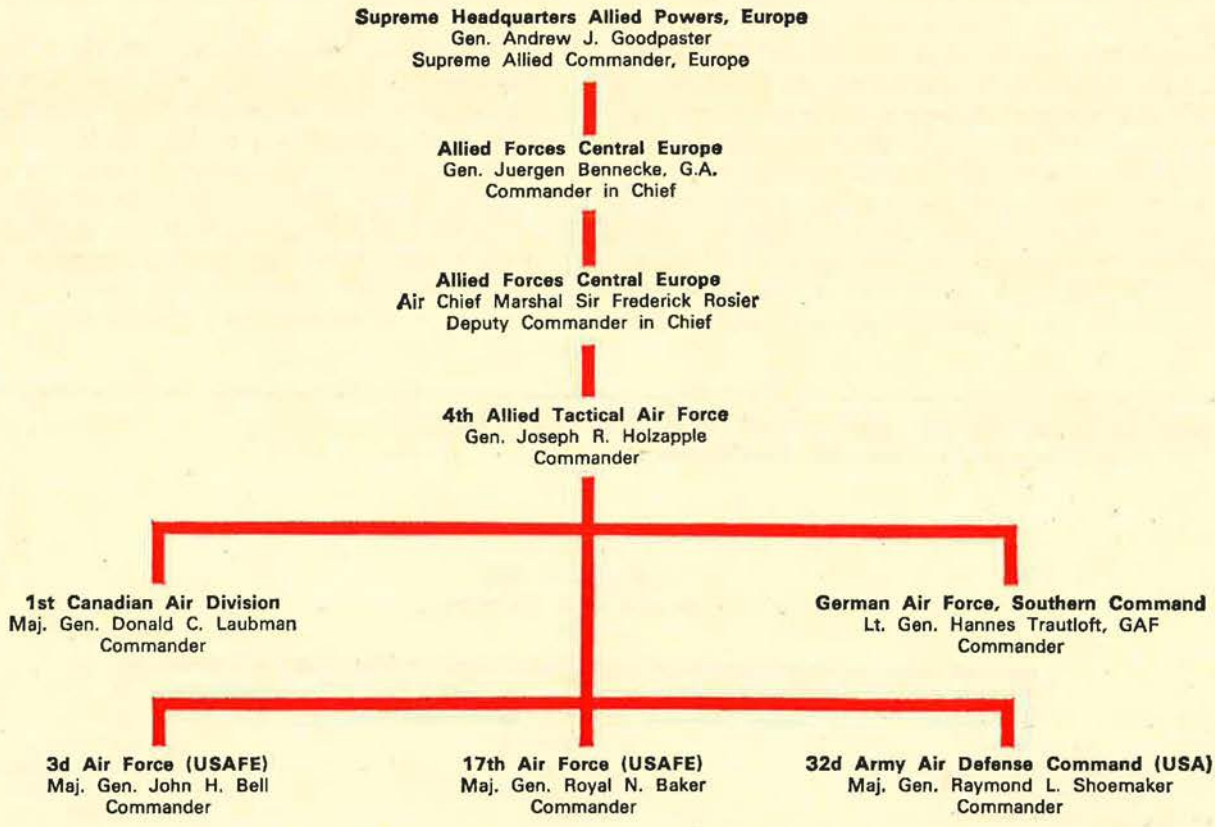
The 322d Tactical Airlift Wing at Rhein-Main Air Base also handles intratheater aeromedical evacuation, operating C-118s and C-131s with augmentation as necessary by C-130s.

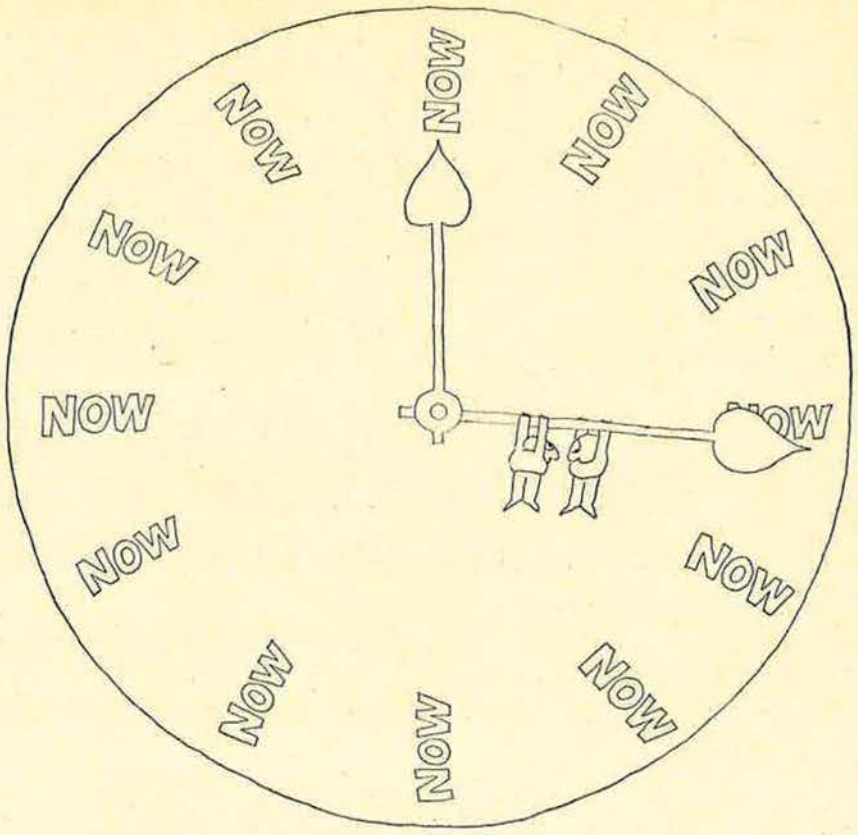
Six dual-based Phantom squadrons, located in the United States for economy reasons, continue to train to meet USAFE and NATO-commitment standards. USAFE maintains suitable bases in Europe in a constant state of readiness to receive the dual-based squadrons. Dual basing serves a definite response capability in time of emergency and is intended primarily as an immediate reinforcement.

The shelter construction program TAB VEE (Theater Air Base Vulnerability), started in January 1969, is well under way at bases in Germany and one in The Netherlands. Initial construction was started at Ramstein Air Base, Germany, and was ninety percent complete in early 1970. The shelters, designed to better protect the Air Force's Phantom jets, are the same type as those now being used in Vietnam, and are scheduled for completion by fall of 1970. Overall, the

(*Continued on page 61*)

Relationship of Major USAFE Units to NATO Chain of Command for Air





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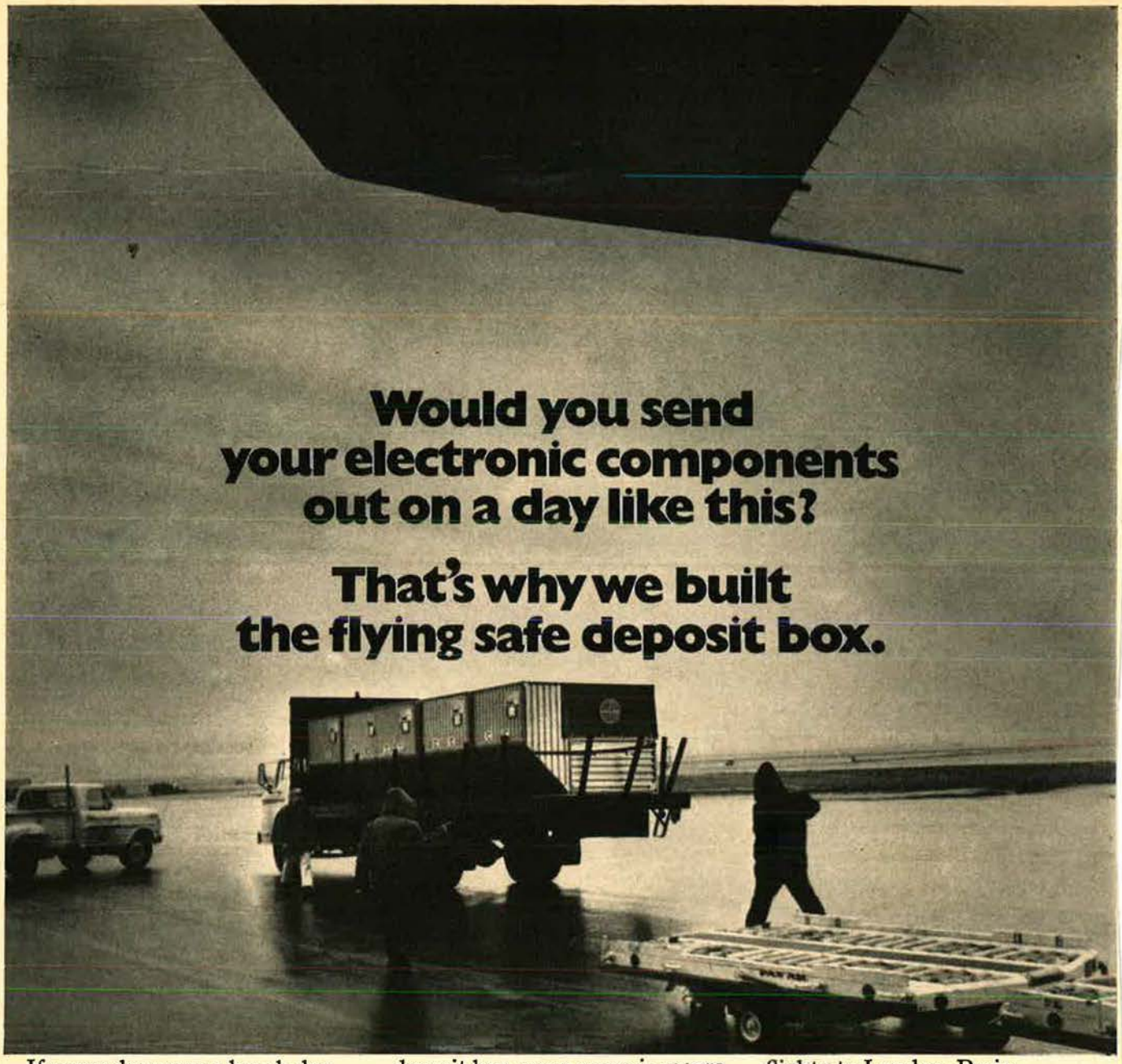

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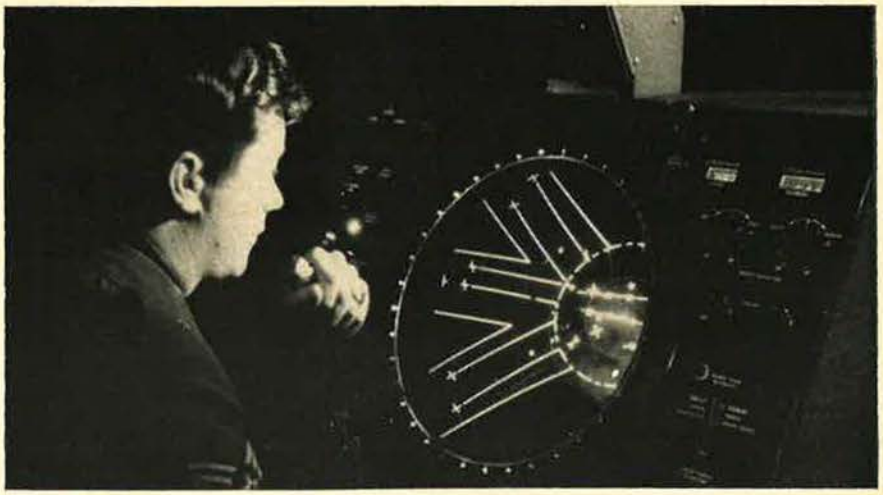
In USAFE as well as throughout USAF the C-130 Hercules is a workhorse. Two rotational C-130 squadrons from the US help provide USAFE and NATO forces with day-to-day logistical airlift and delivery of cargo and personnel during training exercises. NATO forces participated in two large-scale exercises in the recent past. Deep Furrow was conducted in the southern region of Allied Command, Europe, and Arctic Express in Norway near Soviet Union and Finnish borders. Both operations were supported by USAFE aircraft.

The job of air traffic controller is one of the most exacting and exciting in the USAF. Doubly so if the post is in Berlin, where aircraft have to be guided in and out of one of three ten-mile-wide air corridors. This scene is reminiscent of several decades ago when the city was blockaded and the necessities of life for the entire population had to be brought in by air. The blockade was broken by a herculean effort of USAF aircrews who risked their lives daily.



With an icy Norwegian landscape as a background, a USAF C-130 Hercules roars off Bardufoss Air Station during the deployment phase of NATO's field exercise Arctic Express.

USAFE crew unloads gear at Bardufoss in support of NATO forces in Arctic Express, an exercise designed to test rapid deployment as well as winter operational capability.

shelter construction was fifty percent complete by the end of April.

To keep its airlift and tactical fighter units combat ready, USAFE participates in exercises with the US Army in Europe and with other NATO forces. Two large-scale NATO exercises were held in the last year — Deep Furrow in the fall of 1969 and Arctic Express in February/March 1970.

Deep Furrow took place in the southern region of Allied Command, Europe. Land forces held maneuvers in northwestern Turkey, and naval forces held exercises in the eastern Mediterranean, including the Aegean Sea. NATO air units provided fighter-bomber support and photo reconnaissance throughout the area. Greece, Turkey, Italy, the United Kingdom, and the United States participated. The southern land forces were supported by an air deployment from the United States and Europe.

Arctic Express was held in the Tromsö area of Norway near the borders of the Soviet Union and Finland. The object was to test the deployment of the

(Continued on following page)

mobile force of Allied Command, Europe and its ability to operate in a winter climate. Seven battalions—about 5,000 men—from the armies of the United States, Canada, Britain, and Italy were transported by sea and air to the exercise site. The Air Force flew more than 150 airlift missions with C-130s in the deployment phase. The same number of missions was required for redeployment.

USAFE deployed twenty-one F-100s, and the Canadian forces deployed a squadron of F-104G Starfighters for participation in the exercise.

USAFE's humanitarian aid included assistance to the people of Tunisia during a flood in October 1969. Members of the 58th Aerospace Rescue and Recovery Squadron at Wheelus Air Base flew HH-53 Jolly Green Giant helicopters and airlifted tons of food, medicine, clothing, and blankets to the victims. More than 2,000 people were rescued from rising water.—END

Forward air controllers direct close-in support sorties by USAFE fighter aircraft in joint USAF/US Army exercises as well as operations conducted by NATO combined forces.

A propeller from the famed *Lady Be Good* WW II bomber is removed from its site at Wheelus AB, Libya, as the base closes. The souvenir goes to the Air Force Museum, Ohio.

US Army assault troops, flown in by USAF C-130 Hercules, stage a mock attack during a joint USAF/US Army exercise in Europe. In 1969 USAFE acquired responsibility for all tactical airlift operations on the continent.

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A Major Air Command . . .

Pacific Air Forces

THE LAST fire fight of the siege was over. A weary Army sergeant, Carl Mayse, climbed down from his weapon-firing position, sat on a bullet-riddled sandbag, and counted his blessings at the tiny Ben Het Civilian Irregular Defense Camp in the Republic of Vietnam.

Airpower—PACAF style—had just saved his life. He was more than grateful. "We were really glad to see those Air Force fighters," said Mayse. "Things looked grim until they showed up." Another adviser echoed Mayse's words. "The B-52s and the fighters really rattled Charlie's teeth," said Army 2d Lt. Neal D. Fagan. "We couldn't have survived without them."

The sentiments of these two Americans were typical of remarks of more than 100 civilian and military defenders assigned the long, difficult task of defending the Ben Het Civilian Irregular Defense Camp in Kontum Province from North Vietnamese and Viet Cong forces. Their camp had been under attack during most of the spring of 1969, and now, the last week in June, US Air Force airpower had driven off the enemy.

Another success story was quietly recorded for the pilots, ground crewmen, and behind-the-scenes specialists of Pacific Air Forces, the big Air Force command that defends the Pacific. It was the bombing, strafing, illumination, and resupply missions by PACAF aircraft that permitted Ben Het—and Sergeant Mayse and Lieutenant Fagan—to live and fight another day. But the defense of Ben Het didn't just happen. It was a product of professional teamwork in the air and on the ground.

During the siege F-100 Supersabres, F-4 Phantoms, and A-1 Skyraiders from PACAF's Seventh Air Force and Vietnamese Air Force A-37s flew a combined total of 917 sorties. Strategic Air Command B-52s flew thirty-seven missions in direct support of the camp while AC-47 Spooky and AC-119 Shadow gunships performed thirty-three night-illumination and firepower missions.

Ben Het's major source of supply was airdrop, and C-7 Caribou aircraft under direction of the 834th Air Division delivered urgently needed ammunition, water, and medical and food supplies. During the last twenty days of June, 215 tons were air-dropped.

Heaviest action took place during the week of June 23-29. On June 29, ninety sorties were flown by Seventh Air Force and VNAF pilots. At the end of the siege, Forward Air Controllers (FACs) of the 21st Tactical Air Support Squadron who directed area air strikes credited allied fighter-bomber pilots with killing 303 enemy soldiers and destroying 1,062 bunkers and twenty-four weapons positions.

Close air support like this at Ben Het is just a part of PACAF's mission in Southeast Asia, just as PACAF's Southeast Asia mission is only a part of its broad Pacific-area military responsibilities.

What is the mission of the Pacific Air Forces? To maintain air superiority in the Pacific. The command is responsible for roughly forty percent of the earth's surface—an area populated by more than one and one-half billion people of some twenty nations.

To meet this challenging mission, PACAF is manned by more than 150,000 men and women assigned to thirty-one bases from Hawaii to Thailand. The operations of three numbered air forces, five air divisions, and one air base wing are directed from Headquarters PACAF, Hickam AFB, Hawaii, by Gen. Joseph J. Nazzaro and his staff.

The air base wing serving as a major subcommand is the 6486th Air Base Wing, Hickam AFB. This wing is responsible for supporting all PACAF central Pacific activities, including the areas of Hawaii and Johnston

Gen. Joseph J. Nazzaro became the Commander in Chief, Pacific Air Forces, in July 1968. Previously, he headed SAC. A 1936 West Point graduate, General Nazzaro attended advanced flying school at Kelly Field, Tex., and then transferred from the Infantry to the Army Air Corps in 1937. During the war years he served with the Eighth Air Force in Europe, and in January 1944 was named Deputy Director of Operations, US Strategic Air Forces in Europe. After postwar duty as bomb wing and division commander, staff officer, and Air University instructor, General Nazzaro became USAF Director of Personnel Planning in 1957. During the late 1950s and early 1960s, General Nazzaro held several important positions in SAC, including Commander of the Eighth Air Force. He was appointed SAC Vice Commander in Chief in December 1964, and in February 1967 became Commander in Chief. A command pilot, General Nazzaro includes among his military decorations the Distinguished Service Medal, the Silver Star, Legion of Merit, Distinguished Flying Cross, and Air Medal.

Island. Due to its mid-Pacific location, the wing supports transiting tactical fighters and other aircraft en route to and from Southeast Asia. Additionally, Military Airlift Command flights passing through Hickam are serviced by the 6486th.

Also located at Hickam, within Headquarters PACAF, is the agency responsible for the unified Pacific Command's tactical airlift capabilities. The Directorate of Airlift (DOAL) integrates all key elements of a system responding to airlift needs of Army, Navy, Marine, and Air Force units in the Pacific Command. DOAL was formed in early 1969 to assume airlift functions previously performed by PACAF's 315th Air Division, which was deactivated.

Current focal point of public interest in PACAF operations is the air war in Southeast Asia. Two of PACAF's numbered air forces—Seventh Air Force in the Republic of Vietnam and Thirteenth Air Force units in Thailand—are committed to combat.

Since the November 1, 1968, bombing halt, PACAF missions have been restricted to air support of free world forces in the Republic of Vietnam. Prior to that halt, PACAF aircraft successfully carried the war to North Vietnam, striking military and industrial targets with great effectiveness.

Seventh Air Force, air arm of the Military Assistance Command, Vietnam (MACV), is headquartered near Saigon at Tan Son Nhut Air Base. Included in its varied missions are close air support for Army, Marine, and allied ground forces, airlift, reconnaissance, air defense, psychological-warfare operations, and support functions necessary to each of these.

Approximately 1,000 combat aircraft and more than 52,000 personnel are assigned to Seventh Air Force. Its aircraft inventory ranges from the latest in jet fighter-bombers to World War II aircraft converted for special operations.

Thirteenth Air Force units in Thailand provide tactical support for Seventh Air Force operations in Vietnam. Although these units are assigned to Thirteenth, they come under operational control of Seventh.

Flying a variety of missions, Thirteenth Air Force organizations operating from Royal Thai Air Force bases have established impressive combat records. For example, the 13th Tactical Fighter Squadron "Panther Pack" of the 432d Tactical Reconnaissance Fighter Wing at Udorn RTAFB, Thailand, logged its 10,000th mission in Southeast Asia on July 8, 1969. To achieve this mark, pilots flew more than 19,500 hours.

Headquarters Thirteenth Air Force is located at Clark Air Base, Republic of the Philippines. Manned by more than 49,000 men and women, including those assigned to Thailand, Thirteenth Air Force provides primary logistical support for Air Force units in Southeast Asia.

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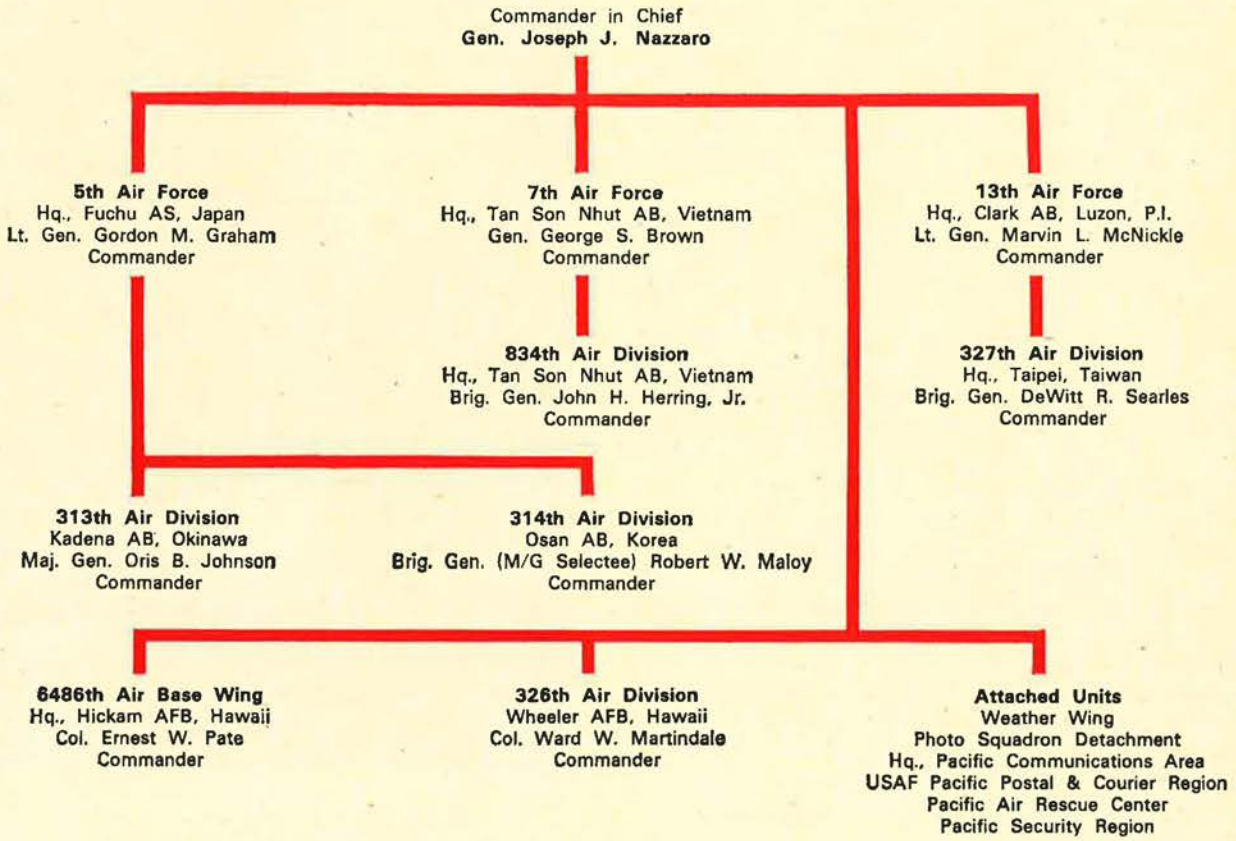
PACIFIC AIR FORCES

Headquarters, Hickam AFB, Hawaii



On the flight line at South Vietnam's Tuy Hoa Air Base, a USAF F-100 Supersabre of the 31st Tactical Fighter Wing awaits the coming of dawn and the inevitable call to combat.

PACAF operations in Southeast Asia are fast paced. From July 1, 1969, through February 1970, Air Force pilots flew some 48,000 tactical sorties. FACs directing these missions credited the pilots with killing more than 3,000 enemy troops and destroying approximately 37,000 fortifications, 57,000 bunkers, and some 2,000 enemy sampans. More than 16,000 of the strikes recorded during this period were in support of allied troops engaging the enemy.

One of the most effective methods of air support furnished by the Air Force in Southeast Asia is high-altitude bombing by Strategic Air Command (SAC) B-52 bombers. The giant eight-engine aircraft each delivers up to thirty tons of conventional ordnance from altitudes of six or more miles. Six B-52s can saturate a target area two kilometers square—an area about the size of 425 football fields.

Under the control of SAC's 3d Air Division at Guam (now redesignated Eighth Air Force), B-52s flew more than 1,600 missions in support of allied forces from July 1, 1969, through February 1970. The first B-52 strike against the enemy in the Republic of Vietnam was conducted in June 1965.

Continuous surveillance of the enemy's movements, logistics efforts, and offensive and defensive posture is one of the most complex missions of PACAF units in Southeast Asia. Employing a variety of aircraft and sensors, tactical reconnaissance forces collect information, process and interpret data, and provide a basis for responsive and decisive command action in the shortest possible time. Tactical reconnaissance produces approximately eighty-five percent of all tactical information and intelligence data in Southeast Asia.

To accomplish this enormous task, reconnaissance forces fly around the clock over potential battle areas, collecting information about the enemy. RF-4s, RF-101s, RB-57s, EB-66s, and EC-47s are used in this role and are equipped with a variety of optical, radar, and electronic sensors.

Meanwhile, the lifeline of extensive allied military operations in Southeast Asia is airlift. Airlift aircraft move troops into battle and supply them with food, weapons and ammunition, and equipment in a land of heavy rain, forests, soggy rice fields, and frequently unusable roads.

For example, US and Australian tactical airlift crews under the direction of Seventh Air Force's 834th Air Division were airborne some 260,000 times from July 1, 1969, through February 1970. During this period, they carried more than 2,600,000 passengers and approximately 470,000 tons of cargo. Total payload amounted to some 800,000 tons.

Another important mission is providing rescue support for downed PACAF airmen in Southeast Asia. The Military Airlift Command's 3d Aerospace Rescue and Recovery Group (ARRG) flys an average of fifty rescue missions a month in HH-43, HH-3C, and HH-53 helicopters and HC-130P aircraft. During 1969 they were credited with saving more than 650 lives, 468 of these in combat.

Since 1964, the 3d ARRG has rescued more than 2,850 downed airmen, including nearly 2,000 combat saves. On November 26, 1969, the unit was awarded the Presidential Unit Citation signed by President Richard M. Nixon. This award, highest United States unit award and the second received by the 3d ARRG, was presented for the period from July 1967 to January 1969.

Psychological-warfare operations also are a major role of several PACAF organizations. These are the four special operations wings in Southeast Asia. From July 1, 1969, through February 1970, these units dropped more than 3.3 billion leaflets urging enemy troops to rally to the side of the government in the Republic of Vietnam.

Results of this psywar program, called Chieu Hoi

Under attack by a night-hidden enemy, the defenders of a Vietnam hamlet call for area illumination by flares dropped from an AC-47 gunship on duty in close support.

An F-4 Phantom streaks in to demolish an attacking force of enemy soldiers during action at Bien Hoa Air Base's eastern perimeter. Beside its support role in the Vietnam fighting, PACAF has the overall mission of maintaining air superiority throughout the entire Pacific, in an area that comprises nearly forty percent of the earth's surface.

(Open Arms), have been outstanding. During the week of July 23, 1969, for example, the Seventh Air Force's 14th Special Operations Wing reported that 1,577 enemy troops rallied to the side of the Republic, a record in the Mekong Delta area.

Also in the special operations area, gunships have become an important part of PACAF's close air support operations. These converted cargo aircraft are equipped with Miniguns and otherwise modified as attack aircraft. They fly flare-drop illumination missions for night operations and firepower missions. From July 1, 1969, through February 1970, PACAF gunships flew more than 4,000 missions in support of allied ground forces.

In November 1969 another aircraft was added to the gunship fleet. This new model—the AC-119K—replaced the AC-47 Spookies, which were transferred to VNAF units. These more potent aircraft were nicknamed "Stinger." They carry four side-firing Miniguns but have an additional two 20-mm cannons. Two J85 jet engines supplement the original two reciprocating engines.

Recently Vietnamese Air Force (VNAF) pilots have assumed greater responsibility for air operations in Vietnam, flying missions in such aircraft as the AC-47 Spooky gunship and the A-37 fighter-bomber. By February 1970, VNAF pilots were flying about twenty-five percent of allied in-country fixed-wing strike missions.

The Vietnamese Air Force has undergone a period of rapid growth and development. In 1961 the VNAF consisted of six squadrons with a total of 100 aircraft. In consonance with President Nixon's concept of "Vietnamization," VNAF size has grown.

Today VNAF has five tactical wings, an expanded Air Training Center, and an Air Logistics Command. It includes an AC&W Group and an Air Medical Center. All of these are under control of VNAF Headquarters, Tan Son Nhut Air Base.

(Continued on following page)

An HH-3 Jolly Green helicopter takes an in-flight drink under the watchful eyes of an HC-130 Hercules loadmaster during a refueling operation conducted over South Vietnam. The two are part of a well-rounded team of aircraft that perform rescue operations in Southeast Asia.

A South Vietnamese Air Force A-37 of the 520th Fighter Squadron scores hits on an enemy bunker in the Mekong Delta. The South Vietnamese are being given the training and equipment to assume a greatly beefed-up role in conducting air operations in defense of their homeland.

The 522d Fighter Squadron at Bien Hoa has operated F-5 Freedom Fighters in combat since mid-1967. Other VNAF fighter squadrons are equipped with the dependable A-1 Skyraider. In addition, several squadrons are flying the A-37.

Vital VNAF airlift functions are performed by C-119 and C-47 airlift squadrons. These aircraft fly throughout the country, delivering essential cargo and equipment and providing airlift for the Vietnamese Army.

VNAF O-1s and U-17s are utilized in the forward air control role and fly psychological-warfare missions. The VNAF is steadily assuming a greater share of FAC sorties and a number of VNAF pilots have been certified to control both VNAF and US strike sorties.

Important helicopter functions are filled by H-34 and several UH-1 squadrons. The jet-powered UH-1 is the most recent helicopter asset phased into the VNAF inventory. With these, VNAF pilots have assumed a greater responsibility in providing highly important supply, medical evacuation, and airmobile operations.

Combining a growing aircraft inventory with their new reconnaissance and special air missions capabilities, the VNAF is a young and growing force that has demonstrated capabilities comparable to USAF standards. As the "Vietnamization" program progresses, the VNAF can be expected to provide a viable, professional, self-sufficient force in the struggle against communism.

While the conflict in Southeast Asia continues, PACAF units in other parts of the Pacific continue to serve as major deterrents to Communist aggression. In addition to its units in Thailand, Thirteenth Air Force is responsible for the Western Pacific, including the Republic of the Philippines and the Republic of China, Taiwan.

Meanwhile, Fifth Air Force in the Far East is responsible for the area including Japan, Korea, and Okinawa. Headquartered at Fuchu Air Station, Japan, Fifth Air Force is manned by some 46,000 combat and support personnel.

Since the seizure of the USS *Pueblo* by North Korea in 1968, Fifth Air Force's area of responsibility has been a prime target for Communist aggression. To combat this challenge, Fifth Air Force units in Korea maintain a highly trained, well-equipped force capable of meeting any form of Communist advance.

In addition, the Republic of Korea Air Force has been bolstered by new aircraft. On August 29, 1969, six F-4D Phantom jet aircraft were delivered to the ROK Air Force. Earlier, in March 1969, six F-5A aircraft were turned over to the ROK Air Force in connection with the Military Assistance Program.

With such allies as Japan, Republic of Korea, Republic of China, Republic of the Philippines, Republic of Vietnam, Thailand, and many others across the Pacific area, the Pacific Air Forces will continue to carry out its mission of air superiority. While PACAF personnel stand guard in the hills of South Korea, other PACAF units continue to combat the Communist threat in Southeast Asia. From one end of the Pacific to the other, Pacific Air Forces men and aircraft stand as "Guardians of the Pacific."—END

US Army Sp. 5 John Shaw shouts, "Let's get out of here!" as his C-7 Caribou draws ground fire during a resupply mission last year to the garrison at the Ben Het outpost.

RIGHT DOWN THE ALLEY.

There's a new LORAN-aided weapons delivery system designed for the Air Force's F-4.

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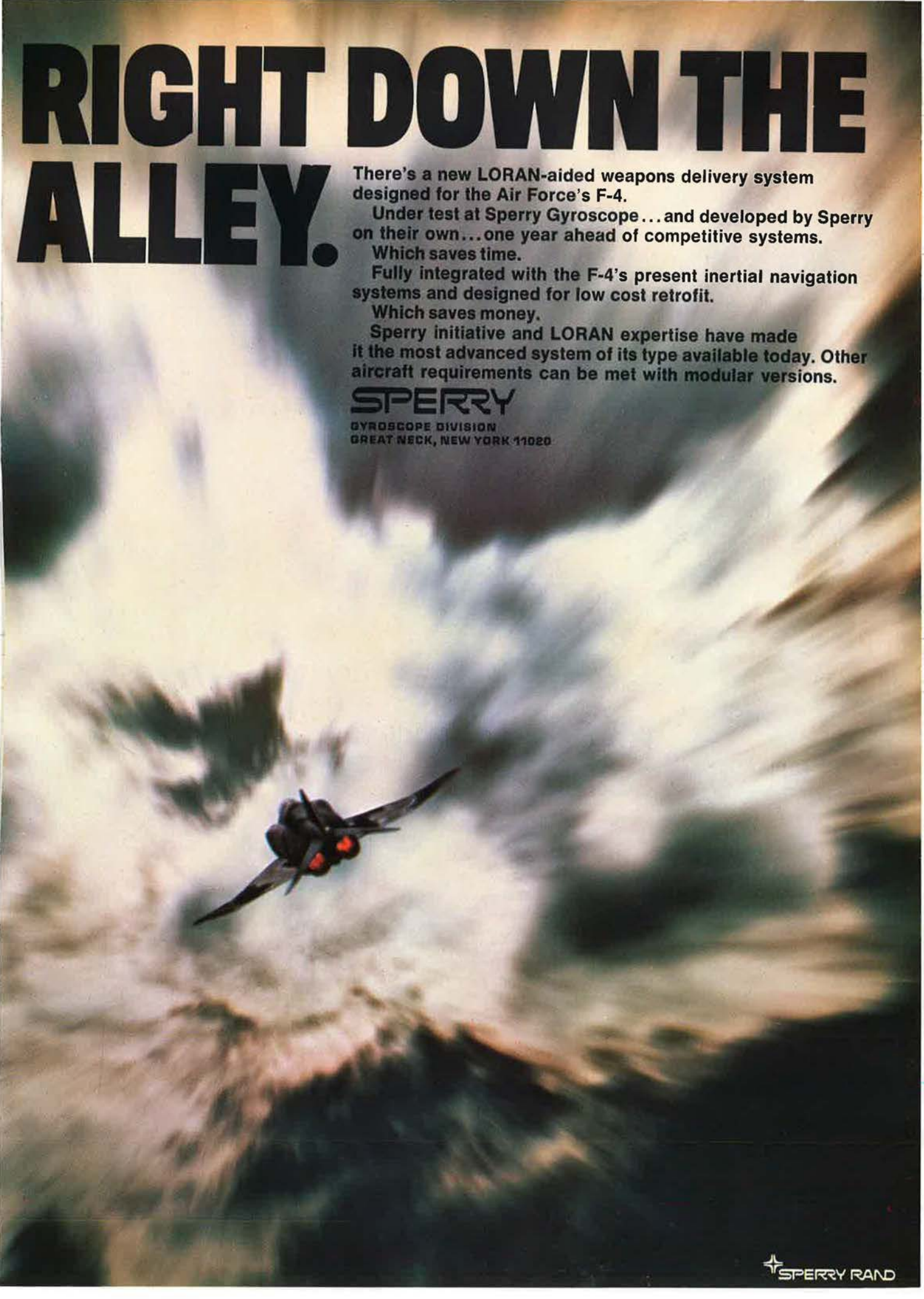


SPERRY RAND

An Air Force Art Portfolio

USAF—Worldwide and Beyond

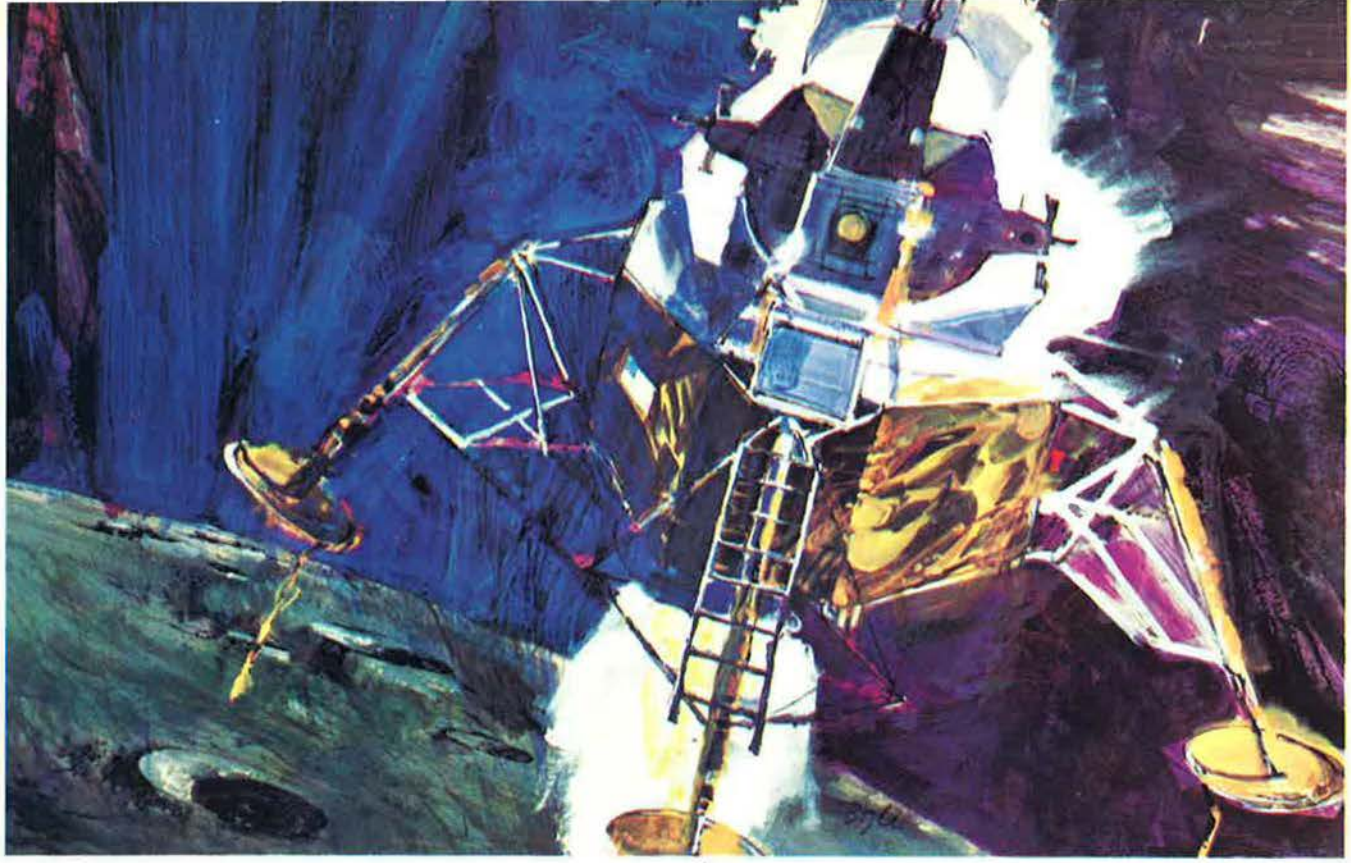
The paintings reproduced on these pages are from the United States Air Force Art Collection, which is administered by the Art and Museum Branch, USAF Office of Information. The collection contains more than 3,000 objects of art — predominantly paintings by eminent American artists. Many of the paintings are on exhibit at the Pentagon, the USAF Academy, Air University, the Air Force Museum at Wright-Patterson AFB, Ohio, and in traveling exhibits that have visited hundreds of communities and bases throughout the United States. Nearly 5,000,000 Americans view portions of the collection each year.

The poems are by Lt. Col. Don Clelland, who served as an RF-101 pilot in Vietnam in 1966-67 and, a decade earlier, flew F-86s in combat in Korea. A former member of the USAF Academy history faculty, Colonel Clelland is now assigned to the Office of the Secretary of the Air Force. His article, "Air Interdiction: Its Changing Conditions," appeared in the June '69 issue of this magazine.

THE LEGACY OF ROME

The jets from Wheelus roar across
The sunlit silence of the ruins.
Their husky voices mix, then fade
Into the patterns of the past.
The insects start again to hum,
The ceaseless wind again to chip
At fluted columns standing tall
Above the legacy of Rome.
But Forum crowds no longer mill
About the shops which lined the square,
And in the temple only dust
Bows slowly to the crumbling floor.
The theatre in silence sits
Soft-echoing the wind's applause,
As passing to the sea it goes,
The sea which laps Sabratha's shores
And speaks of days forever gone.

— PAINTING BY THORNTON UTZ



— Painting by Neil Boyle

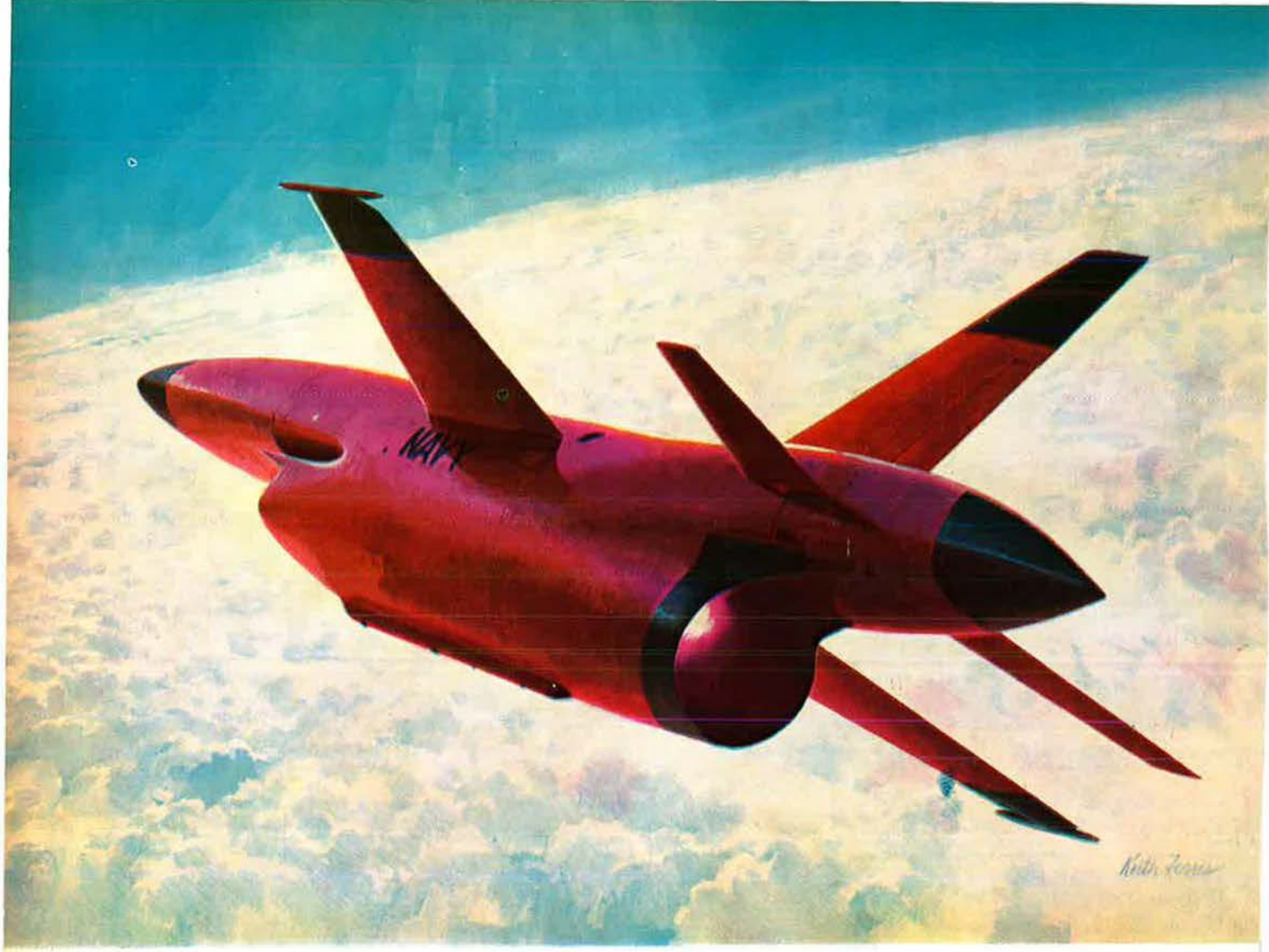
DARK SIDE OF THE MOON

Throughout the world
The people lay their discord down,
The screen they scan with hope
To where the drab orb turns
In silent ignorance
Of how it holds the universal wish
That these men shall return
And say to all,
Together we have won again.
Then from the darkness into light
The spaceship moves,
Its wake a frenzied cheer
That settles far too swiftly,
To conclude a trip
That for a moment
Made so real the brotherhood of man.

SCRAMBLE

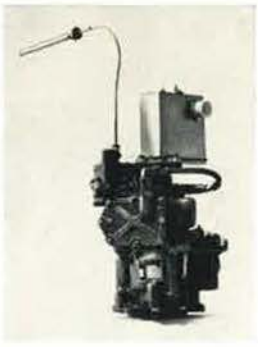
The planes sit silver silent
On the ramp,
Tired wings outstretched
In temporary peace.
Relaxing pilots,
Once again on earth,
Look up into the brilliant blue
Crisscrossed with wispy marks
That they have made —
To still the klaxon voice.

— Painting by Stan Galli



FROM AN ORIGINAL PAINTING FOR CHANDLER EVANS

MAIN FUEL CONTROL by Chandler Evans



MC-33 Main Fuel Control

Teledyne Ryan Aeronautical's new supersonic Firebee II is an unmanned aerial jet target produced for the U. S. Navy and the Air Force. The 1,000 m.p.h. remote control target is powered by a Continental J-69 engine equipped with a main fuel control engineered and precision-produced by Chandler Evans.

This CECO product on the Firebee II joins a distinguished line of pumps, main fuel controls, afterburner controls and other aerospace components in an array of important military aircraft as well as many of the latest missiles and commercial aircraft.

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GAS TURBINE CONTROLS/PUMPS • AIRCRAFT/MISSILE CONTROLS, VALVES AND ACTUATORS

A Major Air Command . . .

The Military Airlift Command

A LOT of people, both in and out of the Air Force, know something about the Military Airlift Command (MAC), and the general impression is that MAC is deeply involved in the people-carrying business. But it ain't necessarily so!

Members of the armed services and their dependents, moving to and from overseas, get where they're going *because* of MAC, but few of them travel on MAC military aircraft.

As a general rule of thumb, all Department of Defense personnel traveling internationally move between designated MAC aerial ports in the US and overseas. But the greatest majority fly on US commercial air carriers, under contract to augment MAC's military airlift force. The number of commercial aircraft or missions contracted for is based on the estimates of passenger-movement requirements submitted to MAC by the armed services and DoD agencies.

In Fiscal Year 1969, for example, MAC was responsible for airlifting 2,920,000 passengers; about ninety-three percent (or 2,718,000) were moved by commercial contract aircraft. The other seven percent traveled on MAC aircraft configured to move both cargo and passengers simultaneously. These latter missions are utilized in those circumstances where—for political or military reasons—commercial contract aircraft are not suitable or are not compatible with the movement requirements.

The necessity for commercial augmentation of MAC's airlift force, to handle routine passenger—and, to a much lesser degree, cargo—movement is obvious: MAC must be prepared at all times to accomplish its primary mission—the airlift of combat troops and equipment to any point on earth at a moment's notice, using its own force of approximately 750 aircraft.

MAC actually airlifts thousands of troops regularly throughout the year during training exercises, in support of Southeast Asia, and for unit moves. The most recent example involves the return of troops from Southeast Asia by MAC military and MAC contract carrier aircraft. By April, MAC had returned more than 50,000 troops. The other returnees were transported by sea or organizational aircraft.

Another example of a large-scale troop airlift in 1969 was Reforger I/Crested Cap I. During this operation, MAC airlifted more than 14,000 Army and Air Force troops to Germany and return, using 495 C-141 and forty-six C-133 missions.

A major Air Force command, MAC is also the purveyor of airlift and technical services for the entire Department of Defense. As DoD's Single Manager Operating Agency for strategic airlift, MAC is responsible for managing and directing a global airlift system. The Joint Chiefs of Staff decide who gets the airlift and in what order of priority. But the important thing to note is that the nation's ability to meet its worldwide defense commitments depends heavily on the mobility of its fighting forces. MAC supplies that

(Continued on following page)

Commander of the Military Airlift Command since August 1969, Gen. Jack J. Catton previously had been chief of the Fifteenth Air Force. After graduation from Loyola University of Los Angeles, he entered the Army Air Corps as an aviation cadet in 1940 and completed pilot training at Kelly Field, Tex., in 1941. An instructor pilot during the early years of World War II, in 1944 he flew the first B-29 across the Pacific to the Marianas. With the XXI Bomber Command, he flew combat missions over Japan. Following the war, General Catton held key posts in SAC planning and operations. When given command of the 817th Air Division, Pease AFB, N.H., in July 1959, he was the youngest brigadier general in the Air Force. During the mid-1960s, General Catton served at Headquarters USAF, in planning activities and in August 1967 was assigned as Deputy Chief of Staff, Programs and Resources. General Catton, with more than 12,000 flying hours logged, is a command pilot and is qualified in MAC's primary airlift aircraft, including the C-5, and many other aircraft.

mobility, with its flexible, responsive, and dependable airlift system—operating around the clock and around the world.

More than 90,000 MAC people are stationed in more than forty nations to support not only strategic airlift, but also to operate the four MAC technical services: Aerospace Rescue and Recovery Service (ARRS), Air Weather Service (AWS), Aerospace Cartographic and Geodetic Service (ACGS), and Aerospace Audio-Visual Service (AAVS).

AIRLIFT, however, is literally MAC's middle name and makes up the command's primary mission. With the introduction of the C-5 into MAC's operational inventory in December 1969, the revolution in airlift is rapidly reaching fruition. The airlift force of the future will be something to behold.

The majority of the C-5 and C-141 capability will be used in support of the day-to-day resupply mission of MAC—that is, in the movement of equipment and supplies in support of our armed forces deployed throughout the world. In the future, the C-5 and C-141 will perform increasing amounts of preplanned logistic resupply between established US ports and dispersed overseas destinations. This routine resupply mission will permit MAC to continually exercise the airlift system that would be used in the event of hostilities.

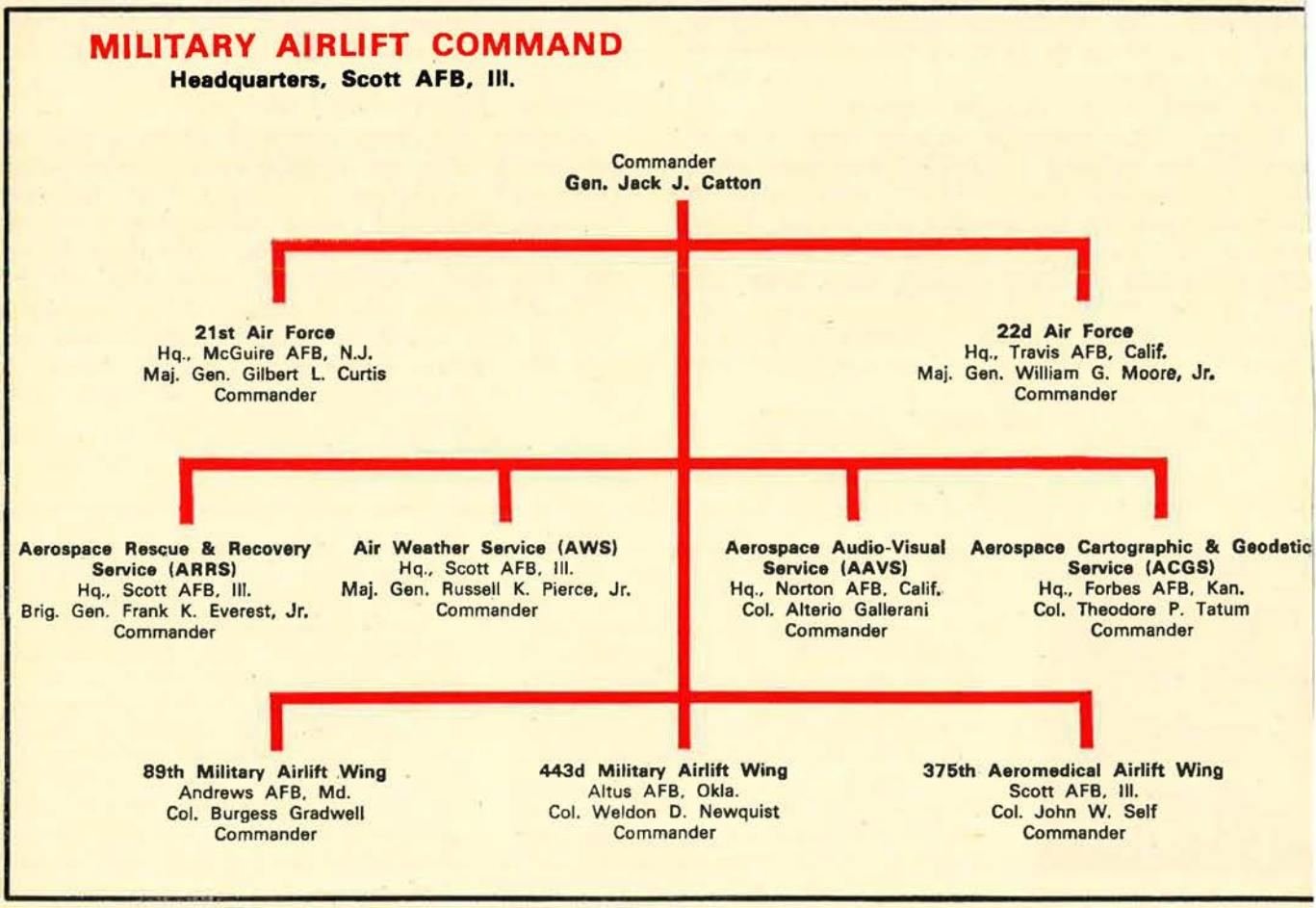
Should an outbreak of hostilities occur, MAC would use the C-5 and C-141 force to provide massive responsive strategic airlift for the deployment and support of DoD combat and support forces anywhere in the world. The troops would be airlifted in the C-141s with the C-5 airlifting cargo.

In addition to the day-to-day resupply mission, the C-5 and C-141 will be used in joint airborne/air transportability training operations and JCS-directed exercises with other combat forces. It is expected that these training activities will be conducted both within and outside the US and will exploit the full range of capabilities of these aircraft.

What this really represents is a revolutionary expansion in airlift capability. The all-jet C-5 and C-14 force will, for the first time, provide DoD with a true strategic airlift capability. MAC will be able to rapidly airlift entire ground combat and support units, including all their equipment and initial supplies, directly from the US to trouble spots around the globe.

This airlift force will be devoted to providing responsive combat mobility of US combat forces and will enable rapid repositioning of these forces to meet changing threats, as was done during the *Pueblo* crisis. Perhaps this capability can best be shown by making a comparison. In the 1960s, it would have taken about seventy days to deploy a joint Army-Air Force divisional size unit; in the 1970s, MAC will be able to move this same force in less than ten days. The inherent capabilities and flexibility of this force will significantly enhance the strategic airlift posture during the 1970s.

MAC hasn't done badly in the past, however. Statistically speaking, the MAC role in support of South



The workhorse of the Military Airlift Command is the C-141 StarLifter, an all-jet transport that can airlift up to 154 fully equipped troops, eighty litter patients, 70,000 pounds of cargo—or combinations of the three. The transport has a range of 6,325 miles.

The first all-jet aircraft to be designed specifically for aeromedical airlift missions, the C-9 Nightingale can accommodate thirty litter patients, forty ambulatory patients, or a combination of the two—along with flight nurses and attendants.

MAC's newest all-jet cargo transport and the world's largest aircraft, the C-5 can airlift ninety-nine percent of an Army division's equipment. It can carry 100,000 pounds of cargo and seventy-five troops over intercontinental distances.

east Asia has been one of increasing magnitude. For example, during Fiscal Year 1964 MAC airlifted some 325,000 passengers and more than 66,000 tons of cargo/mail into and out of Southeast Asia. During Fiscal Year 1969, passenger movement had increased 492 percent, to about 1,923,000 passengers. Cargo movement increased 721 percent, to approximately 544,000 tons.

Overall, during the period from 1964 through 1969, MAC airlifted about 6,117,000 passengers and 1,916,-000 tons of cargo and mail in support of Southeast Asia.

Another key airlift role is MAC's aeromedical evacuation of patients. The C-141 StarLifter is the principal aircraft for worldwide aeromedical airlift of sick or wounded personnel. After completing normal airlift missions, the C-141 is reconfigured to accommodate patients moving to rear-area hospitals or to the US. This fast and highly efficient aeromedical airlift system, bringing Southeast Asia patients to the US hospitals in as little as fifteen hours, plays an important role in helping to achieve the lowest death-to-casualty ratio of any war.

Last year, 172,879 patients were airlifted worldwide, including 46,259 battle casualties from Southeast Asia. Also included in the total figure were more than 67,000 patients airlifted within the US. MAC's domestic air-evac routes, which service some 534 medical facilities within the US, are covered by the new all-jet C-9 Nightingale—the first aircraft with an interior specifically designed for in-flight medical care of patients.

Finally, MAC provides special mission airlift for the President of the United States, Cabinet members, other key government officials, and foreign dignitaries.

The global MAC force is often called upon to pro-

(Continued on following page)

An HH-43 Huskie of the Aerospace Rescue and Recovery Service, with "Sputnik" fire-fighting equipment, takes off.

An aerial mapping camera being installed aboard an RC-130A Hercules aircraft. The Aerospace Cartographic and Geodetic Service uses pictures of the earth taken from altitudes of 30,000 feet in its extensive charting activities.

vide humanitarian airlift and, over the years, has flown many missions to help victims of earthquake, flood, and famine. MAC has provided disaster relief to countless people—from Africa to Alaska, Morocco to Chile, and from America's Gulf Coast to Japan.

MAC's technical services include:

• **Aerospace Rescue and Recovery Service,** whose personnel continued in 1969 to write some of the most thrilling chapters in Air Force history. Since the inception of Rescue, more than 7,140 persons have been saved as a direct result of ARRS efforts. Since 1964, when the buildup in Southeast Asia began, more than 1,500 Air Force, Army, and Navy personnel have been rescued under combat conditions and returned to duty. In the noncombat area, the exploits of Rescue have contributed immeasurably to US goodwill around the world; literally thousands of foreign nationals were saved during the past year in Tunis, Turkey, and Italy in the aftermath of floods and earthquakes.

• Using computers, satellites, and a variety of specialized aircraft, MAC's **Air Weather Service** provides a worldwide weather data vital to Air Force and Army operations, to commands around the globe, and to the US space program. Airborne weathermen have saved countless lives by tracking violent storms as "Hurricane Hunters." Prospects for the future are bright as more is learned about weather modification and control. AWS is already active in fog- and cloud-seeding operations, and fog-dispersal activities have proved especially valuable in Alaska, helping to maintain the flow of C-141s to and from Southeast Asia.

• The **Aerospace Cartographic and Geodetic Service** provides DoD with vital aerial cartographic photography, and aerial and ground geodetic data. Highly trained people, specially instrumented aircraft, and a spectrum of sophisticated equipment collect information vital to national defense and to worldwide efforts for the improvement of mankind.

• MAC's **Aerospace Audio-Visual Service** maintains a pictorial record of Air Force combat and support activities around the world and produces training films and special film reports for top-level Defense planning. Still-photo, motion-picture, and television teams operate around the globe to acquire combat air-strike and documentary photography. During the past year, AAVS consolidated two motion-picture production units, the Air Force Film Depository and Library at Norton AFB, Calif., along with new facilities that comprise a complete and modern audio-visual plant.—END

Air Force weathermen go to all lengths, even into jungles, to acquire information to prepare accurate forecasts.

Pararescueman calls in a hovering helicopter to retrieve an injured pilot downed in heavy cover in Southeast Asia.

A Major Air Command . . .

Air Force Systems Command

THE YEAR 1970 marks twenty years of successful aerospace research and development by the Air Force Systems Command (AFSC).

From its formation (as the Air Research and Development Command) on January 23, 1950, at Baltimore, Md., until the present, the command has been responsible for providing USAF virtually all its new systems, weapons, and equipment. These programs have ranged from the first intercontinental ballistic missile (ICBM), conceived in 1951 and delivered to the DoD as "hardware" in 1954, to the advanced Minuteman III . . . from laboratory work on advanced composites to providing launch crews and facilities for space shots . . . from wind-tunnel tests of aerodynamic structures to providing "quick fixes" for problems of the operating forces in South Vietnam.

R&D, the foundation of military superiority and national security, determines what the nation's military posture and world position will be ten years from now and beyond.

In the past year Systems Command registered major contributions toward more effective utilization of the portion of the national resources over which it exercises supervision.

Commanded by Gen. James Ferguson, AFSC consists of some 9,600 officers, 18,000 airmen, and 30,000 civilians who operate divisions, ranges, centers, and laboratories at 300 worldwide facilities valued at about $2.5 billion. With a budget of $7.45 billion for Fiscal 1970, representing 29.2 percent of the total Air Force budget, AFSC's scientists, engineers, and technicians supervise about 1,300 projects and tasks, ranging from solutions for immediate operational problems, to research on national defense requirements of the 1980s, and to the acquisition of present-day weapon and support systems.

The predominant themes set by the President, the Congress, and the Secretary of Defense are decentralization of authority, more selectivity among technological possibilities, and better defined goals and priorities. All have pledged that there will definitely be less risk-taking in the acquisition and production of major systems; and that development and production will be decoupled, with meaningful milestone decision points acting as the buffers. In advanced development it will be necessary to demonstrate the feasibility of certain subsystems to a much greater degree than ever before. Therefore, fewer items will be able to reach the demonstration stage.

Systems Command is the level at which all the essential ingredients for detailed review and timely decisions come together. At no other level of organization are all these ingredients constantly available for program decisions during the total system procurement cycle.

To effect this, certain functional responsibilities in the program management area have been realigned. For example, the functions, responsibilities, and personnel previously assigned to the Program Element Monitor (PEM) on the Air Staff for the F-15, C-5, Minuteman, and F-111 programs have been transferred to command headquarters at Andrews AFB, Md., under General Ferguson's direct management control. Consideration is also being given to the same sort of process with regard to various advanced development programs.

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Gen. James Ferguson has been head of the Air Force Systems Command since September 1966. Born in Turkey of British parents, he became a US citizen in 1930 and enlisted in the Air Corps in 1934. He completed pilot training in 1936. During World War II General Ferguson commanded the 405th Fighter-Bomber Group in combat in Europe until he was named 9th Fighter Command's Assistant Chief of Staff. In the postwar years, he became Chief of the USAF advisory group in Turkey and 1951-52 served as Vice Commander of the Fifth Air Force and FEAF. In July 1955 General Ferguson began a series of assignments in research and development that was to keep him in the Washington, D.C., area for a decade and a half. In December 1961, he was named Deputy Chief of Staff for Research and Development at Hq. USAF, responsible for monitoring USAF's total R&D effort. His decorations include the Distinguished Service Medal, Legion of Merit, DFC, Bronze Star, Air Medal, the Most Excellent Order of the British Empire, and Croix de Guerre of both France and Luxembourg.

Placing this detailed program management at the Systems Command level will free the higher organization levels for routine, periodic monitoring and program approvals at significant milestones. This will give each level of management sufficient data for its required decisions, while decentralizing the detailed day-to-day program management.

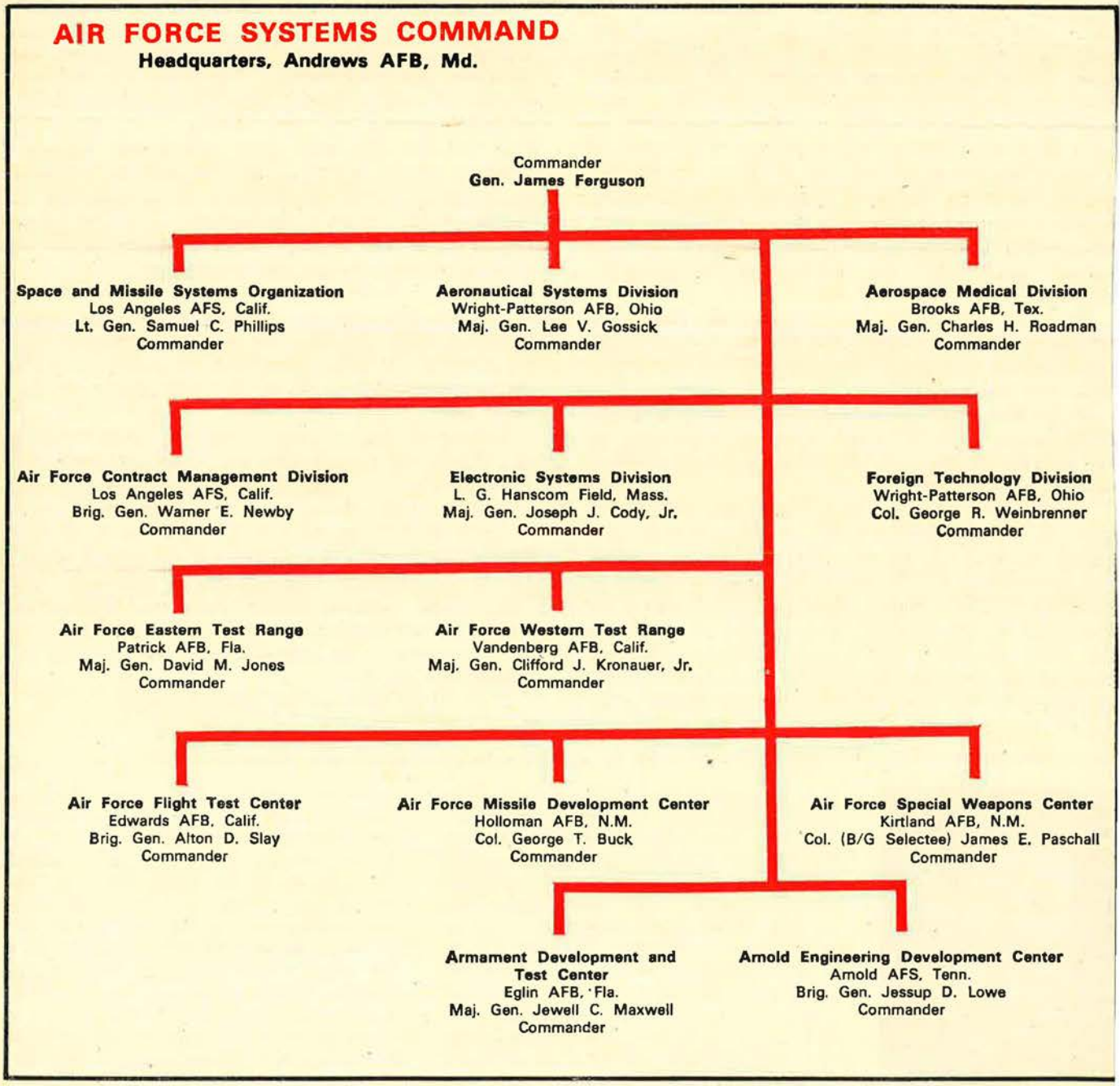
The Air Force is moving in the direction of hardware verification—or prototyping—as a complement to the present practice of engineering studies in the contract-definition phase. This may be thought of as competitive "initial development," or, a "contract definition in hardware." This procedure has a definite advantage in that it surfaces technological and development difficulties before commitment to the high-cost production phase.

One part of AFSC's Cost Management Improvement Program is the specification approach to achieving a single integrated Cost/Schedule Control Systems Criteria method (C/SCSC) by aerospace contractors to serve their own, as well as government and management needs. Recently, seven contractors reached the point of satisfactory compliance with the requirements of the Air Force criteria for cost/schedule control procedures. This new method of requiring contractors' management systems to meet Air Force criteria supersedes an older approach of specifying a particular, rigid system for contractor use, which frequently resulted in dual management systems.

In the present budgetary climate, it is necessary, in the words of Defense Secretary Melvin Laird, "to study new, imaginative ways to reduce the costs associated with our missions, and review again economy measures which have been suggested in the past."

In addition to AFSC's long-standing Cost-Reduction and Zero-Defects programs, new emphasis is being given to an allied endeavor, Value Engineering (VE).

Value Engineering is a fruitful managerial area in



AFSC's Arnold Engineering Development Center sets up its J-1 high-altitude engine test cell, to qualify a GE TF39 engine for the Air Force's C-5 Galaxy transport program.

that it does not seek to save money by compromising the mission, hardware, people, or dollars that are really essential. It is, however, the establishment and maintenance of effective system management techniques to reexamine our methods of doing our jobs. The question must be constantly asked, "Do we really need this degree of sophistication?" If this question cannot be answered in the affirmative, it must be kept simple, whether it is an item of equipment or a managerial procedure.

Has this worked in the Systems Command? For Fiscal Year 1969, command-validated VE savings were slightly more than $77 million, twice the assigned goal of $36 million. In-house VE actions accounted for two-thirds of the saving, while contractor contribution was one-third.

Aeronautical Systems

F-15—This is the Air Force's highest priority development program. Design objectives call for an air-superiority fighter that will be an advancement over any present or planned fighter in the US inventory. A "fighter pilot's fighter," it is expected to be operational in the mid-1970s. It will be a single-place, twin-engine plane in the 40,000-pound weight category. It will carry both short- and medium-range missiles and an internally mounted, rapid-firing gun. It will be highly maneuverable with extremely rapid acceleration and the ability to perform tight turns at high speeds. Plans call for it to fly at or above Mach 2. McDonnell Douglas Corp. has been selected as the prime contractor.

The need for a new US fighter is clear when it is recognized that the state of the art of the nation's best present fighter, the F-4E, will be more than twenty years old in the mid-1970s. During this same period the Soviets have been steadily improving their air-to-air capability with the regular introduction of new fighter aircraft.

B-1—The modernization of US bomber forces is essential if strategic forces are to be a credible deterrent to an enemy who continues to devote a large portion of his total resources to both offensive and defensive weapon systems. The present bomber force is aging, and as age increases, so do the risks of incurring large modification costs, or "crash" programs with their inherent high costs to acquire a needed replacement.

Therefore, studies for an Advanced Manned Strategic Aircraft (AMSA)—now known as the B-1—were initiated in FY 1965 to establish requirements for an advanced bomber replacement for the B-52 in the late 1970s.

Through FY 1969, $148.8 million had been appropriated for B-1 studies and advanced development. Most of those funds were devoted to system design, propulsion, and avionics development. A total of $100.2 million was authorized for FY 1970, and the Air Force is seeking $100 million for continued development in Fiscal 1971. As a result of these funded studies, the Air Force believes uncertainties and risks associated with development of a new bomber have been reduced to a minimum.

The B-1 will be a supersonic bomber with specifications calling for a weight of 350,000 to 400,000 pounds. It will incorporate many aeronautical principles and new materials, based on current research and development projects. It is expected to have variable-sweep wings and a flying range to cover long distances at high speeds. It will have advanced equipment to aid the penetration of enemy defenses and will carry heavy weapons payloads to destroy defensive positions and enemy targets.

Preliminary feasibility and proposal studies are under way. Several airframe and engine contractors are presently engaged in design proposals and engineering approaches.

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A new Goodyear tire shows that it can still function after suffering multiple punctures. It is being developed by Aeronautical Systems Division, Wright-Patterson AFB, Ohio.

A-X—The A-X is planned as a relatively inexpensive, rugged, highly survivable aircraft designed to meet future Air Force needs for specialized close air support. It would be a single-place craft and would feature blast-resistant and redundant structure, extensive armor provisions for the pilot, and subsystem engine protection. A relatively unsophisticated avionics package is also planned. The twin powerplant design would give a high thrust-to-weight ratio which, when combined with low wing loading, would give a wide, usable speed range and unusual maneuverability at speeds below 300 knots. The Air Force has asked for $27.9 million in development funding for the A-X in Fiscal Year 1971.

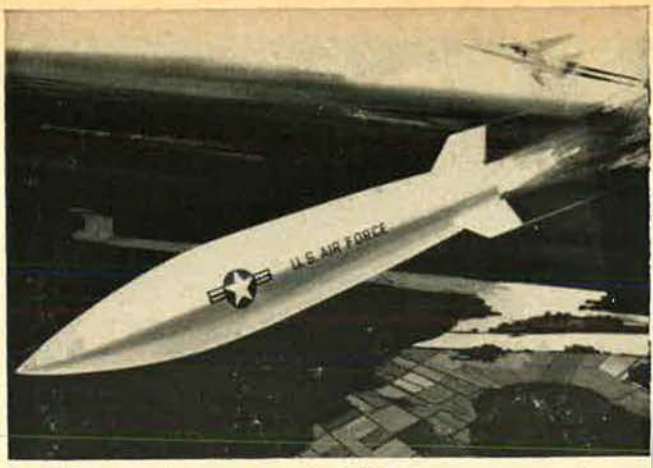
International Fighter—To help small nations of the free world shoulder the self-defense burden as much as possible, RFPs were issued in March to eight companies for the development of the International Fighter aircraft. Since the aircraft is to be essentially off the shelf, procurement will be significantly shortened, with June the target for contract announcement. If approved for production, the International Fighter will be a supersonic, air-superiority fighter. Relatively low cost is a must. Also critical will be maintainability, both in the field and from the standpoint of depot maintenance. The Air Force has asked $30 million in procurement funds for Fiscal 1971.

C-5—The Air Force's gigantic cargo transport, the C-5 Galaxy, joined the operational fleet December 17 in a ceremony at the Lockheed-Georgia plant at Marietta, Ga., with the delivery of the first operational aircraft to the Military Airlift Command. Designed for a gross weight of 728,000 pounds, the C-5 has set successive records for gross takeoff weight in the neighborhood of 800,000 pounds.

In mid-1969 one test aircraft began a thirteen-month, all-weather testing program at Eglin AFB, Fla., in the Climatic Laboratory operated by AFSC's Armament Development and Test Center (ADTC), during which it was subjected to temperatures ranging from minus sixty-five degrees to plus 125 degrees Fahrenheit. In December, another C-5 began a year-long series of tests of its cargo and troop delivery capability at Pope AFB, N.C. On February 18, pilots from AFSC's Aeronautical Systems Division (ASD) at Wright-Patterson AFB, Ohio—who conducted cold-weather tests from Eielson AFB, Alaska, during February—flew a C-5 around the North Pole on a test flight. Acknowledged to be a revolution in aeronautics, with profound implications for both military and commercial aviation, the C-5 is presently scheduled by USAF for four squadrons with a total of eighty-one aircraft.

A-7D—A new attack aircraft, the A-7D, which finished its cold-weather tests at Eielson AFB, Alaska, in February, took its place in the Air Force inventory with the delivery of the first production model to the Tactical Air Command last summer. The A-7D is a single-engine, subsonic attack aircraft, capable of accurately delivering 15,000 pounds of payload. It flies at more than 600 knots and is the first Air Force single-engine fighter to use a nonafterburning turbofan engine for maximum fuel economy.

F-111—Secretary Seamans, in his budget statement to the Senate Armed Services Committee, called the F-111 "a major step in modernizing our interdiction and long-range penetration capabilities." He said, "Its terrain-following radar permits penetration under enemy radar, and its extremely accurate radar delivery capability makes it highly effective once it reaches the target. No other aircraft can compete with the F-111 in night or all-weather attacks. There have been problems with the F-111, but we should remember that it marks a major advance in technology, and programs of this sort are always fraught with difficulty."



Artist's conception of the AGM-69A short-range attack missile (SRAM), an air-to-surface weapon being developed by AFSC's Aeronautical Systems Division and the Boeing Co.

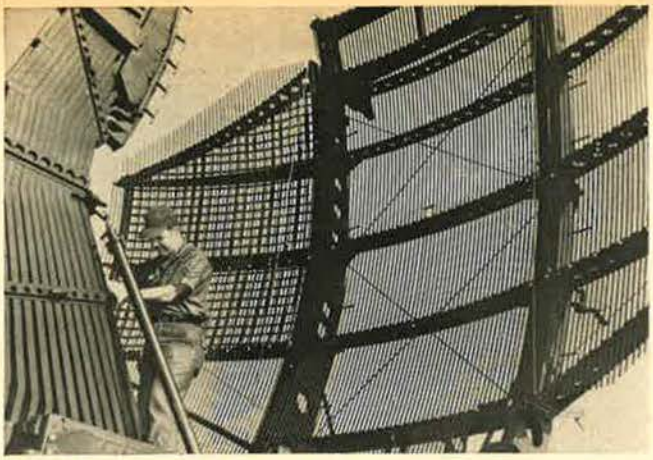
The first new bomber to enter the USAF inventory in a decade, an FB-111, was turned over to the Strategic Air Command in October. "The FB-111 will help us maintain the bomber portion of our strategic deterrent," Secretary Seamans said. "It is a necessary part of our planning because the older model B-52 are gradually phasing out, Soviet air defenses are rapidly improving, and a new bomber, the B-1, cannot be operational before the late 1970s."

SRAM—The Systems Command in July began powered flight testing of the AGM-69A short-range attack missile (SRAM) over the White Sands Missile Range in southern New Mexico. The test program is directed by the Air Force Missile Development Center (AFMDC) at Holloman AFB, N.M., for the Aeronautical Systems Division. SRAM is an air-to-surface rocket-propelled, supersonic, strategic missile with nuclear-warhead capability. It is planned for use on the FB-111 and late models of the B-52.

Maverick—First air-launch separation test of the Maverick air-to-ground missile was successfully conducted at Edwards AFB, Calif., September 19. The missile is designed to attack small tactical targets such as tanks and field fortifications. It is TV-guided, eight feet long, twelve inches in diameter, and weighs 500 pounds. Its first successful guided launch against a target was conducted by AFMDC in December at the White Sands Missile Range.

Electronics and Communications

AWACS—The AWACS is a USAF Airborne Warning and Control System designed to provide rapid response to fast-developing threats (such as low- a



AFSC's Electronic Systems Division is developing a three-dimensional radar system to direct allied aircraft and detect enemy aircraft penetrating forward battle areas.

high-flying, missile-armed, enemy bombers), early warning and air surveillance information, and direction and control of offensive and defensive weapons. Basically, the system consists of high-performance aircraft equipped with extensive sensing, communication, display, and navigational devices. It will be used as a survivable command-and-control center. The Air Force is studying the competitive proposals of Boeing and McDonnell Douglas, but had not announced the winner at press time. USAF is asking $87 million in Fiscal 1971 for engineering development funding.

BUIC III—BUIC III, a sophisticated backup air defense system (Backup Interceptor Control) designed to furnish air defense commanders with immediate information on any airborne threat to the North American continent, was completed in December when the fifteenth radar site, located at Fortuna AFS, N.D., was turned over to the Aerospace Defense Command by AFSC's Electronic Systems Division (ESD). Scattered throughout the United States and Canada, BUIC-III uses improved radars and high-speed electronic computers to back up SAGE (Semi-Automatic Ground Environment) system, which is the primary air surveillance and defense system for North America. Essentially, it is a high-speed, computerized control center.

AUTOVON—The overseas portion of the DoD Automatic Voice Network was completed in March with the last five of seventeen electronic switching centers of the Defense Communications System becoming operational. These centers—at Fuchu AS, Japan; Paternas, Greece; Coltano, Italy; Grass Mountain, Taiwan; and Futema, Okinawa—completed the interconnecting network that permits global telephone calls to be made in seconds. Besides the overseas centers, the system uses fifty-three centers in the United States and nine in Canada to link some 2,000 military facilities.

Other programs included:

• **TDA**—Tactical Data Automation—long-term application of computerized automatic techniques to spread information-handling process among smaller computers.

• **Inflatable Tactical Operations Centers**—Modular operation and support centers . . . housed in air-supported, inflatable shelters.

• **Lightweight, 3-D Radars**—Highly mobile set replaces two heavy radars . . . to perform aircraft detection and control functions.

• **TACWE**—Custom-tailored weather data from three easily transportable, interchangeable electronics packages . . . for Air Force tactical command and control system elements, worldwide.

• **Common Digitizer**—New device interprets data received from long-range radars . . . first installation scheduled at Saint Albans, Vt., in mid-1970 . . . completion of system in 1973.

• **Signal Processing Lab**—Laboratory at Rome Air Development Center (RADC) for testing new signal-processing techniques . . . to identify signals, even though immersed in electronic noise.

• **Mobile Radio System**—Advanced Manpack/Vehicular Communications System . . . new, lightweight radio system using HF, VHF-AM, VHF-FM, UHF bands.

• **LIPS**—Laser Image Processing Scanner for high-resolution photography . . . records improved imagery on film . . . quantitizes for computer.

• **Radio Location System**—Invention for locating moving vehicles with pinpoint accuracy . . . even when there is strong interference in radio channel . . . fixed-time-delay automatic synchronization technique.

• **Narrow Voice Band Communications**—Band width of around 120 Hertz instead of usual 3,500 Hertz . . . promises multichannel voice communications over circuits formerly limited to single channels.

• **Adaptive Data Modem**—Improved transmission from one computer or teletype to another . . . simultaneous transmission and receipt at rates up to 6,400 words per minute over all types of voice channels.

National Space Efforts

From the very beginning of the US manned space program, the Air Force Systems Command played a major role in helping meet the challenge of a moon landing before the end of the decade. Working with other military services and government agencies, AFSC provided vital resources in such areas as communications, bioastronautics, aerodynamics and propulsion systems testing, parachute system testing, and many others.

For example, the Aeronautical Systems Division furnished zero-G training to the astronauts; studied intravehicular procedures; contributed to a system for containing lunar samples on the return to earth; and tested a new water container to eliminate excess hydrogen. The Flight Dynamics Laboratory provided the technique for electroluminescence in the space vehicle's control displays. Many years ago the Arnold Engineering Development Center began tests of spacecraft in its high-performance wind tunnels to obtain force, movement, heat transfer, and stability data to help determine final configuration of the vehicles and to prejudge their reactions in space, or the low-density atmospheres of certain planets.

Two projects developed by the Electronic Systems

(Continued on page 158)

A Major Air Command . . .

Air Force Logistics Command

THE continued superiority of the United States Air Force depends upon the technological, logistical, and operational capability of its personnel and materiel. It is this demand for responsive logistic support of current and future aerospace forces in a dynamic environment that defines the mission of the Air Force Logistics Command (AFLC).

The ever-increasing sophistication and cost of Air Force weapon systems and materiel necessitates a continuing program within the Air Force Logistics Command to develop and implement managerial innovations to maximize the logistics support of USAF's operating commands at the lowest possible cost. AFLC, under the command of Gen. Jack G. Merrell, is progressing with the development of an Advanced Logistics System and other innovative management concepts to assure a logistics posture for the Air Force that is responsive to the dynamics of change.

These AFLC responsibilities are carried out through a headquarters activity located at Wright-Patterson AFB, Ohio, and a decentralized complex of five Air Materiel Areas (AMAs) and three specialized logistics activities geographically dispersed throughout the continental United States.

Of the $22 billion appropriated by Congress for the Air Force this year, AFLC received about one-fourth. Included in this $5.5 billion were $2.3 billion for AFLC's procurement of aircraft and missile parts, munitions, vehicles, electronics, and other major equipment items. Keeping aircraft and missiles in repair and distributing millions of tons of supplies around the world took another $2.7 billion. Modification and modernization of Air Force weapon systems and equipment cost about $400 million. In addition to managing appropriated funds, AFLC manages about $4.7 billion in revolving funds used to buy and sell Air Force aviation fuel and other supplies and services.

The mission of AFLC encompasses the total life cycle of the system or equipment. AFLC becomes involved during the early stages of the acquisition process by working with the Air Force Systems Command's (AFSC) System Project Office (SPO) to incorporate logistics considerations during the design of the weapon system. Under the early System Manager assignment policy recently implemented by AFLC, a System Manager is designated at the AMA at the same time that the Project Management Office is established by AFSC. An AFLC officer actually serves as the director of logistics within the Air Force SPO organizations. The purpose is to assure that both weapon performance and support logistics are fully considered in the many important trade-off decisions made during the design and development of weapon systems.

After the system has transitioned to the operating inventory, AFLC assumes total responsibility for its logistic support.

In August 1969, General Merrell reorganized his headquarters to assure an improved command and staff interface between AFLC headquarters, Hq. USAF, and AMA counterparts.

It had become apparent that the AFLC headquarters

Gen. Jack G. Merrell was appointed Commander, Air Force Logistics Command, in March 1968, following service as Vice Commander in Chief, USAFE. A 1939 graduate of West Point with a Cavalry assignment, he switched to the Air Corps and completed pilot training at Kelly Field, Tex., in 1940. US entry into WW II found General Merrell serving with the Air Corps Training Detachment, Lakeland, Fla. Tours with the 39th and 491st Bombardment Groups as Provisional Commander and Deputy Commander, respectively, followed. He later commanded the Eighth Air Force's 389th Bombardment Group in Europe. General Merrell's postwar assignments included positions with the Military Air Transport Service and several command positions. After graduating from the Air War College in 1954, he served with MATS again, in addition to tours at Headquarters USAF, before becoming Director of the Budget, Headquarters USAF, in January 1962. After duty as Comptroller, USAF, he became Vice Commander in Chief, USAFE, in March 1968. He is a command pilot.

needed to be realigned to provide improved lines of communication with the AMAs and the Air Staff. To provide a headquarters counterpart of the Materiel Management Directorate at the AMAs, for example, General Merrell created a new Deputy Chief of Staff for Materiel Management. This organization develops policy requirements for the support responsibilities of the DMM systems and commodity management functions encompassing managerial, technical, engineering, identification, and maintenance and materiel computations.

A second key change was the establishment of a Deputy Chief of Staff for Plans and Operations, who integrates the command planning and study capability and the control over command resources in one DCS. This DCS also provides the development planning interface with other Air Force commands.

Additional changes included establishment of the DCS/Distribution to be responsible for the command physical distribution processes, which include the transportation, packaging, and handling functions and the former supply distribution function. Similarly, the DCS/Maintenance Engineering was renamed DCS/Maintenance and made responsible for staff surveillance of the industrial operations and organic production functions in the field and the responsibility for direct interface with the AMA Directorate of Maintenance.

Logistic mission support to the Air Force is awesome. Its execution demands creativity and imagination by top managers, particularly in the austere funding period now facing all elements of the Department of Defense. It is in the use of new computer technology that AFLC has concentrated planning during the past three years in its pursuit of improved efficiency and economy.

Development of the Advanced Logistics System (ALS) during 1969 progressed from the conceptual planning stage to the point where equipment acquisition procedures were initiated, and the detail specifications of the new logistics system are now under active development. The ALS, when completed, will bring into a single, fully integrated system the essential elements of some 375 individual logistics and data systems now used by AFLC to provide mission support to the Air Force worldwide. Modular third-generation computers will be located at each of the five Air Materiel Areas and at Hq. AFLC. As the ALS is progressively implemented, these six computer complexes will replace more than ninety of the current total of 120 computers in use throughout AFLC.

The AFLC Depot Maintenance Activity comprises 30,500,000 square feet of building and ramp area, has an annual budget of more than $1 billion, and employs approximately 50,000 people. In 1970 the five Air Materiel Areas are programmed to repair, overhaul, and modify more than 4,000 aircraft engines; 3,600,000 items such as gyros, instruments, accessories, electric and electronic components; and 1,500 aircraft. The replacement value of items repaired annually by depot and contractor maintenance exceeds $8 million.

Accomplishment of depot-level maintenance by contract is an essential and integral part of the overall depot-level maintenance function of AFLC. Air Force policy envisions the maintenance contractors, their skills, and their facilities to be an extension of Air Force resources and stipulates that problems arising out of this method of maintenance will be afforded the same emphasis as problems arising from AFLC organic facilities. The FY '70 contract program for depot-level maintenance amounts to more than $562 million or about forty-three percent of the total depot-level maintenance program.

Between September 1, 1969, and February 28, 1970, 1,080 aircraft were processed into storage at the Military Aircraft Storage and Disposition Center at Davis-Monthan AFB, Ariz., an increase of 150 percent over the entire input during FY '69. Force reductions during late 1969 and currently programmed will add to the storage inventory at Davis-Monthan as AFLC performs

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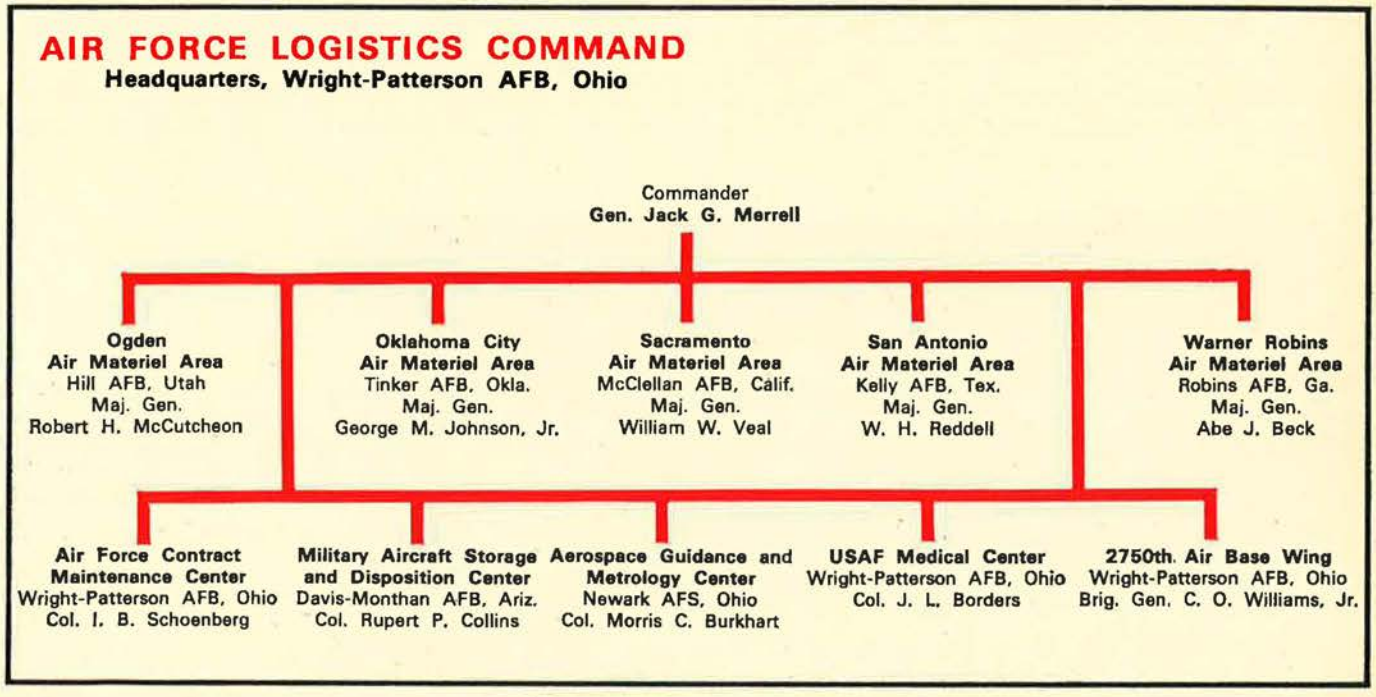


the storage and disposition function as DoD executive agent.

While AFLC continues to provide outstanding mission support to Stateside and other major Air Force commands, special attention continues to be directed to mission support of the Air Force in Southeast Asia.

General Merrell has continued the practice, started in 1964, of having an Assistant to the Commander, AFLC, on site at Hq. Seventh Air Force, Tan Son Nhut Air Base, Vietnam. His job is to supervise the Weapon System Liaison Officers (WSLOs), the Rapid Area Maintenance (RAM) teams, the Rapid Area Supply Support (RASS) teams, and the Rapid Area Transportation Support (RATS) teams. These teams are sent to Southeast Asia to provide on-site assistance to bases when needed. They are made up from skills within the AFLC combat logistics support squadrons and civilian technicians from within AFLC's Air Materiel Areas. The Assistant to the Commander also advises and assists the commanders of the Seventh Air Force and Thirteenth Air Force on logistics, and keeps General Merrell and the Air Materiel Area commanders advised of the status of mission support to SEA.

A primary management indicator that AFLC and the operational commands use to determine supply effectiveness is the "Not Operationally Ready—Supply" (NORS) rating system. Through the coordinated efforts and dedication of supply and maintenance personnel at all echelons of commands, average NORS rate for all aircraft worldwide is only 3.3 percent. Southeast Asia aircraft enjoy an even better average of only 2.8 percent. This means that, of the total inventory of USAF aircraft in SEA (in excess of forty different types), only 2.8 percent require some supply action to provide material necessary to bring the aircraft to a full operationally ready condition.

When a NORS rate so dictates, AFLC responds with special management action to expedite the acquisition of material.

During calendar year 1969 an average of 100 AFLC personnel were assigned to Rapid Area Maintenance (RAM) teams in Southeast Asia. These personnel repaired 161 aircraft, prepared eleven for one-time flight, and twenty-five for shipment to rear-area and depot-level repair facilities. The dollar acquisition value of these aircraft returned to duty in SEA amounted to more than $276 million. Turn-around time averaged forty-two calendar days per aircraft.

The AFLC physical distribution activity, which includes warehousing, packaging, and transportation, is the physical movement of the property phase of logistics. Approximately 19,000 people are employed to identify, package, store, select for shipment, and ship the 870,000 items of supply managed by AFLC to support worldwide customers and 1,300,000 items to support depot maintenance activities, other Air Materiel Area assigned activities, and tenants. As of June 30, 1969, the five depots had 811,000 tons of material in storage to support worldwide customers and AMA tenants. During FY '69, AFLC shipped some 453,000 tons of material to worldwide and tenant customers.

To provide high-priority movement of critical weapon or support systems components to CONUS Air Force bases and to Air Force aerial ports of embarkation for overseas shipments, AFLC operates the Logistic Airlift (LOGAIR) System. LOGAIR interconnects the AFLC AMAs and provides daily service to sixty-one CONUS Air Force bases and eight aerial ports of embarkation. The 1970 contract calls for 17,100,000 air-miles at a contract cost of $32 million.

During the 1969 calendar year, 1,947 personnel were assigned to Rapid Area Supply Support (RASS) and Rapid Area Transportation Support (RATS) teams in Southeast Asia and other areas of the world. These RASS/RATS teams provided AFLC field assistance support to major commands worldwide in the distribution processes of supply, packaging, and transportation. These personnel spent a total of 57,508 man-days in support of this effort at a cost of $2,506,465.

In order to improve management of the very large Air Force contract maintenance requirement, AFLC established the Contract Maintenance Center in mid-1969. The center is charged with supervising operations of eight field detachments which perform contract administration functions at thirteen industrial plants located in the east and southeast United States. AFLC contracts performed in these plants are for depot-level modification and IRAN (Inspect and Repair as Necessary) work on fighter, cargo, and other aircraft, and for the overhaul of aircraft engines. The center has responsibility for approximately twenty-five percent of

An F-105 Thunderchief rolls out of one of the maintenance shops at Air Force Logistics Command's Sacramento Air Materiel Area ahead of schedule after undergoing operational checks.

all such maintenance work performed on Air Force aircraft and engines.

AFLC has stressed the use of Multi-Year Procurements for maintenance requirements and in this regard has established an order of preference for all multiple year-type contracts. This order of precedence is as follows:

1. Multi-Year Procurement.
2. Fixed Price One-Year Contract with Priced Options for follow-on years.
3. Fixed Price One-Year Contract with Unpriced Options for follow-on years (this is normally referred to as the AFLC Five-Year Policy).

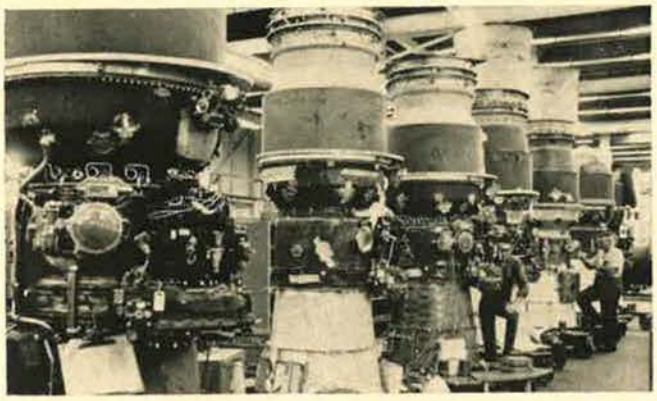
Each of these methodologies will permit a continuing relationship when a contractor's performance is satisfactory.

AFLC implements a wide range of multimillion-dollar programs in support of some fifty-five foreign countries under the International Logistics (IL) programs. Although IL business comprises a relatively small percentage of AFLC transactions, it is a most significant contribution to the defense of eligible recipient governments. Recognizing the impact of this support on the worldwide mutual defense of the United States and its allies, General Merrell has directed that AFLC's support of the program will be comparable to that given USAF organizations.

With the most sophisticated logistics operation in Air Force history, constant training of the 133,000 AFLC personnel is essential.

General Merrell's policy is to continuously promote the growth of his military and civilian managers by overutilization through internal promotions and assignments to other related functional areas. This also applies to all echelons of the work force as well as to the managerial element. Those selected for their growth potential are to be "over-utilized"—rather than under-utilized, *i.e.*, put on a job and given a chance to grow up to it.

Cargo is loaded on a C-141 transport with the use of a special loader that can lift 25,000 pounds. The big aircraft, at Kelly AFB, Tex., is headed for Southeast Asia.



More than 100,000 pounds of thrust are represented in these six J57s at OCAMA's Jet Engine Overhaul Facility.

Automated data retrieval is indispensable to the instantaneous reaction demanded of the USAF's logistics system.

During 1969 some 7,000,000 man-hours of training were provided to increase the knowledge and skills of the AFLC civilian work force. Officer and civilian academic training in logistics culminates in assignment to AFIT's Graduate School of Systems and Logistics. Companion programs update middle management in the logistics force structure. In total, we estimate our training and education will consume four percent—or over 11,000,000 hours of our total available man-hours annually for the next five years.

Well-trained, well-educated people are the key to providing twenty-first century logistics by the early 1970s.

In summary, AFLC's business can be seen to be inextricably linked to and paced by the character and complexion of Air Force mission operations. It is a continuous, costly, complex, and ever-changing business always constrained by time and resources. The mainstream of business is made up of thousands of day-to-day decisions—a constant but invisible grind—which keeps the forces moving and determines their capability and flexibility.

To do the job, AFLC must continually assess the methods and resources it uses in the managerial, technical engineering, and industrial aspects of its mission.

The search for better ways of doing business is never-ending—all geared to responsive support of Air Force operations.—END

A Major Air Command . . .

Tactical Air Command

DURING Fiscal Year 1970, Tactical Air Command (TAC) took a major step forward in preparation for the dynamic demands of the 1970s. The central theme of TAC progress in recent years has been immediate, tailored response to worldwide tactical airpower requirements. FY '70 must be regarded as the starting point of a new dimension in TAC's ability to meet this obligation.

"Tactical airpower is a decisive deterrent in today's diplomacy," Gen. William W. Momyer, Commander of TAC, said recently. "It also plays a vital role when conflict is unavoidable. To put it another way, providing continuous air supremacy can mean the difference between threat and conflict.

"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. Mobility can bridge this gap. With fast-reacting tactical airpower, forces and facilities can be immediately deployed to critical areas for the time needed, and then be recalled."

During the past year, TAC demonstrated the new look in the mobility of "forces and facilities" on an austere operating base in South Carolina. The two-week demonstration was named "Coronet Bare" and marked a highly successful beginning for a new era in United States tactical airpower. Essentially, it released TAC from the traditional requirement for established air bases from which to operate in meeting contingencies around the world.

Coronet Bare was a realistic demonstration of the effectiveness of a family of specially designed, reusable, lightweight, air-transportable, bare-base equipment. The package includes billets, messing, hangars, maintenance, electric power, water purification and distribution, and other items necessary to convert an austere facility —with only a landing strip, taxi areas, and a source of water—into an operational airfield.

Into the austere environment of North Field, S. C., TAC airlifted the prepackaged facilities to support an F-4 fighter squadron of twenty-four aircraft, all on a carefully planned time schedule. Within fifty-four hours after the first of 339 airlift sorties landed, the newly converted bare base began receiving the fighters. Less than two hours later, the F-4s flew their first sorties against simulated targets, but under operational conditions that were quite real.

The entire base was fully operational on the third day of the demonstration. All personnel were efficiently housed, fed, and otherwise supported in a manner equal to an established base. Because of the equipment support, the fighters flew a considerably greater rate than is normally flown from a permanent base during wartime.

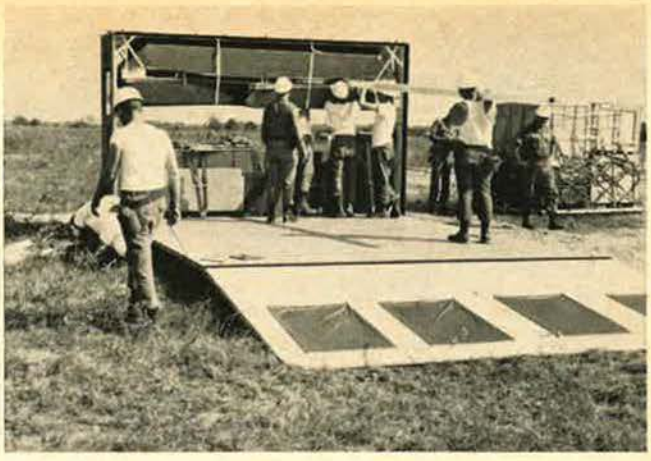
Upon completion of the employment phase of Coronet Bare, the entire base complex was dismantled, repackaged, and ready for airlift back to home base within two days after the fighters had departed. Much of the credit for the success of the bare-base demonstration went to TAC's civil engineering force, which plays a critical role in the new concept. Prime Beef and Red Horse elements were deeply involved in all phases of the operation.

Similarly, TAC's airlift forces were of primary importance, as they are in all of the command's activities. A fleet of thirty-two of TAC's C-130 aircraft, supported by MAC C-141s, airlifted some 3,000 tons of cargo, 1,160 personnel, and 451,000 gallons of POL to the South Carolina bare base. The C-130 fleet logged

(Continued on page 89)

Gen. William W. Momyer has commanded the Tactical Air Command since August 1968. Previously, he served simultaneously as Deputy Commander for Air Operations, Military Assistance Command, Vietnam, and Commander, Seventh Air Force. General Momyer entered the service in 1938 and graduated from pursuit school at Kelly AFB, Tex., in 1939. He led the 33d Fighter Group in combat over Europe during World War II. In the early postwar years General Momyer held top TAC posts and was a student and then a faculty member at the Air War College. He commanded the Eighth Fighter-Bomber Wing in Korea and Japan during the mid-1950s, and in March 1955 was given command of all USAF units in Korea. He commanded the 312th Fighter-Bomber Wing and 832d Air Division, Clovis (now Cannon) AFB, N.M. From July 1958 to October 1961 he was Director of Plans, TAC. He headed the Air Training Command before going to Vietnam. A fighter ace, his decorations include the Distinguished Service Cross, the DSM, the DFC, the Silver Star, and the Legion of Merit.

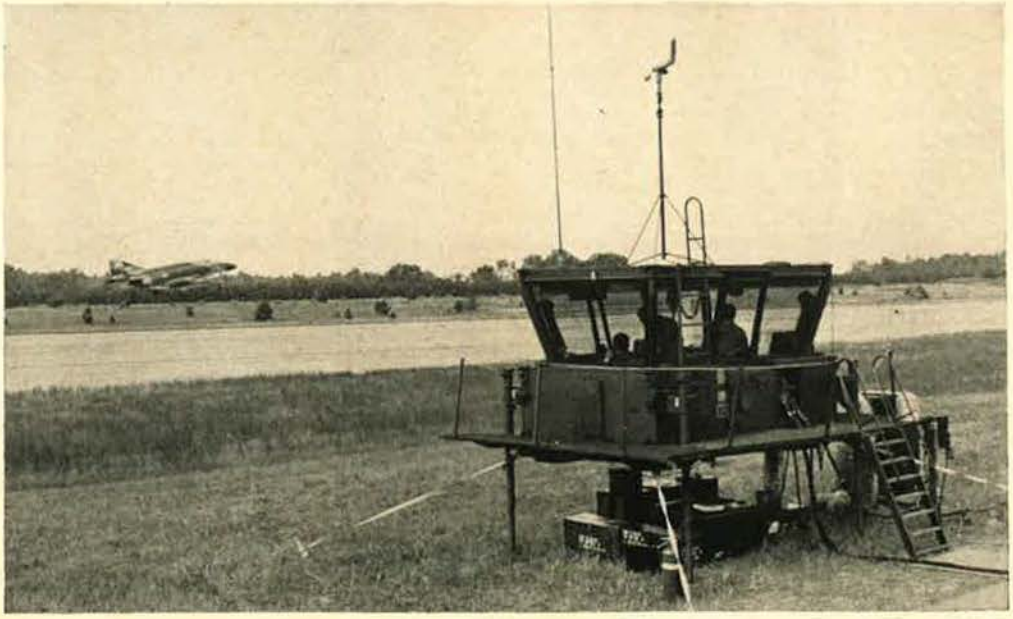
North Field, S.C., the austere site of TAC's demonstration of a new concept in tactical airpower—bare basing. The operation—called Coronet Bare—proved out the theory that a fully operational airfield can be set up from airlifted, especially designed equipment within hours.



Setting up shop, Air Force personnel erect from prepackaged stores the facilities required to conduct air combat operations. Within fifty-four hours of the arrival of the initial airlift sorties, the converted base received the first of a full squadron of twenty-four F-4 Phantoms.

During Operation Coronet Bare, all personnel were efficiently supported in a manner equal to an established base. Given a landing strip, taxi areas, and a water source, TAC proved that it could quickly establish bases ready to meet conditions prevailing during wartime situations.

Within two hours of arrival at North Field, the Phantoms flew their first sorties against simulated targets. With bare basing an actuality, TAC now is free of its traditional dependence on established airfields and has the capability of swift response in any sudden confrontation.



The challenge to airlift capability in the Coronet Bare operation was formidable. A fleet of thirty-two TAC C-130s was engaged, backed up by MAC C-141s. They brought in some 3,000 tons of cargo, 1,160 personnel, and 451,000 gallons of POL. Among the equipment essential in running a modern airfield is the AN/TSW-6 mobile control tower at the left.

TACTICAL AIR COMMAND

Headquarters, Langley AFB, Va.

Commander
Gen. William W. Momyer

19th Air Force
Hq., Seymour Johnson AFB, N.C.
Maj. Gen. Donavon F. Smith
Commander

9th Air Force
Hq., Shaw AFB, S.C.
Maj. Gen. Richard H. Ellis
Commander

Shaw AFB, S.C.
USAF Tactical Air Reconnaissance Center (TAC)
363d Tactical Recon Wing (9th AF)
507th Tactical Control Gp. (9th AF)
68th Tactical Air Support Gp. (9th AF)

Pope AFB, N.C.
USAF Tactical Airlift Center (TAC)
839th Air Div. (9th AF)
464th Tactical Airlift Wing (839th AD)
1st Aeromedical Evacuation Gp. (TAC)

MacDill AFB, Fla.
836th Air Div. (9th AF)
15th Tactical Fighter Wing (836th AD)

Seymour Johnson AFB, N.C.
4th Tactical Fighter Wing (9th AF)

Lockbourne AFB, Ohio
317th Tactical Airlift Wing (839th AD)

Homestead AFB, Fla.
4531st Tactical Fighter Wing (836th AD)

Myrtle Beach AFB, S.C.
4554th Tactical Fighter Wing (9th AF)

12th Air Force
Hq., Bergstrom AFB, Tex.
Maj. Gen. Albert W. Schinz
Commander

Bergstrom AFB, Tex.
75th Tactical Recon Wing (12th AF)
602d Tactical Control Gp. (12th AF)
71st Tactical Air Support Gp. (12th AF)

Nellis AFB, Nev.
USAF Tactical Fighter Weapons Center (TAC)
57th Fighter Weapons Wing (TFWC)
474th Tactical Fighter Wing (832d AD)
820th Civil Engineering Sqdn. (12th AF)

Cannon AFB, N.M.
832d Air Div. (12th AF)
27th Tactical Fighter Wing (832d AD)

McConnell AFB, Kan.
835th Air Div. (12th AF)
23d Tactical Fighter Wing (835th AD)

Little Rock AFB, Ark.
64th Tactical Airlift Wing (12th AF)
4442d Combat Crew Training Wing (12th AF)

George AFB, Calif.
831st Air Div. (12th AF)
479th Tactical Fighter Wing (831st AD)

Forbes AFB, Kan.
313th Tactical Airlift Wing (12th AF)

Luke AFB, Ariz.
58th Tactical Fighter Training Wing (12th AF)

Mountain Home AFB, Idaho
67th Tactical Recon Wing (831st AD)

Langley AFB, Va.
4500th Air Base Wing (TAC)
316th Tactical Airlift Wing (839th AD)
1st Aerial Port Gp. (TAC)
2d Aircraft Delivery Gp. (TAC)
480th Recon Technical Gp. (TAC)

Eglin AFB, Fla.
USAF Tactical Air Warfare Center (TAC)
USAF Special Operations Force (TAC)
33d Tactical Fighter Wing (836th AD)

Holloman AFB, N.M.
49th Tactical Fighter Wing (835th AD)

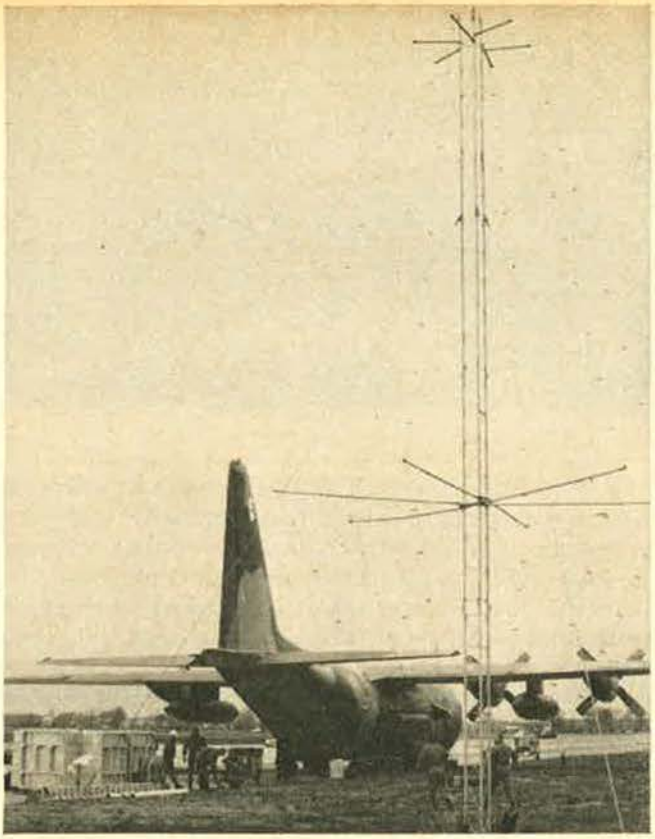
Eglin AAF No. 2, Fla.
(Hurlburt Field)
577th Civil Engineering Sqdn. (9th AF)

Eglin AAF No. 9, Fla.
(Hurlburt Field)
1st Special Operations Wing (SOF)
Special Operations School (SOF)
USAF Air-Ground Operations School (TAC)

Davis-Monthan AFB, Ariz.
4453d Combat Crew Training Wing (12th AF)

England AFB, La.
4410th Combat Crew Training Wing (SOF)

Dyess AFB, Tex.
516th Tactical Airlift Wing (12th AF)



"Talking Bird," an air-transportable communications package for worldwide deployment, can be set up within hours by its twenty-one-man crew for voice and teletype service.

approximately 1,600 hours during the two-week demonstration, which required around-the-clock operations.

In summary, every element of TAC was deeply involved in Coronet Bare and in preparing the way of the future. Soon, the major portion of the command will be capable of rapid deployment, in tailored packages, to any one of more than 1,400 facilities in the free world capable of accepting the bare-base equipment. These sites vary from bare airfields to international airports. The bare-base concept—titled "Harvest Bare" in TAC terminology—will become one of the most significant advances in the modern history of US tactical airpower.

Traditionally, TAC's airlift force typifies the command's versatility and wide-ranging obligations. FY '70 was no exception. From combat in Southeast Asia to support of the nation's moon explorations and humanitarian relief operations in the wake of Hurricane Camille, TAC C-130 aircrews logged untold hours of flying time. Two C-130s delivered 164 tons of food to the famine-stricken Central African nation of Chad; eight C-130s were on standby to provide relief supplies in Biafra; three C-130s circled the globe on a special scientific mission; two C-130s were engaged in a NASA test of winds and radiation. These were but a few of the airlift responsibilities added to the normal operational requirements. The scope of TAC airlift activity is emphasized by the fact that annually the C-130 force carries approximately 260,000 passengers and delivers more than 110,000 tons of cargo.

While the F-4 Phantom continued to serve as TAC's primary tactical fighter weapon system during FY '70, new advances were noted in the achievement of a balanced force. The second F-111 wing was established at Cannon AFB, N. M. (the 27th TFW), to join the 474th TFW at Nellis AFB, Nev. Also, the A-7D close air support fighter entered the inventory at Luke AFB, Ariz. The first A-7D wing will be located at Myrtle Beach AFB, S. C. In addition, the development contract for the F-15 air-superiority fighter was awarded to McDonnell Douglas.

During FY '70, TAC's fighter forces also began returning to total readiness status after accomplishing special replacement training in support of SEA requirements. The 4531st TFW at Homestead AFB, Fla., returned its last RTU unit to operational status. Similarly, the 15th TFW at MacDill AFB, Fla., will have completed its RTU mission in June. The RTU responsibilities of the 479th TFW at George AFB, Calif., also will be phased out in the months ahead.

In connection with these changes, TAC's combat crew training and RTU activities in the F-4 will be centralized and shifted from Davis-Monthan AFB, Ariz., to Luke AFB. Additionally, the A-7D combat crew training activity now at Luke AFB will be transferred to Davis-Monthan AFB.

Operationally, the integrated TAC force of fighters, reconnaissance, and airlift was involved with Army units in numerous training exercises such as Brass Strike and Bold Shot/Brim Fire. Annual exercises like Deep Furrow, Arctic Express, and Punch Card kept the close relationship between TAC and overseas commands intact. TAC also maintained two fighter squadrons in Korea, a rotational responsibility that began with the USS *Pueblo* crisis in 1968.

One of the most versatile of TAC's operational organizations is the Special Operations Force. Equivalent to a numbered air force, USAFSOF is TAC's "other option," designed for deployment of suitable forces when or before a situation necessitates the introduction of general-purpose or tactical strike forces.

At present, SOF is committed primarily to SEA requirements, providing aircrew training in twenty different weapon systems. In addition, SOF provides aircrew training for students from ten allied nations. In total, SOF will have trained more than 5,000 students during FY '71.

Gunship and strike training is conducted in seven different types of aircraft—AC-47, AC-119G/K, AC-130, A-37, T-28, A-1, and UH-1P. Forward air controller training is conducted in the O-1, O-2A, and OV-10. In late 1969, SOF completed training for and deployed two A-37 squadrons to SEA. Allied aircrew training (MAP) is conducted in the A-37, A-1, C-123, and C-47.

Despite its basic training role, SOF maintains a continuing capability to deploy mobile assistance or training teams in response to requests for instruction or assistance. One such team recently was deployed to Vietnam to instruct in VNAF helicopter gun system modernization.

One of the Special Operations Force's most important roles is in developing military civic action

(*Continued on following page*)

One of the aircraft TAC uses for Forward Air Controller training is the OV-10 Bronco, shown here in flight. The versatile OV-10 can perform not only as a FAC plane but also in an attack role, carrying up to 2,400 pounds of external stores. It's in service in Vietnam.

doctrine and techniques. The primary purpose is to prevent conflict by ensuring internal stability. In this connection, USAFSOF, in concert with overseas commands and allied authorities, provides country survey teams when required.

TAC's reconnaissance forces continued to move steadily ahead under the impetus of new techniques and equipment developed by the Tactical Air Reconnaissance Center at Shaw AFB, S. C. All-weather, day-night recce advanced significantly and response time effectiveness improved. In addition, the TAC reconnaissance force structure was enhanced by the return of the 18th Tactical Reconnaissance Squadron from Europe, combined with the reorganization from training mission requirements to operational status of the 29th TRS at Shaw AFB, S. C., and the 4th TRS at Bergstrom AFB, Tex. These additions greatly improved TAC's worldwide recce capability.

In addition, in other highlights during FY '70:

• TAC recorded the best aircraft safety mark in its twenty-three-year history, with an all-time low of 6.7 accidents per 100,000 flying hours.

• The command computerization program advanced during the year, with ten of nineteen bases equipped with the Burroughs B3500 program enabling immediate data acquisition in finance, personnel, and engineering management.

• The TAC Medical Service greatly increased mobility and flexibility by introducing the Mobile Air Transportable Hospital (MATH). This seven-module medical facility is air transportable and specifically designed to support TAC's bare-base concept. It was used in the Coronet Bare exercise in South Carolina.

• TAC also provided USAF with the sole source of tactical aeromedical evacuation capability with the establishment of the 1st Aeromedical Evacuation Group at Pope AFB, N. C., for worldwide deployment. In addition, two Reserve Medical Services units were established at Ellington AFB, Tex., and MacDill AFB, Fla.

• The 64th Tactical Airlift Wing and the 4442d Combat Crew Training Wing shifted from Sewart AFB, Tenn., to Little Rock AFB, Ark., as a result of the programmed closure of the Tennessee base.

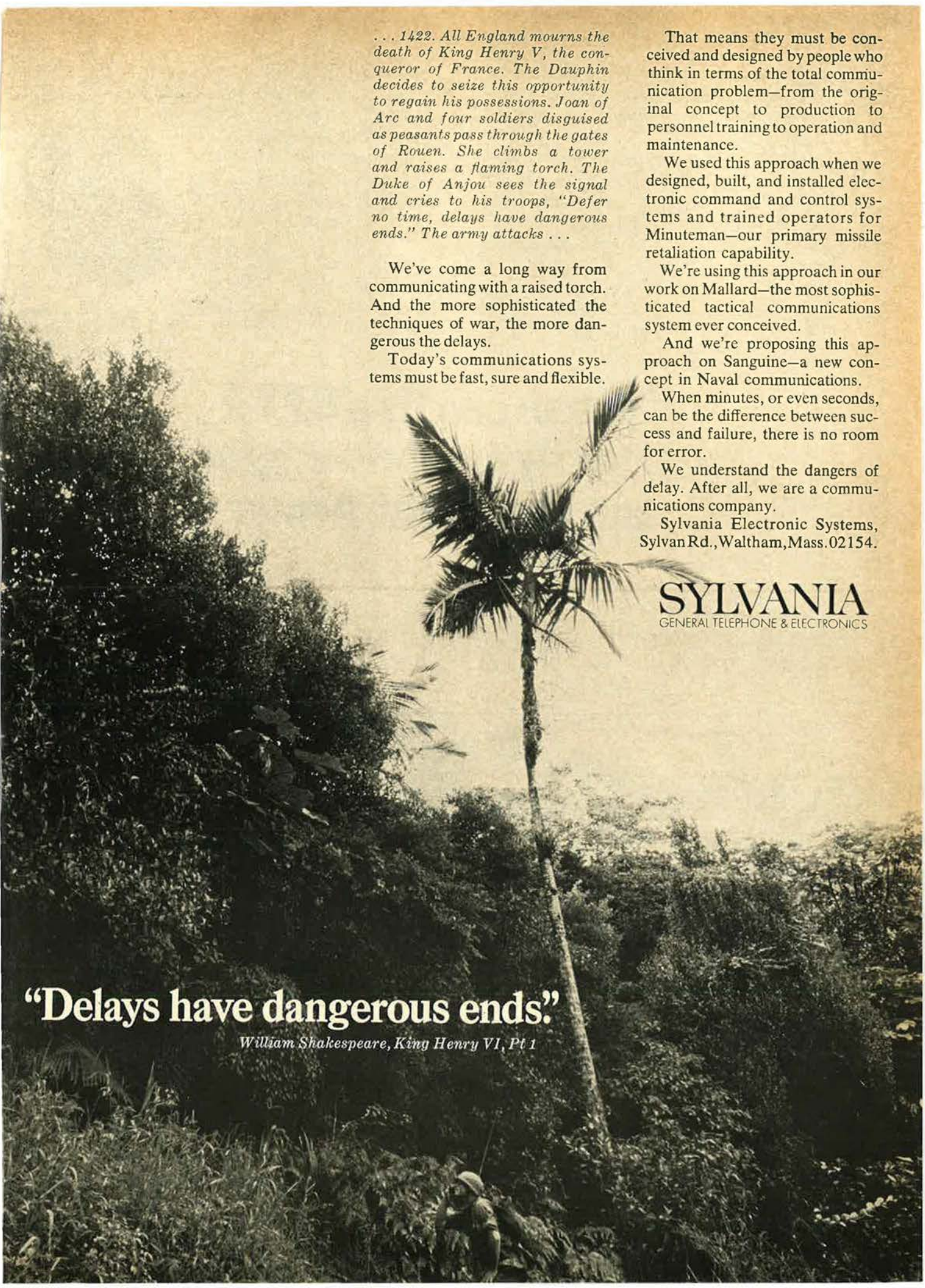
• TAC's worldwide civil engineering capability was enhanced by acquisition of two Red Horse units (heavy repair), the 557th CES(HR) at Hurlburt Field, Fla., and the 820th CES(HR) at Lake Mead, Nev., which returned from Southeast Asia.

• In an additional move to increase civil engineering resources, TAC became gaining command for sixty-nine newly organized Reserve Civil Engineering Flights. Each of the eighty-five-man organizations contain the nucleus of a sixty-man Prime Beef team.

• Organizationally, several key changes were made during the year. A Deputy Chief of Staff for Requirements was established; the four Tactical Centers (fighter weapons, reconnaissance, airlift, and tactical air warfare) were realigned for improved responsiveness; and the Special Operations Center was realigned within the Special Operations Force as DCS/Requirements.

• The TAC-85 Study Group was established to conduct a comprehensive study of US Air Force tactical airpower requirements and objectives over the next fifteen years.—END

A tactical fighter for the Air Force is the A-7D Corsair II, capable of carrying twenty-eight 250-pound general-purpose bombs on its six wing pylons. The A-7D also is armed with the rapid-fire M61 Gatling gun.



"Delays have dangerous ends."

William Shakespeare, King Henry VI, Pt 1

. . . 1422. All England mourns the death of King Henry V, the conqueror of France. The Dauphin decides to seize this opportunity to regain his possessions. Joan of Arc and four soldiers disguised as peasants pass through the gates of Rouen. She climbs a tower and raises a flaming torch. The Duke of Anjou sees the signal and cries to his troops, "Defer no time, delays have dangerous ends." The army attacks . . .

We've come a long way from communicating with a raised torch. And the more sophisticated the techniques of war, the more dangerous the delays.

Today's communications systems must be fast, sure and flexible.

That means they must be conceived and designed by people who think in terms of the total communication problem—from the original concept to production to personnel training to operation and maintenance.

We used this approach when we designed, built, and installed electronic command and control systems and trained operators for Minuteman—our primary missile retaliation capability.

We're using this approach in our work on Mallard—the most sophisticated tactical communications system ever conceived.

And we're proposing this approach on Sanguine—a new concept in Naval communications.

When minutes, or even seconds, can be the difference between success and failure, there is no room for error.

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GENERAL TELEPHONE & ELECTRONICS

Fort Rucker, Alabama is the home of the U. S. Army Aviation Center and School. There, the synthetic flight training branch operates two GAT-2* trainers by Link.

The GAT-2 allows the instructor to spend more time with a man—all the time he needs. The result is better pilot training—especially in the very important area of emergency procedures. Training in the GAT-2 also simplifies scheduling and reduces cost.

The motion of the GAT-2 is real. The feeling of flying you get is exactly the feeling you get in a very responsive modern twin-engine aircraft. So the pilot's transition from GAT-2 to the real twin-engine aircraft is a routine matter.

The GAT-2 is a complete training system created by the same people who provide training systems for everything from a single-engine craft to the new 747 commercial jet. Nobody knows aviation training like Link.

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LINK DIVISION

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If a man can fly a GAT-2 he can fly any twin-engine aircraft in the Army.

The Air University

AIR University (AU), the professional education center for the United States Air Force, prepares the leaders who in large measure will determine the caliber of tomorrow's Air Force.

Air University today—and since its establishment twenty-four years ago—provides the many types of education and educational services required by a dynamic Air Force. These range from precommission education for career-minded young men to the preparation of top aerospace leaders, staff officers, and trained specialists.

Commanding Air University is Lt. Gen. Albert P. Clark, whose headquarters are at historic Maxwell AFB, near Montgomery, Ala. The Air Force's professional military education schools are located on Maxwell's Academic Circle. They are the Air War College, Air Command and Staff College, and Squadron Officer School. Located in the center of the Circle is the imposing Air University Library, named for Gen. Muir S. Fairchild, Air University's first commander and later USAF Vice Chief of Staff.

Another AU school in the Academic Circle is the

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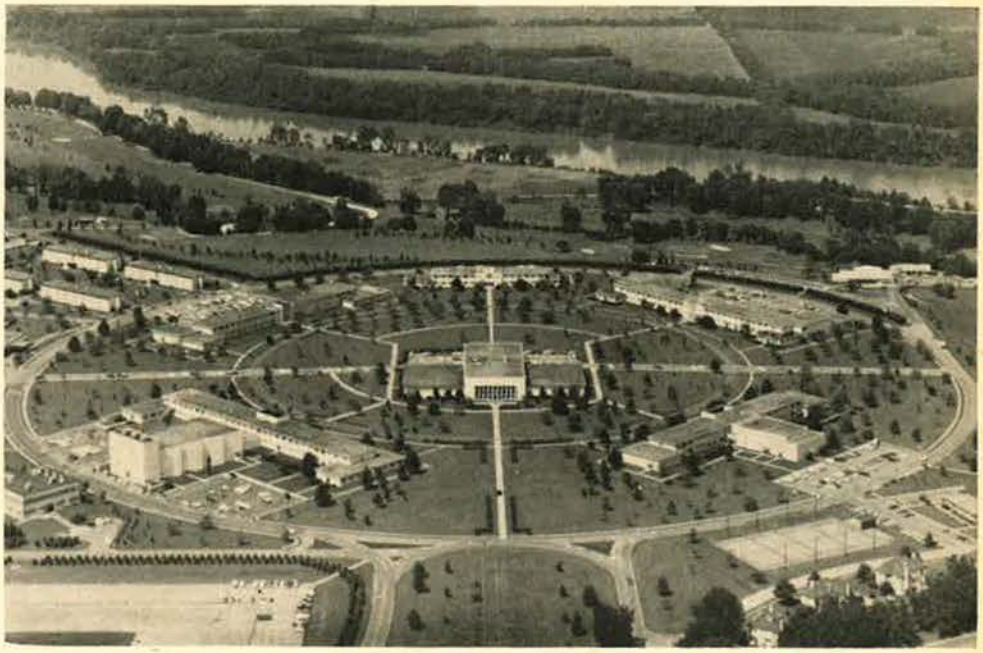


The Air Force's military education schools are located on Maxwell's Academic Circle, in the center of which is the Air University Library, named for Gen. Muir S. Fairchild, Air University's first commander and later USAF Vice Chief of Staff. Air University helps prepare those who to a great extent will determine the quality and direction of tomorrow's Air Force. Its services range from precommission education for the career-minded to advanced courses for top-level aerospace leaders, staff officers, and specialists in many fields.

Lt. Gen. Albert P. Clark became Commander of the Air University in August 1968. His previous assignment was Vice Commander, Tactical Air Command. A 1936 graduate of West Point, he completed flying training at Randolph Field, Tex., in 1937. He then served at Selfridge Field, Mich., and in June 1942 went to England as second in command of the 31st Fighter Group, the first American fighter unit in the European Theater of Operations. He was shot down over Abbeville, France, in July 1942 and held prisoner of war until April 1945. After World War II General Clark progressed through key staff jobs in TAC, Continental Air Command, and ADC. He commanded the 48th Fighter-Bomber Wing in France in the mid-1950s and then served as Chief of Staff, USAFE. General Clark served as Director of Military Personnel, Headquarters USAF, from 1959-63. He next commanded the 313th Air Division, Okinawa. In August 1965, General Clark was named TAC's Vice Commander. A command pilot, he holds the DSM, Legion of Merit, Air Medal, and Purple Heart.

A student officer at Air University's Academic Instructor Course operates a prototype learning center that provides audiovisual systems to permit individual student study.

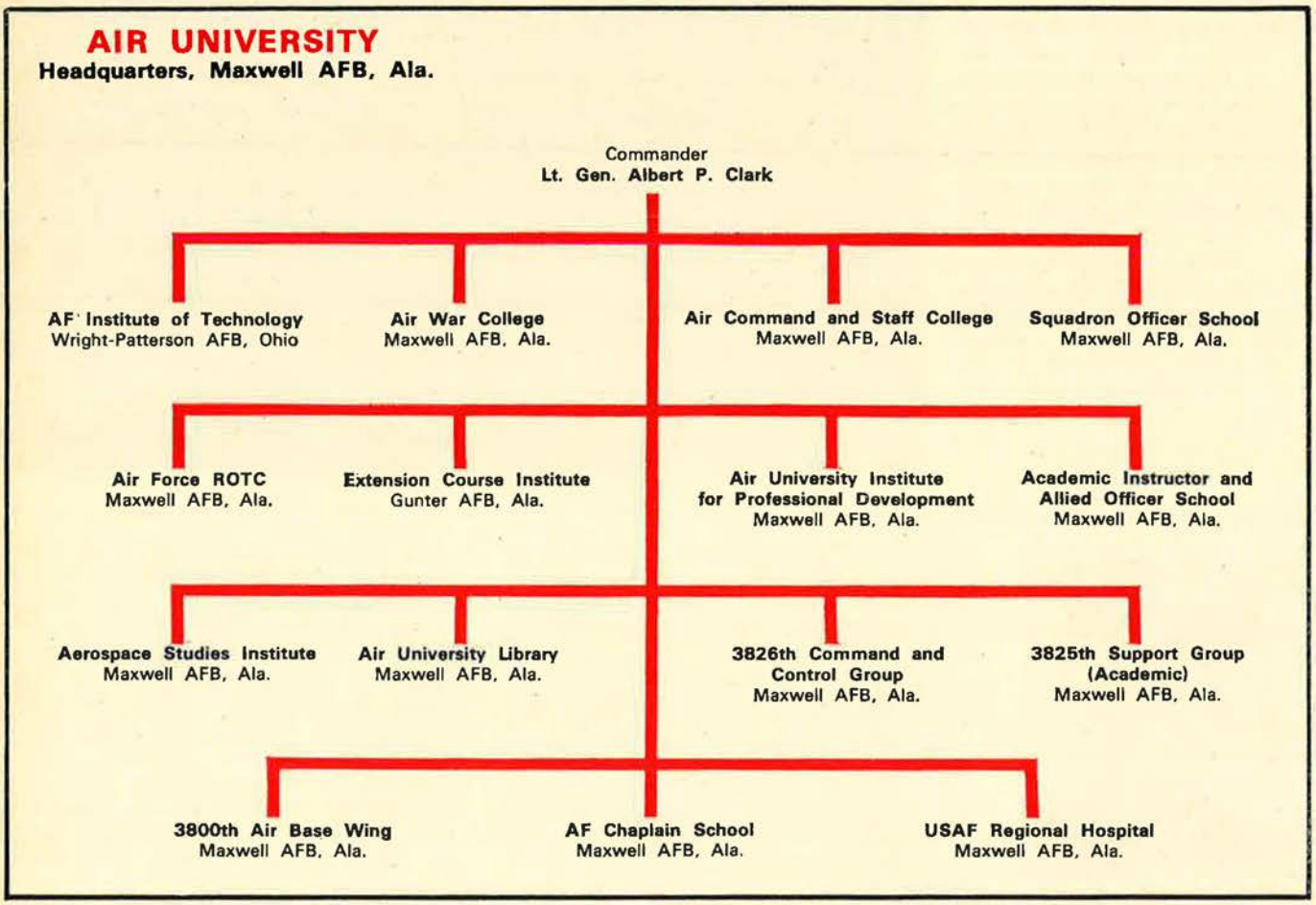
Air University Institute for Professional Development. It provides instruction in space operations, weapons employment, comptrollership, and personnel management. AUIPD's newest course is for new legal officers.

The Circle also houses Project Corona Harvest, an evaluation of the effectiveness of airpower in Southeast Asia since 1954. Although the project's steering committee is headed by the USAF Vice Chief of Staff, the AU Commander is responsible for the overall conduct of the study. Corona Harvest is just one of the agencies composing the Aerospace Studies Institute. Its Arctic, Desert, and Tropic Information Center recently produced a manual and movie on survival in the inland waterways of Southeast Asia. Another division publishes the scholarly *Air University Review*. Other divisions include the USAF Historical Division, the Concepts Division, the Documentary Research Division, and the Communications-Electronics Doctrinal Project Office.

Elsewhere at Maxwell are the headquarters of Air Force ROTC—a dual-education system that offers aerospace education at 165 high schools and an Air Force-commissioning program at 174 universities. Enrollment in Air Force ROTC this fall is expected to total 40,000 college students, while enrollment in Air Force Junior ROTC is anticipated to total 18,000 high school students.

In addition, Maxwell houses the command's Academic Instructor and Allied Officer School. Its Academic Instructor Course prepares officers and airmen for instructor positions throughout the Air Force, while its Allied Officer Familiarization Course prepares allied officers to attend Squadron Officer School and Air Command and Staff College. Distinguished allied graduates include a vice president, air force commanders, military school commandants, ambassadors, and attachés.

During the past four years, since the Air Force Chaplain School moved to Maxwell, it has provided instruction to approximately one-fourth of the clergy in the Air Force. The Air University school conducts courses for both new and experienced chaplains.



Students at Air University's Air War College meet in seminar with students from Squadron Officer School in a unique new program. The resulting interface brings to bear the mature judgment of senior officers and the enthusiasm of junior officers toward the solution of common professional military problems.

Air University also directs the operation of the Extension Course Institute at Gunter AFB, across Montgomery from Maxwell, and the Air Force Institute of Technology at Wright-Patterson AFB, Ohio. Further, Air University has faculty members at Army and Navy schools throughout the country.

The Extension Course Institute operates the world's largest correspondence school with more than 300,000 enrollments and 310 courses. ECI provides study material in support of the Weighted Airman Promotion System (WAPS) and has, to date, shipped more than 175 tons of WAPS study material to Air Force units throughout the world. This involved more than one million study volumes.

The Air Force Institute of Technology provides education and training in scientific, technological, managerial, logistical, medical, and other specialized fields. It conducts resident courses at Wright-Patterson AFB, Ohio, and extension courses at US and allied installations around the world. It also supervises AF education programs at civilian universities, industrial plants, medical centers, and at six Minuteman ICBM missile sites. A nuclear engineering center, the largest nuclear test facility within DoD, became a permanent educational facility of AFIT during 1967.

Astronaut Edwin E. "Buzz" Aldrin, an Air Force colonel, and one of the first men to walk on the moon, is a former AFIT student, having received his Doctor of Science degree from MIT through an AFIT-sponsored program. The famed astronaut is also a graduate of Air University's Squadron Officer School. His father, then a lieutenant, was one of nine graduates of the first AFIT class in 1920. The Institute was then called the Air Service Engineering School. AFIT is observing its fiftieth anniversary this year.

In 1967, Air University initiated the Thomas D. White Lecture Series in memory of the former Air Force Chief of Staff. The series is designed to provide a forum for the exploration of significant defense problems throughout the free world. The list of distinguished lecturers includes Gen. Maxwell D. Taylor, former ambassador to South Vietnam; Dr. Frank Trager, Professor of International Affairs at New York University; Gen. Bernard A. Schriever, former Commander of Air Force Systems Command; Ambassador Charles E. Bohlen; plus many more.

In 1968 Air University accepted corporate membership in The Institute for Strategic Studies. This London-based organization was founded in 1958 to create an international center for continuous study, discussion, and research on the problems of defense and disarmament.—END

Pilot aptitudes are tested in the Air University-sponsored Flight Instruction Program on the campus level. Senior AFROTC cadets have the opportunity to earn pilot's certificates while participating. AFROTC enrollment at 174 universities this fall is expected to total some 40,000 students

A Major Air Command . . .

Air Training Command

AIR Training Command (ATC), one of the world's largest vocational organizations, has trained more than 8,000,000 men and women during almost twenty-seven years of service as the school system for the US Air Force. The command will observe its twenty-seventh anniversary on July 1, 1970.

One of the largest commands in the Air Force, ATC's population during recent years averaged approximately 144,000. Its assets exceed $2.5 billion, including real estate, aircraft, missiles, other equipment, and inventories.

ATC offers more than 3,000 courses at sixteen command bases across the nation, and through its 126 field training detachments at other US bases throughout the free world, including Southeast Asia. In addition, ATC training squadrons function on bases of other commands.

During the current fiscal year, the command will put more than 600,000 students through courses of its military, technical, and flying training systems.

Commanded by Lt. Gen. Sam Maddux, Jr., with headquarters at Randolph AFB, Tex., ATC has four broad missions—personnel recruiting, military training, technical training, and flying training, which includes survival training.

ATC's US Air Force Recruiting Service emphasizes quality in selecting recruits to fit the Air Force-wide needs. The command has a military training center and four technical training centers. The Medical Service School continues its program at one of the centers.

In its flying training mission, ATC has eleven undergraduate pilot training (UPT) wings, a navigator training wing, a survival training school, and five specialized pilot training squadrons. The squadrons include the Instrument Pilot Instructor School (IPIS), two pilot instructor training units (PIT), a pilot indoctrination squadron at the Air Force Academy, and a pilot training squadron for the Military Assistance Training Program (MAP). A helicopter pilot training unit is part of one of the UPT wings.

In providing the lifeblood for the Air Force team, ATC during this fiscal year will initiate more than 100,000 airmen and officers in military training. Approximately 525,000 student entries will be made into technical training courses, and approximately 19,000 will complete the various flying training courses.

Transferred in July 1969 from Strategic Air Command to ATC, Columbus AFB, Miss., joined the ranks of the UPT bases which this fiscal year will produce about 3,450 Air Force pilots. Additionally, ATC provides some pilot training for the US Marine Corps, and for various allied countries, including the Republic of Vietnam.

"Vietnamization" effectively began in July 1969 with Headquarters ATC responsible for supervision of the entire training program, which includes training by the US Air Force of 5,000 Vietnamese students in the United States this year. Pilot training and technical training are involved.

To assist in the pilot training for the Vietnamese Air Force (VNAF), additional T-28 aircraft were obtained. Over the next fiscal year, the T-28 pilot training rate for the VNAF will about double. They also receive flying training in other aircraft types.

In the technical training area, 243 VNAF instructors were trained at ATC technical training centers to develop Vietnamese in-country training capability in

Lt. Gen. Sam Maddux, Jr., assumed command of the Air Training Command in July 1966. Formerly he was Vice Commander in Chief, Pacific Air Forces. A 1936 graduate of the University of Oklahoma, General Maddux completed flight training at Randolph and Kelly Fields, Tex., in 1937. After several years flying pursuit aircraft, he was assigned as a B-17 pilot and participated in the first long-range over-water bomber flight from California to Hawaii. After duty in the Philippines, Australia, and New Guinea following Pearl Harbor, General Maddux in November 1942 was sent to Washington, D.C., for staff duty. The postwar years saw General Maddux in a number of personnel and training posts, and from October 1959 to May 1960 he served as Senior Member, UN Command, Panmunjom, Korea. Following a stint as Deputy for Plans and Operations to the Commander in Chief of PACAF, General Maddux took command of the Thirteenth AF. In July 1965 he was named Vice CinC, PACAF. He holds the DSM, Legion of Merit, DFC, Bronze Star, and Air Medal.

seventeen courses to be activated during March–September 1970. An ATC mobile training team of sixty-four personnel will provide advisory services to the VNAF in establishing its in-country training program.

ATC also is providing course materials, lesson plans, and training graphics to the VNAF. Lists of equipment required to support the training were furnished the VNAF for acquisition action. In addition, ATC's technical training centers and its military training center designed and fabricated various types of training equipment for use at VNAF locations.

In coordination with Southeast Asia operational requirements, ATC schedules VNAF student training to provide trained manpower availability concurrently with the delivery of operational equipment.

ATC makes every effort to provide the USAF and nations of the free world the best possible training on a responsive, cost-effective basis. All courses are reviewed continually, not only to keep the materials abreast of fast changing technology, but also to improve training procedures and methods.

For example, current contractual studies are focused on the pilot training system of the future, looking ahead to the systems and skills needed to provide USAF pilots for 1975-90. This systems-engineering study encompasses all phases of training technology and skills, as well as simulation and training requirements. Its findings are expected to help define the future undergraduate pilot training system.

(Continued on following page)

AIR TRAINING COMMAND
Headquarters, Randolph AFB, Tex.

Commander
Lt. Gen. Sam Maddux, Jr.

USAF RECRUITING SERVICE

Hq., Randolph AFB, Tex.
Westover AFB, Mass. (3501st Gp.)
McGuire AFB, N.J. (3502d Gp.)
Robins AFB, Ga. (3503d Gp.)
Lackland AFB, Tex. (3504th Gp.)
Chanute AFB, Ill. (3505th Gp.)
Mather AFB, Calif. (3506th Gp.)
Lowry AFB, Colo. (3507th Gp.)

LACKLAND MILITARY TRAINING CENTER

Lackland AFB, Tex.

TECHNICAL TRAINING

Chanute AFB, Ill.
Keesler AFB, Miss.
Lowry AFB, Colo.
Sheppard AFB, Tex.

Hq., Medical Service School
Sheppard AFB, Tex.

FLYING TRAINING

UNDERGRADUATE PILOT TRAINING

Reese AFB, Tex.
3500th Pilot Training Wing

Randolph AFB, Tex.
3510th Flying Training Wing

Williams AFB, Ariz.
3525th Pilot Training Wing

Moody AFB, Ga.
3550th Pilot Training Wing

Webb AFB, Tex.
3560th Pilot Training Wing

Vance AFB, Okla.
3575th Pilot Training Wing

Craig AFB, Ala.
3615th Pilot Training Wing

Sheppard AFB, Tex.
*3630th Flying Training Wing

Laredo AFB, Tex.
3640th Pilot Training Wing

Laughlin AFB, Tex.
3646th Pilot Training Wing

Columbus AFB, Miss.
3650th Pilot Training Wing

* Conducts UPT, helicopter pilot training, and German Air Force pilot training.

SPECIALIZED PILOT TRAINING

Randolph AFB, Tex.
3511th Flying Training Sqdn. (IPIS)
(Instrument Pilot Instructor School)

Perrin AFB, Tex.
3251st Flying Training Sqdn. (PIT)
(Pilot Instructor Training — T-37)

Tyndall AFB, Fla.
3250th Flying Training Sqdn. (PIT)
(Pilot Instructor Training — T-38)

Peterson Field, Colo.
3253d Pilot Training Sqdn. (USAFA)
(Pilot Indoctrination Training for Academy first classmen — T-41)

Keesler AFB, Miss.
3389th Pilot Training Sqdn.
(Military Assistance Training Program — C-47 and T-28)

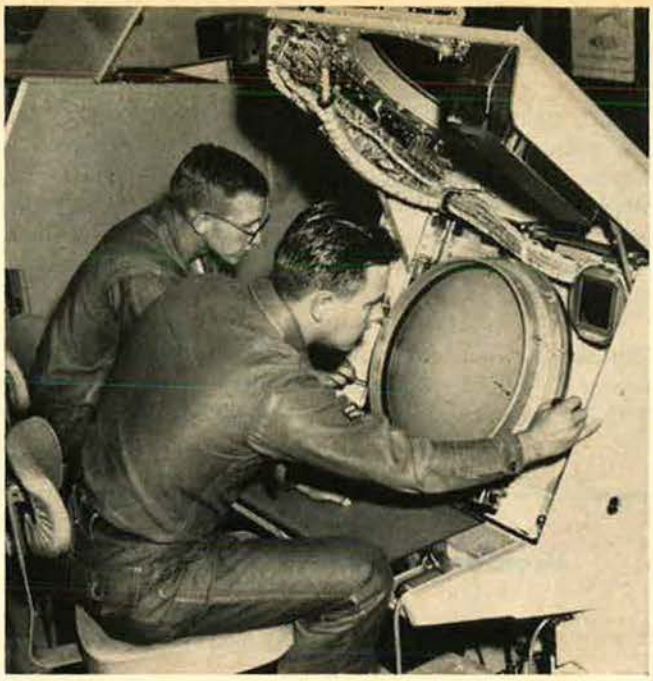
NAVIGATOR TRAINING

Mather AFB, Calif.
3535th Navigator Training Wing

SURVIVAL TRAINING

Fairchild AFB, Wash.
3636th Combat Crew Training Gp. (Survival)

Among all of the technical training courses in the Air Training Command's curriculum, one of the most important—and productive—is the maintenance of jet engines.



Students in ATC's Electronic Digital Data Processing Repairman course learning to adjust the cathode-ray tubes that are basic components of situation display consoles.

A program to reduce the cost and improve the quality of ATC navigator training is now entering the initial procurement stage. A system of new aircraft and simulators promises to fulfill these needs. Reduction of training time is anticipated.

Designated the Undergraduate Navigator Training System (UNTS), it will employ a small fleet of new "T-X" jet navigator training aircraft and a complex of simulator units duplicating the navigator stations in the new aircraft. In the simulator, each student will practice all aircraft navigation tasks. In-flight training will follow. A reduction in flying time of about forty percent is expected with implementation of the total UNTS. Procurement of a "T-X," similar to the McDonnell Douglas DC-9 or Boeing 737, is planned for FY 1971.

It is anticipated also that by FY 1972, navigators will have completely replaced the second pilot currently flying in the back seat of F-4 aircraft. This is in line with the Air Force policy of placing navigators in the

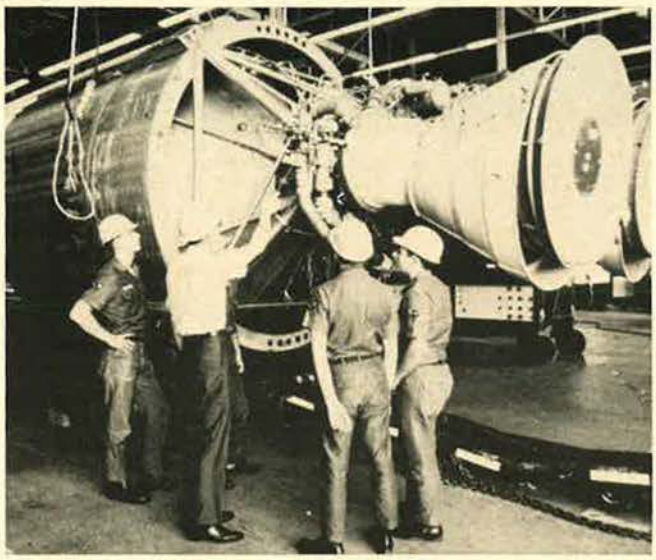
Capable of Mach 1.2 speed, these T-38s are aircraft ATC uses in its undergraduate pilot training program. During this fiscal year, the command will put approximately 19,000 personnel through its various flying training courses, 3,450 of whom will complete pilot training. More than 100,000 officers and airmen will be initiated in military training.

On a training mission, a student pilot flying a CH-3C Jolly Green helicopter picks up a weight and practices landings. Besides preparing pilots for USAF, ATC also provides some training of US Marine Corps pilots and pilots of various allies. "Vietnamization" began in July 1969 when ATC geared up to train 5,000 Vietnamese this year in flying and technical matters.

back and right seats of tactical fighters and reconnaissance aircraft, which has required an increase in production of navigators by 200 men per year. Approximately 1,000 undergraduate navigators will be produced this fiscal year.

Further development by ATC of its Manpower Management Engineering Program resulted in substantial manpower savings in technical and flying training. The program provides the means for studying work to be done, then applies scientific procedures in determining the number of people required to accomplish the workload. Computer tape files are developed in the procedure. These data systems now automatically detail the number and kind of manpower authorizations required to support given workloads. The systems have reduced manpower accounting files and computer machine time.

Good training and fun besides, as a student pilot becomes acquainted with the feel of parachuting during a practice session in the Air Training Command's parasail program.



A Titan II engine is the subject of a lecture by a civilian expert at one of the Air Training Command's four technical training centers. This fiscal year, ATC will put more than 600,000 students through various training courses.

On September 29, 1969, the US Air Force Officer Training School, Lackland AFB, Tex., commissioned its 40,000th second lieutenant while observing its tenth anniversary.

The FB-111 simulator was accepted, and crew training on the weapon system was started October 15 at Mather AFB, Calif.

On December 16, the US Air Force Survival School, Fairchild AFB, Wash., celebrated its twentieth anniversary. It will train about 10,000 this fiscal year.

On April 14, 1970, General Maddux was presented the Arnold Air Society's General Muir S. Fairchild Trophy, awarded annually for outstanding contributions to aerospace education.

ATC has more than 15,000 instructors. They contribute substantially to the accomplishment of ATC's motto, "Prepare the Man." This accomplishment in vocational training is recorded around the world.—END

A Major Air Command . . .

Aerospace Defense Command

A NEW look came to the US Air Force Aerospace Defense Command (ADC) in early 1970. ADC was reorganized and Lt. Gen. Thomas K. McGehee succeeded Lt. Gen. Arthur C. Agan as Commander.

General McGehee, formerly Commander of Fifth Air Force and US Forces, Japan, is a past commander of a number of ADC units, including the former Tenth Air Force at Richards-Gebaur AFB, Mo. He also has served as Director of Operations, ADC, and Deputy Chief of Staff for Operations, Hq. North American Air Defense Command (NORAD).

A command pilot, General McGehee is now responsible for the Air Force component of the joint US-Canadian North American Air Defense Command (NORAD), under the command of Gen. Seth McKee, USAF. ADC resources account for about seventy percent of NORAD operational forces.

As Commander of ADC, General McGehee's responsibility includes providing forces for the detection, identification, interception, and, if necessary, destruction of any aerospace threat to the North American continent and overseas land areas, as required.

While ADC continued to perform the global aerospace defense mission as a major USAF combat command, it experienced budget cuts and personnel reductions. This followed the Secretary of Defense's Project 703 base-closures announcement in late October 1969. These closures were designed to reduce operating and maintenance costs of equipment and facilities. They resulted in a reorganization, under which the continental US aerospace defense mission is now performed by six large air divisions.

Watching the depths of space for satellites has become an increasingly important role for ADC. The Fourteenth Aerospace Force performs this mission.

Information about payloads, the nuts and bolts from rockets and satellites in orbit, is available from ADC's airmen who operate the Space Defense Center inside Cheyenne Mountain near Colorado Springs. Daily, more than 20,000 satellite observations flow into the Center's data-processing facility.

Identification, as well as the position of each satellite in space, is vital to the NORAD mission, the Department of State, Department of Defense, the National

Protected on the ground by a barbed-wire screen, ADC F-106 Delta Darts in the Republic of Korea help provide air defense for free-world forces serving in the Asian nation.

Lt. Gen. Thomas K. McGehee was named Commander of the Aerospace Defense Command in March 1970, following service in numerous ADC posts dating from 1958. Upon graduation from Alabama Polytechnic Institute in 1937, he entered active military service as an artillery officer. Receiving his wings at Randolph Field, Tex., in 1940, he served in several posts in the US before joining the Eighth Air Force's 305th Bombardment Group in Europe in 1942. Given command of the group in 1943, he later was named Assistant Operations Officer for Eighth Air Force. Among postwar assignments, General McGehee served as Deputy Chief of Staff for Operations, Fourteenth Air Force, and Chief of Operations, Armed Forces Staff College. Graduating from the Air War College in 1955, he became Deputy Chief of Staff for Operations, Fifth Air Force, Japan, and later its Chief of Staff. In 1968 General McGehee was named Commander, US Forces, Japan, and Fifth Air Force. His decorations include the Legion of Merit, Distinguished Flying Cross, Soldiers Medal, and the Air Medal.

One arrow in ADC's defensive quiver is Bomarc, a long-range, area-defense guided missile designed to intercept and destroy enemy aircraft before they reach US targets. Less than a minute's warning is required before blastoff.

Aeronautics and Space Administration (NASA), the scientific community, and the exploration of space.

Around-the-clock aerospace surveillance data flows into the Space Defense Center from a worldwide network of radar and optical sensors, including those operated by ADC and other military, government, and private space detection and tracking agencies.

The United States and the Soviet Union are the biggest users of space. On April 10, 1970, the United States had 291 earth-orbit payloads and eighteen deep-space loads, plus 1,099 items of debris, for a total of 1,408 objects in orbit. By comparison, the Soviet Union had seventy-seven earth-orbit payloads and fourteen deep-space payloads, plus 298 items of debris, for a total of 389 objects in orbit.

To warn of a missile attack, there is the Ballistic Missile Early Warning System (BMEWS), with stations in Alaska, Greenland, and England. Their gigantic radar antennas, each with an area equivalent to that of a football field, are beamed to detect the trajectory of ballistic missiles from the Soviet Union. A greatly improved capability to predict hostile ICBM launch points and associated impact points in the United States has been achieved in the BMEWS. Data from BMEWS is transmitted to the ADC Central Computer and Display Facility inside Cheyenne Mountain.

The Facility also receives data from an Over-the-Horizon (OTH) radar system that has the capability of providing information on missile launches, whatever their purpose.

Foremost of the threats faced by the United States is the Soviet arsenal of intercontinental ballistic mis-

(Continued on following page)

AEROSPACE DEFENSE COMMAND

Headquarters, Ent AFB, Colo.

Commander
Lt. Gen. Thomas K. McGehee

14th Aerospace Force
Ent AFB, Colo.
Maj. Gen. Michael J. Ingelido
Commander

Air Defense Weapons Center
Tyndall AFB, Fla.
Brig. Gen. James L. Price
Commander

20th Air Division
Ft. Lee AFS, Va.
Brig. Gen. Jack K. Gamble
Commander

21st Air Division
Hancock Field, N.Y.
Maj. Gen. George V. Williams
Commander

23d Air Division
Duluth IAP, Minn.
Brig. Gen. Clayton M. Isaacson
Commander

24th Air Division
Malmstrom AFB, Mont.
Maj. Gen. Richard S. Abbey
Commander

25th Air Division
McChord AFB, Wash.
Maj. Gen. Archie M. Burke
Commander

26th Air Division
Luke AFB, Ariz.
Brig. Gen. (M/G Selectee) Sanford K. Moats
Commander

siles and the sea-launched ballistic missiles. The Soviets have developed a family of ICBMs that have shown improvement both in lifting and range capabilities. The range of currently deployed Soviet ICBMs is 5,000 to 7,000 nautical miles, which makes any target within the United States vulnerable.

Other Soviet missile threats include the Multiple Independently Targeted Reentry Vehicle (MIRV), which allows each ICBM to carry more than one warhead, and the Fractional Orbital Bombardment System (FOBS). FOBS, a satellite the Soviets may have tested as recently as September 1969, presents the threat of a weapon that can strike the United States from any direction. FOBS is a ground-based weapon, targeted before launch, with the sole intent of attack. It presents great problems in detection, tracking, and interception for aerospace defense forces.

This Baker-Nunn camera, operated by ADC's Fourteenth Aerospace Force, is capable of photographing an object the size of a basketball at a distance of 25,000 miles in space.

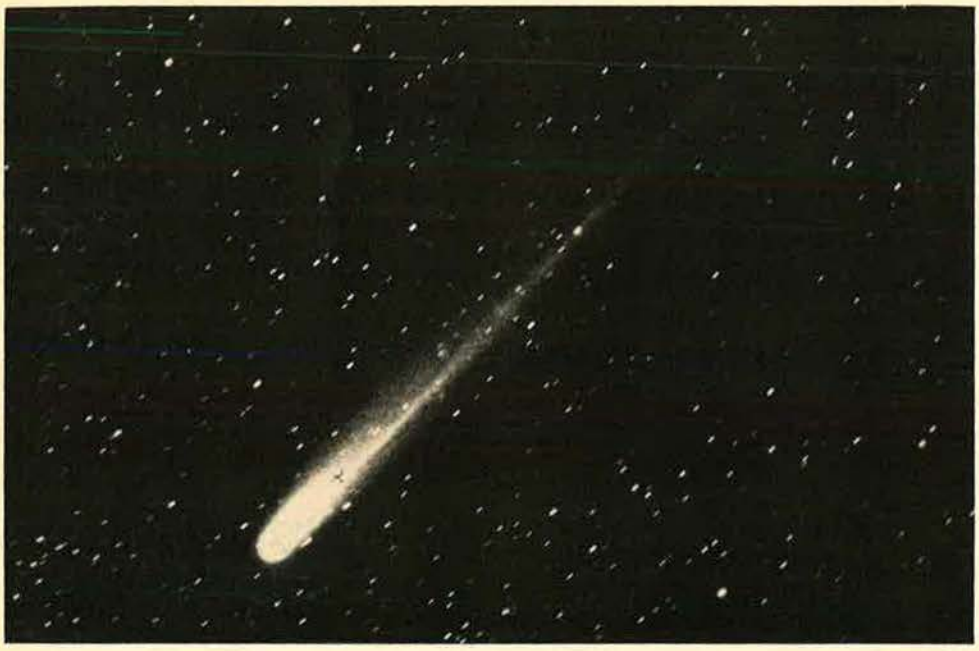
In addition to the missile threat, there is the force of medium and heavy bombers that the Soviet long-range aviation can bring to bear on North American targets. The long-range bombers of the Soviet Union would most likely follow a missile attack, and could reach targets on the North American continent in five hours.

Interceptor crews at Keflavik, Iceland, intercept and make frequent motion pictures of Soviet Bear bomber aircraft conducting training over the North Atlantic. The Bear is a four-engine turboprop that can carry bombs or one air-to-surface missile.

To counter the Soviet bomber threat, ADC uses weapon resources that include the McDonnell F-101 Voodoo, the Convair F-102 Delta Dagger, and the Convair F-106 Delta Dart interceptors, plus Bomarc unmanned surface-to-air interceptor missiles.

The regular ADC forces are supplemented by highly proficient Air National Guard (ANG) units. Flying F-101s and F-102s, ANG units daily support ADC's continental air defense mission.

Both the ADC and ANG fighter-interceptor units are tested once a year at the Air Defense Weapons Center at Tyndall AFB, near Panama City, Fla. From all corners of the United States, pilots converge at the Center to test the effectiveness and capability of our nation's aerospace defense weapons. The supersonic jet fighters are capable of being armed from an arsenal of air-to-air missiles and rockets ranging from the large, nuclear-capable Genie to the smaller Falcon heat-seeking or radar-guided system, and conventional explosives.



An ADC Baker-Nunn camera snapped this remarkable photo of the comet Tago-Sato-Kisaka in its elliptical orbit around the sun. The camera is part of a network of electronic and optical sensors tracking man-made objects in space. The net's space surveillance data is provided to the joint US-Canadian North American Air Defense Command (NORAD) in Colorado Springs, Colo.

ADC personnel operate the Space Defense Center inside Cheyenne Mountain near Colorado Springs, Colo., for NORAD. A worldwide network of sensors furnishes data.

An antiaircraft crew remains alert while on duty guarding ADC aircraft in Korea. From space surveillance to area defense, ADC is one of the most diversified AF commands.

Conventional ground-based radar and a wing of EC-121 airborne early warning and control aircraft serve as a link in the operation of ADC's fighter-interceptor fleet. Besides operations in the United States, the EC-121s fly missions in support of other commands located throughout the world. This includes a mission in Southeast Asia where the EC-121s are an integral part of the command and control system.

The conventional ground-based and airborne radar of ADC's defenses are linked together by a command and control system called Semi-Automatic Ground Environment (SAGE). Backup for SAGE is furnished by the transistorized computers of the Backup Interceptor Control (BUIC) system. Overall operational control of these defenses comes from the NORAD Combat Operations Center.

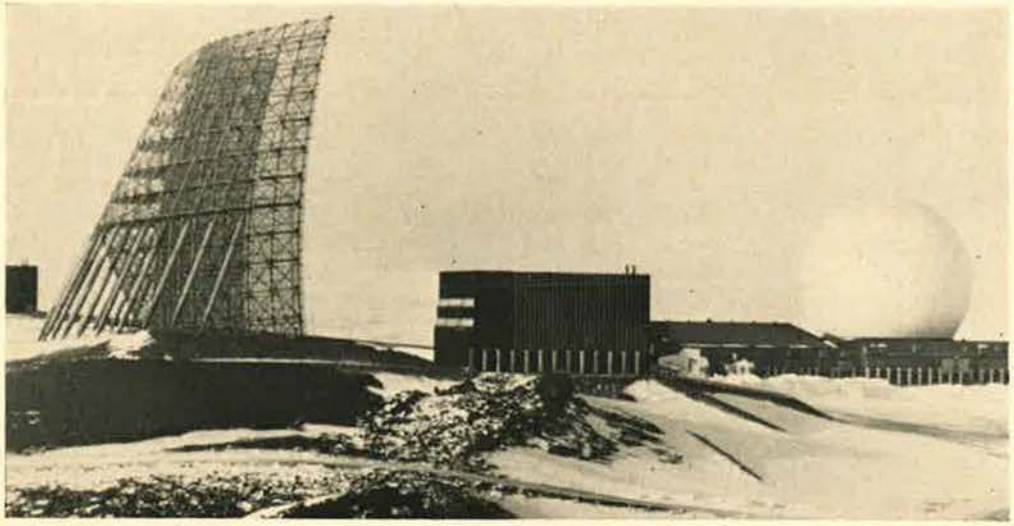
The efficiency of this system will be greatly increased by the forthcoming Airborne Warning and Control System (AWACS). AWACS is basically a high-speed, long-range jet aircraft carrying advanced early warning radar. Using either the well-known airframe of the Douglas DC-8 or an eight-engine Boeing design, the AWACS will sport a large antenna atop its fuselage. It is being designed to provide rapid response to fast-developing threats, early warning and air-surveillance information, and direction and control of offensive and defensive weapons.

To take full advantage of the extended defense resources offered by AWACS, it will be necessary to team up with a long-range, continuous-high-speed interceptor. ADC's requirement to meet the strategic bomber threat is an improved interceptor. Currently, the most advanced fighter-interceptor in ADC's inventory is the ten-year-old Convair air-refuelable F-106 Delta Dart.

As the development of AWACS and plans for an improved manned interceptor move ahead, ADC planners look to the future in other areas of systems development, particularly that of space.

In the space age, with man-made satellites probing the universe, the mission of aerospace defense becomes increasingly important. It now encompasses this relatively new potential battleground.

Today, the fighter-interceptor aircrews and radar operators on alert against a bomber threat have been joined by highly skilled technicians who operate sophisticated hardware for around-the-clock surveillance of space.—END



ADC operates Ballistic Missile Early Warning System sites in Alaska, Greenland, and the United Kingdom. Their information is transmitted to Cheyenne Mountain. Each BMEWS radar antenna has an area the size of a football field. Data from BMEWS is supplemented by ADC's Over-the-Horizon (OTH) radar system.

Alaskan Air Command

THE Alaskan Air Command (AAC), oldest of the United States Air Force's major commands, stands poised and ready on America's last frontier, providing "TOP COVER FOR AMERICA."

Under the command of Maj. Gen. Joseph A. Cunningham, the Alaskan Air Command's overall mission is to conduct, control, and coordinate offensive 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 Region.

As a component commander 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 aerospace forces made available to CINCAL.

As a major 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. US Air Force.

In addition, AAC provides airlift support between Sondrestrom Air Base, Greenland, and the Icecap Sites DYE 2 and DYE 3; and the aerial resupply of T-3, an ice island floating in the Arctic Ocean. Support of other major air command units as well as other military services and government agencies throughout the Alaskan area is also a major AAC effort.

The Alaskan Air Command also provides search and rescue and aeromedical evacuation on the Alaskan mainland. Disaster relief is also supplied during domestic emergencies.

Literally topping the air defense routes of the world, AAC's location is the primary factor contributing to its ever-increasing importance. The command straddles the northern bomber routes between the Soviet Union and the industrial heart of the continental United States. It also links the polar air routes between Europe and the Far East and, more significantly, lies directly on the great-circle air route between the eastern United States and Southeast Asia. With the increased mobility of forces made possible by huge jet transports, Alaska occupies a strategically unique vantage point for protection of the free world.

The command has two main bases, Elmendorf AFB, near Anchorage, and Eielson AFB, near Fairbanks. In addition, 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 the structure of thirteen remote radar 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 American airspace, from the Chukotskiy Peninsula.

Maj. Gen. Joseph A. Cunningham has been head of the Alaskan Air Command since July 1969. Previously, he was Deputy Director, Civil Disturbance Planning and Operations, Office of the Chief of Staff, Department of the Army, Washington, D.C. Following graduation from West Virginia University, General Cunningham attended flying schools at Randolph and Kelly Fields, Tex., receiving his wings in 1939. He flew B-26s over Europe in the war and became Commander of the 319th Bombardment Group. Late in 1943 he was named to the staff of the XII Fighter Command in North Africa. Among postwar assignments, General Cunningham, from 1954 to 1956, commanded the 317th Troop Carrier Wing and 7101st Support Group in Germany. From July 1959 to June 1963, he commanded the Air Rescue Service and in the 1960s held various posts in MATS, including command of the Twenty-Second Air Force from August 1966 to July 1968. General Cunningham, a command pilot, holds the Air Force and Army Distinguished Service Medals, Legion of Merit, and the Air Medal.

Inland, five NORAD Ground Control Intercept Stations and three NORAD Control Centers serve as weapon-control facilities to expedite the intercept of any air-breathing intruders. In addition, all these units stand ready to act as combat-reporting centers or combat-reporting posts supporting tactical operations.

AAC's 21st Composite Wing provides aircraft for support missions in Alaska. Assigned are T-33s and EB-57s for intercept training, and C-123s, C-124s, C-118s, and C-130s, and H-21 helicopters for airlift. The H-21s are flown by the 5040th Helicopter Squadron for both airlift and search and rescue. They are scheduled for replacement by the newer, more versatile HH-3C helicopter. Conversion to the new craft will begin this spring.

The 17th Tactical Airlift Squadron carries the biggest share of AAC's airlift mission. In addition to its primary mission of tactical troop airlift and tactical resupply for Army units, the squadron has the unique task of supporting arctic operations in Greenland and Fletcher's Ice Island (T-3), floating in the Arctic Ocean.

Using ski-equipped C-130 Hercules aircraft, the 17th provides the only physical link between the DEW stations on the Greenland icecap 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.

Two C-124 Globemasters were recently added to the inventory of the 17th. They are used primarily for transporting oversized cargo to and from remote Alaskan stations.

Primary annual resupply of petroleum and nonperishable bulk supplies to AAC's stations is accomplished during the short Alaskan summer by commercial ocean and river barges. Named "Operation Cool Barge," this water resupply route is a joint operation of the Air Force and Military Sea Transport Service (MSTS).

Since the arrival of General Cunningham in July 1969, several major changes have occurred within the command's area of responsibility. Included were inactivation of the 317th Fighter-Interceptor Squadron and the reactivation of the 71st Aerospace Rescue and Recovery Squadron at Elmendorf. The 317th was inactivated on December 31, 1969. Earlier, the squadron had established a record of achievements unparalleled by any other unit of its kind in the US Air Force, including winning the coveted Hughes Trophy an unprecedented three times.

All but one of the F-102 Delta Daggers flown by the 317th are now assigned to Air National Guard units in Wisconsin and Texas. The lone "Deuce" remaining on the Alaskan scene is on public display at the Alaska Transportation Museum in Anchorage.

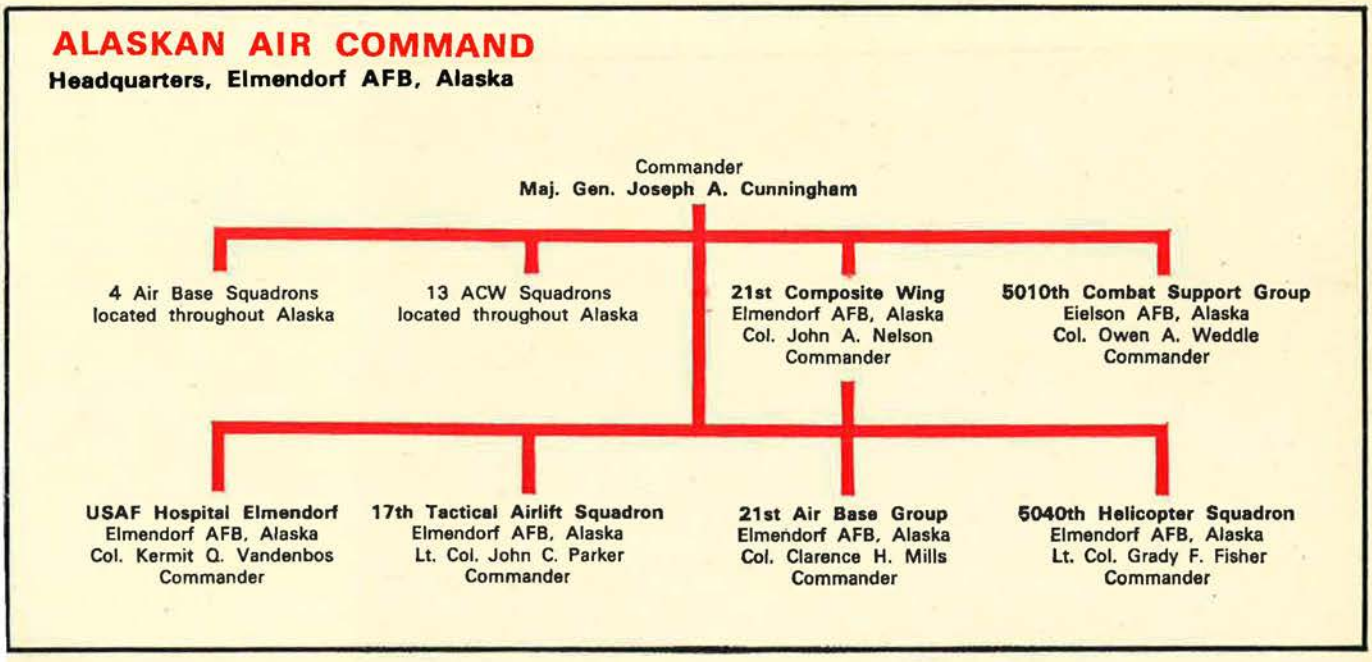
A squadron of F-4E Phantom jet aircraft is scheduled to arrive at Elmendorf AFB this summer. In addition to giving AAC an increased intercept capability, this unit will also provide the unified Alaskan Command's own tactical air capability.

Detachment 3, 25th Air Division, continues to maintain F-106 Delta Dart fighter-interceptors on alert at Alaskan bases. Both the aircraft and their crews serve in Alaska on a rotational basis from Aerospace Defense Command units in the "Lower 48."

Another recent addition to the Alaskan Air Command is the 21st WAF Squadron Section, activated at Elmendorf during October 1969. Organization of the unit was part of an Air Force program to place more uniformed women in overseas locations. One hundred and eighty WAF are programmed for assignment to the unit by August 1970.

Support of the Military Airlift Command's (MAC's) Operation Combat Pacer—the ferrying of men and supplies to and from Southeast Asia—continues to lead the list of AAC support achievements. During 1969, 9,366 C-141s involved in Combat Pacer tran-

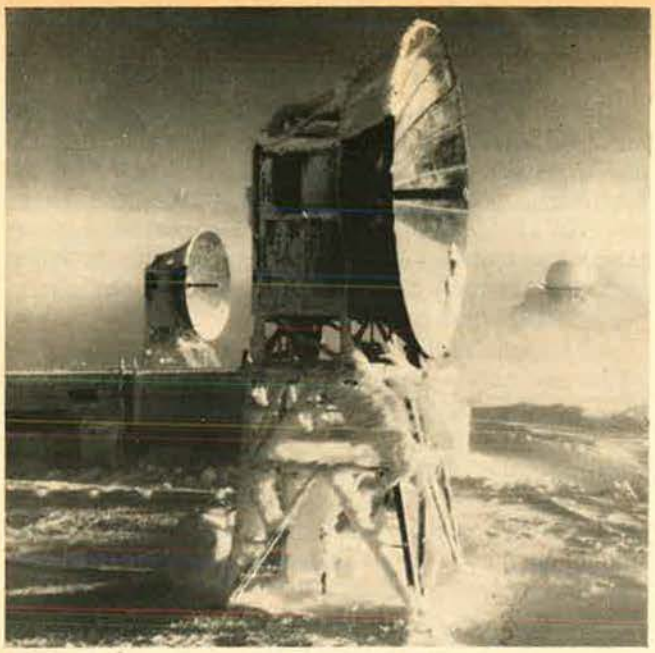
(Continued on following page)



sited Elmendorf. This total included 687 aeromedical-evacuation flights, carrying Vietnam casualties to Stateside hospitals. Since the program's inception in November 1965, nearly 40,000 MAC aircraft, including more than 30,000 Combat Pacer flights, have passed through Elmendorf.

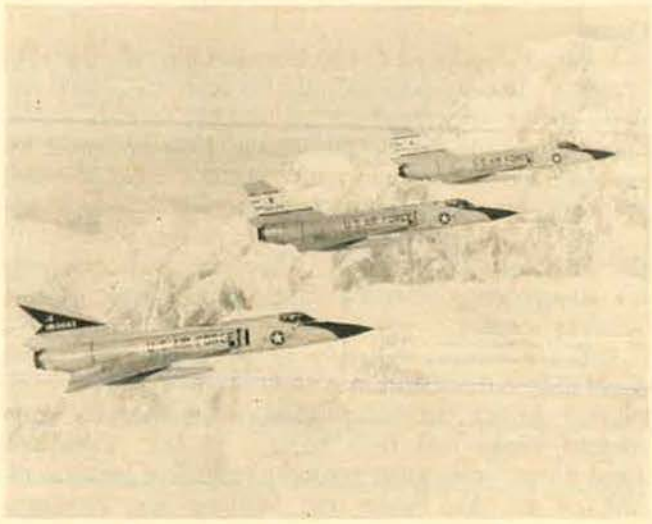
Search and rescue is a major humanitarian mission of AAC. Each month, numerous Air Force, Civil Air Patrol, and civilian sorties are flown under the guidance of AAC's Rescue Coordination Center at Elmendorf. During 1969, sixty-four lives were saved through the combined efforts of the Center and military and civilian pilots throughout Alaska, where aviation and the airplane lead all other means of transportation.

After nearly twenty-five years of service on America's last frontier, AAC continues to blanket the 586,400 square miles of Alaskan terrain, providing "TOP COVER FOR AMERICA."—END



Located in remote central Alaska, Tatalina AFS is a vital link in the Alaskan Air Command's air defense network.

A C-130 of the Alaskan Air Command's 17th Tactical Airlift Squadron cruises over the Alaskan tundra. The unit's aircraft are used to resupply DYE sites on the Greenland icecap, and are the only USAF C-130s equipped with skis.



Air Force F-106 Delta Darts provide a supplement to the other resources of Alaskan Air Command. The aircraft and their crews serve in Alaska on a rotational basis from units of the Aerospace Defense Command in the "Lower 48."

Shown from the air, Cape Newenham Air Force Station is located on Alaska's southwest coast at a point overlooking the Bering Sea. The facility serves as one of a chain of thirteen remote radar installations that act as surveillance stations in the Alaskan Air Command's air defense network.

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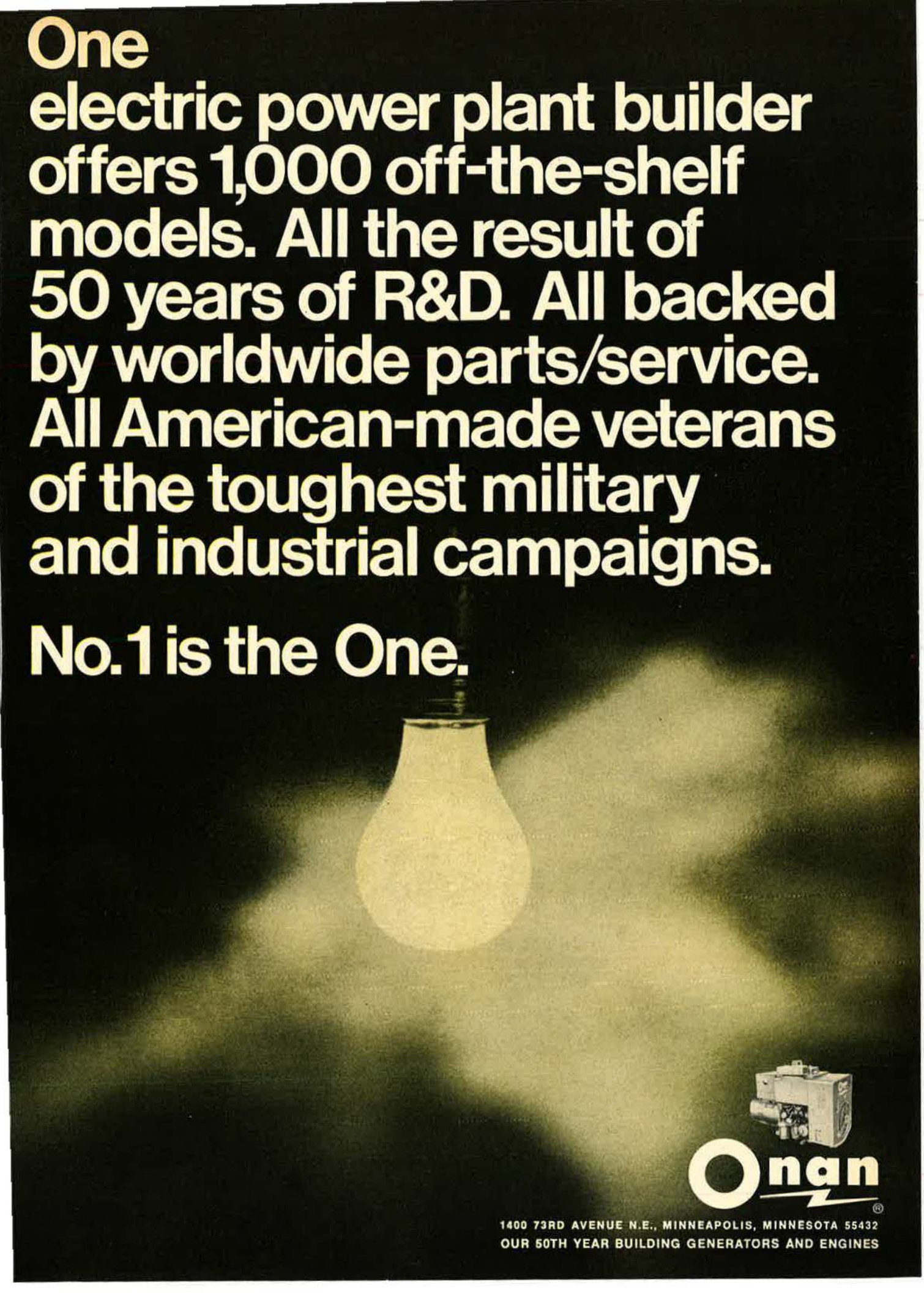

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A Major Air Command . . .

Headquarters Command USAF

THE evening of August 3, 1969, was no ordinary night for the Air Force personnel on duty at Andrews Air Force Base, Md. Several thousand spectators at the flight line in a drenching downpour provided the obvious clue: The "Gateway to the Nation's Capital" was about to receive a most illustrious visitor, President Richard M. Nixon. The Commander in Chief was returning to Andrews after his celebrated international goodwill trip. Among those on hand to greet the President as he emerged from *Air Force One* was the Commander of the 1st Composite Wing, Andrews.

. . . and at the Headquarters Command USAF (HQ COMD USAF) command post at Bolling AFB, the technician on duty was responding to a telephone call from the Commander of the 1141st USAF Special Activities Squadron, Stuttgart, Germany. The conversation concerned the humanitarian reassignment of a sergeant at the squadron's detachment at Oslo, Norway.

. . . while at Hq. Civil Air Patrol, USAF, a clerk in the Operations Directorate was about to put the finishing touches on a search and rescue (SAR) message reporting that a California Wing CAP aircraft had "found" a lightplane down in the Sierra Nevada Range.

Dissimilar as they are, these several events have a common organizational bond: Headquarters Command USAF, with a vested interest in more than 38,000 personnel at well over 800 locations throughout the world.

• **Malcolm Grow USAF Medical Center:** Headquarters Command USAF also takes care of its own with medical, dental, flight medicine, and veterinary services for thousands of active-duty/retired military personnel and their dependents through the Malcolm Grow USAF Medical Center at Andrews. In a vital and direct assist for the war effort in SEA, the Center's 10th Aeromedical Staging Flight at Andrews AFB also provides medical care and processing for returning SEA wounded of all US armed services.

• **USAF Special Activities and Field Extensions:** Approximately 28,000 Air Force personnel are placed under the organizational umbrella of HQ COMD USAF in the category of either special activities or field extensions.

The personnel of the USAF Special Activities Squadrons are under the operational control of and perform duties for agencies outside the Air Force. As an example, the Air Force astronauts attached to NASA are actually assigned to HQ COMD USAF through its 1st USAF Special Activities Squadron at Ellington AFB, Tex. Other units support NATO, unified commands, the Federal Aviation Administration, DASA, MAAGs, and attachés.

Personnel assigned to the Command's field extensions are under the direct operational control of the Air Staff. Some of the larger units in this category are the 1005th Special Investigations Group, Washington, D.C.; the 1002d Inspector General Group, Norton AFB, Calif.; the 1105th Military Personnel Group, Randolph AFB, Tex.; the 1030th Auditor General Group, Norton AFB, Calif.; the Hq. USAF Postal and Courier Service; and the 1127th Field Activities Group.

All in all, there are twenty special activities and ten field extensions assigned to HQ COMD.

Thus, diversity is truly the hallmark of Head-

Maj. Gen. Nils O. Ohman, formerly Vice Commander of the Air Training Command, took over as Commander of Headquarters Command in July 1968. A member of the US Military Academy Class of '37, he completed pilot training at Kelly Field, Tex., in October 1938. General Ohman flew thirty-four B-17 missions in Europe during World War II as Commander of the 97th Bombardment Group. Following the war, he served in many posts around the world, and during the Korean War completed forty-six combat missions in B-26 and B-29 aircraft as Commander of the 3d Bombardmen Wing. In the late 1950s General Ohma served as a SAC wing and division com mander, and in September 1961 was name Senior Air Force Member, Military Studie and Liaison, Weapons Systems Evaluatio Group, Washington, D.C. With Air Train ing Command since August 1964, he be came Vice Commander in August 196 and served in that capacity until his assign ment to Headquarters Command in 196 General Ohman is a command pilot an has more than 7,000 hours of flying tim

quarters Command USAF—whose influence has been felt at many key points around the world.

• **1st Composite Wing, Andrews AFB, Md.:** Many of the 10,000 personnel under the command's operational control are stationed at Andrews AFB. Here, "superior performance" is a daily goal for the personnel responsible for operating a facility under the constant scrutiny of international heads of state, as well as the nation's top military and civilian leaders.

Precision and professionalism are carefully woven into the operational procedures of the 1st Composite Wing to support the more than 200,000 takeoffs and landings at Andrews each year. The great majority of the air operations are produced by the 1st Composite Wing itself, performing its executive airlift mission, transporting high-level government personnel throughout the world; and in its proficiency-flying program established for the pilots and navigators assigned to duties in the Washington, D.C., area.

The command has consistently displayed a high degree of ingenuity and responsiveness to contingency and emergency operations. A recent case in point was the command's support of the 4,500 troops of the Army and Marine Corps deployed to Washington, D.C., during the period from November 11 to 18, 1969, for possible use during the Vietnam Moratorium. Andrews flawlessly received and launched 355 sorties of TAC C-130s to accommodate airlift of the troops, who were then bivouacked at Bolling AFB.

• **1100th Air Base Wing, Bolling AFB:** Situated just south of the Capitol itself, at the confluence of the Potomac and Anacostia rivers, Bolling traditionally has been the nerve center of Air Force activity in the Washington area. The long-range master construction plan for the base will transform it into one of the Air Force's most modern bases. Meeting the stringent esthetic criteria established by the Washington, D.C., National Capital Planning Commission and Commission of Fine Arts, the construction plan will make one of the nation's oldest military facilities one of its most modern, and a showplace for Air Force activities in the nation's capital.

Andrews AFB, Md., was the scene of a fun-filled event in December when Bob Hope (flanked by Connie Stevens), entertained prior to his troupe's tour of military bases.

Bolling's 1100th Air Base Wing is the host for not only Headquarters HQ COMD USAF, but also the USAF Band and the USAF Honor Guard. The versatile US Air Force Band, goodwill ambassadors of the Air Force in the highest tradition, perform across the musical spectrum for official government functions around the world. And the crack precision of the US Air Force Honor Guard is on official display during daily ceremonies in the Washington area.

• **1100th Support Group, Bolling AFB:** Not as visible but just as distinctive is the 1100th Support Group at Bolling—the only Air Force field unit devoted solely to comptroller functions. This agency provides comptroller support to Hq. USAF, and Air Force Special Activities/Field Extension units, as well as the command. The more than 34,000 military and civilian personnel on its payroll include the Secretary of the Air Force and Air Force Chief of Staff. The agency's accounting responsibility exceeds $3 billion annually.

• **Hq. CAP-USAF:** But concern for fiscal matters and resource management hasn't dimmed the Air Force's sense of destiny, as reflected through the support rendered by Hq. Civil Air Patrol-USAF, a subordinate unit of HQ COMD USAF, to the Civil Air Patrol, a civilian auxiliary of the USAF. Both fully recognize the unlimited potential in the youth of today as tomorrow's aerospace leaders and provide a well-rounded program for them, covering many aspects of air and space. Adult CAP members perform another vital job: participation in more than forty-eight percent of all aerial search and rescue missions flown under the supervision of the Air Force Aerospace Rescue and Recovery Service within the continental US.—END

President and Mrs. Richard M. Nixon wave to well-wishers as they board *Air Force One* on Andrews' flight line. The base is called "Aerial Gateway to the Nation's Capital."

US Air Forces Southern Command

IN addition to its role as a major command of the US Air Force, the US Air Forces Southern Command (USAFSO), commanded by Maj. Gen. Kenneth O. Sanborn at Albrook AFB, Canal Zone, serves as the air arm of the unified US Southern Command.

Air defense of the Canal Zone and the administration of Air Force military assistance throughout Latin America are the two main responsibilities of USAFSO.

With a geographical area of responsibility second in the Air Force only to that of PACAF, USAFSO is comparatively small in terms of manpower. The command's area extends from the southern border of Mexico to the southernmost tip of South America, an area two and one-half times the size of the United States.

USAFSO provides logistic support for US Military Groups and their Air Force Sections throughout Central and South America from its two bases in the Canal Zone—Albrook and Howard. The command's 24th Special Operations Wing conducts these air support operations.

The Air Force's military assistance mission with Latin American nations takes several forms, such as materiel assistance through grant aid and foreign military sales, formal and informal training programs, and special airlift operations in support of civic action and community-relations projects.

In addition to advising on the provision of equipment and weapon systems for Latin American air forces, materiel assistance is aimed at providing the technical knowledge to properly operate and maintain such equipment and systems. USAFSO has technical assistance teams available on a continuing basis to offer any help that may be requested.

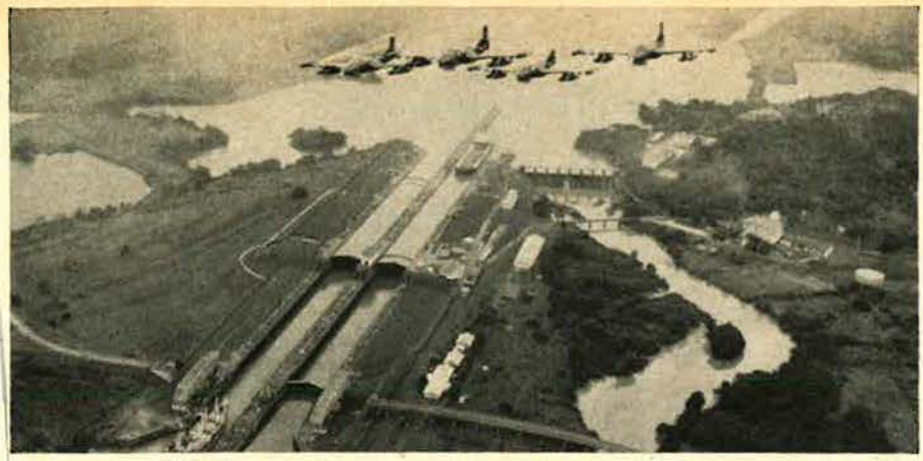
Training programs for officers and airmen of Latin American air forces receive considerable emphasis. The Inter-American Air Forces Academy (IAAFA) at Albrook conducts much of the formal training provided by USAFSO. More than 200 students from eleven Latin American countries were graduated from the Academy last November, bringing the total graduated since classes began in 1943 to more than 9,000. All IAAFA courses are taught in Spanish by bilingual US Air Force instructors. Guest instructors, both officers and enlisted from various Latin American countries, also teach at the school.

Translating USAF training materials into Spanish for use in the school and in on-the-job training programs conducted by participating Latin American air forces is also a responsibility of IAAFA.

During Fiscal Year 1971, the IAAFA curriculum will be expanded to include professional education courses for officers of Latin American air forces. This includes an officer administrative course as well as a command and staff school. The first course is scheduled for November 1970. At present the only IAAFA course for officers is a five-week special air operations course conducted with the assistance of the 24th Special Operations Wing.

Administered by USAFSO and located at Albrook,

The USAF Southern Command has been commanded by Maj. Gen. Kenneth O. Sanborn since June 1968. Formerly, he was Chief of Staff, AFLC, Wright-Patterson AFB, Ohio. A 1937 West Point graduate, General Sanborn received pilot training at Randolph Field, Tex., where he won his wings in October 1938. During World War II, he flew sixty-nine bomber missions, and served in the Caribbean and Pacific. In 1948, following various postwar assignments, General Sanborn began a four-year stint at Headquarters USAF, with the Joint Strategic Plans Group and the NATO Military Committee. In November 1952 he was named Chief of Staff, Second Air Force, and in April 1954, Commander of the 306th Bombardment Wing. In the late '50s came a series of wing and division command assignments. From 1960 to 1965, General Sanborn held several posts at Taipai, Taiwan, including Chief of the Military Assistance Advisory Group. In September 1965 he began his assignment at Wright-Patterson AFB, Ohio. His decorations include the Legion of Merit, DFC, and the Air Medal



Four A-37s recently assigned to the 24th Special Operations Wing at Howard AFB, Canal Zone, pass over Miraflores Locks on the Panama Canal. The A-37s brought some welcome modernization to the Southern Command wing, which previously flew T-28 aircraft.

the USAF Tropic Survival School has graduated more than 1,600 students from jungle- and water-survival courses. Astronauts of the National Aeronautics and Space Administration have attended the courses. All astronauts who have visited the moon underwent a portion of their training at the school. United States and Latin American airmen, members of the US Army, Navy, and Marine Corps, as well as other federal agencies, have also participated in the survival training.

A Familiarization Job Training Program is an important adjunct to the technical training provided by IAAFA. Under this program officers and enlisted men from Latin American air forces work directly with their USAF counterparts in the Canal Zone in a variety of technical and nontechnical fields. The training is done at either Albrook or Howard AFB.

USAFSO provides mobile training teams upon the request of Latin American countries to supplement training offered in the Canal Zone. Field training in a wide range of US Air Force specialties is offered by these teams.

Civic-action and nation-building programs continue to receive great emphasis from USAFSO. USAFSO's helicopters and fixed-wing aircraft log hundreds of hours of flight time in special airlift operations to support these programs. The USAFSO aircraft are augmented by the Tactical Air Command's C-130s on rotational duty in the Canal Zone.

Two welcome additions to the USAFSO aircraft inventory are the A-37 attack/fighter and C-123K cargo aircraft. The A-37 arrived in late 1969 as a modernization measure to replace the T-28 aircraft. Early in 1970 the C-123Ks arrived to replace the C-47 aircraft.

A number of search and rescue and humanitarian airlift missions were made during 1969. During the year, command aircraft made fifty-nine airlifts of sick or injured Panamanians to the capital for medical treatment. Fifty-six of these airlifts were made by USAFSO CH-3 or UH-1 helicopters while the other three were carried in fixed-wing aircraft.

The USAFSO Rescue Coordination Center at Albrook directed thirty-six rescue and recovery missions during 1969, involving a total of forty-four helicopter and thirty-four fixed-wing aircraft sorties. Air Force rescue boats stationed in the Canal Zone also made two sorties on these rescue and recovery missions. The Albrook-based center also acted as a recovery facility for Apollo manned spaceflights made during the year.—END

1Sgt. Jose M. Garcia, 24th USAF Dispensary, examines he throat of a patient during a medical trip to a village.

An instructor at Tropic Survival School, Albrook AFB, Canal Zone, gives water-survival tips to NASA astronauts.

A Major Air Command . . .

Air Force Communications Service

THE SIGN on the main gate will read "Home of the Air Force Communications Service." This is significant because in its many years of operation, first as the old AACS (Airways and Air Communications Service) and later as a major command, the Air Force Communications Service has never before had a home of its own.

Now with the consolidation of AFCS and AFLC's Ground Electronics Engineering Installation Agency (GEEIA), AFCS headquarters will move from Scott AFB, Ill., to Richards-Gebaur AFB, Mo. On July 1, AFCS will take over operation of the base from the Aerospace Defense Command.

Merger of the two organizations extends one step further the USAF single-manager concept for communications-electronics, capable of performing engineering, installation, operation, and maintenance. In addition, the mission includes a ground C-E mobile depot maintenance capability previously exercised by GEEIA for the entire Air Force. AFCS, since its activation as a major command in 1961, has been responsible for the operation of on-base and long-haul communications, air traffic control, and navigational aid facilities.

The union of the two organizations, basically an economy move to meet Department of Defense military strength reductions, is seen by AFCS Commander Maj. Gen. Paul R. Stoney as "an opportunity to further streamline the management of the Air Force's C-E effort to provide more effective service for the 1970s and the future."

Eliminated as a result of the consolidation is the separation of the continental US into three geographical subordinate regions for both AFCS and GEEIA. Instead, AFCS Stateside activities will be directed through two areas—a Northern Communications Area with headquarters at Griffiss AFB, N. Y., currently the site of GEEIA headquarters; and a Southern Communications Area, with headquarters at Oklahoma City AFS, near Tinker AFB, Okla. A communications area is considered to be comparable in size and mission to a numbered Air Force.

Existing AFCS and GEEIA functions and personnel will be consolidated into the new command structure at all echelons by September 30, 1970. Overseas ele-

An F-4C Phantom sweeps by the Air Force Communications Service's ground control approach facility at Davis-Monthan AFB, Ariz., prior to landing after a checkout flight.

Maj. Gen. Paul R. Stoney became Commander of the Air Force Communications Service in August 1969. Since July 1966 he had served as AFCS's Vice Commander. In October 1941, following graduation from Emory University, he enlisted as an aviation cadet and completed pilot training in July 1942. General Stoney served with the Instrument Flying Evaluation Group until March 1944, and then attended Communications Officer School. After tours in Japan and Hawaii, General Stoney in August 1949 was assigned to Headquarters Airways and Air Communications Service where he planned a major updating o global communications and facilities. In Jul 1953 he entered the Air Command and Staf School and the following January was give command of the 1932d AACS Squadron Goose Bay, Labrador. In the 1960s Genera Stoney served as a communications exper with Headquarters USAF and with SAC He helped establish the National Militar Command System and the Consolidate Command Control Communications Pro gram. He holds the Legion of Merit.

ments also will be merged. New on the scene for AFCS will be electronics installation squadrons, developed from present GEEIA squadrons and responsible for the installation of communications-electronics-meteorology (CEM) facilities and systems and for specified on-site maintenance responsibilities.

AFCS thus enters the 1970s with far greater responsibilities than those that prevailed nine years ago when it was elevated to major command status. On the day it was created, July 1, 1961, AFCS inherited its nucleus of 30,000 personnel from the Airways and Air Communications Service (AACS). Today, the consolidation will push worldwide strength to nearly 60,000 personnel operating at more than 700 locations around the globe.

From these worldwide locations, AFCS personnel achieved a number of milestones during the past year.

Air traffic control operations handled by command personnel exceeded 24,000,000, the highest yearly figure since World War II. This means that every one and one-third seconds, somewhere in the world one of the command's nearly 7,000 controllers was in contact with an aircraft taking off, landing, or requesting en-route flight information of some kind. At Da Nang Airport, Vietnam, the 769,886 operations handled by AFCS controllers exceeded the total recorded during the year at Chicago's O'Hare International Airport, with 676,473 operations the busiest commercial airport in the world.

Aircraft "saves" credited to AFCS controllers during the year totaled ninety-one, involving almost 1,000 per-

(*Continued on following page*)

AIR FORCE COMMUNICATIONS SERVICE

Headquarters, Richards-Gebaur AFB, Mo.

(As of April 1. Full consolidation expected by September 30.)

Commander
Maj. Gen. Paul R. Stoney

PACIFIC COMMUNICATIONS AREA

Hq., Wheeler AFB, Hawaii
Brig. Gen. Harold R. Johnson
Commander

Far East Communications Region
Fuchu AS, Japan

Southeast Asia Communications Region
Clark AB, Luzon, P.I.

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. Ivey J. Lewis
Commander

9th Tactical Communications Region
Shaw AFB, S.C.

12th Tactical Communications Region
Bergstrom AFB, Tex.

4th Mobile Communications Group
Altus AFB, Okla.

5th Mobile Communications Group
Robins AFB, Ga.

EUROPEAN COMMUNICATIONS AREA

Hq., Lindsey AS, Germany
Brig. Gen. Paul G. Galentine, Jr.
Commander

United Kingdom Communications Region
South Ruislip AS, England

Spanish Communications Region
Torrejon AB, Spain

TUSLOG Detachment 170
Ankara, Turkey

2d Mobile Communications Group
Sembach AB, Germany

1868th Facility Checking Squadron
(Service Evaluation)
Wiesbaden AB, Germany

NORTHERN COMMUNICATIONS AREA

Griffiss AFB, N.Y.
Col. Robert P. Baumann, Jr.
Commander

2044th Communications Group
Ft. Myer, Va.

2045th Communications Group
Andrews AFB, Md.

2046th Communications Group
Wright-Patterson AFB, Ohio

2049th Communications Group
McClellan AFB, Calif.

ALASKAN COMMUNICATIONS REGION

Elmendorf AFB, Alaska

1866th Facility Checking Squadron
(Service Evaluation)
Scott AFB, Ill.

1840th Air Base Group
Richards-Gebaur AFB, Mo.

1978th Communications Group
Albrook AFB, Canal Zone

3d Mobile Communications Group
Tinker AFB, Okla.

1869th Facility Checking Squadron
(Service Evaluation)
Tinker AFB, Okla.

SOUTHERN COMMUNICATIONS AREA

Oklahoma City AFS, Okla.
Col. Wallace J. Jarman
Commander

Air National Guard squadrons play a significant role in GEEIA, now merging with AFCS. Shown here are members of an ANG unit undergoing training at Eglin AFB, Fla.

TSgt. Billy K. Whitmire of AFCS' 1st Mobile Communications Group works on the complex gear of the Fifth AF's ADVON Command Center site at Osan AB, Korea.

sons and more than $125 million worth of equipment. A "save" is credited for the safe recovery of an imperiled aircraft through extraordinary and timely application of air traffic control knowledge, techniques, and procedures where there is reasonable doubt that the aircraft would have been recovered without such action. Since AFCS was activated in 1961, its controllers have been credited with saving more than 1,200 aircraft, worth more than $1.2 billion and carrying nearly 3,900 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. In Southeast Asia, and at other locations in the Pacific and Europe, this function is broadened to include the evaluation of navigational-aids equipment. These facility-checking units extended a perfect flying-safety record to five years during 1969, although individually some of the units have unblemished safety records dating back to 1962.

USAF Military Affiliate Radio System (MARS) stations—spurred by heavy traffic increases in Southeast Asia—established a new record during the year in helping American servicemen overseas with morale calls. MARS facilities operated by AFCS handled 447,963 telephone patches and telegraph messages from all over the world—nearly 100,000 more than the previous year. More than half of the year's total—268,512 transmissions—originated from the twenty-three MARS stations operated by AFCS in Vietnam and Thailand.

Increased capability and reliability resulted through a number of automation projects completed during the year. Last October, AFCS activated a new Automatic Digital Weather Switch (ADWS) at Carswell AFB, Tex., as part of the Automated Weather Network (AWN).

In March of this year a similar switch was activated at Clark AB, Philippines. The AWN, considered to be the most advanced weather communications system in existence, was pioneered jointly by AFCS and the Air Weather Service and became operational in 1965. Since its beginning, AFCS has upgraded and expanded the network's facilities in order to automate the entire system.

In addition to the new switches, AFCS operates similar switches at Fuchu AS, Japan, and High Wycombe, England. The overseas switches are equipped with central processor computers for collection of weather data from minor relay centers in their area of the world. Everything that is gathered is immediately sent to the Carswell switch, which comprises two high-speed digital computers. The Carswell ADWS automatically transmits the data to the USAF Global Weather Central at Offutt AFB, Neb., where experienced weathermen aided by computers prepare forecasts for virtually any spot on the globe. The finished products are sent back to Carswell and, in turn, relayed to the overseas switches for dissemination, all at the speed of computer electronics.

AFCS also became single manager for the USAF Notice-to-Airmen (NOTAM) system last October 1, the initial step of a far-reaching program designed to modernize the support given to military aircrews involved in worldwide flying operations. Time-phased

objectives included in the expansion program call for the modernization and relocation of the continental US Central NOTAM facility from Washington, D.C., to Carswell AFB. In addition, the program calls for a study of worldwide communications requirements to support achieving real-time communications handling of NOTAMs from the originator to the user; automated processing by Central NOTAM facilities, which is expected to reduce the number of personnel required to operate the facilities; and finally, a fully automated NOTAM system worldwide. Carswell AFB was selected for the location of the continental US Central NOTAM facility because of the programmed installation of computers and automated communications systems there, particularly those supporting the Automated Weather Network.

The bulk of AFCS personnel assets are involved in the command's communications operations, both in support of USAF missions and as the major contributor of all the military departments to the Defense Communications System (DCS). More than half of all the circuitry and personnel making up this long-haul global system are provided by AFCS. During the past two decades these communications facilities and operations have developed into the most extensive and highest quality long-haul communications systems ever known.

The overseas portion of the Automatic Voice Network was completed earlier this year with the last five of seventeen overseas electronic switching centers becoming operational. AFCS operates ten of the overseas centers and also the tri-service training switch at Sheppard AFB, Tex. The network provides the Department of Defense with a worldwide system for handling both voice and graphic communications on an automatically switched basis. The continental US portion of this system is a leased-service operation. In total, AUTOVON links more than a million telephones, teletypewriters, and high-speed data sets at some 2,000 military bases throughout the world.

A1C John F. Major, seated, and SSgt. Kenneth Meehan, of McClellan AFB, Calif., MARS station, complete a phone patch for a US serviceman making a morale call home.

In the area of digital communications, the AFCS-operated system of Automatic Digital Network (AUTODIN) switching centers processed record amounts of traffic during 1969. AUTODIN provides a global capacity for handling more than 40,000,000 punched cards daily, or the equivalent of about 600,000,000 words a day. This high-speed, computer-controlled, common-user, secure data system was pioneered by AFCS and the Air Force. Twenty automatic switching centers make up the system, with AFCS operating the Air Force's ten centers.

The first phase of a two-year modernization program to increase the speed, capability, and reliability of AUTODIN has been completed. When the final phase is completed in 1971, AUTODIN's transmission capacity will be doubled.

Not all of AFCS' communications and air traffic control operations involve fixed facilities. The command also has five strategically located mobile communications groups ready to respond to emergencies and contingencies anywhere in the world. These mobile communications activities were highlighted during the year with the presentation of the Presidential Unit Citation to AFCS' 1st Mobile Communications Group, Clark AB, Philippines. Presented for gallantry in action in Southeast Asia, it marked the first time in the history of AFCS that one of the command's units won the PUC in recognition solely of its own mission performance.

There were significant support projects, large and small, conducted during the year by mobile elements. Personnel and equipment from the 3d (Tinker AFB, Okla.), 4th (Altus AFB, Okla.), and 5th (Robins AFB, Ga.) Mobile Communications Groups assisted the 2052d Communications Squadron at Keesler AFB,

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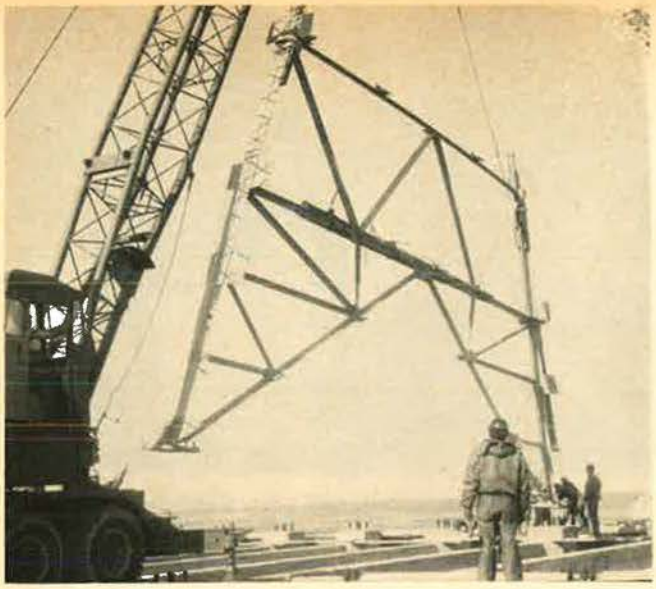
One of AFCS' many assignments is handling Notices to Airmen (NOTAMs), which provide useful and up-to-date information about the condition of airfields worldwide.



Men of the 2879th Squadron, Athenai Airport, Greece, constructing a billboard antenna in Karatas, Turkey. The project is part of a new communications net being built.

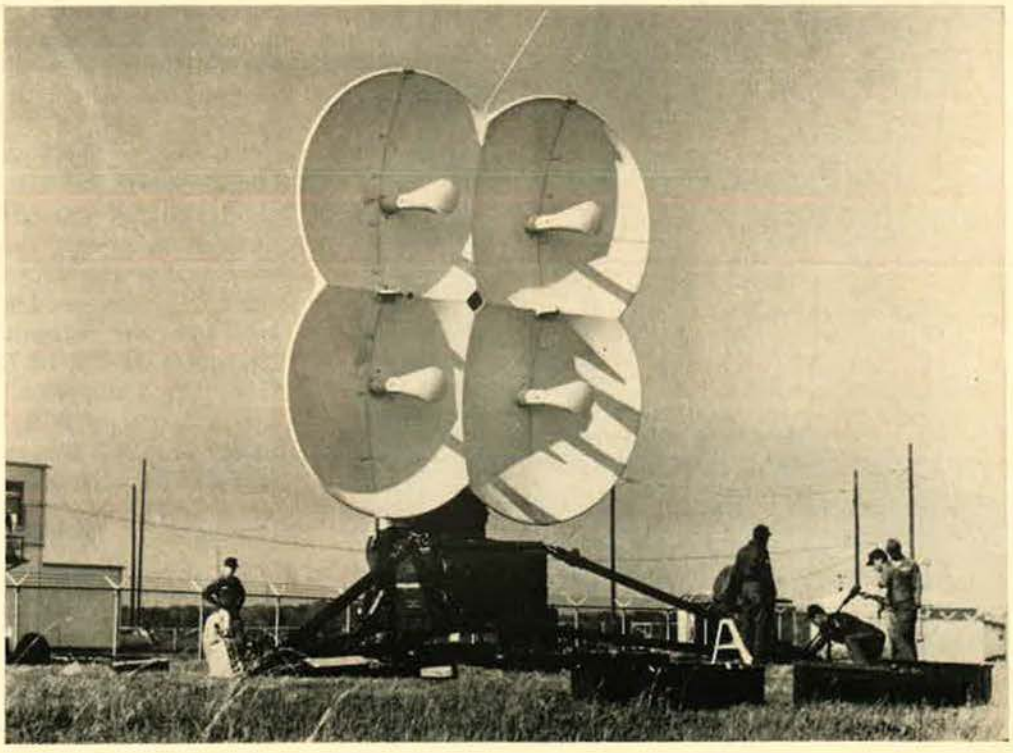
Miss., in recuperating from the devastating effects of Hurricane Camille. AFCS mobile and fixed elements around the world supported the Apollo space shots, including a tactical satellite communications test facility operated by AFCS near its Scott AFB headquarters. At the other end of the spectrum, but equally important, was the small cadre of 3d Mobile Communications Group personnel who deployed to Ketchikan, Alaska, with three mobile power generators. Working around the clock, they helped "turn on the juice" for the southeastern Alaskan community, which had lost a major power plant because of a landslide.

For the second consecutive year, AFCS last year won one of the Air Force's top management awards for support of the DoD Cost Reduction Program. AFCS almost quadrupled its validated savings goal of $6.7 million in FY 1969 to earn the award. Nearly $25.7 million in savings resulted from an intensified management effort and command-wide support of the program.

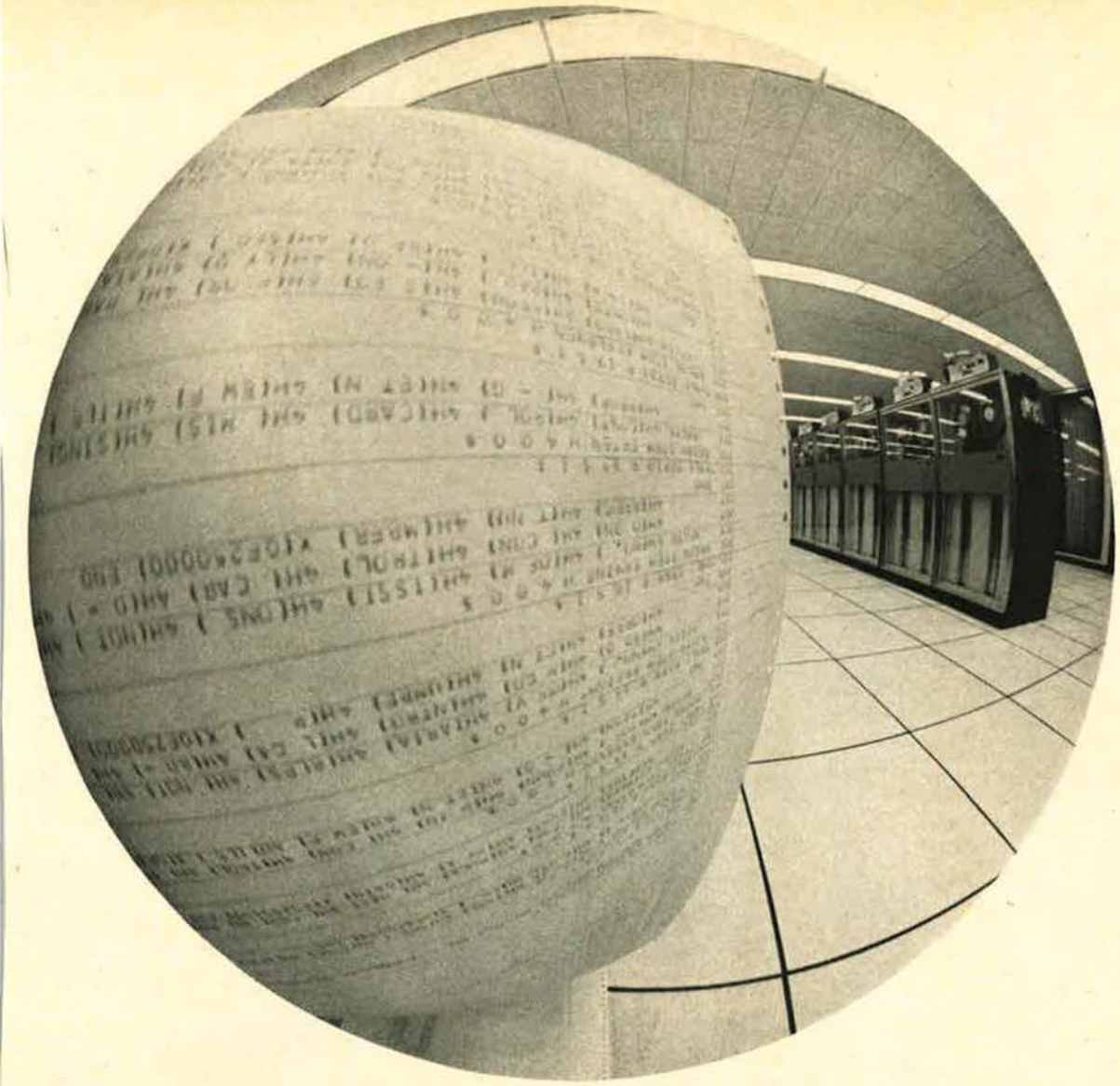
During the year, Air Force undertook a critical assessment of the specialty codes related to the communications-electronics career ladder. Many AFCS personnel have been assigned to the study, along with communicators from other Air Force agencies, to formulate the new career fields and assist in developing education and training requirements. The new codes and training will be specifically tailored with an eye toward the system of the future.

AFCS has instituted a project that works hand-in-glove with the restructuring of the C-E officer-career structure and training area. Called "Scope Creek," the project is designed to identify deficiencies through detailed technical analysis to bring the command's worldwide wide-band systems up to more acceptable standards. In effect, the "Scope Creek" philosophy supports the restructuring of the C-E training program: To place the emphasis on systems management and assessment, swinging the concept away from "restoration" and "alternate routing" as the prime job of maintenance. The communicator must now think "quality control" maintenance.

The marriage of the "Can Do" engineering and installation professionals of GEEIA with the "Will Do" operations and maintenance technicians of AFCS is easily translated into a "Can and Will Do" organization. And from its new home, AFCS confidently expects to achieve monumental new heights of effectiveness in its support of the overall Air Force mission. —END



This four-leaf-clover antenna of a mobile satellite communications terminal is capable of transmitting messages as far as 8,000 miles. The system utilizes comsats orbiting 18,000 miles above the earth. AFCS mobile and fixed communications groups—as part of their more dramatic enterprises—provide worldwide support for the Apollo space missions, in which communications are a vital element.



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A Major Air Command . . .

USAF Security Service

THE "Decade of Challenges" is what the 1970s will pose for members of the USAF Security Service (USAFSS), whose worldwide headquarters are located at Kelly AFB, Tex.

Tighter budgeting, manpower cuts, and a reduction in the number of overseas military forces are but a few of the many challenges the command will have to overcome in this decade as it continues performing its role of denying—or minimizing—the amount of Air Force intelligence available to the enemy through interception and exploitation of Air Force electrical communications.

Maj. Gen. Carl W. Stapleton is commander of the Air Force Security Service. His vice commander is Brig. Gen. Ernest F. John.

The Southeast Asian conflict has dictated many of the missions performed by this globally dispersed command during recent years, for denial of intelligence to any enemy under combat conditions often means the difference between the success or failure of a combat operation.

To accomplish this mission successfully, USAFSS employs the principles of communications security (COMSEC)—an extensive, Air Force-wide effort of applying special equipments, techniques, and proce-

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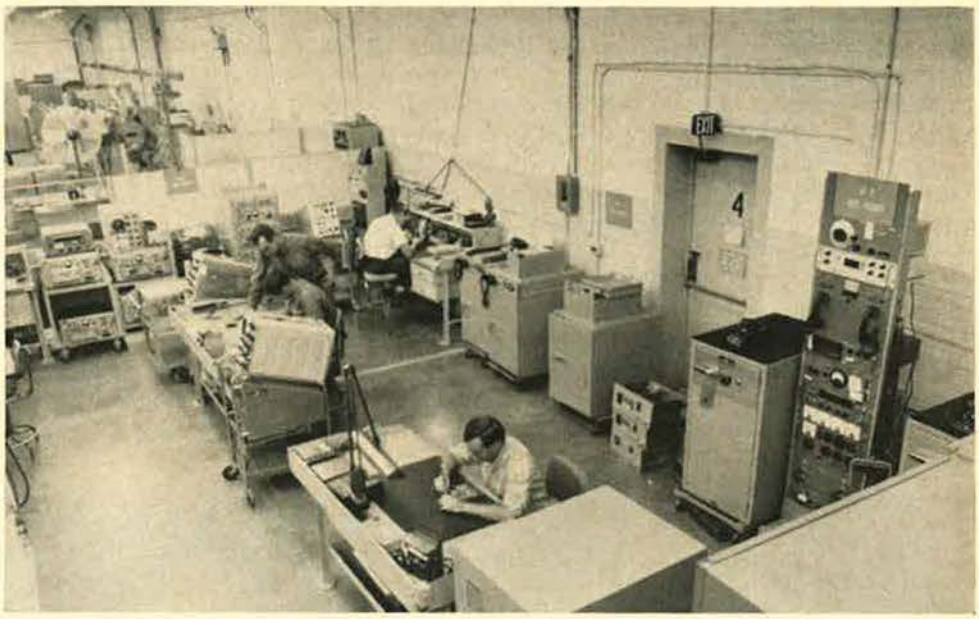
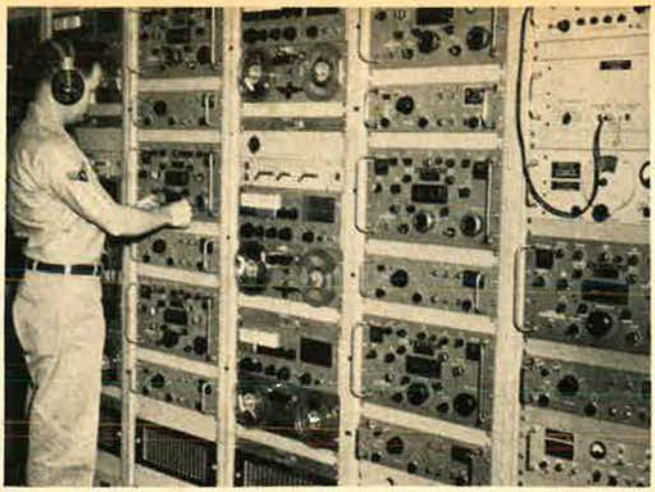


Technicians perform maintenance on ciphony equipment of the USAF Security Service at the Depot laboratory, Kelly AFB, Tex. Security Service personnel work with the major commands to minimize security weaknesses in the Air Force's worldwide electrical communications network.

Maj. Gen. Carl W. Stapleton assumed command of the USAF Security Service in July 1969; he had been Vice Commander of the Service since June 1966. After a hitch in the Cavalry at Fort Bliss, Tex., General Stapleton entered the US Military Academy, graduating in 1942. He received advanced pilot training at Roswell Air Field, N.M., and won his wings in November 1942. During the war he flew 113 fighter missions over Europe. In the postwar years, General Stapleton's USAF career was diversified, ranging from Commander of Tactical Air Command's 108th Fighter-Bomber Wing, Godman AFB, Ky., to Air Attaché, Bangkok, Thailand. From March 1955 to March 1959, he served at Headquarters USAF, as Chief, Air Attaché Branch, Directorate of Collection and Dissemination, ACS/Intelligence. In July 1961, following a tour on Taiwan, General Stapleton took his first USAF Security Service assignment and in August 1964 was named Commander of the Service's Pacific Security Region. A command pilot, his decorations include the Legion of Merit, DFC, and Air Medal.

Monitor operators record signals picked up from communications security recorder positions. The information is typed on roll paper for later study by Service experts.



A technician adjusts the frequency on a recording receiver at a COMSEC site. The tapes are then turned over to monitor operators who transcribe the acquired signals.

dures to electrical communications to deny any enemy the intelligence he seeks from them.

The Security Service also provides other Air Force organizations with cryptographic equipments and procedures, codes and authentication systems, along with the technical guidance concerning their operations, through its subordinate Air Force Cryptologic Depot. USAFSS also develops Air Force COMSEC doctrine and procedures and advises major air commands in their application.

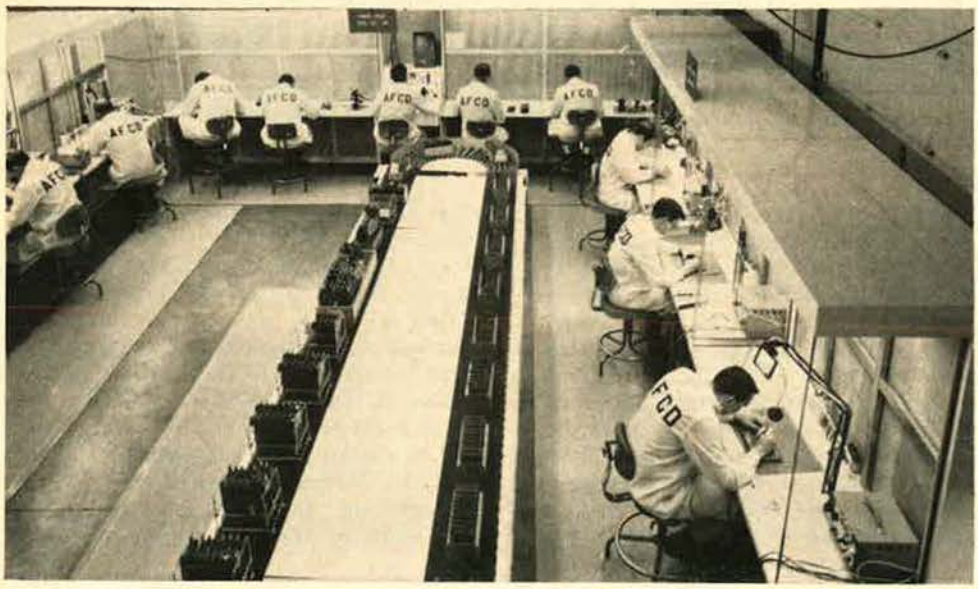
In a continuing effort to determine the effectiveness of Air Force COMSEC measures, the command also conducts a communications-surveillance program. Often the USAFSS teams who monitor Air Force communications detect security weaknesses that could provide an enemy with an opportunity to exploit these communications for intelligence content. Whenever this occurs, Security Service officials work with the major command involved to develop and implement COMSEC measures to plug or minimize the intelligence "leak."

Another field to which the Security Service will direct its attention in the '70s is in the area of communications-security education. Emphasis will continue to be placed on implementation of the USAF communications-security education program of transmission security.

This program, designed to reach every officer, airman, and civilian in the Air Force, applies only to unsecured electrical voice communications. The program is directed principally at the Air Force's largest communications system—the telephone.

The USAFSS communications security efforts during the 1970s will be dedicated to the task of maintaining maximum currency in rapidly changing intelligence-collection techniques and secure countermeasures in the field of electrical communications.

Regardless of myriad changes, innovations, and breakthroughs in 1970 technology, the USAF Security Service goal will remain steadfast: denying the enemy access to information of intelligence value in Air Force electrical communications.—END



Cryptologic Depot maintenance technicians work on a production assembly line. Equipment is produced, checked, and tested, and then stored until needed. USAFSS's efforts during the 1970s will be dedicated to the task of developing the latest in intelligence-collection techniques and secure countermeasures in electrical communications.