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AIR FORCE

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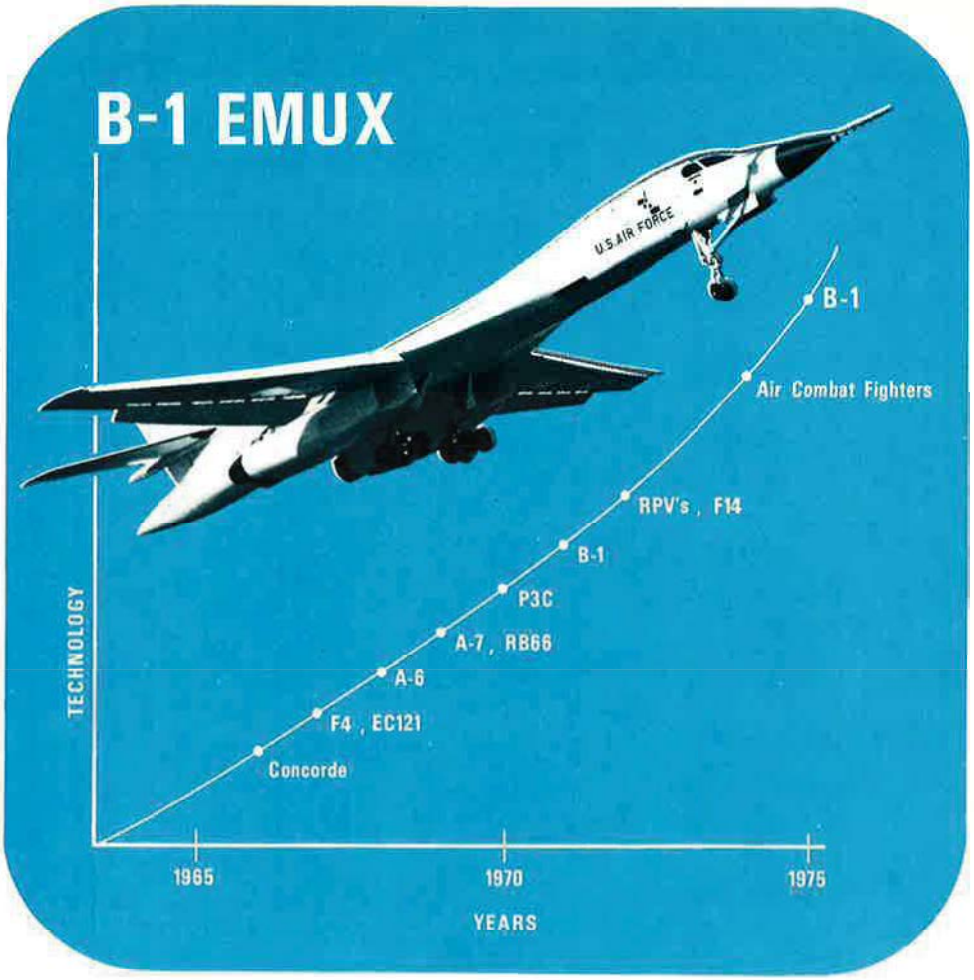
MAGAZINE

75

AIR FORCE ALMANAC

Old Problems New Solutions



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ANNUAL AIR FORCE ALMANAC ISSUE

REPORTS FROM THE MAJOR AIR COMMANDS AND SEPARATE OPERATING AGENCIES

GALLERY OF USAF WEAPONS

BY S. H. H. YOUNG

AN AIR FORCE ALMANAC

THE DEPARTMENTS

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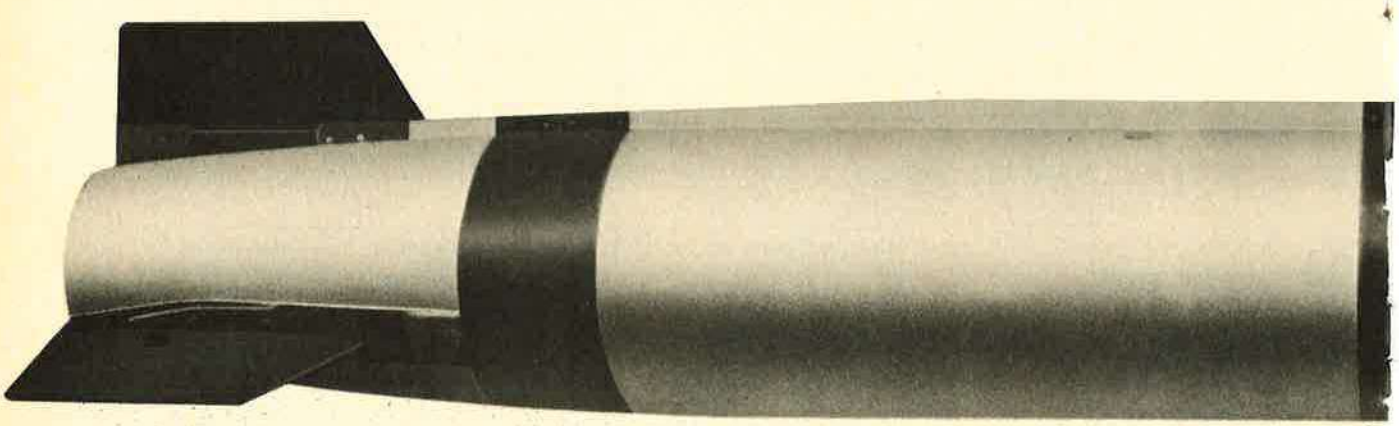
SRAM

After 36 months:
1,270 missiles.
Under budget.
6 hours late. Once.



This is the third anniversary report on SRAM. It's a happy anniversary report.

In March 1972, Boeing delivered the first Short Range Attack Missile to the United States Air Force.

In March of this year, we delivered the 1,270th SRAM of 1,500 ordered. And SAC B-52s and FB-111s are being armed with a capability never before available. SRAM will also become a major element in the armament for the B-1 bomber, now being developed.

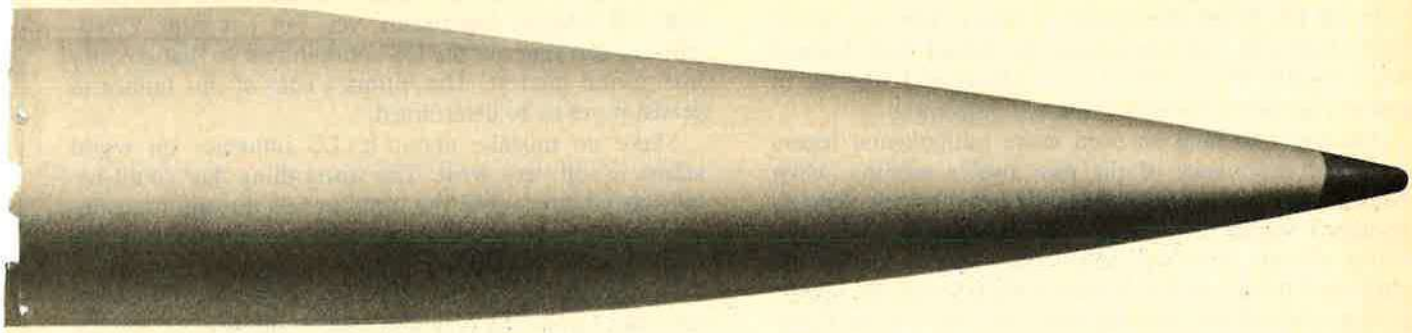
Fortunately, because SRAM production costs have been well below targets, we're achieving some important underruns as well.

And we've checked in on time every time, with one exception. Back in June 1974, one of our sharp-eyed inspectors found a defect in several O-rings and wouldn't let the missiles go until they were perfect.

We're pretty proud of that performance, too, even if it did cause a six-hour delay. Once.

That's what we would call a happy anniversary report.

BOEING



Vietnam—Some Policy Implications

By John L. Frisbee
EXECUTIVE EDITOR, AIR FORCE MAGAZINE

Washington, D. C., April 11

IT IS both sad and frustrating to see an ally, for whom and alongside whom we have fought, disintegrate.

Last night (April 10), in his address to Congress, President Ford asked for an additional $722 million in military assistance for South Vietnam. Early indications are that it will not be approved, even in part.

The proximate cause of South Vietnam's collapse was President Thieu's strategic but almost totally unplanned withdrawal from the Central Highlands. The concept may have been sound, influenced by his belief that US military assistance was in permanent decline, and perhaps in hope that the prospect of impending disaster might help reverse that decline. In any event, the withdrawal was woefully inept.

But the underlying causes go back much further. Over the years, we have commented on the folly of some US policy decisions that prolonged the war and put South Vietnam's survival in question: failure to use airpower properly until the weeks immediately preceding the cease-fire; tardiness in beginning a serious Vietnamization program; acceptance of a cease-fire agreement that left 130,000 North Vietnamese troops in the South; refusal to give the South offensive weapons that would have forced Hanoi to keep most of its troops in defensive positions north of the DMZ; congressional reductions, over the past three years, of $1.3 billion in Administration requests for military assistance to the South; dedication to the futile hope that the USSR would cooperate in enforcing the cease-fire.

From the bitter experience of more than ten years' involvement in Southeast Asia, we should have learned some painful lessons about how, where, and whether to commit ourselves to wars of limited objectives.

We ought to take an even more fundamental lesson from the experience of the past twelve months, when North Vietnam illegally expanded its largely Soviet-equipped forces in the South to an estimated 350,000. While détente may—at least temporarily—reduce the chance of direct clashes between the US and the USSR, it in no way affects the long-term objectives of the Communist movement. That movement is like an amoeba: flexible, formless, persistent, infinitely patient. It will flow outward until it meets opposition, stop if the opposition is balanced, retreat if the balance is against it, and flow onward again when circumstances permit.

Our contest with this amoeba-like force is open-ended. There can be no effective opposition to it without US participation or support. And since the US has neither the means nor the will (nor now, perhaps, even the credibility) to counter aggression everywhere, our truly vital national interests must be redefined. External commitments have to be reduced to a point where US military forces—the smallest since 1953—can support them, or our military posture must be brought into line with commitments that now are too large in their potential demands.

Another lesson that may not be clear quite yet concerns the domino analogy, unfortunately labeled a theory, and thus made endlessly debatable. The domino analogy is a fact of life, not a theory, in a power-dominated world. In its simplest form, an aggressive power that wants to get from square "A" to square "C" must pass through square "B." But the analogy is more complex than that.

Assume, as now seems inevitable, that South Vietnam falls. What will be the effects on events in the Middle East of US failure to adequately support Saigon? On North Korea's long-thwarted plans to invade South Korea? Would Communist control of Southeast Asia—a third of Japan's export market—threaten our major Pacific ally economically and politically? These complex linkages are part of the array of dominoes that have been kept standing by faith in the physical and moral strength of the United States.

The fall of South Vietnam, if it happens, may mark a turning point in twentieth century history. That could hardly have been so if the US had not laid its prestige on the line in Southeast Asia. Vietnam itself was not a vital US interest. Significant, yes, but not vital. Persistence in carrying out the US commitment to that country *was* a vital interest. The ultimate cost of our failure to persist is yet to be determined.

Make no mistake about it. US influence on world affairs is still very great. The worst thing that could befall this country—and the trend in this direction is gaining momentum—would be a retreat to isolationism. We must stay the course, and it must be carefully plotted.

Our sympathy for the tortured people of South Vietnam and Cambodia is undiminished, but we can now do only what the law allows and what the will of Congress and the people make possible. The limits of the possible—of what we can and should do to support South Vietnam—grow ever narrower.

The people of Southeast Asia may perhaps be forgiven if they feel they have paid too large a share of our tuition for a seminar in the exercise of power. History will not forgive us if we fail to heed its lessons. ■

RESPONSIVENESS

On the air 15 days from award. Thule AB, Greenland, has a brand new communications link with the U.S. In record time, RCA Globcom installed Thule's 28-foot satellite earth station to provide the Air Force with a new communications capability.

Satcom Services, RCA Global Communications, Inc., 60 Broad Street, New York, New York 10004.

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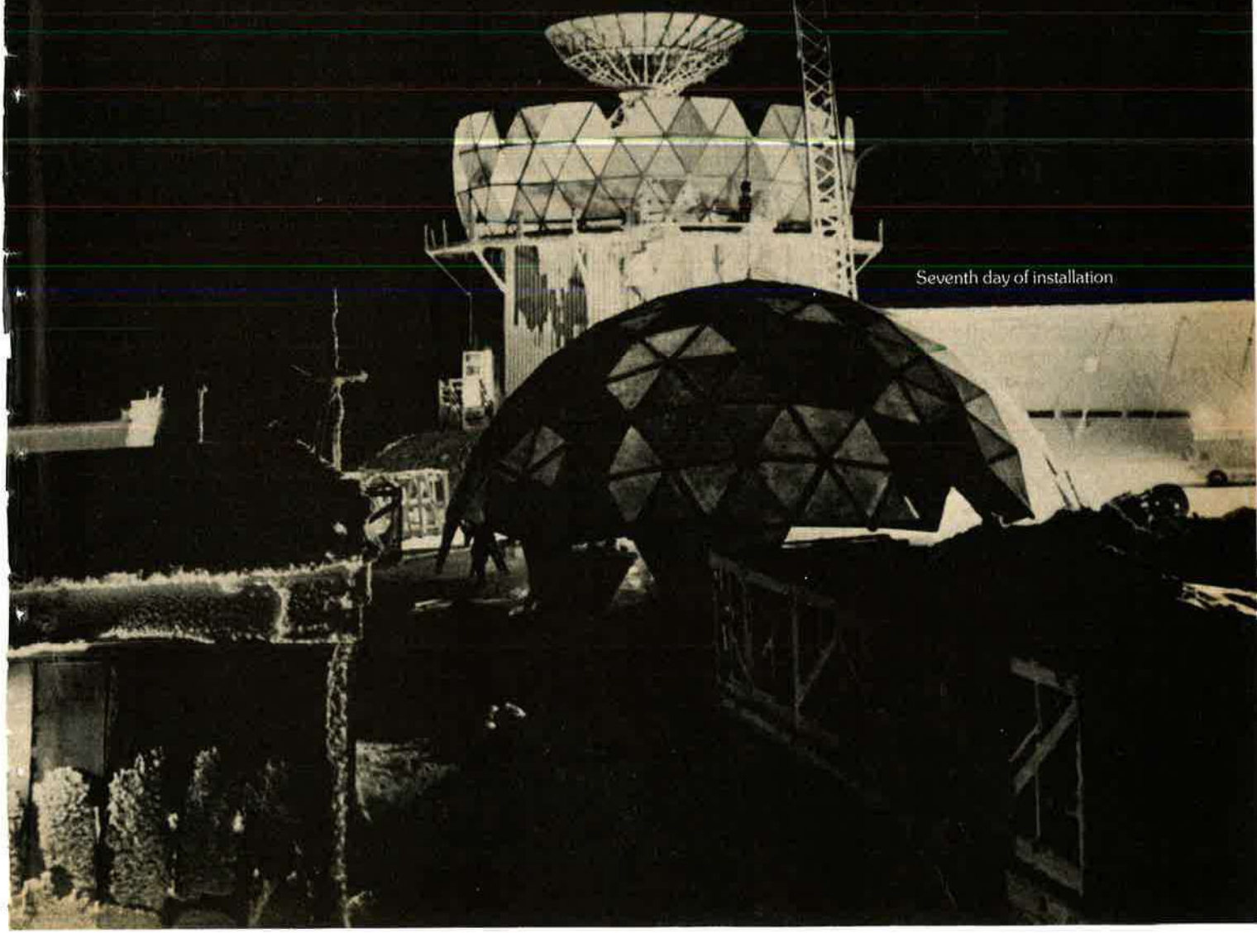


Seventh day of installation

The AAF of World War II flew nearly 1,700,000 sorties against Nazi Germany. Eighteen thousand AAF aircraft went down over Europe; 17,000 airmen were killed in action. And airpower became the decisive element in war. An Eighth Air Force veteran who led the Schweinfurt raid of October 1943 looks back thirty years on "those terrible, and yet somehow stimulating," times, and recalls how it was on . . .

V-E DAY—MAY 7, 1945

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

At precisely 0241, European time, Monday, May 7, 1945, the German military forces surrendered. There was, by then, no other authority in the shattered and outlawed Third Reich—the Reich of a *Thousand* Years. The cities were in ruins: you could fly over Hamburg, or Frankfurt, or Berlin and look in vain for a roof intact. The transportation system was a shambles, and, perhaps most disheartening and frightening of all to the German people, the Russians were inside German borders.

The end was a long time coming, but there was no doubt as to the outcome from D-Day on. There was not really much doubt even in 1943, when the war in Europe was still essentially an air war, although there were days when this proposition would have been challenged at any Eighth Air Force bomber base.

But even on the grimmest days in 1943, when the headlines were all about the numbers of US bombers lost, and when the skeptics began to question the US daylight precision bombing strategy, there was never any talk of losing the war. And, while it was a wild ride into Hitler's Germany in 1943, milk runs turned up occasionally even then.

Nonetheless, the bomber losses began to grow geometrically as the really serious targets deep in Germany came under attack. It was one thing to come in from the North Sea against Emden or Wilhemshaven, and quite another thing to beat your way to Schweinfurt at 150 mph indicated airspeed. The losses rose and, at times, outstripped the replacement program, designed to keep units at full strength. New faces at the breakfast table quickly wiped out memories of yesterday's lost comrades. On the worst days, there were mainly empty places in the mess halls.

There were a lot of those days in late 1943, and the business of being a bomber pilot did not seem to have much of a future.

By 1944, long-range fighter escort had saved daylight bombing, and the air offensive intensified. An observer on the Dutch coast could see, on occasion, 1,000 bombers, escorted by 900 fighters, laying their contrails into Germany.

Big Week—February 20–26—was the real coming of age for the Eighth, the week that showed that the Yanks in England were not just a token force. That week saw more than 3,400 bomber sorties and almost 2,900 fighter sorties in four days. On February 20 alone, there were 1,028 bombers and 832 fighters over Germany. Those four days cost us 261 bombers, thirty-three fighters, and 2,600 men MIA, but it was clearly a turning point in the war.

We know now that this Big Week was an object lesson in how to use airpower. The targets were of military importance and their destruction had an immediate effect on the German combat capability. It was not so clear then, or, at least, not to the operational units. Nor was it clear, evidently, to RAF Bomber Command.

The British theory of bombing was, in the main, to achieve maximum destruction in Germany. Bomber Command would stream out, a thousand strong, night after night to lay waste one city or another. The Lancasters and the Halifaxes were great airplanes, and their bomb loads dwarfed those of the B-17s and B-24s. There was, in fact, a rude and funny RAF song about the B-17s and their "itty-bitty bombs." The night tactics of the RAF were a marvel of navigation expertise and cool leadership.

As the US forces reached full strength, the US Strategic Air Forces were established under Gen. Carl Spaatz, who remained firmly convinced that the US theories were the right ones: that precision bombing of vital industrial and military targets was the way for the US to apply its effort. And, while this was generally the way the US conducted its bombing, we did engage as well in a lot of area bombing, often through overcast with the inaccurate radar then available. The Eighth in England and the Fifteenth in Italy, with their assigned fighter units, made up the USSTAF. And so, finally, the dreams of Billy Mitchell came true. The Army Air Forces were a full-fledged partner and essentially independent.

The tactical air forces came equally into their own as the Ninth Air Force roamed in front of the advancing armies and even, in one instance, covered Patton's right flank in his breakthrough at St.-Lô. Those were great days for airpower and for those who wore the AAF insignia.

As the war ground slowly to a halt, following the final great German spasm—the Battle of the Bulge—there was less and less for the air to do. HQUSSTAF's Special Order of April 15, 1945, announced the end of the strategic air war. Henceforth, only tactical targets

would be struck. And so, here and there, small pockets of German resistance would be clobbered with a full-scale bomber attack.

Just a few days before, President Roosevelt had died, ending an extraordinary period in our history. To Europe, and especially to the British, FDR was the great personality of those terrible and yet somehow stimulating years. His death overshadowed the fact that there was developing, with the end of the war clearly in sight, a growing disunity among the Allies. Great Britain was still the hub of an empire, and the British quite naturally looked forward to a leading role in the postwar world. Russia had ideas of a Soviet orbit that would run from Norway to Turkey. And there was, in the spring of 1945, a disappointment that the war was not yet over. There was even a serious concern about a last-ditch German stand.

The United States, meanwhile, was preoccupied with the war in Japan and the grim struggle that seemed to be the only way to end it. The atomic bomb had been kept truly secret, and no one—or at least no one I ever met or read—thought the Pacific war would end abruptly and soon and without an invasion.

All this took some of the edge off V-E Day for those of us in Europe. Many of us, in fact, had orders to the Pacific, and by V-E Day, Gen. Jimmy Doolittle had relocated his Eighth Air Force to the Pacific. The Japanese resistance at Iwo Jima in February made the taking of that island among the costliest of the Pacific war. There was no hint that Japan was almost through.

Thus, other matters distracted American attention from the German surrender.

The Russians, on the other hand, seemed to perceive in the European war a revolutionary aspect beyond mere national survival: an opportunity to quickly achieve major Leninist goals.

Flak, smoke, and B-24 Liberators compete for airspace over Ploesti, Romania, oil refineries on May 31, 1944. The raid came almost a year before V-E Day as the US concentrated on precision daylight bombing of key targets.

Gen. T. R. Milton, a regular contributor to this magazine, was US Representative to the NATO Military Committee prior to his retirement last year. He served with Eighth Air Force in England from 1943 to the war's end. Postwar assignments included operational positions in MAC and TAC, Executive Assistant to the Secretary of the Air Force, and USAF Comptroller. His combat decorations include the DSC, Silver Star, DFC, Air Medal, and Purple Heart.

The Russians had been curious allies all along. When the Eighth Air Force began to operate occasionally along the German-Soviet front, we discovered how loose were the ties that bound us together. There was reason to think that the lower echelons in the Soviet Army did not even know we were allies. Or maybe they just shot at all airplanes. Perhaps we in the Air Force were the first Americans to become disillusioned with our Russian ally.

But all of this was forgotten on V-E Day. V-E Day was the end of the long nightmare and the beginning of a bright new dream. In Marseilles, it was celebrated wildly by machine guns and jeep races in the streets. In Paris, it was celebrated emotionally. And in London, which the war had left pockmarked and shabby, it was a most special day—a day when all the vitality and courage that had made London such a special city was put on public display. The scaffolding came off the statue of Eros in Piccadilly Circus, the lights came on, and all hell broke loose. It seems such a short time ago, *that* celebration. And *such a* short time ago *that* we viewed the world in such simple and satisfactory terms.

On that V-E Day there was nothing better in the whole universe than to be an American in uniform. The road ahead looked pretty smooth, once the Japanese were taken care of.

We had come, in a few short years, from a third-class military power to the preeminent one. For those of us who were committed to military careers, there was worry about the boredom that would come with the long years of peace and tranquility that inevitably lay ahead. There were, as well, more parochial worries. Would the Army Air Forces gain independence? More parochial still, would we all be reduced to our permanent rank which, in most cases, was first lieutenant or captain?

The thirty years since have gone pretty fast. There was, after all, little boredom and, in fact, rather too much activity. Our old Eighth Air Force suspicions about the reliability of our Russian wartime buddies have proved well founded, it would seem. And, thirty years later, the March 1945 report of Gen. H. H. Arnold still makes good reading as a summing up of the accomplishments of airpower in the war.

This report made something else pretty clear: the dependence of airpower on a strong civilian economy and on an imaginative scientific community. It took a very special kind of nation to support the wonderful Air Force that General Arnold reported on so proudly. Well, it still does, and one other thing is still true, if not generally recognized. There is nothing better in this troubled world than an American in uniform, proud of the job he is doing. ■

Airmail

Soviet Aerospace Almanac

Gentlemen: After the March issue of AIR FORCE Magazine (the Soviet Aerospace Almanac) went to press, the Ministry of Defense of the USSR published its annual announcement of admittance to military schools. Two National Air Defense schools (Opochka and Daugavpils) and two Air Force schools (2d Kharkov and Voronezh) have been upgraded from three-year "military" schools to four-year and five-year "higher military" schools *(p. 59).*

The name of Deputy Minister of Defense General of the Army, N. V. Ogarkov, should be added to the top chart on page 41, even though no specific section of the Ministry of Defense is known to have been assigned to him. General Ogarkov is best known for his participation in the early SALT negotiations in his former position as 1st Deputy Chief of the General Staff. Ogarkov was promoted to Deputy Minister of Defense in early 1974.

Harriet Fast Scott
McLean, Va.

Gentlemen: In the excellent editorial by J. L. Frisbee (March '75 issue), one error has crept in. In the fourth paragraph, those "$104 billion inflated dollars" just aren't so. The dollars themselves are *deflated,* as any reputable textbook will clarify.

The so-called "Dismal Science" is bad enough without garbling its own gobbledegook.

R. H. Hodges
Pelham, N. Y.

Gentlemen: Congratulations on the March issue of AIR FORCE Magazine. I have long felt that you and your associates put out the best magazine in support of the Air Force and a sound national security, but the March issue is especially significant. It also contains the best survey of the Soviet military organization and power I have seen in any one place.

If they are available, I should like ten copies. I am going to Europe and expect to see several old friends who were contemporaries in World War II. Some of these copies I wish to give them, as I know they will be of especial interest.

Congratulations also for the superb editorial "The High Cost of Freedom" [by John L. Frisbee]. One of the people I hope to see while in London is Sir John Slessor, who was my deputy when I commanded the Mediterranean Allied Air Forces, January 1944 until March 1945. He will be very pleased that we in this country still remember him and his book, *Strategy for the West,* containing the quote used in the final paragraph.

With admiration and every good wish.

Lt. Gen. Ira C. Eaker, USAF (Ret.)
Washington, D. C.

Professional School Use

Gentlemen: As you know, I am teaching here for a semester, on sabbatical leave from the Institute. This is a professional school that prepares young people for the government service and similar jobs. I have two classes of graduate students, one of which is concerned with military doctrines and how and why they emerge. It was for this particular class that I want to use your version of *The Military Balance* [AIR FORCE Magazine, December 1974]. I say your version because the illustrations help to make clear the differences between classes of weapon systems to a handful of students who are not so familiar with them. . . .

I was delighted to see your Soviet Aerospace Almanac. It will arouse immense interest in my class.

Brigadier Kenneth Hunt
Fletcher School of Law and Diplomacy
Tufts University
Medford, Mass.

• *Brigadier Hunt is retired from the British Army, and for a number of years has been Deputy Director of The International Institute for Strategic Studies in London.*—THE EDITORS

The Battle Continues

Gentlemen: I must strongly protest the Department of Defense's proposal to curtail financial support of the US military commissary system.

While the method of military compensation, with its so-called "understood benefits," has always been a sore subject with me, I have never before been so moved to write you until now!

This plan, which will effectively terminate the existence of all military commissaries, amounts to a pay *cut!* This applies to all military persons, and is one of the most widely appreciated benefits we have. True, the military bears the brunt of discomfort in times of war, and we have found, lately, that this applies to peacetime as well. However, I thought we had sacrificed enough so-called "understandings" when we changed over to CHAMPUS, and when the TOPCAP program was implemented. Clearly, the decision-makers feel that their efforts to trim the fat off the military budget have been insufficient. This action invades my already lean wallet, however. This is doubly unfair, now that recession and not inflation is seen as our Public Enemy No. 1.

We must not be made to endure this pay cut, and I hope and believe that all military members will voice their opinions on this very important matter.

SSgt. Stanley J. Facey
Atwater, Calif.

• *AFA, too, is deeply concerned about the threat to the commissaries and is following the issue closely, both in the Pentagon and on the Hill. We call your attention to Ed Gates's article, "The Battle of the Commissaries," on p. 81 of our April '75 issue.*—THE EDITORS

Pandora's Box

Gentlemen: I have followed your series of articles, titled "Speaking of People," for quite some time, as a retired member of the USAF, spanning the period February 7, 1921, to May 31, 1951—"Jennies to Jets." . . . The subjects you have covered present much food for thought, and some statements made, taken out of context, open a Pandora's box of ills for broader application and contradiction; *e.g.,* the statement in the January 1975

issue: "Certainly the lower rates that bachelors receive raises questions over the credibility of the Pentagon assertions of equal treatment among uniformed members," contained in "Equity Allowances That Might Have Been."

An article, with chart, published recently in the McClellan AFB paper, *Spacemaker,* revealed the lack of credibility of such a statement as it affects current active-duty personnel and current retirees. But, when we talk about "inversion, comparability, injustice, inequity, and recomputation," coupled with a Pentagon claim of equal treatment among uniformed members, the credibility gap becomes enormous.

That chart should be given wide publication, but with the addition of figures to reflect the ridiculous inequity in the retired pay of those patriotic citizens who served and retired prior to the 1958/1963 fiasco. Citizens who placed their trust, faith, and allegiance in their government many long and trying years ago survived and served to retirement at the meagerest rates of pay, long before the "comparability-with-industry" huge increases in active-duty pay, upon which recent and current retirees' pay is based.

Enactment of P.L. 85–422 in 1958 followed by P.L. 88–132 in 1963 constitutes an act of perfidy by our government. It violated the ethical obligation and responsibility of the government to pay for agreed-upon services after the services had been rendered in accordance with the law that existed when they entered and while they served.

As a result, an O-6 with thirty years of service now retires with monthly pay of $1,871.43, but the one who retired before the perfidious acts of Congress in 1958/1963 is paid $1,343.67, which is $527.76 less per month than his younger compatriot, who now retires with the very same rank and years of service. Can the Pentagon claim this is equal treatment among uniformed members?

. . . Even greater inequities exist throughout the whole field of E-1 to E-9 and O-1 to O-10 ranks, and the CPI/CLI adjustments reflect the same range of injustices. I presume the Armed Services News Service produced the charts, so if an honest presentation of the facts is to be made, they should be able to provide correct figures for pre-1958 retirees.

Col. Julius A. Kolb, USAF (Ret.)
Sacramento, Calif.

Readers' Forum

Gentlemen: Re your editorial, "Readers' Critique," in the February issue, I would like to add one thought to your closing words urging members to tell you what they do and don't like about the magazine.

I would hope AFA members would use "Airmail" to tell you what they do and don't like about AFA itself —and to comment on the issues AFA is or should be pursuing on behalf of the membership.

If one reads Ed Gates's articles as well as "The Bulletin Board," one can get a sense of some of the nonhardware issues. Commentary on them from members would, it seems, provide valuable feedback.

I am surprised that members do not use "Airmail" more for this purpose. For example, during the furor over the proposed retirement pay legislation (still to be resolved) few letters appeared. So, too, with the news of AECP, reported by Ed Gates. I was also disappointed a flood of letters was not forthcoming on the commissary issue. I for one would like to know what AFA knows about the congressional mood. It seems clear how DoD feels.

Finally, one major issue has yet to become publicly visible—health care. DoD, OMB, and HEW are entwined in actions likely to have drastic and far-reaching consequences for Air Force families, active and retired. I'd like to know what AFA knows.

Please understand, I would not want to see "Airmail" become a forum for gripes. It can serve as a forum for informed opinions on issues reported by the magazine; issues that are being worked by the Association. I hope it will serve that way.

Maj. Robert W. Hunter
Annandale, Va.

Of Deep Concern to Many

Gentlemen: In a few months I shall be getting out of the Air Force and, like many of my fellow Americans, had lately been feeling somewhat sorry for myself, considering the high unemployment rate, continuing inflation, and all the other economic ills of the country that directly or indirectly affect each one of us.

Then, your February issue arrived, and my self-pitying blues were cured immediately and perhaps forever. Why? Because one of the first articles I read was "Vietnam: The Map Turns Red," by Maj. Gen. John E. Murray, USA (Ret.). Although the article caused me to feel a depth of sorrow and despair that I had not felt for several years, it was no longer for myself, and I am deeply thankful for General Murray's fine and most needed article. . . .

I am convinced that the situation of the South Vietnamese people is very grave. I am likewise sure that I am not the only American who is deeply concerned about their situation and who has friends in South Vietnam. However, as always, more is needed than just concern. Extreme grief tends to paralyze me, but I feel that I must *do something* to try to help my friends and their countrymen. So, I do hereby ask and invite any and all who feel as I do to join with me in forming an organization called simply "Friends of the South Vietnamese." As I foresee it, its purpose will be similar to that of the POW/MIA organizations.

I realize that our time, perhaps, is very short; we may even be too late, but let us try. Let us try together to do *something.* Please contact me at the address below if you want to help.

Lt. S. E. Mead
13629 Craig Ave.
Grandview, Mo. 64030

SOS Silver Anniversary

Gentlemen: The Squadron Officer School will be celebrating its twenty-fifth anniversary in the fall of this year. The current staff at SOS is planning a variety of activities for the event, but we need help.

Specifically, we need to know the whereabouts of all the ex-students in the first graduating class of Squadron Officer Course. This class met in the fall of 1950 at Maxwell AFB, Ala. If you know of any of these officers or ex-officers, write us.

We also need pictures, artifacts, letters, etc., relating to the time period of 1950–1960. We are planning a full display covering the entire twenty-five-year period, but we are lacking information covering the first ten years. If any ex-student or faculty member has anything and would be willing to share it with us (return guaranteed if requested), we would be most grateful.

Please contact me if you have any information or questions.

Squadron Officer School
EDOH (Capt. Allan J. Kettlehut)
Maxwell AFB, Ala. 36112

Young American's Concern

Gentlemen: I am an eighth grade student at Port Charlotte Junior High School. I am very concerned about

From Jennies to 50 years of aero

A former Army Air Service pilot, T. Claude Ryan opens a general flying service in San Diego.
With a surplus World War I Curtiss JN-4D "Jenny" purchased through Major H. H. (Hap) Arnold, commander of Rockwell Field, San Diego, Ryan provides sightseeing rides to locals and tourists. Gives flying lessons and offers an air taxi service.

1925 / The first regularly scheduled airline.
Daily flights between Los Angeles and San Diego, inaugurate the nation's first scheduled, year-round passenger service. Flying time is 90 minutes each way. Round-trip fare is $22.50. One-way $14.50. Ryan Airlines Inc. flies a refurbished Standard J-1 biplane. Larger than the "Jenny" the Ryan Standards have been fitted with a cabin that easily accommodates 4 passengers. In addition they have been modified to take a 150-hp Hispano Suiza engine, in place of the 100 hp Hall-Scott engine.

1926 / The Ryan M-1
Ryan Airlines Inc. announces the successful flight of its new monoplane, the Ryan M-1. Designed and built to fill the needs of the expanding air mail service, the M-1 carries a 600-pound payload and cruises at 115 mph. Powered by a 200-HP Wright Whirlwind engine, the M-1 is the first machine built for the Pacific Air Transport route from Seattle south.

1927 / The "Spirit of St. Louis"
Capt. Charles A. Lindbergh crosses the Atlantic solo from New York to Paris. His modified Ryan Airlines monoplane makes the 3,610-mile flight in 33½ hours nonstop. Ryan Brougham cabin planes which followed win international attention for their builders.

1934 / The Ryan S-T
The sleek, all metal Ryan S-T low wing monoplane makes its debut. This classic airplane, with many new design features, sets a standard for sport and training planes rarely to be equalled.

1937 / The Ryan S-C
In design, engineering and manufacture, the Ryan S-C is the first successful closed cabin private plane to take full advantage of all-metal construction and full cantilever low-wing efficiency.

1939 / 14,000 pilots
The first low-wing planes ever used by the Army for primary instruction in its military pilot training program, the Ryan S-T goes into full-production. (The Ryan School of Aeronautics cadet training program alone, trained over 14,000 pilots for the Army Air Corps.)

1942 / The PT-22 trainer
The largest number of trainers of any one model built by Ryan are the 1,048 PT-22's ordered by the Army.

1945 / The Navy's first jet fighter
The Ryan FR-1 Fireball, the world's first jet-plus-propeller driven aircraft, combines the advantages of jet propulsion for high altitude, high speed operation, and a piston engine for short take-off and long range.

1948 / Unmanned Jet-Powered Aircraft
Ryan is declared the winner, against 14 other designs, of a tri-service competition to develop an experimental unmanned jet-powered target aircraft.

1949 / XAAM-A-1 Firebird
The rocket-powered Ryan Firebird is the first Air Force air-to-air guided missile. Extremely compact, it features a complex radar target-seeking system.

1952 / Firebee Aerial Target
Designed to simulate enemy aircraft, the unmanned Ryan *Firebees* begin providing realistic crew training and weapons evaluation for all U.S. military services.

1957 / The Vertijet
The Ryan X-13, the world's first vertical take-off and landing jet-powered airplane is successfully flown. The culmination of 10 years of VTOL research and design.

RPVs space history.

1963 / Apollo-Saturn
Ryan designs and builds the radar altimeter used during the test phase of the Apollo's Saturn booster.

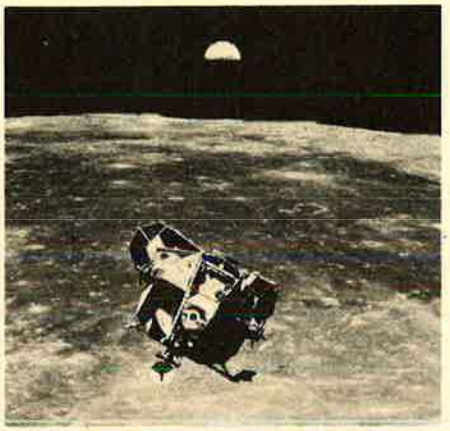
964 / Ryan XV-5A
/ STOL
yan incorporates fan-in-wing rinciple in its revolutionary "Vertifan" V-5A V/STOL Research Aircraft.

1964 / Ryan Special Purpose Aircraft
Ryan develops special purpose unmanned ircraft for reconnaissance and other ilitary missions.

1966 / Surveyor One
Ryan landing radar guides Surveyor One o a perfect moon landing. (Four more successful lunar landings will follow.)

967 / Mariner V
Ryan's solar panels provide power for Mariner V.

1968 / Supersonic Firebee II
The advanced Firebee II begins service ith the U.S. Navy and will be added to ie U.S. Air Force inventory.



1969 / The Moon Landing
Ryan Lunar Landing Radar successfully guides U.S. astronauts Neil Armstrong and Edwin Aldrin to man's first landing on the moon's surface.

1970 / Viking
Teledyne Ryan begins design and manufacture of the landing radar and altimeter for the Viking Mars lander.

1972 / Apollo 17
The landing of "Challenger" on the moon surface marks the close of the manned lunar landing program during which Teledyne Ryan landing radar systems assisted in the successful completion of 6 Apollo moon landing missions.

1973 / Teledyne Ryan's APN/200 Doppler Radar
Rated 10 times more reliable than any comparable Doppler Radar System, the APN/200 is introduced for operation aboard the Navy's S-3A Anti-Submarine Aircraft.

1974/75 / Compass Cope "R" Sets RPV Record
"Rolled out" in January 1974, Teledyne Ryan's Unmanned RPV—Compass Cope "R"—completes a record endurance flight at Edwards AFB, November 4, 1974. Newest member of Ryan's "Family" of versatile RPV's, Cope continues flight tests at Cape Canaveral Air Force Station in Florida.

We at Teledyne Ryan are proud of our heritage . . . half a century of accomplishments and service to the nation and the aerospace industry. Teledyne Ryan has shown the way in manned and unmanned flight, as well as in many other phases of aerospace technology. This involvement over the last fifty years has established our reputation as an organization that gets things done. No matter what the mission. We look forward to the challenges of the next fifty years with the pioneering spirit and enthusiasm that has always been the hallmark of both American aerospace leadership and Teledyne Ryan.

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SAN DIEGO, CALIFORNIA 92112

shows the way

Airmail

the strategic offense Russia is making to improve their air force. And the United States is doing their best to make our Air Force smaller.

The Russians have a total of about 900 heavy and medium bombers plus 7,400 fighter-bombers and interceptors. And still they put out one new prototype fighter plane every eighteen months. The Russians have still another advantage over us with these new high-performance jets—the NATO code name Backfire that flies at twice the speed of sound and at altitudes over thirteen miles; other bombers with equal values, the Bison and Blinder; and the MiG-25 fighter, known as the Foxbat, with very successful high performance. And the only jet to match it, unfortunately, does not carry any weapons—its name is SR-71.

While Russia is building their air force, the United States seems to be almost constantly taking away from our Air Force. . . . [Our] bomber force went from 1,509 to 503, and fighter-attack planes plus interceptors from 3,538 to 2,537. . . .

In my estimation as a student . . . I think Russia is taking advantage of the US. Their goal is to get us into such a poor strategic position that we will eventually, shall we say, "surrender to them." I think very strongly that we should fast and effectively move to rebuild this country's air force to prevent Russia's goals that involve us as a nation.

Bruce R. Johnson
Port Charlotte, Fla.

• *While we may not agree precisely with Bruce Johnson's data and analysis, we think our readers will be encouraged to know that there are some very young Americans who have taken the trouble to inform themselves about the shifting military balance, and who share our concern over its implications.* —THE EDITORS

Two-Headed Monster

Gentlemen: Bob Stevens' page is always a kick, but I've just *gotta* get him on this one: The February issue of AIR FORCE shows a bombardier on the sight *and* firing the chin turret guns all at once . . . quite a feat to explain to any group reunion!

Question: Would a two-headed, four-armed bomb-aimer-and-dropper have had to fly a seventy-mission tour?

Oh heck, artist's license! I still enjoy the page and the magazine very much.

Capt. Robert A. Hand, USAF (Ret.)
Simsbury, Conn.

• *Bob Stevens replies: Didn't ALL bombardiers have two heads and four arms?*

Great Place for a Reunion

Gentlemen: As a photographer-gunner stationed at Cerignola, Italy, with the 461st Bomb Group, 49th Wing, I am interested in contacting other members of these organizations for a possible reunion. Situated as I am, close to Yellowstone and Grand Teton national parks, I feel this area would make a good reunion spot and I could assist in coordinating the meeting.

Also, I would like to know if anyone has taken the time to organize a history of these organizations as I may be able to contribute a few photos for publication.

Enjoy reading AIR FORCE and keeping up with goings on.

Jim VanNostrand
P. O. Box 1659
Jackson Hole, Wyo. 83001

UNIT REUNIONS

Jolly Greens

The Jolly Greens are planning their 6th annual reunion July 25–26, at the Ramada Inn, Fort Walton Beach, Fla. Activities are open to wives, all Jolly Green crew members, Sandy, Spad, Crown, King, Nail, and others who participated in the rescue effort. Further details from

Lt. Col. Frank Catlin
3 Warwick Dr.
Shalimar, Fla. 32579

McGhee Tyson Airport

The 3d reunion of personnel stationed at McGhee Tyson Municipal Airport, Tenn., during the '50s will be held June 14 at the officers' club. Contact

Edwin C. Nichols
1828 Hillcrest Dr.
Maryville, Tenn. 37801

9th Troop Carrier Sqdn.

The 9th Troop Carrier Squadron, AAF, WW II, will hold a 30th-year reunion at the Holiday Inn, New Philadelphia, Ohio,

SCIENCE/SCOPE

First tests of the GBU-15 data link pod for PAVE STRIKE, the U.S. Air Force's new modularized weapon system, have been successfully completed. Mounted under the belly of an F-4E jet fighter, the Hughes-developed pod receives a picture of the target from the television camera in the nose of the bomb and transmits course-correction signals. Besides providing a dramatically improved standoff capability, the GBU-15 greatly increases bombing accuracy.

Moon-caused "earth tides" and small temperature variations can tilt the base of a missile guidance system enough to seriously impair its accuracy. Now Hughes has developed the Self-Leveling Base LB-4A, a sensor/servo unit that continuously measures these tiny tilts and automatically compensates for them. It is much more sensitive than self-leveling systems currently in use.

The ATG-63 radar built by Hughes for the U.S. Air Force F-15 Eagle air-superiority fighter has completed its Category I testing at Edwards AFB after 27 months and more than 3,000 flights in which it met or exceeded all test specifications, and is now a fully qualified modern production radar in the Air Force inventory. The radar is well into Category II testing at Edwards and has begun operational test and evaluation at Luke AFB, where it is operational with the "Triple Nickel" -- first Air Force active group to get the F-15 equipment.

A numerical-control laser-cutter for aircraft parts is being developed and built by Hughes for McDonnell Douglas Corp., St. Louis. Similar to Hughes systems for cutting cloth for apparel manufacture and patterns for shoe manufacture, the laser-cutter will be used to cut sheets of boron epoxy broadgoods which make up part of the tail surfaces of the F-15 fighter aircraft. Advantages over present hand-cutting method: greater speed and cutting accuracy, lower cost, less material waste.

Not even moonlight is needed for the TV-like images of terrain at night -- or in nearly any weather condition -- presented to pilots by the FLIR (Forward-Looking Infrared) device built for the U.S. Air Force B-1 bomber. The FLIR senses differences in heat radiated by objects on the ground and processes them into meaningful images. Hughes builds it under contract to Boeing, the B-1 electro-optical viewing system and avionics integration contractor.

The National Weather Service is now testing a prototype of AFOS (Advanced Field Operating System), its proposed $40-million all-electronic weather reporting network. Key elements of AFOS are the on-site minicomputers and TV-type displays that will replace teletypewriter and facsimile equipment. The displays feature the Hughes Conographic^{tm} terminal which, because of its unique ability to convert contour data to conic curves, requires significantly less data than conventional x-y plotting systems. This results in faster transmission and greater capacity for the network, lower storage requirements for the terminals.

Weather maps will be transmitted 20 times faster, printed matter 30 times faster than by present methods. The increased speed and capacity of AFOS will be particularly valuable for warnings of tornadoes, hurricanes, and floods. The Weather Service hopes to have about 275 of its offices automated by 1980.

Airmail

the Fourth of July weekend. Interested members please contact

James J. Rapsco
412 Broad St.
Dover, Ohio 44622

14th Air Force Assoc. (Flying Tigers)
The 14th Air Force Association's annual meeting and convention will be held in New Orleans, La., July 31–August 2. *(See p. 35, China War Memorial Badge and Ribbon.)* Veterans of China service during WW II who served in the American Volunteer Group, China Air Task Force, and/or 14th AF may direct inquiries to

Kenneth Fuglein
3846 Oxford Ave.
Westchester Estates
Slidell, La. 70458

19th Photo Charting Sqdn.
The 33d anniversary reunion of the 19th Photo Charting Squadron will be held in St. Louis, Mo., June 19–21. Further information from

George Pappas
115 Church Pl.
Crystal City, Mo. 63019

41st ADRS, 41st ADG
All personnel assigned to the 41st ADG at Albuquerque, N. M., and Gioia, Italy, are invited to a reunion June 28–30, in Colorado Springs, Colo. Further information from

Joe Dutton
Sand Springs, Mont. 59077

58th Bomb Wing
The 58th Bomb Wing (40th, 444th, 462d, 468th Bomb Groups), veterans of WW II, are planning their 30th-year reunion at Myrtle Beach, S. C., July 30–August 3, at the Yachtsman Resort Inn. Contact

John A. Kavulich
143 N. 5th St.
Indiana, Pa. 15701

B-58 Hustler Assoc.
The 2d annual reunion of the B-58 Hustler Association will be held June 6–8, at Green Oaks Inn, Fort Worth, Tex. For further information/reservations contact

B-58 Hustler Assoc.
Box 16062
Fort Worth, Tex. 76133
or
Richard A. Campbell
4016 Springbranch Dr.
Fort Worth, Tex. 76116
or
Alexander F. Hydak
1307 Cozby East
Fort Worth, Tex. 76126

86th Air Service Sqdn.
The fifth reunion of the 86th Air Service Sqdn., stationed in Jorhat, India, Myit-

kyina, Burma, and other parts of the CBI from 1943 to 1946, will be held at the Holiday Inn near the Knoxville, Tenn., airport, Alcoa, Tenn., July 18–20. Contact

John Hillenbrand
4 Avondale Cr.
Johnson City, Tenn. 37601

94th Bomb Group
Former members and others of the 94th Bomb Group (H), 8th Air Force, WW II, assigned at Bury St. Edmunds, are forming a group association. A register is in preparation and a reunion is being planned. For all details send self-addressed, stamped envelope to

Col. Frank N. Halm, USAF (Ret.)
433 N.W. 33d St.
Corvallis, Ore. 97330

98th Bomb Group (H)
The annual reunion of the 98th Bomb Group (H) (the Pyramidiers) will be held in New Orleans, La., at the Fontainebleau Motor Hotel, on July 14–17. Former members please contact

Walter Bolling, Jr.
Rt. 3, Box 67
Gonzales, La. 70737

306th Bomb Group
A mailing list and reunion information is being compiled for the 306th Bomb Group, Thurleigh, England, WW II. Send self-addressed envelope to

W. M. Collins, Jr.
2973 Heatherbrae Dr.
Poland, Ohio 44515

362d Fighter Group
The 362d Fighter Group, 9th AF, consisting of the 377th, 378th, and 379th Fighter Squadrons, WW II, will be attending their 6th annual reunion July 15–19, in Colorado Springs, Colo. Former members not previously located are asked to contact

W. K. Marles
2838 Blue Brick Dr.
Nashville, Tenn. 37214
Phone: (1-615) 883-1208

388th Bomb Group (H)
The 388th Bomb Group (H) Association will hold its 1975 reunion at the El Tropicano Motor Inn, San Antonio, Tex., from July 31 to August 3. Contact

Edward J. Huntzinger
P. O. Box 965
Cape Coral, Fla. 33904

397th Bomb Group
An effort is being made to organize a reunion of the 397th Bomb Group "Bridge Busters," of the 9th Bomber Command. Please write

Ray Daniels
426 Grove Ave.
Petersburg, Va. 23803

482d Bomb Group
A group register of the 482d Bomb Group, WW II, Alconbury, England, is being prepared. Please send name, address, and squadron number to

T. R. Cartwright
1006 Pineview Blvd.
Fort Walton Beach, Fla. 32548

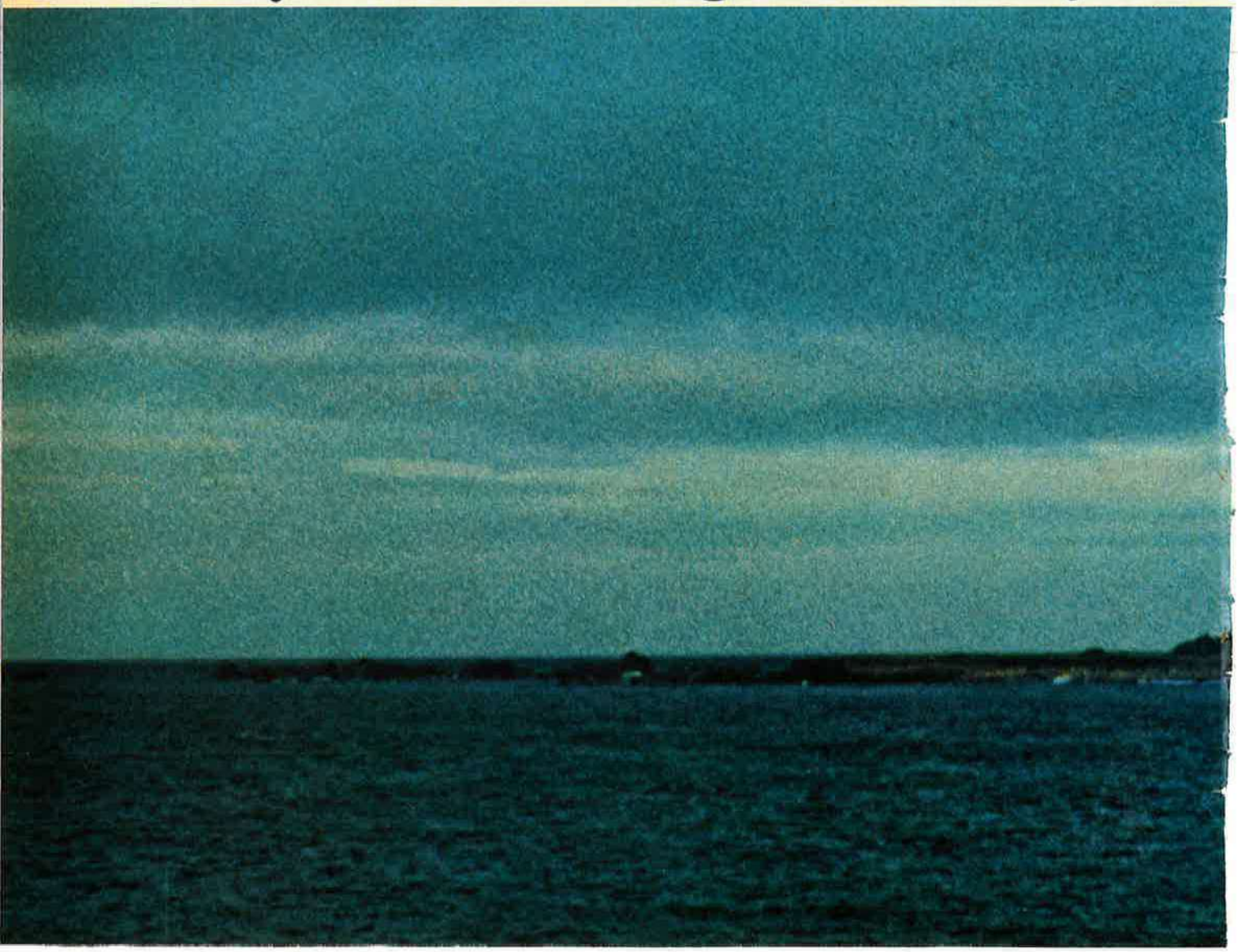
On the island of Shemya in the Aleutian Chain, Raytheon's phased array radar capabilities are going into action for intelligence and early warning.

The project is Cobra Dane. A giant 100-foot phased array radar for the Air Force Electronic Systems Division that will look down a 2000-mile corridor to collect data on Soviet missile development flights, provide early warning of ICBM launches, detect new satellites, and update known satellite orbit parameters.

Mixing and matching proven yet advanced technologies with existing equipment, such as the high-power, travelling wave tube shown at the right, will enable Raytheon to complete the entire project during 1976.

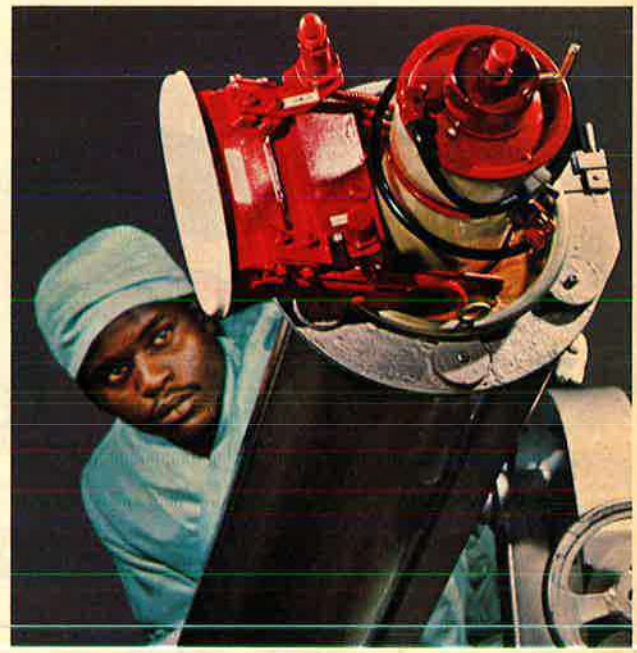
Raytheon's experience in radar technology and signal processing extends also to range instrumentation: (1) it is being applied to MUSTRAC, a telemetry receiver employing dielectric lens arrays to simultaneously track and receive data from high-velocity objects; (2) it is a key part of AGILTRAC, a limited scan phased array radar for multiple target tracking; (3) it is in the Coherent Radar System, a shipboard UHF radar for the tracking of reentry vehicles; and (4) it includes the highly sophisticated "forward scatter" techniques of the 440L system.

Here Raytheon is building a radar sentry that

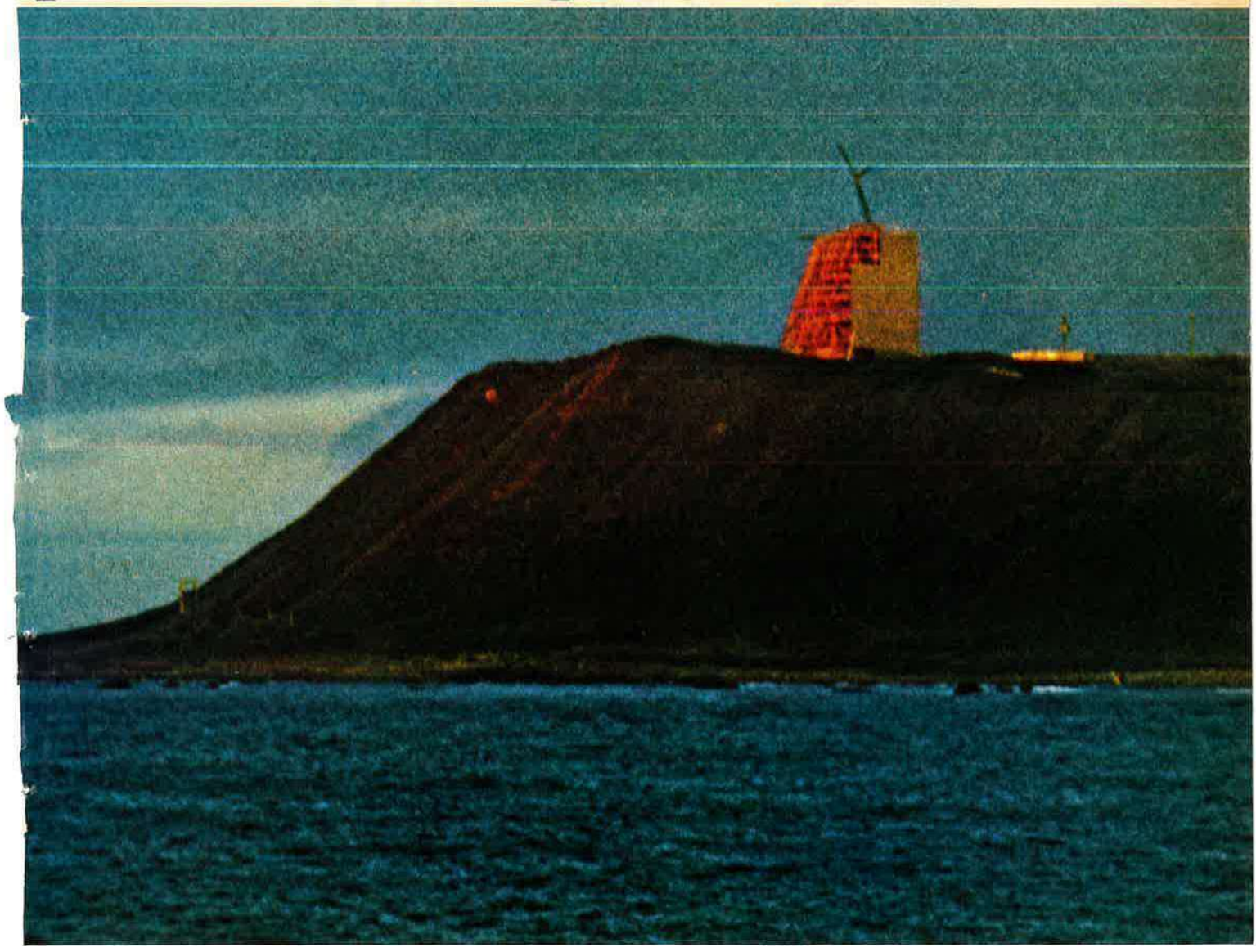


In long range surveillance and tracking, early warning and intelligence, range instrumentation, and ballistic missile defense, Raytheon is meeting the challenge. For details on our advanced radar systems capabilities, write Raytheon Company, 141 Spring Street, Lexington, Massachusetts 02173.

RAYTHEON



patrols a 2000-mile post.



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Airpower in the News

By Claude Witze
SENIOR EDITOR, AIR FORCE MAGAZINE

Budget Battle Lines Ahead

Washington, D. C., April 7

Congress reconvenes today after its Easter recess. The debacle in Indochina is reaching its climax at this point. Yet, in the main, it is a crisis for the Cambodians and the Vietnamese, not for America. Our crisis, and the one that Congress must face, is the financial crisis. According to the *Wall Street Journal,* the corporate bond market may be on the verge of collapse. The reason is that the US Treasury is borrowing so much money there is none left, at a reasonable price, for loans to corporations in need of cash to do business.

Here is the *Journal's* ominous warning:

"If the corporations can't go to the bond market for funds, where can they go? The probable answer: nowhere. And that's bad news both for the companies and for the country as a whole."

The Office of Management and Budget now says the deficit for Fiscal 1976 can rise to $100 billion. The White House originally projected a gap of $51.9 billion. If OMB is right, that will be an overrun of unprecedented magnitude. So far, no one has called it an overrun.

There is at least one committee staff on Capitol Hill, known to this reporter, that has canvassed the biggest US banks and asked them bluntly how big a deficit we can stand. At what point will federal borrowing wreck the economy? A few banks placed the ceiling at $80 billion, but not many. The most prevalent opinions ranged from $50 billion to $60 billion. Even allowing for the natural conservatism of banking circles, as they are known, this makes the OMB $100 billion projection genuinely ominous.

On the basis of the record and the temper of this Ninety-fourth Congress, even the new House and Senate Budget Committees say the deficit could hit $93.5 billion. This is on the assumption that Congress approves all the spending recommended by various Senate committees. The only bulwark against this possibility may be the Budget Committees themselves. They are worth examination.

This is the first year we have had Budget Committees, which were created last summer when Congress passed the Congressional Budget and Impoundment Control Act of 1974. Strictly speaking, the exercise this year is a trial run for the new procedures, but the staffs are known to be eager, and they are pushing key elements of the law a year ahead of schedule.

Because of the critical nature of budget decisions this year, early interest by the new committees is not unwelcome. Within the next ten days, from this writing, they are scheduled to recommend targets for overall budget authority, total outlays, total revenues, the size of the deficit, and possible changes in the size of the public debt. These reports may be the only workable rein put on Congress for Fiscal 1976. Without that rein, many observers believe, the Ninety-fourth easily could plunge ahead with spending. The line between an economy that is stimulated by outlays and one that is destroyed by them is not easy to establish.

The two committees are not identical in structure and program. The House committee membership will rotate. The law gives seats to five members from the Committee on Appropriations, five from the Committee on Ways and Means, eleven from other standing committees, and one from the leadership of each party. As a result, the Budget Committee includes Democrats Robert L. Leggett and Harold Runnels from Armed Services, and Robert N. Giaimo, who also serves on Defense Appropriations. There are no Republicans with defense interest on another committee. Each member will serve four years.

Membership on the Senate Budget Committee is permanent. One of the Democrats is Sam Nunn, who also serves on Armed Services. Certainly the panel (*see box*) can be expected to be less conservative than that of the House. Chairman Muskie already has had a run-in with Sen. John L. McClellan, Chairman of the Appropriations Committee, over jurisdiction, and future conflicts are likely.

One of the most important statements on the role of the Budget Committee was made on the floor of the Senate by John C. Stennis, Chairman of the Armed Services Committee. He discussed a letter he had written to Senator Muskie, in which he made it clear other decisions had to be made before drastic cuts could be made in the budget. Under the new law, Armed Services is required to forward recommendations to the Budget Committee by March 15. At that time, hearings were still under way. Mr. Stennis said the only solution was to stick to the Administration request for $94 billion in defense outlays.

The veteran Senate defense expert expressed other reservations about the new budget law. They were ignored by the *press, in most* instances, and are worth quoting here. Proclaimed Mr. Stennis, in his letter to Mr. Muskie:

"Although we are now just getting into the 'dry run' this year, the timing in the Congressional Budget Act may force Congress to choose between establishing figures on the overall federal budget and determining which specific programs within the overall figure are best for the country.

"We should not have to make this choice. In the long run, some of those specific programs may be more important than the precise overall federal budget figure for one year.

"Under the Budget Act, the Defense Authorization Bill must be reported to the Senate by May 15. May 15 is also the date the first concurrent resolution on the budget must be enacted. If there are major differences between the defense authorizations reported to the Senate and the defense budget figure contained in the concurrent budget resolution, Congress may not have the time or machinery to reconcile the differences. Since major differences would likely involve substantive policy issues, Congress might be faced with either an overall budget ceiling approach which, by

its nature, puts the substantive policy decisions in the Executive Branch, or choosing to ignore the budget figures.

"That was certainly not what I envisioned when this Congressional Budget Act was passed."

What was envisioned, of course, was a new budget control mechanism that would give Congress a stronger voice in setting fiscal policy. But, Mr. Stennis points out, "some very hard policy choices would have to be made before any drastic reductions could be achieved."

Staff members of both the House and Senate budget committees almost uniformly deny they have any intention of forcing consideration of line items in any department budget. Staff members of other committees, queried at random in the past few weeks, display skepticism about this. How can it be avoided? The other committees do have to worry about line items, and they have been equipped for many years to deal with some part of the budget in this way.

Probably the key factor in this part of the annual budget exercise will be the new Congressional Budget Office, also created by the 1974 law. This shop is set up as an independent agency, a sort of congressional counter to the White House Office of Management and Budget. Mr. Muskie says the CBO will examine recommendations from OMB, "the options the President selects, the options he rejects, and any other options that may be advanced, so that we'll have a full range of choices to consider."

Brock Adams (D-Wash.) is the Chairman of the House Budget Committee.

Chairman of the Senate Budget Committee is Sen. Edmund S. Muskie (D-Maine).

Then, Senator Muskie is quoted as saying that eventually the CBO will begin focusing on specific programs, such as defense systems. The situation in the future would appear to be pregnant with the possibility of disagreement with such committees as Armed Services, the germane appropriations subcommittees, and any other group in Congress with a specialized interest in budgetary legislation.

The CBO is taking the first steps toward organization. The first director will be Alice M. Rivlin, who was sworn in on February 24 after being appointed by House Speaker Carl Albert and Senate President Pro Tempore James O. Eastland. She was recommended by Senator Muskie and Rep. Brock Adams, Chairman of the House Budget Committee.

Mrs. Rivlin came from the Brookings Institution, where she was an economist and senior fellow. She brought with her another Brookings economist, Robert D. Reischauer, as her chief assistant. She is quoted as determined to hire a nonpartisan staff, capable of analyzing the budget and studying alternatives where they are available.

The CBO director, who once served as an Assistant Secretary of Health, Education and Welfare, has opinions not unknown to the Senate Budget Committee. Last summer, she was a witness at hearings held to study the impact of the federal budget on inflation. Her opinion was sought along with that of Treasury Secretary William E. Simon, Roy Ash, director of OMB, and Kenneth Rush, counselor to the President.

In her testimony she made it clear she does not believe government deficits are a primary cause of today's inflation or that cutting federal spending would ease inflation. She said Mr. Muskie asked her how Congress should cut nondefense spending in Fiscal 1975 in order to control inflation? Mrs. Rivlin's reply: It shouldn't.

She also recited, at the hearing, a list of questions she thought should demand the committee's attention:

"Is the federal government doing too much or too little? Would it be in the national interest to shift resources from defense to domestic programs? Should the mix of activ-

THE HOUSE BUDGET COMMITTEE

DEMOCRATS	REPUBLICANS
Brock Adams, Chairman (Wash.)	Delbert L. Latta (Ohio)
Thomas P. O'Neill, Jr. (Mass.)	Elford A. Cederberg (Mich.)
Jim Wright (Tex.)	Herman T. Schneebeli (Pa.)
Thomas L. Ashley (Ohio)	James T. Broyhill (N. C.)
Robert N. Giaimo (Conn.)	Del Clawson (Calif.)
Neal Smith (Iowa)	James F. Hastings (N. Y.)
James G. O'Hara (Mich.)	Garner E. Shriver (Kan.)
Robert L. Leggett (Calif.)	Barber B. Conable (N. Y.)
Parren J. Mitchell (Md.)	
Omar Burleson (Tex.)	
Phil M. Landrum (Ga.)	
Sam Gibbons (Fla.)	
Patsy T. Mink (Hawaii)	
Louis Stokes (Ohio)	
Harold Runnels (N. M.)	
Elizabeth Holtzman (N. Y.)	
Butler Derrick (S. C.)	

THE SENATE BUDGET COMMITTEE

DEMOCRATS	REPUBLICANS
Edmund S. Muskie, Chairman (Me.)	Henry Bellmon (Okla.)
Warren G. Magnuson (Wash.)	Robert Dole (Kan.)
Frank E. Moss (Utah)	J. Glenn Beall, Jr. (Md.)
Walter F. Mondale (Minn.)	James Buckley (Conservative) (N. Y.)
Ernest F. Hollings (S. C.)	James McClure (Idaho)
Alan Cranston (Calif.)	Pete Domenici (N. M.)
Lawton Chiles (Fla.)	
James Abourezk (S. D.)	
Joseph R. Biden, Jr. (Del.)	
Sam Nunn (Ga.)	

ities within major areas be shifted?"

It is Mrs. Rivlin's opinion, she testified, "that it would be very much in the national interest to shift public resources gradually from defense to domestic programs."

According to the new law, April 1 is the date on which CBO's annual report is due in the hands of the budget committees. That part of the procedure will be inaugurated in 1976.

Congress is scheduled this year to act by May 15 on what is called a first concurrent resolution. The spending and revenue figures in this measure will not be binding on other committees, and they will proceed with their usual work and report individual bills to the floor.

The schedule then calls for a second concurrent resolution to be adopted not later than September 15. This one will set firm ceilings on spending and quotas for revenue. There is a possibility that, in this "trial-run" year, the September 15 step will be dropped, as well as the law's provision that Congress must complete action on a budget resolution by September 25.

First director of the newly created Congressional Budget Office is Alice M. Rivlin, a former Brookings Institution senior fellow and economist.

The new mechanism is not expected to have substantial impact on the Fiscal 1976 budget, but a year from now it will be felt. As Senator Stennis has pointed out, Congress may find itself disappointed in the results of this effort.

From the standpoint of the Pentagon's interests, the intent to have Congress take a close and professional look at national priorities is not bad. It could be good, and even excellent, depending on the input to CBO and the budget committees.

So far, both committees have made studies, issued some documents and, on the Senate side, held hearings to study the subject.

Nowhere in these papers, or in the statements of witnesses, or in the testimony of Mrs. Rivlin, or in the recorded words of Senator Muskie and Representative Adams, is there any suggestion that a national security threat exists or could develop. Perhaps the new law should have included a requirement that the budget machinery have an input from Russia's financial programming. ■

The Wayward Press

Fred W. Friendly, who is a professor at the Columbia Graduate School of Journalism and former executive at CBS News, has come out with some disclosures that should have a chilling effect on the press and television. Writing in the *New York Times Magazine* of March 30, Mr. Friendly reveals that in 1964 the Democrats laid on a program to silence and embarrass their political opponents through exercise of the Federal Communications Commission's fairness doctrine.

There was no housebreaking, but otherwise the performance had many similarities to the Watergate idiocies so relished by the press a decade later. Yes, there was a meeting at the White House where the program was laid down under the aegis of Kenneth O'Donnell. There was a special committee set up, not called CREEP, but with the more responsible sounding name of the National Committee for Civic Responsibility of the Public Affairs Institute. According to Mr. Friendly's account, initial funding came from the Democratic National Committee, and at least some of the money went to a Washington public-relations firm called Ruder & Finn.

The real target, of course, was the candidacy of Sen. Barry Goldwater, and the dirty tricks were financed by party money that had been laundered. The phoney committee stimulated sympathetic radio listeners to protest, under the fairness doctrine, when their local station permitted a Goldwater supporter to use the airwaves. They were successful and boasted later that they had managed to get more than 1,700 free radio broadcasts.

On top of this, money was found to subsidize a left-wing writer, a sort of poor man's Victor Lasky, to produce a book entitled *Barry Goldwater: Extremist of the Right*. His name was Fred J. Cook, and for considerations from the Democratic National Committee, his typewriter was at the party's service. According to Professor Friendly, this took the form of an advance offer to buy 50,000 copies of the book.

It is a device that was roundly condemned in the press last year because Laurance Rockefeller utilized it to back Lasky's book on Arthur Goldberg. Cook, sometimes described as an "investigative reporter," did even more. Stimulated and helped by the White House, Mr. Friendly writes, journalist Cook did an article called "Hate Groups of the Air" that appeared in the *Nation* magazine. It is made clear that the editor, Carey McWilliams, knew about the origins and bias of the essay before he bought it at a "modest fee." Oswald Garrison Villard, no doubt, turned over in his grave.

So far as author Cook is concerned, what came out of his typewriter was less important, in the long run, than the legal controversy he got into with radio station WGCB in Red Lion, Pa. WGCB used a broadcast by the Rev. Billy James Hargis, which was a taped attack on Mr. Cook. Cook, aided by the White House and lawyers from the Democratic National Committee, demanded time to reply. The case went to court, after an appeal to the FCC by the injured journalist. There is no room here to recite the history of the case, but it ended up in the Supreme Court and Mr. Cook won. The radio and television industry has been sorry ever since.

Mr. Friendly tells why:

"A Supreme Court decision that could be construed as the opening wedge for government involvement in decisions of content on a broadcast-by-broadcast basis meshed with the aspirations of the Nixon Administration."

It was about four years ago that Walter Cronkite said he could see "a clear indication on the part of this [Nixon] Administration of a grand conspiracy to destroy the credibility of the press."

Mr. Cronkite was, as we pointed out at the time, talking through his network hat. Thanks to Mr. Friendly, now we know how high the hat is.

Command & Control.

With IBM on board, the many systems of AWACS work to a common purpose.

Take one Boeing 707, mix well with the most sophisticated avionics available, and you get a plane with a lot of potential.

But tie all the avionics and sub-systems together, harness a computer to run the whole thing, and you get a system with a lot of advantages. An Airborne Warning and Control System known as AWACS. For which IBM is providing the central interface.

Put up an AWACS plane, and suddenly things are a lot clearer for commanders. Because AWACS can help in many ways. With essential data for long-range surveillance of all air vehicles, manned and unmanned, high- and low-flying, in all kinds of weather and over all kinds of terrain; with real-time information on the condition and location of available friendly forces; with the means to command and control a total air effort—strike, air superiority, support, airlift, reconnaissance, interdiction.

At the commander's fingertips is all the information he needs to make command decisions. In a centralized, but highly mobile, command post that can provide effective management of his entire resources.

What makes AWACS work the way it should is its electronic heart—an IBM System/4 Pi CC-1 multiprocessor. It's the CC-1 that ties everything together. It can operate anywhere, under any conditions, performing as many as a million operations a second. It even carries its own built-in spares.

For AWACS, IBM is helping make a complex system work to a common purpose. A challenge that reflects IBM's experience in related programs of design-to-price systems for command and control, navigation, electronic countermeasures, ASW helicopters, shipboard and submarine sonar, ground tracking and launch control.

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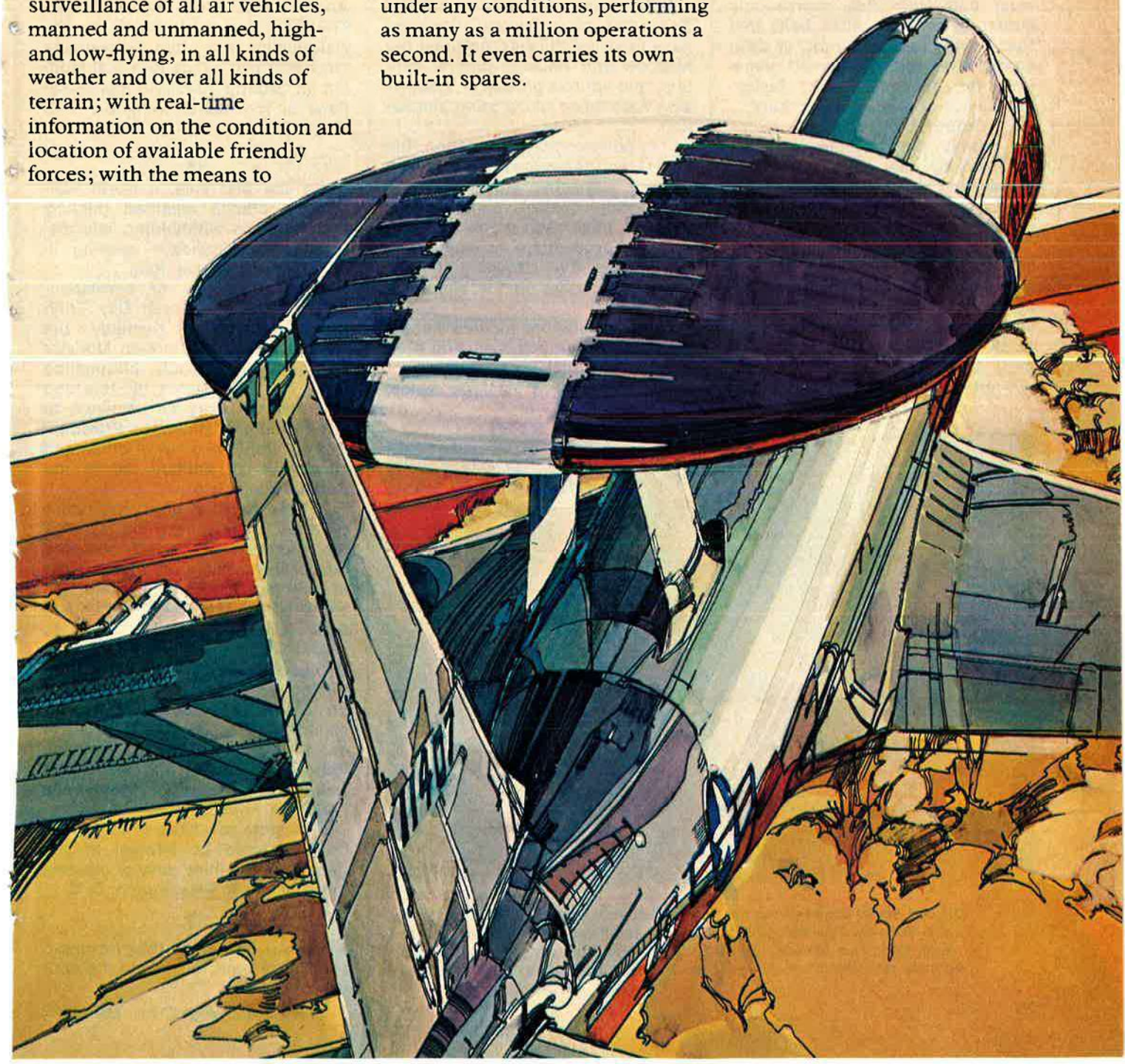


By William P. Schlitz
ASSISTANT MANAGING EDITOR, AIR FORCE MAGAZINE

Washington, D. C., April 7

Medical experiments aboard next July's joint Apollo/Soyuz orbital mission will attempt to determine whether long-duration space flights might be harmful to humans.

Of prospective danger to space travelers is cellular damage caused by high-energy, high-velocity cosmic particles. Spacecraft in near-earth orbit are protected for the most part from this microscopic matter by the Van Allen belts that trap cosmic rays. However, in deep space, the particles would penetrate the spacecraft—and human bodies—in appreciable numbers.

It is known that body cells struck by cosmic particles die and are replaced by new cells, except for those nerve cells in the eye, spinal cord, and brain that don't reproduce.

Some scientists think that on, say, a 1,000-day journey to and from Mars, perhaps as much as ten percent of an astronaut's brain cells would be destroyed. They are quick to point out, however, that even the most intelligent human utilizes only ten percent of his gray matter. Apollo-Soyuz will try to gauge the dimensions of the hazard.

In a related experiment, cosmic particles will be checked for their effect on the "crop" of microorganisms the human body carries with it. The worry here is that if such complex organic systems are altered, fungus and other infections might occur.

Preliminary to July's Apollo/Soyuz mission, communication lines have been established between the Moscow and Houston control centers, and various phases of the mission have been undergoing simulation.

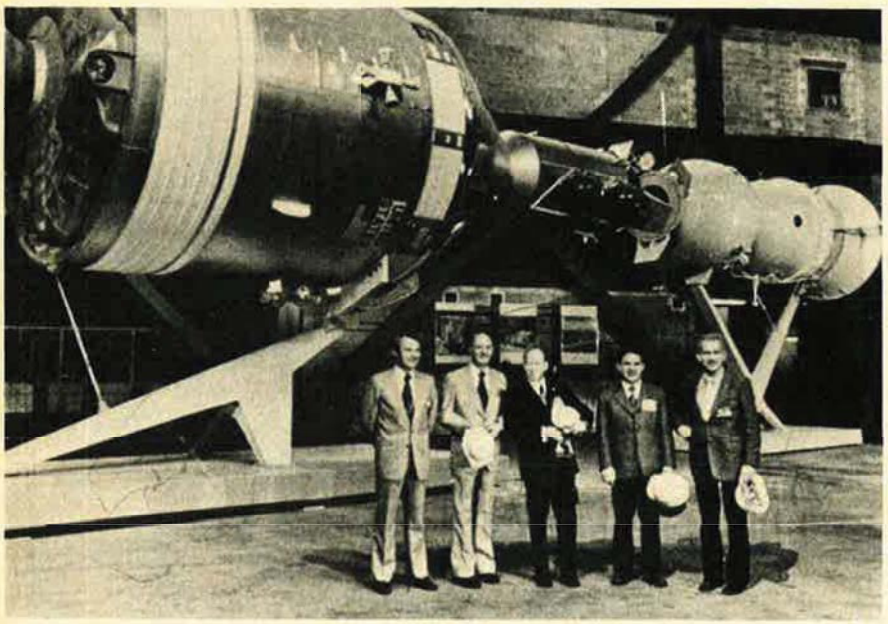
In a fairly complex operation, the Soviet and American crews, each in their respective simulators, and with both control centers fully manned, have been practicing such delicate procedures as spacecraft rendezvous. Even tracking stations are participating in the simulated exercises.

Other simulations include launch, undocking, joint activities, and even emergency situations.

Communications include voice, teletype, datafax, and TV. Among the staff are specialists of each country and mission support personnel needed for interaction of the control centers during the actual flight.

Further simulations and equipment checks are scheduled right up through early July.

Casting a shadow over July's joint venture was the failure in early April of a manned Soyuz mission. The flight was made public by Soviet officials only when the two-man crew returned safely to a soft landing in Siberia following complications in the launch vehicle's third stage.



—Wide World Photos

US and Soviet spacemen at the Vehicle Assembly Building, Cape Canaveral, Fla. With full-size mockups of their spacecraft are, from left, Vance Brand, Brig. Gen. Tom Stafford, Alexei Leonov, Valeri Kubasov, and Deke Slayton. If all goes well, the five will meet in earth orbit during the joint mission in July.

☆

For the first time, a North Vietnamese official admitted publicly that Hanoi is withholding information about Americans missing in action in Southeast Asia.

In an exchange of correspondence between Nguyen Duy Trinh and Sen. Edward Kennedy, the North Vietnamese Foreign Minister conceded that such information exists, but would not be released until the US uses its influence to force South Vietnamese President Nguyen Van Thieu out of office and terminates all military aid to the South Vietnamese.

It has been the unaltered policy of Hanoi to use, first, the issue of the American POWs and, now, the fate of the missing, as trump cards in very hard bargaining. Hanoi has yet to earn a reputation for humanitarian acts.

And with the military situation in Cambodia and South Vietnam continuing to deteriorate toward the point of ultimate disaster, US officials find little that can be used to exert leverage on North Vietnam. Requests to China and the Soviet Union on the matter obviously have had little impact.

This state of affairs is certain to be *the* topic of interest at the League of Families' annual meeting this summer in Washington, D. C.

☆

The Air Force has taken a major step in its plan to provide the con-

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tinental US with an upgraded, long-range warning and surveillance capability.

Under a $39 million contract, GE will design, build, and test a prototype Over-The-Horizon Backscatter (OTH-B) radar system to be located in Maine *(see also p. 58).*

Calspan technician sprays a 750-lb. bomb with heat-absorbing compound. Tests are being conducted to determine how such munitions can keep their cool, especially during fires aboard aircraft carriers.

The prototype will be used to "validate system concepts, develop operational procedures for wide-area surveillance, and establish performance and cost parameters," officials said.

Once the basic concept is proved, two full-scale operational OTH-B radars will be constructed—one in Maine and one in the Northwestern US—to give National Command Authorities better sightings on the vital airspace approaches to our shores.

☆

"The most advanced liquid-fueled rocket engine ever built," according to Rockwell International's Rocketdyne Division, was shipped to a NASA test facility late in March, about one month ahead of schedule.

This first Space Shuttle Main Engine will undergo an extensive test series at NASA's National Space Technology Laboratories, Bay St. Louis, Miss., "to demonstrate the engine's ability to start, run at stable power levels, shut down safely," and otherwise meet Space Shuttle requirements, officials said.

Three of the engines, designed to develop a whopping total of 1.41 million pounds of thrust, will help power the Shuttle orbiter—to launch like a rocket but return to earth like a conventional jetliner. The Shuttle Mains will be the first reusable space booster engines. With servicing, the engines will be used for up to fifty-five missions between overhauls, Rocketdyne said, thus substantially reducing space travel costs.

The big rockets, fed a diet of liquid hydrogen and liquid oxygen, will develop about double the thrust of the J-1 engine, which powered the first and second stages of the Apollo moon launch vehicle. Their discharge pressures will be as high as 8,300 pounds per square inch, compared to 2,000 psi for previous engines.

In a related matter, NASA reports that about 31,000 people in forty-seven states are working on Shuttle development, with the number due to rise to 34,000 by June 1975 and 50,000 within two years. Major contractor Rockwell Space Division alone has 240 Shuttle subcontractors.

According to NASA, as many as 1,000 scientists, engineers, and technicians may participate in Shuttle space experiments in the decade of the '80s.

And because of the Shuttle configuration, noncrew passengers, including women scientists, probably will have to face less stringent physical standards than now confront astronauts, the space agency said.

Shuttle passengers will take centrifuge tests up to three Gs, NASA said, the force of acceleration during Shuttle launch and reentry—far less than is experienced by today's space travelers. (Under a NASA test program, women volunteers have successfully withstood heavy G forces.)

Scientific candidates for Shuttle missions will also be checked for the extent of their motion sickness, which could hamper work assignments.

☆

The US Army has long sought a fast, accurate, and automatic system for countering enemy artillery fire.

Lately, it has been experimenting with a new combat radar that backplots incoming artillery shells to their source in a matter of seconds—and sometimes before the first shell hits.

Known officially as AN/TPQ-37 Artillery Locating Radar (ALR), two such systems are under competitive development by Hughes Aircraft and Sperry Rand.

Potentially, ALRs could change the face of modern war by eliminating one of the greatest threats to

—Wide World Photos

Seconds before tragedy, a USAF C-5 Galaxy takes off from Tan Son Nhut Airport near Saigon, bearing Vietnamese orphans and adult companions. The subsequent crash killed 180, the first fatalities involving the giant plane.

combat units—that of being pinned down under intense fire from enemy artillery that is dug in and hidden. Previous methods of pinpointing enemy ordnance have been ponderous and simply too slow to be effective.

By teaming high-speed and small computers with electronic scanning, the systems theoretically can track incoming targets while simultaneously searching for new ones. Sophisticated signal processing will also filter out such innocuous factors as ground clutter, rain, and even birds. The systems also can be used to register and adjust friendly artillery fire.

While ALRs are still in an advanced development stage, some initial successes in locating artillery have been noted at the Army's artillery center at Fort Sill, Okla.

Along with an antenna and operations unit, the ALRs under development will be equipped with consoles that will display the location of enemy artillery on contour maps, from which an operator will note target coordinates.

☆

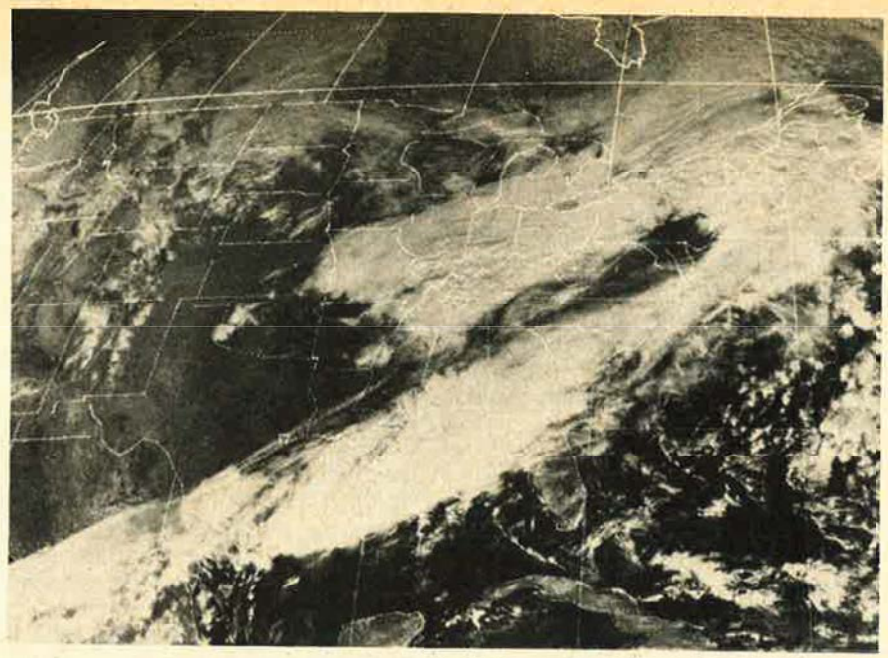
It was fifteen years ago last month that NASA orbited the first weather satellite, Tiros-1. Its succession of photos brought wide acclaim from meteorologists, the news media, and the public alike.

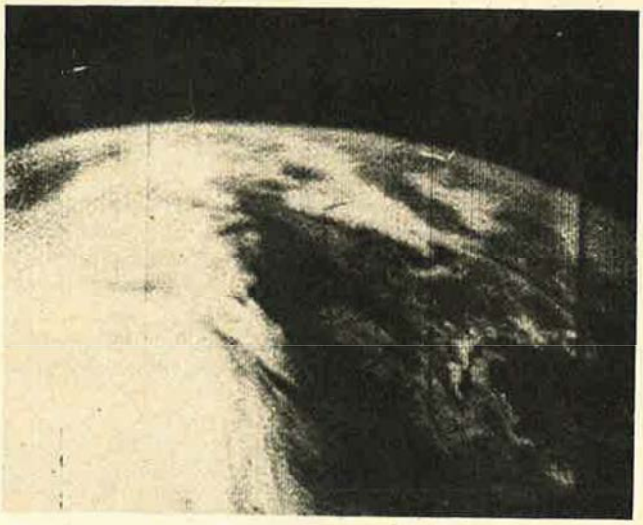
Of enormous importance, for the first time Tiros-1 could provide data on conditions over the oceans, where much of the global weather originates, previously huge blanks on otherwise excellent weather maps of land masses.

Weather satellites have steadily evolved, to incorporate, for example, such new technology as instruments for night viewing and the measurement of vertical temperatures.

Developed, too, were ground stations—some 500 now exist all over the world—for the economic receipt of weather photos. For many countries, these provide the chief source of weather data on which to base predictions. Long-range weather estimates are now commonplace, as are the day-to-day weather reports based on up-to-the-minute photos. Weathermen can justly boast that no major storm anywhere on earth goes undetected and untracked.

Meteorologists believe that this is only the beginning. They see satellites teamed with computers to give warning of such short-term severe weather as tornadoes or cloudbursts as well as superaccurate long-range forecasts.





First weather photo sent from satellite on April 1, 1960, contrasts with a recent mosaic view of cloud cover over the US, above. Globe-spanning weather coverage has been of great help to forecasters (see item at left).

☆

For its munition arsenal, the Air Force has initiated redesign and testing of production quantities of the Pave Storm air-launched cluster munitions dispenser, and guidance adapters for it.

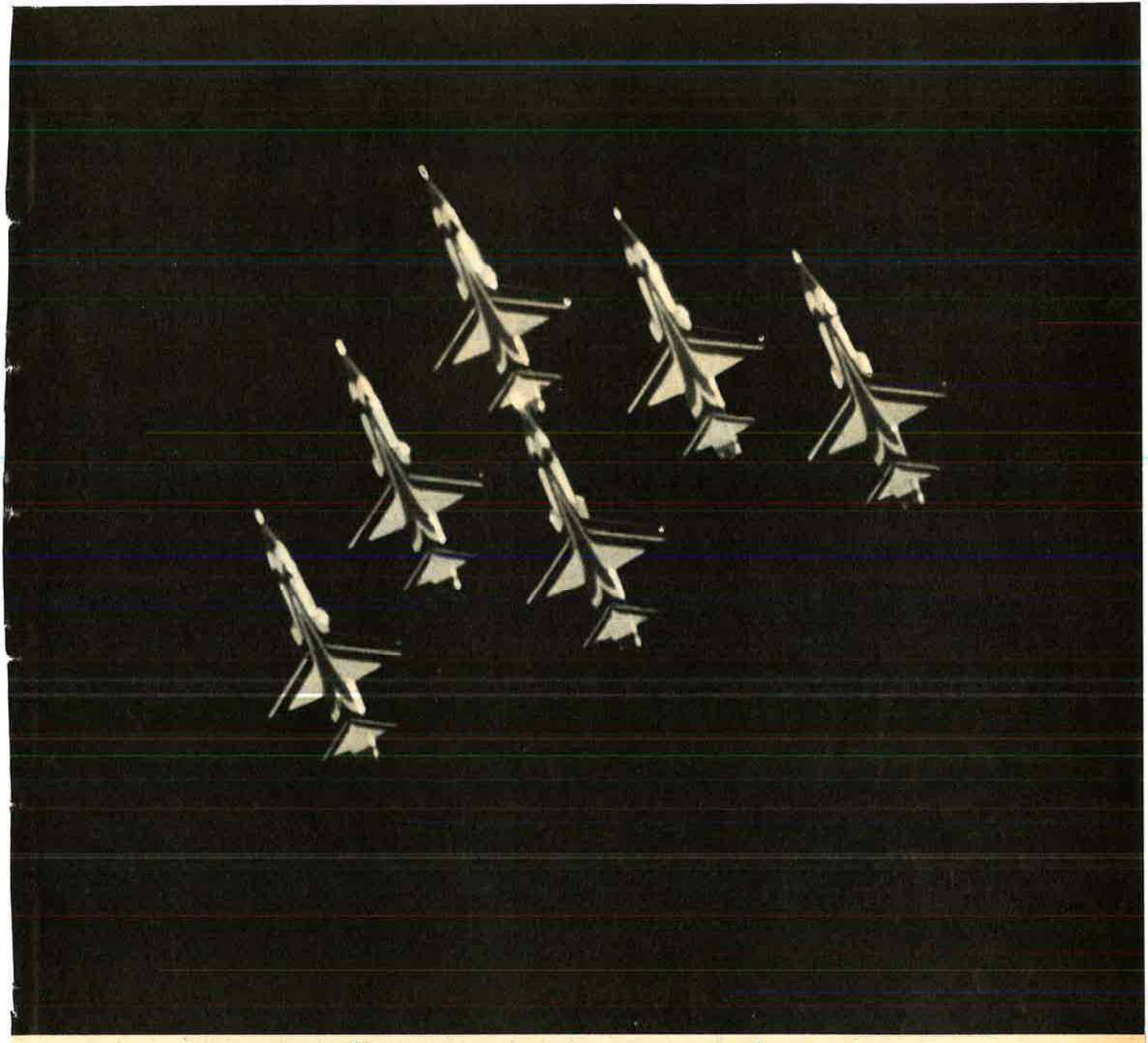
Pave Storm (SUU-54) is similar in size and shape to the Mk. 84 bomb. It is designed to carry almost any of the self-dispensing cluster munitions and can be equipped with a laser or optical guidance head for very accurate delivery on ground targets or as an unguided weapon. Pave Storm's munitions are dispensed automatically by an explosive charge after launch.

Martin Marietta, which developed the original Pave Storm and adapter, will undertake the redesign work to enhance effectiveness, reliability, and reduce costs. Delivery of operational quantities of Pave Storm will follow test of the first twenty units.

☆

The Air Force has centralized the development and acquisition of airlift and tanker aircraft within a new program management unit of Aeronautical Systems Division at Wright-Patterson AFB, Ohio.

The organization, the Deputy for Airlift/Tanker Aircraft, will handle three of USAF's major programs: the C-5, Advanced Medium Short Takeoff and Landing Transport (AMST), and the Advanced Tanker/



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The U.S. Air Force Thunderbird Team demonstrates its precision and skill in Northrop T-38 Talon Jets.

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The supersonic T-38 trainer is one product of the long partnership of our Armed Forces and Northrop. In which Northrop uses cost-conscious technology to build better products. Simpler. More efficient. Less costly to buy, to use and maintain.

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All 1,187 T-38's built by Northrop were delivered on time and at promised cost. A record typical of our continuing performance. Building the new F-5E Tiger II fighter. Moving forward with the new two-seat F-5F tactical trainer. And working with armed forces in the U.S. and abroad to meet future requirements for an advanced tactical aircraft.

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For the jobs that need to be done, the engines to do the job.

The F101-powered B-1 strategic aircraft.

The TF34-powered A-10 close support aircraft.

The F103-powered YC-14
Advanced Medium STOL Transport.

The F103-powered E-4A Advanced Airborne Command Post.

General Electric engines continue to prove they can handle the toughest Air Force assignment.

The B-1, for example, is now successfully airborne. Powered by four advanced-technology F101 augmented turbofans, the B-1 will fly from low-level penetration speeds just under Mach 1 to supersonic speeds at high altitudes. And it will cover a longer mission range with greater survivability and nearly twice the payload of America's current intercontinental bomber.

The A-10, powered by twin GE TF34 high bypass turbofans, is poised to meet its mission requirements, too. The TF34's high thrust-to-weight ratio and low fuel consumption provide the A-10 with unmatched performance capability for its close air support mission. Plus improved short-field takeoffs and landings, exceptional maneuverability and the capability for increased loiter time in the mission area.

Two advanced aircraft are powered by GE's F103 engine. Powering the YC-14 Advanced Medium STOL Transport (AMST), twin F103s will provide that aircraft with outstanding and reliable short-field capabilities plus excellent mission range and payload. Powering the E-4A Advanced Airborne Command Post, four F103 high bypass turbofans give that aircraft the power, reliability and low fuel consumption needed to meet its varied and complex mission objectives.

General Electric engines. Once again, the Task Masters for critical Air Force missions. 205-115

GENERAL ELECTRIC

Cargo aircraft. Former C-5 System Program Director Col. James H. Marshall heads the new unit.

"The Deputate will improve aircraft development efforts and reduce costs by combining the functions of program control, production and manufacturing, procurement, configuration management, and administrative support," officials said. Project management, test and evaluation, and systems engineering will continue to be conducted separately by each aircraft system program director.

Within the C-5 program office is the AFLC-managed effort to develop a "stretched" C-141. The C-5 is also a candidate for the Advanced Tanker/Cargo aircraft; others are the Boeing 747, McDonnell Douglas DC-10, and Lockheed L-1011. (The aircraft would be used primarily as a tanker but available for airlift.)

The stretched C-141 would increase interior space by about thirty percent, with no appreciable impact on range or speed.

Both Boeing and McDonnell Douglas are building two AMST prototypes each.

☆

USAF has under study an improved rocket motor for its Boeing-built Short Range Attack Missile (SRAM).

The eleven-month effort, to be conducted by Thiokol Chemical Corp., will also investigate development of a longer-life propellant for use in an advanced motor. The life of the current SRAM motor will also be researched.

Possible alternatives include retrofitting existing SRAMs, or equipping those missiles to be built for arming the B-1 bomber with a new, more effective motor.

SRAM's present two-pulse motor is responsible for the weapon's remarkable versatility, and a longer-life motor would enhance this without any revolutionary change in the missile's configuration, Boeing said.

USAF has ordered a total 1,500 SRAMs, for deployment aboard SAC B-52s and FB-111s.

☆

Thanks to the persistence of Floridian Graham Kidd, thousands of American and allied service peo-

ple are now entitled to a long-lost decoration authorized by the Chinese government nearly thirty years ago.

Mr. Kidd served at Fourteenth Air Force Headquarters in Kunming during the war, knew of Circular 166 that provided for the award, and following an effort of years' duration, recently secured a copy of the document.

The award—the China War Memorial Badge and Ribbon—was never granted, presumably because of the confused conditions in China at war's end. The 14th Air Force Association *(see p. 16 for a note on the unit's forthcoming reunion)* is currently validating eligibility, with the Republic of China's approval, through its extensive personnel records. The requirement is to have been "assigned or stationed in China for not less than thirty days at any time during the period 8 December 1941 to 2 September 1945." The American Volunteer Group and China Air Task Force are included.

For information about the award, write Don B. VanCleve, 1723 East Grauwyler Rd., Apt. 127, Irving, Tex. 75061.

☆

The first A-7H Corsair II aircraft will be delivered to Hellenic Air Force officials in mid-July 1975, LTV Aerospace Corp. announced.

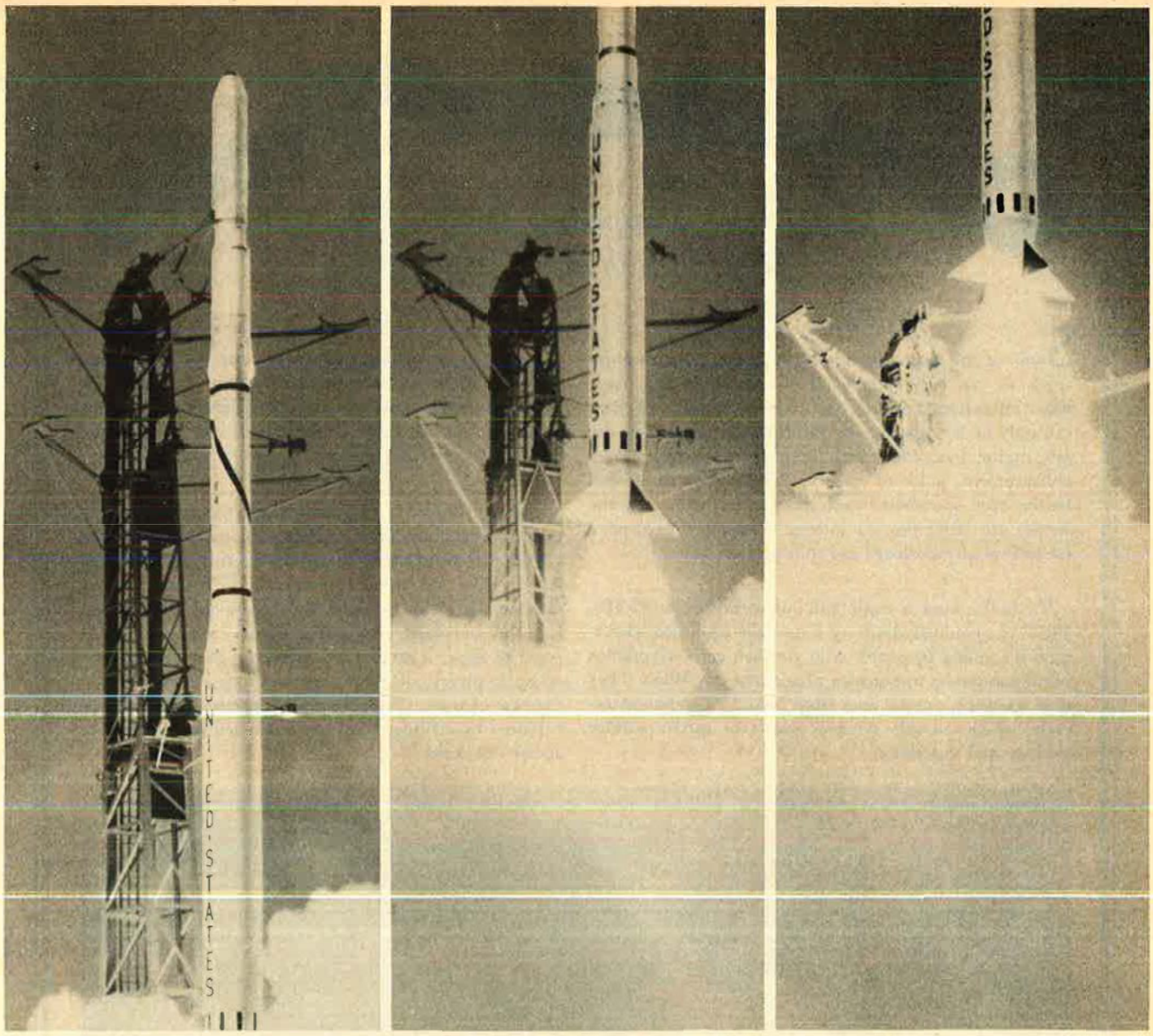
The A-7H, land-based version of Navy's A-7E, is the first Corsair type to be sold internationally. Others are in service domestically with USAF's active and Reserve Forces and Air National Guard, as well as the Navy.

Greece has ordered sixty A-7Hs, with the last to be received in mid-1977. The program is valued at $259.2 million, for purchase of the aircraft, spares, support equipment, and flight training.

Production of the A-7H will be integrated with that of other A-7s on the Vought Systems Division assembly line, officials said.

☆

In a program that may run as long as five years, the Air Force has initiated development of a "wide-body" cargo aircraft fuselage segment that will use unique adhesive bonding in its fabrication rather than conventional riveting.



The trustworthy Scout. Another successful launch would hardly be a long shot.

The Scout launch vehicle holds the NASA record for dependability.

It's certainly no surprise when another Scout is launched successfully.

Because since 1963, the four-stage, solid-propellant Scout has achieved an operational success rate of over 95 percent.

That's one reason the Scout is NASA's lowest-cost orbital launch vehicle, with payload capabilities that have tripled since its inception with NASA and the Department of Defense. And it also has performed probe and re-entry missions.

These missions have supplied scientists with a potpourri of valuable information: From testing radioisotope thermoelectric generators to measuring ion densities to pinpointing the sources of X-rays and ultra-violet radiation in the atmosphere, the Scout continues to help get the job done.

This kind of proven dependability is why the Scout also serves France, Germany, Great Britain, Italy, the Netherlands and the 10-nation European Space Research Organization.

The stakes are too high to risk using anything else.

VOUGHT
SYSTEMS DIVISION
LTV AEROSPACE CORPORATION
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Conversation Pieces

Prospecting for Minerals with Mini-Computers

Some of the most valuable photographs of earth from space are not very spectacular to look at. In fact, their most interesting features are often so subtle that they can only be brought out by skillful manipulation of the raw, digital data, from which the pictures are made. After enhancement, a lot of expert interpretation is needed before even speculative decisions can be made. But the results are beginning to interest some very perceptive executives of petroleum and mining companies.

To do this kind of work both quickly and economically, TRW has gradually built up a specially equipped laboratory. It's staffed by people who got their early experience using computers to enhance pictures of the Moon. They now routinely process data from NASA's Landsat spacecraft, which provide synoptic views of earth's surface geology and vegetation.

Data for particular colors can then be computer-enhanced to bring out significant details. Anomalies in rock formations, variations in the overburden, even slight differences in the color of vegetation can indicate the presence of oil-bearing strata or mineral deposits.

Not only does TRW's system use inexpensive mini-computers instead of big, costly machines but certain repetitive functions are completely automated by a TRW system that helps speed the whole process. As Dr. Gary Kang, who runs the lab, points out: "Prospecting by satellite and mini-computer is a lot quicker than doing it with a burro, or even a jeep. From the businessman's point of view, it saves a lot of money, too. You can get synoptic surveys of promising locations and zero in on the best of them. Then, the really promising sites can be explored by drilling teams and evaluated on the basis of actual test cores."

System analysts scrutinize imagery from single pass landsat before enhancing specific area of interest from multi-pass data.

The problem, of course, is to find potentially useful needles of information in the haystacks of recorded data. The first step is to define areas of interest and put the tapes for those areas through a processing system based on mini-computers. Spacecraft position and attitude data are fed in at the same time and the computer is programmed to compensate for distortions caused by spacecraft motion and sensor errors. The result is a set of dimensionally accurate color separations, formatted into a map projection that suits the user's needs.

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The PABST (for Primary Adhesively Bonded Structure) fuselage design will be that of the YC-15 Advanced Medium STOL transport, currently under development by USAF along with the YC-14 in a competitive prototype program.

PABST, to be built and tested by McDonnell Douglas's Douglas Aircraft Co., Long Beach, Calif., is part of USAF's long-term Advanced Metallic Structures (AMS) program. AMS will establish basic technology for improved airframes with increased durability, with attractive ancillary features of minimized weight and reduced acquisition and maintenance costs, USAF said.

PABST structural static and fatigue testing should begin in 1978.

☆

Dr. John F. Clark, Director of NASA's Goddard Space Flight Center, and Daniel J. Fink, Vice President of GE's Space Division, have been named recipients of the National Aeronautic Association's Robert J. Collier Trophy. The two were cited for their roles in 1974's highly successful Earth Resources Technology Satellite Program, which proved the feasibility of obtaining useful data from orbiting sensors for managing earth's environment and natural resources.

Another NAA award—the Frank G. Brewer Trophy for outstanding contributions to aerospace education of youth—went to Dr. Wayne R. Matson, Editor-in-Chief of the *Journal of Aerospace Education*. Dr. Matson has long worked closely with the Aerospace Education Foundation, AFA's affiliate organization, and for nearly twenty years has pioneered in introducing the nation's young to aviation.

☆

NEWS NOTES—Since December 1950, and after an estimated 1,700,000 flight hours spent training more than 22,000 Air Force navigators without a single serious injury, the **last T-29** has been retired at Mather AFB, Calif.

By year's end, all **WAF squadron sections** will have been disestablished, with duty commanders assuming responsibility for WAF in their units.

ADC's **CMSgt. Vernon C. Shave** suggested that USAF use obsolete Bomarc missiles from storage as high-altitude **target training drones,** thereby saving USAF at least $3.1 million and earning himself a $4,250 award.

Long-time AFAer **Maj. Gen. Edward B. Giller,** USAF (Ret.), has been named **Deputy Assistant Administrator for National Security** of the recently formed Energy Research and Development Administration (ERDA), the principal successor to the Atomic Energy Commission.

Two other AFAers, both retired Air Force major generals, have been appointed to key posts in another AEC spinoff—the **Nuclear Regulatory Commission: Lee V. Gossick** as Executive Director for Operations, and **Kenneth R. Chapman** as Director of the Office of Nuclear Material Safety and Safeguards. Chapman previously served as Assistant Deputy Chief of Staff for R&D, Hq. USAF.

In a program to increase combat maneuvering load factors, an **F-15** at Edwards AFB, Calif., recently withstood **nine Gs** with wing loads

Aerospace World

of eighty-five percent of design limit and 52.5 percent internal fuel.

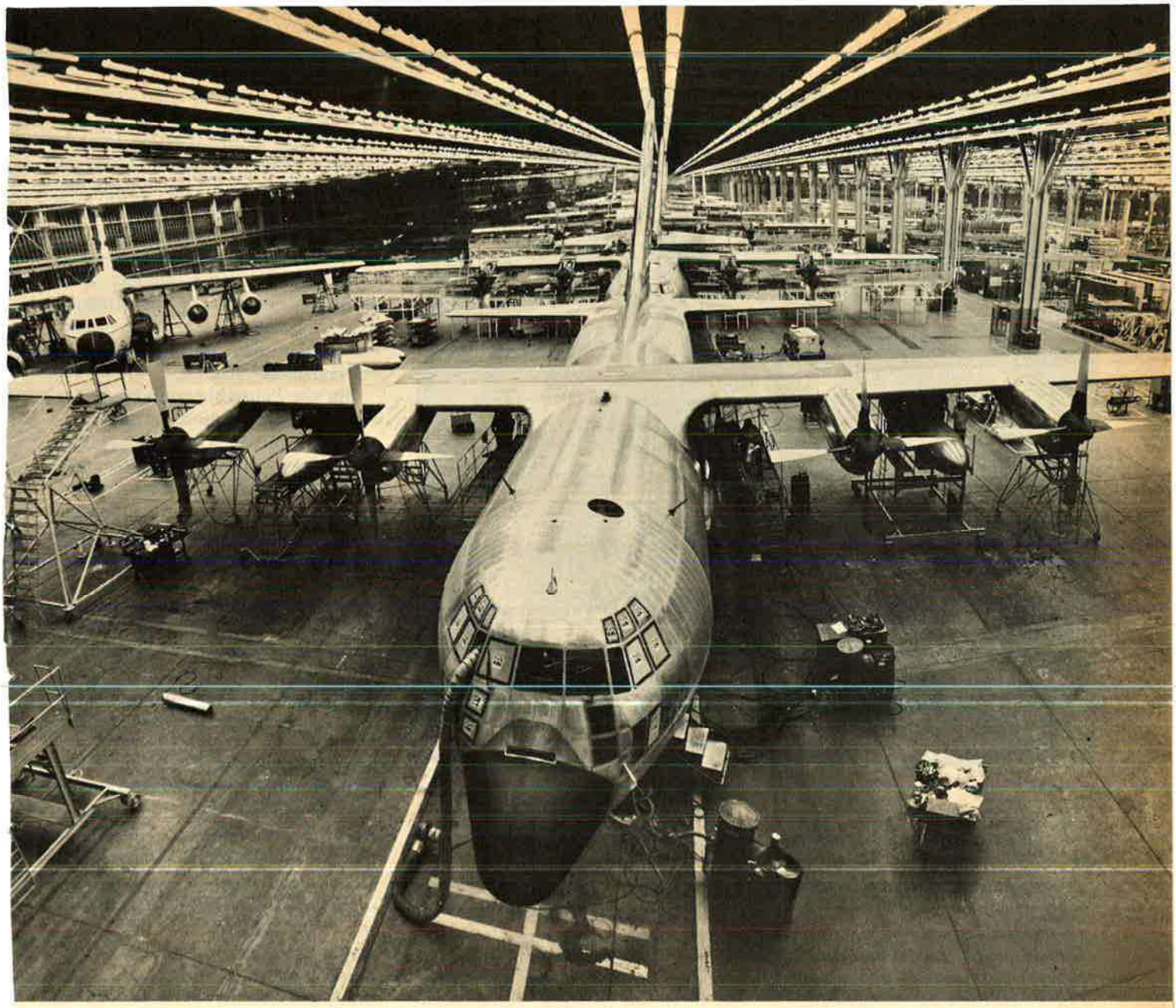
The Navy recently scored two direct hits against separate targets in the first dual launch of its **Condor** air-to-surface missile equipped with live warheads. The Navy is continuing the test program toward a decision on full production of Condor, built by Rockwell International's Missile Systems Division.

NASA has improved instrumentation and resumed a study of that old nemesis—**clear air turbulence.** USAF, March–December 1975, will probe the **upper atmosphere** with a total of thirty-five rocket experiments. Aim: data on the "structural and dynamical parameters of the upper regions for better understanding of atmospheric behavior," officials said.

Retired: WAF Director **Col. Billie M. Bobbitt,** after twenty-four years in the Air Force and earlier service in the Navy. Succeeding her, effective May 1, was WAF Deputy Director **Col. B. D. Trimeloni.**

Died: Florence Lowe "Pancho" Barnes, early aviatrix and stunt flyer who was equally famed as owner of the "Happy Bottom Riding Club," a guest ranch on what is now Edwards AFB, Calif., in Boron, Calif. She was seventy-three. ■

Index to Advertisers



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Inside, Hercules is almost new with avionics systems updated from nose to tail. All basic operating systems have been improved. The 1975 Hercs, for example, will have new radar, air conditioning and auxiliary power systems.

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Lockheed Hercules

SAC's Commander in Chief, Gen. Russell E. Dougherty, feels strongly that the vulnerability of the dispersed, hardened ICBMs is "relatively low."

"THE relative strategic balance between the United States and the USSR," the FY '76 Military Posture Statement asserts, "remains in an unstable equilibrium."

This seemingly contradictory term captures the theoretical and dynamic nature of "essential equivalence," military cornerstone of this nation's détente policy. It denotes a finely tuned level of strategic forces that is neither high enough to provoke the other side into new rounds of the arms race nor so low that it invites instability or worse. The equilibrium tends to be "unstable" because the fine tuning is a continual process that responds to perceptions as much as to concrete knowledge of the other side's changing capabilities.

The military leader principally concerned with translating the theories of "essential equivalence" into workaday practices is the Commander in Chief of the Strategic Air Command, Gen. Russell E. Dougherty. A strong advocate of the strategic equivalence doctrine, General Dougherty told AIR FORCE Magazine that "our desire is not to have more than we think is needed. . . . We are not in the business of amassing megatonnage, but we are in the business of making the most of our capabilities to deter any strategic threat to or attack on this nation."

At present, the force levels of the two principal protagonists are in an essentially equivalent state, according to the latest DoD accounting: 1,540 Soviet ICBM launchers vs. 1,054 US; 700 Soviet SLBMs vs. 656 US; and 160 Soviet intercontinental bombers vs. 498 US. The Soviets lead in operational strategic delivery systems with an aggregate of 2,390, compared to the US grand total of 2,208.

Two associated factors are harder to gauge, but at least as meaningful as these numbers: the total throw weight of the ballistic missiles combined with the payload of the bombers, and the total number of warheads and bombs. DoD's official estimate sets Soviet throw weight at twice that of the US, but warns that this proportion is increasing at a rate that could lead to a "six-to-one superiority" for the USSR.

But there is an offsetting US advantage: The number of individual nuclear weapons this country can deploy from its ballistic missiles and strategic bombers is 8,500, compared to an estimated 2,800 for the Soviets. Obviously the latter number is a significant measure of the strategic balance because, as a Soviet leader is alleged to have said, "warheads—not launchers—kill."

But the "unstable equilibrium" is likely to become more unstable because "the Soviet Union is pressing forward vigorously with massive programs for near-term deployments, involving every facet of offensive strategic power," according to the Military Posture Statement. Moreover, the Soviet Union's focus "is not simply on maintaining the current advantage in terms of megatonnage and throw weight, but it applies as well to accuracy, flexibility, survivability, and MIRVing intercontinental missiles, which, if continued, will eradicate the present US numerical advantage by mid-1979."

Translating these trends into practical terms, DoD's annual report warns that a continued widening of the throw-weight gap, coupled with Soviet deployment of "several thousand high-yield MIRVs and rapidly improving accuracies, could come to jeopardize the survivability of our fixed, hardened ICBM force . . . and bring into question our ability to respond to attacks in a controlled, selective, and deliberate fashion."

But because of the US strategic Triad—less than twenty-five percent of the nation's nuclear deterrent capability measured in terms of the number of warheads and bombs resides in the ICBMs—not even these "worst-case," long-term threat assumptions, according to Defense Secretary James R. Schlesinger, would "give the Soviet Union anything approximating a disarming first strike against the United States." These fundamental factors determine how SAC marshals its strategic deterrent forces.

SAC's Blueprint

The Strategic Air Command is carrying out a "very active, evolutionary improvement program" of its ICBM and bomber forces to pre-

AIR FORCE
MAY 1975 MAGAZINE

SAC's Commander in Chief, though concerned by the increasing Soviet nuclear throw-weight advantage, is confident that the evolutionary improvement of the US ICBM force, coupled with the deployment of a new strategic bomber, can maintain US essential equivalence . . .

SAC'S PLANS FOR TOMORROW'S NUCLEAR BALANCE

BY EDGAR ULSAMER
SENIOR EDITOR, AIR FORCE MAGAZINE
Photos by SSgt. J. Scott Crist, USAF

clude future disturbances of essential equivalence with the USSR, according to General Dougherty. Central to the command's planning is the conviction, "strongly felt," that the vulnerability of the Minuteman missiles is "relatively low. They are well dispersed. They were hardened from the outset. That hardness is being improved on all of our silos," General Dougherty said.

Other important factors contribute to the enduring strength of the Minuteman force. "I think the vulnerability, or lack of it, has to be put in context. These aren't remote bases. They are embedded, literally, in the heartland of the sovereign United States. There can be no ambiguity of attack. Whatever vulnerability is associated with a hardened, fixed, and relatively known position has to be put in the context of the kind of decision that one would have to make in order to attack the heartland of the United States. The credibility of a meaningful response to any attempt to attack is complete," General Dougherty told AIR FORCE Magazine. Because of the "100 percent credibility" of the US response, he added, "I have always personally thought that some measure of vulnerability that goes with fixed bases can be accepted. . . ."

The US strategic Triad, backed up by a reliable and redundant strategic warning system, eliminates real dangers of a surprise attack because it presents a would-be attacker with timing problems that can't be solved.

To launch a surprise attack on SAC's strategic bombers on alert, the Soviet submarine force would have to get close to US shores. Otherwise, the flight time of their missiles is so long that most of the bombers could escape. Further, if the Soviets want to keep SAC from flushing its bombers, they must withhold their ICBMs, whose flight time is much longer. This means that the first sub-launched warheads would detonate over the bomber bases fifteen to twenty minutes before the Soviet ICBM warheads—the only ones accurate and powerful enough to take out Minuteman silos—could strike.

Soviet planners, therefore, must assume that the US National Command Authorities would utilize the fifteen-minute to twenty-minute lag to launch some or all of the Minuteman missiles. But from the point of view of a Soviet strategist, even the assumption that the US would launch only "from under attack" and not on receipt of credible signals from its warning systems, is optimistic. If the US should choose to launch on warning, no credible disabling threat to either SAC's ICBMs *or* bombers can be postulated. "Certainly, the capability to launch on warning exists today. It exists in an assured manner, and I'm going to do all I can to preserve that certainty of capability for our decision-makers," General Dougherty said. "I would hope that we never give any potential attacker grounds to assume with certainty what we won't do, to the point where he uses this assumption in calculating what our response would be. Certainly, as the operational commander of our strategic bombers and our land-based missiles, I don't want to do anything—or reflect any lack of capability to launch on warnings—that would deny that option to our country's decision-makers."

A third consideration working against facile assumptions about the relative vulnerability of fixed-site strategic systems is the fratricidal effect, meaning that an attacker's exploding warhead is as lethal to his

own RVs aimed into the same general area as it is to the target (*see September '74 issue, p. 82*).

"Theoreticians have a way of simplifying very complicated practical problems in facile phrases," he said. "The problem of trying to exploit the vulnerability of the multiple-based Minuteman force has been vastly oversimplified. If you wipe away enough practical considerations by 'what if' assumptions, then, of course, you can postulate Minuteman's vulnerability to attack. But as a practical matter, this is a damn difficult job. It may well be too difficult even to be of major concern to us for many years to come."

In a similar vein, the Defense Department's latest Annual Report states that "the combination of silo upgrading and a new understanding of the problems the Soviets would face in mounting a preemptive counterforce strike—the so-called 'fratricide effects'—holds the promise of extending the period in which we can feel confident of the survivability of our ICBM force."

In terms of economics, General Dougherty pointed out, the Minuteman force as presently constituted "provides great return for minimum cost. Initial cost was high, but sustaining cost is relatively low. A small force of some 200 or so missile crews can safely and redundantly control the missile fields. By any standard, these are highly cost-effective and relatively secure retaliatory forces." As a result, he stressed, "Today I don't think I could in good conscience go to the chief of my service or my operational bosses, the JCS, plant my foot down and say now is the time operationally to deploy the first generation of MX."

If, in the future, Soviet advances in strategic capability reach a level where "we see this becoming a matter of serious, not just academic, concern, we have other options available to us. For example, we have done a study and some experiments on mobile ICBM basing modes; we know what could be available to us," SAC's Commander in Chief said.

The Irreplaceable Titan

The fifty-four liquid-fuel Titan missiles in SAC's arsenal could be replaced by SLBMs under the terms of the SALT I Interim Accord. Some planners have already suggested that this be done.

"Titan is our biggest missile. It gives us a capability that we can't approach with any other weapon. It is irreplaceable in the context of flexible deterrence. There is a key point in the targeting policy espoused by Defense Secretary Schlesinger that is often overlooked or misunderstood: We are not doing less—and we are not developing less capability—than previously.

"At times, people contrast our new strategic philosophy with the 'mutual assured destruction' concept followed by the US in the past. But this is not an either-or proposition. Assured destruction is the bedrock of our expansion into the flexible targeting concept. Titan is a cornerstone of mutual assured destruction. Its excellent reliability enables us to keep these weapons in an extremely high state of readiness," General Dougherty said.

Evolutionary ICBM Improvements

While the welter of new Soviet ICBMs—and their concomitant throw-weight increase and MIRVing—does not jeopardize USAF's Minuteman missiles in the short term, General Dougherty sees "an immediate need for studying new systems and for progressive evolution of our present systems. But I'm certainly not prepared to press for actual deployment of the MX at this time. Many things should be given higher priority."

A potentially promising way to stretch the utility of Minuteman missiles is the Air Force Systems Command's "Pave Pepper" program (*see April '75 issue, p. 26*). Usable by the Minuteman III ICBMs, "Pave Pepper" could deploy a significantly larger number of MIRVs per missile than the three warheads of Minuteman III. Because this system is less effective against hard targets than either Minuteman II or III—it uses smaller warheads—General Dougherty stressed that, "If we go too far in trading yield for multiplicity, we deny ourselves some of the targeting efficiency we have in the existing force."

Already in being are "very active programs to improve present guidance systems. This is one of those things that, while not directly relating to the problem of symmetry in throw weight, does serve to compensate. I feel very comfortable and assured by the accuracy and reliability that we've been able to achieve," General Dougherty said.

The Defense Department requested $40.6 million in FY '76 to continue refinements of the Minuteman III's guidance system. The refinements basically are "improvements in the targeting tapes through alignment and calibration procedures that provide the input to the guidance system, which will be appropriately flight-tested to provide confidence in improved accuracy." In addition, DoD will continue development of the Missile Performance Measurement System (MPMS), a "highly accurate inertial" system carried aboard Minuteman III missiles test-fired from Vandenberg AFB, Calif., to measure the performance of the standard guidance system. According to DoD, MPMS "also provides a guidance system technology base to support the development of future ballistic missile systems."

Another improvement of Minuteman III to counterbalance the Soviet throw-weight advantage is attainable through engineering development of the MK 12A reentry vehicle, a program for which continued funding is sought in the FY '76 budget. The cost of retrofitting 550 Minuteman III missiles with these high-yield-to-weight-ratio warheads would come to about $335 million, not counting the Energy Research and Development Administration's R&D and nuclear materials costs, according to Dr. Schlesinger.

"By coupling improved accuracy with improved yield, we will benefit greatly in terms of flexibility," General Dougherty told this reporter. He said it was too early to decide whether all or only part of the force should be retrofitted with the new warhead which, while almost identical in size and weight to the presently deployed MK 12, provides significantly improved yield. General Dougherty stressed, "The MK 12A would certainly give us a very significant ability to utilize existing throw weight to better advantage."

"We need a new bomber . . . to the point where I would urge the United States to accept the cost."

It may be possible to upgrade the yield of Minuteman II's single warhead through the development of advanced nucleonics and miniaturized arming and fuzing mechanisms, but, "We are not dissatisfied with the way our Minuteman IIs are now equipped. True, it is an earlier-generation missile, but the very flexible targeting capability built into Minuteman II is certainly welcome," General Dougherty said.

Although it is possible to harden Minuteman silos beyond the Upgraded Silo program currently in progress, SAC's Commander in Chief said, "I think we've incorporated in our silo-hardening project all those things that are reasonable or even foreseeable at this time."

Keeping the MX Option Open

With respect to the MX program, SAC's Commander in Chief told AIR FORCE Magazine, "We are actively studying an MX to provide a prudent hedge against a to some extent unknown threat. We want to assure that we have the capability to rapidly meet any one of a number of expected operational deployments that could disrupt what the Secretary of Defense properly calls the 'essential symmetry.' We know what *could* happen on the other side, but we don't know *exactly* what *will* happen. We can't prejudge their operational deployment intentions. If 'essential symmetry' is forecast to be disrupted by their deployments, I think the MX should be frozen in design at that time, developed rapidly, and deployed.

"Now, until we can see that happening, it might be an error to freeze the design. MX is not a growth of an existing missile; it is a new development. Like all first models, it should incorporate as much of the needed capability as our technology can give us and it should be significantly tuned to the environment that it might have to operate in."

The B-1 Requirement

The B-1 bomber "represents the distillate of our best judgment" regarding the Air Force's next manned strategic system, according to General Dougherty. "The country needs —and I think SAC needs—a new bomber. I can't see anything else capable of doing what I envision as the role of the manned penetrating bomber that carries air-to-surface missiles, has the capability for gravity drop, and puts man in the loop. . . . If there are cheaper ways of doing this job, I have not seen them, and that includes the FB-111s stretched, or the B-52s renovated. I don't see in the long term these alternatives as being credible.

"The design of the B-1 incorporates our thinking with regard to radar cross-section, penetrativity, and survival in the target area. It can deliver multiple weapons, can be recovered and reused. We need a new bomber . . . to the point where I would urge the United States to accept the cost. If we could find something that would do all these things cheaper and better over a longer time than the B-1, I would be for that, too. But, I just haven't seen it," General Dougherty said.

SAC's assessment of the need for a follow-on bomber takes cognizance

of the fact that "many of us who have spent part of our careers around big airplanes are frequently accused of a bomber bias. I've been conscious of that . . . and have tried, to the extent that it is humanly possible, to eliminate that bias, at the same time employing the knowledge based on experience about what we may have to do and how best to do it. I was very encouraged by something the Secretary of Defense said at the time of the B-1 rollout."

"I have never thought the B-1, on the day it comes into the operational inventory, voids the whole B-52 fleet."

In Secretary Schlesinger's words, ". . . bombers make impossibly difficult the coordination both of vehicle launch and of weapons impact on targets in such a way as adequately to destroy the retaliatory forces of the United States. The time constraints force permutations in the planning process which make adequately coordinated surprise unattainable to any foe. . . . A force mix which includes bombers contributes to the achievement of our ultimate objective: deterrence. It underscores the need to maintain a diversified force mix, such as our Triad, because of the special and unique contribution of each component to the overall panoply of US deterrent power. By maintaining forces that are both diversified and flexible, we avoid the risks of dependence upon a single capability subject to sudden degradation through possible countermeasures—while at the same time we make the task of attacking US strategic forces so intractably complex that it continues to be dramatically unattractive."

Joint Strategic Bomber Study

The Defense Department recently released some general information obtained from a year-long Joint Strategic Bomber Study carried out under the supervision of the Director of Defense Research and Engineering (DDR&E). The DoD-wide effort probed the cost-effectiveness of various bomber forces over the period 1975–89, and included several force variations of B-1s, reengined B-52s, stretched FB-111s, B-52Gs and Hs (both as penetrating bombers and standoff missile carriers), and such wide-body transports as the Boeing 747 (as standoff missile carriers exclusively). The Soviet air defense environment was assumed to include AWACS-type systems, look-down shoot-down fighters, and low-altitude SAMs. The following conclusions were reached:

- Of the "equal-cost forces" examined, those containing B-1s came out on top. The low-flying, nuclear-hardened B-1, with its advanced ECM, outperformed all other vehicles by "a wide margin."
- The B-52s can't compete against the B-1 cost-effectively because technologically advanced threats impair their survivability and penetrativity, and their operation and maintenance costs are higher. Yet when mixed with forces including B-1s, the B-52s, despite sustaining heavy attrition, are sufficient in number so that their overall force-effectiveness is maintained through the late 1980s.
- The stretched FB-111 is "deficient in range, payload, and ECM. The stretched FB-111 force is markedly cost-ineffective compared to all other forces."
- An all-standoff cruise missile

SAC Emphasizes Total Force Policy

The Air National Guard and Air Force Reserve, General Dougherty told AIR FORCE Magazine, "are programmed to begin receiving 128 KC-135 jet tanker aircraft from SAC during FY '76. The transfer, which will take place over a period of several years, will permit the phasing out of obsolescent KC-97 aircraft. It will also assist in the phase-out of other older aircraft types, as we maintain our ninety-one Air Guard flying units. And since the KC-135 tankers will support SAC, this will, for the first time, place the Reserve Forces squarely in the strategic offensive mission.

"The Air Force is now working out the detailed basing plans for the KC-135 transfer. It is hard for me to imagine a more persuasive example of our desire to achieve maximum utilization of the Reserve component."

force using wide-body transports is not promising because it invites attack on the relatively few weapons carriers before the cruise missiles can be launched.

- The KC-135 tanker, previously thought too vulnerable to SLBM attack to remain viable through the 1980s and beyond, "showed itself to be adequate, when teamed with the B-1, against the SLBM threat."
- Bomber defense missiles against fighter and SAM attacks apparently won't become necessary until the 1990s, later than previously assumed by many experts.
- The ECM systems for both the B-52 and the B-1 "were shown to be effective, but the extreme sensitivity of the performance of the penetrating bomber to the quality of its ECM was manifest." As a result, "viable alternatives to the penetrating bomber" should be pursued.
- Under today's lower threat levels, which were assumed to continue until about 1980, "modified B-52s remain cost-effective. For the threat of 1980 and beyond, however, the B-1-dominated forces become most cost-effective."

B-52s to Remain in SAC's Inventory

If SAC doesn't get the B-1, General Dougherty told AIR FORCE Magazine, "of course we're going to take the best care we can of what we've got. We have made a lot of modifications in the B-52. We've improved its electronic environment and its defenses, we've added the Electro-optical Viewing System, and we're adding the SRAM, which has brought about a dramatic and important change in how the manned penetrating bomber can be used. These are very significant things."

Even with a go-ahead on the B-1 or something comparable, "It's not fully appreciated that it takes literally years to reach operational status. I've never thought that the B-1, on the day it comes into the operational inventory, voids the whole B-52 fleet. Certainly in time it would replace many of the B-52s. Whether it replaces all of them or not depends on the total strategic environment in those years. To the extent that the B-52 can be kept modern and is needed in our force mix, I think it can be retained," the General said.

SAC, its Commander in Chief points out, is a closely controlled force, internally as well as through the National Command Authorities. The Command has been a pacesetter of command control and communications (C^3). "We don't want our National Command Authorities to feel that the only thing they can call on in response to some form of limited threat or attack is an immediate increase in the intensity of conflict, with all the potential hazards for everyone. We've got to be able to present our options rapidly and in an understandable way.

"The increased requirement for optional employment of our forces and the flexible strategy demands everything a modern command control system can give us. I suppose it would be fair to say that the requirement for command and control is driven and spurred by the flexible targeting philosophy," General Dougherty told AIR FORCE Magazine.

Better Assessment Needed

Secretary Schlesinger has stressed that the assessment of the consequences of an attack are vitally important in controlling and terminating any conflict at the lowest possible level, both from the viewpoint of the attacker as well as of the attacked. Citing specific shortcomings in that portion of the national damage assessment system directly under SAC's control, General Dougherty pointed out that "as fast as the SR-71 is, it does not operate in real time, and as relatively invulnerable as we think the SR-71 is, it is not totally invulnerable. As reliable as are the sensors that can be employed in the SR-71, they are not totally reliable. Processing time for information derived is not instantaneous.

"If you could have absolutely assured, instantaneous, real-time, and unequivocal evaluation of attack, that's optimum. How you achieve that is a national question of the first order, and certainly I couldn't do it with the forces under our command in SAC. It's an all-service job, involving an assimilation of all sorts of indicators, some of which can be provided by SAC's reconnaissance force. Our manned systems will give you some degree of real-time reports of the success or failure of what they're called upon to do. And I think that's one of the things we've always held out as a unique attribute of a manned penetrating system."

The proposed B-1 is eminently suited for that mission. ■

Antishipping Role for the B-52

Asked about potential collateral missions for SAC's B-52 force, General Dougherty told AIR FORCE Magazine that "we have used it in a test of its mine-laying capability. It is being used in the long-range sea-surveillance role . . . and expansion of that role has been given new impetus. The long-range and sophisticated sensors available in our B-52s give SAC a global sea-surveillance capability. Add to the long range the aerial refueling capability and it becomes an ideal vehicle for this role. Recently, we checked the B-52 as a launch platform for the Navy's Harpoon missile. This is a very effective cruise missile that weighs about 1,100 pounds and is capable of delivering a 500-pound conventional warhead to about sixty miles. We expect that Harpoon will provide the B-52 an active air-to-surface, antishipping role. From SAC's B-52s, the Harpoon missile could be launched outside the range of enemy shipborne guns and antiaircraft missiles, giving the United States an added capability for long-range sea surveillance and attacking enemy shipping and naval combatants at sea."

The Defense Department recently announced that the Air Force will begin prototype development of a B-52 Harpoon system, using two modified B-52Ds. In addition, DoD is requesting an authorization of $41 million in FY '77 to initiate procurement of ninety Harpoon missiles for use by B-52s.

Observing that "our military preparedness is the touchstone of international accord," the Secretary of the Air Force reports on the equipment and personnel programs that are creating . . .

USAF'S INCREASING OPERATIONAL EFFICIENCY

BY THE HON. JOHN L. McLUCAS
SECRETARY OF THE AIR FORCE

IN THIS post-Vietnam, post-Vladivostok era, the wishful notions that military strength and détente are incompatible, and that current negotiations and increased cooperation with the Soviet Union signal an opportunity for us to decrease our commitment to the maintenance of military strength, are conclusions fraught with danger.

It is strength, translated by resolve, that has fostered this period of negotiation. Our military preparedness is the touchstone of international accord because détente remains a very delicate balance of cooperation and competition based on mutual interest and not, as yet, on the altruism of man. As President Ford has said, "Strength makes détente attainable. Weakness invites war."

In my opinion, Air Force accomplishments during the past twelve months have done much to maintain the strength that nurtures the process of détente. Substantial improvements have been made in our strategic and conventional capabilities as well as in the utilization of our people and our overall operational efficiency—despite the effects of inflation and increasing demands on the nation's resources.

It is clear that the Soviets recognize the importance of military strength. The CIA estimates that Soviet expenditures on defense, not including pensions, exceed our own by twenty-five percent. Secretary Schlesinger, in his annual Defense Department Report for FY '76, labeled Soviet advances in ICBMs, for example, as "very substantial" and "indeed unprecedented." In addition, the USSR also has a new, long-range, variable-sweepwing bomber known as the Backfire that has been designed for in-flight refueling.

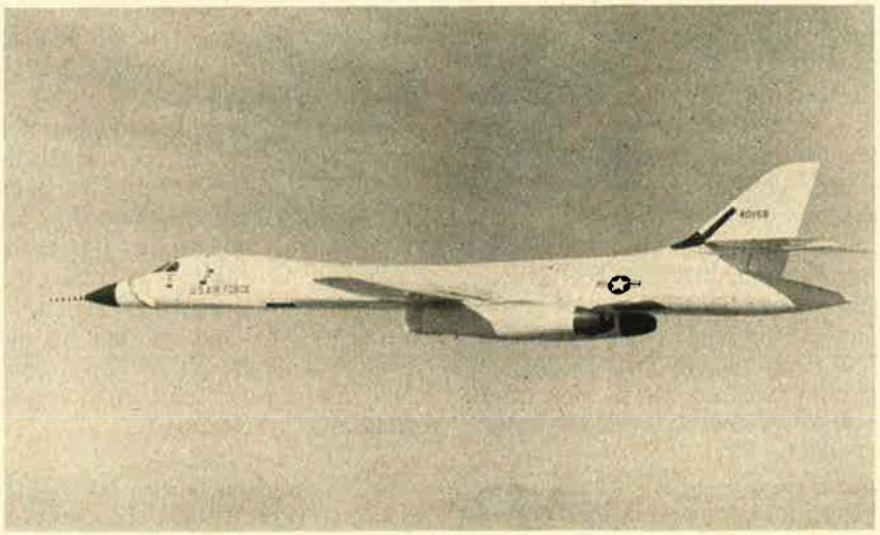
Strategic Forces

Our development of the B-1 bomber, along with other strategic initiatives, provides the sinew and muscle for the strength we will need for more substantive negotiation.

With the roll-out ceremonies in late October and the first flight just before Christmas, the B-1—at least in prototype form—became a flying reality. That test flight was an early milestone in a two-year evaluation program with a production decision anticipated by late 1976, dependent upon congressional funding, development progress, and the SALT environment.

Except for a minor problem during the third flight, test results so far have been favorable. The engines have been very responsive, and the aircraft overall has flown essentially the way the ground simulator indicated it would.

We have also initiated various



Secretary McLucas sees the B-1 bomber as part of "the sinew and muscle for the strength we need for more substantive negotiation" with the USSR. A production decision on the B-1 is expected by late 1976.

economies to reduce B-1 cost. Aluminum has been substituted for more expensive titanium wherever possible in the airframe. The engine inlet has been modified to a more easily manufactured design. As a result of intensive review, we are taking a number of cost-saving actions such as the replacement of the crew escape module with new, advanced technology ejection seats. We will continue to evaluate and adopt those trade-offs that cut costs but do not degrade essential mission performance.

Due to Soviet advances and the long lead time involved in developing new major weapon systems, we are continuing efforts to improve our strategic missile forces. Probably the most significant recent event took place over the Pacific Test Range in October. Using the C-5 as a transporter, a Minuteman I was dropped from the rear cargo door and stabilized with parachutes. Ignition occurred at 8,000 feet and the missile climbed above 20,000 feet during the ten-second firing, demonstrating the technical feasibility of air-launching such missiles.

Other aspects of the Advanced ICBM Technology Program (MX) include examination of ground mobile missiles and increasingly hardened silos.

In airlift, the C-5's capability to be air refueled was demonstrated in nonstop flights from Dover AFB, Del., to Clark AB in the Philippines—more than 10,000 miles. Obviously, the use of in-flight refueling techniques extends the range of the aircraft, but these measures also permit larger payloads, cut our dependence on en-route stations, and reduce overall fuel consumption. We have begun training our line crews in in-flight refueling.

In the context of the strategic environment, these advances preserve our bargaining options in the SALT talks. To some extent, the technological capability implicit in these programs tends to inspire the Soviets to negotiate before deployment can take place. Also, the programs provide a hedge against our having to play "catch-up ball" in maintaining strategic parity.

Dr. John L. McLucas, a physicist with long experience in defense affairs, became USAF's tenth Secretary in 1973 after having served as Under Secretary for more than four years. Earlier, Dr. McLucas filled positions as Deputy Director of Defense, Research and Engineering, NATO's Assistant Secretary General for Scientific Affairs, President of MITRE Corp., and as a member of the Air Force Scientific Advisory Board. He is a graduate of Davidson College and holds a doctorate in physics from Pennsylvania State University.

Tactical Weapon Systems

In addition to "essential equivalence" in the strategic realm, we also are meeting our responsibilities for maintaining an equilibrium of conventional forces. A number of new developments have occurred to ensure this "equilibrium" for the foreseeable future.

Fresh in many minds is the recent selection of the F-16 as the new Air Combat Fighter. While the competing YF-17 is a very capable aircraft, the YF-16 proved superior in a number of areas, including acceleration, transonic maneuverability, and, for the Air Force, projected life cycle costs and production risk. Both the YF-17 and YF-16 were flown more than 300 hours during the evaluative process.

The F-16 will be a multimission fighter weighing about half as much as the F-15 and costing significantly less. With a thrust-to-weight ratio greater than one, the ACF will be a highly maneuverable aircraft capable of Mach 2 speed. Because of its relatively low price tag, we will counter the trend toward rising weapon systems costs, permitting modernization and planned expansion of our tactical forces. Moreover, we hope our European allies will select the F-16 to replace their aging F-104s and thereby achieve increased standardization within NATO. We have offered them an attractive coproduction arrangement.

The F-16 will complement the

Successful air-launching of a Minuteman I from a C-5 in October demonstrated the technique's "technical feasibility."

Progress in the A-10, F-15, and F-16 programs, Secretary McLucas says, is assurance that "equilibrium" is being maintained in conventional forces. USAF pilots are training in the F-15, above, at Luke AFB, Ariz.

more sophisticated, all-weather F-15 tactical fighter. During its 2½-year test program, the F-15 has met or exceeded all expectations and will provide air superiority against any challenger.

The F-15's performance capabilities were highlighted early in February when it broke eight world time-to-climb records set previously by a Navy F-4 and a Russian MiG-25. The F-15 also holds great promise for durability. For example, the aircraft that visited the Farnborough Air Show in Great Britain this past fall made seventy-two flights before maintenance was required on its radar.

President Ford, in welcoming the aircraft into the Air Force inventory during ceremonies at Luke AFB, Ariz., last November, called the F-15 Eagle a "pioneer of peace." The several aircraft assigned to Luke will be used for training purposes with the first operational wing scheduled for Langley AFB, Va., in FY '76.

The first aircraft we have ever designed specifically for the close air support role, the A-10, promises to counter the numerical advantages in armor the Warsaw Pact enjoys in Europe. While armed with the new GAU-8 30-mm armor-piercing cannon and capable of carrying an eight-ton multipurpose payload, the A-10 nonetheless possesses high maneuverability, long loiter time, and the capability to operate from austere, forward bases.

In a comparative flight evaluation with the A-7D last spring, the A-10 proved more effective for close air support. Funds have been released for purchase of twenty-two A-10s this fiscal year with a programmed buy of more than 700 by 1980. The first of these preproduction aircraft flew early this year. As in the case of the F-16 for the air-superiority mission, the relatively low cost of the A-10 will enable us to acquire the number we need for the close air support role.

Capable of tying all these tactical weapon systems together and enhancing their respective capabilities is a surveillance, warning, and control system known as AWACS. The E-3A AWACS, or Airborne Warning and Control System, is actually a Boeing 707 equipped with long-range radar, computers, displays, and a thirty-foot diameter rotating radome.

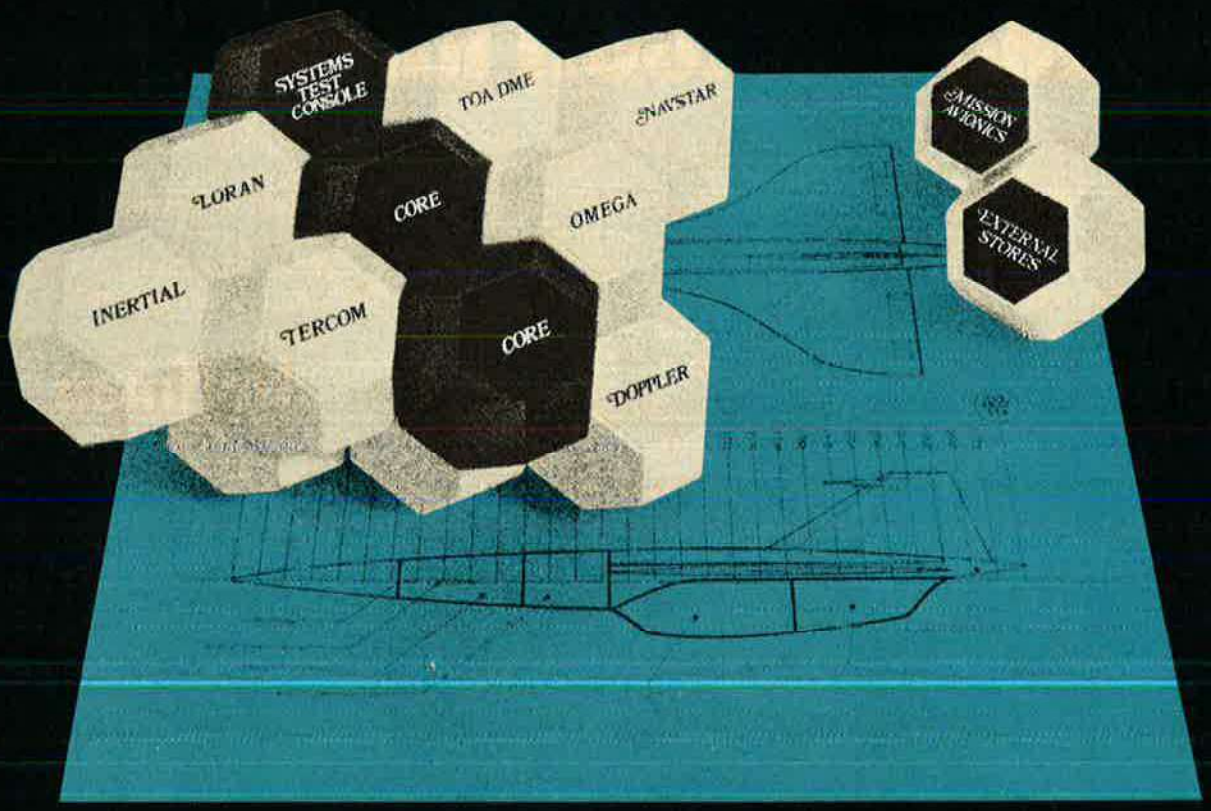
Operating in a highly sophisticated arena such as Central Europe, AWACS will be able to monitor and direct large-scale air operations. At its normal operating altitude of 30,000 feet, it can detect and track aircraft flying at high and low altitudes over both land and water. It can also track ships at sea. Recent tests verified the suitability of the AWACS concept for tactical and air defense operations.

We are hoping for continued support from Congress to make AWACS an operational part of the inventory. Six aircraft were funded last year and we are requesting $431 million in FY '76 for six more, along with $199 million to continue development and testing.

Reserve Components

However important equipment and performance capabilities are, the basic factor that determines our level of effectiveness remains the ability and dedication of the people who fly and maintain the hardware and perform countless other jobs necessary to Air Force operations.

Air Force manpower has declined steadily since 1968, the peak year of our involvement in Southeast Asia. Projections through FY '76 show reductions of thirty-five percent for military



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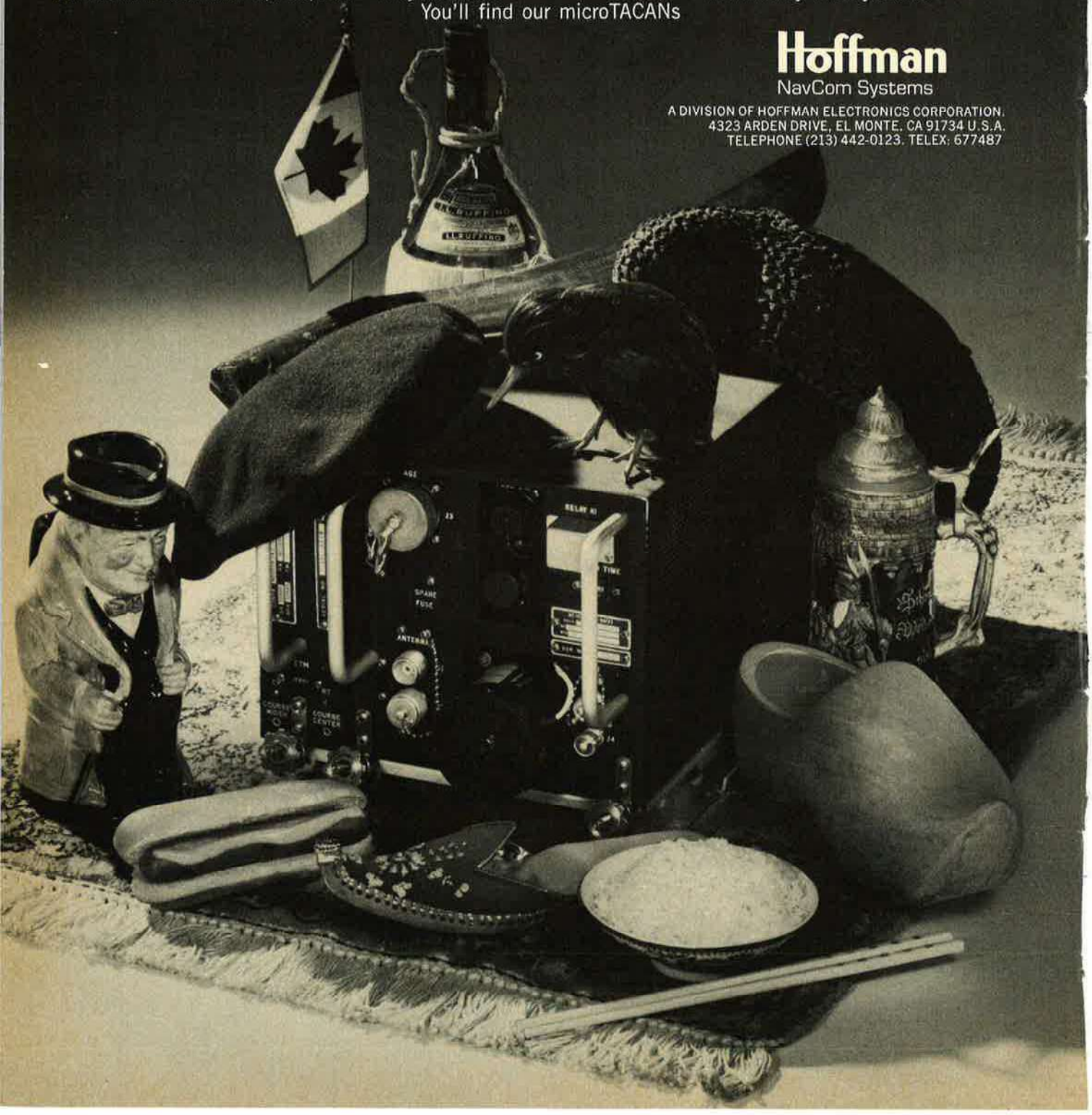

and twenty-four percent for civilians—an overall drop of thirty-two percent. Dependent, of course, on future circumstances, I would hope that we can avoid further significant cuts.

The decrease in active-duty and civilian manpower points to the importance of the Total Force Policy for maintaining our overall strength. Since 1968, Air National Guard and Air Force Reserve total manpower has increased some twenty-nine percent. In addition, the Reserve components are receiving modern equipment and high-priority missions.

For example, three Guard units have completed conversion from older F-100s to new-production A-7D aircraft and are combat-ready. Three more such conversions are programmed before the end of FY '76. Also, fifty-six percent of our tactical airlift aircraft are assigned to Reserve components, and in FY '76 we will begin the assignment of 128 KC-135 tankers to the Reserve.

With more modern equipment and added responsibilities, the Reserve components are becoming increasingly essential to maintaining our capabilities.

Personnel Programs

Another area vital to maintaining our capabilities involves our recruiting success in the all-volunteer environment. There were those who doubted the ability of the Air Force to meet recruiting quotas in the absence of the draft. Last June, we ended the first full year of the all-volunteer program and the results were very positive. Quotas for both airmen and officers were met without lowering our quality standards. We did have some trouble in recruiting enough doctors and filling certain enlisted requirements in the Air Force Reserve, but the overall program has been successful.

While possibly affected somewhat by the nation's economy, the recruiting totals since last June are equally impressive. Monthly quotas are being met, in terms of both quantity and quality. About ninety percent of our recruits are high school graduates or the equivalent, and ninety-nine percent are in the top three mental categories.

Overall, I think we are continuing to make good progress in creating a stimulating, rewarding environment in which our people can work. With more than 1,000 jobs in forty-eight career fields, the Air Force certainly offers diverse opportunities.

Furthermore, the Chief of Staff, Gen. David Jones, and I have been working hard to make the Air Force more responsive to the needs of our people. The new Advanced Personnel Data System (APDS), through closer integration of personnel preferences into the decision-making process, enables us to be more sensitive to the needs and desires of our people. Full travel and transportation entitlements have been extended to E-4s with two years of service. The CAREERS program is now a reality and enables us to match the skills and interests of our reenlisting airmen with those needed by the Air Force.

In equal opportunity, three percent of our officer corps currently consists of minorities, but our goal is to increase that to 5.6 percent by 1980 and thereby approximate the percentage of minority college graduates in the US population. Our minority enlisted manning is 15.6 percent. Women now compose about 4.5 percent of our active-duty force with more than 27,000 in the Air Force, and we expect that percentage to almost double to 8.2 percent by 1978. Although our work in equal opportunity is not finished, we have made significant gains.

The Effects of Inflation

Overshadowing our equipment and manpower programs in recent months has been the specter of rising inflation. Since 1968, the purchasing power of the Defense budget has declined some forty percent, although the funding level in then-year dollars has remained relatively constant. In FY '75 alone, inflation since the budget was prepared has already taken about $6 billion more than originally programmed.

Consider the cost of petroleum products. Even though we have significantly reduced our consumption through such measures as increased use of simulators and reduced flying hours, we are paying more for fuel. For example, in FY '76 the Air Force plans to purchase twenty-eight percent less fuel than in FY '73, but the cost of that reduced amount will be more than $1 billion higher. The price of JP-4 jet fuel has jumped from eleven to about thirty-seven cents a gallon since mid-1973.

We have taken a number of belt-tightening measures to counter the effects of inflation without jeopardizing our combat capability. As our overall manpower strength has declined since 1968, we have made significant reductions in support and headquarters manning, with many of the personnel authorizations being used to increase the capability of our operational units. The retirement of 400 reciprocating-engine support aircraft should provide a cost avoidance of $75 million and reduce annual fuel consumption by more than 1.5 million barrels.

Incumbent upon all of us—from equipment operator to shop foreman to wing commander—is the necessity for prudent management and maximum efficiency. The American people demand it—and rightfully so.

Détente has been likened to easing the tension on a bow. Only through strength—the continued quality of the bowmen, the bows, and the arrows—can the tension be reduced with confidence.

Current economic stresses and rising Soviet military might are formidable challenges, but the lessening of international tension through détente requires that we maintain a powerful Air Force. We are meeting those challenges. ■

The Chief of Staff outlines some management and operating innovations that, despite the fact that USAF is now smaller than at any time since 1950, give promise of . . .

KEEPING THE AIR FORCE NUMBER ONE

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

WHEN I was sworn in as the Chief of Staff last July, I expressed my conviction that the United States Air Force was without equal in the world today, and I pledged myself to keep it that way. In viewing the future after nearly a year on the job, I remain optimistic that this position of leadership can be maintained. Before discussing the major trends that I foresee for the Air Force, however, some perspective provided by the recent past will be helpful.

Since the 1968 peak, the Air Force has decreased in size by about one third in both personnel (more than 300,000) and aircraft (about 5,000). Although the President's FY '76 budget includes a significant and much needed increase in real purchasing power, it nevertheless represents the smallest Air Force in terms of people, aircraft, and bases since the outbreak of the Korean War. The maintenance of our unequalled combat capability in the face of these reductions—and the turbulence that they inevitably involve—is a high tribute to the professionalism of the men and women of our total force. Over these years, Air Force people have continually performed with dedication and skill under many difficult circumstances and, fortunately, such efforts (and those of the other services) have not gone without notice.

The frequent and often vitriolic criticism of the military in past years has been progressively replaced by a more balanced understanding and appreciation. This deserved improvement is borne out both by the polls and by observations during my travels as Chief of Staff. In spite of this relative improvement, however, too many still regard the military as basically inward-looking and more interested in the acquisition of new and expensive weapons than in such broader issues as the efficient management of public resources, arms control, or diplomatic efforts to reduce the risks of war. Our work is cut out if we are to reverse these misperceptions and better demonstrate our very real concern with the basic problems facing our country.

In the area of arms control, the Air Force (and the Joint Chiefs of Staff) applaud the understanding reached at Vladivostok where, for the first time in history, a ceiling was placed on strategic arms. Hopefully, this important first step will lead to lower balanced totals on both sides, and if such actions to increase our nation's security result in a smaller Air Force, I will be the first to support such a step.

Gen. David C. Jones has been USAF's Chief of Staff since July 1974. General Jones has commanded operational units in SAC, TAC, and ARRS and held staff positions at both SAC and USAF Headquarters. He flew more than 300 combat hours in Korea, and served as DCS/O and Vice Commander of Seventh Air Force in Vietnam. After a tour as Commander of SAC's Second Air Force, he became Vice Commander in Chief, then Commander in Chief of US Air Forces in Europe, prior to his selection as Chief of Staff of the US Air Force.

Management Initiatives

In another area of great interest to the public—the efficient management of public resources—the Air Force has an excellent record and is making substantial further improvements. During the same time that the Air Force has been reduced in size by nearly a third, actions have been taken to trim headquarters by more than fifty percent—a highly desirable trend that runs counter to the experience of most large organizations. As the Air Force has decreased in size, however, it has become increasingly appropriate and necessary to achieve greater efficiency and mutual support through basic organizational consolidation, rather than through continued sizable reductions in the existing and progressively leaner headquarters structure.

Accordingly, in the future, the Air Force will be moving more toward a "single manager approach." Examples of this trend were the recent announcements

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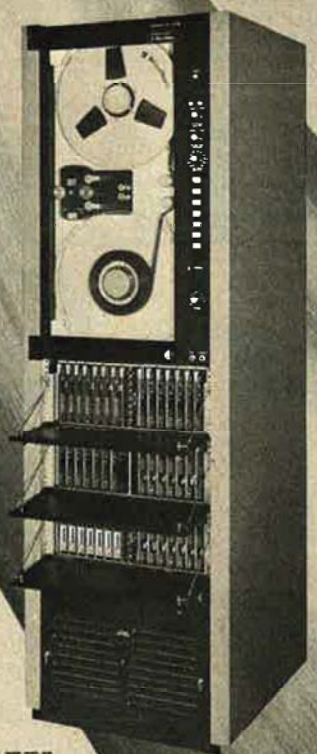

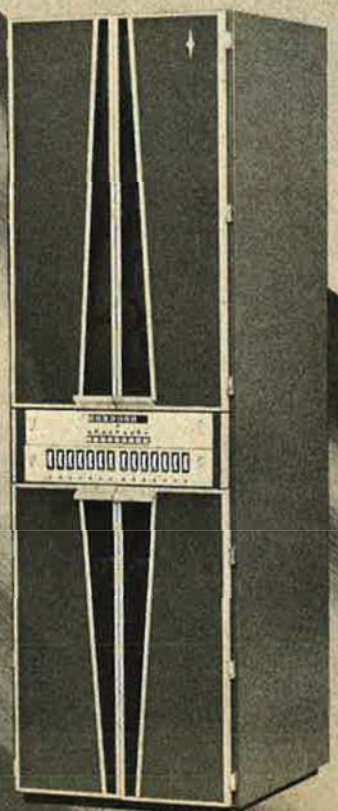

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to disestablish Hq., Pacific Air Forces as a separate command, with peacetime support responsibilities to be assumed by the Tactical Air Command; and to consolidate all airlift—strategic, tactical, and support—under the Military Airlift Command. Support airlift will soon be scheduled by MAC on a priority basis, and as a result of the elimination of some 400 older support aircraft (at considerable savings in manpower, dollars, and fuel), Air Force people will be traveling more on commercial aircraft. Some inconveniences will result, but these will be manageable and well worth the savings.

Force Modernization

The Air Force is also pursuing a wide range of other actions to increase combat capability in the face of prevailing budgetary pressures. Greater emphasis is being placed on design-to-cost goals and on reducing the ownership (life cycle) costs of our weapon systems. More effort will be directed toward the application of technological advances to increase reliability and decrease operating and maintenance costs.

Within the total force, the Air National Guard and Air Force Reserve are highly professional and cost-effective components and will be utilized to a greater extent. Expanded missions, increased participation with the active forces, and accelerated modernization are planned for the years ahead.

These examples touch on only a few of the initiatives under consideration. The Air Force will continue to demonstrate to the President, the Congress, and the American people that we are constantly striving to improve our effectiveness and are willing to change for the better the way we do business. Unavoidably, the innovations I have mentioned will cause some turbulence and short-term inconvenience for Air Force people. But I have been gratified to see the Air Force close ranks and support these necessary changes.

However, not everything can be done by belt-tightening, and the 1976 budget (on which we are testifying as this is written) represents an increase of $4 billion from last year. Of this increase, however, a full $2 billion is required merely to offset inflation, while the remaining $2 billion will permit needed modernization of our force. The average age of virtually every category of aircraft in our inventory has been increasing, and the funding included in this year's budget will begin to check this trend.

The progress and performance of our new weapon systems are described by Secretary McLucas on p. 48, and I want to emphasize that our major programs—the B-1, AWACS, F-15, A-10, and F-16—are highly successful in terms of aircraft performance, production schedule, and cost objectives. Unfortunately, the excellent management responsible for this success is often obscured by the extraordinary inflation of recent years. This inflation, as well as future inflation, is beyond the means of the Air Force to control—a fact that is far too frequently overlooked.

Although Congress is scrutinizing our budget request very carefully—as it should—the Department of Defense and the Air Force have presented a good case, and I am hopeful the Congress will provide adequate means for defense.

Leadership

Turning to another and most important subject, in the future the Air Force will place increasing emphasis on dealing with our people, particularly in the areas of discipline and human relations. In many ways, we have led our society in social change. But in spite of our progress, we have only begun to develop that degree of understanding and respect necessary at all levels if we are to achieve both sensitive human relations and high standards of discipline.

In the past, quite a bit of controversy has polarized around two extremes, both of which conclude that good discipline and good human relations are incompatible. At one extreme—and thank goodness the numbers are decreasing—are a few hardliners of the old authoritarian school who believe that any consideration of the individual breeds permissiveness. These people mistake arbitrary leadership for good discipline and their actions evoke not good discipline, but a grudging resentment that lurks behind a thin veneer of obedience. At the other extreme—and again decreasing in number—are those who feel the military is a public-welfare organization; that we ought to eliminate standards and let everyone do his own thing. Both extremes miss the mark.

The best units, in my experience, have not only high performance and good morale, but good discipline and demanding standards. Individuals in these units recognize the need to subordinate some of their personal interests to the good of the whole, while the leadership treats each person as an individual and ensures equal treatment and opportunity for all. In my judgment, good discipline and human relations are not only compatible but *inseparable* if we are to achieve our full potential in today's climate of limited resources.

Finally, the leadership of the Air Force is firmly committed to improving the quality of life within the service. Be assured that we are working diligently to retain those rights and benefits that have long been a part of military life. We recognize the importance of these well-deserved benefits to the morale and welfare of service people and will strive to ensure adequate recognition by all that such programs are essential to a strong defense.

I remain optimistic about the future. I am hopeful both that the American people will provide the necessary means for defense and that within these means the Air Force will provide increasing combat capability in the years ahead. ■

AEROSPACE DEFENSE COMMAND

The Aerospace Defense Command (ADC), with a primary mission of strategic warning, will become a Specified Command by July 1, assuming Continental Air Defense (CONAD) responsibilities for controlling Air Force and Army air defense forces.

Announcement of the change, under which CONAD is being eliminated, was made by Secretary of Defense James R. Schlesinger in February. Air defense headquarters realignments—including an earlier move in which the North American Air Defense Command (NORAD), ADC, and CONAD were consolidated and the Army Air Defense Command was disestablished—will result in an overall reduction of 1,400 personnel spaces.

While taking on the new responsibilities, ADC is also streamlining its surveillance and warning apparatus. With forthcoming improvements in existing systems and the application of new technologies in detection hardware, the warning of a future attack will come sooner and with better definition.

One of these new systems—a phased-array radar nicknamed Cobra Dane, at Shemya, Alaska—is already under construction to fill a gap in the space-watching network. Another phased-array project that will be a giant step forward in detecting submarine-launched missiles is in the planning stage. Named Pave Paws, it calls for two new phased-array radars—one on each coast—to replace the six dish-type radars now scanning from US shorelines. These much more reliable and longer range radars, along with the present early warning satellite system, would provide highly credible long-range warning of a sea-launched ballistic missile attack against the US.

A system to extend aircraft detection coverage far beyond the limits of today's conventional radar is also on the drawing boards. Called Over-the-Horizon-Backscatter (OTH-B) radar, it eliminates the line-of-sight handicap of conventional radar. OTH-B will extend surveillance and early warning capability against aircraft to more than 1,000 nautical miles from US coasts at high and low altitudes. The coverage of today's aircraft detection radar ranges from fifty nautical miles at low altitudes to 200 to 250 nautical miles at high altitudes. Construction on the first OTH-B prototype is to start later this year in Maine (*see also "Aerospace World," p. 28*).

As part of ADC's modernization program, most of the command's present military radars will be phased out or combined with Federal Aviation Administration's air traffic control radars to form a joint-use air defense/surveillance system. This economical system will capitalize on existing radar facilities, allow for integration with the Airborne Warning and Control System (AWACS) aircraft, and reduce overhead by cutting the number of headquarters elements now controlling air defense forces.

Twenty-eight radars are now shared with the FAA, and in FY '78, forty-three military/FAA surveillance radars should be in operation. Five ADC radars will remain after the conversion to provide air defense surveillance in areas where the FAA has no requirement for radar coverage.

In conjunction with the joint-use plan, ADC's six SAGE regional control centers will be replaced by four Region Operations Control Centers (ROCCs)—one in each of the four regions into which the forty-eight contiguous states will be divided.

While ADC's new mission places emphasis on aerospace surveillance and warning operations, the responsibility for defending against a bomber attack has not been eliminated.

As the major component of the North American Air Defense Command (NORAD), ADC controls a total of twenty squadrons of fighter-interceptors. The six active-duty squadrons fly the F-106 Delta Dart while fourteen Air National Guard units are equipped with the F-101 Voodoo, F-102 Delta Dagger, and the F-106.

To modernize the interceptor force, several new fighters—including the F-15 Eagle and the F-16 Air Combat Fighter—are being studied as possible replacements for the aging F-106.

In another move toward modernization, the fleet of prop-driven EC-121 Warning Star aircraft is scheduled for retirement on a timetable consistent with the planned introduction of AWACS aircraft. AWACS, with its self-contained surveillance and detection system and proven ability to control fighter-interceptors, will supplement ADC's air defense forces. It will also assure the survivability of the air defense command control network that is so vital to NORAD forces during crisis periods and wartime.

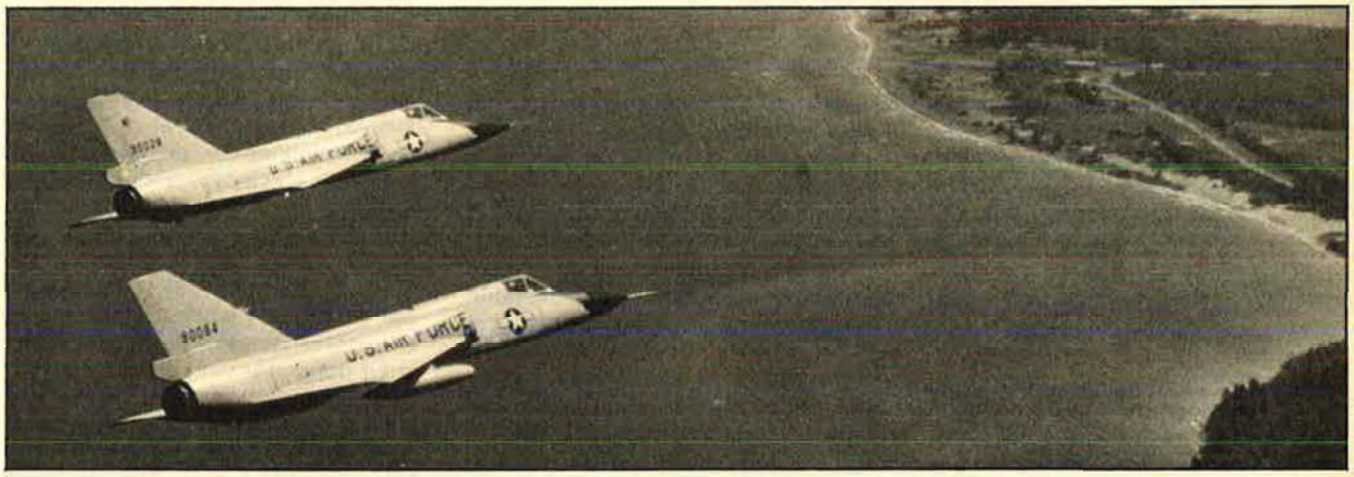
While modernization plans progress, ADC's 30,600 military and 5,300 civilian personnel continue to operate the worldwide sensor sys-

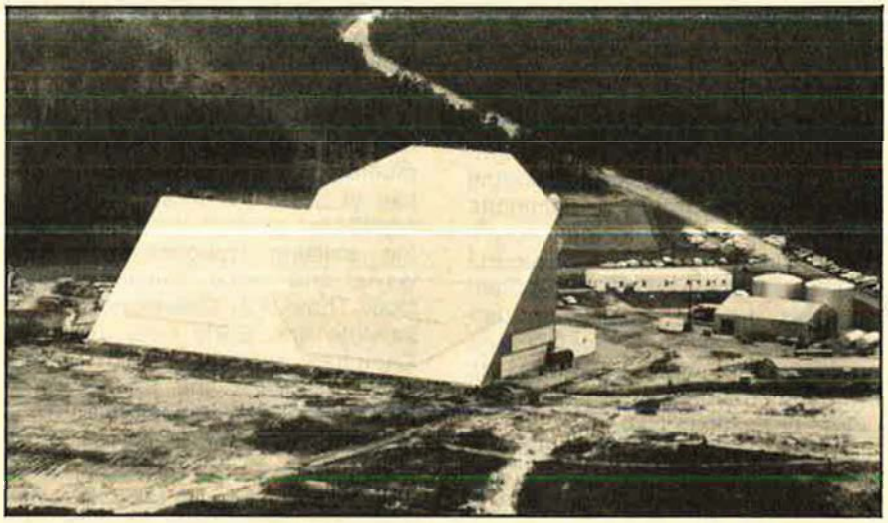
Gen. Lucius D. Clay, Jr., who commanded Seventh Air Force and then PACAF until October 1973, has been Commander of ADC and CINC of NORAD/CONAD since that time. A WW II bomb group commander, he has also held command and staff positions in SAC and TAC. General Clay has served on the Joint Staff and as DCS/P&O, Hq. USAF.

tems that would sound the alarm today if an attack were to come—BMEWS, the Ballistic Missile Early Warning System; early warning satellites; coastal SLBM detection radars; DEW Line; and the Spacetrack System.

Four months ago, in his annual posture statement, Secretary Schlesinger told Congress: "With reduced emphasis on active defenses, we become more dependent on warning for the survival and, hence, the deterrent effectiveness of our strategic offensive forces. . . . Consequently . . . a basic readjustment of our air defense program and some major improvements in our tactical warning systems should be made."

ADC is reshaping its forces in 1975, adjusting wherever possible to provide the improved warning for our strategic forces called for by the Secretary. ■

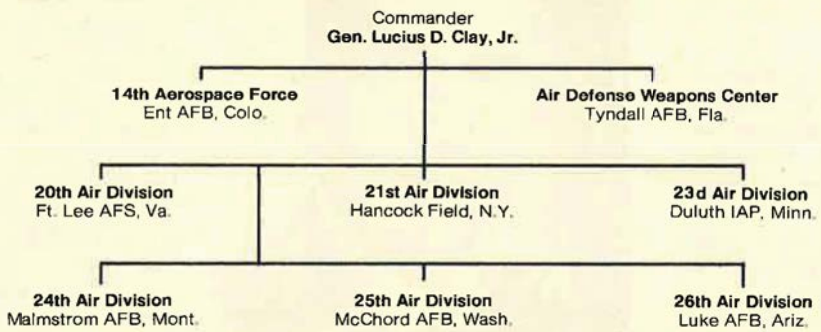




Top, six squadrons of F-106 Delta Darts make up ADC's active interceptor force. Left, ADC's first phased-array radar at Eglin AFB, Fla., is being joined by a second now under construction at Shemya, Alaska.

AEROSPACE DEFENSE COMMAND

Headquarters, Ent AFB, Colo.



AIR FORCE COMMUNICATIONS SERVICE

"Providing the Reins of Command" is the motto of the Air Force Communications Service (AFCS) and the goal of the nearly 46,600 men and women who provide essential communications and air traffic control services to the command's globally dispersed customers.

Assigned to the command are some 35,800 enlisted personnel, 7,750 officers, and 7,900 civilians serving at 497 locations in forty-nine states and the District of Columbia, island possessions, and twenty-four foreign countries. Approximately 2,300 people serve at sixty-five remote overseas locations. Organizations vary from small operating locations to groups with more than 1,300 personnel. The AFCS annual operating budget approaches $800 million.

AFCS puts great emphasis on junior officer and noncommissioned officer (NCO) leadership, and provides young officers and NCOs with command experience early in their careers. NCOs command 180 detachments and operating locations, and half of AFCS's unit commanders are captains or of lower rank.

In keeping with the Total Force Policy, AFCS is augmented by Air National Guard and Air Force Reserve personnel. The 140 ANG and thirty-five AFRES units have a combined total augmenting strength of more than 14,000 personnel.

The programming, program management, engineering, and installation of communications-electronics-meteorological systems make up a large portion of AFCS's total commitment to provide high-quality, reliable communications for the Air Force, DoD, and foreign governments under the Security Assistance Program. Nearly 5,300 planners, engineers, and installers are committed around the world to such diverse and complex tasks as installing voice and data networks, modernizing and upgrading air traffic control systems, and providing modern computerized command control and communications. To ensure the integrity of future communications systems, AFCS efforts encompass the full range from participation in the development and acquisition of new equipment to the major maintenance and modification of existing systems.

AFCS operates the Communications Computer Programming Center (CCPC) at Tinker AFB, Okla. It is responsible for analyzing, designing, developing, and maintaining the necessary software for automated communications-electronics-meteorological systems.

With an authorized strength of 218 personnel, CCPC provides software for real-time systems in direct functional support of many aspects of the AFCS mission, including message switching, transaction switching, data communications, message store-and-forward terminals, air traffic control, and technical control. Automated software systems produced at the Center have resulted in significantly increased efficiency and manpower savings.

AFCS's new intermediate Capacity Automated Telecommunications System (ICATS) is one example of CCPC's work. Using Optical Character Readers and an off-the-shelf computer with a software system designed by the CCPC, the ICATS provides automated message entry, routing, control, and transmission. A new design of this system, using minicomputer technology, is being developed for high-density traffic communications centers.

AFCS is now deeply involved in the growing field of satellite communications and is a leader in the use of these advanced systems. A significant project involves replacing existing troposcatter, microwave, and cable communications from Thule AB, Greenland, with a satellite link. Early tests using the Canadian satellite ANTK I were very successful and the follow-on effort has been outstanding. It is feasible and cost-effective to replace some of the terrestrial communications, now in service to the northern areas, with satellite service that will provide higher quality communications at lower cost.

AFCS operates and maintains the largest military air traffic control (ATC) system in the world. Approximately 6,000 air traffic controllers operate at more than 250 ATC facilities throughout the world. They control some fifteen million aircraft operations each year and are essential to the Air Force's all-weather capability. Specially equipped facility-checking aircraft are used to ensure that navigational aids and ATC facilities are providing safe, accurate service.

AFCS is also responsible for improving flying safety through equipment modernization. For example, new electronic equipment permits

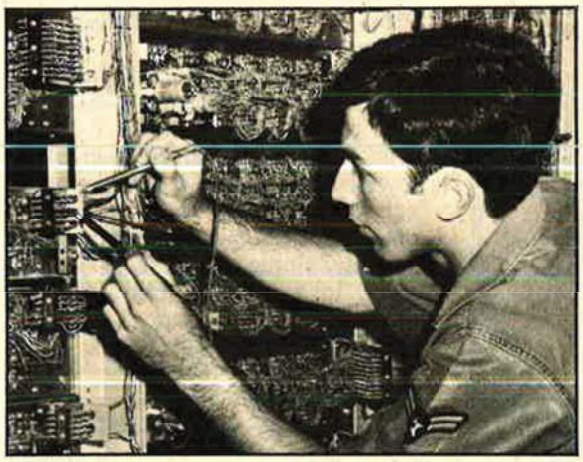
Maj. Gen. Donald L. Werbeck became Commander of AFCS on November 1, 1973, after serving as AFCS Chief of Staff and then Vice Commander. Commissioned in 1943, he flew twenty-five combat missions in Europe. General Werbeck's varied assignments have included directing satellite recovery operations and space systems development.

AFCS's four mobile communications groups can be deployed worldwide to set up complete air base communications and navigational aid facilities.

the controller to selectively identify aircraft and determine, from the radar display, the aircraft altitudes.

The command also has a significant tactical mission. Through its mobile communications groups (MCGs), AFCS is organized and equipped to support emergency war and contingency plans. The MCGs provide direct combat support communications and navigational aids to the theater commander and his Tactical Air Control System (TACS) in order to conduct tactical air operations. Another mission of the MCGs is the emergency replacement of fixed-base facilities and communications assistance in support of special projects, international crises, and natural disasters.

AFCS is to be realigned as a technical service under the Military Airlift Command (MAC). Common nontechnical management functions will be assumed by the MAC staff, permitting a reduction in associated manpower. AFCS will continue to retain its present name, and there will be no change in the services it provides to the Air Force and DoD. As part of this realignment, Hq. AFCS will relocate to Scott AFB, Ill. ■



An AFCS technician checks Automatic Voice (AUTOVON) equipment that provides direct-dial telephone service worldwide.

AIR FORCE COMMUNICATIONS SERVICE

Headquarters, Richards-Gebaur AFB, Mo.

Commander
Maj. Gen. Donald L. Werbeck

Pacific Communications Area
Hq., Wheeler AFB, Hawaii

1867th Facility Checking Squadron
Flight Inspection/Operational Evaluation
Clark AB, Luzon, P. I.

Tactical Communications Area
Hq., Langley AFB, Va.

4th Mobile Communications Group
Altus AFB, Okla.

5th Mobile Communications Group
Robins AFB, Ga.

European Communications Area
Hq., Ramstein AB, Germany

1868th Facility Checking Squadron
Flight Inspection/Operational Evaluation
Wiesbaden AB, Germany

2d Mobile Communications Group
Lindsey AS, Germany

Northern Communications Area
Hq. Griffiss AFB, N. Y.

1931st Communications Group
Hq., Elmendorf AFB, Alaska

Southern Communications Area
Hq., Oklahoma City AFS, Okla.

1840th Air Base Wing
Richards-Gebaur AFB, Mo.

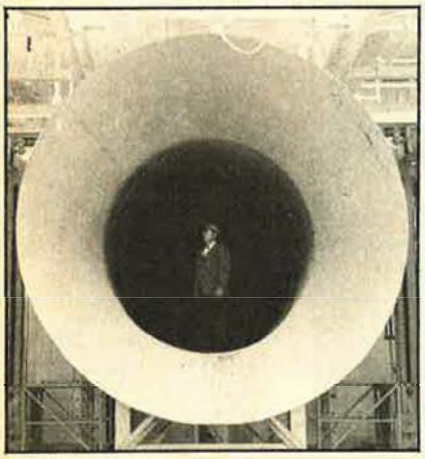
3d Mobile Communications Group
Tinker AFB, Okla.

1978th Communications Group
Albrook AFB, Canal Zone

1866th Facility Checking Squadron
Flight Inspection/Operational Evaluation
Richards-Gebaur AFB, Mo.

AIR FORCE LOGISTICS COMMAND

Despite the dual problems of a shrinking budget and inflation, Air Force Logistics Command, headed by Gen. William V. McBride who succeeded Gen. Jack J. Catton on September 1, 1974, has more than met the challenge of its slogan—"Lifeline of the Aerospace Team."



A new jet engine test cell at Oklahoma City ALC tests engines three times as powerful as did earlier cells.

AFLC's mission is to provide worldwide technical logistics support to the Air Force's weapon systems. Its vital task is to ensure that all commands have the technical support required to maintain their aircraft, missiles, and associated equipment at top efficiency. This mission includes not only supporting the active-duty Air Force, but also Reserve Forces, some sixty Military Assistance and allied countries, and other US government agencies.

One of the command's most significant management innovations—the Technology Repair Center (TRC) concept—moved well along toward complete implementation, scheduled for January 1976. This grouping of similar functions at essentially single locations will enable AFLC to gain in effectiveness and skills, save dollars, and more completely utilize facilities.

A primary consideration during the formulation of TRC was the need to hedge against inflation. The advantages of TRC are now greater than anticipated, since the impact of inflation on operational costs has exceeded predictions.

Inflation also brought innovations in the procurement area—a primary AFLC responsibility. Long-term contracting was discouraged, greater flexibility was delegated to the command's procurement offices, and AFLC served as the catalyst for an Air Force decision that virtually all Air Force procurement offices should have at least one expert in the construction and operation of economic indices. These indices are important in the measurement of price changes in both industry and government.

Gen. William V. McBride took command of AFLC in September 1974 after serving as ATC Commander. A WW II navigator-bombardier, he helped organize USAF basic training after the war. General McBride has held many command and staff positions in MAC, was Military Assistant to Air Force Secretaries Zuckert and Brown, and has been Vice Commander of USAFE.

High-level management attention was directed to improving the logistics supportability of new weapons by the establishment of an AFLC headquarters deputate—the Deputy Chief of Staff for Acquisition Logistics. Deputate personnel are collocated with Air Force Systems Command offices to apply techniques for driving down the cost of supporting new weapons.

During 1974, AFLC assigned management for the Airborne Warning and Control System (AWACS) to its Oklahoma City Air Logistics Center at Tinker AFB, Okla., and the Air Force designated Tinker as a main operating base (MOB) for AWACS, thus providing centralized management and maintenance responsibility for this important new system.

An innovative technique for airlifting eight F-5 aircraft to allied countries aboard a single C-5 aircraft was developed by engineers at San Antonio Air Logistics Center, Kelly AFB, Tex. By increasing from four to eight the number of F-5s carried on the C-5, savings of approximately $1.5 million are expected in FY '75.

AFLC's headquarters is at Wright-Patterson AFB, Ohio. The command's five principal field organizations—known as Air Logistics Cen-

ters—are industrial-type operations that supply and service particular Air Force weapon systems. They are also responsible for assigned equipment and commodities on a worldwide basis. The five centers are located at Hill AFB, Utah; Kelly AFB, Tex.; McClellan AFB, Calif.; Robins AFB, Ga.; and Tinker AFB, Okla.

The command also has three specialized organizations:

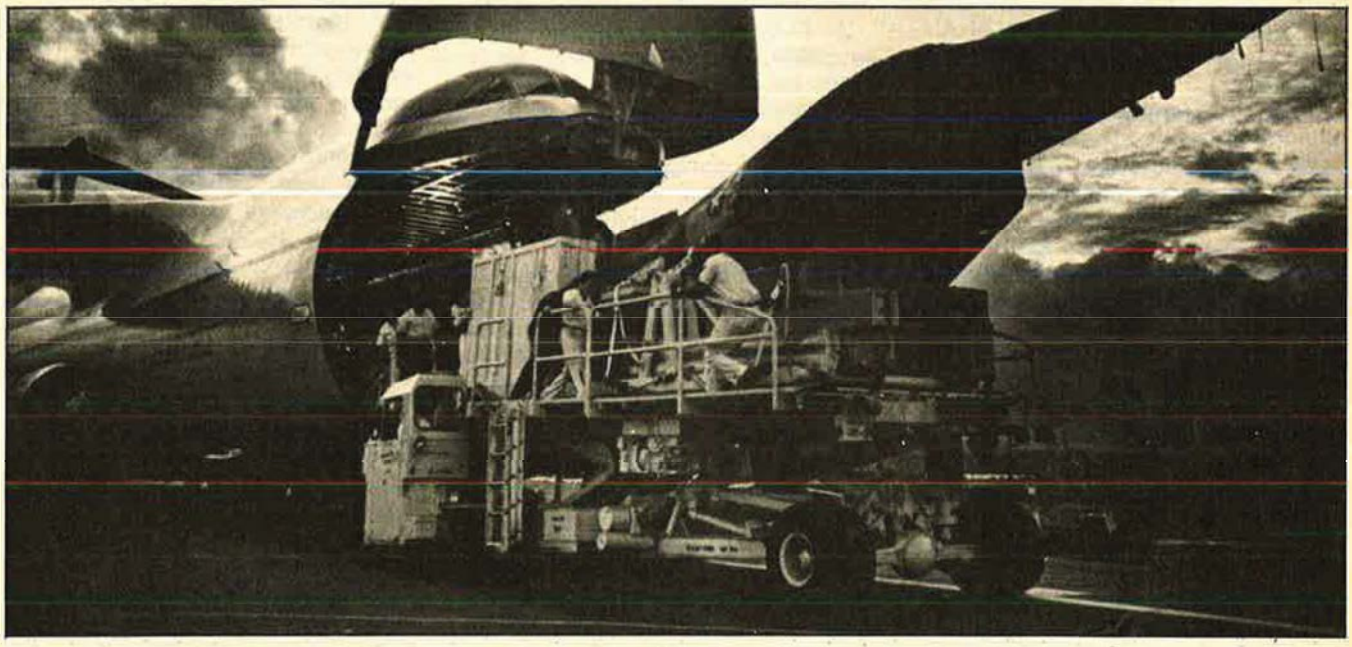
• The Aerospace Guidance and Metrology Center at Newark AFS, Ohio, maintains and overhauls all inertial guidance systems used in Air Force aircraft and missiles and does similar work for the other military departments.

• The Military Aircraft Storage and Disposition Center, Davis-Monthan AFB, Ariz., stores all aircraft not currently needed by the Department of Defense and Coast Guard.

• The Air Force Contract Maintenance Center at Wright-Patterson AFB, Ohio, administers hundreds of millions of dollars in contracts for maintenance work performed for the Air Force by commercial firms around the world.

AFLC's 10,105 military and 93,409 civilian workers are attuned to support. The year 1974 found that support constantly improving. ■

Left, the USAF Thunderbirds' T-38s were modified at San Antonio ALC to replace F-4s. Below, AFLC engineers devised a way to increase from four to eight the number of F-5s that can be delivered to allies in a single C-5.



AIR FORCE LOGISTICS COMMAND

Headquarters, Wright-Patterson AFB, Ohio

Commander
Gen. William V. McBride

- **Ogden Air Logistics Center**, Hill AFB, Utah
- **Oklahoma City Air Logistics Center**, Tinker AFB, Okla.
- **Sacramento Air Logistics Center**, McClellan AFB, Calif.
- **San Antonio Air Logistics Center**, Kelly AFB, Tex.
- **Warner Robins Air Logistics Center**, Robins AFB, Ga.
- **Air Force Contract Maintenance Center**, Wright-Patterson AFB, Ohio
- **Military Aircraft Storage and Disposition Center**, Davis-Monthan AFB, Ariz.
- **Aerospace Guidance and Metrology Center**, Newark AFS, Ohio
- **USAF Medical Center**, Wright-Patterson AFB, Ohio
- **2750th Air Base Wing**, Wright-Patterson AFB, Ohio.

AIR FORCE SYSTEMS COMMAND

To provide sophisticated and technologically superior weapon systems for the national defense, both now and in the future, is the purpose of the Air Force Systems Command (AFSC). In that process, AFSC handles research, design, development, test, evaluation, and procurement and production of Air Force missiles, aircraft, and related hardware.

AFSC's budget in FY '75 was $6.7 billion, or twenty-six percent of the total Air Force budget. AFSC is responsible for administering nearly 17,000 individual contracts with a face value of more than $50 billion.

Gen. Samuel C. Phillips directs operation of AFSC's divisions, development and test centers, ranges, and laboratories from headquarters at Andrews AFB, Md. AFSC's 200-plus installations are valued at more than $2 billion.

A total of 55,300 people work for AFSC, including 9,300 officers, 17,000 airmen, and 29,000 civilians. This represents a reduction in strength of 1,264 from 1973, and is one reason effective management had a higher priority than ever within AFSC during 1974. Managers concentrated on improved methods of using inflation-shrunken dollars to cover essential—and only essential—requirements.

Some results of that effort in the past year included $164 million in measurable savings through a resource conservation program that freed funds for use in critical areas.

A $5.8 million electronic flight simulator, in development since 1970, became a reality in 1974. It eliminates certain aspects of flight training and saves many gallons of aircraft fuel annually. Savings also will be realized in aircraft maintenance, wear on facilities, and all support required for flight operations. Development costs will be repaid within five years.

AFSC's management engineering teams completed forty-five separate studies that cost $27,000 and saved $7.4 million—for a return of $274 on the dollar.

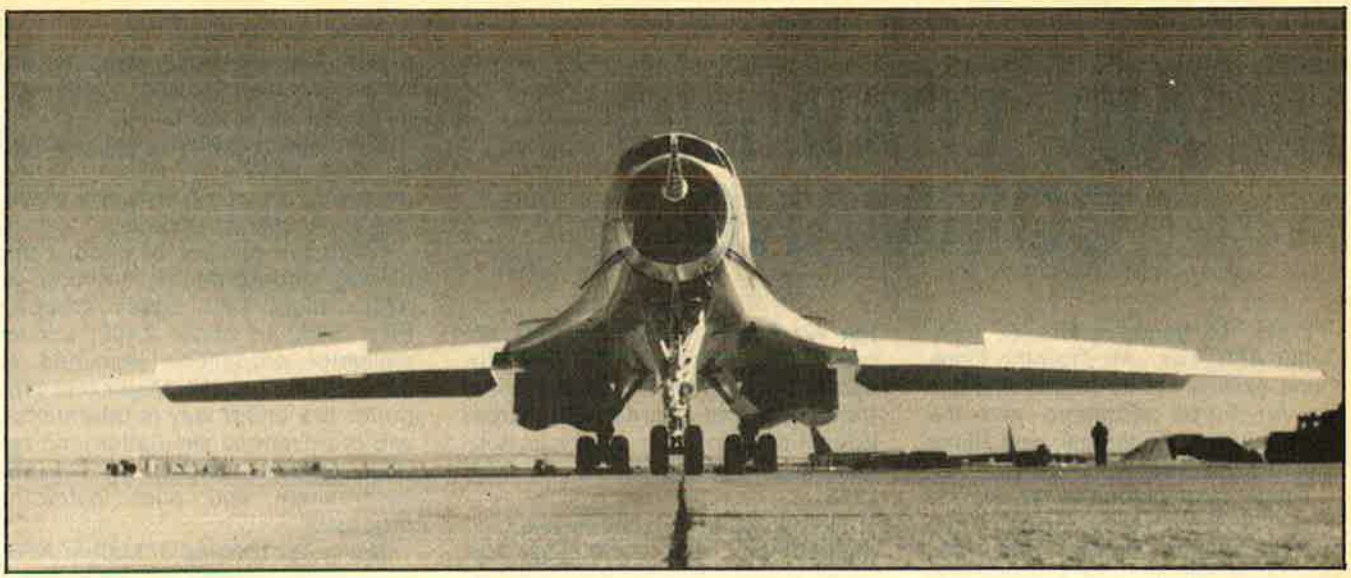
Other management programs at AFSC include testing and evaluation of new systems in prototype *before* they go into production ("try before buy"); a "blue-line" organizational arrangement under which systems program managers can go right to the top, rather than through normal channels, to get important decisions; and a design-to-life cycle cost concept under which costs for a new weapon system are computed from the time a program starts to the time it becomes obsolete. The A-10 close air support aircraft is the first system developed under this concept, in which full maintenance and operation costs, which can account for approximately fifty percent of a total system cost, are computed for the life of the aircraft.

Gen. Samuel C. Phillips has headed AFSC since August 1973, following service as Director, NSA/Chief, Central Security Service. He commanded SAMSO earlier. A WW II fighter pilot, General Phillips has been engaged primarily in R&D since 1950. He was a leader in developing the Minuteman missile, and directed the Apollo program from 1964–69.

Weapon systems technology continued to advance through the research and development work of AFSC laboratories. Significant milestones during the past year included: a sixty percent improvement in the fatigue strength of special blades for aircraft turbines, and discovery of a new intermetallic compound—titanium aluminide—that together could reduce costs and improve performance of aircraft engines; initiation of fuel and lubrication standardization with the Army and Navy; design of a new cryogenic cooler to make reconnaissance and surveillance sensors more sensitive to targets; development of an automatic computer language compiler generating program that produces computer programs in half the time and uses forty percent less computer memory than previously; and missile cost reductions through use of reusable rocket test motors and a unique test facility that enables advanced reentry vehicle nosetips to be evaluated without flight testing.

And there were other significant achievements:

Feasibility testing was completed with the record flight of the Teledyne Ryan Compass Cope Remotely Piloted Vehicle (RPV) and the flight testing of the Boeing YQM-94 RPV; the B-1 strategic bomber made its maiden flight; the first Advanced Airborne Command Post was turned over to the National Emergency Airborne Command Post (NEACP); the close air support A-10 aircraft, with its TF34 engines and the GAU-8 30-mm Gatling gun, was approved for production; Short Range Attack Missile (SRAM) management and engineering responsibility was transferred to AFLC; and the first operational F-15 was turned over to TAC. Also, the Airborne Warning and Control System (AWACS) successfully completed survivability tests; the X-24B flight research vehicle reached record speed and altitude; a Minuteman I was successfully launched



A prime AFSC achievement was the first flight of the B-1 advanced strategic bomber in December. Developmental flight testing is continuing at AFSC's Edwards AFB, Calif.

from an airborne C-5, culminating an Airmobile Feasibility demonstration series; rollout and first flight of the F-5F aircraft were accomplished; a contract was awarded to develop and build six spacecraft for Phase I of the NAVSTAR Global Positioning System; and development testing was begun on the Air-to-Air Combat Simulator.

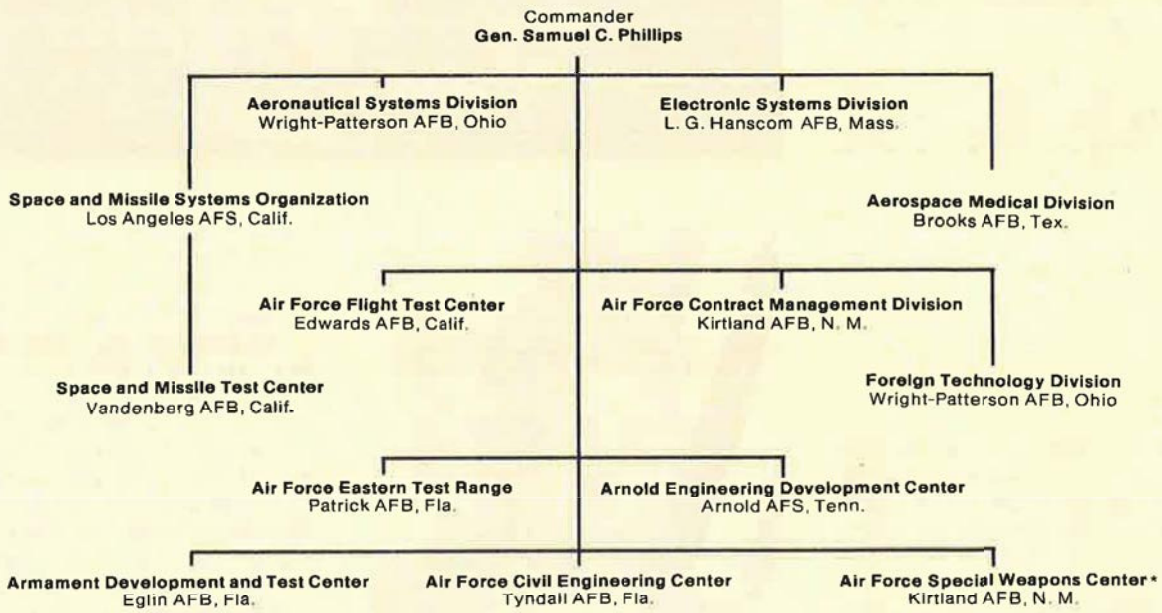
Expected in coming months:

Further flight testing of the B-1; delivery of the final SRAM missile to SAC; official certification of the F-15 Eagle's "time-to-climb" records; phaseout of all command support aircraft; and initial movement in the recently announced reposturing of AFSC's laboratory system.

The future for AFSC planners, scientists, and engineers can be any point ahead in time—twenty minutes, twenty days, or twenty years. They must look ahead to survive in the rapidly changing world of technology without diminishing emphasis on today's needs. ■

AIR FORCE SYSTEMS COMMAND

Headquarters, Andrews AFB, Md.



*To be phased out during Fiscal Year 1976

AIR TRAINING COMMAND

From its headquarters at Randolph AFB, Tex., Air Training Command carries out its responsibilities for Air Force recruiting and the basic military, technical, and flying training for the Air Force.

These responsibilities spread to fifteen bases in nine states, three survival training schools, some 985 recruiting offices, and a worldwide network of sixty-six Field Training Detachments.

With a strength of 123,000 military and civilians (including students), an inventory of nearly 1,800 aircraft (including 856 T-38s, 743 T-37s, 104 T-41s, and nineteen T-43s), a billion-dollar-plus annual operating budget, and assets totaling more than $2.9 billion, ATC is one of the largest training systems in the world.

The USAF Recruiting Service met or exceeded all objectives in 1974 with the exception of physicians. ATC is helping to offset the current shortage with the implementation of several physician-extender training programs.

ATC technical training continues to take on increased importance through the Community College of the Air Force (CCAF). A fully accredited institution, CCAF has processed more than 75,000 individual transcripts and awarded 168 Career Education Certificates since its activation at Randolph AFB in April 1972.

The latest techniques in teaching methodology and technology are being applied to both the technical and flying training programs. These include widespread use of self-paced learning and computer-assisted simulation and computer-managed instruction.

With nearly 800,000 flying hours in 1974, ATC's cumulative flying accident rate of 1.2 was one of the lowest in the Air Force.

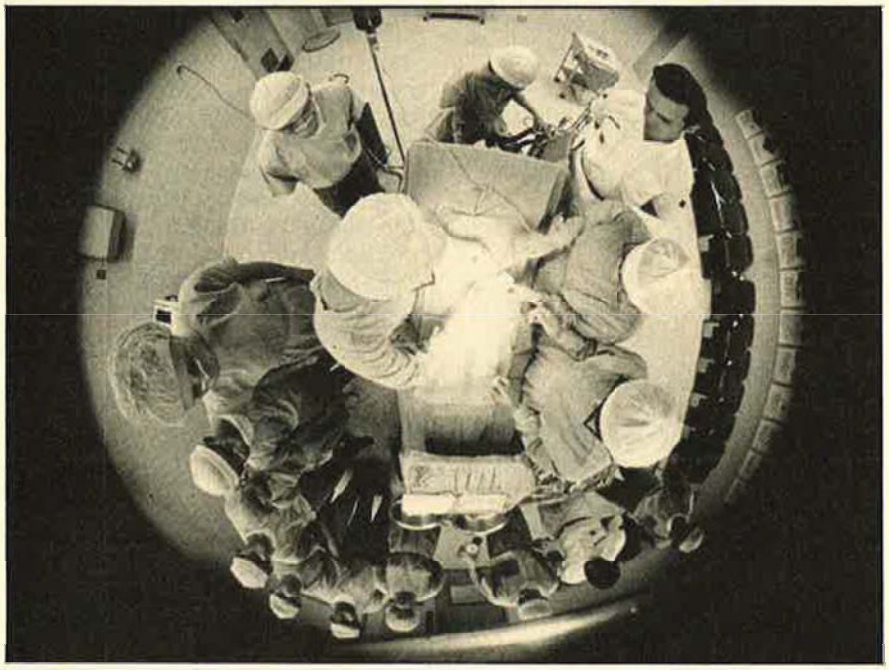
While the number of pilots completing undergraduate training at ATC's eight UPT bases dropped from 3,000 to about 2,400, annual navigator production remained at approximately 1,400. Major test programs are under way in operational use of advanced simulation and revised syllabus content for the undergraduate and pilot instructor programs.

Navigator training at Mather AFB, Calif., has become an all-jet program with the addition of T-37s to the fleet of nineteen T-43 jet trainers delivered to Mather last year. The flying program will be complemented with an advanced navigation simulator in mid-1975.

The Simulator for Electronic Warfare Training (SEWT) has resulted in a "no-fly" program and the phase-out of twelve aircraft.

Training of Air Force Reservists and Air National Guardsmen continued throughout 1974, and ATC technicians also provided training support to other major commands. These technicians developed maintenance programs for TAC's F-15 Eagle and are designing training programs for the F-16, B-1, and AWACS.

A wide range of training was pro-



Health care sciences and physician-extender training in ATC are helping offset USAF's doctor shortage.

Lt. Gen. George H. McKee has been ATC chief since September 1974. He had been SAC's Eighth Air Force Commander on Guam. A B-17 pilot in WW II in Europe, he has spent much of his career in command and staff positions in SAC. General McKee helped develop SAC's command and control system in the late 1950s, and later was SAC Chief of Staff.

vided to nearly 5,000 foreign students under the Security Assistance Training Program.

ATC operates facilities at Lowry AFB, Colo., to help rehabilitate Air Force members convicted of military law infractions who wish to return to productive duties.

The command remained deeply involved in "people-oriented" programs and ATC people responded to community-related projects with more than 722,000 volunteer hours last year. ■

RECRUITING

Recruiting the numbers of qualified men and women to meet the requirements of today's modern aerospace force is the responsibility of the USAF Recruiting Service, headquartered at Randolph AFB, Tex.

The Service not only recruits but also classifies and assigns new enlistees from civilian resources.

More than 78,000 people—including more than 9,000 women—were recruited as USAF met all regular recruiting objectives in the first full calendar year under the all-volunteer Air Force structure.

Approximately ninety-three percent of the new enlistees were high school graduates and forty-three percent of all enlistees scored in the top two of five Department of Defense mental categories.

On the average, each of the 1,800 recruiters in the field recruited about forty people, an average higher than any other service.

Recruiting Service will reorganize July 1 with the inactivation of two recruiting groups and eight detachment headquarters. The new five-group, thirty-eight-detachment organization will streamline intermediate headquarters and provide increased operational capability at the recruiting office level.

The USAF Recruiting Service, with 3,700 military and civilians, is commanded by Maj. Gen. Bennie L. Davis, who is also DCS/Recruiting, Hq. ATC. ■

ATC recruited and trained 78,000 new airmen last year. Ninety-three percent were high school graduates.

AIR TRAINING COMMAND

Headquarters, Randolph AFB, Tex.

Commander
Lt. Gen. George H. McKee

Technical Training Center
Chanute AFB, Ill.

Technical Training Center
Keesler AFB, Miss.

Technical Training Center
Lowry AFB, Colo.

3320th Retraining Group

Technical Training Center
Sheppard AFB, Tex.

USAF School of Health Care Sciences

Air Force Military Training Center
Lackland AFB, Tex.

Basic Military Training School

USAF Occupational Measurement Center

Undergraduate Pilot Training

Columbus AFB, Miss.
(14th Flying Training Wing)
Craig AFB, Ala.
(29th FTW)
Laughlin AFB, Tex.
(47th FTW)
Moody AFB, Ga.
(38th FTW)
Reese AFB, Tex.
(64th FTW)
Vance AFB, Okla.
(71st FTW)
Webb AFB, Tex.
(78th FTW)
Williams AFB, Ariz.
(82d FTW)
Sheppard AFB, Tex.*
(80th FTW)

12th Flying Training Wing
Randolph AFB, Tex.

Pilot Instructor Training Learning Center;
USAF Instrument Flight Center.

557th Flying Training Squadron*
US Air Force Academy, Colo.

Community College of the Air Force
Randolph AFB, Tex.

3636th Combat Crew Training Wing*
(Survival)

Fairchild AFB, Wash.*
(Eielson AFB, Alaska)*
(Homestead AFB, Fla.)*

USAF Recruiting Service
Randolph AFB, Tex.

Recruiting Groups:
3501st—Hansom AFB, Mass.
3502d—McGuire AFB, N.J.†
3503d—Robins AFB, Ga.
3504th—Lackland AFB, Tex.
3505th—Chanute AFB, Ill.
3506th—Mather AFB, Calif.
3507th—Lowry AFB, Colo.†

Armed Forces Vocational Testing Group

Navigator Training Wing
Mather AFB, Calif.
(323d FTW)

Officer Training School
Lackland AFB, Tex.

*Tenant Unit

† To be inactivated July 1, 1975

AIR UNIVERSITY

Senior officers from all US services, allied forces, and civilian agencies attend the Air War College, one of AU's four PME schools.

Air University (AU) was organized in 1946 and constituted to keep pace with Air Force needs in scientific, technological, managerial, and other professional areas. It meets those needs with a system of professional education.

With today's cutbacks in defense spending and the nation's shortages of natural resources, the Air Force depends more than ever on this system to develop leaders who will make maximum use of our national resources.

Lt. Gen. F. Michael Rogers, a long-time proponent of professional education, commands AU. Its headquarters and most of its major activities are at Maxwell AFB, Ala., an installation rich in aerospace history.

AU's academic system encompasses four professional military education (PME) schools. Air War College for senior officers, Air Command and Staff College for mid-career officers, and Squadron Officer School for junior officers are all located on Academic Circle (being renamed Chennault Circle in May) at Maxwell. The fourth PME school, the USAF Senior Non-Commissioned Officer Academy, joined the AU system in 1972 and is located across town, at Gunter AFS. These schools have graduated more than 75,000 officers and 2,500 senior NCOs.

Lt. Gen. F. Michael Rogers assumed command of AU on November 1, 1973. He had been ATC Vice Commander. General Rogers is a WW II fighter ace, scoring twelve kills as a P-51 pilot. Much of his career has been devoted to intelligence and R&D, including development planning for the B-1, F-111, F-15, and C-5 aircraft.

The PME schools provide the professional education essential to progressively more responsible positions in both the NCO and officer corps.

AU's specialized schools meet specific USAF educational requirements. The AU Institute for Professional Development operates personnel management, comptroller, judge advocate, chaplain, and electronic warfare courses, along with a seminar for USAF commanders.

Academic Instructor and Allied Officer School (AIAOS) serves in two principal capacities. It conducts the USAF teachers' college for instructor personnel and prepares allied officers for attendance at USAF schools. AIAOS this year celebrated twenty years of serving the Air Force through its Allied Officer Familiarization Course. Since its creation, AIAOS has graduated more than 2,700 officers from seventy foreign countries.

The Extension Course Institute administers approximately 375 courses in specialized and career-development fields of learning. Enrolling some 300,000 students annually, the Institute has handled more than six million enrollments.

USAF requirements in scientific, technological, managerial, and other designated professional areas are met through the Air Force Institute of Technology, located on AU's northern campus at Wright-Patterson AFB, Ohio.

With its headquarters at Maxwell, Air Force ROTC, a major source of new USAF second lieutenants, operates detachments at colleges throughout the US and Puerto Rico. The Junior AFROTC program, started in 1966, is conducted at approximately 275 high schools throughout the nation, in Europe, and on Guam.

Supporting the academic complex is the Air University library, with vast resources that include bibliographic, documentary, and circulating facilities.

Throughout its existence, Air University has remained responsive to the changing pattern of Air Force educational requirements. For ex-

AU's Academic Circle at Maxwell AFB, to be renamed Chennault Circle this month, houses Air War College, Air Command and Staff College, and Squadron Officer School. The USAF Senior NCO Academy is at Gunter AFS, Ala.

ample, curricula at all PME schools now include some exposure to computer technology and contemporary problems. During the past year, AU conducted a Media-Military Symposium in an effort to improve understanding between the military and members of the news media.

General Rogers stresses the need for AU graduates to be aware of far more than the purely military aspects of their profession. "We would like to keep as close to the society from which we spring as possible, while at the same time teaching Air Force people to be professionals," he said.

Aptly phrasing the command's progressive educational concept is its motto, *Proficimus More Irretenti* —"We Progress Unhindered by Tradition." ■

AIR UNIVERSITY

Headquarters, Maxwell AFB, Ala.

Commander
Lt. Gen. F. Michael Rogers

- **AF Institute of Technology**, Wright-Patterson AFB, Ohio
- **Air War College**, Maxwell AFB, Ala.
- **Air Command and Staff College**, Maxwell AFB, Ala.
- **Squadron Officer School**, Maxwell AFB, Ala.
- **Air Force ROTC**, Maxwell AFB, Ala.
- **Extension Course Institute**, Gunter Station, Ala.
- **Air University Institute for Professional Development**, Maxwell AFB, Ala.
- **Academic Instructor and Allied Officer School**, Maxwell AFB, Ala.
- **Air University Library**, Maxwell AFB, Ala.
- **USAF Senior NCO Academy**, Gunter AFS, Ala.
- **USAF Regional Hospital**, Maxwell AFB, Ala.
- **3800th Air Base Wing**, Maxwell AFB, Ala.
- **3825th Academic Services Group**, Maxwell AFB, Ala.
- **3840th Support Squadron**, Maxwell AFB, Ala.
- **3841st Comptroller Services Group**, Maxwell AFB, Ala.

U.S. Tactical

one here...

THE USN EA-6B PROWLER, combat-proven in the most challenging electronic environment ever encountered. Designed by Grumman as a totally integrated tactical jamming system, the Prowler has been operational with the Fleet since 1970 and will soon join the United States Marine Corps.

GRUMMAN AEROSPACE CORPORATION

Jamming Systems

another on the way

THE USAF EF-111A TJS, in prototype development at Grumman, will move the proven ALQ-99 system and U.S. tactical jamming into the supersonic era. Grumman is proud to team with the United States Air Force in the EF-111A effort.

The Leaders in U.S. Tactical Jamming Systems

ALASKAN AIR COMMAND

SSgt. Jim Jackson, Eielson AFB, captured this dramatic shot of a KC-135 at high noon on December 21.

The Alaskan Air Command (AAC), one of the oldest major commands, continues to provide top cover for the American continent. Commanded by Maj. Gen. Jack K. Gamble, AAC was created on December 21, 1945, from the Eleventh Air Force of World War II.

AAC is responsible for planning, coordinating, controlling, and conducting defensive and offensive air operations within Alaska. AAC is the air component of both the soon-to-be-inactivated unified Alaskan Command, and the on-going Alaskan North American Air Defense (NORAD) Region. Thus, AAC's primary mission is to provide early air attack warning for the US and Canada, and to defend Alaska from air and ground attack.

With the inactivation of the unified Alaskan Command on July 1, 1975, as announced recently by DoD, AAC responsibilities will be measurably increased. The AAC command position will be upgraded from major general to lieutenant general. The commander will also act as the senior military officer, Alaska; senior DoD representative to the State of Alaska; DoD coordinating authority; and Commander of the Alaskan NORAD Region.

As part of the restructuring, the concept of a Joint Task Force will receive added emphasis. This concept involves the designation of a senior military officer, in a contingency situation, who would report directly through the Joint Chiefs of Staff to the National Command Authority. The Joint Task Force concept will be embodied in contingency plans covering emergencies and hostilities. It will also emphasize the quick augmentation of existing defense forces in Alaska with specifically identified Army and Air Force units in the "lower forty-eight" states, now held in reserve.

The command operates three air bases, thirteen Aircraft Control and Warning (ACW) squadrons, and two civilian airports. The bases are Elmendorf, bordering Anchorage; Eielson, near Fairbanks; and Shemya, near the tip of the Aleutian Island chain. The ACW squadrons are scattered along the state's western coastline and the interior. Galena and King Salmon Airports provide forward operating locations for the command.

With approximately 11,000 military and civilian personnel authorized, AAC provides logistical, administrative, and other host support services to tenant units from commands and agencies such as the Military Airlift Command, Air Force Security Service, Army and Air Force Exchange Service, Strategic Air Command, Defense Communications Agency, Defense Supply Agency, Defense Mapping Agency, Defense Investigative Service, US Navy, US Coast Guard, US Army, Department of Interior, and Department of Transportation.

The 21st Composite Wing at Elmendorf operates as AAC's main aerial arm. The wing is composed of three flying and nine support squadrons, and an air-base group. The flying units are the 43d Tactical Fighter Squadron, equipped with F-4E Phantoms; the 5040th Helicopter Squadron, with HH-3E Jolly

Maj. Gen. Jack K. Gamble became Commander of AAC in March 1974. In previous successive assignments, he commanded the 20th and then the 25th NORAD/CONAD Regions and the 20th and 25th Air Divisions. A career tactical and air defense fighter pilot, General Gamble flew night fighters over Europe in WW II.

HH-3E Jolly Green Giants stay busy resupplying far-flung US facilities and flying rescue missions.

Adjusting an HH-3E rotor is slow work for an airman bundled up against Alaska's sub-zero temperatures.

Green Giants; and the 5041st Tactical Operations Squadron, which operates with a mix of T-33s, EB-57s, and a T-39.

The 5010th Combat Support Group at Eielson is the only other unit in AAC with aircraft assigned. The group's 25th Tactical Air Support Squadron is equipped with O-2As. Eielson's largest tenant unit is SAC's 6th Strategic Wing, equipped with KC-135 Stratotankers.

The AAC continues to participate in several large joint-service field training exercises each year. More than 8,000 active-duty and Reserve Forces personnel from Air Force, Army, and Navy units participated in Jack Frost '75. Several firsts occurred during the winter exercise, with MAC providing all strategic airlift of "lower forty-eight" participants, using C-5, C-141, and C-130 aircraft.

Jack Frost '75 marked the first time TAC F-111s participated in an Alaskan field exercise. Alaska provides an unmatchable Arctic training environment, and AAC participation in future JCS-sponsored exercises is anticipated.

AAC also operates a Rescue Coordination Center that directed Air Force, Army, Air National Guard, and Civil Air Patrol aircraft in 2,642 sorties totaling 4,920 flying hours during 1974. The RCC provided emergency assistance to 467 military and civilians in the forty-ninth state, and was credited with saving ninety lives in the past year.

AAC's mission, even excluding the major responsibilities to be gained in July, makes the command one of the more unusual in the Air Force. Whether they are assisting in disaster relief, participating in exercises, or saving lives, AAC personnel stand ready to provide "Top Cover for America." ■

ALASKAN AIR COMMAND

Headquarters, Elmendorf AFB, Alaska

Commander
Maj. Gen. Jack K. Gamble

- 2 Air Base Squadrons & 13 ACW Squadrons located throughout Alaska
- **USAF Hospital Elmendorf** — Elmendorf AFB, Alaska
- **21st Composite Wing** — Elmendorf AFB, Alaska
  - **21st Air Base Group** — Elmendorf AFB, Alaska
  - **43d Tactical Fighter Squadron** — Elmendorf AFB, Alaska
  - **5040th Helicopter Squadron** — Elmendorf AFB, Alaska
  - **5041st Tactical Operations Squadron** — Elmendorf AFB, Alaska
- **5010th Combat Support Group** — Eielson AFB, Alaska
  - **25th Tactical Air Support Squadron** — Eielson AFB, Alaska
- **5073d Air Base Group** — Shemya AFB, Alaska

HEADQUARTERS COMMAND

Headquarters Command, under the leadership of Maj. Gen. M. R. Reilly, is one of the most diverse and complex commands in the US Air Force. Air Force people served by the command include those in Hq. USAF as well as in designated separate operating agencies, joint and unified commands, international activities, and other government agencies in the United States and overseas. The command's 20,000 people, assigned in more than 800 locations with nearly one-third of them overseas, represent the greatest variety of job specialties in the Air Force.

The command operates two key Air Force bases in the National Capital region: Bolling and Andrews. Both are proceeding with extensive building and modernization programs. Headquarters Command's operational units are the 1100th Air Base Wing and the 1st Composite Wing that operate Bolling and Andrews respectively; the Malcolm Grow USAF Medical Center at Andrews; the USAF Postal and Courier Service; and the Civil Air Patrol-USAF.

Bolling is one of the oldest and most historic bases in the Air Force. In its host role, the 1100th Air Base Wing provides facilities and services for personnel working in the Washington area to include record maintenance, housing for NCOs and officers, and ceremonial representation at official government functions. The US Air Force Honor Guard, an elite 150-man unit of the 1100th, renders honors at military and state functions in the Capital area and in other parts of the nation.

The Bolling Wing supports a number of important tenants such as the Air Force Chief of Chaplains. One organization, the 1139th Comptroller Services Squadron, provides data automation and accounting and finance support for elements of eighteen other major commands and agencies in addition to Headquarters Command.

The US Air Force Band, another Headquarters Command unit, has its home at Bolling. The band and its specialty units have performed before more than thirty-five million people throughout the world.

Andrews AFB is one of the most active and important air facilities in the Department of Defense. The 1st Composite Wing hosts more than 8,000 distinguished visitors who arrive at Andrews each year. The Wing operates a National Emergency Airborne Command Post for the Joint Chiefs of Staff and recently received the first of its programmed three E-4A aircraft (military version of the Boeing 747). The Wing's administrative airlift responsibilities are being modified with the departure of the reciprocating-engine aircraft from the inventory and with the transfer of the T-39s to MAC. Retained will be the emergency evacuation capability which the Wing's helicopters provide.

There are more than twenty Air Force, Navy, and Marine tenant organizations at Andrews. The Malcolm Grow USAF Medical Center serves the medical needs of the Air Force in the Washington area. With clinics at Bolling AFB and in the Pentagon, the Center provides a full range of medical service to military personnel and dependents. It is one of the major instructional hospitals in the Air Force and conducts both residency and internship programs.

Another specialized activity at Andrews is the Washington Area Procurement Center, in which the Air Force's many purchasing and contracting functions in the National Capital region are consolidated.

The Command's 1143d Air Base Squadron, in the heart of the Pentagon, provides Hq. USAF with a wide range of personnel, administrative, and logistics functions. Its personnel divisions serve 5,700 military and 3,000 civilian workers in Hq. USAF.

The USAF Postal and Courier Service is responsible to the command for operating post offices and courier stations around the globe. Its 1,800 officers and airmen, organized in 487 functional activities, provide services to military personnel and US government agencies in sixty countries. The Postal and Courier Service provides traffic management and budgets annually for the transportation of approximately eighteen million pounds of mail and thirty-one million pounds of courier materials—the latter from the eighteen armed forces courier stations that it operates.

The Civil Air Patrol (CAP), the all-volunteer civilian auxiliary of the Air Force, has its headquarters at Maxwell AFB, Ala. It is organized into eight geographical regions and fifty-two wings and has a membership of 60,000. CAP pilots, under the supervision of the Aerospace Rescue and Recovery Service, have saved more than 1,250 lives and assisted some 16,000 Americans threatened during natural disasters.

Maj. Gen. M. R. Reilly has been chief of Headquarters Command, USAF, since February 1974. He was a B-24 and B-29 pilot in the Pacific in WW II. General Reilly has spent much of his career in civil engineering, and was Director of Civil Engineering, Hq. USAF, before assuming his present command.

Headquarters Command's USAF Honor Guard represents the Air Force at ceremonial functions.

CAP operates a comprehensive aerospace education and youth motivation program for its 25,000 teenage cadet members.

A unique but distinct responsibility of Headquarters Command is the support of 9,000 Air Force officers and airmen assigned outside the normal Air Force command structure. These people serve in such joint and unified commands as the Supreme Headquarters Allied Powers Europe; the North Atlantic Treaty Organization; and the European, Pacific, and Southern Commands. Headquarters Command personnel are assigned to military advisory groups and as air attachés in numerous countries. Other command personnel are assigned to a number of agencies in DoD.

The Headquarters Command USAF NCO Academy provides professional military education to command NCOs, including those assigned to such overseas agencies as SHAPE and NATO. ■

The first E-4A, equipped with command control and communications gear to operate as a National Emergency Airborne Command Post, is at Andrews AFB, Md.

MILITARY AIRLIFT COMMAND

The Military Airlift Command (MAC) experienced dynamic growth this past year, with more to come.

DoD realignment consolidated all tactical airlift operations and aircraft in the United States within MAC. This included two air divisions, four tactical airlift wings, and Little Rock AFB, Ark., and Pope AFB, N. C., raising command strength to 64,500 military and 16,900 civilians.

The Air Force Communications Service (AFCS), all Air Force administrative aircraft, and overseas tactical airlift units are scheduled to become part of MAC during the next year, along with Richards-Gebaur AFB, Mo., and Hickam AFB, Hawaii.

The capabilities of the C-5 Galaxy were expanded during the year as seventy aircrews, including two Reserve associate crews, qualified for aerial refueling. This capability has saved fuel on long missions and possibly extended the life of the aircraft by reducing the number of landings.

The feasibility of air-launching an intercontinental ballistic missile was demonstrated October 24 off the West Coast when a Minuteman I was dropped from a C-5 and ignited.

With the help of a specially designed shipping fixture developed by the Air Force Logistics Command, MAC can now transport eight complete F-5 fighter aircraft inside a C-5 on a single mission, twice the number previously possible.

Meanwhile, MAC's strategic airlift force maintained a constant state of war readiness, carried out routine DoD logistic support, and continued its longstanding record of response with humanitarian airlift.

A MAC C-5 and a C-141 flew seventy-five tons of flood-relief supplies to storm-ridden Chile during the July 4 weekend in 1974. When Bangladesh was hit by floods a few weeks later, MAC aided with 100,000 pounds of relief supplies.

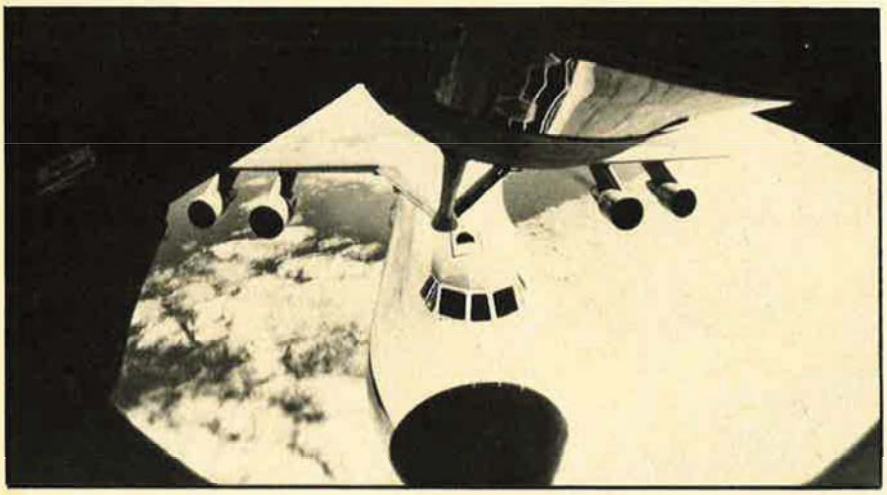
In August, MAC aircrews airlifted help from the US to Cyprus as part of a relief effort for persons displaced during the island's hostilities. The same month, supplies furnished by the US Agency for International Development (AID) were flown by MAC from Clark AB in the Philippines to Burma, in the aftermath of severe flooding.

As the new year began, MAC aircrews brought assistance to Darwin, Australia, ravaged by Cyclone Tracy. MAC C-141s hauled half a million pounds of relief supplies to the storm's victims. When the Star-Lifters left Darwin, they carried women, children, and the injured to refuge in Sidney.

Later in January 1975, a MAC C-141 airlifted specialists and their equipment from the US to Singapore to help combat a million-gallon oil spill from a Japanese supertanker.

The exercise schedule over the last year included Brave Shield IX, a joint Army-Air Force (Readiness Command) exercise, at Ft. Polk, La., in which MAC airlifted 7,000 troops and 7,000 tons of cargo to England AFB and Barksdale AFB, La.; Brave Crew '74, a REDCOM exercise providing training for mechanized ground forces, tactical air units, and support forces in joint exercises at Fort Hood, Tex.; and Jack Frost '75, where both strategic and tactical airlift, operating for the first time under the MAC emblem, joined forces with the 9th Infantry Division, the Alaska National Guard, and a Canadian infantry company in the JCS-coordinated exercise sponsored by the Alaskan Command.

In addition to the Stateside exercises, MAC flew 12,000 troops and



Seventy MAC C-5 crews are now qualified for aerial refueling. The result is fuel savings and fewer wear-and-tear landings.

Gen. Paul K. Carlton has led MAC since September 1972, having previously been Fifteenth Air Force Commander. A B-29 pilot in the Pacific in WW II, General Carlton has commanded several SAC wings and the 1st Strategic Aerospace Division, Vandenberg AFB, Calif. He has also been DCS/Ops, Hq. SAC.

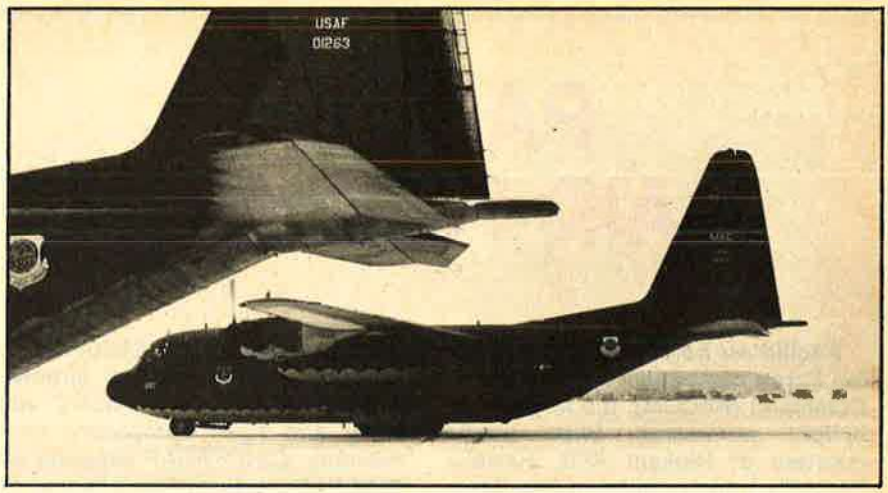
OPERATIONAL AIRCRAFT ASSIGNED TO MAC

TYPE	NUMBER
T/UH-1F	43
UH-1N/P	47
HH-1	11
C/HH-3	38
C-5	77
VC-6A	1
VC-9	1
C-9A	12
T-29	3
T-39	11
HH-43	13
C/HH-53	33
C-118	1
C-130	231
HC-130	47
RC-130	1
WC-130	19
C-131	5
C-135	12
C-137	5
C-140	11
C-141	275

equipment of the 1st Infantry Division to West Germany during Reforger '74. This exercise sharpened techniques for receiving, equipping, assembling, and deploying dual-based Army units committed to NATO.

The three technical services in MAC support not only the Air Force, but the other services and numerous government agencies. The Aerospace Audio Visual Service (AAVS) provides combat and historical audiovisual documentation; television, still, and motion picture production; film archival and depository services; and film distribution.

The Air Weather Service (AWS) operates a worldwide network of facilities providing continuous weather support to all echelons of the US Air Force and Army.



Tactical airlift C-130s now assigned to MAC participated in Jack Frost '75 in Alaska, their first exercise under their new command emblem.

The Aerospace Rescue and Recovery Service (ARRS) saved 561 people in 1974. This brought the total of lives saved to 15,317 since ARRS was born in 1946. In mid-June, the new Air Force Rescue Coordination Center became fully operational at Scott AFB, Ill., coordinating all rescue efforts in the US interior.

There are three special mission wings in MAC. The 89th Military Airlift Wing at Andrews AFB, Md., provides worldwide airlift for top government officials, including the President, Vice President, cabinet members, and foreign dignitaries. The Wing has logged nearly 500,000 accident-free flying hours in its twenty-six-year history. In February 1975, the 89th took delivery of the first of three new VC-9s as replacements for older reciprocating-engine aircraft.

The 375th Aeromedical Airlift Wing performs domestic aeromedical airlift, flying 3,000 patients a month in twelve C-9 Nightingales to 650 government-operated medical facilities in the US.

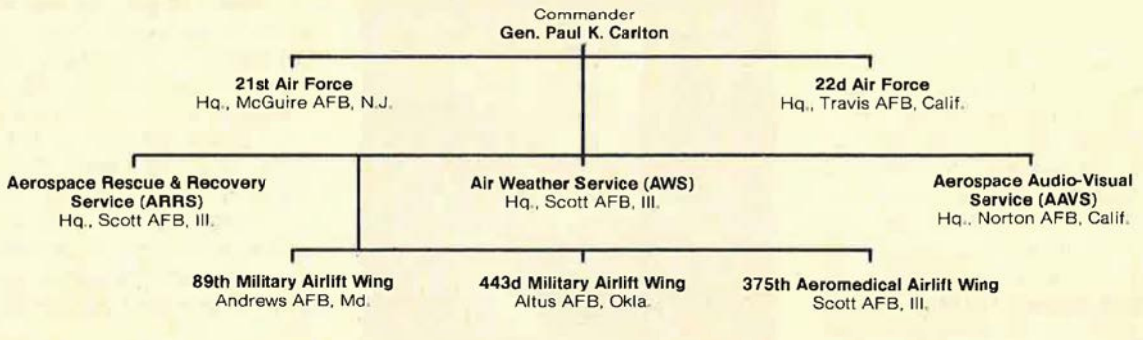
Twenty different courses for aircrews and special ground personnel are conducted by the 443d MAW, which has trained nearly 14,000 C-141 aircrew members, 2,200 C-5 aircrew members, and an additional 2,200 people in various special schools.

The Mackay Trophy was presented to MAC in 1974 for the previous year's most meritorious flight—the return of the prisoners of war to the United States, from February 12 to March 31, 1973. The Air Force Association also named MAC winner of the David C. Schilling Trophy for the 1973 resupply of Israeli armed forces.

The extensive mission of MAC directly affects each member of the Air Force as MAC people perform their vital roles every day, throughout the world. ■

MILITARY AIRLIFT COMMAND

Headquarters, Scott AFB, Ill.



PACIFIC AIR FORCES

Pacific Air Forces (PACAF) is the Air Force component of the Pacific Command (PACOM), the largest US unified command. With headquarters at Hickam AFB, Hawaii, PACAF's primary mission has been to plan, conduct, and coordinate offensive and defensive air operations within PACOM.

Secretary of Defense James R. Schlesinger announced in December that he had approved the recommendation of the Secretary of the Air Force and the Air Force Chief of Staff to disestablish Hq. PACAF.

The Air Force will not take the action until Congress has had an opportunity to review the plan for the DoD unified command structure. In the interim, there will be no major realignments, although prudent management actions will be taken to avoid unnecessary costs and to minimize personnel turbulence.

Until final action takes place, the Commander in Chief, Pacific Air Forces (CINCPACAF), Gen. Louis L. Wilson, Jr., will maintain his dual responsibilities to the Commander in Chief of the Pacific Command (CINCPAC), and to the Air Force Chief of Staff. General Wilson is responsible to the CINCPAC for accomplishing assigned Air Force operational missions and serves as principal adviser to CINCPAC on the employment of USAF airpower within PACOM. In concert with Army and Navy component commanders, CINCPACAF supports the CINCPAC mission of maintaining the security of the PACOM and defending the United States against attack through the Pacific.

As a major service commander, CINCPACAF has exercised command over assigned Air Force operational and support forces, units, bases, and facilities in Japan, Korea, Taiwan, the Philippines, Thailand, Australia, Hawaii, and Wake Island. More than 40,000 military personnel and some 16,000 civilians are assigned to PACAF.

Other PACAF responsibilities have included military assistance to air forces of friendly nations and support for other USAF commands operating in PACOM.

Evolving US foreign policy and related military strategy for PACOM have a direct effect on the PACAF mission. Current US foreign policy places the major responsibility for the security of the area on US allies in the Pacific and calls for an attendant reduction of US military forces. Accordingly, incremental withdrawals of USAF forces from Thailand have occurred throughout the past year.

Gen. Louis L. Wilson, Jr., took command of PACAF in July 1974, after serving as Vice CINC of USAFE. He has also commanded SAMSO and the Space and Missile Test Center, and was Air Force Inspector General until 1971. A P-47 pilot in Europe in WW II, General Wilson served in SAC command and staff positions for eighteen years.

In May 1974, A-7D Corsairs of TAC's 354th Tactical Fighter Wing completed redeployment from Korat RTAFB to their home base at Myrtle Beach, S. C. Also in May, SAC began withdrawing some B-52s from Thailand. EC-121s from ADC ended more than nine years of airborne radar operations in SEA when Det. 1, 552d Airborne Early Warning and Control Squadron, departed Korat later in May.

On August 4, the last of the 8th Tactical Fighter Wing's famed Wolfpack F-4 Phantoms left Ubon RTAFB, leaving behind some 350 support personnel to maintain the base for contingency purposes. To preserve the numerical designation of one of the Air Force's oldest and most famous fighter units, the 3d TFW at Kunsan AB, Korea, became the 8th TFW. Concurrently, the 405th Fighter Wing at Clark AB, the Philippines, became the 3d TFW.

A helicopter crewman drops food to flood victims in the Philippines.

F-111s of the 347th TFW were moved from Takhli to Korat prior to returning Takhli to the Royal Thai government September 12. And after ten years of service in SEA, the last F-105 Thunderchief was redeployed to the CONUS from Korat on October 29.

Aircraft assigned to PACAF make up twenty-eight squadrons, compared to forty-five a year ago. Tactical fighters and attack aircraft include the F-4, F-102s of the Hawaiian Air National Guard (scheduled to be replaced by F-4s, F-111s, A-7s, and AC-130s). Photo reconnaissance requirements are fulfilled by RF-4Cs. C-130s handle the bulk of PACAF's airlift requirements, and intracommand aeromedical evacuation is provided by C-9s from Clark AB.

PACAF has been organized into

three numbered Air Forces—the Fifth, Seventh, and Thirteenth. Fifth Air Force is responsible for the area of Japan and Korea and is organized into the 313th Air Division on Okinawa and the 314th Air Division in Korea. In Southeast Asia, Seventh Air Force, headquartered at Tan Son Nhut AB near Saigon during the Vietnam conflict, is now located at Nakhon Phanom RTAFB. Seventh's commander is also Commander, US Support Activities Group, a joint service command. Thirteenth Air Force units include the 327th Air Division on Taiwan and 13th Air Force Advanced Echelon (ADVON) at Udorn RTAFB, Thailand. The latter is responsible for administration, logistics, and training of PACAF forces in Thailand.

PACAF's Hawaii-based units are the 326th Air Division and the 15th Air Base Wing. As a regional air defense commander, the 326th commander controls the Hawaii ANG Fighter Interceptor Group and plans for the employment of US Army and Navy forces made available for the air defense of Hawaii.

Disestablishment of PACAF headquarters is a reduction of overhead and not a reduction of combat forces. Tactical Air Command (TAC) will assume most of the management and support functions performed by Hq. PACAF in the Western Pacific. Military Airlift Command (MAC) will assume Air Force host responsibilities at Hickam AFB and Yokota AB, Japan. Both will remain major USAF operating bases.

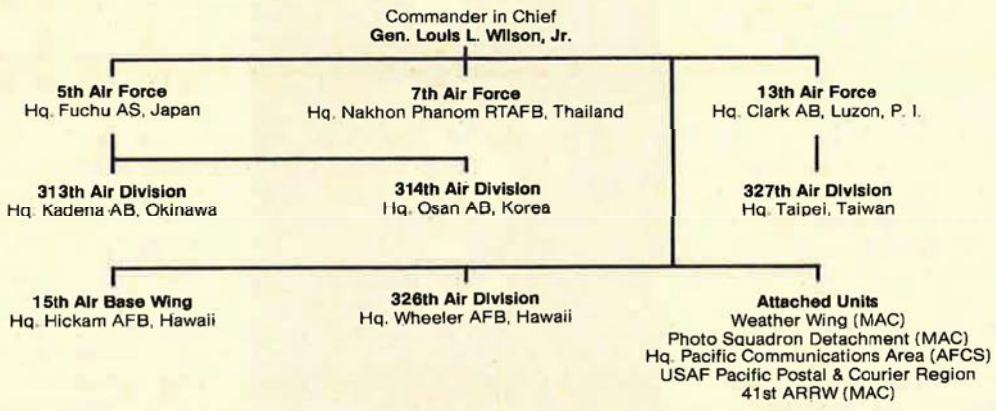
The Air Force has repeatedly demonstrated the capability to deploy combat forces rapidly, worldwide, should the need arise. Inherent in the planning of Hq. PACAF adjustments is retention of the capability to expand the command and control mechanism should a major contingency require the rapid deployment of a combat force. ■

THE MAJOR OPERATIONAL UNITS OF PACIFIC AIR FORCES (PACAF)

UNIT	LOCATION	AIRCRAFT
15th Air Base Wing	Hickam AFB, Hawaii	EC-135, O-2, T-33
326th Air Division	Wheeler AFB, Hawaii (Kunia Facility)	F-102 (Hawaiian Air National Guard based at Hickam)
FIFTH AIR FORCE, HQ. YOKOTA AB, JAPAN		
8th Tactical Fighter Wing	Kunsan AB, Korea	F-4
18th Tactical Fighter Wing	Kadena AB, Okinawa	F-4
51st Composite Wing	Osan AB, Korea	F-4, OV-10
313th Air Division	Kadena AB, Okinawa	
314th Air Division	Osan AB, Korea	
475th Air Base Wing	Yokota AB, Japan	T-39, UH-1
6168th Combat Support Squadron	Taegu AB, Korea	
6171st Combat Support Squadron	Kwang Ju AB, Korea	
THIRTEENTH AIR FORCE, HQ. CLARK AB, P.I.		
3d Tactical Fighter Wing	Clark AB, P.I.	F-4, T-39
56th Special Operations Wing	Nakhon Phanom RTAFB, Thailand	OV-10, CH-53, T-39
327th Air Division	Taipei AS, Taiwan	
347th Tactical Fighter Wing	Korat RTAFB, Thailand	F-111
374th Tactical Airlift Wing	Clark AB, P.I./Kadena AB, Okinawa	C-130
388th Tactical Fighter Wing	Korat RTAFB, Thailand	F-4, A-7, AC-130
432d Tactical Fighter Wing	Udorn RTAFB, Thailand	F-4, RF-4
635th Combat Support Group	U-Tapao Royal Thai Afld, Thailand	
Det. 1, 635th Combat Support Group	Don Muang Airport, Thailand	
6217th Tactical Group	Ching Chuan Kang ROCAB, Taiwan	
6233d Air Base Squadron	Ubon RTAFB, Thailand	

PACIFIC AIR FORCES

Headquarters, Hickam AFB, Hawaii



STRATEGIC AIR COMMAND

The mission of the Strategic Air Command (SAC) is to protect the United States, its allies, and national interests from aggression, coercion, or blackmail by any inimical nuclear power.

To fulfill this mission, SAC commits approximately 400 B-52 and seventy FB-111 aircraft, and 1,000 Minuteman and fifty-four Titan intercontinental ballistic missiles (ICBMs), to the integrated strategic nuclear forces of the United States.

SAC's land-launched ICBMs and manned bombers combine with the Navy's ballistic missile submarine fleet to form the Triad of strategic offensive forces. Each arm of the strategic Triad contributes unique characteristics to our deterrent objectives.

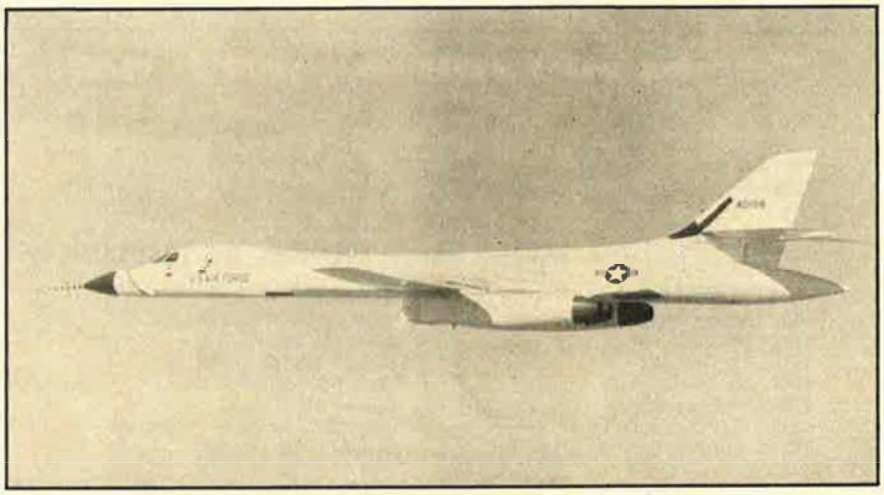
The most flexible member of the Triad is the manned bomber—the B-52 and FB-111—because man is always in control. The mainstay of the SAC bomber force, the B-52, can deliver a wide range of weapons, including a large payload of conventional bombs, gravity-fall nuclear weapons, and nuclear-armed air-to-ground missiles.

The newest missile, being deployed on the B-52G and H models, is the inertially guided, high-speed SRAM (Short Range Attack Missile). This versatile missile can follow the terrain or travel on a semiballistic (higher arc) path to a target. It also has a 360-degree targeting capability that allows it to be released while an aircraft is flying parallel to or away from the target.

Ongoing B-52 modifications include an update of the aircraft's electronic countermeasures equipment (ECM) and providing the Stratofortresses with an electro-optical viewing system (EVS). The EVS will allow the B-52 to penetrate at an even lower altitude.

The FB-111 is a swingwing bomber capable of speeds greater than Mach 2 at high altitudes and near supersonic speed at sea level. It can deliver a variety of weapons, both conventional and nuclear, including SRAM.

The KC-135 tanker gives SAC's bombers and manned strategic reconnaissance aircraft, as well as a variety of other users, a high-speed aerial refueling capability that greatly increases range.



SAC's prototype B-1 over Edwards AFB, Calif., in a flight evaluation test. The B-1 is being developed to modernize the US strategic bomber force.

Gen. Russell E. Dougherty became CINC of SAC in August 1974, after serving as Chief of Staff, SHAPE. He commanded Second Air Force earlier. A bomber pilot and legal officer early in his career, General Dougherty has filled various command and staff posts in SAC and has had four assignments in joint and international duties.

SAC's 1,000 Minuteman missiles make up the largest part of the Triad's ICBM arm. The Minuteman force is on strategic alert around the clock and under the constant control of SAC missile combat crews. Those crews are assisted by a variety of supporting people such as maintenance and security police.

The quality of the SAC Minuteman force is being constantly improved. The most recent significant improvement has been deployment of the new Minuteman III missile, which incorporates an improved third-stage motor and has multiple independently targetable reentry vehicle (MIRV) warheads. The last Minuteman I missile was retired from SAC's inventory in September of last year, and plans call for replacement of some Minuteman II missiles with the Minuteman III. By the summer of 1975, SAC will have 550 Minuteman III and 450 Minuteman II missiles.

The fifty-four Titan II missiles are deployed in hardened, underground

silos, and are programmed to remain in the command into the next decade. The Titan II is a two-stage, storable liquid-fuel missile and is the heavyweight of the ICBM force, carrying the largest missile warheads.

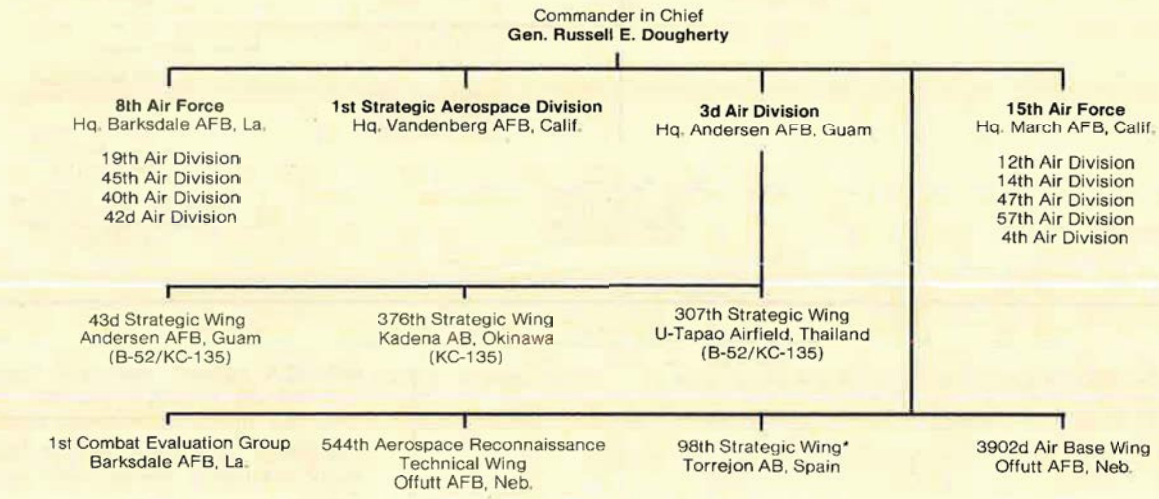
Beyond the basic strategic nuclear commitment, SAC has several important collateral missions that are integral parts of the command's strategic deterrent posture. Tasked for global strategic reconnaissance, SAC uses high-altitude U-2, long-range RC-135, and the multisensored SR-71 aircraft to collect intelligence and meteorological data on a worldwide scale in support of national requirements.

SAC is also the single manager for all Air Force KC-135 tankers. As such, SAC supports its own forces and those of other commands with aerial refueling for all tactical and cargo aircraft.

In the near future, SAC's strategic aerial refueling missions will be extended to the Air National Guard and Air Force Reserve when approximately 128 KC-135 tankers are transferred to Guard and Reserve units. This Reserve Forces' modernization will bring about some changes this year. Three SAC air refueling squadrons—one each at Rickenbacker AFB, Ohio; Pease AFB, N. H.; and Wright-Patterson AFB, Ohio—will be inactivated. SAC's bombers at Wright-Patterson

STRATEGIC AIR COMMAND

Headquarters, Offutt AFB, Neb.



*Tenant Unit

EIGHTH AIR FORCE

Headquarters, Barksdale AFB. La.

Commander
Lt. Gen. Richard M. Hoban

19th Air Division
Carswell AFB, Tex.

11th Air Refueling Squadron*
Altus AFB, Okla.
(KC-135)

2d Bomb Wing
Barksdale AFB, La.
(B-52/KC-135)

7th Bomb Wing
Carswell AFB, Tex.
(B-52/KC-135)

381st Strategic Missile Wing
McConnell AFB, Kan.
(Titan II)

384th Air Refueling Wing
McConnell AFB, Kan.
(KC-135)

45th Air Division
Pease AFB, N.H.

95th Strategic Wing*
Goose AB, Labrador
(KC-135)

416th Bomb Wing
Griffiss AFB, N.Y.
(B-52/KC-135)

380th Bomb Wing(M)
Plattsburgh AFB, N.Y.
(FB-111/KC-135)

509th Bomb Wing (M)[1]
Pease AFB, N.H.
(FB-111/KC-135)

42d Bomb Wing
Loring AFB, Me.
(B-52/KC-135)

40th Air Division
Wurtsmith AFB, Mich.

301st Air Refueling Wing
Rickenbacker AFB, Ohio[1]
(KC-135)

379th Bomb Wing
Wurtsmith AFB, Mich.
(B-52/KC-135)

410th Bomb Wing
K.I. Sawyer AFB, Mich.
(B-52/KC-135)

305th Air Refueling Wing
Grissom AFB, Ind.
(KC-135)

449th Bomb Wing
Kincheloe AFB, Mich.
(B-52/KC-135)

351st Strategic Missile Wing
Whiteman AFB, Mo.
(Minuteman)

42d Air Division
Blytheville AFB, Ark.

19th Bomb Wing *
Robins AFB, Ga.
(B-52/KC-135)

68th Bomb Wing*
Seymour Johnson AFB, N.C.
(B-52/KC-135)

308th Strategic Missile Wing*
Little Rock AFB, Ark.
(Titan II)

17th Bomb Wing*[2]
Wright-Patterson AFB, Ohio
(B-52/KC-135)

97th Bomb Wing
Blytheville AFB, Ark.
(B-52/KC-135)

[1] One KC-135 Squadron to be inactivated in FY '76
[2] SAC unit will be inactivated in FY '76
* Tenant Unit

FIFTEENTH AIR FORCE (SAC)

Headquarters, March AFB, Calif.

Commander
Lt. Gen. William F. Pitts

4th Air Division
F.E. Warren AFB, Wyo.

28th Bomb Wing
Ellsworth AFB, S.D.
(B-52/KC-135)

44th Strategic Missile Wing
Ellsworth AFB, S.D.
(Minuteman)

90th Strategic Missile Wing
F.E. Warren AFB, Wyo.
(Minuteman)

12th Air Division
Davis-Monthan AFB, Ariz.

100th Strategic Reconnaissance Wing
Davis-Monthan AFB, Ariz.
(U-2/DC-130)

390th Strategic Missile Wing
Davis-Monthan AFB, Ariz.
(Titan II)

22d Bomb Wing
March AFB, Calif.
(B-52/KC-135)

96th Bomb Wing
Dyess AFB, Tex.
(B-52/KC-135)

14th Air Division
Beale AFB, Calif.

6th Strategic Wing*
Eielson AFB, Alaska
(RC-135)

9th Strategic Reconnaissance Wing
Beale AFB, Calif.
(SR-71)

456th Bomb Wing
Beale AFB, Calif.
(B-52/KC-135)

55th Strategic Reconnaissance Wing
Offutt AFB, Neb.
(RC/EC-135)

916th Air Refueling Squadron*
Travis AFB, Calif.
(KC-135)

320th Bomb Wing*
Mather AFB, Calif.
(B-52/KC-135)

57th Air Division
Minot AFB, N.D.

5th Bomb Wing
Minot AFB, N.D.
(B-52/KC-135)

91st Strategic Missile Wing
Minot AFB, N.D.
(Minuteman)

319th Bomb Wing
Grand Forks AFB, N.D.
(B-52/KC-135)

321st Strategic Missile Wing
Grand Forks AFB, N.D.
(Minuteman)

47th Air Division
Fairchild AFB, Wash.

92d Bomb Wing
Fairchild AFB, Wash.
(B-52/KC-135)

341st Strategic Missile Wing
Malmstrom AFB, Mont.
(Minuteman)

Direct Reporting Unit
93d Bomb Wing
Castle AFB, Calif.
(B-52/KC-135)

*Tenant Unit

An SR-71 lands at Farnborough, England, September 1974, after setting a New York-to-London speed record of one hour and fifty-six minutes. SR-71, RC-135, and U-2 aircraft conduct global strategic reconnaissance for the US.

will also be transferred to other units, closing out SAC operations from that base.

The force modernization program has already brought about some unit realignments. Hq. Eighth Air Force at Andersen AFB, Guam, was redesignated in January as 3d Air Division. Subsequently, Second Air Force headquarters at Barksdale AFB, La., was retired and the headquarters redesignated Eighth Air Force.

Future outlook for strategic forces includes further modernization of the bomber and missile forces. SAC personnel and planners are watching the development of the B-1 strategic bomber that will modernize the US strategic bomber force. The B-1 made its maiden flight on December 23, 1974, and extensive flight testing is being conducted at Edwards AFB, Calif. A production decision on the B-1 program is expected late in 1976. If the decision is favorable, the B-1 could enter the operational inventory as early as 1980.

New developments in the field of communications and airborne command control are also coming to SAC. Modernization of the airborne command control operation includes the procurement of modified 747B jet transports (E-4 aircraft). A total of seven E-4s is planned, with the first three stationed at Andrews AFB, Md., for the operation of the National Emergency Airborne Command Post. Congressional appropriations for the remaining four aircraft, to be assigned to Offutt AFB, Neb., will be decided at a later date.

These improvements and changes are designed to get the most out of the strategic deterrent forces. These and more will be necessary to maintain the equilibrium of power that the United States must have to fulfill its responsibilities for deterring aggression or terminating hostilities on acceptable terms, at the lowest possible level of conflict. ■

The U.S. Department of Defense has authorized production of the A-10 aircraft for the U.S. Air Force.

That production decision is the result of two-and-one-half years of intensive flight testing and evaluation of the first USAF aircraft specifically developed to deliver anti-armor firepower in support of friendly ground forces.

The A-10 prototypes won two head-to-head competitive fly-offs.

Further tests proved the lethality of the new 30mm GAU-8 cannon and the capability of the A-10 airframe/systems to survive in the hostile close air environment. Work is well underway on the first 22 of 733 A-10s for the USAF.

A-10 production represents a major victory for military design-to-cost and fly-before-buy procurement concepts.

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A-10

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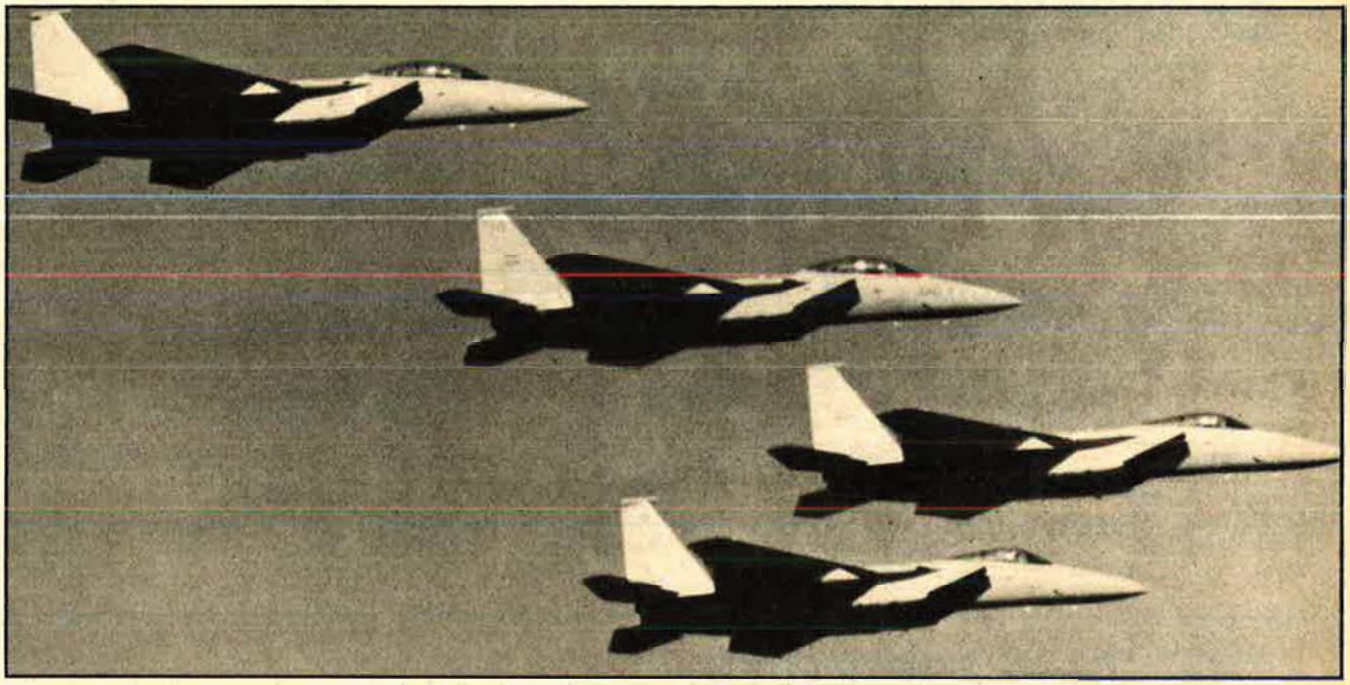
TACTICAL AIR COMMAND

This year marks the twenty-ninth anniversary of Tactical Air Command and promises to be another year of dynamic progress, coupled with change and challenge.

Major events that occurred in late 1974 and early 1975 will have a significant effect on TAC's future, and the future of American tactical airpower. Among them:

- Introduction of the F-15 Eagle air-superiority fighter into the TAC inventory.
- Authorization for initial production of the A-10 close air support aircraft.
- Designation of TAC as single manager for the Airborne Warning and Control System (AWACS), and establishment of the 4552d Aircraft Warning and Control Squadron at Tinker AFB, Okla.
- Selection of the F-16 as the Air Combat Fighter.
- Plans to disestablish Hq. Pacific Air Forces, with TAC assuming management and support functions for major tactical forces in the Pacific.
- Transfer of tactical airlift mission and resources from TAC to the Military Airlift Command (MAC).

While these developments chiefly concern the future, there were equally important ongoing programs designed to improve TAC's combat readiness, with emphasis on conservation and resources management.



The first four-ship flight of F-15s passes over Luke AFB, Ariz., home of the first operational Eagles.

Gen. Robert J. Dixon has been at TAC's helm since October 1973, following service as DCS/ Personnel, Hq. USAF. He was a fighter pilot in three wars. In addition to duties as an Air Staff planner, General Dixon has commanded a SAC air division and the Military Personnel Center. He was also Vice Commander of Seventh Air Force in Southeast Asia in 1969–70.

During 1974, TAC's concern for energy conservation was reflected in consistently exceeding the baseline goal of a fifteen percent saving in all energy uses. The Resources Conservation (RECON) program encouraged innovation in all areas and produced more than $45 million in projected savings. A typical example was an improved flying training syllabus at Luke AFB, Ariz., with a saving of $3.4 million. Another was an improvement in command supply systems while deleting

TACTICAL AIR COMMAND

Headquarters, Langley AFB, Va.

Commander
Gen. Robert J. Dixon

9th Air Force
Hq. Shaw AFB, S.C.

12th Air Force
Hq. Bergstrom AFB, Tex.

Eglin AFB, Fla.
USAF Tactical Air Warfare Center*

Eglin AAF No. 9, Fla.
(Hurlburt Field)
834th Tactical Composite Wing
(O-2, OV-10, UH-1, C-123, C-130, AC-130)
USAF Air-Ground School
USAF Special Operations School

Langley AFB, Va.
4500th Air Base Wing
2d Aircraft Delivery Gp.

Nellis AFB, Nev.
USAF Tactical Fighter Weapons Center
57th Fighter Weapons Wing
(F-4, F-111A/E, F-105, A-7, T-38)
USAF Aerial Demonstration Team

*Tenant Unit

NINTH AIR FORCE (TAC)

Headquarters, Shaw AFB, S.C.

Commander
Lt. Gen. James D. Hughes

MacDill AFB, Fla.
1st Tactical Fighter Wing
(F-4E)

Shaw AFB, S.C.
363d Tactical Recon Wing
(RF-4C, EB-66C/E)
507th Tactical Air Control Gp.
(O-2A, CH-3E)

Seymour Johnson AFB, N.C.
4th Tactical Fighter Wing
(F-4E)

Homestead AFB, Fla.
31st Tactical Fighter Wing
(F-4E)

Myrtle Beach AFB, S.C.
354th Tactical Fighter Wing
(A-7D)

England AFB, La.
23d Tactical Fighter Wing
(A-7D)

Eglin AFB, Fla.
33d Tactical Fighter Wing*
(F-4E)

Eglin AAF No. 9, Fla.
(Hurlburt Field)
823d Civil Engineering Sqdn.

Langley AFB, Va.
9th Tactical Intelligence Sqdn.*

*Tenant Unit

TWELFTH AIR FORCE (TAC)

Headquarters, Bergstrom AFB, Tex.

Commander
Lt. Gen. Charles W. Carson, Jr.

Goorgo AFB, Calif.
35th Tactical Fighter Wing
(F-4C/D/F/, F-105G)

Cannon AFB, N.M.
832d Air Division
27th Tactical Fighter Wing (832d AD)
(F-111D)

Bergstrom AFB, Tex.
67th Tactical Recon Wing
(RF-4C)
602d Tactical Air Control Gp.
(O-2A, CH-53)

Nellis AFB, Nev.
474th Tactical Fighter Wing
(F-111A)
820th Civil Engineering Sqdn.

Holloman AFB, N.M.
49th Tactical Fighter Wing
(F-4D, T-38)

Luke AFB, Ariz.
58th Tactical Fighter Training Wing
(F-15, F-4D, T-38)

Williams AFB, Ariz.
425th Tactical Fighter Training Sqdn.*
(F-5A/B/F)**

Mountain Home AFB, Idaho
366th Tactical Fighter Wing
(F-111F)

Davis-Monthan AFB, Ariz. (SAC)
355th Tactical Fighter Wing
(A-7D, DC-130A, CH-3)

*Tenant Unit
**Assigned to 58th TFT Wg.

533 manpower spaces at a saving exceeding $2.3 million.

Emphasis on management and efficiency enabled TAC to achieve the best aviation safety record in its history. In 1974, the command had nineteen fewer aircraft accidents than in 1973 and ended the year with a rate of 3.1 per 100,000 flying hours. During the year, TAC aircrews flew more than 240,000 sorties and logged some 600,000 hours.

Perhaps the single most significant event of 1974 was delivery of the F-15 to TAC at Luke AFB in November. On that occasion, President Gerald R. Ford stressed the F-15's importance when he said, "This great aircraft was constructed by the American people in pursuit of peace. Our only aim—with all the aircraft's new maneuverability, speed, and power—is the defense of freedom."

The importance of these new tactical air weapons systems was emphasized by continued progress in the Airborne Warning and Control System (AWACS) program. As the key to the future enhancement of tactical air capabilities, the E-3A AWACS is a highly versatile system capable of controlling all aspects of air warfare, including air superiority, strike, interdiction, close air support, and airlift. Its development represents a quantum jump forward in air combat operations.

During 1974, the 64th Fighter Weapons Squadron, simulating Soviet fighter tactics in T-38 Talon aircraft, provided "aggressor" opposition for TAC fighter units to sharpen and enhance air combat tactics. TAC also implemented an air-to-air training program involving Aerospace Defense Command F-106 interceptors, and developed an interservice air combat training program with the Navy and Marine Corps.

With the transfer of tactical airlift resources to MAC in December, TAC's manpower and aircraft resources decreased to approximately 81,800 and 1,600, respectively, by the end of 1974. The aircraft inventory included the F-15, F/RF-4, F-111, F-105, A-7, C/AC/DC-130, CH-3, CH-53, T-38, F-104, F-5, O-2, and OV-10. With the programmed transfer of major USAF resources in the Pacific to TAC control, the command's manpower and aircraft assets will increase significantly in the future.

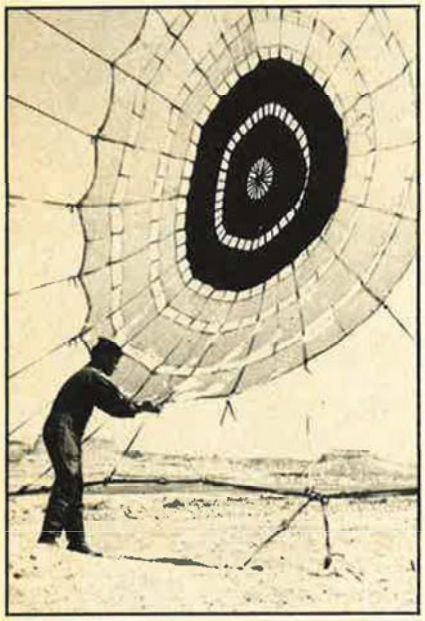
Prior to its transfer to MAC in December, TAC airlift wrote another chapter to its history of outstanding performance and humanitarian relief in disasters. Notable efforts in 1974 included relief missions in Bolivia, Colombia, and Honduras; and, for the second straight year, TAC airlifters provided assistance to the drought-stricken African nations of Chad, Mali, and Mauritania, delivering nearly 9,500 metric tons of grain and other relief supplies.

On three occasions in 1974, TAC clearly demonstrated its readiness and capability to support the North Atlantic Treaty Organization. In March, forty-eight F-4s deployed from Holloman AFB, N. M., to Germany for a thirty-day exercise in Crested Cap '74. This was followed in early May by Creek Bee '74, under which eighteen RF-4s were deployed from Bergstrom AFB, Tex., to Germany in a second month-long exercise. Both are annual exercises of TAC's dual-based units, committed to the support of NATO.

The third exercise was Coronet Viking, a special deployment of eighteen F-4s from Seymour Johnson AFB, N. C., to Norway's Bodo AB. This was a unique demonstration of the readiness of the US Air Force—and TAC—to respond quickly to any crisis in Europe requiring augmentation of NATO airpower. Only limited TAC maintenance supervisory personnel and crew chiefs with tool boxes accompanied the deployment. Additional support was provided by USAFE and the Royal Norwegian Air Force. ■

Top, SSgt. Steven Skaggs at the console of Mountain Home AFB F-111 simulator, which helps train TAC aircrews at some $2,000 an hour less than the cost of F-111 air time. At left, A1C Carol Johnson, a weapons control system specialist, doctors an F-4 radar at Nellis AFB, Nev.

UNITED STATES AIR FORCES IN EUROPE



A strafing target at a range in Spain, where USAFE pilots do most of their air-ground weapons training.

The United States Air Forces in Europe (USAFE) traces its origin to early 1942, but it observes the thirtieth anniversary of its formal activation in August. Although old by Air Force standards, youthful innovation, flexible development, and streamlined operation continue to characterize the command.

Change notwithstanding, USAFE's basic mission and dedication to the security of Western Europe remain the same. The primary mission is support for United States airpower commitments to the North Atlantic Treaty Organization (NATO). USAFE's peacetime efforts are directed mainly toward training and equipping its units to carry out the NATO mission. It also assists air forces of other NATO nations in developing their combat capabilities.

USAFE maintains combat-ready units dispersed in an area from the United Kingdom to Turkey. As a component of the US European Command, USAFE also supports US military plans and operations throughout that unified command's vast geographical area of responsibility. About 65,000 Air Force personnel, by far the majority of them assigned to USAFE units, are involved in these varied and demanding missions.

USAFE's tactical fighter inventory consists of two basic aircraft types, the F-4 Phantom and the F-111. Some 400 F-4s based in Germany, the Netherlands, the United Kingdom, and Spain account for the majority of the command's aircraft. The C, D, and E model Phantoms perform the attack and air defense roles required by NATO. E models, which carry out the day-to-day, all-important air defense alert mission, continue to undergo installation of a leading-edge slat that greatly improves the aircraft's maneuverability. Some ninety RF-4s provide the command with an all-weather, day/night reconnaissance capability.

USAFE's approximately seventy swingwing F-111s with their range, penetration ability, instrumentation, payload, and low-level supersonic dash speed provide the all-weather capability so necessary to perform in Central Europe's often adverse weather. Use of the F-111's radar offset beacon bombing capability in support of ground troops in extreme weather has been vividly demonstrated in Europe at the US Army's Grafenwohr Range in Germany. Installation of the tactical "LORAN D" system in Central Europe provides additional all-weather and night capability for USAFE aircraft.

Other aircraft in the command include ten OV-10 Broncos and four C-9 Nightingale flying hospitals. About thirty C-130 tactical airlift aircraft are under USAFE operational control while on rotational duty in Europe. USAFE continues to have access to augmentation by NATO-committed, dual-based tactical fighter, reconnaissance, and airlift aircraft located in the US.

During the past year, USAFE has been deeply involved in major programs and changes designed to improve command and control of NATO's air resources in Europe's Central Region, and to improve the command's capability to support ground forces at night and in poor weather.

The major organizational change involving the command was establishment in June 1974 of the new Allied Air Forces Central Europe (AAFCE), which is also commanded by Gen. John W. Vogt, USAFE Commander in Chief. This new NATO command consists of Air Force units from six NATO countries—Belgium, Canada, Germany, the Netherlands, the United Kingdom, and the US. Its headquarters is collocated with USAFE's at Ramstein AB, Germany, and the unit reports directly to NATO's Allied

Gen. John W. Vogt has been CINC of USAFE since June 1974. Formerly CINC of PACAF, he is the only officer ever to fill both posts. A WW II fighter ace over Europe, General Vogt has held numerous key positions on JCS and Air Force staffs. He commanded Seventh Air Force for the last eighteen months of US combat activity in Vietnam.

Forces Central Europe (AFCENT) Headquarters in Brunssum, the Netherlands.

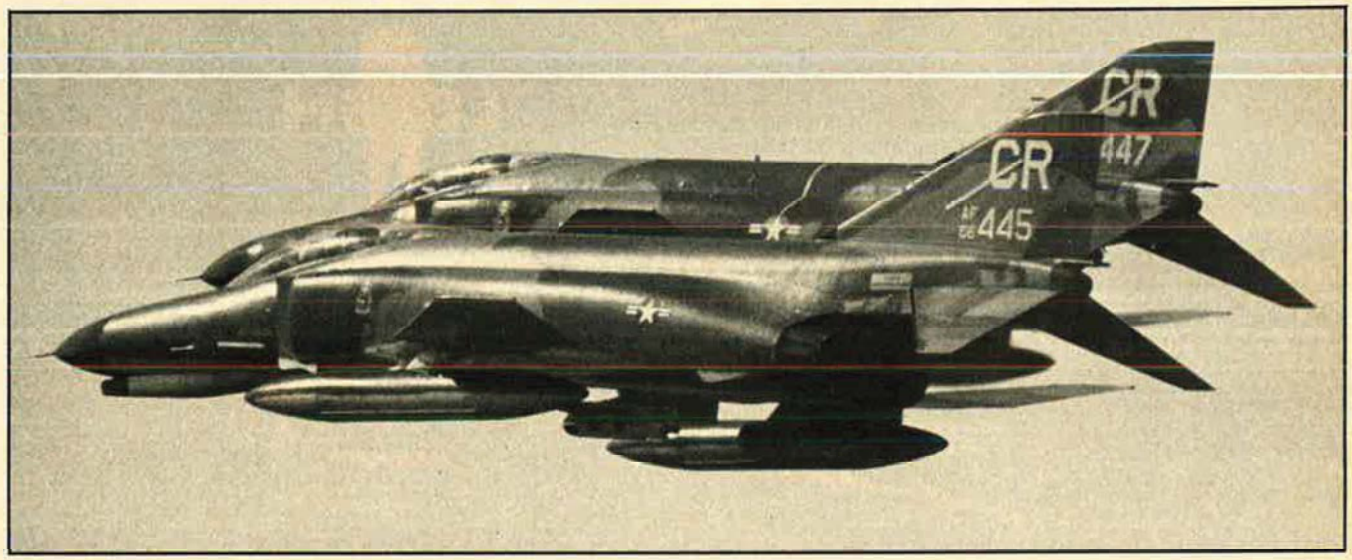
Most of USAFE's forces are NATO-committed and would be employed by AAFCE in case of war.

The new NATO command permits centralized command and control over the Central Region and provides a basis for standardized operations. The result, during hostilities or tension, would be the integrated employment of all Central Region air forces.

As USAFE continues to reduce overhead, improve command and control, and increase combat capability, the command eagerly anticipates the future and new Air Force systems—the F-15 Eagle air-superiority fighter, the close air support A-10, the F-16 Air Combat Fighter, and the Airborne Warning and Control System (AWACS). Each can help hone USAFE's combat edge in the European environment. ■

THE MAJOR OPERATIONAL UNITS OF USAFE

UNIT	LOCATION	AIRCRAFT/MISSION
10th Tac Recon Wing	RAF Alconbury, England	RF-4C
48th Tac Fighter Wing	RAF Lakenheath, England	F-4D
20th Tac Fighter Wing	RAF Upper Heyford, England	F-111E
81st Tac Fighter Wing	RAF Bentwaters/Woodbridge, England	F-4D, MAC Rescue HC-130, HH-53
513th Tac Airlift Wing	RAF Mildenhall, England	TAC Rotational C-130, SAC Rotational KC-135
401st Tac Fighter Wing	Torrejon AB, Spain	F-4C, SAC Rotational KC-135
406th Tac Fighter Training Wing	Zaragoza AB, Spain	Tactical Range Support, Weapons Training School
40th Tac Air Control Group	Aviano AB, Italy	Rotational USAFE Aircraft, Command and Control
TUSLOG Detachment 10	Incirlik CDI, Turkey	Rotational USAFE Aircraft
601st Tac Control Wing	Wiesbaden AB, Germany	Communications, Command and Control
7400th Air Base Group	Sembach AB, Germany	Command and Control
7206th Air Base Group	Athenai Airport, Greece	Support and Communications
7350th Air Base Group	Tempelhof Airport, Berlin	Support and Communications
86th Tac Fighter Wing	Ramstein AB, Germany	F-4E
322d Tac Airlift Wing	Rhein-Main AB, Germany	C-9, TAC Rotational C-130, ANG Rotational KC-97
26th Tac Recon Wing	Zweibrucken AB, Germany	RF-4C
36th Tac Fighter Wing	Bitburg AB, Germany	F-4E
50th Tac Fighter Wing	Hahn AB, Germany	F-4E, F-4D
32d Tac Fighter Squadron	Camp New Amsterdam, Netherlands	F-4E
52d Tac Fighter Wing	Spangdahlem AB, Germany	F-4C, F-4D



F-4E Phantoms, this pair based in the Netherlands, carry out USAFE's air defense alert mission. Some 400 F-4s of all models patrol Europe's skies.

UNITED STATES AIR FORCES IN EUROPE

Headquarters, Ramstein AB, Germany

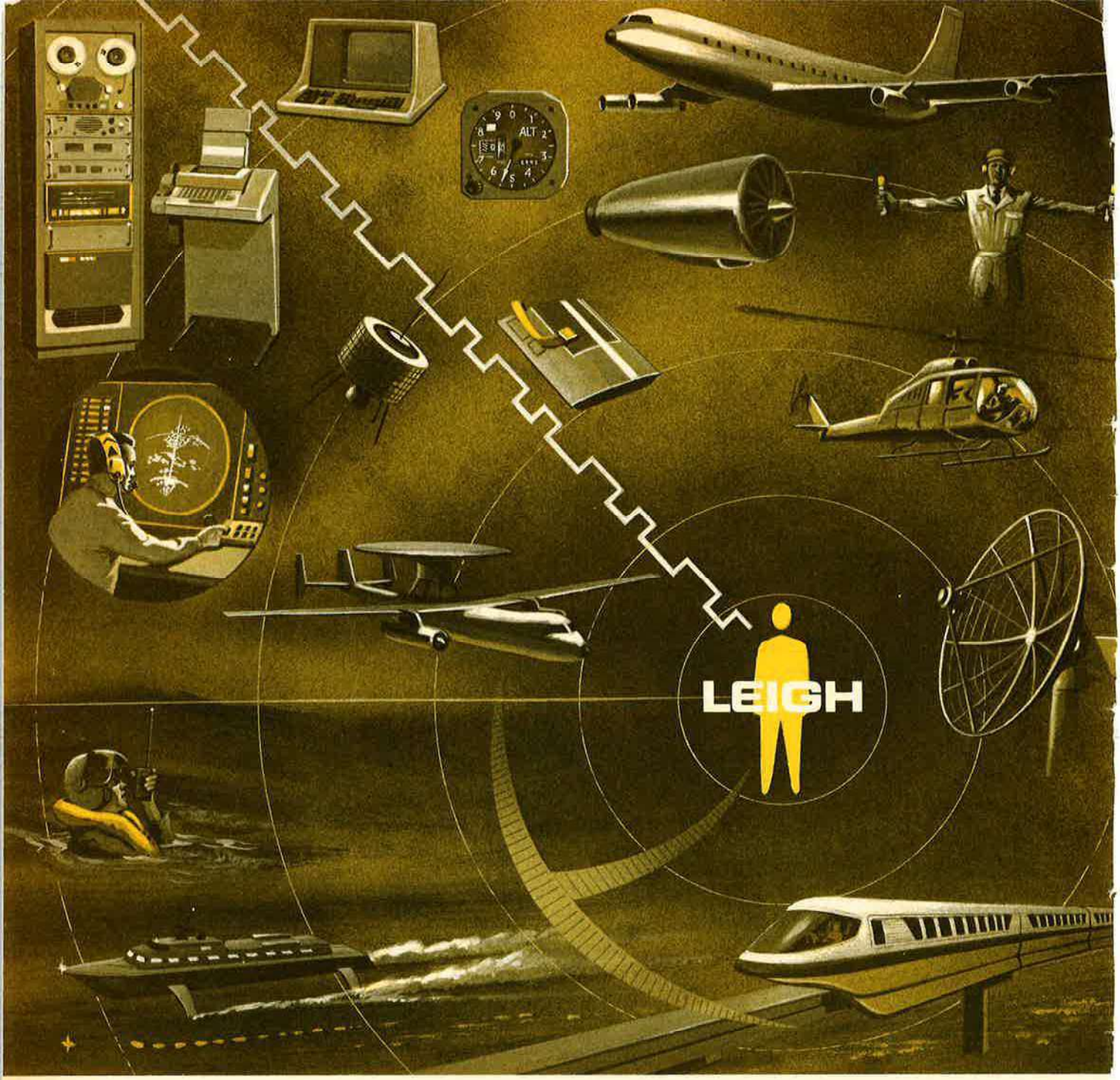
US European Command (USEUCOM) — **US Air Force (USAF)**

Headquarters
United States Air Forces in Europe (USAFE)
Hq. Ramstein AB, Germany
Gen. John W. Vogt, Commander in Chief

3d Air Force
Hq. RAF Mildenhall, England

16th Air Force
Hq. Torrejon, Spain

17th Air Force
Hq. Sembach AB, Germany



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USAF SECURITY SERVICE

A major air command, the US Air Force Security Service (AFSS) provides signals intelligence, communications security (COMSEC), and electronic warfare analysis services for Air Force units throughout the world. AFSS also serves as the Air Force signals intelligence element of the National Security Agency/Central Security Service.

To accomplish this highly technical and important mission, the command has people deployed in forty-three locations throughout the United States and eleven foreign countries. Maj. Gen. H. P. Smith, Commander of AFSS since May 1974, directs the operation of these globally dispersed units from his Kelly AFB, Tex., headquarters.

AFSS was activated at Arlington Hall Station, Va., on October 20, 1948, charged with the cryptologic mission for the relatively new Department of the Air Force. From its original cadre of eleven officers and a handful of enlisted men on loan from the Army, the command began to grow as it moved first to Brooks AFB, Tex., in 1949, and then to its present site at Kelly AFB four years later.

AFSS reached its peak strength of nearly 30,000 members during the Vietnam conflict. As the state of the communications art developed new equipment needing fewer operators, technology plus reduced operations and maintenance costs streamlined the command to its present strength of 17,300, with no effect on its multifaceted support to Air Force tactical units.

In order to perform its mission successfully, AFSS provides the materials and services necessary to safeguard information of intelligence value that is transmitted electrically. This involves buying, storing, distributing, accounting for, and providing depot maintenance and technical assistance for COMSEC devices and materials required to make USAF communications secure. AFSS also manages the Air Force COMSEC education program and provides advisory services and materials to support the major command education programs.

To provide those services, AFSS operators monitor and evaluate all vulnerable USAF communications systems to detect and correct improper transmission procedure and faulty COMSEC equipment, and to determine if classified information or information of intelligence value is being transmitted over insecure systems.

The surveillance aspect is performed by units located in each major theater of Air Force operations, while specially equipped mobile teams often augment the "fixed sites" by flying on aircraft of other commands to spot-check air-to-air and air-to-surface communications and provide on-the-spot technical assistance. Additionally, mobile Emergency Reaction Units (ERU) stand ready to be deployed anywhere in the world to support tactical exercises or actual emergencies.

Working from a mobile van, a USAFSS technician does a spot security check on open communications lines.

The vital support that AFSS provides the rest of the Air Force dictates the use of the most sophisticated electronic and cryptographic equipment available. The command's equipment inventory ranges from small, inexpensive cryptographic devices, through modern data recorders and computers, to specially designed high-frequency and very-high-frequency receivers and antenna systems. Some antennas cover as many as thirty-five acres and extend up to 125 feet in the air.

Because of the type of equipment used and the deployment pattern required to spot-check air-to-air and air-to-surface communications for security evaluation, AFSS units also perform direction-finding and range-estimation functions in support of search-and-rescue operations.

Since 1948, AFSS units have earned nearly 100 Air Force Outstanding Unit Awards, two Presidential Unit Citations, the Navy Meritorious Unit Commendation, and special awards for outstanding contributions to the national cryptologic effort. ■

Maj. Gen. Howard P. Smith has commanded USAFSS since May 1974. He was previously Deputy Director for Intelligence, DIA. A veteran bomber pilot, General Smith has held numerous SAC assignments. He was director of targets for Seventh Air Force and PACAF from 1967–70, and has been Deputy ACS/Intelligence, Hq. USAF.

UNITED STATES AIR FORCES SOUTHERN COMMAND

The US Air Forces Southern Command (USAFSO), with headquarters in the Canal Zone, is the USAF major command in Latin America and the air component of the unified US Southern Command.

Commanded by Maj. Gen. James M. Breedlove, USAFSO operates Howard AFB and Albrook AFS in the Canal Zone. In addition to its responsibility for providing the air element of defense of the Panama Canal, the command acts as executive agent in all matters pertinent to the System of Cooperation Among the American Air Forces (SICOFAA). USAFSO also provides advice, assistance, and training to Latin American air forces and logistic and other support for US Military Groups and their Air Force sections in fifteen of the twenty Latin American republics.

Headquarters of the command is at Albrook, along with the Inter-American Air Forces Academy, the 1978th Communications Group, and the USAF Tropical Survival Training School (ATC). Air Force flying activity is conducted from Howard, headquarters for the command's 24th Composite Group.

Also at Howard are Det. 25, 5th Weather Wing (MAC), and rotational aircraft detachments from MAC, TAC, and the Air Force Reserve.

As of January 31, 1975, there were 2,039 military personnel and 809 DoD civilian employees assigned to USAFSO and tenant units in the Canal Zone.

The Inter-American Air Forces Academy provides professional advancement courses and technical training in Air Force occupational specialties for personnel of the Latin American air forces, and Spanish translation services for Air Force training publications. In 1974, the Academy graduated nearly 500 students from sixteen Latin American air forces, bringing to more than 12,000 the number of students trained since the Academy opened in 1943.

Last year saw the beginning of specialized training courses in A-37, T-37, C-130, and UH-1H aircraft at the Academy. Courses are conducted in Spanish.

Additionally, USAFSO personnel assist Latin American air forces through Mobile Training Teams and Technical Assistance Teams covering such functional areas as operations, personnel, and logistics. In 1974, about forty such teams were deployed throughout Latin America.

USAFSO is also responsible for coordinating joint search and rescue operations of US air, sea, and ground forces in Latin America. During 1974, the USAFSO Rescue Coordination Center at Albrook directed 139 search and rescue or emergency medical evacuation flights, assisting 219 people and saving the lives of thirty-six.

Maj. Gen. James M. Breedlove took command of USAFSO in October 1974, following service as Deputy Director, Defense Mapping Agency. He was a combat fighter pilot in Korea and Southeast Asia, where he commanded the 388th TFW. General Breedlove has also served in staff positions with USAFE and Hq. USAF.

Support of joint US Army-US Air Force training programs, civic action, humanitarian airlift, and disaster relief activities are other important parts of the USAFSO mission. Among the airlift missions, USAFSO conducted its largest disaster relief operation since the Managua earthquake of 1972 when its personnel provided assistance to the people of northern Honduras, devastated by floods in late 1974.

The command provided airlift of civic-action materials to Trinidad, Bolivia, and Colombia. Twenty tons of relief supplies were flown to Bolivia after massive flooding left some 7,000 homeless. Also, when a landslide near Villavicencio, Colombia, isolated the nation's agricultural district at harvest time, C-130 Hercules aircraft attached to USAFSO flew harvesters and grain dryers into the area and then flew the grain to market in Bogotá, preventing a critical food shortage and economic ruin of the farmers.

Designated as the USAF representative for System of Cooperation matters, USAFSO fulfills US commitments contracted through this organization. SICOFAA's primary objective is to promote and strengthen ties of friendship, cooperation, and fraternity among the air forces of the Western Hemisphere. The command is responsible for administering SICOFAA's Permanent Secretariat and for hosting, and, as appropriate, chairing the Preplanning Conference for the annual American Air Forces Chiefs' meeting (CONJEFAMER). USAFSO also provides USAF representation to the SICOFAA committees on logistics, training, search and rescue, medicine, telecommunications, and air accident prevention.

In 1974, the Air Force section of the US Military Group–Venezuela became the first Western Hemisphere unit of its kind to win the Air Force Outstanding Unit Award. The section was honored for furthering US foreign policy in modernization of the Venezuelan Air Force. The 776th Air Force Band won its third Outstanding Unit Award for "furthering the Air Force mission of hemispheric solidarity through professional musical performances throughout Latin America," and the rawinsonde section of Det. 25, 5th Weather Wing, won the Air Weather Service Bassett Award for the second straight year. ■

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A SEPARATE OPERATING AGENCY

AIR FORCE ACCOUNTING AND FINANCE CENTER

The Air Force Accounting and Finance Center, headquartered in Denver, Colo., is the money center for the worldwide operations of the US Air Force.

AFAFC develops the overall policies on how the global network of accounting and finance offices will function; prepares systems necessary to implement those policies; keeps all accounting and finance offices informed about administration of those systems; centrally pays Air Force personnel; and accounts for Air Force funds. Under today's strict economy and budget limitations, the Center utilizes the most professional financial management techniques in accomplishing its mission.

Brig. Gen. Lucius Theus is Director of Accounting and Finance, USAF, serving on the staff of the Air Force Comptroller, and Commander of the AFAFC. His Directorate includes forty officers, 260 airmen, and 2,130 civilians.

The best-known part of the AFAFC mission is providing efficient pay service for Air Force members. This is done through a modern centralized pay system—the Joint Uniform Military Pay System (JUMPS)—that became fully operational in August 1974, with more than 600,000 military pay records. Master pay records of active-duty Air Force members are located and managed at AFAFC. In addition, AFAFC centrally pays all Air Force retirees and all members of the Air National Guard and Air Reserve Force.

JUMPS—the centralized automated pay, leave, and accounting system—integrates Air Force members' pay, allotments, leave, and indebtedness information into master accounts. These are maintained on computers and updated daily to provide Air Force personnel with accurate and timely pay data.

Another important function of the JUMPS program is the tighter financial control and better management of the Air Force military pay appropriation. AFAFC is responsible for reporting Air Force expenditures to Air Force managers and to the Congress. JUMPS will improve this capability for the military pay appropriation and make future projections more realistic, accurate, and timely.

AFAFC accounts for the entire Air Force appropriation made by Congress—$26 billion in FY '76. This requires on-time management of Air Force monies with extensive accounting reports. In many cases, within a day or two after dollars have been spent or committed in the worldwide operations of the Air Force, the managers have precise figures before them. These are summarized into accounting reports that are forwarded to Hq. USAF and other government agencies to support overall financial management.

Brig. Gen. (Maj. Gen. selectee) Lucius Theus has been Commander, AFAFC, and Director of Accounting and Finance, Office of the AF Comptroller, since June 1974. He had been Special Assistant for Social Actions, DCS/Personnel, Hq. USAF, and helped establish the DoD Race Relations Institute. General Theus is the only nonrated MAJCOM or SOA commander.

Looking toward the future, the Center has begun a new system for the electronic transfer of funds. AFAFC furnishes military pay data for commercial banks on a tape and a single check to the Denver branch of the Federal Reserve System. In turn, this data is transmitted to other FRS regions throughout the nation and then to area banks, eliminating the use of postal service. Because of the high volume, savings are expected to be in millions of dollars.

Over the years, AFAFC has continually developed new financial management systems that have been recognized as revolutionary by the industry and government sectors of the nation. ■

A SEPARATE OPERATING AGENCY

AIR FORCE AUDIT AGENCY

The mission of the Air Force Audit Agency (AFAA) is to provide independent, objective, and constructive evaluations of systems, programs, etc., throughout the Air Force. The AFAA deploys its professional staff at major USAF installations worldwide. By having auditors "where the action is," the AFAA maintains continual contact with all levels of Air Force management, permitting timely response to local management problems as well as to conditions that are Air Force-wide.

The Agency traces its mission origin to public law and the General Accounting Office, Department of Defense, and Air Force regulations. The audit function is the responsibility of the Comptroller of the Air Force, but execution has been delegated solely to AFAA.

The Commander of the AFAA, Brig. Gen. Thomas G. Bee, is also designated The USAF Auditor General. He reports directly to the Comptroller of the Air Force and has direct communication with the Assistant Secretary of the Air Force for Financial Management.

The Auditor General, his Deputy —Mr. Trenton D. Boyd—and all staff directorates are located at Norton AFB, Calif. The Assistant

Auditor General—Col. Andrew E. Migala—and his staff represent and act for The Auditor General at Hq. USAF.

As of January 31, 1975, AFAA had an authorized professional staff of 925 auditors (508 military and 417 civilian) to provide audit service to commanders and managers throughout the Air Force. These professionals serve the needs of installation commanders as well as Air Staff managers on a host of topics.

Air Force auditors examine policies, systems, procedures, and controls employed in the management of the Air Force's multifunctional operations. Their evaluations of a wide variety of areas—such as aircraft operations, logistics, maintenance, and personnel—provide managers increased visibility and additional alternatives for decision-making.

Operationally, the AFAA has three functional divisions and four geographic regions. The Acquisition Systems Division, headquartered at Andrews AFB, Md., serves the Air Force Systems Command (AFSC) and manages audit efforts at AFSC's buying divisions. The Logistic Systems Division, Wright-Patterson AFB, Ohio, audits the functions and operations of the Air Force Logistics Command and supervises audits of the Air Logistics Centers. The Service-Wide Systems Division, collocated with Hq. AFAA at Norton AFB, Calif., manages audits of standard Air Force-wide accounting and management systems (*e.g.*, Joint Uniform Military Pay System, Standard Base Supply System, Advanced Personnel Data System). This division is also responsible for audit offices at AFAFC, AFMPC, and AFDSDC.

AFAA centrally directs audits of Air Force-wide programs or problems from its headquarters at Norton. These audits are performed at selected Air Force bases, but are centrally summarized and consolidated into a single report that is released to the highest levels of Air Force management and to the Office of the Secretary of Defense.

The majority of the AFAA's audit offices are assigned to four geographic regions—Western, Central, Eastern, and European. The regions are responsible for the overall supervision and management of their assigned audit offices. On-site managers of these worldwide audit offices, known as resident auditors, provide audit service to local installation commanders and managers to identify local potential trouble spots, thus allowing management to increase productivity.

The AFAA also provides commanders at all levels confidential, independent, and professional audit service through the Commanders Audit Program (CAP). This program differs from the typical local audit in that the audit results are reported only to the requesting commander. The CAP allows commanders personalized assistance when reviews of self-identified priority problems would exceed their in-house capabilities.

Brig Gen. Thomas G. Bee has served as Auditor General and AFAA Commander since December 1974. He was previously Assistant for Requirements Development and Acquisition Programming, DCS/R&D. A combat fighter pilot in Korea and Vietnam, General Bee has served in various R&D assignments.

During FY '74, the AFAA issued seventy-eight summary audit reports, 4,275 local audit reports to major command and base-level managers, and 818 CAP reports.

In the past year, the AFAA made significant improvements in managing its audit resources. Included were shifts in audit priorities and greater emphasis in priority areas of audit; implementation of a performance measurement system; increased emphasis on the research phase of potential audit subjects; improved audit planning techniques; and expanded use of the computer to assist in planning and managing AFAA audit operations. ■

A SEPARATE OPERATING AGENCY

AIR FORCE DATA AUTOMATION AGENCY

The Air Force Data Automation Agency (AFDAA) was established as a separate operating agency on February 29, 1972, to provide centralized management and common organizational alignment of similarly engaged automatic data processing (ADP) activities. It is responsible for automatic data-processing support to Hq. USAF, major commands, bases, the Office of the Secretary of Defense (OSD), and other federal and separate operating agencies.

The agency consists of a headquarters element at Gunter AFS, Ala., and three subordinate centers: the Air Force Data Services Center (AFDSC), the Air Force Data Systems Design Center (AFDSDC), and the Federal Computer Performance Evaluation and Simulation Center (FEDSIM). Approximately 1,120 military and 740 civilians are assigned to AFDAA.

Maj. Gen. Jack B. Robbins, AFDAA Commander, serves in the Pentagon in a second capacity as the Air Force Director of Data Automation.

Maj. Gen. Jack B. Robbins has been Commander of AFDAA and USAF's Director of Data Automation since September 1971. Previously AFCS's Chief of Staff, General Robbins has commanded a troop-carrier squadron and served in AFOSI, AFSC's Electronics Systems Division, and Hq. USAF.

The agency Vice Commander, Col. Gearald D. McCrea, is assigned to Gunter AFS and directs the daily activities of the headquarters staff.

Through its centers, AFDAA participates in and performs ADP support, beginning with the conceptual stage of a system and extending through its operational life.

The operating philosophy of AFDAA assures a high degree of autonomy for the centers in carrying out assigned missions. AFDAA's organizational structure provides proper management and grouping of data automation skills necessary to respond to major command requirements. Direct access to the centers by activities served ensures prompt response to the users.

AFDAA's oldest organization is the Air Force Data Services Center. Formerly a field extension of the Air Staff, it is located in the Pentagon and provides automatic data processing, computing, and management science services to Hq. USAF, OSD, and other agencies. In addition, AFDAA also plans, designs, develops, and implements computer-based management information systems that serve in support of these agencies.

AFDAA's largest organizational element is the Air Force Data System Design Center, established in 1967. With about 1,300 people assigned, it designs, develops, and maintains standard automated data systems assigned by Hq. USAF.

Major responsibilities of AFDSDC are to analyze, design, develop, progam, test, initiate the use of, and maintain assigned automated data systems for standard management supporting systems; establish the use of common computer techniques approved by USAF for assigned automated data systems, and recommend areas for additional applications; and develop and maintain general-purpose software.

AFDSDC also develops and recommends standards for programming languages; establishes documentation requirements for automated data systems according to Air Force policies; participates in the development of related standards for equipment; and acts as the Automatic Data Processing Systems Manager for base and major command Automated Data Processing Systems.

AFDAA's newest organization is the Federal Computer Performance Evaluation and Simulation Center, which is unique in the government. It was established near Washington, D. C., in February 1972, by the General Services Administration (GSA) to provide computer performance/evaluation services to all federal government agencies. Because of USAF's recognized expertise in this developing discipline, it was designated executive agent to operate this center for the GSA.

FEDSIM is underwritten financially by the GSA ADP fund to provide a source for advanced techniques of computer performance/evaluation services on a fully reimbursable basis. It has a full range of computer performance tools, including simulation languages and packages, hardware and software monitors, and analytical routines. New developments in the field are regularly applied to ensure that the center remains at the forefront of the state of the art in performance evaluation. ■

A SEPARATE OPERATING AGENCY

AIR FORCE INTELLIGENCE SERVICE

The Air Force Intelligence Service (AFIS) was established as a Separate Operating Agency on June 27, 1972. AFIS is authorized to collect, evaluate, correlate, and disseminate Air Force intelligence. In addition, Department of Defense directives call for the Air Force to provide an organization capable of furnishing adequate, timely, and reliable intelligence for DoD use. The mission of AFIS is to provide specialized intelligence services and intelligence to Hq. USAF and USAF commanders worldwide.

The Assistant Chief of Staff for Intelligence (ACS/I), Maj. Gen. George J. Keegan, Jr., serves in the dual capacity as ACS/I and as Commander of AFIS.

AFIS performs intelligence operations and support functions in human source intelligence, operational intelligence, target intelligence, special research, special security, intelligence communications, intelligence data management, attaché affairs, and intelligence Reserve Forces.

AFIS is comprised of the following major organizational elements:

- The 7602d Air Intelligence Group (AINTELG), formerly the 1127th USAF Field Activities Group, is headquartered at Fort Belvoir, Va., and is responsible for management and collection of worldwide human source intelligence, as well as evasion and escape and prisoner-of-war intelligence.

During Operation Homecoming, the Group provided active and Reserve personnel skilled in debriefing to assist in processing returning prisoners of war from Southeast Asia. These personnel are sifting and reviewing data from POW "lessons learned" to better prepare the Air Force in the event the US is faced with a potential prisoner-of-war situation again.

- The Directorate of Operational Intelligence provides the Air Force with all source intelligence pertaining to or affecting Air Force policies, resources, force deployment and employment, indications and warning, intelligence analysis of current operations, and special intelligence research. It also provides targeting, weaponeering, and cartographic expertise. This directorate is the Air Force point of work-

Maj. Gen. George J. Keegan, Jr., has headed AFIS since its inception in June 1972. He is also Assistant Chief of Staff, Intelligence, Hq. USAF, and was previously DCS/P&O for AFLC. A WW II combat pilot in the Pacific, General Keegan was honored by the Republic of Vietnam for planning the defense of Khe Sanh during the 1968 Tet offensive.

ing contact with the Defense Mapping Agency. The Aerospace Intelligence Division of the Directorate of Operational Intelligence ensures that the Secretary of the Air Force, the Chief of Staff, and key Air Staff officers receive the vital, timely, and accurate intelligence necessary to assess critical situations that develop during such world crises as the Arab-Israeli war.

- The Directorate of Security and Communications Management oversees the worldwide Air Force Special Security Office and Special Activities Office systems by ensuring compliance with special intelligence security, intelligence telecommunications, and communications security policies.
- The Intelligence Data Management Division plans, coordinates, and exercises management control of worldwide Air Force intelligence data handling capabilities.
- The Directorate of Attaché Affairs operates the Air Force attaché program, supports the Defense Attaché System (DAS), and monitors all matters concerning Air Force participation in DAS.
- The Directorate of Intelligence Reserve Forces manages the Air Force Intelligence Service Reserve Program. Responsibilities include recruitment, administration, training, and utilization of intelligence mobilization augmentees who provide an immediate support capability under the Total Force Policy to active-force peacetime, contingency, and mobilization requirements.

The Air Force Intelligence Service participates in a number of joint and Air Force training exercises each year with other Air Force commands and the Army and Navy to improve the state of readiness of active and Reserve intelligence personnel. ■

A SEPARATE OPERATING AGENCY

AIR FORCE INSPECTION AND SAFETY CENTER

Maj. Gen. Ranald T. Adams, Jr., has been Commander of AFISC and Deputy IG for Inspection and Safety, OIG, Hq. USAF, since September 1974. He previously commanded the 26th NORAD/CONAD Region and the 26th Air Division, ADC. General Adams was a combat fighter pilot in Korea and chief of an AF advisory team in Vietnam.

This year marks the twenty-fifth anniversary of the arrival at Norton AFB, Calif., of the first components of today's Air Force Inspection and Safety Center (AFISC). The directorates of Flight Safety Research and Technical Inspection were established at Norton in 1950, moving from Langley AFB, Va., and Kelly AFB, Tex., respectively.

AFISC is part of the organization of The Inspector General, USAF, and is responsible for surveillance of all Air Force matters pertaining to inspection and safety. The role of The Inspector General traditionally has been to act as the "eyes and ears" of the Chief of Staff. The Center's Commander, Maj. Gen. Ranald T. Adams, Jr., who also serves at Air Staff level as the Deputy Inspector General for Inspection and Safety, carries out this role.

The Center is responsible to The Inspector General for planning, directing, and monitoring the Air Force inspection system and safety programs to help assure that the Air Force's fighting capability is sustained and managed effectively.

On January 31, 1975, AFISC's work force totaled 518 (381 military and 137 civilian), including forty-eight personnel at Kirtland AFB, N. M. In addition, twenty-one people attached to the Center at Norton include exchange officers from Australia, Canada, and Germany; safety engineering representatives from seven major aerospace manufacturers; and two Federal Aviation Administration employees.

AFISC is divided into five directorates. Four are primary mission directorates—Inspection, Aerospace Safety, Medical Inspection, and Nuclear Safety. The fifth—the Directorate of Programs—supports the others in such functional areas as programs development, analysis, scheduling, budget, transportation, and manpower management.

Recent changes in IG philosophy not only impact on inspection and safety at Hq. USAF level, but soon will be felt throughout the Air Force. The objective is to focus inspection, safety, and medical expertise on identification of the most significant management problems throughout the Air Force, determine root causes, and recommend lasting solutions.

The Center's Directorate of Inspection was reorganized recently to be more responsive to the current philosophy. The resource management inspection is a thing of the past; wall-to-wall, base-level inspections are no longer conducted.

Today the Directorate conducts three types of inspections: The Functional Management Inspection (FMI) evaluates well-defined activities and programs, and the big payoff, in terms of resource savings, comes from this inspection; the System Acquisition Management Inspection (SAMI) looks into all aspects of the acquisition process to identify problems early in developmental stages of new weapons systems; the Command Inspection System Inspection (CISI) evaluates MAJCOM/SOA IG performance and the results of actions taken on problems identified.

The major role of the Directorate of Aerospace Safety is to monitor Air Force experience in all safety disciplines except nuclear, and formulate guidance for the equipment operators and other Air Force personnel for accident-prevention programs. Its successes in these endeavors annually save the Air Force hundreds of millions of dollars in hardware and probably scores of lives.

The lowest major aircraft accident rates in USAF history were attained in the years 1973 and 1974—2.3 and 2.8, respectively, for every 100,000 hours flown.

Through its Safety Education Division, the Directorate disseminates a wealth of information on safety

matters learned from inspections, analysis, research, and accident/incident investigations. The most visible methods used are the Safety Officer's Study Kits, whose posters are a familiar sight on the bulletin boards on every Air Force installation; *Aerospace Safety* Magazine; and the popular *Driver* Magazine, distributed widely in both the military and civilian communities.

Maintenance of the nation's only repository for all USAF accident records is the responsibility of the Directorate's Reports and Analysis Division. Its microfilmed files date back to the first fatal military aircraft mishap in 1908.

The Directorate of Medical Inspection was established at the Center on July 1, 1974, by direction of the Air Force Chief of Staff. This new directorate consolidates all medical inspection activities for active-duty and Air Reserve Force medical units worldwide. Its personnel evaluate the mission capability of medical units through Health Services Management Inspections (HSMIs) that place emphasis on total management systems and practices. When necessary, instructional or correctional programs are initiated during inspections to ensure unit understanding of each management system and its objective.

The Directorate of Nuclear Safety at Kirtland AFB is the focal point for administration of the worldwide USAF nuclear safety program. Its primary responsibility is to develop and monitor policies, procedures, programs, and standards for prevention of nuclear accidents or incidents.

The Center's third-generation computer complex provides immediate access to its numerous data files in response to official Air Force requests from around the world for inspection and safety information. Its latest addition is a computer output to microform (COM) unit that allows direct production of microfilm from the computer. ■

A SEPARATE OPERATING AGENCY

AIR FORCE TEST AND EVALUATION CENTER

Newest of the separate operating agencies is the Air Force Test and Evaluation Center (AFTEC) at Kirtland AFB, N. M. Activated at the beginning of 1974, AFTEC became completely operational in October.

AFTEC provides the Air Force a unique foundation for objectively judging and reporting a new weapon system's operational capabilities and limitations. The Center was organized in response to the need for an operational test management agency independent from the developing and operating commands.

AFTEC's primary mission is to determine the military utility of new weapon systems and how well those systems perform when operated and maintained by military personnel in the environment for which they were developed. Essentially, that is operational test and evaluation (OT&E).

As manager of such programs, AFTEC has an added responsibility as the principal spokesman for Air Force OT&E. AFTEC's Commander, Maj. Gen. Richard G. Cross, Jr., reports the results of OT&E to the Chief of Staff, the Secretary of the Air Force, and principals of the Defense Systems Acquisition Review Council to assist in making hardware-production decisions.

The nucleus of the AFTEC organization is a staff of test managers, planners, and analysts based at Kirtland AFB. As of January 31, 1975, AFTEC had 160 military and thirty-four civilians assigned. Three-fourths of its people are officers or equivalent-grade civilians.

AFTEC is already engaged in planning or performing operational tests on thirty-five major weapon systems (involving at least $50 million R&D or $200 million production costs) and also on certain special-interest nonmajor weapon systems.

With its blend of operational, test, and technical personnel, AFTEC—in a joint effort with the major commands—designs the test and manages its execution. After analyzing test data, AFTEC assesses the system's military utility, operational effectiveness, and suitability.

AFTEC is presently managing the operational testing and evaluation of such key systems as the B-1 strategic bomber, the Airborne Warning and Control System (AWACS), the F-16 Air Combat Fighter, the A-10, the Advanced Airborne Command Post (AABNCP), and the F-15. Operational evaluation of such future systems as the advanced tanker/cargo aircraft (ATCA), the advanced medium/short takeoff and landing transport (AMST), the stretched C-141, and the Air Force satellite communications system (AFSATCOM) will be AFTEC's responsibility.

Maj. Gen. Richard G. Cross, Jr., has commanded AFTEC since August 1974, having previously been Director of Operational Requirements and Development Plans, DCS/R&D. A fighter pilot in WW II and in SEA, General Cross has been Chief of Air Operations, MACV, headed the 26th NORAD Region and the 26th Air Division, as well as several fighter units.

Additionally, the Center is actively involved in monitoring approximately 100 other OT&E programs being conducted by the major commands. AFTEC approves the test plans, monitors the tests, and then adds its comments to those of the commands. AFTEC also serves as the agency for Air Force implementation in joint-service operational tests sponsored by the OSD's Deputy Director of Defense Research and Engineering.

Besides involvement in individual test programs, AFTEC will be working to enhance overall OT&E management efforts. Earlier this year, AFTEC planners published the initial phase of a master plan detailing test and evaluation activities for the next five years. Also, a centralized management information

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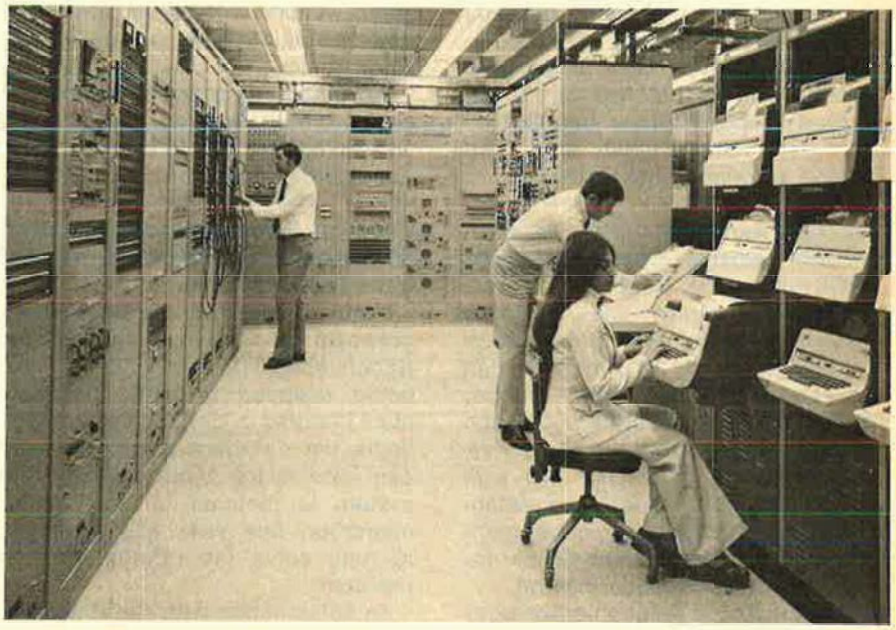

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system, designed to satisfy a wide variety of OT&E information requirements, is in the prototype stages at AFTEC, scheduled for full operational use in the second half of 1975. Both efforts are firsts for the Air Force OT&E community and represent significant advancements in OT&E management. ■

A SEPARATE OPERATING AGENCY

AIR FORCE MILITARY PERSONNEL CENTER

Brig. Gen. (Maj. Gen. selectee) Walter D. Druen, Jr., took command of AFMPC in April after serving as Vice Commander since June 1974. Previously Chief, Air Section, Military Advisory Group, Iran, General Druen has also commanded two fighter wings. He flew 100 F-86 combat missions in Korea and 173 F-4 missions in SEA.

If you are interested in assignments or promotions, you are interested in the Air Force Military Personnel Center (AFMPC). As the operating arm of the Deputy Chief of Staff for Personnel, the AFMPC mission is people and the implementation of personnel programs and policies that affect people throughout their Air Force careers.

Assignments for lieutenant colonels and below, and promotions through colonel are two of the important responsibilities handled by the more than 1,700 men and women working at the Center.

During 1974, Air Force's Advanced Personnel Data System (APDS) became operational. The APDS links the active-duty force, Air National Guard, and Air Force Reserve to a common data system for the first time. Air Force civilian workers will soon come under APDS as well. Working through nearly 140 Consolidated Base Personnel Offices (CBPOs) and with other users, Air Force has established an integrated personnel management and information system for more effective decision making.

A giant step in balancing overages and shortages in enlisted skills through controlled entry to the career enlisted force was taken when the Career Airman Reenlistment Reservation System (CAREERS) became operational this past year. By accepting for reenlistment only airmen with skills the Air Force needs, the system will not only correct imbalances but will be an important tool in maintaining a quality enlisted force.

An ambitious program to convert paper officer records to microfilm was completed in 1974, and airmen documents are now being converted. The microfilm format provides Air Force with faster retrieval of personnel records data required to manage the force.

Final details of a long-studied proposal to overhaul the Officer Effectiveness Report (OER) were being resolved in 1974. The new plan features a control system that limits the numbers of officers who can receive top block ratings. The system is planned for full implementation this year and promises to help solve the ratings inflation problem.

In consonance with the Presidential clemency program for deserters, AFMPC was designated the focal point for operation of the Air Force portion of the plan.

Efforts to make the latest and most complete information on personnel programs available to each Air Force member were increased during 1974. Personnel subjects covered by project Palace Flicks, a cartridged film series available for individual use at CBPOs, were considerably expanded. Numerous "spread-the-word" trips by AFMPC representatives to Air Force units provided valuable feedback on both operating personnel programs as well as suggestions for new directions.

A new program was instituted to provide officers eligible for promotion the opportunity to verify a preselection brief containing the same personnel information an upcoming promotion board will review.

Enactment of the Aviation Career Incentive Act (flight pay legislation) required revision of officer-assignment policy to ensure that rated officers meet the flying utilization standard established by Congress.

Assignments for each officer support field are handled by individual Palace teams. A major program now being finalized will provide the capability to manage centrally the rated officer force. This program, Rated Distribution and Training

AFMPC experts ensure that career field selection objectives were met in a recent promotion. AFMPC handles all promotions through colonel.

Management (RDTM), manages the rated officer force by separate fields or weapon-system groups.

A constant AFMPC goal is to provide the management and policy guidance necessary to sustain responsive and comprehensive local morale, welfare, and recreation programs for all Air Force members.

Many of the other programs operated by the Center—Tops in Blue, Rated Supplement, Awards and Decorations, the Sponsor Program, the Selective Reenlistment Bonus, Career Motivation Conferences, Professional Military Education (PME)—carry familiar names. And the Personnel Center wants to keep it that way, because the more people know about how Personnel operates, the better the people at the Air Force Military Personnel Center figure they are accomplishing an important part of their job. ■

A SEPARATE OPERATING AGENCY

AIR FORCE OFFICE OF SPECIAL INVESTIGATIONS

Maj. Gen. William A. Temple has headed AFOSI since April 1972, having commanded two bomb wings before that. He has been Assistant Judge Advocate for AAC and Assistant Chief Pilot for MATS (now MAC). General Temple's other assignments have included service with Hq. SAC, and with OSD as a Manpower and Reserve Affairs Assistant.

When any USAF commander needs assistance in dealing with criminal, fraud, or counterintelligence activities, he requests the help of the Air Force Office of Special Investigations (AFOSI).

AFOSI provides professional investigators to ferret out the facts and present them to the commander in detailed, objective reports of investigations. The commander, in turn, takes the action he deems appropriate.

While AFOSI's 1,524 special agents and administrative people provide services to commanders around the world, the organization itself is administered through its own centrally directed chain of command. Operational control over thirty-one districts and 131 detachments and operating locations worldwide is maintained from Hq. AFOSI, in Washington, D. C.

To perform its mission, AFOSI divides its investigative task into three major categories and administers investigations through the Criminal, Fraud, and Special Operations directorates.

The Criminal Directorate investigates criminal offenses against persons, their property, or the Air Force. Generally, jurisdiction is limited to crimes committed on Air Force installations by persons subject to the Uniform Code of Military Justice. Included are offenses ranging from housebreaking to homicide.

To aid in criminal fact finding, AFOSI directs the Air Force polygraph program that recruits, trains, and uses polygraph examiners throughout the Air Force. The Criminal Directorate also operates the Air Force terminal to the FBI National Crime Information Center, and directs a criminal intelligence collection program geared to keep Air Force commanders apprised of patterns or trends in criminal activity.

The Fraud Directorate is responsible for the direction and staff supervision of investigations of criminal or serious administrative irregularities and violations of public trust primarily involving Air Force procurement, disposal, nonappropriated fund activities, and finance matters. This Directorate is also responsible for supervising OSI investigative surveys that are in-depth probes or test checks to determine the existence, location, and extent of fraud, violations of public trust, and major administrative irregularities in Air Force operations or programs.

The Fraud Directorate coordinates criminal investigative support to the Army and Air Force Exchange Service worldwide, with AFOSI having been designated the Executive Agency for such support. Additionally, AFOSI, through the Fraud Directorate, supports 188 Defense Supply Agency field offices under a 1974 agreement.

The Directorate of Special Operations is primarily concerned with countering threats to Air Force security posed by foreign intelligence services. This includes investigation of all allegations of espionage, sabotage, treason, sedition, terrorism, and major security violations.

In addition, the Directorate supervises a centrally directed information collection, analysis, and dissemination program concerning overall threats to Air Force security and discipline, upon which commanders can take appropriate defensive measures. Related activities include the physical protection of senior Air Force and other designated US government officials.

Since many investigative matters extend beyond Air Force personnel or the boundaries of Air Force bases, AFOSI maintains liaison with law enforcement and investigative organizations at the international, federal, state, and local levels. Such cooperation ensures the preservation of jurisdictional responsibilities and assures the Air Force commander of getting the most factually exhaustive investigative result.

To maintain the integrity of a truly professional and ongoing force of investigators, AFOSI selects and trains its own special agents from among the most highly qualified and capable Air Force officers, NCOs, and civilians. Selectees attend a ten-week investigator's course at the Air Force Special Investigations School in Washington, D. C. The course includes approximately 350 hours of administrative, investigative, and military law work. Upon graduation, students are awarded badges and official credentials as AFOSI special agents.

After gaining experience as working investigators, most special agents return to the school for advanced or specialized training toward further enhancing the investigative professionalism of AFOSI. ■

A SEPARATE OPERATING AGENCY

AIR FORCE RESERVE

Maj. Gen. William Lyon became Chief of AFRES in April 1975. He had been Mobilization Assistant to the CINC of SAC. A veteran transport pilot, General Lyon flew combat missions in Korea and has commanded a tactical airlift squadron and group. He has also been Mobilization Assistant to the Commanders of the Sacramento AMA and Fifteenth Air Force.

Significant progress continued during 1974 in assuring that the Air Force Reserve (AFRES) would, upon mobilization, serve as a combat-capable partner of the active force. Mission and equipment conversions within the force continued to be extensive, including the announcement that AFRES would acquire an air-refueling capability with the assignment of KC-135 Stratotanker aircraft.

AFRES Aerospace Rescue and Recovery units contributed sixty-two missions to the active force in search and rescue, and were credited with thirteen lives saved and twenty-five assists during FY '74.

Reserve aircrews, flying a variety of cargo aircraft, supported the active Air Force and other elements of the Department of Defense as a by-product of Air Force Reserve training during calendar year 1974. During this period, Reserve crews flew 41,178 by-product hours, carrying 75,219 passengers and 8,212 tons of cargo. Additionally, 34,277 persons were air-dropped in support of active forces and Reserve training.

Among the unusual missions flown by Reserve crews during the year was the screwworm eradication program in Puerto Rico. Reserve aircrews flew 311 sorties, air-dropping 669,476,000 sterile screwworm larvae.

The Air Force Reserve's operational command is headquartered at Robins AFB, Ga., and administers a nationwide program ranging from civil engineering units to aeromedical evacuation organizations. Flying unit missions include strategic and tactical airlift, airborne early warning and control, aerospace rescue and recovery, special operations, and tactical fighter.

Reservists also fly and maintain MAC's first-line C-141 StarLifter, C-5 Galaxy, and C-9 Nightingale flying hospital under the Reserve's associate unit program. In these units, Reservists work with active-duty crews or form complete Reserve teams to perform MAC missions.

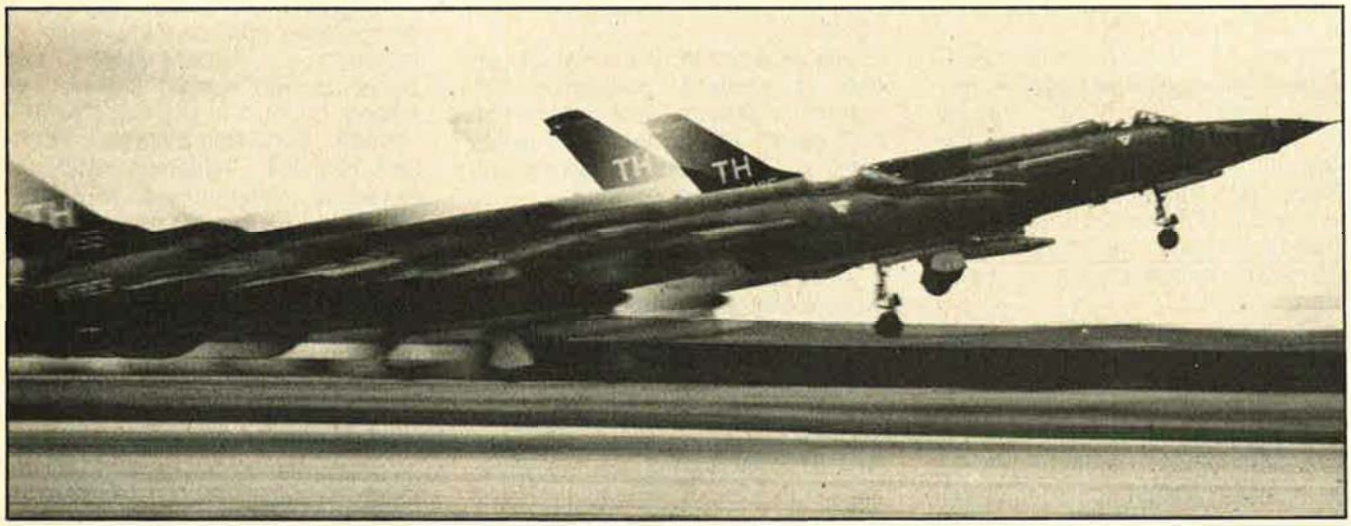
The Air Force Reserve regularly makes aeromedical evacuation flights, transporting patients to hospitals throughout the United States. On MAC flights during which one or more Reserve aeromedical evacuation members served as crewmembers, Reservists assisted 54,689 patients while flying more than 4,951,000 total miles during FY '74.

Nonflying organizations include all support elements of the flying units, in addition to medical service, aeromedical evacuation, civil engineering, mobile maintenance and supply, and aerial port units.

AFRES units also participate in a variety of domestic-action projects as part of the Department of Interior's Johnny Horizon Program to improve the US for the 1976 Bicentennial celebration. Reservists will conduct or assist in programs ranging from painting buildings and cleaning up land to teaching inner-city youth about the environment and ecology.

To provide top manning for AFRES units, Reserve recruiters continue a vigorous campaign to enlist personnel with prior military service as well as those with no previous duty. In 1974, 13,000 Reservists were recruited.

As an important part of the overall Air Force capability under the Total Force Policy, the Air Force Reserve is poised to provide combat-ready units and trained individuals in time of war or national emergency, or in the event of increased world tensions. ■



A pair of F-105 Thunderchiefs from the 465th Tactical Fighter Squadron (AFRES) takes off from Tinker AFB, Okla., in this multiple-exposure photo. F-105s are also assigned to Reserve squadrons at Carswell AFB, Tex., and Hill AFB, Utah.

AIR FORCE RESERVE FLYING WINGS AND ASSIGNED UNITS

AIR FORCE RESERVE REGION	WING HQ.	GROUP	SQUADRON	TYPE AIRCRAFT	LOCATION
			79th AEW&CS	EC-121	Homestead AFB, Fla.
	94th TAW	918th TAG*	700th TAS	C-7	Dobbins AFB, Ga.
		908th TAG	357th TAS	C-7	Maxwell AFB, Ala.
	302d TAW	906th TAG*	355th TAS	C-123	Rickenbacker AFB, Ohio
		907th TAG*	356th TAS	C-123	Rickenbacker AFB, Ohio
		911th TAG	758th TAS	C-123	Greater Pittsburgh AP, Pa.
	403d TAW	927th TAG*	63d TAS	C-130	Selfridge ANG Base, Mich.
		913th TAG	327th TAS	C-130	Willow Grove NAS, Pa.
		914th TAG	328th TAS	C-130	Niagara Falls Int'l AP, N. Y.
Eastern Region (Hq., Dobbins AFB, Ga.)	439th TAW	901st TAG*	731st TAS	C-123	Westover AFB, Mass.
		905th TAG*	337th TAS	C-130	Westover AFB, Mass.
	459th TAW	909th TAG*	756th TAS	C-130	Andrews AFB, Md.
		919th TAG	711th TAS	C-130	Eglin AFB, Fla. (Aux. 3)
		920th TAG	815th TAS	C-130	Keesler AFB, Miss.
	315th MAW (A)		300th MAS (Assoc)	C-141	Charleston AFB, S. C.
			701st MAS (Assoc)	C-141	Charleston AFB, S. C.
			707th MAS (Assoc)	C-141	Charleston AFB, S. C.
	512th MAW (A)		326th MAS (Assoc)	C-5	Dover AFB, Del.
			709th MAS (Assoc)	C-5	Dover AFB, Del.
	514th MAW (A)		335th MAS (Assoc)	C-141	McGuire AFB, N. J.
			702d MAS (Assoc)	C-141	McGuire AFB, N. J.
			732d MAS (Assoc)	C-141	McGuire AFB, N. J.
		932d AMAG (Assoc)	73d AMAS (Assoc)	C-9	Scott AFB, Ill.
	301st TFW		457th TFS	F-105	Carswell AFB, Tex.
			465th TFS	F-105	Tinker AFB, Okla.
			466th TFS	F-105	Hill AFB, Utah
	433d TAW	921st TAG*		C-130	Kelly AFB, Tex.
		922d TAG*	68th TAS	C-130	Kelly AFB, Tex.
		924th TAG	704th TAS	C-130	Ellington AFB, Tex.
Central Region			705th TATS		Ellington AFB, Tex.
(Hq., Ellington AFB, Tex.)	434th TFW	930th TFG*	45th TFS	A-37	Grissom AFB, Ind.
		931st TFG*	46th TFS	A-37	Grissom AFB, Ind.
		910th TFG	757th TFS	A-37	Youngstown Municipal AP, Ohio
		917th TFG	47th TFS	A-37	Barksdale AFB, La.
	440th TAW	933d TAG*	95th TAS	C-130	Gen. Billy Mitchell Fld., Wis.
		928th TAG	64th TAS	C-130	O'Hare Int'l AP, Ill.
		934th TAG	96th TAS	C-130	Minneapolis-St. Paul Int'l AP, Minn.
	442d TAW	935th TAG*	303d TAS	C-130	Richards-Gebaur AFB, Mo.
		936th TAG*		C-130	Richards-Gebaur AFB, Mo.
		926th TAG	706th TAS	C-130	New Orleans NAS, La.
			302d SOS	CH-3E	Luke AFB, Ariz.
	349th MAW (A)		301st MAS (Assoc)	C-5	Travis AFB, Calif.
			312th MAS (Assoc)	C-5	Travis AFB, Calif.
			708th MAS (Assoc)	C-141	Travis AFB, Calif.
			710th MAS (Assoc)	C-141	Travis AFB, Calif.
	445th MAW (A)		728th MAS (Assoc)	C-141	Norton AFB, Calif.
Western Region			729th MAS (Assoc)	C-141	Norton AFB, Calif.
(Hq., Hamilton AFB, Calif.)			730th MAS (Assoc)	C-141	Norton AFB, Calif.
	446th MAW (A)		97th MAS (Assoc)	C-141	McChord AFB, Wash.
			313th MAS (Assoc)	C-141	McChord AFB, Wash.
	452d TAW	904th TAG*	336th TAS	C-130	Hamilton AFB, Calif.
		940th TAG	314th TAS	C-130	McClellan AFB, Calif.
			301st ARRS	HH-1H/HH-3E	Homestead AFB, Fla.
			303d ARRS	HC-130	March AFB, Calif.
			304th ARRS	HH-1H	Portland Int'l AP, Ore.
			305th ARRS	HC-130	Selfridge ANG Base, Mich.

AEW&CS	Airborne Early Warning & Control Squadron	SOS	Special Operations Squadron
AMAG (Assoc)	Aeromedical Airlift Group (Assoc)	TATS	Tactical Airlift Training Squadron
ARRS	Aerospace Rescue & Recovery Squadron	TAW/G/S	Tactical Airlift Wing/Group/Squadron
MAW/S	Military Airlift Wing/Squadron	TFW/G/S	Tactical Fighter Wing/Group/Squadron

* All groups collocated with wings are scheduled to be inactivated during FY '76.

AIR NATIONAL GUARD

The Air National Guard's primary mission is to train and to guarantee the immediate availability of combat-ready units as needed by the Air Force.

The dual mission of the Air National Guard—a state mission as well as its primary federal mission—provides each of the fifty states, the Commonwealth of Puerto Rico, and the District of Columbia an organized military body for their use. This provision is specified in the US Constitution and Title 32, United States Code.

Two ANG wings and two groups fly the F-105 Thunderchief.

Under federal law, Air Guard units are organized, trained, and equipped in a nonmobilized status for immediate service as required. The ANG is a primary source of added strength and equipment to help the US Air Force in times of war or national emergency, and its resources are devoted to training and performing meaningful missions for the Department of Defense.

In assisting the Air Force to fulfill its peacetime mission, the ANG provides a major portion of the air defense of the United States and Puerto Rico and the entire air defense of Hawaii.

One of the ANG's most important achievements of the past year was maintaining its personnel strength in excess of 100 percent. At the end of the fiscal year, ANG manpower was at 101.5 percent of the programmed end strength. This trend is continuing into the current fiscal year.

The numbers of women and minority persons in the Guard continued to grow, as did the rate of retention. During FY '74, the retention rate of airmen eligible for reenlistment was sixty-five percent.

All Air Guard units are assigned for mobilization purposes to active Air Force major commands that, during peacetime, establish training standards, advise units on tactical standards, and inspect for compliance. Upon mobilization, Air Guard units take their place in the organization structure of their gaining commands: TAC, SAC, ADC, MAC, AFCS, AAC, and PACAF. The Air Guard is involved in many Air Force mission areas, with prime emphasis placed on tactical, aerospace defense, strategic, and communications functions.

All Guardsmen, by statutory requirements, participate in forty-eight unit training assemblies per year and fifteen days of annual training—a minimum requirement to assure that units and individuals are trained and available for immediate active service. Pilots and aircrews receive up to thirty-six additional flying-training periods to maintain required readiness or proficiency.

The current Air Guard force structure includes twenty-four wings, ninety-one flying squadrons plus support units, and 239 specialized nonflying ground-support organizations. The flying squadrons operate twenty-one different types of mission aircraft and a limited number of support aircraft.

The ANG maintains federal equipment and vehicles valued at $3.3 billion. Each state provides substantial support in both funds and facilities.

ANG personnel total almost 94,000 men and women serving in all fifty states, the District of Columbia, and Puerto Rico. Another 1,200 are awaiting entry into initial active duty for training.

As part of the total force, the ANG continues its modernization of equipment and its acceptance of additional mission responsibilities. The three ANG units that received the A-7 last year are now combat ready. One additional unit has received its initial aircraft with another two scheduled to receive the A-7 in the near future.

Maj. Gen. John J. Pesch became Director, ANG, in April 1974 after serving as Deputy Director since 1966. A WW II bomber pilot in Europe, General Pesch's ANG service in active-duty and other positions dates back to 1947. He has also served with Hq. USAF and Hq. ADC, the latter as Assistant Director of Operations.

During the coming year, ANG will assume a strategic air refueling mission. It is scheduled to convert to its initial KC-135 unit in the first quarter of FY '76. So far, five units have been identified out of the total to receive the aircraft.

Invaluable assistance is provided by the ANG in carrying out its state mission. ANG aircraft are often used in airlifting to safety the victims of hurricanes, tornadoes, and floods, and in transporting supplies to stricken areas. Vital communications are often provided by Air Guardsmen to areas that have been isolated by disasters. In addition to helping out at home, the ANG is also called upon to assist in disaster relief overseas. In September and October 1974, several tons of medical supplies were airlifted to Honduras in the wake of Hurricane Fifi, and, in November, emergency medical supplies were flown to the Virgin Islands after severe flooding there.

The ANG is in state status unless it has been called to federal duty. The transition from state to federal status may be accomplished in several ways. Air Guard units are available for federal service by call or order of the President, upon declaration of war by Congress, or when otherwise authorized by law. ■

THE AIR NATIONAL GUARD BY MAJOR COMMAND ASSIGNMENT

(As of April 1, 1975)

TACTICAL AIR COMMAND

F-100 Super Sabre

103d Tac Fighter Gp.	Windsor Locks, Conn.
104th Tac Fighter Gp.	Westfield, Mass.
114th Tac Fighter Gp.	Sioux Falls, S. D.
116th Tac Fighter Wg.	*Dobbins AFB, Ga.
122d Tac Fighter Wg.	Fort Wayne, Ind.
127th Tac Fighter Wg.	***Selfridge ANGB, Mich.
131st Tac Fighter Wg.	St. Louis, Mo.
132d Tac Fighter Wg.	Des Moines, Iowa
138th Tac Fighter Gp.	Tulsa, Okla.
149th Tac Fighter Gp.	San Antonio, Tex.
159th Tac Fighter Gp.	**New Orleans, La.
162d Tac Fighter Tng. Gp.	Tucson, Ariz.
178th Tac Fighter Gp.	Springfield, Ohio
179th Tac Fighter Gp.	Mansfield, Ohio
180th Tac Fighter Gp.	Toledo, Ohio
181st Tac Fighter Gp.	Terre Haute, Ind.
185th Tac Fighter Gp.	Sioux City, Iowa
188th Tac Fighter Gp.	Fort Smith, Ark.

RF-101 Voodoo

123d Tac Recon Wg.	Louisville, Ky.
152d Tac Recon Gp.	Reno, Nev.
186th Tac Recon Gp.	Meridian, Miss.
189th Tac Recon Gp.	*Little Rock AFB, Ark.

F-104 Starfighter

156th Tac Fighter Gp.	San Juan, P. R.

F-105 Thunderchief

108th Tac Fighter Wg.	*McGuire AFB, N. J.
113th Tac Fighter Wg.	*Andrews AFB, Md.
184th Tac Fighter Tng. Gp.	*McConnell AFB, Kan.
192d Tac Fighter Gp.	Sandston, Va.

F-4 Phantom

183d Tac Fighter Gp.	Springfield, Ill.

RF-4 Phantom

117th Tac Recon Wg.	Birmingham, Ala.
155th Tac Recon Gp.	Lincoln, Neb.
187th Tac Recon Gp.	Montgomery, Ala.

A-7D Corsair II

121st Tac Fighter Wg.	*Rickenbacker AFB, Ohio
140th Tac Fighter Wg.	***Denver, Colo. (Buckley ANGB)
150th Tac Fighter Gp.	*Kirtland AFB, N. M.

A-37B Dragonfly

174th Tac Fighter Gp.	Syracuse, N. Y.
175th Tac Fighter Gp.	Baltimore, Md.

KC-97L

126th Air Refueling Wg.	Chicago, Ill.
128th Air Refueling Gp.	Milwaukee, Wis.
134th Air Refueling Gp.	Knoxville, Tenn.
136th Air Refueling Wg.	**Dallas, Tex.
139th Air Refueling Gp.	St. Joseph, Mo.
151st Air Refueling Gp.	Salt Lake City, Utah
160th Air Refueling Gp.	*Rickenbacker AFB, Ohio
161st Air Refueling Gp.	Phoenix, Ariz.
171st Air Refueling Wg.	Pittsburgh, Pa.

C-119 Flying Boxcar/U-10D Courier

129th Special Operations Gp.	Hayward, Calif.
130th Special Operations Gp.	Charleston, W. Va.
143d Special Operations Gp.	Providence, R. I.

EC-121 Warning Star

193d Tac Electronic Warfare Gp.	Olmsted, Pa.

O-2 Super Skymaster

105th Tac Air Support Gp.	White Plains, N. Y.
110th Tac Air Support Gp.	Battle Creek, Mich.
111th Tac Air Support Gp.	**Willow Grove, Pa.
135th Tac Air Support Gp.	Baltimore, Md.
182d Tac Air Support Gp.	Peoria, Ill.

AEROSPACE DEFENSE COMMAND

F-100 Voodoo

101st F-I Gp.	Bangor, Me.
107th F-I Gp.	Niagara Falls, N. Y.
119th F-I Gp.	Fargo, N. D.
141st F-I Gp.	Spokane, Wash.
142d F-I Gp.	Portland, Ore.
147th F-I Gp. (Tng.)	Houston, Tex.
148th F-I Gp.	Duluth, Minn.

F-102 Delta Dagger

106th F-1 Gp.	Suffolk County, N. Y.
112th F-1 Gp.	Pittsburgh, Pa.
124th F-I Gp.	Boise, Idaho
169th F-1 Gp.	***McEntire ANGB, S. C.

F-106 Delta Dart

102d F-I Gp.	***Otis AFB, Mass.
120th F-I Gp.	Great Falls, Mont.
125th F-I Gp.	Jacksonville, Fla.
144th F-I Gp.	Fresno, Calif.
177th F-I Gp.	Atlantic City, N. J.
191st F-I Gp.	***Selfridge ANGB, Mich.

EB-57

158th DSE Gp.	Burlington, Vt.
190th DSE Gp.	Forbes ANGB, Kan.

MILITARY AIRLIFT COMMAND

C-130 Hercules

109th Tac Airlift Gp.	Schenectady, N. Y.
118th Tac Airlift Wg.	Nashville, Tenn.
133d Tac Airlift Wg.	St. Paul, Minn.
137th Tac Airlift Wg.	Oklahoma City, Okla.
145th Tac Airlift Gp.	Charlotte, N. C.
146th Tac Airlift Wg.	Van Nuys, Calif.
153d Tac Airlift Gp.	Cheyenne, Wyo.
157th Tac Airlift Gp.	*Pease AFB, N. H.
164th Tac Airlift Gp.	Memphis, Tenn.
165th Tac Airlift Gp.	Savannah, Ga.
166th Tac Airlift Gp.	Wilmington, Del.
167th Tac Airlift Gp.	Martinsburg, W. Va.
172d Tac Airlift Gp.	Jackson, Miss.

C-7 Caribou

170th Tac Airlift Gp.	*McGuire AFB, N. J.

PACIFIC AIR FORCES

F-102 Delta Dagger

154th F-I Gp.	*Hickam AFB, Hawaii

ALASKAN AIR COMMAND

C-123J Provider

176th Tac Airlift Gp.	Anchorage, Alaska

*Tenant unit on active Air Force base
**Tenant unit on Naval Air station
***Operated by Air National Guard
Note: All other units collocated on state, county, or municipal airports.

A SEPARATE OPERATING AGENCY

AIR RESERVE PERSONNEL CENTER

Developing new concepts and programs that keep Reservists better informed and trained to meet demands of the Total Force Policy continues to be the goal of the Air Reserve Personnel Center (ARPC) in Denver, Colo.

During 1974, ARPC fully implemented the Reserve Officer Career Development and Reserve Supplement Officer (RSO) programs. It also began microfilming master personnel records and expanded administration of individual Reserve programs.

The Reserve Officer Career Development Program for Reservists in Training and Pay Categories A, B, and D was begun in July. Under the program, career managers advise Reservists on education, promotion, and career advancement. Unit-level career managers were recently added to the program, and visitations to bases have been initiated to give Reservists personal attention.

The RSO program, begun in December 1973, has been extremely successful and was enlarged in October to include twenty-two additional AFSCs. Originally, Reservists in only five AFSCs were assigned to the program, which is designed to train Reservists to replace active-duty officers when the rated officers are called back to the cockpit. Advantages of this program are that Reservists train at bases nearest their home and would be assigned where they are needed during mobilization.

The Air Reserve Forces Assignment Referral Division (formerly Recruiting Command Post) is responsible for multifaceted programs. Palace Chase is still one of the major jobs for the staff—a mixture of Reservists, Air Guardsmen, active-duty, and civilian personnel. They are tasked to find assignments for active-duty personnel who wish to switch service obligation time under the Palace Chase program. The Division also responds to Reservists' inquiries regarding their records or careers through the ARPC "Action Line" (toll-free numbers are (800) 525-9984 outside Colorado, and (800) 332-9952 within Colorado). The calls are answered on the spot or referred to experts in specific areas for written reply.

In June 1974, the Microfilm Division of the Directorate of Reserve Personnel Records began the three-year task of photographing some 300,000 master personnel records. Advantages of the system, besides requiring less floor space, are security and ease of handling. It also is compatible with the Active Force Microfilm System.

ARPC is responsible for administration of individual Reserve programs (pay and nonpay) and is the single manager for such professional Reserve Individual programs as the Chaplain, Judge Advocate General, Surgeon, and Air Reserve Information Squadron Program.

The Center manages the largest single officer input to the active force. Each year, Air Force Reserve Officer Training Corps (AFROTC) graduates and direct appointees in the professional fields are placed into the Air Force by ARPC.

ARPC conducts selection boards to consider Reserve and Guard officers for promotion, and administrative boards to determine qualifications of airmen and officers to retain their Reserve status. The Center also convenes boards to select Reserve Officers for formal training schools.

The ARPC is scheduled to move into a new building at Lowry AFB, Colo., in June 1976. The $20 million structure will house ARPC and the Air Force Accounting and Finance Center.

Air Force Secretary John L. McLucas has said: "The Total Force Policy requires increased emphasis and reliance on the Air National Guard and Air Force Reserve Forces. With decreasing active-duty manpower, we must recognize that future major contingencies will require the quick activation of our Reserve Components."

The Air Reserve Personnel Center is doing its part to ensure that the Air Force will always have a manpower bank of Reservists—trained, qualified, and ready when needed. ■

Col. James E. Dalton assumed command of ARPC in February 1975, having previously commanded the 39th Aerospace Rescue and Recovery Wing. He is a veteran airlift pilot. Earlier assigned to the Office of the Assistant to the Chairman JCS for Strategic Arms Negotiation, Colonel Dalton was a military adviser with the US SALT delegation.

ARPC officials discuss the new Reserve Officer Career Development Program through which Reservists receive personal career guidance.

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A SEPARATE OPERATING AGENCY

UNITED STATES AIR FORCE ACADEMY

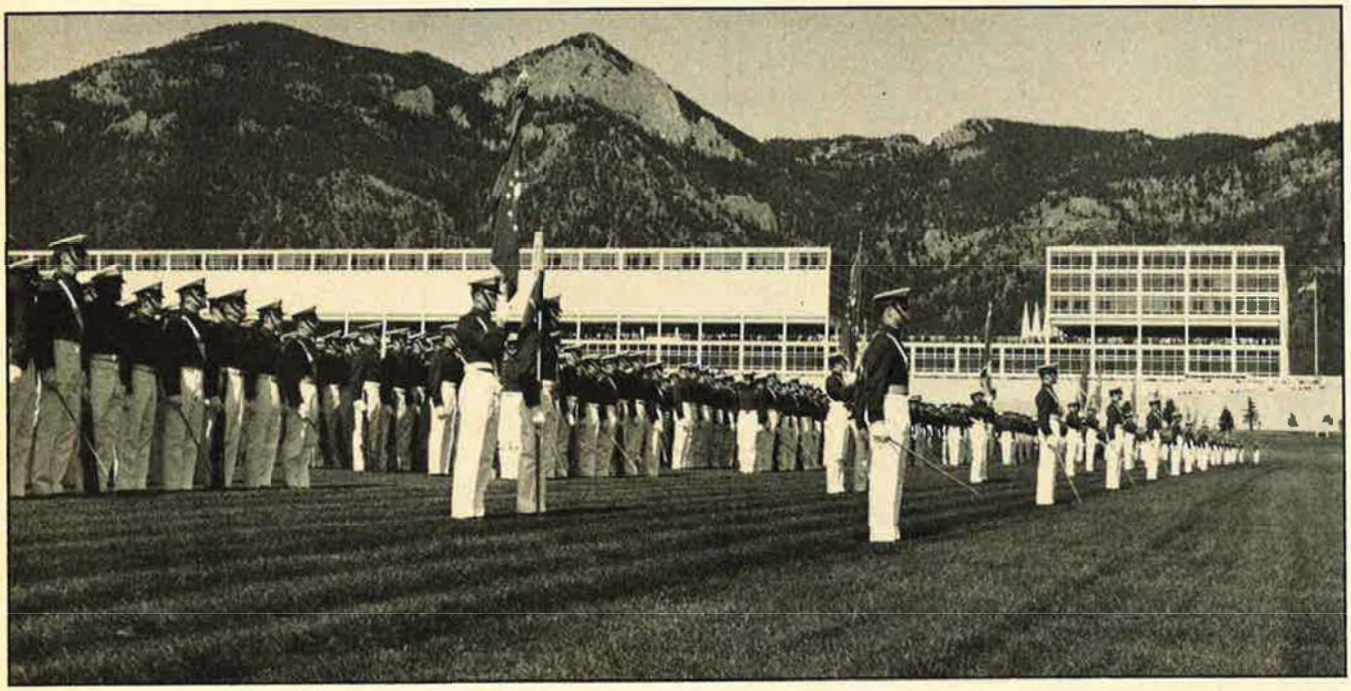
Maj. Gen. James R. Allen became Superintendent of the USAFA in August 1974, following service as Special Assistant to the Chief of Staff for B-1 matters. He served two tours as a combat fighter pilot in Korea and another in Vietnam. General Allen has commanded a fighter squadron and SAC's 19th Air Division.

The Air Force Academy educates and trains career officers for the US Air Force. Under the leadership of Maj. Gen. James R. Allen, Superintendent, the Academy provides instruction and experience to each cadet so that he graduates with the knowledge and character essential to leadership and with the motivation to become a career officer.

The Academy came into existence on April 1, 1954, and the first class was graduated in 1959.

academic, military, and physical education courses, a cadet is graduated with a bachelor of science degree and a regular commission as a second lieutenant in the Air Force. Social, religious, and extracurricular activities round out the educational program.

Since 1959, the Academy has graduated 8,602 cadets, including seventeen Rhodes Scholars. About 750 cadets in the Class of 1975 will be graduated on June 4 this year.



USAFA's 4,000-man Cadet Wing forms for a graduation parade. About 750 will be added this year to the Academy's roster of 8,602 graduates.

Authorized strength of the Cadet Wing is 4,417 at the beginning of academic classes each August. On January 31, 1975, 4,134 cadets were enrolled.

Supporting the Cadet Wing in training, instructor, maintenance, and administrative positions are 1,126 officers, 1,508 enlisted, and 2,070 civilian employees. The predominately military faculty numbers 540. Each holds a master's degree, and thirty percent have earned doctorates in the subjects they teach.

After completing four years of

Brig. Gen. William T. Woodyard, Dean of the Faculty, administers academic instruction organized under four divisions: basic sciences, engineering science, humanities, and social science.

To graduate, a cadet must complete one of twenty-one academic majors. Each cadet takes at least 145 semester hours of course work, with about half of the cadets participating in a special enrichment program that includes additional courses. Cadets also take fifteen hours of physical education and twenty-seven of military training.

The Academy and the Air Force identify the top fifteen percent of each graduating class so they may be offered graduate education under Air Force Institute of Technology sponsorship some time between three and eight years after graduation. Acceptance into the program depends upon performances as officers and upon valid Air Force requirements for the graduate program specialty.

The leadership and military training program is directed by Brig. Gen. Hoyt S. Vandenberg, Jr., Commandant of Cadets. Along with for-

mal classes in professional military subjects, cadets gain leadership experience as officers and NCOs in the Cadet Wing.

The Wing is divided into four groups of ten squadrons each. First classmen (seniors) hold officer rank in command and staff positions while underclassmen perform the NCO duties.

Prospective cadets arrive at the Academy each July and enter the Basic Cadet Training program, a six-week course of intensive military training and physical conditioning. Succeeding summers are spent in field-training programs, on leave, or at the Academy serving in leadership positions training underclassmen and the new group of incoming cadets. Cadets also participate in Operation Third Lieutenant and Operation Non-Com. Under Third Lieutenant, upperclassmen perform junior-officer duties with operational Air Force units. Operation Non-Com allows sophomores to work with NCOs at bases in the US to gain an understanding of the responsibilities of the enlisted force.

An extensive airmanship program is included in military training. Forty-seven T-41 aircraft, two U-4s, two hot-air balloons, and thirteen sailplanes are assigned to the Academy for airmanship training.

The T-41s belong to the 557th Flying Training Squadron (ATC) based at the Academy. Squadron instructor pilots, supplemented by pilots assigned to the Academy, teach all pilot-qualified first classmen to fly in the T-41, a 210-horsepower version of the Cessna 172.

The T-41 program was streamlined last year with the transfer of the 557th from nearby Peterson Field to the Academy airstrip. The move followed completion of parallel and crosswind runways, a control tower, and operations and maintenance buildings.

Cadets may also fly sailplanes and earn FAA private, commercial, and flight instructor glider ratings. Parachute training, for which the U-4s are used as jump planes, offers four advanced courses.

Navigation courses give cadets a basic understanding of navigation as a career specialty. Navigator training flights are staged from Peterson Field and, beginning this year, the new T-43 jet navigation trainer will replace the T-29 for these missions.

T-37 jet trainers are also replacing the T-33s at Peterson for use in the cadet airmanship programs. One such program offers flight-orientation rides for fourth classmen (freshmen) to motivate them toward a flying career. Another program is for flight-qualified third and second classmen (sophomores and juniors). Third classmen are given two rides in the local area and second classmen take a cross-country flight to give the cadets an appreciation of aviation skills, responsibilities of aircrews, and capabilities of jet aircraft.

USAFA parachutists placed second in '75 intercollegiate championships.

Col. Frank E. Merritt heads the Department of Athletics, which oversees the physical education, intramural, and intercollegiate athletic programs. Cadets who do not participate in intercollegiate athletics must compete in the intramural program, and all cadets are required to take physical-education courses during all four years at the Academy.

The Academy participates in eighteen different intercollegiate sports, competing against teams from all over the nation.

Located on the Academy grounds is the Air Force Academy Preparatory School, where selected enlisted men from the Regular and Reserve Forces undergo a year of intensive study in math, English, and military training to prepare for an Academy appointment. The prep school enables most of the cadet candidates to achieve the high scores on College Entrance Examination Board tests that are required for admission.

Academy admissions requirements state that a young man must be at least seventeen years old but not yet twenty-one on July 1 of the year he is admitted. He must be a citizen of the US, unmarried, of good moral character, and in good physical condition. He must show adequate academic preparation, demonstrated leadership potential, and a desire to be a cadet and pursue a military career. Nominations to the Academy come through congressional or other authorized channels. ■

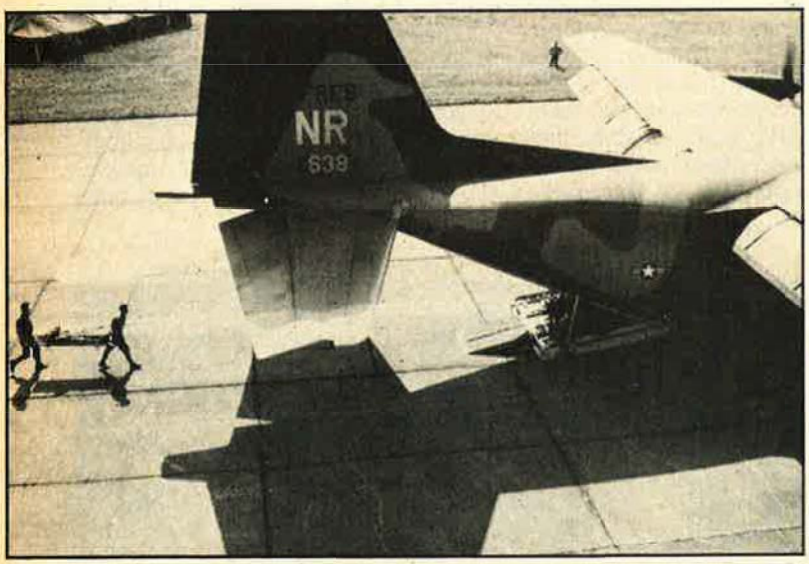
Ice hockey is one of eighteen intercollegiate sports in which Academy teams participate. Here, Falcon skaters attack the Puget Sound goal.

PEOPLE POWER

...the Essence of Airpower

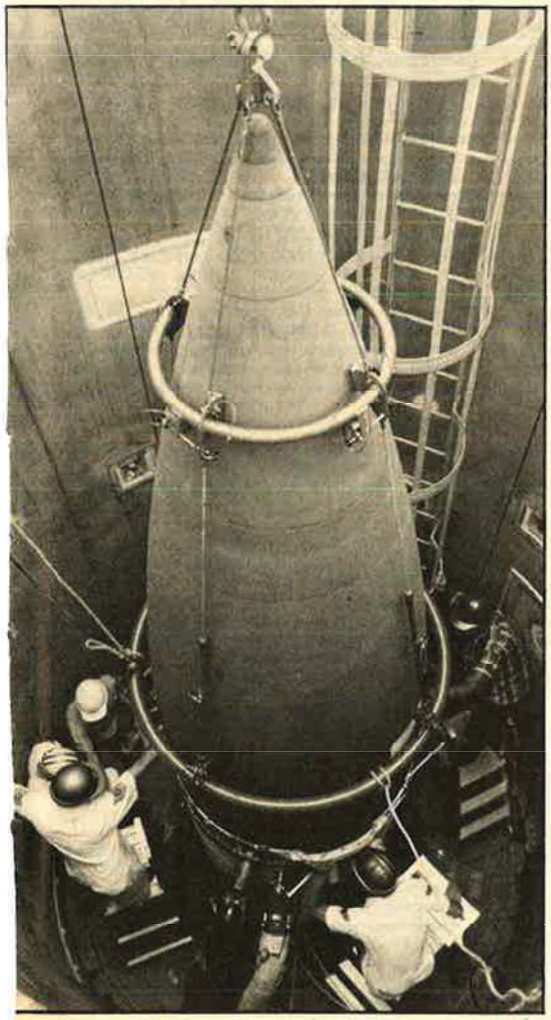
The heart and spirit of the United States Air Force lie in its people and the traditions by which they live: courage, self-sacrifice, humanitarian concern, technical excellence. It is they who created and who sustain this great aerospace force that has never been turned back by enemy action. To these men and women in a hundred different jobs—in the depots, the shops, the radar sites, the offices, the sentry posts, the cockpits, the launch control centers—we dedicate this Almanac Issue of AIR FORCE Magazine.

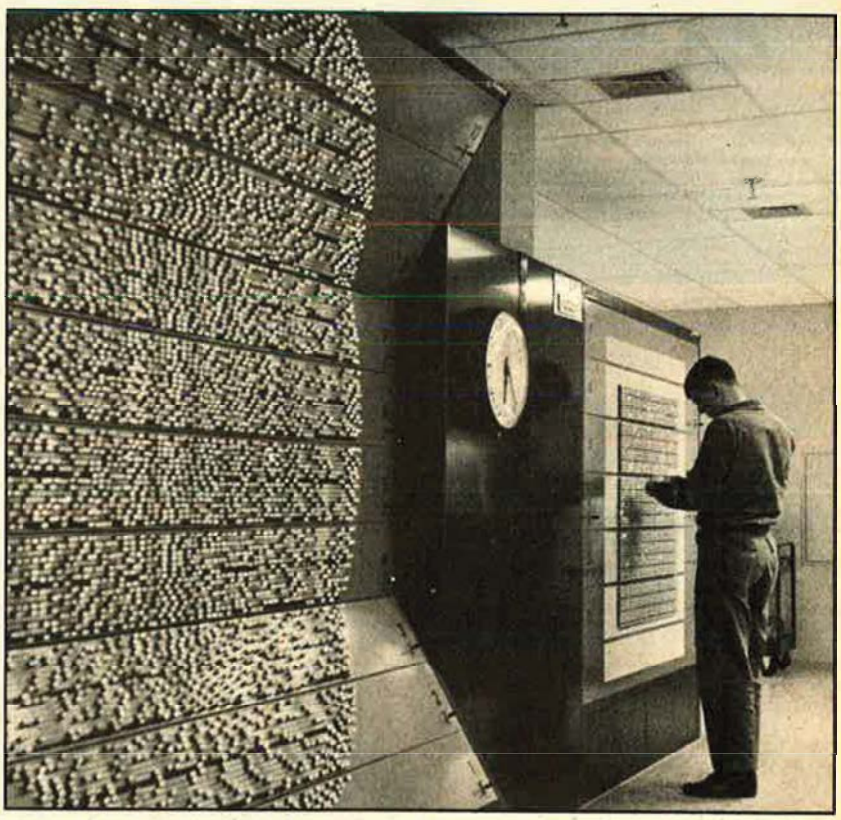
—THE EDITORS



Above, Reserve medical technicians transfer a patient. Right, SSgt. Jim Vertucci suits up to fill a liquid oxygen bottle that becomes an A-7D pilot's oxygen supply in flight.

A TAC crew chief, SSgt. Barton T. Rembert, guides an A-7D into the quick-check area before takeoff.



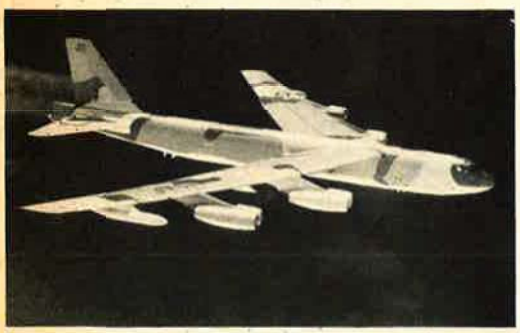


Left, Patrick AFB, Fla., technicians mate a Minuteman III upper stage to the booster. Above, an ADC airman monitors a phased-array satellite-tracking radar panel.

GALLERY OF USAF WEAPONS

BY S. H. H. YOUNG
ASSOCIATE COMPILER, JANE'S ALL THE WORLD'S AIRCRAFT
Edited by John W. R. Taylor, Editor, Jane's All the World's Aircraft

B-1



B-52H Stratofortress

FB-111A

Bombers

B-1

The initial flight of this variable-geometry strategic bomber of blended wing-body configuration, under development by the Air Force to provide for the modernisation of its strategic bomber force, took place on 23 December 1974. The present development programme includes three aircraft, with current plans calling for the beginning of work on a fourth in May this year. The B-1 is designed to cruise at least part of the way to its target at subsonic speed, then to attack at high subsonic speeds at low altitude or in an over-the-target supersonic dash at high altitude. A unique low altitude ride control system is incorporated to minimise the effects of turbulence likely in high-speed, low-level operations. Among the weapons the B-1 may carry are the Short Range Attack Missile (SRAM) and the proposed Bomber Defense Missile (BDM), while protection is afforded by electronic jamming equipment, infra-red countermeasures, and other devices. USAF envisages production of 241 aircraft.

Contractor: Rockwell International Corporation, North American Aircraft Operation, B-1 Division.

Power Plant: four General Electric F101-GE-100 afterburning turbofan engines; each approx 30,000 lb thrust.

Accommodation: four, in pairs.

Dimensions: span spread 137 ft 0 in, fully swept 78 ft 0 in, length overall 151 ft 0 in, height 34 ft 0 in.

Weight: gross 350,000–400,000 lb.

Performance (approx): max speed at 50,000 ft Mach 2.2, max range without refuelling 6,100 miles.

Armament: three internal weapon bays, accommodating a total of 24 SRAMs on three rotary dispensers, or 75,000 lb of conventional bombs. Provision for 8 more SRAMs or 40,000 lb of conventional weapons externally.

B-52 Stratofortress

Although the prototype XB-52 flew first more than 20 years ago, in October 1952, the SAC inventory continues to include about 450 of these eight-jet long-range bombers, most of them "G" and "H" models. A total of 744 production Stratofortresses were built between 1954 and 1962, with continual refinement and introduction of new equipment and more powerful engines resulting in a succession of variants. Those still operational are: **B-52D,** total of 170 built with J57-P-29W turbojet engines, with delivery from December 1956. **B-52F,** with uprated J57-P-43W engines, first flown in May 1958; 89 built; those remaining in inventory now used for training purposes. **B-52G,** introduced important changes including a redesigned wing containing integral fuel tankage, fixed underwing tanks, a new tail fin of reduced height and broader chord, a remotely controlled tail turret which allowed the gunner to be repositioned with the rest of the crew, and the ability to carry two AGM-28 Hound Dog air-to-surface missiles on missions of a round-trip range of more than 10,000 miles. Deliveries of the B-52G began in February 1959, and 193 were built. **B-52H,** the final version, switched to TF33 turbofan engines and had improved defensive armament, including a Vulcan multi-barrel tail gun and underwing pods of penetration rockets; 102 were built, with deliveries starting in May 1961. Under a major USAF programme initiated in 1971, the B-52Gs and Hs are being modified to carry 20 AGM-69A SRAM Short Range Attack Missiles, six under each wing and eight in the bomb-bay. In addition, these two latter versions are being equipped with an AN/ASQ-151 Electro-optical Viewing System (EVS) to improve low-level flight capability. More than 270 of these EVS kits are being produced, with deliveries scheduled for completion by the first quarter of 1976. (Data for B-52G.)

Contractor: The Boeing Aerospace Company.

Power Plant: eight Pratt & Whitney J57-P-43W turbojet engines; each 13,750 lb thrust.

Accommodation: two pilots, side-by-side, plus navigator, radar-navigator, ECM operator, and tail gunner.

Dimensions: span 185 ft 0 in, length 157 ft 7 in, height 40 ft 8 in.

Weight: gross 480,000 lb.

Performance (approx): max speed at 20,000 ft 660 mph, service ceiling 55,000 ft, range 10,000 miles.

Armament: four 0.50 calibre guns in tail turret; two AGM-28 Hound Dog air-to-surface missiles under wings; bombs and Quail diversionary missiles internally. Alternative provision for 20 SRAM missiles.

FB-111A

Two-seat medium-range strategic bomber version of the basic swing-wing F-111, developed originally to provide SAC with a replacement for some of its B-52C/F versions of the Stratofortress and the B-58A Hustler. The first production aircraft flew in July 1968, and the initial delivery was made in October 1969 to the 340th Bomb Group. Operational units equipped with the FB-111A are the 380th and 509th Bomb Wings. Production of the 76 FB-111As ordered has been completed.

Contractor: General Dynamics Corporation.

Power Plant: two Pratt & Whitney TF30-P-7 turbofan engines; each 20,350 lb thrust with afterburning.

Accommodation: two, side-by-side.

Dimensions: span spread 70 ft 0 in, fully swept 33 ft 11 in, length 73 ft 6 in, height 17 ft 1.4 in.

Weight (approx): gross 100,000 lb.

Performance: max speed at 36,000 ft Mach 2.5, service ceiling more than 60,000 ft, range 4,100 miles with external fuel.

Armament: up to four AGM-69A SRAM air-to-surface missiles on external pylons, plus two in the weapons bay, or six nuclear bombs, or combinations of these weapons; provision for up to 31,500 lb of conventional bombs.

Fighters

F-4 Phantom II

Initially developed in the mid-1950s, several versions of this all-weather fighter have been supplied to USAF. The **F-4C** is a two-seat tactical fighter, developed from the basic F-4B naval version, with provision for a large external weapon load. Modifications included dual controls, an inertial navigation system, improved weapon aiming system, and boom flight refuelling, instead of drogue. First F-4C flew in May 1963. With deliveries completed by May 1966, the 583 aircraft ordered were deployed by TAC, PACAF, and USAFE for close-support, attack, and air-superiority duties. Two squadrons are operational in a "Wild Weasel" defence suppression role, carrying ECM warning sensors, jamming pods, chaff dispensers, and anti-radiation missiles. The **F-4D** was developed from the F-4C and replaced it in production. Major systems changes were introduced, including new weapon ranging and release computers to increase accuracy in air-to-air and air-to-surface weapon delivery. First F-4D flew in December 1965, with deliveries beginning in March 1966. A total of 825 aircraft was built, primarily for USAF, but 32 were supplied to Iran and 18 were transferred from USAF to the Republic of Korea. The **F-4E** is a multi-role fighter capable of performing air-superiority, close-support, and interdiction missions. A 20 mm Vulcan multi-barrel gun is fitted, together with an improved fire-control system in the nose, as a result of operational experience with earlier aircraft, some of which had been equipped with pod-mounted guns. An additional fuselage fuel tank extends the F-4E's radius of action. Leading-edge slats, as developed for the F-4F to improve manoeuvrability, are being retrofitted to all the USAF's F-4Es. In addition, from early 1973, these models were fitted with Northrop's target-identification system electro-optical (TISEO) as an aid to positive long-range visual identification of airborne or ground targets. Several hundred have been built for USAF. (Data for F-4E.)

Contractor: McDonnell Aircraft Company, Division of McDonnell Douglas Corporation.
Power Plant: two General Electric J79-GE-17 turbojets; each 17,900 lb thrust with afterburning.
Accommodation: pilot and weapons system operator in tandem.
Dimensions: span 38 ft 5 in, length 62 ft 10 in, height 16 ft 3 in.
Weights: empty 30,425 lb, gross 58,000 lb.
Performance: max speed at 40,000 ft Mach 2.27, range with typical tactical load 1,300 miles.
Armament: one 20 mm M-61A1 multi-barrel gun; provision for up to four AIM-7E Sparrow and four AIM-9 Sidewinder air-to-air missiles, or up to 16,000 lb external stores.

F-5E Tiger II

Although developed primarily to provide America's allies in Southeast Asia with an uncomplicated air-superiority tactical fighter, capable of relatively inexpensive maintenance and operation, foreign orders for this advanced version of the F-5 export aircraft have more than trebled the original estimated production figure of 325 aircraft. First flown in August 1972, the F-5E is basically a VFR day/night fighter with limited all-weather capability. The design emphasis is on manoeuvrability rather than high speed, notably through the incorporation of manoeuvring flaps. TAC, assisted by ATC, is training pilots and technicians of user countries. For this purpose, 20 F-5Es were supplied to USAF, beginning in April 1973 with the 425th TF Squadron, before deliveries to foreign governments began late that year.

Contractor: Northrop Corporation, Aircraft Division.
Power Plant: two General Electric J85-GE-21 turbojet engines; each 5,000 lb thrust with afterburning.
Accommodation: pilot only.
Dimensions: span 26 ft 8 in, length 48 ft 3¾ in, height 13 ft 4½ in.
Weights: empty 9,588 lb, gross 24,080 lb.
Performance (at 13,220 lb): max level speed at 36,000 ft Mach 1.51, service ceiling 53,000 ft, range with max fuel, with reserve fuel for 20 min max endurance at S/L (with external tanks retained) 1,974 miles.
Armament: two AIM-9 Sidewinder missiles on wingtip launchers; two M-39A2 20 mm cannon in nose, with 280 rounds per gun; up to 7,000 lb of mixed ordnance can be carried on four underwing attachments and one under-fuselage station.

F-15 Eagle

Under the budget for FY 1975, authorisation has been given for the acquisition of another 72 F-15s, bringing the total authorised for production to 104 for operational use by the USAF. First flown in July 1972, this single-seat fixed-wing all-weather fighter was designed specifically for an air-superiority role, but it also has an inherent air-to-surface attack capability. Specialised equipment includes a lightweight Hughes radar system for long-range detection and tracking of small high-speed objects operating at all heights down to treetop level, and for ensuring effective delivery of weapons, with a head-up display for close-in dog-fights; a Hazeltine interrogator for the IFF system to inform the pilot if an aircraft seen visually or on radar is friendly; and an inertial navigation system. The first F-15s were delivered to the USAF Tactical Air Command in November 1974. The initial contract awarded in 1969, which had provided for 18 F-15s for development testing, also called for 2 **TF-15s**; basically a pilot training version, the first of which flew in July 1973. All of the development and test aircraft have been delivered to the test programme. The F-15 broke all eight existing time-to-climb world records during January 1975, including some set by the Soviet MiG-25 (Foxbat).

Contractor: McDonnell Aircraft Company, Division of McDonnell Douglas Corporation.
Power Plant: two Pratt & Whitney F100-PW-100 turbofan engines; each 25,000 lb thrust.
Accommodation: pilot only.
Dimensions: span 42 ft 9¾ in, length 63 ft 9¾ in, height 18 ft 7½ in.
Weight: gross about 40,000 lb.
Performance: max speed more than Mach 2.5, absolute ceiling 66,900 ft, ferry range more than 2,878 miles.
Armament: one internally mounted M-61A1 20 mm multi-barrel cannon; four AIM-9L Sidewinder and four AIM-7F Sparrow air-to-air missiles carried externally. Provision for carrying up to 12,000 lb of ordnance on five weapon stations, and for electronic warfare pods on outboard wing stations.

F-16

This high-performance, highly manoeuvrable new multi-purpose fighter evolved from the YF-16/YF-17 Lightweight Fighter Prototype programme begun in April 1972. Two General Dynamics YF-16s were built under Air Force contract, the first of which made its official first flight on 2 February 1974. The prototypes were designed to exploit and flight test emerging advanced technologies such as: decreased structural weight through the use of composites, decreased drag resulting from reduced static stability margins, fly-by-wire flight controls with side stick force controller, high *g* tolerance/high visibility cockpit with a 30 degree reclined seat and single-piece bubble canopy, blended wing-body aerodynamics with forebody strakes and automatically variable wing leading-edges to enhance the exceptional manoeuvrability provided by the light weight/low wing loading design and the high thrust provided by the single F100-PW-100 engine. The interchangeability of this engine with the F-15 contributed to the lower acquisition and operating costs of the F-16 in the Air

F-4E Phantom II

F-5E Tiger II

F-15 Eagle

F-16

F-100 Super Sabre

F-101B Voodoo

F-102A Delta Dagger

F-105D Thunderchief

Force's evaluation of the two prototype fighter designs. This, together with the performance advantages demonstrated in test flights, led to the decision to develop and procure the F-16 for the USAF inventory in quantities totalling at least 650.

Contractor: General Dynamics Corporation.

Power Plant: one Pratt & Whitney F100-PW-100 turbofan engine; about 25,000 lb thrust with afterburning.

Accommodation: pilot only.

Dimensions: span 30 ft 0 in, length 47 ft 2 in, height 16 ft 4 in.

Weights (approx): empty 12,000 lb, design gross 21,000 lb.

Performance: max speed Mach 2 class, ferry range more than 2,300 miles.

Armament: one M-61A1 20 mm multi-barrel cannon with 500 rounds, mounted in fuselage; infra-red missile mounted on each wingtip; underwing attachments for other stores including air-to-ground weapons.

F-100 Super Sabre

Around 400 Super Sabres remain operational with the ANG. The original prototype, flown in May 1953, was the first operational fighter capable of supersonic speed in level flight. The **F-100A,** with a J57-P-7 or -39 engine, was the basic single-seat interceptor version. Two hundred and three were delivered, of which some were later converted to camera-carrying RF-100As. The **F-100C** introduced a strengthened wing with four attachments for up to 6,000 lb of bombs, other weapons, or drop tanks, and could be flight refuelled. Four hundred and seventy-six were built, being superseded in production by the **F-100D,** with bomb-load increased to 7,500 lb, a Minneapolis Honeywell supersonic autopilot, tail-warning radar, and other refinements; 1,274 were built. Final version was the **F-100F,** a two-seat variant for use as a fighter-bomber, air-superiority fighter, or trainer, of which 339 were built in 1957–59, with full operational equipment apart from having two instead of the standard four guns. (Data for F-100D.)

Contractor: North American Aviation, Inc.

Power Plant: one Pratt & Whitney J57-P-21A turbojet engine; 17,000 lb thrust with afterburning.

Accommodation: pilot only.

Dimensions: span 38 ft 9 in, length 47 ft 0 in, height 15 ft 0 in.

Weights: empty 21,000 lb, gross 34,832 lb.

Performance: max speed at 36,000 ft Mach 1.3, range, with two external tanks, 1,500 miles.

Armament: four 20 mm M-39E guns in fuselage; underwing pylons for six 1,000 lb bombs, two Sidewinder or Bullpup missiles, rockets, etc.

F-101B Voodoo

A development of the basic F-101 single-seat tactical fighter-bomber, the F-101B is a two-seat long-range all-weather interceptor, first flown in March 1957, and designed originally for service with the Air Defense Command (now Aerospace Defense Command—ADC). About 116 remain in service with the ANG, with others in Canadian Armed Forces under NORAD control. For reconnaissance versions, see page 117.

Contractor: McDonnell Aircraft Corporation.

Power Plant: two Pratt & Whitney J57-P-55 turbojet engines; each 14,990 lb thrust with afterburning.

Accommodation: pilot and radar operator in tandem.

Dimensions: span 39 ft 8 in, length 67 ft 4¾ in, height 18 ft 0 in.

Weight: gross 46,500 lb.

Performance: max speed at 40,000 ft Mach 1.85, service ceiling 51,000 ft, max range 1,550 miles.

Armament: two AIM-4D Falcon air-to-air missiles carried externally, and two AIR-2A Genie nuclear-warhead unguided rockets carried internally.

F-102 Delta Dagger

Of the 875 F-102As built originally for operation by ADC from mid-1956, many were transferred to the Greek and Turkish Air Forces in 1969–70. Fifty-six remain in the US operational interceptor force, deployed with the ANG, but will be phased out in FY 1976. The basic single-seat **F-102A** all-weather interceptor was the first USAF operational fighter to be armed solely with guided missiles and unguided rockets. USAF also acquired 63 side-by-side two-seat **TF-102As** for use as combat trainers, and has two versions which have been converted into target drones, the manned **QF-102A** and unmanned **PQM-102A** for use in air-to-air and ground-to-air missile tests under the Pave Deuce programme.

Contractor: Convair Division of General Dynamics Corporation.

Power Plant: one Pratt & Whitney J57-P-23 or -25 turbojet engine; 17,000 lb thrust with afterburning.

Accommodation: pilot only.

Dimensions: span 38 ft 1½ in, length 68 ft 4½ in, height 21 ft 2½ in.

Weight: gross 28,000 lb (overload approx 32,000 lb).

Performance: max speed at 36,000 ft Mach 1.3, service ceiling 54,000 ft, max range 1,350 miles.

Armament: six AIM-4C/D Falcon and one AIM-26B air-to-air missiles; twelve 2.75 in rockets carried internally.

F-105 Thunderchief

Developed as a supersonic single-seat fighter capable of delivering nuclear as well as conventional weapon loads at very high speeds over long ranges, the F-105 underwent extensive modification after production ended in 1965. Still in service with the ANG and AF Reserve are several groups of **F-105D** single-seat all-weather fighter-bombers, equipped with NASARR monopulse radar system, for use in both high- and low-level missions, and Doppler for night or bad weather operations. First F-105D flew in June 1959, and deliveries to the 4th Tactical Fighter Wing began in May 1960. More than 600 were built, of which about 30 were modified to carry the T-Stick II system to improve all-weather bombing capability. Also in ANG and Reserve service is the **F-105F** two-seat dual-purpose trainer/tactical fighter version of the F-105D with lengthened fuselage and higher tail fin, of which 143 were built. Two squadrons of the active Air Force fly the **F-105G** all-weather "Wild Weasel" version of the two-seat F-105, intended for the suppression of surface-to-air missile sites, with an electronic countermeasures pod mounted on the underfuselage. Typical armament load comprises four Shrike missiles or two Standard ARMs. (Data for F-105D.)

Contractor: Fairchild Republic Division of Fairchild Industries.

Power Plant: one Pratt & Whitney J75-P-19W turbojet engine; 26,500 lb thrust with afterburning and water injection.

Accommodation: pilot only.

Dimensions: span 34 ft 11¼ in, length 67 ft 0¼ in, height 19 ft 8 in.

Weights: empty 27,500 lb, gross 52,546 lb.

Performance: max speed at 38,000 ft Mach 2.1, service ceiling 52,000 ft, max range more than 1,842 miles.

Armament: one General Electric 20 mm Vulcan multi-barrel gun and more than 14,000 lb of stores under fuselage and wings.

F-106 Delta Dart

The F-106 all-weather fighter was developed in the mid-1950s from the F-102 to accommodate the larger J75 engine. Constant updating has enabled the Aerospace Defense Command to deploy the aircraft throughout the '60s and '70s, and 233 serve with active USAF squadrons. The two production versions are: **F-106A,** single-seat interceptor with J75 engine, first flown in January 1957; 277 were built, with deliveries beginning in July 1959. **F-106B,** a tandem two-seat dual-purpose combat trainer, of which 63 were built. The F-106's MA-1 electronic guidance and fire-control system, which operates in conjunction with NORAD's SAGE defence system, has been updated periodically. Other modifications include enhancement of the reliability of the on-board radar, installation of supersonic drop tanks, in-flight refuelling, and the approval of a 20 mm cannon, which gives greater effectiveness against low altitude/ECM/manoeuvring targets. These have improved the F-106's capability in such a way as to permit its operation in global roles as well as for continental US defence in con-

junction with USAF E-3A AWACS aircraft. (Data for F-106A.)

Contractor: Convair Division of General Dynamics.

Power Plant: one Pratt & Whitney J75-P-17 turbojet engine; 24,500 lb thrust with afterburning.

Accommodation: pilot only.

Dimensions: span 38 ft 3½ in, length 70 ft 8¾ in, height 20 ft 3⅓ in.

Weights (approx): empty 23,650 lb, gross 35,500 lb.

Performance (approx): max speed at 40,000 ft Mach 2.3, service ceiling 57,000 ft, range 1,200 miles.

Armament: one AIR-2A Genie unguided nuclear-warhead rocket and four AIM-4F/G Falcon air-to-air missiles carried internally; 20 mm cannon now under production and installed on one test aircraft. Installation of gun on all operational F-106s will not be completed until late 1976 at earliest.

F-111

The distinctive variable wing-sweep configuration of the F-111 was developed essentially to satisfy USAF's stringent specification for a tactical fighter with a maximum speed well above Mach 2 at high altitude; low-level supersonic dash; good take-off and landing performance on rough airfields in forward areas; and excellent handling characteristics throughout the speed range. An initial contract provided for 18 development F-111As for USAF, and, in January 1965, one month after its maiden flight, the aircraft gave its first demonstration of the full range of its wing sweep. Four versions are currently deployed with four USAF tactical fighter wings: **F-111A,** the initial aircraft of this type delivered for service with the 4480th TF Wing, a training unit, in July 1967 were development models. First operational wing was the 474th TFW, with deliveries beginning in October 1967. A total of 141 production F-111As was built, and this version served with distinction in SEA in 1972–73. The "A" was superseded in production by the **F-111E,** a version with modified air intakes which improve engine performance above Mach 2.2. Ninety-four were built for service with the 20th TFW, based in the UK in support of NATO. The **F-111D** has more advanced avionics, offering improvements in navigation and air-to-air weapon delivery. Ninety-six were built and equip the 27th TFW. The **F-111F,** of which 106 are being completed for the 366th TFW with uprated turbofans, entered service initially with lower-rated TF30-P-9 engines, pending availability of the specified version. USAF is currently developing the **EF-111A,** which uses a modified ALQ-99 jamming subsystem to suppress enemy defences and provide other electronic warfare capabilities. SAC has a strategic bomber version of the same basic aircraft, designated **FB-111A** (see page 112). The Royal Australian Air Force has acquired 24 **F-111Cs** for strike duties.

Contractor: General Dynamics Corporation.

Power Plant: F-111A/E: two Pratt & Whitney TF30-P-3 turbofan engines; each 18,500 lb thrust with afterburning. F-111D: two TF30-P-9 turbofan engines; each 19,600 lb thrust with afterburning. F-111F: two TF30-P-100 turbofan engines; each approx 25,100 lb thrust with afterburning.

Accommodation: crew of two, side-by-side in escape module.

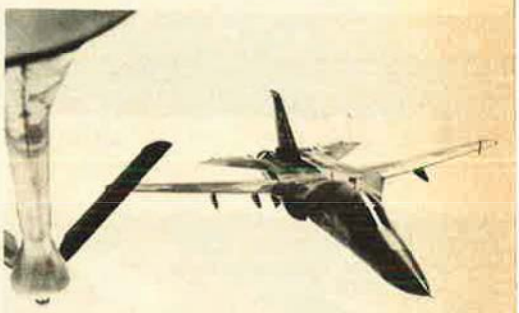
Dimensions: span spread 63 ft 0 in, fully swept 31 ft 11.4 in, length 73 ft 6 in, height 17 ft 1.4 in.

Weights (F-111A): empty 46,172 lb, gross 91,500 lb.

Performance (F-111A): max speed at S/L Mach 1.2, max speed at altitude Mach 2.2, service ceiling more than 51,000 ft, range with max internal fuel more than 3,165 miles.

Armament: one 20 mm M-61A1 multi-barrel cannon or two 750 lb bombs in internal weapon bay; four swivelling and four fixed wing pylons carrying total external load of up to 25,000 lb of bombs, rockets, missiles, or fuel tanks.

F-106 Delta Dart



F-111 preparing to refuel

Attack and Observation Aircraft

A-7D Corsair II

The A-7D is a single-seat tactical fighter of outstanding target kill capacity, as demonstrated by the 354th TFW in Southeast Asia. Its accuracy is achieved with the aid of a continuous-solution navigation and weapon-delivery system, including all-weather radar bomb delivery. The first of the initial two production aircraft, each powered by a TF30-P-8 engine, flew in April 1968, followed five months later by the first flight of the TF41-engined model. Deliveries to USAF began in December of the same year. The 354th TFW was the first operational unit equipped with A-7Ds. Deliveries have also been made to ANG units in New Mexico, Colorado, and Ohio, beginning in 1973 and representing the first new aircraft received by these units for over 20 years. Current programmes call for 459 aircraft. In addition, several hundreds of the A-7A, B, and E versions are used by the USN, which made the first combat sorties from the USS *Ranger* in the Gulf of Tonkin on December 3, 1967.

Contractor: Vought Systems Division of LTV Aerospace Corporation.

Power Plant: one Allison TF41-A-1 non-afterburning turbofan engine; 14,250 lb thrust.

Accommodation: pilot only.

Dimensions: span 38 ft 9 in, length 46 ft 1½ in, height 16 ft 0¾ in.

Weights: empty 19,781 lb, gross 42,000 lb.

Performance: max speed at S/L 698 mph, ferry range with external tanks 2,871 miles.

Armament: one M-61A1 20 mm multi-barrel gun; up to 15,000 lb of air-to-air or air-to-ground missiles, bombs, rockets, or gun pods on 6 underwing and two fuselage attachments.

A-10

Winner of the competitive fly-off with the Northrop A-9A, and a comparative flight evaluation with the A-7D in the close air support role. The two prototype aircraft had flown more than 1,000 test hours by February 1975; the TF34-100 engine has been qualified, and the A-10/GAU-8 compatibility tests have shown that the combination of the 30 mm rapid-fire cannon and the highly manoeuvrable A-10 will improve significantly the Air Force's capability to support friendly ground forces. The first of six development aircraft flew in February this year. Funding has been released for 22 production aircraft in FY 1975, and the FY 1976 budget includes a procurement request for a further 61 aircraft. Equipment includes a head-up display, laser seeker, target penetration aids, 30 mm cannon, and associated equipment for Maverick and other missile systems. The A-10 has been hardened to survive in a high threat environment.

Contractor: Fairchild Republic Company, Division of Fairchild Industries.

Power Plant: two General Electric TF34-GE-100 turbofan engines; each approx 9,065 lb thrust.

Accommodation: pilot only.

Dimensions: span 57 ft 6 in, length 52 ft 7 in, height 15 ft 5 in.

Weight (estimated): max gross weight 47,200 lb.

Performance: max speed 460 mph, range with 9,500 lb of weapons and 2 hr loiter 290 miles.

Armament: one 30 mm GAU-8/A gun (20 mm M-61 on prototypes); ten underwing hard points and one under fuselage for up to

A-7D Corsair II

A-10

A-37 Dragonfly

AC-130 gunship

O-2A

OV-10A Bronco

SR-71

U-2

16,000 lb of ordnance, including various types of free-fall or guided bombs, gun pods, or 9 AGM-65 Maverick and 2 AIM-9E/J Sidewinder missiles.

A-37B Dragonfly

Intended for use in armed counter-insurgency (COIN) missions from short unimproved airstrips, the A-37 was evolved from the T-37 trainer, and the first 39 production models (A-37As), with derated (2,400 lb thrust) engines were, in fact, converted T-37Bs. The A-37B, which first flew in September 1967, represents the main production version. A total of 415 A-37Bs had been delivered by April 1973, mainly for service in Southeast Asia, with additional deliveries scheduled under a later USAF contract. Since 1970, USAF has been transferring the A-37Bs to the Air Force Reserve and to the Air National Guard.

Contractor: Cessna Aircraft Company.
Power Plant: two General Electric J85-GE-17A turbojet engines; each 2,850 lb thrust.
Accommodation: two, side-by-side.
Dimensions: span over tip-tanks 35 ft 10½ in, length 29 ft 3 in, height 8 ft 10½ in.
Weights: empty 6,211 lb, gross 14,000 lb.
Performance: max level speed at 16,000 ft 507 mph, service ceiling 41,765 ft, range with max payload, including 4,100 lb ordnance, 460 miles.
Armament: one GAU-2B/A 7.62 mm Minigun installed in forward fuselage; four pylons under each wing able to carry various combinations of rockets and bombs.

AC-130A/H

Seven of these gunship conversions of the Hercules were ordered initially as a result of prototype trials at Wright-Patterson AFB, Ohio, in the summer of 1967, and were used subsequently, from 1970, in Vietnam. Each was fitted with four 20 mm Vulcan cannon, four 7.62 mm Miniguns, searchlight, and sensors, including forward-looking infra-red target-acquisition equipment and low-light-level TV and laser target designators. All the AC-130As are now equipped with two 40 mm cannons, two 20 mm cannons, and two 7.62 mm guns. In the AC-130H, one of the 40 mm cannons is replaced by a 105 mm howitzer.

Contractor: Greenville (Tex.) Division of E-Systems, Inc. Other data basically as for C-130 (page 119).

O-2A

Designated O-2A, this military version of the "push-and-pull" Cessna 337 Skymaster was originally selected by USAF to replace the Cessna O-1 in the forward air controller role in Vietnam in 1966. A total of 346 aircraft was ordered. Specialised equipment and electronics permit control of air strikes, visual reconnaissance, target identification and marking, ground-air co-ordination, and damage assessment. The O-2B version is no longer in operation.

Contractor: Cessna Aircraft Company.
Power Plant: two Continental IO-360-C/D piston engines; each 210 hp.
Accommodation: pilot and observer side-by-side; two passengers optional.
Dimensions: span 38 ft 2 in, length 29 ft 9 in, height 9 ft 2 in.
Weights: empty 2,848 lb, gross 5,400 lb.
Performance: max speed at S/L 199 mph, service ceiling 19,300 ft, range 1,060 miles.
Armament: four underwing pylons can carry light ordnance, including a 7.62 mm Minigun pack.

OV-10A Bronco

A two-seat counter-insurgency combat aircraft, first flown in August 1967, 157 of which were acquired by USAF for use in the forward air controller role and for limited quick-response ground support pending the arrival of tactical fighters. Production of the OV-10A for the US services ended in April 1969, but 15 aircraft have since been modified by E-Systems, Inc., under the USAF Pave Nail programme, with specialised equipment including a stabilised night periscopic sight, a combination laser rangefinder and target illuminator, a LORAN receiver, and a Lear Siegler LORAN co-ordinate converter, to permit their use in a night forward air control and strike designation role. Versions of the OV-10 are also in service with the USN and US Marine Corps.

Contractor: Rockwell International Corporation, North American Aircraft Operation.
Power Plant: two AiResearch T76-G-410/411 turboprop engines; each 715 hp.
Accommodation: two in tandem.
Dimensions: span 40 ft 0 in, length 41 ft 7 in, height 15 ft 2 in.
Weights: empty 6,969 lb, overload gross weight 14,466 lb.
Performance: max speed at S/L, without weapons, 240 mph; service ceiling 28,800 ft; combat radius with max weapon load, no loiter, 228 miles.
Armament: four fixed forward-firing M-60C 7.62 mm machine-guns; four external weapon attachment points under short sponsons, for up to 2,400 lb of rockets, bombs, etc; fifth point, capacity 1,200 lb, under centre fuselage. Provision for carrying one Sidewinder missile on each wing.

Reconnaissance and Special-Duty Aircraft

SR-71A/C

Development of the **SR-71A** strategic reconnaissance aircraft was started in February 1963, to provide a successor to the same design team's U-2. The prototype flew for the first time in December 1964; delivery of production aircraft, known unofficially as "Blackbirds", began in January 1966, for operation by the 9th Strategic Reconnaissance Wing at Beale AFB, Calif. At least 30 SR-71As are thought to have been built, each carrying complex equipment ranging from simple battlefield surveillance systems to multiple-sensor, high-performance systems capable of specialised surveillance of up to 60,000 sq miles of territory in one hour. Mission details are highly classified, but SR-71As and Teledyne Ryan AQM-34L RPVs are known to have been the only USAF reconnaissance aircraft permitted to overfly North Vietnam after the cessation of bombing in January 1973. Other sorties were made in the Middle East during and after the Yom Kippur war in late 1973. In September 1974, an SR-71A flew from New York to London, England, in 1 hr 54 min 56.4 sec, at an average speed of 1,806.987 mph.

The **SR-71C** is a tandem two-seat training version.

Contractor: Lockheed Aircraft Corporation.
Power Plant: two Pratt & Whitney JT11D-20B (J58) turbojet engines; each 34,000 lb thrust with afterburning.
Accommodation: crew of two in tandem.
Dimensions: span 55 ft 7 in, length 107 ft 5 in, height 18 ft 6 in.
Weight (estimated): empty 60,000 lb; gross 170,000 lb.
Performance (estimated): max speed at 78,750 ft over Mach 3, operational ceiling above 80,000 ft, range at Mach 3.0 (1,980 mph) at 78,750 ft 2,982 miles.
Armament: none.

U-2A/D

Original requirements for an aircraft capable of carrying out strategic reconnaissance for long periods at very high altitudes over Communist territory resulted in the design of the U-2, which is essentially a powered glider, with sailplane-like high aspect ratio wing and lightweight structure. Fifty-five aircraft are believed to have been built from 1954, including 2 prototypes, 48 single-seat

U-2A/B versions, and 5 two-seat **U-2Ds.** The J57-P-37A turbojet of the U-2A was replaced by a more powerful J75-P-13, adapted to run on low-volatility fuel, in the U-2B. Several U-2s remain in service for special high-altitude reconnaissance and weather flights, with some of the weather reconnaissance aircraft redesignated **WU-2.** (Data for U-2A.)
Contractor: Lockheed Aircraft Corporation.
Power Plant: one Pratt & Whitney J57-P-37A turbojet engine; 11,200 lb thrust.
Accommodation: pilot only.
Dimensions: span 80 ft 0 in, length 49 ft 7 in, height 13 ft 0 in.
Weight: gross, with slipper tanks, 17,270 lb.
Performance: max speed at 40,000 ft 528 mph, operational ceiling about 80,000 ft, range about 4,000 miles.

RF-101

The RF-101 Voodoo was the USAF's first supersonic daylight tactical reconnaissance aircraft. Original RF-101As and "C"s, with nose-mounted cameras, were supplemented in 1967–68 by RF-101Gs and "H"s, converted from F-101A/C fighters, for service with the ANG. Two of the four currently operational squadrons will be deactivated in FY 1976. Data similar to F-101B.

RF-4C

A multi-sensor reconnaissance version of the F-4C Phantom II, the RF-4C was developed to replace the RF-101 in USAF service. First production model flew in May 1964. Radar and photographic systems are housed in a modified nose, increasing the overall length of the aircraft by 33 in. The three basic reconnaissance systems, operated from the rear seat, comprise side-looking radar, an infra-red sensor, and forward- and side-looking cameras. A total of 505 aircraft had been built when production ended in December 1973. Data similar to F-4.

EC-121

Massive radomes above and below the fuselage readily distinguish this early warning, fighter control, and reconnaissance aircraft, derived from the C-121 (Super Constellation) transport. A few versions continue in service: the **EC-121D** is a development of the EC-121C, with added wingtip fuel tanks, first delivered in May 1954. Under subsequent modification programmes, some "D"s became **EC-121Hs,** with additional electronics to feed data into NORAD's SAGE defence system; others became **EC-121Ts,** which remain operational on radar picket duties covering the seas east of Iceland. (Data for EC-121D.)
Contractor: Lockheed Aircraft Corporation.
Power Plant: four Wright R-3350-91 piston engines; each 3,250 hp.
Dimensions: span 126 ft 2 in, length 116 ft 2 in, height 27 ft 0 in.
Weights: empty 80,611 lb, gross 143,600 lb.
Performance: max speed at 20,000 ft 321 mph, service ceiling 20,600 ft, range 4,600 miles.
Armament: none.

EC-135 etc.

In order to pursue specialised roles, several aircraft in the KC-135 Stratotanker series have received modification either during production or at a later date. The **EC-135C** (originally designated KC-135B) is basically similar to the KC-135A but with 18,000 lb st TF33 turbofans. Equipped as Flying Command Posts in support of SAC's airborne alert role, 17 were built, fitted with extensive communications equipment. As well as being able to refuel other aircraft in flight, EC-135Cs can themselves be refuelled by SAC tankers. Fourteen have been adapted to provide control of Minuteman ICBMs, and at least one aircraft is airborne at all times, accommodating a flight crew of 5, a general officer, and a staff of 18. Other models used as Flying Command Posts and communications relay stations are: 4 **EC-135Gs** and 3 **EC-135Ls** with J57 turbojets; 5 turbojet **EC-135Hs** used by USAFE; one **EC-135K** used by TAC, and 5 **EC-135Ps** used by PACAF, also with turbojets; and 3 **EC-135Js** which are modified "C"s with turbofan engines. Versions of the C-135 Stratolifter series used for reconnaissance include 12 turbofan **RC-135Vs,** equipped also for electronic reconnaissance with SAC; 2 **RC-135Bs** and 2 **RC-135Vs;** and 10 **WC-135Bs,** converted C-135Bs, are used by MAC for long-range weather reconnaissance missions. In addition, 8 **EC-135Ns** were equipped as airborne radio and telemetry stations for the Apollo programme. Data basically as C-135 (page 119).

E-3A AWACS

Production of the first six E-3A AWACS (Airborne Warning and Control System) aircraft is in progress as a result of successful completion of the System Integration Demonstration (SID) in December 1974. AWACS has been conceived essentially as a mobile, flexible, survivable and jamming-resistant surveillance and command, control and communications (C^3) system, capable of all-weather, long-range, high- or low-level surveillance of all air vehicles, manned or unmanned, above all kinds of terrain. A modified Boeing 707-320B carries an extensive complement of mission avionics, including computer, radar, IFF, communications, display and navigation systems. Two test-bed aircraft were built to allow a competitive fly-off between two competing brassboard radar systems developed by two different contractors. The winning aircraft was converted into the SID vehicle, to conduct the tests which were the basis of the production decision. Three additional RDT&E aircraft, one of which is the losing brassboard machine, are being built primarily for routine kinds of operational suitability and technical order verification testing. The unique capability of AWACS is its lookdown radar by Westinghouse Electronic Corporation which makes possible all-altitude surveillance over land or water, thus correcting a serious deficiency in existing surveillance systems. The single command manager for AWACS is the Tactical Air Command. AWACS can support a variety of tactical and/or air defence missions with no change in configuration. It will become operational in September 1977, and the last of 34 aircraft will be delivered in November 1981.
Contractor: The Boeing Aerospace Company.
Power Plant (production aircraft): four Pratt & Whitney TF33-P-100A turbofan engines; each 21,000 lb thrust.
Accommodation: operational crew of 17.
Dimensions: span 130 ft 10 in, height 41 ft 4 in.
Performance: max speed 530 mph, ceiling above 29,000 ft, endurance 5 hr on station 1,150 miles from base.

E-4A/B (AABNCP)

The Advanced Airborne Command Post (AABNCP) is a modified Boeing 747 aircraft to serve as the National Emergency Airborne Command Post (NEACP) and Headquarters Strategic Air Command airborne command post. Three **E-4A** aircraft were funded by Congress and will provide an interim NEACP capability, utilising existing EC-135 command, control and communications (C^3) equipment. The first E-4A was delivered in July 1973. Funding for a fourth aircraft has also been provided. This will be a test-bed aircraft for checking advanced C^3 equipment now under development and has been designated the **E-4B.** The procurement of three additional E-4B aircraft, and retrofit of the E-4As to E-4B configuration, is planned.
Contractor: The Boeing Aerospace Company.
Power Plant: four General Electric CF6-50E turbofan engines; each 52,500 lb thrust. Aircraft No. 1 and 2 were delivered with Pratt & Whitney JT9D-7AW engines and will be retrofitted with CF6-50E engines at a later date.
Dimensions: span 195 ft 8 in, length 231 ft 4 in, height 63 ft 5 in.
Weight (E-4A): gross 778,000 lb.
Performance: unrefuelled endurance 12 hours.

EB-57

Both single-seat and two-seat versions of the EB-57 make up the 24-plane complement of the 17th Defense Systems Evaluation Squadron (DSES) of ADC at Malmstrom AFB, Montana. Equipped with the latest devices for jamming and penetrating air defences, their task is to simulate an enemy bomber force, and attempt to find gaps in air defence systems by day or night, at variable

RF-101 Voodoo

RF-4C Phantom II

EC-121

EC-135N

E-3A AWACS

E-4A (AABNCP)

EB-57

WC-130

altitudes and from any point of the compass.
Contractor: The Martin Company.
Power Plant: two Wright J65-W-5F turbojet engines; each 7,200 lb thrust.
Dimensions: span 64 ft 0 in, length 65 ft 5 in, height 15 ft 6 in.
Performance: max speed more than 500 mph, ceiling above 45,000 ft, range more than 1,800 miles.

WC-130B/E/H

Seventeen modified C-130 Hercules transports, designated WC-130B, E, and H, are equipped for weather reconnaissance duties, including penetration of tropical storms to obtain data for forecasting of storm movements. All are assigned to the 9th Weather Reconnaissance Wing of MAC's Air Weather Service. Data similar to C-130.

Transports and Tankers

C-5 Galaxy

C-5 Galaxy

Production contracts for this very heavy logistics transport aircraft have now been completed with USAF having taken delivery in May 1973 of the last of the 81 aircraft ordered. Currently the largest aircraft in service anywhere in the world, the C-5 first flew in June 1968, after five years of design and development study. Delivery of the first operational aircraft was made to MAC in December 1969.
Contractor: Lockheed-Georgia Company.
Power Plant: four General Electric TF39-GE-1 turbofan engines; each 41,000 lb thrust.
Accommodation: crew of eight; rest area for 16 (relief crew, etc); 73 troops and 36 standard 463L pallets or assorted vehicles, or additional 270 troops.
Dimensions: span 222 ft 9 in, length 247 ft 10 in, height 65 ft 1 in.
Weights: empty 323,000 lb, gross (for 2.25 g) 764,500 lb.
Performance: max speed at 25,000 ft 571 mph, service ceiling (at 615,000 lb) 34,000 ft, range with max fuel 5,350 miles.

C-7A Caribou

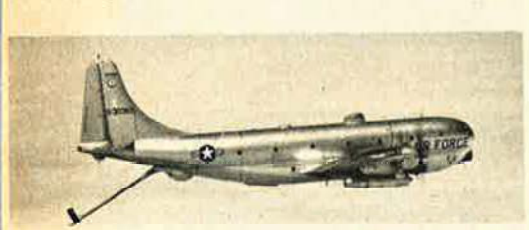
C-7A Caribou

A twin-engined STOL utility transport built in Canada, the prototype C-7A first flew in August 1958. The US Army was the principal customer and in January 1967 still had 134 aircraft in service, all of which were transferred to USAF. Their ability to operate from short, unprepared runways in all weather conditions led to the widespread use of the C-7As in Southeast Asia. All have now been transferred to the AFRES and ANG.
Contractor: de Havilland Aircraft of Canada Ltd.
Power Plant: two Pratt & Whitney R-2000-7M2 piston engines; each 1,450 hp.
Accommodation: crew of two or three; 31 troops, 25 paratroops, or 14 litters and 9 other persons.
Dimensions: span 95 ft 7½ in, length 72 ft 7 in, height 31 ft 9 in.
Weights: empty 18,335 lb, gross 28,500 lb.
Performance: max speed at 6,000 ft 216 mph, service ceiling 27,100 ft, range 200 to 1,175 miles.

C-9A Nightingale

C-9A Nightingale

The C-9A is essentially an off-the-shelf DC-9 Series 30 commercial transport, modified to include a special-care compartment with separate atmospheric and ventilation controls for USAF aeromedical evacuation operations. The first of 21 was delivered in August 1968 to MAC's 375th Aeromedical Airlift Wing; orders were completed by February 1973. The Nightingale is also currently performing overseas theatre aeromedical evacuation missions in Europe and the Pacific.
Contractor: Douglas Aircraft Company, Division of McDonnell Douglas Corporation.
Power Plant: two Pratt & Whitney JT8D-9 turbofan engines; each 14,500 lb thrust.
Accommodation: crew of two; 30 to 40 litter patients, more than 40 ambulatory patients, or a combination of both, plus five medical staff.
Dimensions: span 93 ft 5 in, length 119 ft 3½ in, height 27 ft 6 in.
Weight: gross 108,000 lb.
Performance: max cruising speed at 25,000 ft 565 mph, ceiling 35,000 ft, range over 2,000 miles.



KC-97 of Texas ANG

C-119 Flying Boxcar

C-123 Provider

KC-97L, C-97G and K

Since production was initiated in 1945, many versions of this transport development of the B-29 have seen service with USAF. Those remaining in operational use are derived from the KC-97G, built between 1953 and 1956 and gradually replaced from 1957 by KC-135As. A total of 135 was converted to **C-97G** Stratofreighter cargo aircraft by the removal of the flight refuelling equipment; a further 26 became **C-97Ks,** in passenger configuration, for SAC mission support duties. A number were modified by the addition of J47-GE-25A jet pods for use by the ANG as tankers, for operation with TAC fighters, and were redesignated **KC-97L.** Another 28 were converted to **HC-97Gs** for air-sea search and rescue work, and now serve with the AF Reserve and ANG. (Data for KC-97G.)
Contractor: The Boeing Airplane Company.
Power Plant: four Pratt & Whitney R-4360-59 piston engines; each 3,500 hp.
Accommodation: crew of five; 96 combat troops or 69 litters.
Dimensions: span 141 ft 3 in, length 110 ft 4 in, height 38 ft 3 in.
Weights: empty 82,500 lb, gross 175,000 lb.
Performance: max speed at 25,000 ft 375 mph, service ceiling 35,000 ft, range at 297 mph 4,300 miles.

C-119 Flying Boxcar

First flown in October 1952, the **C-119G** was the final production version of the Flying Boxcar, with Aeroproducts propellers replacing the Hamilton Standards of the C-119F variant, of which all were eventually converted to "G" standard. In turn, 68 "F"s and "G"s were modified to **C-119J** standard with beaver-tail rear doors. All aircraft are now serving with the Air Force Reserve and ANG. (Data for C-119G.)
Contractor: The Fairchild Engine and Airplane Corporation.
Power Plant: two Wright R-3350-89 piston engines; each 3,500 hp.
Accommodation: crew of six; 62 troops or 26,000 lb of cargo.
Dimensions: span 109 ft 3 in, length 86 ft 6 in, height 27 ft 6 in.
Weights: empty 40,785 lb, gross 72,700 lb.
Performance: max cruising speed 250 mph, ceiling 22,200 ft, max range 2,280 miles, or 1,620 miles with 10,000 lb cargo.

C-123 Provider

Two modified versions of the basic **C-123B,** which entered service in 1955 as a troop and supply transport, are still in the USAF inventory. The **C-123J** has additional wingtip J44 turbojets and provision for wheel-ski landing gear; 10 were built for use as support aircraft for the DEW Line radar chain in Alaska. Some are still used by the ANG. The **C-123K,** which first flew in 1966, features two underwing pylon mounted auxiliary turbojets, improved landing gear, and a new stall warning system. This version was widely used during the Vietnam War for transport and special duties. (Data for C-123K.)
Contractor: The Fairchild Engine and Airplane Corporation.
Power Plant: two Pratt & Whitney R-2800-99W piston engines; each 2,500 hp; and two General Electric J85-GE-17 turbojet engines; each 2,850 lb thrust.
Accommodation: crew of three; 58 troops, 50 litters, or 21,000 lb of cargo.
Dimensions: span 110 ft 0 in, length 76 ft 4 in, height 34 ft 6 in.
Weights: empty 35,366 lb, gross 60,000 lb.
Performance: max speed at 10,000 ft 228 mph, service ceiling above 25,000 ft, range with 15,000 lb payload 1,035 miles.

C-130 Hercules

Many versions of the Hercules transport have entered USAF service, resulting from an original specification issued by TAC in 1951. The initial production model was the **C-130A,** first flown in April 1955, powered by 3,750 eshp Allison T56-A-11 or -9 turboprops; 219 ordered with deliveries beginning in December 1956. Two special variants, **GC-130As,** were built as drone launchers/directors for ARDC (now AFSC), carrying up to four drones on underwing pylons. All special equipment was removable, permitting the aircraft to be used as *freighters, assault* transports, or ambulances, as required. The **C-130B** was a developed version with improved range and higher weights, powered by 4,050 eshp Allison T56-A-7 turboprops; the first of 134 entered USAF service in April 1959. Twelve **C-130Ds** were modified C-130As for use in the Arctic, with wheel-ski landing gear, increased fuel capacity, and provision for JATO. The **C-130E** is an extended-range development of the C-130B, with larger underwing fuel tanks; 389 were ordered for MAC and TAC with deliveries beginning in April 1962. Basically similar to the "E", the **C-130H** has uprated T56-A-15 turboprop engines, a redesigned outer wing, and other minor improvements; delivery began last year. Variants include **HC-130H** for the Aerospace Rescue and Recovery Service, and the **AC-130A/H** and **WC-130E** described separately. (Data for C-130E.)

Contractor: Lockheed-Georgia Company.
Power Plant: four Allison T56-A-7A turboprop engines; each 4,050 eshp.
Accommodation: crew of five; up to 92 troops or 6 standard freight pallets, etc.
Dimensions: span 132 ft 7 in, length 97 ft 9 in, height 38 ft 3 in.
Weights: empty 72,892 lb, gross 175,000 lb.
Performance: max speed 384 mph, service ceiling at 155,000 lb AUW 23,000 ft, range with max payload 2,000 miles.

HC-130

An extended-range version of the C-130, the **HC-130H** was first ordered in 1963 for the Aerospace Rescue and Recovery Service. A total of 66 was built with 4,910 ehp (limited to 4,500 ehp) Allison T56-A-15 turboprop engines. Initial flight was made in December 1964. Crew comprises 10 to 12 members. The **HC-130N** is a further search and rescue version for the recovery of aircrew and retrieval of space capsules after re-entry, using advanced direction-finding equipment, and for refuelling helicopters in flight; 15 ordered in 1969. Twenty HC-130Hs have been modified into **HC-130Ps,** also capable of refuelling helicopters in flight and of retrieving parachute-borne payloads in mid-air. Other data similar to C-130 above, except length, which is 98 ft 9 in with recovery system folded.

C-131 Samaritan

Derived from the Convair 240, 26 **C-131As** were delivered to MATS (now MAC) in 1954 for air-evacuation duties; each could accommodate 37 passengers, 27 litters, or a combination of both, in a pressurised cabin. For testing electronic equipment, USAF acquired 36 **C-131Bs,** based on the Convair 340, which could, additionally, carry 48 passengers. Also developed from the Model 340 and the Model 440, with improved soundproofing, were the 44-passenger **C-131D** and **VC-131D,** 33 of which were delivered. In 1956–57, 15 **C-131Es** were built for use as ECM trainers by SAC, but 7 were later converted to RC-131s for use by MAC. (Data for C-131B.)

Contractor: Convair Division of General Dynamics Corporation.
Power Plant: two Pratt & Whitney R-2800-99W piston engines; each 2,500 hp.
Accommodation: crew of four and 48 passengers.
Dimensions: span 105 ft 4 in, length 79 ft 2 in, height 28 ft 2 in.
Weights: empty 29,248 lb, gross 47,000 lb.
Performance: max speed 293 mph, service ceiling 24,500 ft, max range 2,000 miles.

KC-135 Stratotanker

Developed from the Model 367-80 (prototype for the 707 series), the **KC-135A** can be used either as a standard flight refuelling tanker for SAC bombers, with high-speed and high-altitude capabilities, or as a long-range passenger and/or cargo transport; 732 were built, of which the first flew in August 1956. Variants include the **KC-135Q,** adapted to refuel Lockheed SR-71s; and **KC-135R** and **KC-135T** for special reconnaissance. (Data for KC-135A.)

Contractor: The Boeing Company.
Power Plant: four Pratt & Whitney J57-P-59W turbojet engines; each 13,750 lb thrust.
Accommodation: crew of four or five; up to 80 passengers.
Dimensions: span 130 ft 10 in, length 136 ft 3 in, height 38 ft 4 in.
Weights: empty 98,466 lb, gross 297,000 lb.
Performance: max speed at 30,000 ft 585 mph, service ceiling 50,000 ft, range with 120,000 lb of transfer fuel 1,150 miles, ferry mission 9,200 miles.

C-135 Stratolifter

Pending delivery of the C-141, MATS (now MAC) ordered the C-135 to serve as an interim jet passenger/cargo transport. Derived from the KC-135A, the Stratolifter version differed primarily in having had the tanker's refuelling equipment deleted; minor internal changes adapted the cabin for personnel transport, with other modifications to facilitate cargo handling. The first of three converted KC-135As, known as **C-135A** "Falsies", flew in May 1961. The 15 genuine production C-135As, with J57-P-59W turbojets, could be identified by their taller fin and rudder, as standardised for commercial 707s. Thirty **C-135Bs** followed, powered by Pratt & Whitney TF33-P-5 turbofans, and first flew in February 1962. Eleven "B"s were subsequently converted to **VC-135Bs** with revised interior for VIP transportation; others became **WC-135B** and **RC-135E/M.** Data similar to KC-135, except:

Dimensions: length 134 ft 6 in.
Weights (C-135B): operating weight empty 102,300 lb, gross 275,500 lb.
Accommodation: 126 troops; 44 litters and 54 sitting casualties; or 87,100 lb of cargo.
Performance (C-135B): max speed 600 mph, range with 54,000 lb payload 4,625 miles.

VC-137

Of the various modified Boeing 707 transports acquired by USAF for VIP duties, the best known is "Air Force One", a **VC-137C,** operated by MAC's 89th Military Airlift Wing from Andrews AFB, Md., for use by the President. It is basically a 707-320B with a special VIP interior for a crew of seven or eight and 49 passengers. Delivery has also been made of a second similar aircraft, ordered in 1972. Three of the smaller 707-120s, originally designated VC-137As but later modified to **VC-137B** standard by the installation of turbofan engines, are also in service with the 89th Wing.

Contractor: The Boeing Company.
Power Plant: four Pratt & Whitney JT3D-3 turbofan engines; each 18,000 lb thrust.
Dimensions: VC-137B span 130 ft 10 in, length 144 ft 6 in, height 42 ft 0 in; VC-137C span 145 ft 9 in, length 152 ft 11 in, height 42 ft 5 in.
Weights: VC-137B gross 258,000 lb; VC-137C gross 322,000 lb.
Performance (VC-137C): max speed 627 mph, service ceiling 42,000 ft, range about 7,000 miles.

C-140 JetStar

Used in inspecting worldwide military navigation aids, five **C-140As** have been delivered to the Air Force Communications Service, beginning from Summer 1962. Eleven transport versions, **VC-140Bs,** are in service with the 89th Military Airlift Wing (Special Missions) of MAC, operating from Andrews AFB, Md., the first being delivered in late 1961.

Contractor: Lockheed-Georgia Company.
Power Plant: four Pratt & Whitney J60-P-5A turbojet engines; each 3,000 lb thrust.
Accommodation: C-140A crew of five; VC-140B crew of three and 8 or 13 passengers.
Dimensions: span 54 ft 5 in, length 60 ft 5 in, height 20 ft 5 in.
Weight: gross 40,920 lb.
Performance: max cruising speed at 20,000 ft 550 mph, ceiling above 45,000 ft, range with reserves 2,280 miles.

C-130 Hercules

HC-130H

C-131B Samaritan

KC-135 Stratotanker with F-111s

C-135 Stratolifter

VC-137

C-140 JetStar

C-141 StarLifter

C-141 StarLifter

Initiated as the flying element of Logistics Support System 463L, with an all-weather landing system standard, the C-141 began squadron operations with MAC in April 1965 and was soon making virtually daily flights to Southeast Asia. A total of 284 aircraft was built, some of which were modified to carry Minuteman ICBMs, with local structure strengthening to accommodate this 86,207 lb load. To utilise more fully the capability of the C-141, the USAF hopes to begin lengthening the fuselage of all aircraft by 23 ft 4 in in FY 1977, increasing usable payload by 30%. A prototype conversion is in hand. Flight refuelling capability will be provided.

Contractor: Lockheed-Georgia Company.
Power Plant: four Pratt & Whitney TF33-P-7 turbofan engines; each 21,000 lb thrust.
Accommodation: crew of four; 154 troops; 122 paratroops; or 64,000 lb of freight.
Dimensions: Span 159 ft 11 in, length 145 ft 0 in, height 39 ft 3 in.
Weights: empty 136,000 lb, gross 323,100 lb.
Performance: max speed at 25,000 ft 571 mph, service ceiling 41,600 ft, range with max fuel 4,750 miles.

YC-14 AMST (artist's concept)

AMST (YC-14 and YC-15)

Contracts were awarded to Boeing and McDonnell Douglas in November 1972 to develop their proposals for an advanced medium STOL transport (AMST), which might eventually replace the C-130 Hercules in USAF service, with each company building two prototypes to compete in a prototype fly-off competition.

YC-15 AMST (artist's concept)

Boeing YC-14

Basically the Boeing design uses a supercritical unswept high-wing T-tail airframe, with rear-loading ramp, and fuselage-side fairings to house the main-wheel bogies when retracted. The power plant installation will be highly unconventional. Two General Electric CF6-50D engines, each of approx 50,000 lb thrust, will be mounted close to the fuselage, above and forward of the wing. High lift will be provided by upper-surface blowing and use of inboard Coanda flaps. Benefits resulting from this layout include the presentation of low infra-red signature to ground-based detectors; an uncluttered underwing surface, simplifying the carriage of external stores, including RPVs; and a reduced noise footprint. The fuselage diameter will be considerably greater than that of the C-130 to accommodate most essential Army divisional combat equipment. The aircraft will be capable of airlifting 150 troops or 27,000 lb payloads into and out of 2,000 ft semi-prepared runways (S/L 103° F) at a 400 nautical mile radius. In conventional operation, the aircraft will transport 65,000 lb. Max gross weight is estimated at 172,000 lb for STOL operation or 216,000 lb for conventional operation. Max speed at 30,000 ft, estimated at STOL max T-O weight, is 460 mph. Range with max payload in a STOL operation is 1,150 miles. First flight will occur in mid-1976.

Dimensions: span 129 ft 0 in, length 131 ft 8 in, height 48 ft 8 in.

McDonnell Douglas YC-15

The McDonnell Douglas AMST is more conventional in configuration. It will have ailerons and triple inboard spoilers/airbrakes, externally blown flaps, and a high T-tail. The aircraft will be powered by four JT8D-17 turbofans, each having 16,000 lb thrust. Cargo compartment dimensions and performance capabilities will be similar to the Boeing AMST. Design gross weight (3.0 g) at the mid-point will be approximately 150,000 lb. Maximum gross weight is estimated at 198,500 lb. The first flight is scheduled for this Autumn.

Dimensions: span 110 ft 4 in, length 123 ft 6 in, height 42 ft 10 in.
Performance: max speed 500 mph, design operational radius 460 miles.

X-24B

Utility and Experimental Aircraft

JC-130B

Delivery was made in 1961 of six modified C-130Bs to replace the C-119s of the 6593d Test Squadron at Hickam AFB, Hawaii. Designated **JC-130B,** these aircraft are equipped for air-snatch recovery of classified USAF satellites. Data similar to C-130.

T-33A

X-24B

This unique "double-delta" wingless research aircraft is currently completing a flight test programme conducted jointly by the Air Force Systems Command's (AFSC) Air Force Flight Test Center and NASA's Flight Research Center at Edwards AFB, California. Present research is directed toward developing manoeuvring manned re-entry vehicles able to perform as spacecraft in orbit, fly in earth's atmosphere like aircraft, and land at conventional airports; the X-24B programme has accordingly been devised to demonstrate the ability of an aircraft shaped for extremely high speeds to manoeuvre and land at low speeds. Evolved from the X-24A, the "B" retains the power plant and systems of the earlier model but has completely new external lines. It is designed to be air-launched from a modified B-52, which on a typical flight carries it to an altitude of about 45,000 ft before separation. A 137-second burn of its rocket motor then boosts it to above 70,000 ft and a speed of approx Mach 1.5; the flight ends with a glide back to earth. Several highly successful powered flights have followed the X-24B's first, unpowered, flight on 1 August 1973, and predicted performance goals have been exceeded.

Contractor: Martin Marietta Corporation.
Power Plant: one Thiokol XLR-11 liquid-propellant rocket engine; 8,000 lb thrust. Two Bell LLRV rockets, each 500 lb thrust, for possible use during approach and landing.
Accommodation: pilot only.
Dimensions: span 19 ft 2 in, length 37 ft 6 in, height 10 ft 4 in.
Weights: unfuelled 8,250 lb, fuelled 13,539 lb.

T-37B

Trainers

T-33A

Although replaced as USAF's standard jet advanced trainer by the T-38, this version of the Shooting Star jet fighter is still widely used for combat support missions, and for proficiency and radar target evaluation training. A lengthened fuselage accommodates a second cockpit in tandem, with the canopy extended to cover both; the armament of the fighter was replaced by an all-weather "navigational nose". Production ended in August 1959, with deliveries to USAF having totalled more than 4,000.

Contractor: Lockheed Aircraft Corporation.
Power Plant: one Allison J33-A-35 turbojet engine; 4,600 lb thrust.
Accommodation: crew of two, in tandem.

Dimensions: span 38 ft 10½ in, length 37 ft 9 in, height 11 ft 4 in.
Weights: empty 8,084 lb, gross 11,965 lb.
Performance: max speed at 25,000 ft 543 mph, service ceiling 47,500 ft.
Armament: two 0.50 calibre machine-guns on some early aircraft only.

T-37B

Employed in Undergraduate Pilot Training (UPT), this aircraft was USAF's first jet trainer designed specifically as such from the start. Deliveries of the T-37B, which superseded the T-37A, began in November 1959; all "A" models have subsequently been converted to "B" standard. In addition to training, this version can be equipped to perform military surveillance and low-level attack duties. Well over a thousand T-37s have been built, and versions are used by many foreign countries for their pilot training programmes.
Contractor: Cessna Aircraft Company.
Power Plant: two Continental J69-T-25 turbojet engines; each 1,025 lb thrust.
Accommodation: two, side-by-side.
Dimensions: span 33 ft 9.3 in, length 29 ft 3 in, height 9 ft 2 in.
Weights: empty, 3,870 lb, gross 6,574 lb.
Performance: max speed at 20,000 ft 425 mph, service ceiling 39,200 ft, range at 360 mph, standard tankage 870 miles.

T-38 Talon

Having maintained consistently the best safety record of any USAF supersonic aircraft, this lightweight twin-jet advanced trainer was in continuous production from 1956 to 1972. Like the F-5 tactical fighter, the Talon is derived from Northrop's private-venture N-156 design and is almost identical in structure to the former aircraft. The first T-38 flew in April 1959, with production models entering operational service in March 1961. More than 1,100 of the total 1,187 T-38s built were delivered to USAF.
Contractor: Northrop Corporation.
Power Plant: two General Electric J85-GE-5 turbojet engines; each 2,680 lb thrust dry, 3,850 lb thrust with afterburning.
Accommodation: student and instructor, in tandem.
Dimensions: span 25 ft 3 in, length 46 ft 4½ in, height 12 ft 10½ in.
Weights: empty 7,164 lb, gross 12,093 lb.
Performance: max level speed at 36,000 ft more than Mach 1.23 (812 mph), ceiling above 55,000 ft, range, with reserves, 1,093 miles.

T-39 Sabreliner

Designed to meet USAF requirements for a combat readiness trainer and utility aircraft, the prototype Sabreliner was built as a private venture, making its first flight in September 1958, powered by two General Electric J85 turbojets. Subsequent production models utilised by USAF are T-39B basic utility trainers with J60 turbojet engines, of which 143 were delivered for service throughout the Air Force.
Contractor: Industrial Products Group of Rockwell International Corporation.
Power Plant: two Pratt & Whitney J60-P-3 turbojet engines; each 3,000 lb thrust.
Accommodation: crew of two; 4 to 7 passengers.
Dimensions: span 44 ft 5 in, length 43 ft 9 in, height 16 ft 0 in.
Weights: empty 9,300 lb, gross 17,760 lb.
Performance: max speed at 36,000 ft 595 mph, service ceiling 39,000 ft, range 1,950 miles.

T-41A Mescalero

USAF pilot candidates undergo a flight screening programme with about 14 hours in a standard Cessna Model 172 light aircraft, bought by USAF as a trainer under the designation **T-41A.** An initial order for 170 aircraft in 1964 was supplemented by a further 34 in July 1967. In October the same year, 45 **T-41Cs,** a more powerful version of the Model 172, were ordered for cadet flight training at the USAF Academy. (Data for the T-41A.)
Contractor: Cessna Aircraft Company.
Power Plant: one Continental O-300-C piston engine; 145 hp.
Accommodation: crew of two, side-by-side.
Dimensions: span 35 ft 10 in, length 26 ft 11 in, height 8 ft 9½ in.
Weights: empty 1,285 lb, gross 2,300 lb.
Performance: max speed at S/L 139 mph, service ceiling 13,100 ft, range 720 miles.

T-43A

The first of these navigation trainers, selected by USAF to replace the piston-engined T-29, made its initial flight on 10 April 1973. Basically a military version of the commercial Boeing Model 737-200, the T-43A is equipped with the same on-board avionics as the most advanced USAF operational aircraft, including celestial, radar, and inertial navigation systems, LORAN, and other radio systems. Deliveries of the 19 aircraft ordered by USAF were completed in July 1974.
Contractor: The Boeing Aerospace Company.
Power Plant: two Pratt & Whitney JT8D-9 turbofan engines; each 14,500 lb thrust.
Accommodation: crew of two; 12 students, 4 advanced students, and 3 instructors.
Dimensions: span 93 ft 0 in, length 100 ft 0 in, height 37 ft 0 in.
Weight: gross 115,500 lb.
Performance: econ cruising speed at 35,000 ft Mach 0.7, operational range 2,995 miles.

T-38 Talon

T-39 Sabreliner

T-41A Mescalero

T-43A

Helicopters

UH-1F and HH-1H

Used for missile site support duties, 146 **UH-1Fs** were built for USAF between 1963 and 1967 following success in a design competition. Developed from the basic Bell Model 204 design, this version first flew in February 1964; deliveries began to the 4486th Test Squadron in September of the same year. A few UH-1Fs were modified to **UH-1Ps** for classified psychological warfare missions in Vietnam. **TH-1F** is a version of the UH-1F used for instrument and hoist training. Production of these versions has been completed, but in November 1970 USAF placed an initial order for 30 **HH-1Hs,** a larger 12- to 15-seat helicopter based on the Model 205, to replace the HH-43 for local base rescue duties. Deliveries, begun in 1972, are complete. (Data for UH-1F.)
Contractor: Bell Helicopter Company.
Power Plant: one General Electric T58-GE-3 turboshaft engine; 1,272 shp (derated to 1,100 shp).
Accommodation: one pilot and 10 passengers; or two crew and 2,000 lb of cargo.
Dimensions: rotor diameter 48 ft 0 in, length of fuselage 39 ft 7½ in, height 14 ft 8 in.
Weight: 9,000 lb.
Performance: max speed 138 mph, service ceiling at mission gross weight 13,450 ft, max range, no allowances, at mission gross weight 347 miles.

UH-1N

This twin-engined version of the UH-1 utility helicopter was developed as a result of approval given by the Canadian government in 1968. Designated UH-1N, it is capable of sustaining cruising flight on one engine. An initial order made for the US services in 1969 included 79 of these aircraft for USAF, the Canadian government simultaneously ordering 50, with options on 20 more. Deliveries to USAF began in 1970.
Contractor: Bell Helicopter Company.
Power Plant: Pratt & Whitney (UACL) T400-CP-400 Turbo "Twin-Pac", consisting of two PT6 turboshaft engines coupled to a combining gearbox with a single output shaft; flat-rated to 1,250 shp.
Accommodation: pilot and 14 passengers or cargo; or external load of 3,383 lb.
Dimensions: rotor diameter (with tracking tips) 48 ft 2¼ in, length of fuselage 42 ft 4¾ in, height 14 ft 4¾ in.
Weight: gross 10,500 lb.

HH-1H


UH-1N

CH-3E

HH-3E Jolly Green Giant

HH-43 Huskie

HH-53C

Performance: max speed at S/L 150 mph, service ceiling 15,000 ft, max range, no reserves, 248 miles.
Armament: two General Electric 7.62 mm Miniguns or two 40 mm grenade launchers; two seven-tube 2.75 in rocket launchers.

CH-3E

Important design changes incorporated in this twin-engined amphibious transport helicopter, based on the US Navy's SH-3A, permit speedier cargo handling and ease of maintenance, with built-in equipment for the removal and replacement of all major components in remote areas. The initial version was the CH-3C, of which 41 were built for USAF. Introduction of uprated engines led to the new designation CH-3E in February 1966, applicable to both new production aircraft and the 41 re-engined CH-3Cs. A pod-mounted turret armament system developed for this version, with one pod on each sponson, achieves over 180° traverse on each side of the aircraft, to give complete 360° coverage with overlapping fire forward. A total of 83 new and uprated aircraft was produced, of which 50 were adapted as **HH-3Es** (see below).
Contractor: Sikorsky Aircraft, Division of United Aircraft Corporation.
Power Plant: two General Electric T58-GE-5 turboshaft engines; each 1,500 shp.
Accommodation: crew of two or three; 25 or 30 fully equipped troops, 15 litters, or 5,000 lb of cargo.
Dimensions: rotor diameter 62 ft 0 in, length of fuselage 57 ft 3 in, height 18 ft 1 in.
Weights: empty 13,255 lb, gross 22,050 lb.
Performance: max speed at S/L 162 mph, service ceiling 11,100 ft, max range, with 10% reserve, 465 miles.
Armament: General Electric six-barrel 7.62 mm Minigun mounted in each turret.

HH-3E Jolly Green Giant

Variant of the CH-3E for USAF's Aerospace Rescue and Recovery Service, developed originally to facilitate penetration deep into North Vietnam on rescue missions. Additional equipment includes self-sealing fuel tanks, armour, defensive armament, a rescue hoist, and a retractable flight refuelling probe. Some HH-3Es are modifications of CH-3Cs. An unarmed version (HH-3F) is used by the US Coast Guard. Other data basically similar to CH-3E above.

HH-43F Huskie

Evolved from an earlier piston-engined model, the HH-43 Huskie has been deployed as a local crash rescue helicopter at USAF bases throughout the world for well over a decade, with small wheel-skis fitted to the landing gear enabling it to operate from hard or soft surfaces. USAF's first major production version was the **HH-43B,** which flew for the first time in December 1958; but this was replaced by the **HH-43F,** with greater power and increased fuel capacity, in operations where optimum altitude performance under hot-weather conditions was required. The first "F" flew in August 1964. The HH-43s are being replaced by HH-1Hs.
Contractor: Kaman Aircraft Corporation.
Power Plant: one Lycoming T53-L-11A turboshaft engine; 1,150 shp (derated to 825 shp).
Accommodation: pilot, two fire-fighters, and rescue gear; or pilot, co-pilot, and 10 passengers; or pilot, medical attendant, and four litters.
Dimensions: rotor diameter 47 ft 0 in, length of fuselage 25 ft 2 in, height to top of rotor head 12 ft 7 in.
Weight: gross 9,150 lb.
Performance (at 6,500 lb): max speed at S/L 120 mph, service ceiling 23,000 ft, range at 8,270 lb, no reserve, 504 miles.

HH-53B

Ordered in September 1966 for USAF's Aerospace Rescue and Recovery Service to supplement the HH-3E, this twin-turbine heavy-lift helicopter carries the same general equipment as the Jolly Green Giant, including the flight refuelling probe and all-weather avionics and armament, but is faster and larger. The first of eight HH-53Bs flew in March 1967, and, following delivery, which began in June the same year, the type was used extensively for rescue operations in Southeast Asia.
Contractor: Sikorsky Aircraft, Division of United Aircraft Corporation.
Power Plant: two General Electric T64-GE-3 turboshaft engines; each 3,080 shp.
Accommodation: crew of three; basic accommodation for 38 combat-equipped troops or 24 litters and 4 attendants.
Dimensions: rotor diameter 72 ft 3 in, length of fuselage (without refuelling probe) 67 ft 2 in, height 24 ft 11 in.
Weights: empty 23,125 lb, gross 42,000 lb.
Performance: max speed at S/L 186 mph, service ceiling 18,400 ft, max range, with 10% reserve, 540 miles.

HH-53C and CH-53C

An improved version of the HH-53B, powered by 3,435 shp T64-GE-7 turboshaft engines; first delivered to USAF in August 1968. With a maximum speed of 196 mph, the **HH-53C** is faster than the "B" model; it can transport 60 passengers or 18,500 lb of freight and has an external cargo hook of 20,000 lb capacity. Other data basically as for HH-53B above. A total of 66 HH-53B/Cs was built. A similar version, the **CH-53C,** is used to provide battlefield mobility for the Air Force mobile Tactical Air Control System.

Strategic Missiles

LGM-25C Titan II

LGM-30G Minuteman III

LGM-25C Titan II

Operational since 1963, this two-stage ICBM is deployed in six squadrons, each with nine missiles, based at Davis-Monthan AFB, Ariz.; McConnell AFB, Kan.; and Little Rock AFB, Ark. Titan II is fitted with a thermonuclear warhead having the largest yield of any carried by a US missile and has a launch reaction time of one minute from its fully hardened underground silo. During flight, the second stage shuts down once a speed of 17,000 mph is attained; vernier nozzles then adjust the velocity and correct the trajectory for the proper ballistic delivery of the ablative-type re-entry vehicle, which finally separates from the burnt-out second stage. Advanced penetration aids are carried to hinder detection and destruction by enemy ABMs.
Contractor: Martin Marietta Corporation.
Power Plant: first stage: Aerojet-General LR87 storable liquid-propellant engine; 430,000 lb thrust; second stage: Aerojet-General LR91 storable liquid-propellant engine; 100,000 lb thrust.
Guidance: AC Electronics inertial guidance system.
Warhead: thermonuclear, in General Electric Mk 6 ablative re-entry vehicle.
Dimensions: length 103 ft 0 in, max body diameter 10 ft 0 in.
Weight: launch weight 330,000 lb.
Performance: max speed 15,112 mph (Mach 20.33), max range 6,300 miles.

LGM-30F/G Minuteman

Provision has been made in the FY 1975 budget for the acquisition of a further 61 Minuteman ICBMs. Of similar range, though smaller and lighter in weight than the liquid-propellant Titan, this three-stage solid-propellant second-generation missile was designed to supersede earlier ICBMs and has a smaller payload. The current operational versions are:

LGM-30F Minuteman II: similar in configuration to the original Minuteman I, Minuteman II has increased range and targeting coverage; also increased accuracy and payload capacity; operational since 1965, it

is currently based at Wings I, II, and IV.

LGM-30G Minuteman III: with MIRV capability, this version increases the possibility of penetrating enemy defence systems. First highly successful test launch was made in 1968, and Minuteman III is now operational in Wings III, V, and VI.

Current plans provide for the force of 1,000 Minuteman missiles to consist of 450 LGM-30Fs and 550 "G" models.

Assembly and Integration: The Boeing Aerospace Company.

Power Plant: first stage: Thiokol M-55E solid-propellant motor; 200,000 lb thrust; second stage: Aerojet-General SR19-AJ-1 solid-propellant motor; 60,600 lb thrust; third stage: LGM-30F Hercules, Inc., solid-propellant motor; LGM-30G Aerojet-General SR73-AJ-1 solid-propellant motor; 34,000 lb thrust.

Guidance: Autonetics Division of Rockwell International inertial guidance system.

Warhead: LGM-30F single thermonuclear warhead in Avco re-entry vehicle; LGM-30G multiple thermonuclear warheads, each in a General Electric Mk 12 re-entry vehicle.

Dimensions: length 59 ft 10 in, diameter of first stage 5 ft 6 in.

Weight: launch weight (approx) LGM-30F 70,000 lb; LGM-30G 76,000 lb.

Performance: speed at burn-out more than 15,000 mph (Mach 22.75), highest point of trajectory approx 700 miles, range with max operational load LGM-30F more than 6,000 miles; LGM-30G more than 7,000 miles.

AGM-28B Hound Dog

Developed to arm B-52G and "H" aircraft, this long-range air-to-surface strategic standoff missile was first launched in 1959 and entered service in 1961 under the original designation GAM-77A. Each aircraft carries two Hound Dogs, one beneath each wing on pylons that contain the astro-tracking system and launching equipment.

Capable of high- or low-level attack, of changing course or altitude, and of making dog-leg or feint runs, all of the several hundred Hound Dogs still operational are of the AGM-28B version.

Contractor: North American Aviation, Inc.

Power Plant: Pratt & Whitney J52-P-3 turbojet; 7,500 lb thrust.

Guidance: North American Autonetics inertial guidance system, supplemented by a star-tracking system produced by Kollsman Instrument Company.

Warhead: thermonuclear.

Dimensions: length 42 ft 6 in, body diameter 2 ft 4½ in, wing span 12 ft 2 in.

Weight: launch weight 9,600 lb.

Performance: cruising speed Mach 2, max range 600 miles.

AGM-69A SRAM

This supersonic air-to-surface nuclear missile was designed fundamentally to attack and neutralise enemy terminal defences such as the Soviet SAM missile sites. The inertial guidance system makes the missile impossible to jam, while its radar signature is said to be no larger than that of a machine-gun bullet. Initial delivery of the SRAM (Short Range Attack Missile) was made in 1972, and current contracts cover the production of 1,500 missiles to equip 17 B-52 wings and two FB-111 wings at 18 SAC bases, by mid-1975. Each SAC B-52G and "H" can carry 20 SRAMs, twelve in three-round underwing clusters and eight on a rotary dispenser in the aft bomb-bay, together with up to four Mk 28 thermonuclear weapons. Alternatively, the rotary launcher can be carried simultaneously with two underwing AGM-28B Hound Dogs and decoy missiles. An FB-111A can carry four SRAMs on swivelling underwing pylons and two internally. SRAM has also been designated as primary armament for the Rockwell International B-1. When carried externally, a tailcone, 22.2 in long, is added to the missile for aerodynamic reasons.

Contractor: The Boeing Aerospace Company.

Power Plant: Lockheed Propulsion Company LPC-415 restartable solid-propellant two-pulse rocket engine.

Guidance: General Precision/Kearfott inertial system, permitting attack at high or low levels, and dog-leg courses. CEP stated to be well within lethal radius of warhead.

Warhead: nuclear, of similar yield to that of single Minuteman III warhead.

Dimensions: length 14 ft 0 in, body diameter 1 ft 5½ in.

Weight: launch weight approx 2,230 lb.

Performance: speed up to Mach 2.5, range 100 miles at high altitude, 35 miles at low altitude.

AGM-28 Hound Dog on B-52

AGM-69A SRAM on FB-111

Airborne Tactical and Defence Missiles

AIR-2A Genie

When, on July 19, 1957, the Genie was launched from an F-89J Scorpion, it became the first nuclear-tipped air-to-air rocket ever tested in a live firing. Production ended in 1962, but thousands were delivered and continue in first-line service with F-101B and F-106 squadrons of USAF, as well as with the Canadian Armed Forces. Unguided in flight, Genie is normally fired automatically by the Hughes fire-control system fitted in the launching aircraft. As one of many safety precautions, the missile remains inert in a nuclear sense until it is armed in the air, a few moments before firing. A training version, without nuclear warhead, is also in service.

Contractor: McDonnell Douglas Astronautics Company.

Power Plant: Thiokol SR49-TC-1 solid-propellant rocket motor; 36,000 lb thrust.

Guidance: no guidance system.

Warhead: nuclear, with reported yield of 1.5 kilotons.

Dimensions: length 9 ft 7 in, body diameter 1 ft 5.35 in, fin span 3 ft 3½ in.

Weight: launch weight 820 lb.

Performance: max speed Mach 3, max range 6 miles.

AIM-4A/C/D Falcon

Standard armament on all US all-weather interceptors, Falcon was the first air-to-air guided weapon to come into USAF service. Versions include;

AIM-4A: improved version of the original radar-homing production model; about 12,000 built between 1956 and 1959.

AIM-4C: similar airframe to AIM-4A but with infra-red guidance system. About 9,500 were delivered simultaneously with the "A"s.

AIM-4D: "cross-bred" version, combining the improved infra-red homing head of the AIM-4G Super Falcon with the basic airframe of the AIM-4C. Used to arm F-4 fighters of Tactical Air Command and F-101 and F-102 fighters of the ANG. Thousands of older Falcons were converted to AIM-4D standard.

Contractor: Hughes Aircraft Company.

Power Plant: Thiokol M58-E4 solid-propellant rocket motor; 6,000 lb thrust.

Guidance: AIM-4A: Hughes semi-active radar homing system; AIM-4C/D: infra-red homing system.

Warhead: high-explosive.

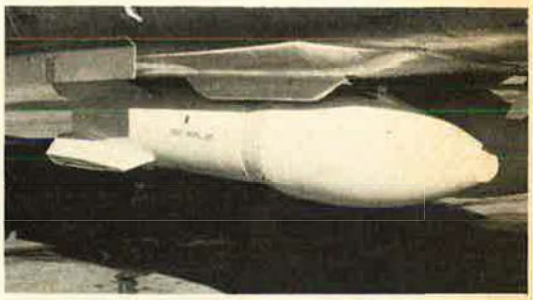
Dimensions: length AIM-4A 6 ft 6 in, AIM-4C/D 6 ft 7½ in, body diameter 6.4 in, wing span 1 ft 8 in.

Weight: launch weight AIM-4A 110 lb; AIM-4C 122 lb; AIM-4D 134 lb.

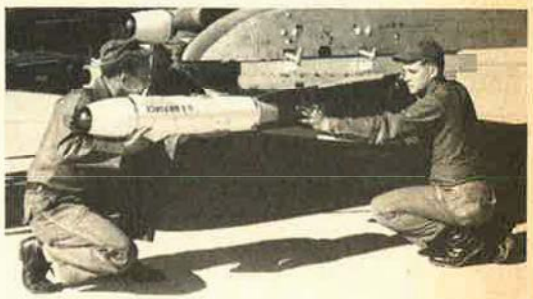
Performance (AIM-4D): max speed Mach 4, range 6 miles.

AIM-4F/G Super Falcon

Arming the F-106 Delta Dart, the Super Falcon is a developed version of the AIM-4A/C Falcon, having reduced susceptibility



AIR-2A Genie



AIM-4D Falcon on F-4

AIM-7E Sparrow

AIM-9 Sidewinders on F-111

AGM-45A Shrike

AGM-65A Maverick on A-7D

to enemy countermeasures and higher performance. A mixed armament of four AIM-4F/Gs is carried internally. The two versions were introduced simultaneously in 1960, superseding the interim AIM-4E.

Contractor: Hughes Aircraft Company.
Power Plant: Thiokol M46 two-stage solid-propellant motor; first-stage rating of 6,000 lb thrust.
Guidance: AIM-4F: Hughes semi-active radar homing guidance; AIM-4G: infra-red homing system.
Warhead: high-explosive, weighing 40 lb.
Dimensions: length AIM-4F 7 ft 2 in; AIM-4G 6 ft 9 in, body diameter 6.6 in, wing span 2 ft 0 in.
Weight: launch weight AIM-4F 150 lb; AIM-4G 145 lb.
Performance: max speed Mach 2.5, max range 7 miles.

AIM-7E/F Sparrow

Currently one of the most important guided weapons in service with the NATO air forces and their allies, the **AIM-7E** is a radar-homing air-to-air missile of all-weather all-altitude operational capability, suited also for use against shipping targets from aircraft or ships. Up to four Sparrow missiles can be carried by the F-4 Phantom II. A variant of the standard AIM-7E, the **AIM-7E-2** is similar but has better manoeuvrability to improve its "dog-fight" capability. The **AIM-7F** is an advanced solid-state version of the Sparrow, powered by a Hercules Mk 58 Mod 0 solid-propellant rocket motor, that has been undergoing operational testing and evaluation. It is in limited production for both USAF and USN, and FY 1975 budget requests include the provision of 600 additional missiles as well as further funding for development. It is intended to supersede the AIM-7E, and arm the F-15. (Data for AIM-7E.)

Contractor: Raytheon Company.
Power Plant: Rocketdyne Mk 38 solid-propellant rocket motor.
Guidance: Raytheon continuous-wave semi-active radar homing system.
Warhead: high-explosive, weighing 60 lb.
Dimensions: length 12 ft 0 in, body diameter 8 in, wing span 3 ft 4 in.
Weight: launch weight 450 lb.
Performance: max speed more than Mach 3.5, range AIM-7E 14 miles; AIM-7F 28 miles.

AIM-9 Sidewinder

Said to have fewer than two dozen moving parts and no more electronic components than a domestic radio, the Sidewinder air-to-air missile is one of the simplest and cheapest guided weapons yet produced in quantity. The standard AIM-9B, first fired successfully in September 1953, was produced in very large numbers by Philco and General Electric for USAF and USN, and has been supplied to many foreign armed services, including those of nine NATO countries. New versions of Sidewinder reported to be under development for USAF, or in service, are:

AIM-9E: an advanced version of AIM-9B produced by Philco for USAF.

AIM-9H: version with improved close-range capability, produced for USN. To be acquired by USAF as one-time procurement in FY 1976.

AIM-9J: an advanced version of AIM-9E with increased range, developed and produced by Philco-Ford to overcome limitations experienced during air fighting in Vietnam; to equip all Sidewinder-capable aircraft, including the F-15.

AIM-9L: new version with much enhanced capability, under development jointly for USAF and USN. Procurement scheduled to begin in FY 1976. No details available. (Data for AIM-9B.)

Contractor: Naval Weapons Center.
Power Plant: Naval Propellant Plant solid-propellant rocket motor.
Guidance: infra-red homing guidance.
Warhead: high-explosive, weighing 25 lb.
Dimensions: length 9 ft 3½ in, body diameter 5 in, fin span 1 ft 10 in.
Weight: launch weight 159 lb.
Performance: max speed Mach 2.5, max range 2 miles.

AIM-26B Falcon

Though generally similar to the AIM-26A, which, in 1960, became the first nuclear-tipped guided missile to enter service and which was subsequently deployed with the F-102 Delta Dagger squadrons of ADC, the AIM-26B differs fundamentally in having a conventional warhead. Production began in 1963, and it is now the only version still operational, on F-102s of the ANG. The basic radar homing guidance of the AIM-4A was fitted in this advanced variant, as it provides better all-weather capability, longer acquisition range, and is more suitable than infra-red systems for attack from any direction.

Contractor: Hughes Aircraft Company.
Power Plant: Thiokol M60 solid-propellant rocket motor.
Guidance: Hughes semi-active radar homing guidance.
Warhead: high-explosive.
Dimensions: length 7 ft 0 in, max body diameter 11 in, wing span 1 ft 8 in.
Weight: launch weight 203 lb.
Performance: max speed Mach 2, range 5 miles.

AGM-45A Shrike

Introduced into operational service in Vietnam during 1965, where it played a vital role in the US air offensive, this supersonic air-to-surface missile is designed to home on enemy radar installations and is carried as a standard penetration aid by USAF tactical aircraft. Many improvements have subsequently increased Shrike's effectiveness, and it continues in production for both USAF and USN.

Contractor: Naval Weapons Center.
Power Plant: Rocketdyne Mk 39 Mod 7 or Aerojet Mk 53 solid-propellant rocket motor.
Guidance: passive homing head by Texas Instruments.
Warhead: high-explosive/fragmentation.
Dimensions: length 10 ft 0 in, body diameter 8 in, span 3 ft 0 in.
Weight: launch weight 395 lb.
Performance: max range over 3 miles.

AGM-65A Maverick

The self-homing capability of this tactical air-to-surface missile, which is the smallest of the US TV-guided weapons currently in production and operational use, distinguishes it from the earlier types. This enables the pilot of the launch aircraft to seek other targets or leave the target area once the missile has been launched. Production was initiated in 1971 following the success of test launches over distances ranging from a few thousand feet to many miles, and from high altitudes down to treetop level. Orders total more than 17,000, the first of which was formally accepted by USAF in August 1972. The missile is carried by the A-7D, F-4D, F-4E, and the A-10, normally in two three-round underwing clusters, and is intended for use against pinpoint targets such as tanks and columns of vehicles. It is also carried by Teledyne Ryan BGM-34 RPVs.

To overcome limitations of the TV Maverick, which can be used only in daylight clear-weather conditions, two new versions are under development with laser and imaging infra-red seeker respectively.

Contractor: Hughes Aircraft Company.
Power Plant: Thiokol TX-481 solid-propellant rocket motor.
Guidance: self-homing electro-optical guidance system.
Warhead: high-explosive, shaped charge.
Dimensions: length 8 ft 1 in, body diameter 1 ft 0 in, wing span 2 ft 4 in.
Weight: launch weight 462 lb.
Performance: classified.

AGM-78 Standard ARM

Designed to provide a significant increase in capability over earlier weapons in countering the threat of radar-controlled anti-aircraft guided missiles and guns, the AGM-78 Standard ARM (Anti-Radiation Missile) has been in production since 1968, with several advanced models developed subsequently. The initial version used the passive homing target-seeking head of the Shrike missile; current models have improved seeker heads and avionics for better target selection, increased effectiveness against target countermeasures, and still greater attack range. An impact marking device is fitted to assist

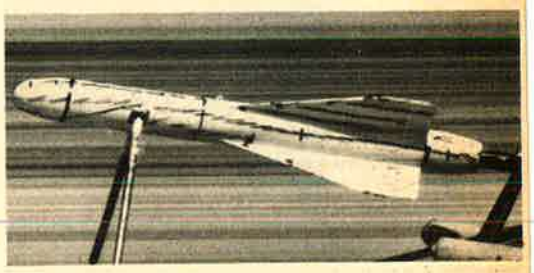
subsequent attacks on concealed sites. Standard ARM is deployed on USAF's F-105 and also by USN.
Contractor: General Dynamics Corporation, Pomona Division.
Power Plant: Aerojet-General Mk 27 Mod 4 dual-thrust solid-propellant rocket motor.
Guidance: passive homing guidance system, using seeker head that homes on enemy radar emissions.
Warhead: high-explosive.
Dimensions: length 15 ft 0 in, body diameter 1 ft 1.5 in, wing span 3 ft 6 in.
Weight: launch weight, basic version 1,400 lb.

Electro-Optical Guided Bomb (EOGB)

EOGB is a modular weapon system, in the form of a kit, able to convert a variety of standard unpowered bombs into highly accurate guided weapons, with moderate/long-range stand-off capability. Each kit consists of a forward guidance assembly, the warhead or interconnect section (including the bomb), and the aft control section, including an autopilot. When installed, it does not alter the conventional bomb suspension, release, or jettison functions. Mk 84 EOGBs can be fitted with a swept-wing assembly, the wings extending after launch, to increase the weapons' range. Known as modular guided glide bombs (MGGB), they carry a data link to allow controllability at extended ranges. Another modified version incorporates a midcourse guidance system, including distance measuring equipment, for increased accuracy. The effectiveness of the EOGB bomb was demonstrated in a large number of successful air drops in Southeast Asia.
Contractor: Rockwell International Corporation.
Guidance: current EOGBs use electro-optical guidance systems.
Warhead: current EOGBs are built around standard Mk 84 (2,000 lb) bombs, but can also embody M118 (3,000 lb) bombs.
Dimensions: length Mk 84 12 ft 5 in, M118 12 ft 2 in; body diameter Mk 84 1 ft 6 in, M118 2 ft 0 in; wing span Mk 84 3 ft 8 in, M118 4 ft 4 in.
Weight: launch weight Mk 84 2,240 lb, M118 3,404 lb.

Walleye

Operational use in Vietnam showed this unpowered air-to-surface glide bomb to be an extremely accurate and effective weapon. Officially designated Guided Weapon Mark 1 Mod 0 (Walleye), it was put into production in 1966 and can be carried by a wide variety of aircraft, including the A-7, F-4, and F-111. Production is now complete.
Contractor: Martin Marietta Corporation.
Guidance: self-homing electro-optical guidance system, enabling the pilot of the carrier aircraft to take any necessary evasive action once he has focused Walleye's TV camera on target and launched the bomb.
Warhead: high-explosive.
Dimensions: length 11 ft 3 in, body diameter 1 ft 3 in, wing span 3 ft 9 in.
Weight: launch weight 1,100 lb.



Walleye (early test model)

Launch Vehicles

Agena

A payload section (nosecone) able to accommodate a variety of earth-orbiting and space probes weighing up to several hundred pounds gives this space vehicle an inherent versatility. Agena is normally utilised as the upper stage of such launchers as Atlas and Titan III. With its attached payload, it has functioned for longer than six months on some USAF missions. An Agena spacecraft was the first to accomplish a rendezvous and docking by spacecraft in orbit and to provide propulsion power in space for another spacecraft. Current version is **Agena D;** tested successfully in June 1962, this is able to accept a variety of payloads, unlike the earlier "A" and "B" which had integrated payloads. Agena is used in most USAF reconnaissance satellite launchings, except for Big Bird missions.
Prime Contractor: Lockheed Missiles and Space Company, Inc.
Power Plant: Bell Aerosystems YLR81-BA-11 liquid-propellant rocket engine; 16,000 lb thrust.
Dimensions (Agena D): length (typical) 23 ft 3 in, diameter 5 ft 0 in.
Weights (typical Agena D): launch weight 15,037 lb, weight in orbit, less payload, 1,277 lb.

Atlas Launchers

Atlas-Agena: Used by the USAF for military satellite and scientific launchings, this is a general-purpose space launch vehicle (SLV), consisting of the Atlas SLV standardised launcher with an Agena upper stage. Atlas-Agena vehicles have successfully launched Ranger lunar probes, Mariner Mars and Venus probes, Vela nuclear detection satellites, and OAO, OGO, and ATS satellites.

Atlas SLV-3A: An uprated version of the earlier SLV-3, with lengthened propellant tanks, the SLV-3A was evolved primarily for use with the Agena upper stage, but it could serve as a direct-ascent vehicle or in conjunction with other upper stages. Of the fourteen SLV-3As produced under initial contracts, seven were for use by the USAF in classified missions, with the remainder for NASA.

Atlas SLV-3D: Although intended for use primarily with the Centaur D-1A upper stage, the SLV-3D is standardised like the SLV-3A and can be used on other missions. In 1972, Pioneer 10 was launched on its flight path to Jupiter with the highest velocity ever imparted to a spacecraft, the launch vehicle being an Atlas/Centaur with an additional TE-M-364-4 solid-propellant rocket motor.
Prime Contractor: General Dynamics Corporation, Convair Aerospace Division.
Power Plant: uprated Rocketdyne MA-5 propulsion system, comprising central sustainer motor and two boosters; total S/L thrust approx 431,040 lb (60,000 lb from the central sustainer motor, 370,000 lb total from the two boosters, 1,040 lb from two verniers).
Dimensions (Atlas SLV-3A): height 71 ft 0 in, max body diameter 10 ft 0 in.
Launch Weight (SLV-3A): 314,000 lb.
Performance (SLV-3A-Agena): capable of putting payload of 8,800 lb into a 115 mile circular orbit, or of launching 2,920 lb into synchronous transfer orbit.

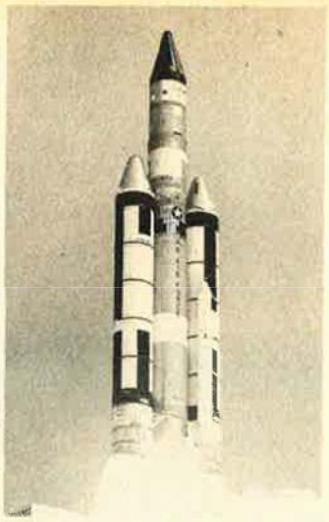
Atlas/Centaur

Burner II

Suitable for mating to the current range of space vehicles, Burner II is a low-cost guided solid-propellant upper-stage booster capable of injecting small to medium payloads into orbit and then orientating them precisely. Since the initial contract, covering one ground test and three flight test vehicles, eleven additional flight vehicles have been ordered and delivered. Its first launching took place in September 1966 when it was used in combination with a Thor vehicle to put into orbit a secret USAF satellite. Subsequent launchings have proved highly successful. A developed version of Burner II, with a larger motor, is under consideration for use as a booster in conjunction with Titan III/Centaur for outer planet exploration missions.
Prime Contractor: The Boeing Company.
Power Plant: Thiokol TE-M-364-2 rocket motor; 10,000 lb thrust.
Guidance: Honeywell system similar to that used on NASA Scout launch vehicle.
Dimensions: length overall 5 ft 8 in, diameter 5 ft 5 in.

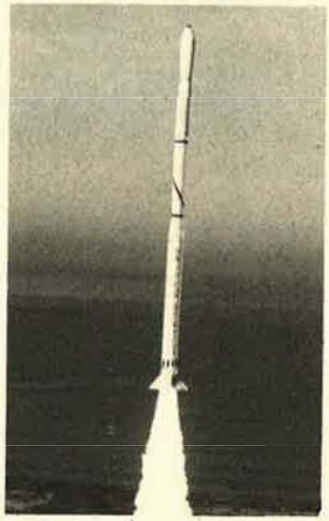
Burner IIA

A two-stage development of Burner II, for use with virtually all USAF space



Titan IIIC

Titan IIIE-Centaur



Scout

boosters on missions requiring high-velocity earth escape speeds or for placing satellites in synchronous equatorial orbit. First commissioned in 1969 by the USAF's Space and Missile Systems Organization, the initial contract covered six Burner IIAs and one ground test unit. A second-stage Thiokol TE-M-442 solid-propellant motor, with 8,800 lb thrust, is added to Burner II's first stage, and the latter's subsystems are mounted on the new stage.

Centaur

First US high-energy upper stage and first to utilise liquid hydrogen as a propellant. The latest version, Centaur D-1, retains the same propulsion and structural features as its predecessor, Centaur D, but has several redesigned or repackaged astrionics components. Used in conjunction with the Atlas SLV-3D or the Titan IIIE, it provides widely ranging applications and capabilities: the nose section of the former is modified to a constant 10 ft diameter to accommodate the Centaur D-1A which, in turn, generates most of the electronic command and control systems for the launch vehicle; the Centaur D-1T also provides guidance for its Titan booster. A 10 ft diameter fairing protects payloads for Centaur D-1A; a 14 ft shroud encloses both the payload and the Centaur D-1T on Titan/Centaur. Atlas/Centaur D-1A launch missions have been assigned into 1976. Primary mission of Titan IIIE/Centaur is the placing of two Viking spacecraft on Mars next year, followed by the 1977 Mariner Jupiter/Saturn missions.

Prime Contractor: General Dynamics Corporation, Convair Aerospace Division.

Power Plant: two Pratt & Whitney RL10A-3 liquid hydrogen engines; each 15,000 lb thrust.

Guidance: inertial guidance system.

Dimensions: Centaur: length 30 ft 0 in, diameter 10 ft 0 in.

Launch Weight (approx): 37,000 lb.

Performance: Atlas/Centaur: 11,200 lb into 115 mile circular orbit, or 4,000 lb into synchronous transfer orbit, or 1,300 lb to nearest planet; Titan/Centaur: 34,000 lb into 115 mile circular orbit, or 7,400 lb into synchronous equatorial orbit, or 8,200 lb to nearest planet.

Scout

Designed to make possible space, orbital, and re-entry research by NASA and the Department of Defense at comparatively low cost, using "off-the-shelf" major components where available, Scout is a four/five-stage launch vehicle, first ordered in 1959, which can be launched at any angle from vertical to 20° from vertical. A subsequent version with an improved fourth stage was launched successfully for the first time in August 1965. In addition to increasing the payload, this version can be manoeuvred in yaw and can send a 100 lb payload more than 16,000 miles into space. A fifth-stage velocity package is being developed, which will increase the Scout's hypersonic re-entry performance, make possible highly elliptical deep-space orbits, and extend the vehicle's probe capabilities to the sun. Using the latest Algol III first-stage motor, Scouts can put 425 lb payloads (320 lb with the earlier motor) into a 310 mile easterly orbit and have been used to launch many unmanned spacecraft, including classified military satellites.

Prime Contractor: LTV Aerospace Corporation.

Power Plant: first stage: Aerojet-General Algol IIB solid-propellant motor; 115,000 lb thrust, or Algol III; 140,000 lb thrust; second stage: Thiokol Castor II solid-propellant motor; 60,000 lb thrust; third stage: Hercules Antares II solid-propellant motor; 21,000 lb thrust; fourth stage: UTC FW-4S solid-propellant motor; 6,000 lb thrust; fifth stage under development.

Guidance: simplified Honeywell gyro guidance system.

Dimensions: height overall 75 ft 2½ in, max body diameter 3 ft 9 in.

Launch Weight: 47,185 lb.

Titan III

As the US's standard heavy-duty space "workhorse" booster, Titan III can be modified to launch a wide variety of payloads, both manned and unmanned, ranging from 35,000 lb in earth orbit to 7,000 lb for planetary missions. The basic core section consists of two booster stages evolved from the Titan II ICBM and an upper stage, known as Transtage, capable of functioning both in the boost phase of flight and as a restartable space propulsion vehicle. Principal configurations are:

Titan IIIB: basically the first two stages of the core section, able to accommodate various upper stages. First launched in July 1966 and used subsequently with Agena upper stages to launch classified USAF payloads.

Titan IIIC: consisting of the core section with two five-segment strap-on motors functioning as a booster before ignition of the main engines. First launched in June 1965; payloads include USAF early warning satellites.

Titan IIID: basically similar to IIIC but using only the first two stages of the core section and able to accept a variety of upper stages. Radio guidance is used instead of the standard inertial guidance. Production order placed by USAF in 1967; first used in June 1971 to orbit the first Lockheed Big Bird photo-reconnaissance spacecraft.

Titan IIIE-Centaur: basically a Titan IIID which has been modified to accommodate a Centaur high-energy upper stage. Primary mission is to place two Viking spacecraft on Mars in 1976. Titan IIIs have achieved well over 50 successful launchings since 1968, and additional contracts have extended production of various models through 1976.

Prime Contractor: Martin Marietta Corporation.

Power Plant: first and second stages: Aerojet liquid-propellant engines; first stage 520,000 lb thrust; second stage 100,000 lb thrust; Transtage Aerojet twin-chamber liquid-propellant engine; 16,000 lb thrust; Titan IIIC/D also have two UTC five-segment solid-propellant booster rocket motors; each more than 1,200,000 lb thrust.

Dimensions: first and second stages of core: height 96 ft 3½ in, diameter 10 ft 0 in; Transtage: height 15 ft 0 in, diameter 10 ft 0 in.

Launch Weight: Titan IIIB: 345,000 lb; Titan IIIC: 1,390,000 lb.

Performance (Titan IIIC, approx): speed at burn-out: solid-propellant boosters 4,100 mph, first stage 10,200 mph, second stage 17,100 mph, Transtage 17,500 mph.

Remotely Piloted Vehicles (RPVs)

Boeing YQM-94A

Under the USAF's Compass Cope programme, Boeing and Teledyne Ryan (see below) received contracts for prototypes of a long-endurance high-altitude RPV for evaluation. Such an aircraft is to be used primarily for signal intelligence collection and other missions requiring a high-altitude long-endurance platform.

An all-fibreglass fuselage permits the YQM-94A's (known as Compass Cope B) use as a "flying radome" in which radar and other sensing equipment can be in-

stalled. A TV camera mounted in the nose enables a pilot to control the aircraft from a ground station, using advanced digital communications systems. The prototypes are each powered by a single J97 turbojet, pod-mounted above the fuselage to reduce vulnerability to infra-red missiles launched from below; a final decision on whether to adopt a single- or twin-engined configuration for production aircraft will depend on flight test results. Re-engined with a turbofan, more than twice the endurance of the RC-135s, used currently in electronic intelligence collection, could be expected. Unlike present RPVs, the YQM-94A takes off and lands from a conventional runway and so requires an all-weather landing capability, plus a main undercarriage track of 21 ft for maximum ground stability. The first of the two prototypes ordered in the initial contract in 1971 flew on July 28, 1973, five months after delivery to the USAF, but crashed a week later. The second vehicle has since been delivered to USAF and has made several successful flights.

Contractor: Boeing Aerospace Company.
Power Plant: one General Electric J97-GE-100 turbojet engine; 5,270 lb thrust.
Dimensions: span 90 ft 0 in, length (excluding nose probe) 42 ft 0 in.
Weights: payload for 24 hr mission 700 lb, gross approx 13,000 lb.
Performance (prototype): cruising speed at altitudes from 50,000 ft to 70,000 ft Mach 0.5 to 0.6, max endurance 30 hr.

YQM-98A

Because the prototype contract was not received until Spring 1972, development of the Teledyne Ryan YQM-98A (Compass Cope R) was some months behind that of the Boeing vehicle. Construction began in February 1973 and the two prototypes were rolled out eleven months later, in January 1974. Delivery was made to Edwards AFB, California, in April 1974 and the first flight took place in July; several successful flights have since been made, one of which exceeded 25 hours duration. Representing a third-generation aircraft, superseding the Ryan AQM-34N(H) and AQM-91A, the YQM-98A (the Ryan Model 235) is very similar to the latter vehicle in general configuration, with extremely high aspect ratio wings and an over-fuselage pod mounting for its power plant which, in the prototypes, is a Garrett AiResearch ATF 3 turbofan. A decision regarding the power plant of production models has not yet been made. Method of operation and applications are generally similar to those of the Boeing YQM-94A.

Contractor: Teledyne Ryan Aeronautical, Division of Teledyne Inc.
Power Plant: one Garrett AiResearch ATF 3 (XF104-GA-100) turbofan engine; 5,000 lb design thrust.
Dimensions: span 81 ft 2 in, length approx 38 ft 4 in.
Weights (approx): empty 5,600 lb, gross 14,300 lb.
Performance (estimated): cruising speed at altitudes from 50,000 ft to 70,000 ft Mach 0.5 to 0.6, max endurance 30 hours.

Ryan AQM-34

Of the large "family" of surveillance/reconnaissance RPVs encompassed within this basic USAF designation and the Ryan Model number 147, a total of twenty-four versions has been revealed, all evolved from the BQM-34A Firebee I target drone. Many hundreds of Model 147s have been delivered for operational use, while versions have also been widely utilised in testing the effectiveness of new combat equipment in a combat environment without risk to personnel. The original 147A was no more than a modified Firebee I, with a new guidance system and increased fuel capacity. Typical subsequent versions are: **AQM-34N,** Ryan 147H, a medium-altitude reconnaissance vehicle; operational with SAC from about 1968. **AQM-34H,** Ryan 147NC, a medium-altitude ECM version, with two underwing hard points for electronic warfare pods or ALE-2 chaff dispensing pods; equipment includes Sperry Univac APW-25 or -26 transponder. Like USAF's other tactical drones, this one is air-launched from DC-130s of the 11th Tactical Drone Squadron of TAC. **AQM-34L,** Ryan 147SC, a low-altitude reconnaissance RPV, with nose-mounted camera or other sensor. Long used for missions over North Vietnam, this vehicle and the Lockheed SR-71 manned strategic reconnaissance aircraft were the only USAF reconnaissance types permitted to overfly that country after the cessation of bombing in January 1973. Under the Lear Siegler Update programme, six AQM-34Ls were modified to improve low-level navigational accuracy and maintainability, and reliability of the RPV avionics system. Redesignated **YAQM-34U,** these RPVs are also being equipped to carry Igloo White acoustic sensor dispensers on the underwing hard points. The first YAQM-34U was lost at the end of its first flight in March 1973 when the main recovery parachute failed to deploy. This problem was corrected and the vehicle underwent an extensive test programme with no further losses. **AQM-34M,** Ryan 147SD, very similar to the AQM-34L, is an improved vehicle which has almost replaced the AQM-34L in operational use. Seventy-eight have been ordered, including eight for flight testing. **AQM-34Q/R,** Ryan 147TE/TF, high-altitude surveillance drones with span extended to 27 ft. These two models form part of USAF's Combat Dawn programme and are used in electronic intelligence operations, with mid-air recovery by helicopter. (Data for AQM-34L.)

Contractor: Teledyne Ryan Aeronautical, Division of Teledyne Inc.
Power Plant: Teledyne CAE J69-T-41A turbojet engine; 1,920 lb thrust.
Dimensions: span 13 ft 0 in, length 30 ft 0 in, body diameter 3 ft 1.2 in.
Weight: gross 3,065 lb.
Performance: range at low-altitude variable from 177 miles at 645 mph to 748 miles at 485 mph.

Ryan BGM-34

Plans to evolve combat drones for a variety of missions which at present require manned aircraft are reflected in this RPV which, though sharing the Firebee I parentage of the AQM-34, is intended to fulfill a more aggressive role. Demonstrations of unarmed air-to-air combat against a piloted F-4 fighter, and the dropping of inert 500 lb bombs from a modified Firebee have been followed up by the production of small test batches of three versions: **BGM-34A,** used to evaluate the capability of RPVs to deliver missiles and bombs for defence suppression by day, under real-time control. Initial trials involved the release of single Shrike anti-radiation missiles and EOGBs (electro-optically guided bombs), with good results. Development is continuing to permit multiple weapons to be carried and launched. The RPVs themselves are directed from their DC-130 launch aircraft, via a TV camera mounted in the RPV's nose. Power plant is a 1,700 lb thrust Teledyne CAE J69-T-29 turbojet engine. **BGM-34B,** generally similar to the BGM-34A, but with a 1,920 lb thrust J69-T-41A turbojet, enlarged control surfaces, and added operational capability. Eight ordered. Maximum launching weight approximately 5,000 lb. At least one BGM-34B was fitted with an extended, modified nose housing target acquisition and designation equipment of the kind contained in the Philco-Ford Pave Knife pods carried by F-4D Phantoms for use with laser-guided "smart bombs"; this enabled the RPV to be used in a pathfinder role. One other BGM-34B has been fitted with a Hughes high-resolution FLIR (forward-looking infra-red) nose sensor instead of the TV installation. BGM-34Bs have made successful single and multiple passes against a variety of targets, including SPASMs (self-propelled air-to-surface missiles) and Maverick TV-guided missiles. Evaluation of this version in a weapon carrying role, for precision air-to-ground strikes, is continuing. **BGM-34C** is an interim multi-mission RPV, for air or ground launch, with modular nose sections for reconnaissance, electronic warfare, or strike missions.

Contractor: Teledyne Ryan Aeronautical, Division of Teledyne Inc.
Dimensions: span BGM-34A and B 14 ft 6 in, length BGM-34A 23 ft 7.2 in, BGM-34B 26 ft 0 in, body diameter BGM-34A and B 3 ft 1.2 in.
Weights: gross BGM-34A 2,800 lb, BGM-34B 3,230 lb.

YQM-94A Compass Cope B RPV

YQM-98A Compass Cope R RPV

AQM-34 RPV

BGM-34B RPV with Mavericks

AN AIR FORCE ALMANAC

THE UNITED STATES AIR FORCE IN FACTS AND FIGURES

On the following pages appears a variety of information and statistical material about the US Air Force—its people, its organization, its equipment, its funding, its activities, and its heroes. This "Almanac" section was compiled by the staff of AIR FORCE Magazine, and only unclassified information has been used. We especially acknowledge the help of the Secretary of the Air Force Office of Information in its role as liaison with Air Staff agencies in bringing data up to date from last year's comparable "Almanac." Also, we welcome suggestions from readers about the kinds of information they would like to see in future editions of this Almanac Issue. A word of caution: Personnel figures that appear in this section in different forms will not always agree because of differing cutoff dates, rounding off, or categories of personnel (such as those serving outside the Air Force) that are excluded in some cases. These figures do illustrate trends, however, and may be helpful in placing force fluctuations in perspective.

—THE EDITORS

USAF—HOW IT GOT ITS NAME

FROM	TO	DESIGNATION
Aug. 1, 1907	July 18, 1914	Aeronautical Div., US Signal Corps
July 18, 1914	Apr. 6, 1917	Aviation Section, US Signal Corps
Apr. 6, 1917	May 21, 1918	Aeronautical Div., US Signal Corps*
May 21, 1918	June 4, 1920	Div. of Military Aeronautics, US Army
June 4, 1920	July 2, 1926	Army Air Service
July 2, 1926	June 20, 1941	Army Air Corps
June 20, 1941	Sept. 18, 1947	Army Air Forces
Sept. 18, 1947		United States Air Force

* During World War I, the air arm of the American Expeditionary Forces (AEF) was designated "Air Service," but this designation did not apply to the entire Aeronautical Division of the Signal Corps.

UNITED STATES AIR FORCE PERSONNEL STRENGTH—1907 THROUGH 1976

YEAR	STRENGTH	YEAR	STRENGTH	YEAR	STRENGTH	YEAR	STRENGTH
1907	3	1925	9,670	1943	2,197,114	1961	820,490
1908	13	1926	9,674	1944	2,372,292	1962	883,330
1909	27	1927	10,078	1945	2,282,259	1963	868,644
1910	11	1928	10,549	1946	455,515	1964	855,802
1911	23	1929	12,131	1947	305,827	1965	823,633
1912	51	1930	13,531	1948	387,730	1966	886,350
1913	114	1931	14,780	1949	419,347	1967	897,426
1914	122	1932	15,028	1950	411,277	1968	904,759
1915	208	1933	15,099	1951	788,381	1969	862,062
1916	311	1934	15,861	1952	973,474	1970	791,078
1917	1,218	1935	16,247	1953	977,593	1971	755,107
1918	195,023	1936	17,233	1954	947,918	1972	725,635
1919	25,603	1937	19,147	1955	959,946	1973	690,999
1920	9,050	1938	21,089	1956	909,958	1974	643,795
1921	11,649	1939	23,455	1957	919,835	1975	611,534 *
1922	9,642	1940	51,165	1958	871,156	1976	590,000 *
1923	9,441	1941	152,125	1959	840,028		
1924	10,547	1942	764,415	1960	814,213		

* Projected

USAF AND AIR RESERVE FORCES PERSONNEL BY CATEGORIES

CATEGORY	FY '60	FY '64	FY '68	FY '74	FY '75	FY '76
AIR FORCE MILITARY						
Officers	130,000	133,000	140,000	111,000	105,000	100,000
Airmen	683,000	721,000	761,000	529,000	503,000	486,000
Cadets	2,000	3,000	4,000	4,000	4,000	4,000
TOTAL, AIR FORCE MILITARY	**815,000**	**857,000**	**905,000**	**644,000**	**612,000**	**590,000**
Career Reenlistments	42,000 [1]	61,700	56,500	46,500	54,000	52,600
Rate	44% [1]	86%	88%	90%	90%	90%
First-Term Reenlistments		14,900	10,600	19,500	16,800	18,600
Rate		23%	18%	31%	38%	38%
CIVILIAN PERSONNEL						
Direct Hire	307,000	289,000	316,000	274,000	266,000	256,000
Indirect Hire Foreign Nationals	48,000	33,000	26,000	16,000	15,000	15,000
TOTAL, CIVILIAN PERSONNEL	**355,000** [2]	**322,000** [2]	**342,000** [2]	**290,000**	**281,000**	**271,000**
TOTAL, AIR FORCE MILITARY AND CIVILIAN PERSONNEL	**1,170,000**	**1,179,000**	**1,247,000**	**934,000**	**893,000**	**861,000**
AIR RESERVE FORCES						
Air National Guard, Paid	71,000	73,000	75,000	94,000	96,000	95,000
Air Force Reserve, Paid	67,000	59,000	46,000	48,000	55,000	57,000
Air Force Reserve, Nonpaid	136,000	119,000	145,000	135,000	89,000	81,000
TOTAL, READY RESERVE	**274,000**	**251,000**	**266,000**	**277,000**	**240,000**	**233,000**
Standby	304,000	130,000	101,000	46,000	42,000	38,000
TOTAL, AIR RESERVE FORCES [3]	**578,000**	**381,000**	**367,000**	**323,000**	**282,000**	**271,000**

NOTE: All personnel data for FY '60–74 columns are actual. FY '75–76 are programmed.

[1] FY '60 reenlistment data only reflect combined Career and First-Term performance.
[2] Excludes Air National Guard Technicians who were State Employees until FY '69 when they were changed to Federal Employees by Public Law.
[3] Excludes Retired Air Force Reserve.

UNITED STATES AIR FORCE—PERSONNEL STRENGTH BY COMMANDS AND AGENCIES

COMMAND	OFFICERS	AIRMEN	TOTAL MILITARY	CIVILIANS	TOTAL PERSONNEL
Aerospace Defense Command (ADC)	4,104	26,396	30,500	5,525	36,025
Air Force Communications Service (AFCS)	2,703	37,921	40,624	6,445	47,069
Air Force Logistics Command (AFLC)	2,705	7,376	10,081	93,709	103,790
Air Force Systems Command (AFSC)	9,788	17,274	27,062	28,938	56,000
Air Training Command (ATC)	14,457	73,221	87,678	17,890	105,568
Air University (AU)	5,220	3,177	8,397	2,221	10,618
Alaskan Air Command (AAC)	976	7,762	8,738	2,227	10,965
Headquarters Command, USAF (HQ COMD USAF)	8,344	14,111	22,455	3,212	25,667
Military Airlift Command (MAC)	11,594	56,622	68,216	15,228	83,444
Pacific Air Forces (PACAF)	5,643	37,522	43,165	12,370	55,535
Strategic Air Command (SAC)	22,344	108,941	131,285	20,606	151,891
Tactical Air Command (TAC)	9,810	60,260	70,070	10,536	80,606
United States Air Forces in Europe (USAFE)	6,213	39,551	45,764	3,922	49,686
USAF Security Service (USAFSS)	1,076	15,418	16,494	1,778	18,272
USAF Southern Command (USAFSO)	224	1,334	1,558	784	2,342
TOTALS	**105,201**	**506,886**	**612,087**	**225,391**	**837,478**

SEPARATE OPERATING AGENCIES	OFFICERS	AIRMEN	TOTAL MILITARY	CIVILIANS	TOTAL PERSONNEL
Air Force Accounting and Finance Center (AFAFC)	39	222	261	2,090	2,351
Air Force Audit Agency (AFAA)	420	102	522	537	1,059
Air Force Data Automation Agency (AFDAA)	346	775	1,121	720	1,841
Air Force Inspection and Safety Center (AFISC)	302	72	374	142	516
Air Force Intelligence Service (AFIS)	184	228	412	152	564
Air Force Military Personnel Center (AFMPC)	455	736	1,191	620	1,811
Air Force Office of Special Investigations (AFOSI)	494	1,015	1,509	323	1,832
Air Force Test and Evaluation Center (AFTEC)	130	25	155	36	191
Hq. Air Force Reserve (AFRES)	199	704	903	10,908	11,811
Air Reserve Personnel Center (ARPC)	56	91	147	714	861
United States Air Force Academy (USAFA)	1,020	5,605	6,625	1,998	8,623
TOTALS	**3,645**	**9,575**	**13,220**	**18,240**	**31,460**

NOTE: Military strength figures are current as of December 31, 1974. Figures are assigned strength. Civilian figures are current as of December 31, 1974. They represent total direct chargeable employees.

USAF TOTAL ACTIVE-DUTY STRENGTH BY GRADE

(As of December 31, 1974)

OFFICERS

GRADE	NUMBER
GENERAL	13
LIEUTENANT GENERAL	42
MAJOR GENERAL	142
BRIGADIER GENERAL	204
COLONEL	5,681
LIEUTENANT COLONEL	13,006
MAJOR	20,934
CAPTAIN	39,914
FIRST LIEUTENANT	15,922
SECOND LIEUTENANT	12,936
WARRANT OFFICER	52
TOTAL	**108,846**
CADETS	4,194
AIRMEN	512,267
TOTAL STRENGTH	**625,307**

AIRMEN

GRADE	NUMBER
CHIEF MASTER SERGEANT	5,064
SENIOR MASTER SERGEANT	10,256
MASTER SERGEANT	36,298
TECHNICAL SERGEANT	66,319
STAFF SERGEANT	111,849
SERGEANT	124,364
AIRMAN FIRST CLASS	96,782
AIRMAN	35,985
AIRMAN BASIC	25,350
TOTAL	**512,267**

USAF MILITARY PERSONNEL BY GRADE, RACE, AND SEX

(As of December 31, 1974)

OFFICERS

GRADE	FORCE	BLACK (%)	OTHER (%)	WOMEN (%)
GENERALS	401	3 (0.7)	1 (0.2)	2 (0.5)
COLONELS	5,681	75 (1.3)	25 (0.4)	67 (1.2)
LIEUTENANT COLONELS	13,006	185 (1.4)	71 (0.5)	265 (2.0)
MAJORS	20,934	390 (1.9)	122 (0.6)	731 (3.5)
CAPTAINS	39,914	901 (2.3)	288 (0.7)	1,611 (4.0)
FIRST LIEUTENANTS	15,922	354 (2.2)	77 (0.5)	1,182 (7.4)
SECOND LIEUTENANTS	12,936	696 (5.4)	117 (0.9)	1,132 (8.8)
WARRANT OFFICERS	52	1 (1.9)	0	0
TOTALS	**108,846**	**2,605 (2.4)**	**701 (0.6)**	**4,990 (4.6)**

AIRMEN

GRADE	FORCE	BLACK (%)	OTHER (%)	WOMEN (%)
CHIEF MASTER SERGEANTS	5,064	264 (5.2)	24 (0.5)	12 (0.2)
SENIOR MASTER SERGEANTS	10,256	737 (7.2)	57 (0.6)	30 (0.3)
MASTER SERGEANTS	36,298	3,519 (9.7)	203 (0.6)	84 (0.2)
TECHNICAL SERGEANTS	66,319	8,635 (13.0)	432 (0.7)	172 (0.3)
STAFF SERGEANTS	111,849	15,564 (13.9)	911 (0.8)	1,271 (1.1)
SERGEANTS	124,364	19,996 (16.1)	1,541 (1.2)	5,139 (4.1)
AIRMEN FIRST CLASS	96,782	14,315 (14.8)	1,317 (1.4)	8,719 (9.0)
AIRMEN	35,985	7,223 (20.1)	539 (1.5)	3,766 (10.5)
AIRMEN BASIC	25,350	4,661 (18.4)	350 (1.4)	3,174 (12.5)
TOTALS	**512,267**	**74,914 (14.6)**	**5,374 (1.0)**	**22,367 (4.4)**
TOTALS, INCLUDING OFFICERS	**621,113**	**77,519 (12.5)**	**6,075 (1.0)**	**27,357 (4.4)**

AVERAGE AGES OF USAF MEMBERS

Officers	Average 33.2 years of age
Noncommissioned Officers (Top 6 Grades)	Average 29.8 years of age
Airmen	Average 27.0 years of age

AIR FORCE FULL-TIME CIVILIAN EMPLOYMENT BY GRADE

(As of January 31, 1975)

GS		WP		WS		WL		WG	
GR	POP	GR	POP	GR	POP	GR	POP	GR	POP
1	145	4	1	1	62	1	2	1	358
2	2,102	8	2	2	45	2	86	2	3,524
3	13,821	9	7	3	139	3	24	3	1,212
4	19,751	10	5	4	183	4	155	4	3,156
5	20,348	11	7	5	426	5	93	5	6,987
6	7,127	12	12	6	612	6	120	6	6,516
7	11,204	13	1	7	845	7	68	7	6,165
8	2,359	14	8	8	1,007	8	295	8	10,735
9	16,893	15	3	9	1,755	9	575	9	9,556
10	1,037	16	5	10	1,714	10	1,367	10	25,748
11	14,828	17	5	11	853	11	159	11	6,252
12	12,402	18	2	12	490	12	12	12	2,905
13	8,157	19	1	13	373	13	1	13	521
14	2,880	20	1	14	282	14	1	14	106
15	968	21	2	15	120				
16	103	23	1	16	74				
17	16	24	1	17	21				
18	8			18	22				
				19	19				
TOTALS	**134,149**		**64**		**9,042**		**2,958**		**83,741**

GR = Grade
GS = General Schedule
POP = Population
WP = Printing and Lithographic Pay Schedules
WS = Supervisory (Foreman) Pay Schedules
WL = Leader Pay Schedules
WG = Non-Supervisory Pay Schedules

Source: USAF Civilian Grade Trends Comparison by Month, RCS: RRAQ-0028, as of January 31, 1975.

FEDERAL CIVILIAN PAY SCALE

General Schedule
(Effective October 1, 1974)

GRADE	1	2	3	4	5	6	7	8	9	10
GS- 1	$5,294	$5,470	$5,646	$5,822	$5,998	$6,174	$6,350	$6,526	$6,702	$6,878
GS- 2	5,996	6,196	6,396	6,596	6,796	6,996	7,196	7,396	7,596	7,796
GS- 3	6,764	6,989	7,214	7,439	7,664	7,889	8,114	8,339	8,564	8,789
GS- 4	7,596	7,849	8,102	8,355	8,608	8,861	9,114	9,367	9,620	9,873
GS- 5	8,500	8,783	9,066	9,349	9,632	9,915	10,198	10,481	10,764	11,047
GS- 6	9,473	9,789	10,105	10,421	10,737	11,053	11,369	11,685	12,001	12,317
GS- 7	10,520	10,871	11,222	11,573	11,924	12,275	12,626	12,977	13,328	13,679
GS- 8	11,640	12,028	12,416	12,804	13,192	13,580	13,968	14,356	14,744	15,132
GS- 9	12,841	13,269	13,697	14,125	14,553	14,981	15,409	15,837	16,265	16,693
GS-10	14,117	14,588	15,059	15,530	16,001	16,472	16,943	17,414	17,885	18,356
GS-11	15,481	15,997	16,513	17,029	17,545	18,061	18,577	19,093	19,609	20,125
GS-12	18,463	19,078	19,693	20,308	20,923	21,538	22,153	22,768	23,383	23,998
GS-13	21,816	22,543	23,270	23,997	24,724	25,451	26,178	26,905	27,632	28,359
GS-14	25,581	26,434	27,287	28,140	28,993	29,846	30,699	31,552	32,405	33,258
GS-15	29,818	30,812	31,806	32,800	33,794	34,788	35,782	36,776 *	37,770 *	38,764 *
GS-16	34,607	35,761	36,915 *	38,069 *	39,223 *	40,377 *	41,531 *	42,685 *	43,839 *	
GS-17	40,062 *	41,397 *	42,732 *	44,067 *	45,402 *					
GS-18	46,336 *									

* The rate of basic pay for employees at these rates is limited by Section 5308 of Title 5 of the United States Code to the rate for level V of the Executive Schedule (currently $36,000 per annum).

MONTHLY BASIC PAY RATES

(Effective October 1, 1974)

YEARS OF SERVICE

PAY GRADE	UNDER 2	2	3	4	6	8	10	12	14	16	18	20	22	26
COMMISSIONED OFFICERS														
O-10	$2,705	$2,800	$2,800	$2,800	$2,800	$2,908	$2,908	$3,131*	$3,131*	$3,355*	$3,355*	$3,579*	$3,579*	$3,802*
O-9	2,397	2,461	2,513	2,513	2,513	2,577	2,577	2,684	2,684	2,908	2,908	3,131*	3,131*	3,355*
O-8	2,172	2,237	2,290	2,290	2,290	2,461	2,461	2,577	2,577	2,684	2,800	2,908	3,024*	3,024*
O-7	1,804	1,927	1,927	1,927	2,013	2,013	2,130	2,130	2,237	2,461	2,630	2,630	2,630	2,630
O-6	1,337	1,470	1,565	1,565	1,565	1,565	1,565	1,565	1,618	1,875	1,971	2,013	2,130	2,310
O-5	1,069	1,256	1,343	1,343	1,343	1,343	1,384	1,458	1,555	1,672	1,768	1,821	1,885	1,885
O-4	902	1,097	1,171	1,171	1,192	1,245	1,330	1,405	1,470	1,533	1,576	1,576	1,576	1,576
O-3	838	936	1,001	1,108	1,161	1,203	1,267	1,330	1,363	1,363	1,363	1,363	1,363	1,363
O-2	730	798	958	990	1,011	1,011	1,011	1,011	1,011	1,011	1,011	1,011	1,011	1,011
O-1	634	660	798	798	798	798	798	798	798	798	798	798	798	798
COMMISSIONED OFFICERS WITH MORE THAN 4 YEARS ACTIVE SERVICE AS ENLISTED MEMBERS														
O-3	—	—	—	1,108	1,161	1,203	1,267	1,330	1,384	1,384	1,384	1,384	1,384	1,384
O-2	—	—	—	990	1,011	1,043	1,097	1,140	1,171	1,171	1,171	1,171	1,171	1,171
O-1	—	—	—	798	852	884	915	948	990	990	990	990	990	990
WARRANT OFFICERS														
W-4	853	915	915	936	979	1,022	1,065	1,140	1,192	1,235	1,267	1,309	1,353	1,458
W-3	776	842	842	852	862	925	979	1,011	1,043	1,074	1,108	1,150	1,192	1,235
W-2	679	735	735	756	795	842	873	905	936	969	1,001	1,033	1,074	1,074
W-1	566	649	649	703	735	767	798	831	862	894	925	958	958	958
ENLISTED MEMBERS														
E-9	—	—	—	—	—	—	969	992	1,014	1,038	1,060	1,081	1,138	1,249
E-8	—	—	—	—	—	813	836	858	881	904	925	948	1,003	1,116
E-7	568	613	636	658	681	702	724	747	781	803	825	836	892	1,003
E-6	490	535	557	580	602	624	647	681	702	724	735	735	735	735
E-5	430	469	491	513	546	568	591	613	624	624	624	624	624	624
E-4	414	437	462	499	518	518	518	518	518	518	518	518	518	518
E-3	398	420	437	454	454	454	454	454	454	454	454	454	454	454
E-2	383	383	383	383	383	383	383	383	383	383	383	383	383	383
E-1	344	344	344	344	344	344	344	344	344	344	344	344	344	344

NOTE: Amounts less than $1 have been omitted.

Basic pay while serving as Chairman of the Joint Chiefs of Staff or as Chief of Staff of the Air Force is $4,195.80, regardless of cumulative years of service.

Basic pay for the highest enlisted rank, while serving as Chief Master Sergeant of the Air Force, is $1,518.60, regardless of cumulative years of service.

* Basic pay is limited to $3,000 by Level V of the Executive Schedule.

BASIC ALLOWANCE FOR QUARTERS (BAQ)

Pay Grade	Without Dependents	With Dependents
O-10	$243.00	$303.90
O-9	243.00	303.90
O-8	243.00	303.90
O-7	243.00	303.90
O-6	223.50	272.70
O-5	209.10	252.00
O-4	188.70	227.40
O-3	167.10	206.40
O-2	146.40	185.40
O-1	114.90	149.40
W-4	182.10	219.30
W-3	164.10	202.20
W-2	144.60	183.30
W-1	130.80	169.80
E-9	138.00	194.40
E-8	128.70	181.80
E-7	110.40	170.40
E-6	101.10	158.40
E-5	97.80	146.40
E-4	86.10	128.10
E-3	76.20	110.70
E-2	67.50	110.70
E-1	63.30	110.70
Aviation Cadets	86.10	128.10

AVIATION CAREER INCENTIVE PAY SCHEDULE

PHASE I

Monthly Rate	Years of Aviation Service (including flight training) As an Officer
$100	2 or less
$125	over 2
$150	over 3
$165	over 4
$245	over 6

PHASE II

Monthly Rate	Years of Service as an Officer
$225	over 18
$205	over 20
$185	over 22
$165	over 24 but not over 25
0	over 25

NOTE: An officer in pay grade O-7 may not be paid at a rate greater than $160 a month, and an officer in pay grade O-8 or above may not be paid at a rate greater than $165 a month.

BASIC ALLOWANCE FOR SUBSISTENCE (BAS)

	Enlisted (Daily)		
Officer and Aviation Cadets (Monthly)	Separate Rations	Rations in Kind Not Available	Emergency Rations
$50.52	$2.41	$2.71	$3.61

COMPARISON OF DoD BUDGETS FOR FY 1974–76

By Military Programs and Components

(Billions of dollars)

Military Program	Total Obligational Authority FY '74	FY '75	FY '76
Strategic Forces	$ 6.8	$ 7.4	$ 7.7
General-Purpose Forces	27.5	28.2	35.8
Intelligence and Communications	5.9	6.4	7.3
Airlift and Sealift	.8	.9	1.6
Guard and Reserve Forces	4.3	4.8	5.6
Research and Development	6.9	7.7	9.4
Central Supply and Maintenance	8.5	9.0	9.9
Training, Medical, Other	18.2	19.9	21.7
Administration and Associated Activities	1.8	2.1	2.4
Support of Other Nations	4.3	2.6	3.3
Totals	**$85.0**	**$89.0**	**$104.7**
Components			
Department of the Army	$21.6	$21.7	$ 24.6
Department of the Navy	26.9	28.1	33.7
Department of the Air Force	24.7	26.2	30.2
Defense Agencies/OSD	2.1	3.1	3.5
Defense-wide	6.3	7.5	9.9
Civil Defense	.1	.1	.1
Military Assistance Programs	3.3	2.3	2.7
Totals	**$85.0**	**$89.0**	**$104.7**

USAF MILITARY AND CIVILIAN STRENGTH BY OPERATING LOCATION

The following list includes Air Force bases and stations where the combined military and civilian population is 100 or more.

STATE	MIL	CIV	TOTAL
Alabama			
Craig AFB	2,061	579	2,640
Gunter AFS	1,263	854	2,117
Maxwell AFB	3,934	1,784	5,718
Alaska			
Cape Lisburne AFS	98	7	105
Cape Newenham AFS	96	5	101
Cape Romanzof AFS	104	11	115
Clear MEW	122	75	197
Cold Bay AFS	102	8	110
Eielson AFB	2,492	507	2,999
Elmendorf AFB	6,705	1,656	8,361
Fort Yukon AFS	101	11	112
Galena APT	354	27	381
Indian Mountain AFS	149	12	161
King Salmon APT	446	40	486
Kotzebue AFS	88	12	100
Murphy Dome AFS	142	23	165
Shemya AFB	572	43	615
Sparrevohn AFS	133	13	146
Tatalina AFS	112	11	123
Tin City AFS	103	7	110
Arizona			
Davis-Monthan AFB	7,299	1,818	9,117
Gila Bend AAF	195	92	287
Luke AFB	5,453	1,174	6,627
Williams AFB	3,124	761	3,885
Arkansas			
Blytheville AFB	2,677	424	3,101
Little Rock AFB	6,470	720	7,190
California			
Almaden AFS	145	31	176
Beale AFB	4,732	670	5,402
Boron AFS	84	21	105
Cambria AFS	101	30	131
Castle AFB	5,305	589	5,894
Edwards AFB	3,640	2,166	5,806
El Centro NAS	79	32	111
George AFB	4,790	480	5,270
Hamilton AFB	166	109	275
Klamath AFS	141	32	173
Los Angeles AFS	1,609	1,183	2,792
March AFB	4,963	822	5,785
Mather AFB	6,576	1,274	7,850
McClellan AFB	4,636	14,835	19,471
Mill Valley AFS	192	31	223
Mt. Laguna AFS	191	30	221
Norton AFB	6,049	2,956	9,005
Point Arena AFS	136	35	171
Presidio of Mont AIN	679	–	679
Sunnyvale AFS	673	288	961
Travis AFB	9,427	2,663	12,090
Vandenberg AFB	4,800	1,687	6,487
Colorado			
AF Accounting & Finance Center	443	2,880	3,323
Buckley AGB	641	25	666
Cheyenne Mt. Complex	332	114	446
Ent AFB	1,219	911	2,130
Lowry AFB	7,206	1,603	8,809
Peterson Field	3,818	634	4,452
USAF Academy	2,598	2,051	4,649
Delaware			
Dover AFB	5,321	1,581	6,902
District of Columbia			
Bolling AFB	1,866	823	2,689
Fort McNair	129	–	129
Forrestal Building	606	406	1,012
Florida			
Eglin Fld #3	183	151	334
Eglin Fld #9 (Hurlburt Fld)	3,093	417	3,510
Eglin AFB	7,672	3,401	11,073
Homestead AFB	4,818	938	5,756
Jacksonville NAS	147	7	154
Key West NAS	242	2	244
MacDill AFB	5,681	976	6,657
McCoy AFB	109	24	133
Patrick AFB	2,743	2,049	4,792
Tyndall AFB	3,707	959	4,666
Georgia			
Dobbins AFB	194	701	895
Moody AFB	2,289	563	2,852
Robins AFB	4,303	15,791	20,094
Savannah AFS	115	11	126
Hawaii			
Camp Smith	287	–	287
Hickam AFB	5,990	2,390	8,380
Wheeler AFB	655	298	953
Idaho			
Mountain Home AFB	3,718	497	4,215
Illinois			
Chanute AFB	9,944	1,739	11,683
Chicago/O'Hare IAP	15	379	394
Scott AFB	4,731	2,437	7,168
Indiana			
Grissom AFB	2,861	738	3,599
Kansas			
Forbes AGB	129	7	136
McConnell AFB	3,938	627	4,565
Kentucky			
Fort Campbell	279	5	284
Louisiana			
Barksdale AFB	6,533	1,169	7,702
England AFB	2,811	539	3,350
Maine			
Bucks Harbor AFS	99	21	120
Caswell AFS	102	19	121
Charleston AFS	223	27	250
Loring AFB	3,600	662	4,262
Maryland			
Andrews AFB	6,890	2,774	9,664
Friendship IAP	83	19	102
Fort George G. Meade	1,370	12	1,382
Fort Ritchie	104	1	105
Massachusetts			
L. G. Hanscom AFB	1,617	2,846	4,463
North Truro AFS	135	35	170
Otis AGB	23	101	124
Westover AFB	498	875	1,373
Michigan			
Calumet AFS	146	29	175
Empire AFS	92	23	115
K. I. Sawyer AFB	3,843	582	4,425
Kincheloe AFB	2,883	533	3,416
Port Austin AFS	124	30	154
Sault Sainte Marie AFS	133	21	154
Selfridge AGB	195	331	526
Wurtsmith AFB	2,942	510	3,452
Minnesota			
Baudette AFS	139	36	175
Duluth IAP	1,404	433	1,837
Minneapolis/St. Paul IAP	70	360	430
Mississippi			
Columbus AFB	2,642	597	3,239
Keesler AFB	13,933	3,120	17,053
Missouri			
Richards-Gebaur AFB	2,729	1,821	4,550
Whiteman AFB	3,209	456	3,665
Montana			
Glasgow AFB	127	30	157
Havre AFS	133	32	165
Kalispell AFS	84	32	116
Malmstrom AFB	5,242	703	5,945
Opheim AFS	115	26	141
Nebraska			
Offutt AFB	10,955	1,891	12,846
Nevada			
Indian Springs AAF	168	33	201
Lake Meade Base AIN	352	–	352
Nellis AFB	6,390	1,053	7,443
New Hampshire			
Pease AFB	3,931	613	4,544
New Jersey			
Gibbsboro AFS	125	22	147
McGuire AFB	5,684	1,675	7,359
New Mexico			
Cannon AFB	4,342	474	4,816
Holloman AFB	4,742	1,112	5,854
Kirtland AFB	3,748	2,484	6,232
New York			
Griffiss AFB	4,146	3,491	7,637
Hancock Field	1,091	292	1,383
Lockport AFS	123	26	149
Montauk AFS	126	35	161
Niagara Falls IAP	25	353	378
Plattsburgh AFB	3,993	543	4,536
Saratoga Springs AFS	122	32	154
Watertown AFS	132	32	164

ABBREVIATIONS

AAF	AF Auxiliary Airfield
AFB	Air Force Base
AFS	Air Force Station
AGB	Air National Guard Base
AIN	Army Installation
APT	Airport
ATM	Air Terminal
IAP	International Airport
MEW	Missile Early Warning Station
NAS	Naval Air Station
TNG	Training Annex/Site

STATE	MIL	CIV	TOTAL
North Carolina			
Fort Fisher AFS	198	30	228
Pope AFB	3,172	388	3,560
Roanoke Rapids AFS	117	22	139
Seymour Johnson AFB	5,402	622	6,024
North Dakota			
Finley AFS	122	30	152
Fortuna AFS	123	29	152
Grand Forks AFB	5,150	664	5,814
Minot AFB	5,939	827	6,766
Minot AFS	100	17	117
Ohio			
Gentile AFS	101	26	127
Newark AFS	146	2,719	2,865
Rickenbacker AFB	2,856	898	3,754
Wright-Patterson AFB	8,373	16,637	25,010
Youngstown APT	1	310	311
Oklahoma			
Altus AFB	3,948	687	4,635
Oklahoma City AFS	319	375	694
Tinker AFB	3,238	19,486	22,724
Vance AFB	1,230	141	1,371
Oregon			
Kingsley Field	424	233	657
Mt. Hebo AFS	208	39	247
North Bend AFS	123	35	158
Pennsylvania			
Benton AFS	102	31	133
Greater Pittsburgh IAP	19	347	366
Willow Grove NAS	4	254	258
South Carolina			
Charleston AFB	4,754	1,387	6,141
Myrtle Beach AFB	2,822	500	3,322
North Charleston AFS	125	15	140
Shaw AFB	5,399	653	6,052
South Dakota			
Ellsworth AFB	5,633	736	6,369
Tennessee			
Arnold AFS	100	159	259
Texas			
Amarillo ATM	120	3	123
Bergstrom AFB	5,182	622	5,804
Brooks AFB	1,232	890	2,122
Carswell AFB	4,910	1,012	5,922
Dyess AFB	4,416	548	4,964
Ellington AFB	654	950	1,604
Fort Hood	126	2	128
Goodfellow AFB	1,715	363	2,078
Kelly AFB	4,220	20,541	24,761
Lackland AFB	21,082	2,240	23,322
Laredo AGB	143	123	266
Laughlin AFB	2,330	620	2,950
Medina TNG	226	–	226
Randolph AFB	5,256	2,650	7,906
Reese AFB	2,303	661	2,964
Sheppard AFB	9,033	2,189	11,222
Webb AFB	2,161	679	2,840
Utah			
Hill AFB	3,095	15,253	18,348
Vermont			
St. Albans AFS	113	31	144
Virginia			
Cameron Station	72	29	101
Cape Charles AFS	101	29	130
Fort Belvoir	272	51	323
Fort Lee	564	61	625
Fort Myer	122	2	124
Langley AFB	8,560	1,490	10,050
Pentagon	4,129	2,293	6,422
Washington			
Blaine AFS	144	37	181
Fairchild AFB	4,201	793	4,994
McChord AFB	5,066	1,589	6,655
Othello AFS	125	30	155
Wisconsin			
Antigo AFS	112	32	144
Gen. Billy Mitchell Field	12	282	294
Osceola AFS	89	27	116
Wyoming			
F. E. Warren AFB	3,768	583	4,351
TOTALS	**465,901**	**224,741**	**690,642**

INSTALLATIONS OF THE UNITED STATES AIR FORCE

Major Installations	**FY '60**	**FY '64**	**FY '68**	**FY '72**	**FY '73**	**FY '74**
Total in the Continental United States	163	151	129	112	111	109
Total Overseas (incl. Alaska and Hawaii)	90	65	69	49	46	45
TOTALS	**253**	**216**	**198**	**161**	**157**	**154**
By Function						
Operational	147	126	109	90		
Operational Flying Support	16	12	10	10	(These installation classifications were eliminated from the automated system because of limited use.)	
Operational Nonflying Support	12	16	14	10		
Operational Foreign-Owned	7	5	18	8		
Training	48	38	30	29		
Research and Test	7	9	9	8		
Logistical	16	10	8	6		
TOTALS	**253**	**216**	**198**	**161**	**157**	**154**

Other Installations	**FY '60**	**FY '64**	**FY '68**	**FY '72**	**FY '73**	**FY '74**
Ancillary	2,740	2,849	1,899	1,655		
Ballistic Missile	—	1,083	1,158	1,157		
Industrial	76	55	43	36	(See	
Radar	410	331	182	108	Note,	
Air National Guard	—	103	107	109	Below)	
Tenant, Non-Air Force	235	348	358	288		
For Use in Wartime Only	22	49	44	44		
TOTALS (Worldwide)	**3,483**	**4,818**	**3,791**	**3,397**	**3,074**	**3,083**
Located in the Continental United States	2,212	3,435	2,524	2,316	2,204	2,227
Located Overseas	1,271	1,383	1,267	1,081	870	856
Plus Major Installations *(see above)*	253	216	198	161	157	154
TOTALS, ALL INSTALLATIONS	**3,736**	**5,034**	**3,989**	**3,558**	**3,231**	**3,237**

NOTE: "Other Installations" for FY '73 and '74 have been reclassified in the automated systems as follows:

Missile Sites	1,156	1,157
Electronics Stations or Sites	609	603
General Support Annexes	1,171	1,184
Air National Guard Installations	115	117
Auxiliary Airfields	23	22
TOTALS	**3,074**	**3,083**

AIR FORCE BUDGET AND FINANCE—FISCAL YEARS 1960–76

(Figures in millions of dollars)

	FY '60	FY '64	FY '68	FY '74	FY '75	FY '76
Gross National Product	495,200	612,200	826,100	1,348,900	1,434,100	1,595,600
Federal Budget, Outlays	92,223	118,584	178,833	268,392	313,446	349,372
DoD Budget, Outlays	42,823	50,786	78,027	78,445	84,800	92,800
DoD Percent of: GNP	8.6%	8.3%	9.4%	5.8%	5.9%	5.8%
Federal Budget	46.4%	42.8%	43.6%	29.2%	27.1%	26.6%
Air Force Budget Outlays						
Current Dollars	19,066	20,456	25,734	23,928	24,755	26,554
Constant FY 1976 Prices	43,261	44,035	48,859	30,440	27,374	26,554
AF Percent of: GNP	3.9%	3.3%	3.1%	1.8%	1.7%	1.7%
Federal Budget	20.7%	17.3%	14.4%	8.9%	7.9%	7.6%
DoD Budget	44.5%	40.3%	33.0%	30.5%	29.2%	28.6%
Total Obligational Authority						
Current Dollars	18,132	19,959	24,974	24,682	26,201	30,196
Constant FY 1976 Prices	42,248	44,116	48,306	30,561	28,553	30,196
Appropriations, TOA (Current $)						
Aircraft Procurement (3010)	3,865	3,620	5,306	2,824	3,060	4,575
Missile Procurement (3020)	2,593	2,220	1,408	1,416	1,543	1,791
Other Procurement (3080)	1,021	876	2,358	1,641	1,656	2,343
Military Construction-AF (3300)	799	497	481	252	445	704
RDT&E (3600)	1,460	3,627	3,412	3,062	3,299	3,903
Operations and Maintenance (3400)	4,147	4,339	5,904	6,882	7,328	7,956
Military Personnel-AF (3500)	3,965	4,423	5,678	7,479	7,500	7,401
Reserve Personnel-AF (3700)	51	57	63	126	148	161
Military Construction-AFR (3730)	3	3	4	10	16	18
Operations and Maintenance-AFR (3740)	—	—	—	239	298	344
Military Construction-ANG (3830)	12	17	10	18	35	63
Operations and Maintenance-ANG (3840)	168	220	266	551	669	724
National Guard Personnel-AF (3850)	48	60	84	182	204	213
Programs, TOA (Current $)						
I Strategic Forces		6,527	5,186	4,394	4,652	4,872
II General-Purpose Forces		3,030	7,272	5,524	5,973	7,573
III Intelligence and Communications		2,977	3,618	3,322	3,535	3,821
IV Airlift and Sealift Forces	Not	1,010	1,736	759	909	1,564
V Reserve and Guard Forces	Available	503	621	1,219	1,420	1,633
VI Research and Development	By	2,065	1,561	2,400	2,848	3,483
VII Central Supply and Maintenance	Program	1,768	2,375	2,755	2,990	3,063
VIII Training, Medical, and Other General Activities		1,726	2,079	3,437	3,249	3,524
IX Admin and Assoc Activities		342	352	519	582	621
X Support of Other Nations		11	173	353	43	42
Total Funds Avail. for Exp. Air Force	33,947	29,144	38,690	34,032	35,782	41,204
Outlays (Excludes MAP/FMS)	19,066	20,456	25,734	23,928	24,755	26,554
Unexpended Balance	14,881	8,688	12,956	10,104	11,027	14,650

USAF AIRCRAFT PROCUREMENT—FY '60–76

CATEGORY	FY '60	FY '64	FY '68	FY '73	FY '74	FY '75	FY '76
Fixed-Wing Aircraft							
Total Budgeted	555	778	1,152	161	165	171	191
Accepted/Scheduled Acceptances	1,049	726	935	255	117	108	259
Helicopters							
Total Budgeted	42	43	38	6	0	0	0
Accepted/Scheduled Acceptances	41	37	36	29	1	5	0

NOTE: Excludes MASF, Navy, NASA, MAP, and FMS funded aircraft. Data in FY '60–74 columns are actual. FY '75–76 data are programmed.

THE NUMBER OF SQUADRONS IN THE US AIR FORCE

MAJOR FORCE SQUADRONS	FY '60	FY '64	FY '68	FY '74	FY '75	FY '76
STRATEGIC FORCES						
ICBMs (UE)	5	821	1,054	1,054	1,054	1,054
Bomber	140	78 [1]	40	28	27	26
Reconnaissance	6	2	3	1	1	1
Tanker	59	55	41	38	38	35
Interceptor	65	40	26	7	6	6
GENERAL-PURPOSE FORCES						
Tactical Fighter	55	75	92	73	68	67
Other Fighter and Attack Aircraft	13	9	8	1	1	1
Reconnaissance	14	8	21	13	13	9
Special Operations Force	—	6	22	5	5	3
Tactical Missiles	5	8	2	—	—	—
Drones	—	—	—	1	1	1
Tactical Air Control	—	1	9	11	12	11
AIRLIFT FORCES						
Tactical Airlift	24	26	31	17	17	15
Military Airlift	31	35	32	17	17	17
Aeromedical Airlift	3	5	6	3	3	3
Special Air Mission	2	2	2	2	2	2
AIR NATIONAL GUARD SQUADRONS	92	92	78 [2]	91	91	91
AIR FORCE SQUADRONS [3]	45	50	38 [2]	53	53	53

[1] Includes 3 EB-47 squadrons.
[2] Does not include 14 ANG squadrons and 6 Air Force Reserve squadrons that were reported in the Active Force.
[3] Includes Associate Squadrons.

NOTE: Data in FY '60–74 columns are actual; FY '75 and FY '76 data are programmed.

THE NUMBER OF ACTIVE AIRCRAFT IN USAF'S INVENTORY

Type of Aircraft	FY '60	FY '64	FY '68	FY '74	FY '75	FY '76
Bomber						
Strategic	1,941	1,364	714	500	499	500
Other	252	145	65	—	—	—
Tanker	1,230	998	667	657	660	628
Fighter/Interceptor/Attack	3,922	3,538	3,985	2,387	2,308	2,479
Reconnaissance/Electronic Warfare	685	595	1,009	610	591	492
Cargo/Transport	2,549	2,327	2,358	1,253	937	902
Search and Rescue (Fixed Wing)	129	100	91	56	44	32
Helicopter (Includes Rescue)	372	401	465	317	297	271
Special Research	2	3	5	—	—	—
Trainer	3,914	2,873	2,584	1,996	1,896	1,880
Utility/Observation	316	345	663	154	87	68
TOTALS	**15,312**	**12,689**	**12,606**	**7,930**	**7,319**	**7,252**
Plus total, Air National Guard Aircraft	2,269	1,806	1,438	1,798	1,692	1,684
Plus total, Air Force Reserve Aircraft	770	719	426	428	446	486
Plus total, Free World Military Forces	—	—	692	1,976	1,739	—
Plus aircraft earmarked [1]	361	166	165	—	—	—
TOTAL ACTIVE AIRCRAFT	**18,712**	**15,380**	**15,327**	**12,132**	**11,196**	**9,422**

[1] Total actual inventory for FY '60, '64, and '68 include "Earmarked" aircraft (aircraft identified for MAP, Navy, and other non-Air Force agencies).

UNITED STATES AIR FORCE MEDAL OF HONOR WINNERS—1918–1975

NAMES, ALPHABETICALLY BY WARS AND RANK AT TIME OF ACTION	HOME TOWN	DATE AND PLACE OF ACTION	PRESENT ADDRESS OR DATE OF DEATH
WORLD WAR I			
Bleckley, 2d Lt. Erwin R.	Wichita, Kan.	Oct. 6, 1918, Binarville, France	KIA, Oct. 6, 1918
Goettler, 2d Lt. Harold E.	Chicago, Ill.	Oct. 6, 1918, Binarville, France	KIA, Oct. 6, 1918
Luke, 2d Lt. Frank, Jr.	Phoenix, Ariz.	Sept. 29, 1918, Murvaux, France	KIA, Sept. 29, 1918
Rickenbacker, Capt. Edward V.	Columbus, Ohio	Sept. 25, 1918, Billy, France	Deceased, July 23, 1973
WORLD WAR II			
Baker, Lt. Col. Addison E.	Chicago, Ill.	Aug. 1, 1943, Ploesti, Romania	KIA, Aug. 1, 1943
Bong, Maj. Richard I.	Superior, Wis.	Oct. 10–Nov. 15, 1944, Southwest Pacific	Killed, Aug. 6, 1945, Burbank, Calif.
Carswell, Maj. Horace S., Jr.	Fort Worth, Tex.	Oct. 26, 1944, South China Sea	KIA, Oct. 26, 1944
Castle, Brig. Gen. Frederick W.	Manila, P.I.	Dec. 24, 1944, Liège, Belgium	KIA, Dec. 24, 1944
Chell, Maj. Ralph	San Francisco, Calif.	Aug. 18, 1943, Wewak, New Guinea	Died as POW, Mar. 6, 1944
Craw, Col. Demas T.	Traverse City, Mich.	Nov. 8, 1942, Port Lyautey, French Morocco	KIA, Nov. 8, 1942
Doolittle, Lt. Col. James H.	Alameda, Calif.	Apr. 18, 1942, Tokyo, Japan	Los Angeles, Calif. (Ret. Lt. Gen.)
Erwin, SSgt. Henry E.	Adamsville, Ala.	Apr. 12, 1945, Koriyama, Japan	Birmingham, Ala.
Femoyer, 2d Lt. Robert E.	Huntington, W. Va.	Nov. 2, 1944, Merseburg, Germany	KIA, Nov. 2, 1944
Gott, 1st Lt. Donald J.	Arnett, Okla.	Nov. 9, 1944, Saarbrucken, Germany	KIA, Nov. 9, 1944
Hamilton, Maj. Pierpont M.	Tuxedo, N.Y.	Nov. 8, 1942, Port Lyautey, French Morocco	Santa Barbara, Calif. (Ret. Maj. Gen.)
Howard, Maj. James H.	Canton, China	Jan. 11, 1944, Oschersleben, Germany	Washington, D.C. (Ret. Brig. Gen.)
Hughes, 2d Lt. Lloyd H.	Alexandria, La.	Aug. 1, 1943, Ploesti, Romania	KIA, Aug. 1, 1943
Jerstad, Maj. John L.	Racine, Wis.	Aug. 1, 1943, Ploesti, Romania	KIA, Aug. 1, 1943
Johnson, Col. Leon W.	Columbia, Mo.	Aug. 1, 1943, Ploesti, Romania	McLean, Va. (Ret. Gen.)
Kane, Col. John R.	McGregor, Tex.	Aug. 1, 1943, Ploesti, Romania	Barber, Ark. (Ret. Col.)
Kearby, Col. Neel E.	Wichita Falls, Tex.	Oct. 11, 1943, Wewak, New Guinea	KIA, Mar. 5, 1944, Wewak, New Guinea
Kingsley, 2d Lt. David R.	Portland, Ore.	June 23, 1944, Ploesti, Romania	KIA, June 23, 1944
Knight, 1st Lt. Raymond L.	Houston, Tex.	Apr. 25, 1945, Po Valley, Italy	KIA, Apr. 25, 1945
Lawley, 1st Lt. William R., Jr.	Leeds, Ala.	Feb. 20, 1944, Leipzig, Germany	Montgomery, Ala. (Ret. Col.)
Lindsey, Capt. Darrell R.	Jefferson, Iowa	Aug. 9, 1944, Pontoise, France	KIA, Aug. 9, 1944
Mathies, SSgt. Archibald	Scotland	Feb. 20, 1944, Leipzig, Germany	KIA, Feb. 20, 1944
Mathis, 1st Lt. Jack W.	San Angelo, Tex.	Mar. 18, 1943, Vegesack, Germany	KIA, Mar. 18, 1943
McGuire, Maj. Thomas B., Jr.	Ridgewood, N.J.	Dec. 25–26, 1944, Luzon, P.I.	KIA, Jan. 7, 1945, Negros, P.I.
Metzger, 2d Lt. William E., Jr.	Lima, Ohio	Nov. 9, 1944, Saarbrucken, Germany	KIA, Nov. 9, 1944
Michael, 1st Lt. Edward S.	Chicago, Ill.	Apr. 11, 1944, Brunswick, Germany	Fairfield, Calif. (Ret. Col.)
Morgan, F/O John C.	Vernon, Tex.	July 28, 1943, Kiel, Germany	Scarborough, N.Y. (Ret. Col.)
Pease, Capt. Harl, Jr.	Plymouth, N.H.	Aug. 7, 1942, Rabaul, New Britain	KIA, Aug. 7, 1942
Pucket, 1st Lt. Donald D.	Longmont, Colo.	July 9, 1944, Ploesti, Romania	KIA, July 9, 1944
Sarnoski, 2d Lt. Joseph R.	Simpson, Pa.	June 16, 1943, Buka, Solomon Is.	KIA, June 16, 1943
Shomo, Capt. William A.	Jeannette, Pa.	Jan. 11, 1945, Luzon, P.I.	Pittsburgh, Pa. (Ret. Lt. Col.)
Smith, SSgt. Maynard H.	Caro, Mich.	May 1, 1943, St. Nazaire, France	Albany, N.Y.
Truemper, 2d Lt. Walter E.	Aurora, Ill.	Feb. 20, 1944, Leipzig, Germany	KIA, Feb. 20, 1944
Vance, Lt. Col. Leon R., Jr.	Enid, Okla.	June 5, 1944, Wimereaux, France	Killed July 26, 1944, near Iceland
Vosler, TSgt. Forrest L.	Lyndonville, N.Y.	Dec. 20, 1943, Bremen, Germany	Poland, N.Y.
Walker, Brig. Gen. Kenneth N.	Cerrillos, N.M.	Jan. 5, 1943, Rabaul, New Britain	KIA, Jan. 5, 1943
Wilkins, Maj. Raymond H.	Portsmouth, Va.	Nov. 2, 1943, Rabaul, New Britain	KIA, Nov. 2, 1943
Zeamer, Capt. Jay, Jr.	Carlisle, Pa.	June 16, 1943, Buka, Solomon Is.	Boothbay Harbor, Me. (Ret. Lt. Col.)
KOREA			
Davis, Lt. Col. George A., Jr.	Dublin, Tex.	Feb. 10, 1952, Sinuiju-Yalu River, No. Korea	KIA, Feb. 10, 1952
Loring, Maj. Charles J., Jr.	Portland, Me.	Nov. 22, 1952, Sniper Ridge, No. Korea	KIA, Nov. 22, 1952
Sebille, Maj. Louis J.	Harbor Beach, Mich.	Aug. 5, 1950, Hamch'ang, So. Korea	KIA, Aug. 5, 1950
Walmsley, Capt. John S., Jr.	Baltimore, Md.	Sept. 14, 1951, Yangdok, No. Korea	KIA, Sept. 14, 1951
VIETNAM			
Bennett, Capt. Steven L.	Palestine, Tex.	June 29, 1972, Quang Tri, So. Vietnam	KIA, June 29, 1972
Dethlefsen, Maj. Merlyn H.	Greenville, Iowa	Mar. 10, 1967, Thai Nguyen, No. Vietnam	Active duty, Col., Beale AFB, Calif.
Fisher, Maj. Bernard F.	San Bernardino, Calif.	Mar. 10, 1966, A Shau Valley, So. Vietnam	Kuna, Idaho (Ret. Col.)
Fleming, 1st Lt. James P.	Sedalia, Mo.	Nov. 26, 1968, Duc Co, So. Vietnam	Active duty, Capt. USAF Academy, Colo.
Jackson, Lt. Col. Joe M.	Newnan, Ga.	May 12, 1968, Kham Duc, So. Vietnam	Chicopee, Mass. (Ret. Col.)
Jones, Lt. Col. William A. III	Norfolk, Va.	Sept. 1, 1968, Dong Hoi, No. Vietnam	Killed, Nov. 15, 1969, Woodbridge, Va.
Levitow, A1C John L.	Hartford, Conn.	Feb. 24, 1969, Long Binh, So. Vietnam	Glastonbury, Conn.
Thorsness, Lt. Col. Leo K.	Walnut Grove, Minn.	Apr. 19, 1967, No. Vietnam	Sioux Falls, S.D. (Ret. Lt. Col.)
Wilbanks, Capt. Hilliard A.	Cornelia, Ga.	Feb. 24, 1967, Dalat, So. Vietnam	KIA, Feb. 24, 1967
Young, Capt. Gerald O.	Ancortes, Wash.	Nov. 9, 1967, Da Nang area, So. Vietnam	Active duty, Lt. Col., Andrews AFB, Md.

AIR FORCE MAGAZINE'S GUIDE TO ACES

In compiling this list of aces who flew with USAF and its predecessor organizations (the Air Service and the Army Air Forces), AIR FORCE Magazine has used official USAF sources except for World War I. During that war, many Americans scored victories serving with foreign countries. As a result, these men do not appear on official lists as "American" aces. We have included in our list of World War I aces both those who flew with the American Air Service and with the British or French. The lists for World War II, Korea, and Vietnam include only AAF/USAF airmen.

The Albert F. Simpson Historical Research Center, Maxwell AFB, Ala., has completed a detailed accounting of the Air Service victory credits in World War I and USAF victory credits in Korea and Southeast Asia. The Center is still preparing the list of Army Air Forces victory credits for World War II. This has taken much time as a result of the great number of victories and the many different procedures used to record them. The final documented list of all World War II combat scores will not be available for several years. The changes this year from the similar list in last year's Almanac are based on findings concerning some of the aces' victory credits. However, all World War II awards are still tentative, and all are open to further change or challenge.

Although some World War I totals (notably Frank Luke's) include balloons, all entries for subsequent conflicts are for air-to-air victories.

—The Editors

LEADING AMERICAN ACES OF WORLD WAR I

(Ten or more victories)

Rickenbacker, Capt. Edward V. (AEF)	26
Rosevear, Capt. S. C. (RFC)	23
Lambert, Capt. William C. (RFC)	22
Gillette, Capt. Frederick W. (RFC)	20
Malone, Capt. John J. (RN)	20
Wilkinson, Maj. Alan M. (RFC)	19
Hale, Capt. Frank L. (RFC)	18
Iaccaci, Capt. Paul T. (RFC)	18
Luke, 2d Lt. Frank, Jr. (AEF)	18
Lufbery, Maj. Raoul G. (FFC/LE)	17
Kullberg, Lt. Harold A. (RFC)	16
Rose, Capt. Oren J. (RFC)	16
Warman, Lt. C. T. (RFC)	15
Libby, Capt. Frederick (RFC)	14
Vaughn, 1st Lt. George A. (AEF)	13
Baylies, Lt. Frank L. (FFC/LE)	12
Bennett, 1st Lt. Louis B. (RFC)	12
Kindley, Capt. Field E. (AEF)	12
Putnam, 1st Lt. David E. (LE/AEF)	12
Springs, Capt. Elliott W. (AEF)	12
Iaccaci, Lt. Thayer A. (RFC)	11
Landis, Capt. Reed G. (AEF)	10
Swaab, Capt. Jacques M. (AEF)	10

AEF—American Expeditionary Force
FFC—French Flying Corps
RFC—Royal Flying Corps (British)
RN—Royal Navy (British)
LE—Lafayette Escadrille

LEADING ARMY AIR FORCES ACES OF WORLD WAR II

(Fifteen or more victories)

Bong, Maj. Richard T.	40
McGuire, Maj. Thomas B.	38
Gabreski, Col. Francis N.	28*
Johnson, Lt. Col. Robert S.	27
MacDonald, Col. Charles H.	27
Preddy, Maj. George E.	26.83
Meyer, Col. John C.	24*
Schilling, Col. David C.	22.50
Johnson, Lt. Col. Gerald R.	22
Kearby, Col. Neel E.	22
Robbins, Col. Jay T.	22
Christensen, Capt. Fred J.	21.50
Wetmore, Capt. Ray S.	21.25
Mahurin, Lt. Col. Walker M.	20.75*
Voll, Maj. John J.	20.50
Lynch, Lt. Col. Thomas J.	20
Westbrook, Lt. Col. Robert B.	20
Gentile, Capt. Donald S.	19.83
Duncan, Col. Glenn E.	19.50
Carson, Maj. Leonard K.	18.50
Eagleston, Lt. Col. Glenn T.	18.50*
Hill, Maj. David L. (AVG/USAF)	18.25†
Older, Lt. Col. Charles H. (AVG/USAF)	18.25†
Beckham, Col. Walter C.	18
Green, Col. Herschel H.	18
Zemke, Col. Hubert	17.75
England, Lt. Col. John B.	17.50
Beeson, Maj. Duane W.	17.33
Thornell, Maj. John F., Jr.	17.25
Foy, Maj. Robert W.	17
Reed, Maj. William N. (AVG/USAF)	17†
Varnell, Capt. James S., Jr.	17
Johnson, Col. Gerald W.	16.50
Godfrey, Capt. John T.	16.33
Anderson, Lt. Col. Clarence E., Jr.	16.25
Dunham, Col. William D.	16
Harris, Lt. Col. Bill	16
Welch, Maj. George S.	16
Beerbower, Capt. Donald M.	15.50
Peterson, Maj. Richard A.	15.50
Whisner, Maj. William T., Jr.	15.50*
Blakeslee, Col. Donald J. M. (ES/USAF)	15†
Bradley, Col. Jack T.	15
Brown, Capt. Samuel J.	15
Cragg, Maj. Edward	15
Herbst, Col. John C.	15
Hofer, 1st Lt. Ralph K.	15
Homer, Maj. Cyril F.	15

* Aces who added to these scores by victories in the Korean War.

AVG—American Volunteer Group
ES—Eagle Squadron

†—The Simpson Center has no way of verifying kills made while flying with AVG or ES.

AAF/USAF ACES OF WORLD WAR II AND LATER WARS

	WW II	KOREA	TOTAL
Gabreski, Col. Francis S.	28	6.5	34.5
Meyer, Col. John C.	24	2	26
Mahurin, Col. Walker M.	20.75	3.5	24.25
Davis, Maj. George A., Jr.	7	14	21
Whisner, Maj. William T.	15.5	5.5	21
Eagleston, Col. Glenn T.	18.5	2	20.5
Garrison, Lt. Col. Vermont	7.33	10	17.33
Baker, Col. Royal N.	3.5	13	16.5
Jabara, Maj. James	1.5	15	16.5
Olds, Col. Robin	12	4*	16
Mitchell, Col. John W.	11	4	15
Brueland, Maj. Lowell K.	12.5	2	14.5
Hagerstrom, Maj. James P.	6	8.5	14.5
Hovde, Lt. Col. William J.	10.5	1	11.5
Johnson, Col. James K.	1	10	11
Adams, Maj. Donald E.	4	6.5	10.5
Ruddell, Lt. Col. George I.	2.5	8	10.5
Thyng, Col. Harrison R.	5	5	10
Colman, Capt. Philip E.	5	4	9
Heller, Lt. Col. Edwin L.	5.5	3.5	9
Chandler, Maj. Van E.	5	3	8
Hockery, Maj. John J.	7	1	8
Creighton, Maj. Richard D.	2	5	7
Emmert, Lt. Col. Benjamin H., Jr.	6	1	7
Bettinger, Maj. Stephen L.	1	5	6
Visscher, Maj. Herman W.	5	1	6
Liles, Capt. Brooks J.	1	4	5
Mattson, Capt. Conrad E.	1	4	5

* Colonel Olds's 4 additional victories came in Vietnam.

USAF ACES OF THE KOREAN WAR

McConnell, Capt. Joseph, Jr.	16
Jabara, Lt. Col. James	15*
Fernandez, Capt. Manuel J.	14.5
Davis, Lt. Col. George A., Jr.	14*
Baker, Col. Royal N.	13*
Blesse, Maj. Frederick C.	10
Fischer, 1st Lt. Harold E.	10
Garrison, Lt. Col. Vermont	10*
Johnson, Col. James K.	10*
Moore, Capt. Lonnie R.	10
Parr, Capt. Ralph S., Jr.	10
Foster, Capt. Cecil G.	9
Low, 1st Lt. James F.	9
Hagerstrom, Maj. James P.	8.50*
Risner, Capt. Robinson	8
Ruddell, Lt. Col. George I.	8*
Buttlemann, 1st Lt. Henry	7
Jolley, Capt. Clifford D.	7
Lilley, Capt. Leonard W.	7
Adams, Maj. Donald E.	6.50*
Gabreski, Col. Francis S.	6.50*
Jones, Lt. Col. George L.	6.50
Marshall, Maj. Winton W.	6.50
Kasler, 1st Lt. James H.	6
Love, Capt. Robert J.	6
Whisner, Maj. William T., Jr.	5.50*
Baldwin, Col. Robert P.	5
Becker, Capt. Richard S.	5
Bettinger, Maj. Stephen L.	5
Creighton, Maj. Richard D.	5*
Curtin, Capt. Clyde A.	5
Gibson, Capt. Ralph D.	5
Kincheloe, Capt. Iven C., Jr.	5
Latshaw, Capt. Robert T., Jr.	5
Moore, Capt. Robert H.	5
Overton, Capt. Dolphin D., III	5
Thyng, Col. Harrison R.	5*
Westcott, Maj. William H.	5

* These are in addition to World War II victories.

AMERICAN ACES OF THE VIETNAM WAR

DeBellevue, Capt. Charles D. (USAF)	6
Cunningham, Lt. Randy (USN)	5
Driscoll, Lt. William (USN)	5
Feinstein, Capt. Jeffrey S. (USAF)	5
Ritchie, Capt. Richard S. (USAF)	5

LEADING AIR SERVICE/ AAF/USAF ACES OF ALL WARS

Bong, Maj. Richard T.	40	WW II
McGuire, Maj. Thomas B.	38	WW II
Gabreski, Col. Francis S.	34.50	WW II, Korea
Johnson, Lt. Col. Robert S.	27	WW II
MacDonald, Col. Charles H.	27	WW II
Preddy, Maj. George E.	26.83	WW II
Meyer, Col. John C.	26	WW II, Korea
Rickenbacker, Capt. Edward V.	26	WW I
Mahurin, Lt. Col. Walker M.	24.25	WW II, Korea
Schilling, Col. David C.	22.50	WW II
Johnson, Lt. Col. Gerald R.	22	WW II
Kearby, Col. Neel E.	22	WW II
Robbins, Col. Jay T.	22	WW II
Christensen, Capt. Fred J.	21.50	WW II
Wetmore, Capt. Ray S.	21.25	WW II
Davis, Maj. George A., Jr.	21	WW II, Korea
Whisner, Maj. William T., Jr.	21	WW II, Korea
Eagleston, Col. Glenn T.	20.50	WW II, Korea
Voll, Maj. John J.	20.50	WW II
Lynch, Lt. Col. Thomas J.	20	WW II
Westbrook, Lt. Col. Robert B.	20	WW II
Gentile, Capt. Donald S.	19.83	WW II

SOME FAMOUS FIRSTS IN THE ANNALS OF AVIATION

First American to shoot down five enemy aircraft during World War I
Capt. Frederick Libby (serving with RFC)

First American ace of World War I
Capt. Alan M. Wilkinson

First American ace to serve with the AEF
Capt. Raoul G. Lufbery (RFC)

First American AEF ace of World War I
Capt. Douglas Campbell (FFC/LE)

First American ace of World War II
Pilot Officer William R. Dunn (RFC)

First American USAAF ace of World War II
Lt. Boyd D. "Buzz" Wagner

First American ace of the Korean War and USAF's first jet ace
Capt. James Jabara (May 20, 1951)

First American to score an aerial victory in Korea
1st Lt. William G. Hudson (F-82 pilot; downed a Yak-11, June 27, 1950)

First jet-to-jet kill of the Korean War
1st Lt. Russell J. Brown, (F-80 pilot; downed a MiG-15, November 8, 1950)

First American ace of two wars
Maj. A. J. "Ajax" Baumler (8 victories in the Spanish Civil War and 5 in World War II)

First USAF ace with victories in World War II and the Vietnam War
Brig. Gen. Robin Olds (12 victories in WW II and 4 in Vietnam)

Source: *Fighter Aces*, by Col. Raymond F. Toliver and Trevor J. Constable, Macmillan Co., N.Y., 1965

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AIR FORCE MAGAZINE'S GUIDE TO USAF BASES AT HOME AND ABROAD

Altus AFB, Okla. 73521; 3 mi. NE of Altus. Phone: (405) 482-8100. AUTOVON: 866-1110. MAC base. 443d Military Airlift Training Wing; transition training for C-141 and C-5 crews. Formerly SAC base; SAC's 11th ARS continues tanker operations as tenant. AFCS's 4th Mobile Communications Group has tenant status. Base activated Jan. 1943; inactivated May 1945; reactivated Jan. 1953. Area: 2,487 acres. Altitude: 1,376 ft.

Andrews AFB, Md. 20331; 11 mi. SE of Washington, D. C. Phone: (301) 981-9111. AUTOVON: 858-1110. Headquarters Command base. Hq. Air Force Systems Command; high-priority airlift for HQ COMD; also proficiency flying for HQ COMD, AFRES, ANG, Navy, Marines. Other units: 1st Composite Wing; 89th Military Airlift Special Missions Wing; 6th Weather Wing; 459th Tactical Airlift Wing, AFRES; 113th Tactical Fighter Wing, ANG. Base activated June 1943; named for Lt. Gen. Frank M. Andrews, military air pioneer, killed in an aircraft accident, May 3, 1943. Area: 4,279 acres. Altitude: 279 ft.

Arnold AFS, Tenn. 37389; approximately 7 mi. SE of Manchester. Phone: (615) 455-2611. AUTOVON: 882-1520. AFSC installation; site of the Arnold Engineering Development Center, the free world's largest complex of wind tunnels, jet and rocket engine test cells, space simulation chambers, and hyperballistic ranges, which support the acquisition of new aerospace systems by conducting research, development, and evaluation testing for the Air Force, other military services, and government agencies. Base activated Jan. 1, 1950; named for Gen. H. H. "Hap" Arnold, wartime Chief of the AAF. Area: 40,118 acres. Altitude: 950 to 1,150 feet.

Barksdale AFB, La. 71110; 4 mi. SE of Bossier City. Phone: (318) 456-2252. AUTOVON: 781-1110. SAC base. Hq. 8th Air Force; 2d Bomb Wing. Base is also site of AFRES special operations group. Base activated Feb. 2, 1933; named for Lt. Eugene H. Barksdale, WW I airman killed in Aug. 1926 aircraft accident. Area: 22,000 acres (20,000 acres reserved for recreational area). Altitude: 167 ft.

Beale AFB, Calif. 95903; 13 mi. E of Marysville. Phone: (916) 634-3000. AUTOVON: 368-1110. SAC base. 14th Air Division; 9th Strategic Reconnaissance Wing; 456th Bomb Wing. Beale is the only USAF base having SR-71 strategic recce aircraft. Originally US Army's Camp Beale; became AF installation in Nov. 1948; became AFB in Dec. 1951; named for Brig. Gen. E. F. Beale, Indian agent in Calif. prior to Civil War. Area: 22,944 acres. Altitude: 113 ft.

Bellows AFS, Hawaii (APO San Francisco 96553); approximately 12 mi. NE of Honolulu. Phone: (808) 259-9469. PACAF base. It is a closed airfield presently used by the Marine Corps as a tactical maneuver area, by the Army National Guard as an armory, and by the Air Force as a radio-transmitter site and recreation center. Activated in 1930 as Bellows Field in honor of 2d Lt. Franklin D. Bellows, killed in France during WW I. Became Bellows AFS on March 28, 1948. Area: 1,492 acres. Altitude: 15 ft.

Bergstrom AFB, Tex. 78743; 6 mi. SE of Austin. Phone: (512) 385-4100. AUTOVON: 685-1110. TAC base. Hq. 12th Air Force; 67th Tactical Reconnaissance Wing; 602d Tactical Air Control Group. Base activated Sept. 22, 1942; named for Capt. John A. E. Bergstrom, first Austin serviceman killed in WW II. Area: 3,147 acres. Altitude: 541 ft.

Blytheville AFB, Ark. 72315; 4 mi. NW of Blytheville. Phone: (501) 763-3931. AUTOVON: 637-1110. SAC base. 42d Air Division; 97th Bomb Wing. Base activated June 1942; inactivated Feb. 1947; reactivated Aug. 1955. Area: 3,067 acres. Altitude: 254 ft.

Bolling AFB, D. C. 20332; 3 mi. S of the US Capitol. Phone: (202) 767-4522. AUTOVON: 297-1110. Hq. Headquarters Command, USAF. Base activated Oct. 1917; named for Col. Raynal C. Bolling, Ass't Chief of Air Service, killed during WW I. Area: 604 acres. Altitude: 8 ft.

Brooks AFB, Tex. 78235; 7 mi. SE of San Antonio. Phone: (512) 536-1110. AUTOVON: 240-1110. AFSC base. Home of Aerospace Medical Division, USAF School of Aerospace Medicine, and USAF Human Resources Lab. Base activated Dec. 8, 1917; named for Cadet Sidney J. Brooks, Jr., killed Nov. 13, 1917, on his final solo flight before commissioning. Area: 1,330 acres. Altitude: 600 ft.

Cannon AFB, N. M. 88101; 7 mi. WSW of Clovis. Phone: (505) 784-3311. AUTOVON: 681-1110. TAC base. Hq. 832d Air Division; 27th Tactical Fighter Wing. Activated Aug. 1942; named for Gen. John K. Cannon, WW II Commander of all Allied Air Forces in Mediterranean. Area: 11,339 acres. Altitude: 4,295 ft.

Carswell AFB, Tex. 76127; 7 mi. WNW of downtown Fort Worth. Phone: (817) 738-3511. AUTOVON: 739-1110. SAC base. 19th Air Division; 7th Bomb Wing; 301st Tactical Fighter Wing (AFRES). Activated Aug. 1942; named Jan. 30, 1948, for Maj. Horace S. Carswell, Jr., native of Fort Worth, WW II B-24 pilot and posthumous Medal of Honor winner. Area: 2,000 acres. Altitude: 650 ft.

Castle AFB, Calif. 95342; 8 mi. NW of Merced. Phone: (209) 726-2011. AUTOVON: 347-1110. SAC base. 93d Bomb Wing. Conducts training of SAC B-52 and KC-135 crews. Also houses ADC fighter-interceptor squadron. Activated Sept. 1941; named for Brig. Gen. Frederick W. Castle, WW II B-17 pilot and posthumous Medal of Honor winner. Area: 2,700 acres. Altitude: 188 ft.

Chanute AFB, Ill. 61866; 1 mi. S of Rantoul; 14 mi. N of Champaign. Phone: (217) 495-1110. AUTOVON: 862-1110. ATC base. Provides technical training in missile and aircraft maintenance and weather school. Base has museum, Chanute Technical Training Display Center. Base activated May 21, 1917; named for Octave Chanute, aeronautical engineer and glider pioneer. Area: 2,100 acres. Altitude: 737 ft.

Charleston AFB, S. C. 29404; 10 mi. NW of Charleston. Phone: (803) 747-4111. AUTOVON: 583-0111. MAC base. 437th Military Airlift Wing; C-141 associate AFRES 315th Wing. Base activated June 1942; inactivated Feb. 1946; reactivated Aug. 1953. Area: 3,900 acres. Altitude: 45 ft.

Columbus AFB, Miss. 39701; 10 mi. NNW of Columbus. Phone: (601) 434-7322. AUTOVON: 742-1110. ATC base. 14th Flying Training Wing, undergraduate pilot training. Base activated in 1941 for pilot training. Area: 4,606 acres. Altitude: 214 ft.

Craig AFB, Ala. 36701; 5 mi. SE of Selma. Phone: (205) 874-7431. AUTOVON: 485-1110. ATC base. 29th Flying Training Wing, undergraduate pilot training. Base activated Aug. 1940; named for Bruce K. Craig, flight engineer for B-24 manufacturer, killed in 1941 crash. Area: 2,064 acres. Altitude: 176 ft.

Davis-Monthan AFB, Ariz. 85707; 4 mi. SE of Tucson. Phone: (602) 793-3900. AUTOVON: 361-1110. SAC base. 12th Air Division; 390th Strategic Missile Wing (Titan II); 100th Strategic Reconnaissance Wing; 355th Tactical Fighter Wing. TAC A-7D combat crew training. Also site of AFLC's Military Aircraft Storage and Disposition Center. Base activated in 1927; named in 1928 for two Tucson accident victims—1st Lt. Samuel H. Davis, killed Dec. 28, 1921; and 2d Lt. Oscar Monthan, killed Mar. 27, 1924. Area: 15,000 acres. Altitude: 2,705 ft.

Dobbins AFB, Ga. 30060; 2 mi. S of Marietta; 10 mi. NW of Atlanta. Phone: (404) 424-8811. AUTOVON: 925-1110. AFRES base. Hq. Eastern AFRES Region; 94th Tactical Airlift Wing (AFRES); 116th Tactical Fighter Wing (ANG); Naval Air Station Atlanta. Base activated in 1943; named for Capt. Charles Dobbins, WW II pilot, killed in action. Area: 2,095 acres. Altitude: 1,068 ft.

Dover AFB, Del. 19901; 4 mi. SE of Dover. Phone: (302) 678-7011. AUTOVON: 455-1110. MAC base. 436th Military Airlift Wing; air transport units; 512th Military Airlift Wing (Assoc.) (AFRES). Dover is largest air freight terminal on East Coast. Base activated Dec. 1941; inactivated Sept. 1946; reactivated Feb. 1951. Area: 3,600 acres. Altitude: 28 ft.

Duluth International Airport, Minn. 55814; 5 mi. NW of Duluth. Phone: (218) 727-8211. AUTOVON: 825-0011. ADC base. Hq. 23d Air Division, ADC, and 23d NORAD Region and 23d Air Division; ANG fighter-interceptor squadron; SAGE region control center, NORAD. Activated Mar. 1951. Area: 2,191 acres. Altitude: 1,429 ft.

Dyess AFB, Tex. 79607; 2 mi. WSW of Abilene. Phone: (915) 696-0212. AUTOVON: 461-1110. SAC base. 96th Bomb Wing; 463d Tactical Airlift Wing. Base activated Apr. 1942; inactivated Dec. 1945; reactivated Sept. 1955; named for Lt. Col. William E. Dyess, WW II fighter pilot killed in accident Dec. 1943. Area: 5,186 acres. Altitude: 1,774 ft.

Edwards AFB, Calif. 93523; 2 mi. E of Rosamond. Phone: (805) 277-1110. AUTOVON: 350-1110. AFSC base. AF Flight Test Center. Also trains aerospace test pilots, engineers, and project managers. Base houses NASA Flight Research Center, concerned with supersonic and transonic flight research, and is home for Army Aviation's Test Activity. Home of AF Rocket Propulsion Laboratory. Base activated Sept. 1933; named for Capt. Glen W. Edwards, killed June 5, 1948, in crash of a YB-49 "Flying Wing" experimental bomber. Area: 301,000 acres. Altitude: 2,302 ft.

Eglin AFB, Fla. 32542; 2 mi. SW of Valparaiso; 7 mi. SE of Fort Walton Beach. Phone: (904) 881-6668. AUTOVON: 872-1110. AFSC base. Air Force Armament Development and Test Center; AF Armament Laboratory; 3246th Test Wing; 39th Aerospace Rescue & Recovery Wing; 33d Tactical Fighter Wing; Tactical Air Warfare Center; 919th Special Operations Group (AFRES); new Air Force Armament Museum. Base activated in 1935; named for Lt. Col. Frederick I. Eglin, WW I flyer killed in aircraft accident while en route from Langley to Maxwell, Jan. 1, 1937. Area: 464,980 acres. Altitude: 85 ft.

Eielson AFB, Alaska (APO Seattle 98737); 26 mi. SE of Fairbanks. Phone: (907) 372-2181. AUTOVON: (317) 377-1292. AAC base. SAC tanker operations; air defense and search and rescue for AAC; communications for AFCS; 6th Strategic Wing. Activated Oct. 1944; named for Carl B. Eielson, Arctic aviation pioneer. Area: about 35,000 acres. Altitude: 534 ft.

Ellington AFB, Tex. 77030; 15 mi. SSE of Houston. Phone: (713) 481-1400. AUTOVON: 954-2110. AFRES base. AFRES and ANG training and operations; Hq. Central AFRES Region; fighter-interceptor group (Texas ANG); USCG air station; AWS detachment; facilities for NASA's Lyndon B. Johnson Space Center. Base activated Nov. 27, 1917; after several reactivations through the years, transferred to AFRES in 1958; named for Lt. Eric L. Ellington, killed in crash Nov. 24, 1913. Area: 2,200 acres. Altitude: 40 ft.

Ellsworth AFB, S. D. 57706; 11 mi. ENE of Rapid City. Phone (605) 342-2400. AUTOVON: 747-1110. SAC base. 28th Bomb Wing; 44th Strategic Missile Wing; SAC post-attack command and control system squadron. Activated July 1942; named for Brig. Gen. Richard E. Ellsworth, killed Mar. 16, 1953, in crash of RB-36. Area: 5,675 acres. Altitude: 3,600 ft.

Elmendorf AFB, Alaska (APO Seattle 98742); 1 mi. NW of Anchorage. Phone: (907) 754-9125 or 754-9121. AUTOVON: (317) 754-9121. AAC base. Hq. Alaskan Command, Hq. Alaskan Air Command and 21st Composite Wing; aerospace rescue and recovery squadron, MAC; military airlift support squadron, MAC; 1931st Communications Group, AFCS. Base activated July 1940; named for Capt. Hugh M. Elmendorf, killed in air accident Jan. 13, 1933. Area: 13,400 acres. Altitude: 118 ft.

England AFB, La. 71301; 5 mi. W of Alexandria. Phone: (318) 448-2100. AUTOVON: 683-1110. TAC base. 23d Tactical Fighter Wing. Base activated Oct. 1942; named for Lt. Col. John B. England, WW II ace, killed Nov. 17, 1954, in a crash. Area: 2,282 acres. Altitude: 89 ft.

Ent AFB, Colo. 80912; within Colorado Springs. Phone: (303) 635-8911. AUTOVON: 632-0111. Ent, along with Peterson Field (*see Peterson Field*), is home of three major commands—North American Air Defense Command, Continental Air Defense Command, and Aerospace Defense Command—plus Hq. 14th Aerospace Force (ADC). All units and activities will eventually be transferred to Peterson Field. Base activated Jan. 1951; named for Maj. Gen. Uzal G. Ent, WW II leader who died Mar. 5, 1948. Area: 36 acres. Altitude: about 6,000 ft.

Fairchild AFB, Wash. 99011; 12 mi. WSW of Spokane. Phone: (509) 247-1212. AUTOVON: 352-1110. SAC base. 47th Air Division; 92d Bomb Wing; 3636th Combat Crew Training Wing. Base activated Jan. 1942; named for Gen. Muir S. Fairchild, USAF Vice Chief of Staff at his death in 1950. Area: 5,450 acres. Altitude: 2,462 ft.

Francis E. Warren AFB, Wyo. 82001; adjacent to Cheyenne. Phone: (307) 775-2510. AUTOVON: 481-1110. SAC base. 4th Air Division; 90th Strategic Missile Wing. Base activated July 4, 1867; under Army jurisdiction until 1947 when reassigned to USAF. Home of first Atlas-D ICBM missile wing (1960–65); named for Francis Emory Warren, Wyoming senator and early governor. Base has 7,600 acres, plus 200 Minuteman III missile sites distributed over some 15,000 sq. mi. Altitude: 6,000 ft.

George AFB, Calif. 92392; 6 mi. NW of Victorville. Phone (714) 269-1110. AUTOVON: 353-1110. TAC Base. 35th Tactical Fighter Wing. Provides F-4 transitional and upgrade training for aircrewmen. Home of USAF's only two operational F-105G "Wild Weasel" squadrons. ADC F-106 unit maintains operating location at George. Base activated in 1941; named for Brig. Gen. Harold H. George, WW I fighter ace killed in Australia in aircraft accident Apr. 29, 1942. Area: 5,247 acres. Altitude: 2,875 ft.

Glasgow AFB, Mont. 59231; 19 mi. NW of Glasgow. Phone: (406) 524-7323. AUTOVON: 345-4110. SAC base. Heavy bomber satellite operations; also houses Army Safeguard ABM depot. Base deactivated in June 1968, was reopened Jan. 1972. Area: 5,815 acres. Altitude: 2,755 ft.

Goodfellow AFB, Tex. 76901; 2 mi. SE of San Angelo. Phone: (915) 653-3231. AUTOVON: 885-3450. USAF Security Service base. 6940th Security Wing; USAF School of Applied Cryptologic Sciences. Base activated Jan. 1941; named for 2d Lt. John J. Goodfellow, Jr., WW I fighter pilot killed in combat Sept. 17, 1918. Area: 1,127 acres. Altitude: 1,877 ft.

Grand Forks AFB, N. D. 58205; 16 mi. W of Grand Forks. Phone: (701) 594-6011. AUTOVON: 362-1110. SAC base. 319th Bomb Wing (Heavy); 321st Strategic Missile Wing (Minuteman III). Base activated in 1956. Area: 5,400 acres. Altitude: 911 ft.

Griffiss AFB, N. Y. 13441; 1 mi. SE of Rome. Phone: (315) 330-1110. AUTOVON: 587-1110. SAC base. 416th Bomb Wing. Major tenant is Rome Air Development Center (RADC), part of AFSC. Base also houses hq. of AFCS's Northern Communications Area and ADC fighter-interceptor squadron. Base activated Feb. 1, 1942; named for Lt. Col. Townsend E. Griffiss, killed in aircraft accident Feb. 15, 1942. Area: 3,468 acres. Altitude: 515 ft.

Grissom AFB, Ind. 46970; 9 mi. S of Peru. Phone: (317) 689-2211. AUTOVON: 928-1110. SAC base. 305th Air Refueling Wing; 434th Tactical Fighter Wing (AFRES). Activated Jan. 1943 for Navy flight training; reactivated June 1954 as Bunker Hill AFB; renamed May 1968 for Lt. Col. Virgil I. "Gus" Grissom, killed Jan. 27, 1967, with other Astronauts Edward White and Roger Chaffee, in Apollo capsule fire. Area: 2,810 acres. Altitude: 800 ft.

Gunter AFS, Ala. 36114; 4 mi. NE of Montgomery. Phone: (205) 279-1110. AUTOVON: 921-1110. AU base. Hq. Air Force Data Automation Agency and site of AF Data Systems Design Center. USAF Extension Course Institute; USAF Senior NCO Academy. Base activated Aug. 27, 1940; named for William A. Gunter, former mayor of Montgomery,

who died in 1940. Area: about 2 sq. mi. Altitude: 166 ft.

Hamilton AFB, Calif. 94934; adjacent to city of Novato. Phone: (415) 838-1110. AUTOVON: 997-1110. AFRES base. Hq. 452d Tactical Airlift Wing (AFRES), Western AFRES Region, and 904th Tactical Airlift Group. Base activated 1933; named for 1st Lt. Lloyd A. Hamilton, first American in WW I to fly with the Royal Flying Corps, killed in action Aug. 24, 1918. Area: 2,322 acres. Altitude: 10 ft.

Hancock Field, N. Y. 13225; 10 mi. NNE of Syracuse. Phone: (315) 458-5500. AUTOVON: 587-9110. ADC base. 21st NORAD Region/Air Division (ADC); also houses tactical air support group (ANG); SAGE region control center. Base activated Sept. 1941. Area: 1,125 acres. Altitude: 520 ft.

Hickam AFB, Hawaii (APO San Francisco 96553); 6 mi. W of Honolulu. Phone: (808) 422-0531. AUTOVON: 430-0111. PACAF base. Hq. Pacific Air Forces; 15th Air Base Wing, support organization for Air Force units in Hawaii and throughout the Pacific; ANG fighter group; 41st Air Rescue and Recovery Wing; 1st Weather Wing; 61st Military Airlift Support Wing. Base activated Sept. 1937; named for Lt. Col. Horace M. Hickam, air pioneer killed in crash Nov. 5, 1934. Area: 2,544 acres. Altitude: sea level.

Hill AFB, Utah 84406; 7 mi. S of Ogden. Phone: (801) 777-7221. AUTOVON: 458-1110. AFLC base. Hq. Ogden Air Logistics Center; furnishes logistic support for ICBMs; manager for F-101 and F-4 aircraft; also home of 1550th Aircrew Training Test Wing and drone test activity; tactical fighter squadron (AFRES). Base activated Nov. 1940; named for Maj. Ployer P. Hill, killed Oct. 30, 1935, test-flying the first B-17. Area: 7,000 acres. Altitude: 4,788 ft.

Holloman AFB, N. M. 88330; 6 mi. SW of Alamogordo. Phone: (505) 479-6511, AUTOVON: 867-1110. TAC base. 49th Tactical Fighter Wing. AFSC also conducts test and evaluation of airborne missiles, drones, recon systems, and missile reentry vehicles, and operates Central Inertial Guidance Test Facility, AFSC track facility, and Radar Target Scatter site (RATSCAT). Activated 1942; named for Col. George V. Holloman, guided-missile pioneer, killed in crash Mar. 19, 1946. Area: 97,877 acres. Altitude: 4,000 ft.

Homestead AFB, Fla. 33030; 5 mi. NNE of Homestead. Phone: (305) 257-8011. AUTOVON: 791-0111. TAC base. 31st Tactical Fighter Wing; site of ATC sea-survival school; AFRES early warning and control squadron; and aerospace rescue and recovery squadron. Base activated Apr. 1955. Area: 3,607 acres. Altitude: 7 ft.

Hurlburt Field, Fla. 32544 (Eglin AF Auxiliary Field #9); part of Eglin AFB (AFSC) reservation but TAC-operated base; 8 mi. W of Ft. Walton Beach; Phone: (904) 881-6668. Home of 1st Special Operations Wing, focal point of all USAF special operations; reports directly to Hq. TAC; base houses USAF Special Operations School and USAF Air Ground Operations School; C-130E (Combat Talon) and AC-130H gunship, with OV-10 and O-2A for all FAC training in USAF; special operations Combat Control Team/Combat Weather Team. Base activated in 1943; named for 1st Lt. Donald W. Hurlburt, WW II bomber pilot killed Oct. 2, 1943, in crash on Eglin reservation. Altitude: 35 ft.

Indian Springs AF Auxiliary Field, Nev. 89018; 45 mi. NW of Las Vegas. Phone: (702) 879-6268. TAC base. Provides range support for TAC operations from nearby Nellis AFB; supports the Las Vegas Bombing and Gunnery Range, more than 3,000,000 acres, the largest reservation in the USAF inventory. Here the Atomic Energy Commission has conducted most of its tests, supported by a detachment of the AF Special Weapons Center. The base was activated in 1942. Altitude: 3,124 ft.

Keesler AFB, Miss. 39534; located in Biloxi. Phone: (601) 377-1110. AUTOVON: 868-1110. ATC base. Keesler Technical Training Center (communications and electronics training and personnel and administrative courses); Keesler USAF Medical Center: also provides technical training for foreign students. Hosts MAC weather recon squadron and AFRES airlift unit. Base activated June 12, 1941; named for 2d Lt. Samuel R. Keesler, Jr., WW I aerial observer, killed in action Oct. 9, 1918. Area: 1,576 acres. Altitude: 26 ft.

Kelly AFB, Tex. 78241; 5 mi. SW of San Antonio. Phone: (512) 925-1110. AUTOVON: 945-1110. AFLC base. Hq. San Antonio Air Logistics Center; Hq. USAF Security Service; AF Communications Security Center; AF Special Communications Center; USAF Environmental Health Laboratory; 433d Tactical Airlift Wing (AFRES); tactical fighter group (ANG). Base activated May 7, 1917; named for 2d Lt. George E. M. Kelly, first Army pilot to lose his life in a military aircraft, killed May 10, 1911. Area: 3,924 acres. Altitude: 689 ft.

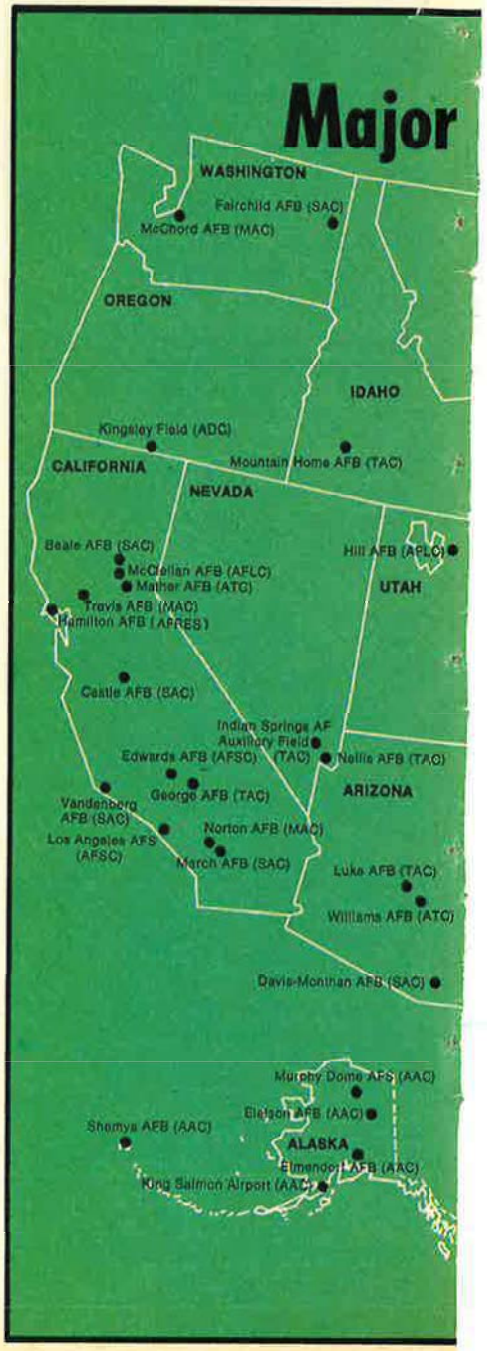
Kincheloe AFB, Mich. 49788; 20 mi. S of Sault Ste. Marie. Phone: (906) 495-5611. AUTOVON: 741-1110. SAC base. 449th Bomb Wing. Base first activated 1941 as Kinross AFB; later renamed for Capt. Iven C. Kincheloe, Jr., jet ace of Korean War and later X-2 test pilot, killed July 26, 1958, in F-104 crash. Area: 3,700 acres. Altitude: 799 ft.

King Salmon Airport, Alaska (APO Seattle 98713); 300 mi. SW of Anchorage. Phone: (907) 721-3550. AAC base. Furnishes air defense and aircraft warning for Alaskan Air Command. Activated in 1950. Area: 1,700 acres. Altitude: 57 ft.

Kingsley Field, Ore. 97601; 5 mi. SE of Klamath Falls. Phone: (503) 882-4411. AUTOVON: 620-1470. ADC base. Fighter-interceptor dispersed operating base. Formerly a naval air station, base was activated by USAF in April 1956; named for 2d Lt. David R. Kingsley, WW II B-17 bombardier and Medal of Honor winner, who was KIA on June 23, 1944. Area: 1,640 acres. Altitude: 4,081 ft.

Kirtland AFB, N. M. 87115; south of Albuquerque. Phone: (505) 264-0011. AUTOVON: 964-0011. AFSC base. Hq., AF Special Weapons Center, AF Contract Management Division, and AF Weapons Laboratory, AFSC. Furnishes nuclear, laser, airborne missile, and guidance research, development, and testing, contract management, and operational test and evaluation services for USAF. Base houses AF Test and Evaluation Center, New Mexico ANG, AFSC NCO Academy, AF Directorate of Nuclear Safety, Interservice Nuclear Weapons School, and Defense Nuclear Agency Field Command. Base activated Jan. 1941; named for Col. Roy S. Kirtland, air pioneer and Commandant of Langley Field in the 1930s, died in 1941. Area: 47,466 acres. Altitude: 5,352 ft.

K. I. Sawyer AFB, Mich. 49843; 16 mi. S of Marquette. Phone: (906) 346-6511. AUTOVON: 472-1110. SAC base. 410th Bomb Wing; ADC fighter-interceptor squadron. Base activated 1956;



named for Kenneth I. Sawyer, who proposed site for a county airport, died in 1944. Area: 4,800 acres. Altitude: 1,220 ft.

Lackland AFB, Tex. 78236; 8 mi. WSW of San Antonio. Phone: (512) 671-1110. AUTOVON: 473-1110. ATC base. Provides basic military training for airmen, precommissioning training for officers; technical training of basic, advanced security police/law enforcement personnel; patrol dog/handler courses; training of instructors, recruiters, and career-motivation counselors; social actions/drug abuse counselors; USAF marksmanship training; also site of USAF Personnel Research Lab (AFSC); USAF Occupational Measurement Center; Defense Language Institute English Language School, under US Army; Wilford Hall USAF Medical Center. Known as "The Gateway to the Air Force" for its role in providing basic training and indoctrination since activation in 1941; named for Brig. Gen. Frank D. Lackland, early Commandant of Kelly Field flying school, died in 1943. Area: 6,828 acres, including 4,017 acres at Lackland Training Annex. Altitude: 787 ft.

Langley AFB, Va. 23665; 3 mi. N of Hampton. Phone: (703) 764-9990. AUTOVON: 432-1110. TAC base. Hq. Tactical Air Command; 316th Tactical Airlift Wing (MAC); 5th Weather Wing; also houses ADC fighter-interceptor unit and Hq. Tactical Communications Area, AFCS. Base activated Dec. 30, 1916, is the oldest continuously active Air Force base in the US; named for aviation pioneer and scientist Samuel Pierpont Langley, who died in 1906. Area: 3,195 acres. Altitude: 10 ft.

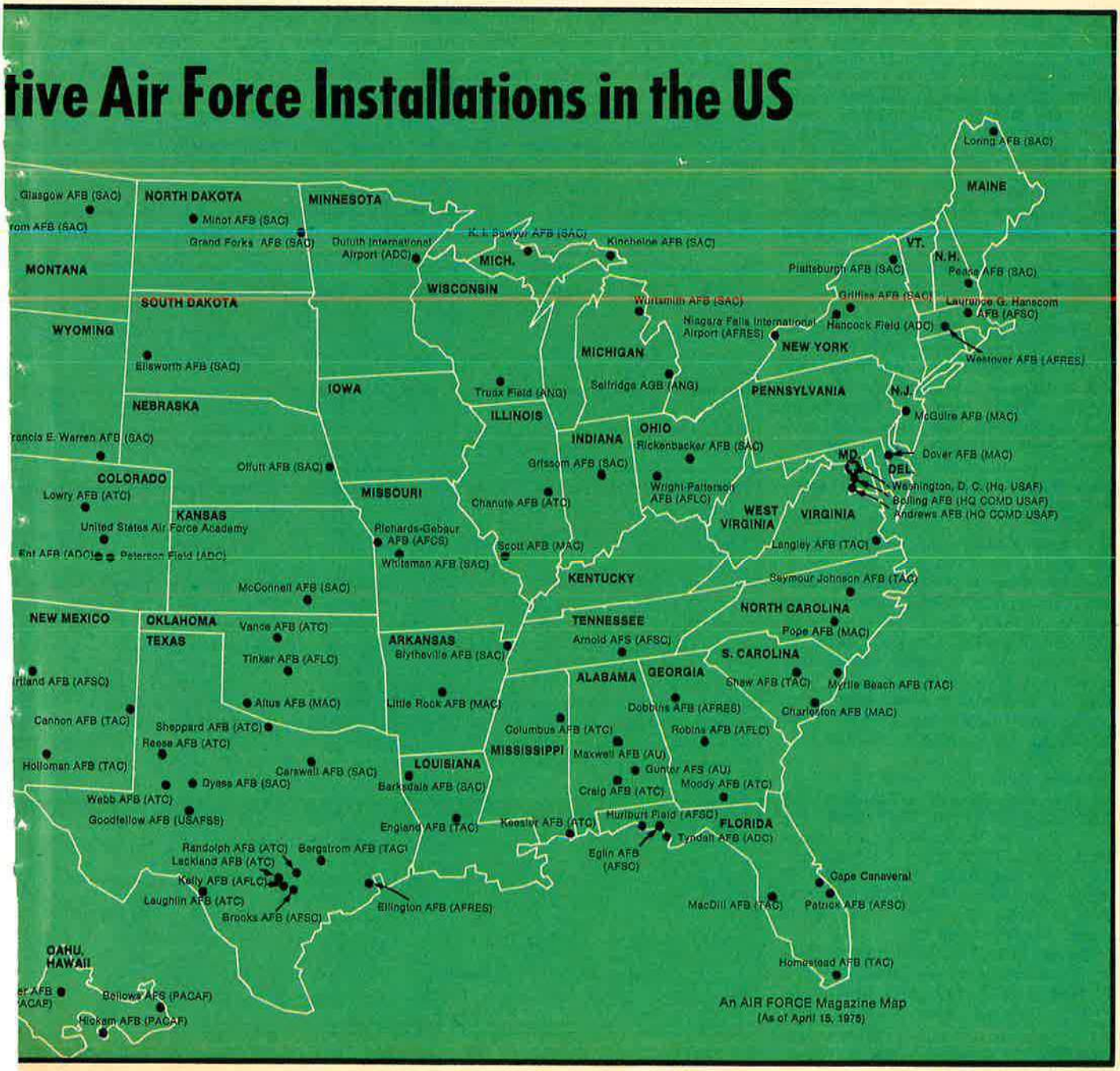
Laughlin AFB, Tex. 78840; 7 mi. E of Del Rio. Phone: (512) 298-3511. AUTOVON: 732-1110. ATC base. 47th Flying Training Wing, undergraduate pilot training. Base activated Oct. 1942; named for 1st Lt. Jack T. Laughlin, killed in action Jan. 29, 1942. Area: 3,908 acres. Altitude: 1,080 ft.

Laurence G. Hanscom AFB, Mass. 01731; 17 mi. NW of Boston. Phone: (617) 861-4441. AUTOVON: 478-4441. AFSC base. Hq. Electronic Systems Div., AFSC; also site of AF Cambridge Research Laboratories, AFSC, providing basic and applied research in electronics and geophysics. Joint federal-state use of the base began in 1946; named for Laurence G. Hanscom, pre-WW II advocate of private flying, killed in 1941 in a lightplane accident. Area: 1,668 acres. Altitude: 133 ft.

Little Rock AFB, Ark. 72076; 12 mi. NE of Little Rock. Phone: (501) 988-3131. AUTOVON: 731-1110. MAC base. 314th Tactical Airlift Wing; 308th Strategic Missile Wing; combat crew training; SAC Titan ICBM support base; SAC satellite base; ANG tactical recon group. Base activated in 1955. Area: 6,000 acres. Altitude: 310 ft.

Loring AFB, Me. 04751; 4 mi. W of Limestone. Phone: (207) 999-1110. AUTOVON: 920-1110. SAC base. 42d Bomb Wing. Base activated Feb. 25,

tive Air Force Installations in the US



1953; named for Maj. Charles J. Loring, Jr., WW II pilot killed Nov. 22, 1952, in North Korea; posthumously awarded the Medal of Honor. Area: more than 13,000 acres. Altitude: 746 ft.

Los Angeles AFS, Calif. 90045; 12 mi. SW of Los Angeles. Phone: (213) 643-1000. AUTOVON: 833-1110. AFSC support base. Hq. AFSC's Space and Missile Systems Organization (SAMSO); manages the development, production, test, and delivery of most of DoD's space and ballistic systems; 28 tenant units. Base activated Dec. 14, 1960.

Lowry AFB, Colo. 80230; 1 mi. SE of Denver. Phone: (303) 388-5411. AUTOVON: 926-1110. ATC base. Technical training center. Future home of the Air Force Accounting and Finance Center. Base activated Feb. 26, 1938; named for 1st Lt. Francis B. Lowry, killed in action Sept. 26, 1918. Area: 2,001 acres. Altitude: 5,400 ft.

Luke AFB, Ariz. 85309; 20 mi. WNW of Phoenix. Phone: (602) 935-7411. AUTOVON: 853-1110. TAC base. 58th Tactical Fighter Training Wing; houses SAGE region control center, NORAD, and Hq. 26th Air Division, ADC. Because of its 2,500,000-acre Gila Bend gunnery range, Luke is the largest fighter training base in the free world. Programs include training USAF pilots in F-4 and F-15; West German students in F-104G; and MAP training in F-5 (at nearby Williams AFB). Base activated in 1941; named for 2d Lt. Frank Luke, Jr., America's balloon-busting ace in WW I, winner of Medal of Honor, killed in action Sept. 29, 1918. Area: 4,008 acres plus 2,500,000-acre range. Altitude: 1,101 ft.

MacDill AFB, Fla. 33608; adjacent SSW of Tampa. Phone: (813) 830-1110. AUTOVON: 968-1110. TAC base. Hq. US Readiness Command; 1st Tactical Fighter Wing conducts replacement training in F-4E Phantoms. Base activated May 24, 1940; named for Col. Leslie MacDill, killed in airplane accident Nov. 8, 1938. Area: 6,000 acres. Altitude: 6 ft.

Malmstrom AFB, Mont. 59402; 4 mi. E of Great Falls. Phone: (406) 731-9990. AUTOVON: 632-1110. SAC base. 341st Strategic Missile Wing; also Hq. 24th Air Division, ADC; SAGE region control center, NORAD. Base activated Dec. 15, 1942; named for Col. Einar A. Malmstrom, WW II fighter commander, killed in T-33 accident Aug. 21, 1954. Site of SAC's first Minuteman wing, 1961. Area: 3,573 acres, plus about 23,000 sq. mi. in missile complex. Altitude: 3,525 ft.

March AFB, Calif. 92508; 9 mi. SE of Riverside. Phone: (714) 655-1110. AUTOVON: 947-1110. SAC base. Hq. 15th AF; 22d Bomb Wing; air rescue squadron (AFRES). Base activated Mar. 15, 1918; named for 2d Lt. Peyton C. March, Jr., who died in US of crash injuries Feb. 18, 1918. Area: 8,840 acres. Altitude: 1,530 ft.

Mather AFB, Calif. 95655; 12 mi. ENE of Sacramento. Phone: (916) 364-1110. AUTOVON: 828-1110. ATC base. 323d Flying Training Wing; USAF's only training installation for navigators, navigator-bombardiers, and electronic-warfare officers; also houses SAC's 320th Bomb Wing. Base activated Feb. 1918; named for 2d Lt. Carl S. Mather, killed in US Jan. 30, 1918, in midair collision. Area: 5,800 acres. Altitude: 96 ft.

Maxwell AFB, Ala. 36112; 1 mi. WNW of Montgomery. Phone: (205) 293-1110. AUTOVON: 875-1110. AU base. Hq. Air University, professional education center for USAF; site of Air War College, Air Command and Staff College, Squadron Officer School, Academic Instructor and Allied Officer School, AU Institute for Professional Development; Hq. Civil Air Patrol-USAF; tactical airlift group (AFRES). Base activated 1918; named for 2d Lt. William C. Maxwell, killed in air accident Aug. 12, 1920, Luzon, Philippines. Area: 3,161 acres. Altitude: 169 ft.

McChord AFB, Wash. 98438; 1 mi. S of Tacoma. Phone: (206) 984-1910. AUTOVON: 976-1110. MAC base. 62d Military Airlift Wing; Hq. 25th Air Division, ADC; fighter-interceptor squadron, ADC; SAGE region control center, NORAD; AFRES military airlift group. Base activated June 7, 1940; named for Col. William C. McChord, killed in crash Aug. 18, 1937. Area: 4,500 acres. Altitude: 550 ft.

McClellan AFB, Calif. 95652; 7 mi. NE of Sacramento. Phone: (916) 643-2111. AUTOVON: 633-1110. AFLC base. Hq. Sacramento Air Logistics Center; management, maintenance, and supply support of such AF weapon systems as F-111, A-10, F-100, F-104, F-105, and various communications systems; houses 940th Tactical Airlift Group (AFRES); USAF Environmental Health Laboratory; 9th Weather Reconnaissance Wing; aerospace rescue and recovery squadron. Base activated July 1936; named for Maj. Hezekiah McClellan, pioneer in Arctic aeronautical experiments, killed in crash May 25, 1936. Area: 2,583 acres. Altitude: 76 ft.

McConnell AFB, Kan. 67221; 5 mi. SE of Wichita. Phone: (316) 685-1151. AUTOVON: 962-1000. SAC base. 381st Strategic Missile Wing; 384th Air Refueling Wing; ANG F-105 squadron. Base activated June 5, 1951; named for Capt. Fred J. McConnell, WW II bomber pilot who died in crash of a private plane, Oct. 25, 1945; and for his brother, 2d Lt. Thomas L. McConnell, also a WW II bomber pilot, killed July 10, 1943, during attack on

GUIDE TO AIR FORCE STATIONS

In addition to the major facilities listed in this "Guide to Bases," USAF has a number of Air Force Stations (AFS) throughout the United States and overseas. These stations, for the most part, perform an air defense mission and house radar, SAGE, or AC&W units. Here is AIR FORCE Magazine's listing of those stations, with state and ZIP code.

Aiken AFS, South Carolina 29801
Albrook AFS, APO New York 09825
Almaden AFS, California 95042
Andersen AFS, APO San Francisco 96334
Antigo AFS, Wisconsin 54409
Baudette AFS, Minnesota 56623
Bedford AFS, Virginia 24523
Benton AFS, Pennsylvania 17814
Blaine AFS, Washington 98230
Boron AFS, California 93516
Bucks Harbor AFS, Maine 04618
Calumet AFS, Michigan 49913
Cambria AFS, California 93428
Campion AFS, APO Seattle 98703
Cape Canaveral AFS, Florida 32925
Cape Charles AFS, Virginia 23310
Cape Lisburne AFS, APO Seattle 98716
Cape Newenham AFS, APO Seattle 98745
Cape Romanzof AFS, APO Seattle 98706
Caswell AFS, Maine 04750
Charleston AFS, Maine 04426
Cold Bay AFS, APO Seattle 98711
Dauphin Island AFS, Alabama 36528
Empire AFS, Michigan 49630
Fallon AFS, Nevada 89406
Finland AFS, Minnesota 55603
Finley AFS, North Dakota 58230
Fort Lee AFS, Virginia 23801
Fort Fisher AFS, North Carolina 28449
Fort Yukon AFS, APO Seattle 98710
Fortuna AFS, North Dakota 59275
Gentile AFS, Ohio 45401
Gila Bend AFAF, Arizona 85337
Gibbsboro AFS, New Jersey 08026
Havre AFS, Montana 59501
Indian Mountain AFS, APO Seattle 98748
Kaala AFS, APO San Francisco 96786
Kalispell AFS, Montana 59922
Keno AFS, Oregon 97601
Klamath AFS, California 95548
Kotzebue AFS, APO Seattle 98709
Lake Charles AFS, Louisiana 70601
Lockport AFS, New York 14094
Makah AFS, Washington 98357
Martinsburg AFS, West Virginia 25401
Mill Valley AFS, California 94941
Minot AFS, North Dakota 58759
Montauk AFS, New York 11954
Mt. Hebo AFS, Oregon 97122
Mt. Laguna AFS, California 92048
Newark AFS, Ohio 43055
No. Bend AFS, Oregon 97459
No. Charleston AFS, South Carolina 29405
No. Truro AFS, Massachusetts 02652
Oklahoma City AFS, Oklahoma 73145
Opheim AFS, Montana 59250
Osceola AFS, Wisconsin 54020
Othello AFS, Washington 99344
Pillar Point AFS, California 94019
Point Arena AFS, California 95468
Port Austin AFS, Michigan 48467
Roanoke Rapids AFS, North Carolina 27870
San Antonio AFS, Texas 78209
Saratoga Springs AFS, New York 12866
San Pedro Hill AFS, California 90000
Sault Sainte Marie AFS, Michigan 49783
Savannah AFS, Georgia 31402
Sparrevohn AFS, APO Seattle 98746
St. Albans AFS, Vermont 05478
Sunnyvale AFS, California 94088
Tatalina AFS, APO Seattle 98747
Tin City AFS, APO Seattle 98715
Tonopah AFS, Nevada 89049
Watertown AFS, New York 13601

Bougainville. Area: 34,500 acres. Altitude: 1,371 ft.

McGuire AFB, N. J. 08641; 18 mi. SE of Trenton. Phone: (609) 724-2100. AUTOVON: 440-0111. MAC base. Hq. 21st AF; 438th Military Airlift Wing; C-141 associate AFRES squadrons; 514th Military Airlift Wing (AFRES); 108th Tactical Fighter Wing (ANG); Hq. N. J. ANG. Base adjoins Army's Ft. Dix; activated as AFB in 1949; named for Maj. Thomas B. McGuire, Jr., second leading US ace of WW II, holder of Medal of Honor, killed in action Jan. 7, 1945. Area: 5,000 acres. Altitude: 133 ft.

Minot AFB, N. D. 58701; 13 mi. N of Minot. Phone: (701) 727-4761. AUTOVON: 783-1110. SAC base. 91st Strategic Missile Wing; 5th Bomb Wing; also houses fighter-interceptor unit, ADC. Base activated Aug. 1959. Area: 5,151 acres plus additional 19,058 for missile sites. Altitude: 1,668 ft.

Moody AFB, Ga. 31601; 10 mi. NNE of Valdosta. Phone: (912) 333-4211. AUTOVON: 460-1110. ATC base. 38th Flying Training Wing, undergraduate pilot training. Base activated June 1941; named for Maj. George P. Moody, killed May 5, 1941, while testing Beech AT-10. Area: 5,000 acres. Altitude: 233 ft.

Mountain Home AFB, Idaho 83648; 56 mi. SE of Boise. Phone: (208) 828-2111. AUTOVON: 857-1110. TAC base. 366th Tactical Fighter Wing (F-111s). Base activated April 1942. Area: 6,639 acres. Altitude: 3,000 ft.

Murphy Dome AFS, Alaska (APO Seattle 98750); 20 mi. NW of Fairbanks. Phone: (907) 744-1202. AAC base. Air defense activities. Base activated Dec. 1950; named for veteran hard-rock miner John Murphy, who lived and worked in the area before the site was built. Area: 60 acres around immediate site but includes a total of 1,360 acres. Altitude: 2,990 ft.

Myrtle Beach AFB, S. C. 29577; 1 mi. SW of Myrtle Beach. Phone: (803) 238-7211. AUTOVON: 748-1110. TAC base. 354th Tactical Fighter Wing. Site of first operational A-7Ds. Base activated Mar. 1941. Area: 3,800 acres. Altitude: 25 ft.

Nellis AFB, Nev. 89191; 8 mi. NE of Las Vegas. Phone: (702) 643-1800. AUTOVON: 682-1800. TAC base. 57th Fighter Weapons Wing; 474th Tactical Fighter Wing; tactical fighter training, including F-111 combat crew training; site of USAF Tactical Fighter Weapons Center for test and evaluation of air tactics and AF equipment; home of the USAF Thunderbirds aerial demonstration team. Base activated July 1941; named for 1st Lt. William H. Nellis, WW II fighter pilot, killed Dec. 27, 1944, in Europe. Area: 3,000,000 acres (*see Indian Springs*). Altitude: 1,868 ft.

Niagara Falls International Airport, N. Y. 14304; 6 mi. E of Niagara Falls. Phone: (716) 297-4100. AUTOVON: 822-1470. AFRES base. ANG fighter group, and AFRES tactical airlift group. Base activated Jan. 1952. Area: 979 acres. Altitude: 590 ft.

Norton AFB, Calif. 92409; 59 mi. E of Los Angeles, within corporate limits of city of San Bernardino. Phone: (714) 382-1110. AUTOVON: 876-1110. MAC base. 63d Military Airlift Wing; Hq. Air Force Inspection and Safety Center; Hq. Air Force Audit Agency; Hq. Aerospace Audio Visual Service, MAC; also 445th Military Airlift Wing (Assoc.), C-141 AFRES associate unit. Base activated Mar. 2, 1942; named for Capt. Leland F. Norton, WW II bomber pilot, killed in an aircraft accident in France, May 1944. Area: 2,396 acres. Altitude: 1,156 ft.

Offutt AFB, Neb. 68113; 8 mi. S of Omaha. Phone: (402) 291-2100. AUTOVON: 271-1110. SAC base. Hq. Strategic Air Command; 55th Strategic Reconnaissance Wing; 544th Aerospace Reconnaissance Technical Wing; AF Global Weather Center; 3d Weather Wing; 3902d Air Base Wing. Base activated 1888 as the Army's Ft. Crook; landing field named in 1924 for 1st Lt. Jarvis J. Offutt, WW I pilot who died Aug. 13, 1918, from wounds; entire installation renamed Offutt AFB in 1946. Area: 1,907 acres. Altitude: 1,049 ft.

Patrick AFB, Fla. 32925; 2 mi. S of Cocoa Beach. Phone: (305) 494-1110. AUTOVON: 854-1110. AFSC base. Operates the AF Eastern Test Range in support of DoD, NASA, and other agency missile and space programs. Activated in 1940, base is airhead for Cape Canaveral AFS. Named for Maj. Gen. Mason M. Patrick, Chief of AEF's Air Service in WW I and Chief of the Air Service, 1921–27. Area: 2,332 acres. Altitude: 9 ft.

Pease AFB, N. H. 03801; 3 mi. W of Portsmouth. Phone: (603) 436-0100. AUTOVON: 852-1110. SAC base. 45th Air Division; 509th Bomb Wing; also houses tactical airlift group, ANG. Base activated 1956; named for Capt. Harl Pease, Jr., WW II B-17 pilot and Medal of Honor winner, killed Aug. 7, 1942, during attack on Rabaul, New Britain Island. Area: 4,373 acres. Altitude: 101 ft.

Peterson Field, Colo. 80914; 5 mi. E of Colorado Springs. Phone: (303) 591-7321. AUTOVON: 692-0111. Home of 4600th Air Base Wing, which supports North American Air Defense Command, Continental Air Defense Command, Aerospace Defense Command, Hq. 14th Aerospace Defense Force, and the NORAD Combat Operations Center. Peterson Field will eventually be home for all units and activities located at Ent AFB (*see Ent AFB*). Base activated in 1941; named for 1st Lt. Edward J. Peterson, who was killed Aug. 8, 1942, in aircraft crash at the field. Area: 980 acres. Altitude: 6,200 ft.

Plattsburgh AFB, N. Y. 12903; 2 mi. SW of Plattsburgh. Phone: (518) 563-4500. AUTOVON: 689-1110. SAC base. 380th Bomb Wing; medium bomber and tanker operations; FB-111 combat crew training. Established as military installation in 1814; activated as an Air Force base in 1955. Area: 3,100 acres. Altitude: 235 ft.

Pope AFB, N. C. 28308; 12 mi. NNW of Fayetteville. Phone: (919) 394-0001. AUTOVON: 486-1110. MAC base. 317th Tactical Airlift Wing; 1st Aeromedical Evacuation Group. Base adjoins Army's Ft. Bragg and provides tactical airlift support for airborne forces and other personnel, equipment, and supplies. Activated Sept. 1919; named for 1st Lt. Harley H. Pope, WW I flyer, killed Jan. 7, 1919, in a local crash. Area: 2,000 acres. Altitude: 218 ft.

Randolph AFB, Tex. 78148; 13 mi. ENE of San Antonio. Phone: (512) 652-1110. AUTOVON: 487-1110. ATC base. Hq. Air Training Command; 12th Flying Training Wing; Instrument Flight Center; T-37 and T-38 pilot instructor training; site of Air Force Military Personnel Center; Hq. USAF Recruiting Service; and Community College of the Air Force. Base activated Oct. 1931; named for Capt. William M. Randolph, killed Feb. 17, 1928, in a crash. Area: 2,618 acres. Altitude: 761 ft.

Reese AFB, Tex. 79401; 6 mi. W of Lubbock. Phone: (806) 885-4511. AUTOVON: 838-1110. ATC base. 64th Flying Training Wing, undergraduate pilot training. Base activated in 1942; named for 1st Lt. Augustus F. Reese, Jr., fighter pilot killed in Sardinia May 14, 1943. Area: 3,597 acres. Altitude: 3,338 ft.

Richards-Gebaur AFB, Mo. 64030; 17 mi. S of Kansas City. Phone: (816) 348-2000. AUTOVON: 465-1110. AFCS base. Hq. Air Force Communications Service; 442d AFRES Tactical Airlift Wing; AFCS NCO Academy. Base activated Mar. 1944; named for 1st Lt. John F. Richards and Lt. Col. Arthur W. Gebaur, Jr. Richards was killed Sept. 29, 1918, while on artillery-spotting mission. Gebaur was killed Aug. 29, 1952, over North Korea. Area: 2,418 acres. Altitude: 1,090 ft.

Rickenbacker AFB, Ohio 43217; 11 mi. SSE of Columbus. Phone: (614) 492-8211. AUTOVON: 950-1110. SAC base. 301st Air Refueling Wing; 121st Tactical Fighter Wing (ANG); 302d Tactical Airlift Wing (AFRES). Base activated April 1942. Formerly Lockbourne AFB, renamed on May 18, 1974, in honor of Capt. Edward V. Rickenbacker, America's leading WW I ace and aviation pioneer who died July 23, 1973. Area: 4,500 acres. Altitude: 744 ft.

Robins AFB, Ga. 31098; at Warner Robins, 18 mi. SSE of Macon. Phone: (912) 926-1110. AUTOVON: 468-1001. AFLC base. Hq. Warner Robins Air Logistics Center; Hq. AFRES; site of 19th Bomb Wing; mobile communications group, AFCS. Base activated Sept. 1941; named for Brig. Gen. Augustine Warner Robins, an early Chief of the Materiel Division of the Air Corps, died June 16, 1940. Area: 7,625 acres. Altitude: 295 ft.

Scott AFB, Ill. 62225; 6 mi. ENE of Belleville. Phone: (618) 256-1110. AUTOVON: 638-1110. MAC base. Hq. Military Airlift Command; hq. of two of MAC's services—Aerospace Rescue and Recovery Service and Air Weather Service; 375th Aeromedical Airlift Wing; AFRES associate aeromedical airlift group.

USAF'S MAJOR BASES OVERSEAS

Albrook AFS, Canal Zone
APO New York 09825
Hq. USAF Southern Command
Andersen AFB, Guam
APO San Francisco 96334
Hq. 3d Air Division, SAC
Ankara AS, Turkey
APO New York 09254
TUSLOG detachment, USAFE
Athenai Airport, Greece
APO New York 09223
Support base, USAFE
Aviano AB, Italy
APO New York 09293
Tactical group, USAFE

Bitburg AB, West Germany
APO New York 09132
Tactical fighter base, USAFE

Camp New Amsterdam, the Netherlands
APO New York 09292
Fighter-interceptor base, USAFE
Clark AB, Philippines
APO San Francisco 96274
Hq. 13th Air Force, PACAF

Erding AS, West Germany
APO New York 09060
Support base, USAFE

Frankfurt, West Germany
APO New York 09101
Support base, USAFSS

Goose AB, Labrador, Canada
APO New York 09677
Strategic bomber base, SAC

Hahn AB, West Germany
APO New York 09109
Tactical fighter base, USAFE
Howard AFB, Canal Zone
APO New York 09817
Support base, USAF Southern Command

Incirlik AB, Turkey
APO New York 09289
Tactical fighter base, USAFE
Iraklion AS, Crete
APO New York 09291
Support base, USAFSS
Izmir, Turkey
APO New York 09224
Support base, USAFE

Kadena AB, Okinawa
APO San Francisco 96239
Air division base, PACAF
Strategic operations, SAC
Keflavik Airport, Iceland
FPO (US Navy), New York 09571
Fighter-interceptor base, ADC
Korat AB, Thailand
APO San Francisco 96288
Tactical fighter base, PACAF
Kunsan AB, South Korea
APO San Francisco 96264
Tactical fighter base, PACAF

Kwangju AB, South Korea
APO San Francisco 96324
Combat support base, PACAF

Lajes Field, Azores
APO New York 09406
Airlift base, MAC
Lindsey AS, West Germany
APO New York 09633
Support base, USAFE

Misawa AB, Japan
APO San Francisco 96519
Support base, USAFSS
Moron AB, Spain
APO New York 09282
Support base, USAFE

Nakhon Phanom RTAB, Thailand
APO San Francisco 96310
US Support Activities Group, PACAF
Special operations base, PACAF

Osan AB, South Korea
APO San Francisco 96570
Air division base, PACAF
Tactical fighter base, PACAF

RAF Alconbury, United Kingdom
APO New York 09238
Tactical reconnaissance base, USAFE
RAF Bentwaters, United Kingdom
APO New York 09755
Tactical fighter base, USAFE
RAF Chicksands, United Kingdom
APO New York 09193
Support base, USAFSS
RAF Lakenheath, United Kingdom
APO New York 09179
Tactical fighter base, USAFE
RAF Mildenhall, United Kingdom
APO New York 09127
Hq. 3d Air Force, USAFE
Tactical airlift base, USAFE
RAF Sculthorpe, United Kingdom
APO New York 09048
Support base, USAFE
RAF Upper Heyford, United Kingdom
APO New York 09194
Tactical fighter base, USAFE
RAF West Ruislip, United Kingdom
APO New York 09218
Support base, USAFE
RAF Wethersfield, United Kingdom
APO New York 09120
Support base, USAFE
RAF Woodbridge, United Kingdom
APO New York 09405
Tactical fighter base, USAFE
Ramstein AB, West Germany
APO New York 09012
Hq. USAFE
Tactical fighter base, USAFE
Hq. European Command Area, AFCS
Rhein-Main AB, West Germany
APO New York 09057
Tactical airlift base, USAFE

San Vito dei Normanni AS, Italy
APO New York 09240
Support base, USAFSS
Sembach AB, West Germany
APO New York 09130
Hq. 17th Air Force, USAFE
Support base, USAFE
Shu-Lin-Kou AS, Taiwan
APO San Francisco 96360
Support base, USAFSS
Sondrestrom AB, Greenland
APO New York 09121
Support base, ADC
Spangdahlem AB, West Germany
APO New York 09123
Tactical fighter base, USAFE

Tachikawa AB, Japan
APO San Francisco 96323
Support base, PACAF
Taegu AB, South Korea
APO San Francisco 96213
Combat support base, PACAF
Tainan AS, Taiwan
AP San Francisco 96340
Support base, PACAF
Taipei AS, Taiwan
APO San Francisco 96280
Air division base, PACAF
Tempelhof Airport, Berlin, Germany
APO New York 09611
Support base, USAFE
Thule AB, Greenland
APO New York 09023
Aerospace defense base, ADC
Torrejon AB, Spain
APO New York 09283
Hq. 16th Air Force, USAFE
Tactical fighter base, USAFE

Ubon Airfield, Thailand
APO San Francisco 96304
Support base, PACAF
Udorn Airfield, Thailand
APO San Francisco 96237
Tactical fighter/reconnaissance base, PACAF
U-Tapao Airfield, Thailand
APO San Francisco 96330
Strategic bomber base, SAC
Combat support base, PACAF

Wiesbaden AB, West Germany
APO New York 09332
Support base, USAFE
Weather base, MAC

Yokota AB, Japan
APO San Francisco 96328
Hq. 5th Air Force, PACAF

Zaragoza AB, Spain
APO New York 09286
Tactical fighter training base, USAFE
Zweibrucken AB, West Germany
APO New York 09860
Tactical fighter/reconnaissance base, USAFE

Base activated June 14, 1917; named for Cpl. Frank S. Scott, first enlisted man to die in an air accident, killed Sept. 28, 1912. Area: 2,310 acres. Altitude: 453 ft.

Selfridge AGB (ANG), Mich. 48045; 3 mi. NE of Mount Clemens. Phone: (313) 465-1241. AUTOVON: 892-1790. ANG base. 127th Tactical Fighter Wing (ANG); 191st Fighter Interceptor Group (ANG); 403d Tactical Airlift Wing (AFRES); also hosts Navy Reserve, Marine Reserve, Army Guard and Reserve, and US Coast Guard Air Station for Detroit. Base activated July 1917; named for 1st Lt. Thomas E. Selfridge, first Army officer to fly in an airplane and first fatality of powered flight; killed Sept. 17, 1908, at Ft. Myer, Va., when plane piloted by Orville Wright crashed. Area: 3,660 acres. Altitude: 583 ft.

Seymour Johnson AFB, N. C. 27531; 2 mi. SSE of Goldsboro. Phone: (919) 736-0000. AUTOVON: 583-1110. TAC base. 4th Tactical Fighter Wing; 68th Bomb Wing. Base first activated June 12, 1941; named for Navy Lt. Seymour A. Johnson, killed in 1942. Area: 4,124 acres. Altitude: 109 ft.

Shaw AFB, S. C. 29152; 7 mi. WNW of Sumter. Phone: (803) 668-8110. AUTOVON: 965-1110. TAC base. Hq. 9th AF, TAC; RF-4C recon operations and training; 363d Tac Recon Wing; 507th Tac Air Control Group. Base activated Aug. 30, 1941; named for 2d Lt. Ervin D. Shaw, one of first Americans to see air action in WW I; killed in action July 9, 1918. Area: 3,257 acres and supports another 10,000 acres. Altitude: 252 ft.

Shemya AFB, Alaska (APO Seattle 98736); located at western tip of the Aleutian chain, midway between Anchorage, Alaska, and Tokyo, Japan. Phone: 572-3400. AAC base. Activated in 1943, Shemya was used as a bomber base in WW II. The International Date Line has been "bent" around Shemya so that local date is the same as elsewhere in the US. Area: about 4½ mi. long by 2½ mi. wide. Altitude: 270 ft.

Sheppard AFB, Tex. 76311; 4 mi. N of Wichita Falls. Phone: (817) 851-2511. AUTOVON: 736-1001. ATC base. Sheppard Technical Training Center; 80th Flying Training Wing; furnishes undergraduate pilot training for the German Air Force and for foreign students under Security Assistance Training (SAT). Base activated June 14, 1941; named for Morris E. Sheppard, US Senator from Texas, died in 1941. Area: 5,082 acres. Altitude: 1,015 ft.

Tinker AFB, Okla. 73145; 8 mi. SE of Oklahoma City. Phone: (405) 732-7321. AUTOVON: 735-1110. AFLC base. Hq. Oklahoma City Air Logistics Center; furnishes logistic support for bombers, jet engines, instruments, and electronics; hq., AFCS's Southern Communications Area; mobile communications group, AFCS; and AFRES tactical fighter group. Base activated May 1941; named for Maj. Gen. Clarence L. Tinker. On June 7, 1942, at the end of the Battle of Midway, General Tinker's LB-30 (an early model B-24) apparently went down at sea after attacking enemy ships retreating toward Wake Island. Area: 4,200 acres. Altitude: 1,291 ft.

Travis AFB, Calif. 94535; at Fairfield, 50 mi. NE of San Francisco. Phone: (707) 438-4011. AUTOVON: 837-1110. MAC base. Hq. 22d AF; 60th Military Airlift Wing; 349th Military Airlift Wing (AFRES); also houses SAC tanker operations; David Grant Medical Center. Base activated May 25, 1943; named for Brig. Gen. Robert F. Travis, killed Aug. 5, 1950, in a B-29 accident. Area: 6,000 acres. Altitude: 62 ft.

Truax Field, Wis. 53707; 2 mi. E of Madison. Phone: (608) 249-0461. AUTOVON: 884-1590. ANG base. Hq. 128th Tactical Air Support Wing (ANG). Named for 1st Lt. Thomas L. Truax, killed in a crash on Nov. 2, 1941. Area: 153 acres. Altitude: 859 ft.

Tyndall AFB, Fla. 32401; 7 mi. SE of Panama City. Phone: (904) 283-1113. AUTOVON: 970-1110. ADC base. Air Defense Weapons Center; conducts combat crew training for F-106 pilots; AF Civil Engineering Center. Base activated Dec. 7, 1941; named for 1st Lt. Frank B. Tyndall, WW I fighter pilot, killed in crash July 15, 1930. Area: 28,000 acres. Altitude: 18 ft.

Vance AFB, Okla. 73701; 3 mi. SSW of Enid. Phone (405) 237-2121. AUTOVON: 962-7110. ATC base. 71st Flying Training Wing, undergraduate pilot training. Base activated Nov. 1941; named for Lt. Col. Leon R. Vance, Jr., Medal of Honor winner, killed July 26, 1944, when air-evac plane returning him to the United States went down in the Atlantic near Iceland. Area: 1,603 acres. Altitude: 1,307 ft.

Vandenberg AFB, Calif. 93437; 8 mi. NNW of Lompoc. Phone: (805) 866-1611. AUTOVON: 276-1110. SAC base. Site of 1st Strategic Aerospace Division, SAC; Space and Missile Testing Center, AFSC; 6595th Aerospace Test Wing. Provides launch facilities and support for operational ICBM tests and missile crew training; research and development testing of Air Force space and ballistic missile programs; and unmanned polar-orbiting space operations of USAF, NASA contractors, *et al.* Originally Army's Camp Cooke; activated Oct. 1941, base was taken over by USAF June 7, 1957; renamed for Gen. Hoyt S. Vandenberg, USAF's second Chief of Staff, died Apr. 2, 1954. It is the only AFB from which are launched operational ballistic missiles in the SAC deterrent force and polar-orbiting satellites in US space program. About 1,300 launches have taken place from Vandenberg since Dec. 1958. Area: 98,400 acres. Altitude: 400 ft.

Warren AFB, Wyo. (*see Francis E. Warren AFB*).

Webb AFB, Tex. 79720; 4 mi. SW of Big Spring. Phone: (915) 267-2511. AUTOVON: 866-0111. ATC base. 78th Flying Training Wing, undergraduate pilot training. Base activated Sept. 25, 1942; named for 1st Lt. James L. Webb, WW II fighter pilot, killed in a crash in Japan, June 16, 1949. Area: 2,311 acres. Altitude: 2,561 ft.

Westover AFB, Mass. 01022; 5 mi. NE of Chicopee Falls. Phone: (413) 557-1110. AUTOVON: 589-1110. AFRES base. 439th Tactical Airlift Wing. Base activated Oct. 1939; named for Maj. Gen. Oscar Westover, Chief of the Air Corps, killed Sept. 21, 1938, in aircraft accident. Area: 2,500 acres. Altitude: 244 ft.

Wheeler AFB, Hawaii (APO San Francisco 96515); located near center of the island of Oahu. Phone: (808) 422-0531. PACAF base. Furnishes administrative and logistic support to the Hawaiian Air Defense Division (326th Air Division); Joint Coordination Center, Far East; tactical air support squadron. Also supports US Army flying activities from adjacent Schofield Barracks. Hq. of Pacific Communications Area, AFCS. Base activated Feb. 1922; named for Maj. Sheldon H. Wheeler, killed July 13, 1921, during aerial exhibition. Area: 1,423 acres. Altitude: 845 ft.

Whiteman AFB, Mo. 65301; 1.5 mi. S of Knob Noster. Phone: (816) 563-5511. AUTOVON: 975-1110. SAC base. 351st Strategic Missile Wing. Base activated 1942; named for 2d Lt. George A. Whiteman, shot down while taking off in a fighter plane from Wheeler Field, Hawaii, on Dec. 7, 1941, the first AF casualty of WW II. Area: 3,384 acres plus area encompassed by missile complex of about 15,660 sq. mi. Altitude: 869 ft.

Williams AFB, Ariz. 85224; 16 mi. SE of Mesa; 10 mi. E of Chandler. Phone: (602) 988-2611. AUTOVON: 474-1011. ATC base. 82d Flying Training Wing, largest undergraduate pilot training base; also provides F-5 combat crew training for foreign students. Base activated July 1941; named for 1st Lt. Charles L. Williams, killed in crash July 6, 1927, during aerial demonstration. Area: 3,867 acres. Altitude: 1,385 ft.

Wright-Patterson AFB, Ohio 45433; Fairborn, 10 mi. ENE of Dayton. Phone: (513) 257-1110. AUTOVON: 782-1110. AFLC base. Hq. Air Force Logistics Command; Hq. Aeronautical Systems Division, AFSC; Foreign Technology Division, AFSC; AF Institute of Technology; USAF Medical Center, Wright-Patterson; AF Contract Maintenance Center, AFLC; Air Force Museum; 17th Bomb Wing; plus more than 150 other DoD activities and government agencies. Originally separate, Wright Field and Patterson Field were finally merged and redesignated Wright-Patterson AFB on Jan. 13, 1948; named for aviation pioneers Orville and Wilbur Wright and for 1st Lt. Frank S. Patterson, killed June 19, 1918, in the crash of a DH-4. The Wright brothers did much of their early flying on Huffman Prairie, now Areas A and C of present base. Area: 8,147 acres. Altitude: 824 ft.

Wurtsmith AFB, Mich. 48753; 3 mi. NW of Oscoda. Phone: (517) 739-2011. AUTOVON: 623-1110. SAC base. 40th Air Division; 379th Bomb Wing. Base activated in 1926; assigned to SAC Apr. 1, 1960; named for Maj. Gen. Paul B. Wurtsmith, killed Sept. 13, 1946, in crash. Area: 5,200 acres. Altitude: 634 ft. ■

A GUIDE TO USAF'S R&D FACILITIES

The United States Air Force is the product of a technological breakthrough—the airplane. From its inception, USAF has been the nation's principal user as well as provider of aerospace technology. The Air Force's dependence on technology increases steadily and with it the importance of USAF's role as a catalyst of scientific and technological advance. The Air Force Systems Command (AFSC) and its many diverse components formulate and manage USAF's scientific and technological activities and programs. Presented here is a guide to all key installations of the AFSC divisions, centers, and laboratories, with a brief description of proposed FY '76 laboratory realignments.

Principal R&D Facilities

From AFSC headquarters at Andrews AFB, Md., Gen. Samuel C. Phillips, AFSC Commander, directs the operations of the Command's divisions, development and test centers, ranges, and laboratories. AFSC manages and controls approximately 200 installations, valued at more than $2 billion. Following is a descriptive listing of these organizations and facilities:

Special AFSC Divisions

Foreign Technology Division (FTD), Wright-Patterson AFB, Ohio—To prevent possible technological surprise by a potential enemy, the FTD acquires, evaluates, analyzes, and disseminates foreign aerospace technology, in concert with other divisions and centers. Information collected from a wide variety of sources undergoes screening and is processed in unique electronic data-handling and laboratory processing equipment. Then, it is analyzed by scientific and technical specialists who prepare reports, studies, and technical findings and assessments of potential hostile, technological, or operational environs with which USAF weapon systems must cope.

Aerospace Medical Division (AMD), Brooks AFB, Tex.—Conducts biomedical and biotechnical research, development, and test programs necessary to explore the capabilities and limitations of man in aerospace operations and enhance his ability to function as an integral part of the Air Force systems and operations. The Division provides clinical medical services and specialized advanced training and education in aerospace medical and paramedical specialties. AMD units include:

- **Wilford Hall USAF Medical Center,** Lackland AFB, Tex.—AMD's primary clinical facility has 1,100 beds and is the largest single-structure hospital in the Department of Defense. Postgraduate training in the form of internships, residencies, and fellowships is provided for medical, dental, administrative, and allied medical specialists.

- **6570th Aerospace Medical Research Laboratory,** Wright-Patterson AFB, Ohio—Specializes in theoretical and experimental medical research and development in the areas of biodynamics, human engineering, combined aerospace stress effects, and toxic hazards.

- **USAF School of Aerospace Medicine,** Brooks AFB, Tex.—Is concerned with research directed at the selection, care, and retention of pilots and other aircrew members, and specialized Air Force personnel. The School specializes in research into the effects of electromagnetic and ionizing radiation, atmosphere composition, and control and development of medical equipment needed specifically for aerospace operations.

Product Organizations

Space and Missile Systems Organization (SAMSO), Los Angeles AFS, Calif.—Manages DoD space and ballistic missile systems. Its responsibility for space systems development encompasses engineering, test, program management, installation, on-orbit tracking, command and control, and evaluation. SAMSO manages development of space boosters and related aerospace ground equipment for the launch and tracking of a wide variety of DoD and NASA payloads.

- **The Air Force Satellite Control Facility (AFSCF),** headquartered at Los Angeles AFS, conducts on-orbit real-time tests of more than thirty DoD satellites a day.

- **The Space and Missile Test Center (SAMTEC),** headquartered at Vandenberg AFB, Calif., provides field-test management for all DoD-directed ballistic and space programs. SAMTEC manages satellite launches from Vandenberg and Patrick AFB, Fla., as well as a variety of ICBM ballistic tests. The Test Center also operates the Western Test Range. SAMTEC launches are conducted by the Center's 6595th Aerospace Test Wing, composed of the 6595th Space Test Group and the 6595th Missile Test Group at Vandenberg AFB and the 6555th Aerospace Test Group at Patrick AFB.

Aeronautical Systems Division (ASD), Wright-Patterson AFB, Ohio—Is responsible for the development and acquisition of aeronautical systems as well as for tactical warfare and reconnaissance systems, subsystems, and related equipment.

Typical of the wide range of systems presently under ASD management are the F-15 air-superiority fighter; the B-1 advanced strategic bomber; the International Fighter, or F-5E; the F-16 Air Combat Fighter; and the Maverick, a television-guided, air-to-ground weapon.

Not only does ASD acquire new and advanced systems for the future, but it modernizes aircraft and nonballistic missiles of the force-in-being. In recent years, ASD has been deeply involved in a tactical warfare modernization program. Old aircraft have been modified and new ones developed for this purpose. Noteworthy are the AC-47 and AC-130 gunships and the A-7D attack aircraft. The new A-10 close-support aircraft is now under development.

Electronic Systems Division (ESD), Laurence G. Hanscom AFB, Mass.—Responsible for developing, acquiring, and delivering electronic systems and equipment for the command control and communications functions of aerospace forces.

These systems take many forms, such as undersea communications cables around the Indochina peninsula, line-of-sight and tropospheric scatter communications throughout the Mediterranean, the underground North American Air Defense Command (NORAD) combat operations center, long-range radars to warn of missile and aircraft attack, the air defense control net for the North American continent, equipment for improved weather forecasting, the free world's satellite detection and tracking network, and a new airborne radar-and-communications post, which can give the Air Force an instant air defense and tactical control system anywhere in the world at jet speed.

ESD is heavily involved in the application of computers to command and control problems and is the Air Force's center for evaluating contract proposals by computer manufacturers.

Development Centers and Labs

Director of Science & Technology, Andrews AFB, Md.—Located at the Systems Command headquarters, the Director of Science & Technology manages the command's research and development laboratories' programs and developments. Laboratories under the Director of Science & Technology supervision and their respective functional areas are:

- **Air Force Weapons Laboratory (AFWL),** Kirtland AFB, N. M.—Conducts research and development programs in

weapon effects and safety, fuzing, civil engineering, laser technology, and nuclear survivability/vulnerability.

• **Rome Air Development Center (RADC),** Griffiss AFB, N. Y.—Conducts research in electromagnetic energy conversion, signal detection and processing, computation and display, command control, and test and evaluation. RADC furnishes research and development and engineering support of intelligence devices, ground communications hardware, ground environment equipment for surveillance, aircraft approach and landing, ground-based navigation aids, and electronic warfare.

• **Air Force Rocket Propulsion Laboratory (AFRPL),** Edwards AFB, Calif.—AFRPL is responsible for conducting exploratory and advanced development programs in the areas of liquid rockets, solid rockets, hybrid rockets, advanced rocket propellants, and the development of ground support equipment. AFRPL carries out numerous system support programs for other units and divisions of AFSC, other branches of the armed services, and NASA.

• **Air Force Armament Laboratory (AFATL),** Eglin AFB, Fla.—AFATL is under the operational control of Armament Development and Test Center (ADTC). AFATL is the principal Air Force Laboratory performing research and development of free-fall and guided nonnuclear munitions and airborne targets and scorers. AFATL conducts exploratory and advanced development of aircraft armaments and performs engineering support to ADTC development activities that provide munitions products to operational forces. The wide span of interest includes chemical and fuel-air explosives, energy sources and conversions, electronic and mechanical devices, aerodynamics, terradynamics, etc., as well as bombs, dispensers, fuzes, flares, guns, and ammunition.

• **Air Force Human Resources Laboratory (AFHRL),** Brooks AFB, Tex.—AFHRL has operating locations at Lackland AFB, Tex.; Williams AFB, Ariz.; Lowry AFB, Colo.; Wright-Patterson AFB, Ohio; Maxwell AFB, Ala.; the Air Force Academy; and in Alexandria, Va. AFHRL is the principal Air Force organization planning and executing development programs in the fields of manpower, personnel, training, and education. AFHRL provides technical and management assistance to Hq. USAF, USAF major commands, other US military services, other US governmental agencies, and to military services of allied countries.

• **Air Force Cambridge Research Laboratories (AFCRL),** L. G. Hanscom Field, Mass.—AFCRL is the center for basic and exploratory research in the environmental and physical sciences. In electronics, programs are devoted to data processing and solid-state and microwave physics. Its geophysics programs include optical and radio solar astronomy, meteorology, physics and chemistry of the upper atmosphere, geodesy, and geology.

• **The Frank J. Seiler Research Laboratory (FJSRL),** USAF Academy, Colo.—This in-house laboratory is engaged in basic research concerned with the physical and engineering sciences. The research usually centers around chemistry, applied mathematics, and gas dynamics. FJSRL sponsors related research conducted by the faculty and cadets of the USAF Academy.

• **Air Force Office of Scientific Research (AFOSR),** Arlington, Va.—This unit serves as the liaison with universities and private research organizations. Liaison and research contacts with the scientific community, primarily educational institutions and individual scientists, cover most of the free world.

• **European Office of Aerospace Research (EOAR),** London, England—This unit is the link between the Air Force and the scientific communities in Europe, Africa, and the Near East.

Five laboratories are at Wright-Patterson AFB, Ohio:

• **Air Force Aero Propulsion Laboratory (AFAPL)** works in the areas of air-breathing, electric and advanced propulsion, fuels and lubricants, and flight vehicle power.

• **Air Force Materials Laboratory (AFML)** handles research in material sciences, metals and ceramics, nonmetallic materials, manufacturing technology, and materials application.

• **Aerospace Research Laboratories (ARL)** conduct primarily in-house research programs in the physical and engineering sciences together with a wide scope of consulting and applications activities related to these programs. Among the program areas are those of mathematics, aerodynamics, general plasma and solid-state physics, chemistry, energy conversion, and metallurgy and ceramics.

• **Air Force Flight Dynamics Laboratory (AFFDL)** is concerned with flight vehicle dynamics, performance, control, launching, alighting, and structures; crew station environmental control and escape; and aerodynamic decelerators.

• **Air Force Avionics Laboratory (AFAL)** conducts research and technology programs for electronic components, optics and photo materials, navigation and guidance, vehicle defense, electronic warfare, and communications.

As of Fiscal Year 1976, certain changes are expected in these and other AFSC laboratories. The Aerospace Research Laboratories will be disestablished and its functions shifted to other laboratories. The remaining four laboratories at Wright-Patterson AFB, plus certain functional elements of the Cambridge Research Laboratories and another laboratory are expected to form the nucleus of three new laboratories: (1) the Air Force Wright Aeronautical Laboratory, Wright-Patterson AFB; (2) the Command Control and Communications (C^3) Laboratory, Laurence G. Hanscom AFB, Mass.; and (3) the Air Force Geophysics Laboratory, Kirtland AFB, N. M.

Test and Evaluation Centers

Air Force Flight Test Center (AFFTC), Edwards AFB, Calif.—Responsible for test and evaluation of manned aircraft and aerospace vehicles. Conducts aircraft development testing and provides facilities for contractor tests and the functional tests and military demonstrations intended to determine the capability and suitability of a complete system in meeting established USAF requirements and design objectives. AFFTC is the home of the X-24B wingless plane, which is exploring the use of maneuverable reentry vehicles. The B-1, F-15, F-5E, and A-10 are currently being tested at AFFTC. The USAF Test Pilot School trains experimental test pilots to supervise and conduct flight tests of research, experimental, or production-type aerospace vehicles. Additionally, the school trains Aerospace Research Pilots for flight test, engineering design, and/or management in advanced aircraft and manned space research programs. The USAF Parachute Test Group, El Centro, Calif., develops recovery and retardation systems for DoD.

Air Force Special Weapons Center (AFSWC), Kirtland AFB, N. M.—The Center is principally responsible for evaluating nuclear systems, airborne missiles, aircraft fire control, inertial guidance, drones, missile reentry vehicles and aids, and advanced weaponry.

AFSWC operates a fleet of high-performance test-bed aircraft for evaluation of weapon systems and subsystems, guidance devices, and sensors over White Sands and other ranges. With a detachment at Indian Springs, Nev., it flies air support for underground nuclear testing, both for military and peaceful purposes. At Holloman AFB near Alamogordo, AFSC's 6585th Test Group conducts aerospace fly-before-you-buy test operations.

AFSWC's facilities include a 35,588-foot, precision rocket sled track where engineers and scientists evaluate aircraft crew escape capsules, guidance systems, reentry vehicles, fuzing devices, new missile concepts, and missile components in a dynamic environment, at speeds up to 4,000 mph.

The Center's Central Inertial Guidance Test Facility at Holloman evaluates the performance of inertial guidance systems for the Air Force and the other military services prior to procurement. The Radar Target Scatter Site provides radar cross-section signatures to make it easier to track aerospace vehicles, decoys, nose cones, and reentry bodies. (AFSWC to be disestablished in Fiscal Year 1976.)

Armament Development and Test Center (ADTC), Eglin AFB, Fla.—The Center manages the Air Force's nonnuclear munitions program. ADTC's primary mission is the development, testing, and initial purchase of all nonnuclear munitions. The Center also is responsible for the development and test of all nonnuclear munitions for the Air Force as well as the initial purchase of these munitions for the Air Force's inventory. Among the items developed and tested by ADTC are bombs, mines, dispensers, and fuzes. In addition, the Center conducts research and development testing of aeronautical systems, such as aircraft and their associated missiles and airborne electronic warfare devices.

Arnold Engineering Development Center (AEDC), Arnold AFS, Tenn.—This center is the largest complex of wind tunnels, high-altitude jet and rocket engine test cells, space environmental chambers, and hyperballistic ranges in the free world. The Center's mission is to ensure that aerospace hardware—aircraft, missiles, spacecraft, jet and rocket propulsion systems, and other components—will "work right the first time they fly." Tests are conducted for federal agencies, the Army, Navy, Air Force, and private companies. These customers reimburse AEDC for the costs of conducting their tests. Currently valued at more than $650 million, AEDC began its first tests in the early 1950s. ARO, Inc., is the operating contractor.

Among the Center's thirty-eight test units are some of the largest and most adaptable of their respective types currently available for testing. They subject aerospace systems to objective testing across a broad range of realistic and repeatable conditions—often with engines operating. Full-size hardware or scale models can be tested at Arnold under conditions precisely matching altitudes of up to 1,000 miles and velocities up to twenty-three times the speed of sound.

Air Force Eastern Test Range (AFETR), Patrick AFB, Fla.—AFETR is an operational component of the Air Force Systems Command. Executive management responsibility for AFETR is assigned to Hq., AFETR, Patrick AFB, Fla. The Eastern Test Range extends southeastward from Cape Canaveral across the Atlantic Ocean to ninety degrees east longitude in the Indian Ocean. Support capability is provided by a number of ground tracking stations, sites, and a fleet of instrumented ships and aircraft to provide mobile support in remote areas. Each station and tracking system is configured to complement the integrated range network.

GUIDE TO NASA'S RESEARCH CENTERS

The National Aeronautics and Space Administration (NASA) continues to operate a number of research, development, test, and evaluation (RDT&E) facilities that frequently participate in or coordinate their work with USAF R&D programs.

Following is a descriptive listing of key NASA installations:

Ames Research Center, Moffett Field, Calif.—Ames conducts laboratory and flight research such as atmospheric reentry, fundamental physics, materials, chemistry, life sciences, guidance and control, aircraft supersonic flight, aircraft operational problems, and V/STOL. It manages such spaceflight programs as Pioneer.

Flight Research Center, Edwards AFB, Calif.—Flight Research Center is concerned with manned flight within and outside the atmosphere, including low-speed, supersonic, hypersonic, and reentry flight, and aircraft operations. Examples of its studies are lifting bodies (wingless vehicles whose bodies provide lift in the atmosphere) and integration between man and technological systems and vehicles.

Goddard Space Flight Center, Greenbelt, Md.—Goddard Space Flight Center is responsible for a broad variety of unmanned earth-orbiting satellites and sound-rocket projects. Among its projects are Orbiting Observatories, Explorers, Nimbus, Applications Technology satellites, and Earth Resources Technology satellites. Goddard is also the nerve center for the worldwide tracking and communications network for both manned and unmanned satellites.

Jet Propulsion Laboratory, Pasadena, Calif.—Jet Propulsion Laboratory is operated for NASA by the California Institute of Technology. The laboratory's primary role is investigation of the planets. It also designs and operates the Deep Space Network, which tracks, communicates with, and commands spacecraft on lunar, interplanetary, and planetary missions.

John F. Kennedy Space Center, Fla.—The Center makes preflight tests and prepares and launches manned and unmanned space vehicles for NASA. Launches from the Pacific Coast are conducted by the KSC Western Test Range Operations Division at Lompoc, Calif.

Langley Research Center, Hampton, Va.—Oldest of the NASA centers, Langley has the task of providing technology for manned and unmanned exploration of space and for improvement and extension of performance, utility, and safety of aircraft. Langley devotes more than half its efforts to aeronautics. The Center is charged with overall project management for Viking.

George C. Marshall Space Flight Center, Marshall Space Flight Center, Ala.—Launch vehicles for Apollo and other major missions are designed and developed by George C. Marshall Space Flight Center. The Center is concerned with launch vehicles of the Saturn class, as well as payloads, related research, and studies of advanced space transportation. The Center is responsible for development of Skylab components.

Wallops Flight Center, Wallops Island, Va.—Wallops Station is one of the oldest and busiest ranges in the world. Some 300 experiments are sent aloft each year on vehicles that vary in size from small meteorological rockets to the four-stage Scout with orbital capability. A sizable effort is devoted to aeronautical research and development.

Lewis Research Center, Cleveland, Ohio—*Aircraft and rocket propulsion* and electric power generation in space are among the major programs of Lewis. These take the Center into such studies as metallurgy, fuels and lubricants, magnetohydrodynamics, and ion propulsion. Lewis has technical management of the Agena and Centaur rocket stages.

Lyndon B. Johnson Space Center, Houston, Tex.—The Center designs, tests, and develops manned spacecraft and selects and trains astronauts. It directs the Space Shuttle program. Mission Control for manned spaceflight is located at the Center.

National Space Technology Laboratories, Bay St. Louis, Miss.—This laboratory complex conducts remote sensing as well as environmental and related research. Other responsibilities include developmental testing of the Space Shuttle's main engine. ■

to approve any of them," a Hq. USAF official told AIR FORCE Magazine.

Headquarters recently disclosed that the Junior AFROTC program, now affiliated with 266 high schools, will expand to 275 schools next fiscal year. Student enrollment will increase from about 32,000 to 35,000. The cost of the Junior program to USAF is $3.7 million this year.

Five college AFROTC units will be disestablished next month: Otterbein (Ohio), University of the South (Tenn.), Davis and Elkins (W. Va.), Drake (Iowa), and Fordham (N. Y.). The first three were slated to disappear last year, but got reprieves.

The following twelve university units will close by the spring of 1976: Livingston (Ala.), Arkansas at Monticello, Catholic (D. C.), Butler (Ind.), Detroit, St. Louis, Montana, Tulsa, Willamette (Ore.), Duquesne (Pa.), Sul Ross State (Tex.), and Southern Utah State. The "operating unit" at Maryland's Eastern Shore University will become a regular unit next year.

Commissary Letters Pile Up

The thousands of persons who have written the Secretary of Defense protesting his plan to boost commissary prices to cover store operating costs "are wasting their time, because their message isn't getting through." Those letters are stacked in boxes in a remote DoD sub-office far from Dr. Schlesinger's E-Ring suite in the Pentagon.

An official, pointing to a stack estimated at 5,000 "save-the-commissary" letters, said, "the Secretary doesn't see them. The writers should have sent them to members of Congress," where they could be added to the mountain of complaints the lawmakers have received.

About "one in a thousand" commissary letters supports the Secretary, the official said. Many are extremely heated; a few are unprintable.

Persons who write the Defense Department receive in return a "fact sheet" titled "Self-Sustaining Commissary Stores," which contains a brief summary of the Department's position. It says the size of the rise in commissary prices isn't known.

Both the House Appropriations Committee and the House Armed Services Committee were planning spring hearings on the commissary issue. The latter group is more sympathetic to military members' needs, but the Appropriations unit controls the purse strings. Last year, it rejected the Pentagon's bid for commissary construction and maintenance funds.

USAF Home Building Slumps

The Air Force is earmarked for only 200 new family housing units —at Clark AB, P. I.—in the Defense Department's FY '76 construction program, compared with 2,100 units for the Army and 1,128 for the Navy. The USAF figure is the lowest in memory.

"We went in for many more than the 200," an Air Force authority said. He was more pleased with the $51 million (including $16 million for energy-conservation projects) the measure contains for improvements to existing USAF family housing. This is in line with the service's overall plan to pour about $200 million into refurbishing, over the next five years, the 35,000–40,000 units that need enlarging and modernization.

The Army's 2,100-unit program for FY '76 is split between the three installations getting new divisions—Forts Polk, La.; Stewart, Ga.; and Ord, Calif. Polk, until now a training base, will get 1,000 new units.

The new construction package also asks a slight increase in funds to lease civilian housing, to an average of $245 per month with a ceiling on any one unit of $325. This housing in the States is mainly for recruiters stationed in cities and removed from commissaries, exchanges, etc. Saying even these figures were unrealistic, the official indicated that during upcoming congressional hearings, the services plan to ask as much as $400 per month for a single rental unit. Air Force wants funds to lease 2,815 Stateside homes and 2,690 overseas in FY '76.

Without explanation, the bill seeks authority to build:

- Twelve family housing units "at various locations" for the Defense Intelligence Agency, at a total cost not to exceed $1.32 million. That's an average of $110,000 per unit. None of these is for USAF sites, a source said.
- Three family units in Cairo, Egypt. Total ceiling outlay: $180,000.

The construction measure, containing total requests Defense-wide of $4.2 billion, covers the fifteen-month period July 1, 1975–September 30, 1976. More than fifty USAF bases will share in the projects. The final outcome, however, is several months away because Congress must screen the requests through the Armed Services and Appropriations Committees.

Academy Attrition Woes Ease

The Air Force Academy's class of 1975, hit with a jarring forty-six percent attrition the past four years, will graduate only about 750 new officers next month. But authorities say things are looking up, as new reports from Hq. USAF forecast six percent lower attrition in the classes of 1976 and 1977. Attrition so far in the freshman class is greatly reduced over more recent classes, they say.

Lt. Gen. Robert A. Patterson, USAF's Surgeon General since August 1972, accepts AFA's Citation of Honor from Jess Larson, AFA National Director. The Association applauded General Patterson's "innovative and dynamic leadership" that led to USAF's "preeminence in military health care."

The class of 1976, which had a large initial enrollment, is expected to graduate about 950 new lieutenants.

The improved production forecasts spring from strong internal efforts to improve cadet selection, communication with applicants, and the school's training program. Prospective cadets have gotten a more "realistic view" of what they should expect, according to USAF.

Youths, meantime, are bombarding USAF for cadet appointments.

The Bulletin Board

The current freshman class of 1,630 was chosen from 7,562 nominees, and huge numbers have applied for this year. While AFROTC and OTS production drops, Air Force plans to increase Academy production if at all possible, even if it is forced to continue reducing overall officer strength.

Civilians' Courses Pushed

Air Force has reminded its civilian employees of the special off-duty study programs available to them.

For courses designed to improve employee performance and help USAF meet future staffing and mission needs, the government pays up to 100 percent of the cost. This is the "job-related" phase of the program.

Other Air Force civilians participate in the "self-development" phase, attending off-duty courses at all academic levels. But they must pay the fees themselves. Supervisors have authority to adjust work weeks so that employees can take advantage of the courses.

The service, meanwhile, is encouraging civilian employees to take the correspondence courses sponsored by the Extension Course Institute. There are 400 ECI courses in all, with various career development subjects accounting for more than 300. Management-oriented courses are offered in the professional military education category.

Base education offices will provide details of the regular off-duty and the ECI programs.

In other civilian employee developments:

• USAF announced a cut, by July, of 3,675 civilian positions at Logistics Command bases. Actual firings will be curtailed, however, because 2,000 of the cuts will be handled by normal attrition. Tinker AFB, Okla., will lose 1,150 of the spaces.

• John T. McConathy is the new Director of Civilian Personnel, replacing W. J. Abernethy, who has retired. Mr. McConathy began his Air Force career in 1951 at Hq. USAF. He later held civilian personnel posts in Spain, in Japan, at the San Antonio Air Materiel Area, and at SAC. As Director, he heads the planning and administering of the 270,000-member civilian personnel force.

On April 8, Maj. Gen. Homer I. Lewis ended a four-year appointment as Chief of the Air Force Reserve. He was replaced by Maj. Gen. William Lyon (see p. 102). *A WW II B-17 pilot and earlier Reserve Deputy to the Headquarters Command commander, General Lewis now lives in Eagle Pass, Tex.*

Personalities

"Best Cop in the Air Force" is the accolade The USAF Inspector General, Lt. Gen. Donald G. Nunn, extended to **Col. Billy Jack Carter** recently. The occasion was the transfer of the Security Police Directorate, which Carter headed, from the IG's office to the special staff of the USAF Chief of Staff.

Carter then became a deputy to Maj. Gen. (selectee) Thomas Sadler, whose new title is Chief of Security Police. General Nunn said the elevation of the police organization means that SP officers "will soon be competing strongly" for star rank.

Chief Master Sergeant of the Air Force Thomas N. Barnes has been extended for a year as the service's top NCO, which will make him the first "chief" to hold the post three years. Barnes, whose Pentagon office is just two brief turns from the Chief of Staff's office, has also been appointed to the USAF Discharge Review Board. He's one of five E-8s and E-9s to join the heretofore all-officer panels that pass on requests from former airmen to have their discharges upgraded.

USAF has named a veteran information officer as Deputy Informa-

tion Director in the Office of the Air Force Secretary. He's **Col. Harry J. (Jerry) Dalton,** recently chief IO for ATC. An able professional, Dalton is highly respected among the media. Heretofore, the practice has been to give the normally one-star billet to an operational type with little or no information background.

Capt. Barry Robinson, Bolling AFB, D. C. (*see photo, p. 160*), has been appointed to the Presidential Clemency Board, where he will help determine the destiny of Vietnam-era convicted deserters and court-martial offenders. Captain Robinson, twenty-nine, is a New York Univer-

Ed Gates . . . Speaking of People

Retirement and Pay—A Trio of Problems

Three major unresolved problems concerning military retirement combine to stir up both active-duty and retired members more than any other current personnel issue. And the trio is likely to continue in that role, despite strong competition generated by the "battle of the commissaries."

The fuss over retirement policies began in the late 1960s when, following the proliferation of active-duty raises, many people became alarmed because retired pay was not being recomputed on the rising pay scales.

The "recomp" fight has stayed hot ever since, though proponents have modified their demands—from full recomputation to a one-shot plan, at age sixty, based on January 1, 1972, pay scales. Currently, sixteen military-oriented groups (including the Air Force Association) are supporting such a measure sponsored by Rep. Bob Wilson (R-Calif.). Similar proposals have failed over the past three years, however, and prospects of favorable action in 1975 are considered poor.

One new argument being advanced for recomputation: it's a proper way to pump new money into the depressed economy.

As recomp waits, so do two other sensitive and related issues: "pay inversion" and Defense's now bewhiskered plan to overhaul the present retirement system. The latter is known as the Retirement Modernization Act (RMA).

Because it exists, frustrates many people, and promises no early solution, the inversion problem is the more critical. Retired pay percentage increases have been rising much faster than active-duty pay. The result is that a new retiree receives less pay than one of the same grade and service who retired previously. That's pay inversion.

The situation could worsen, if percentage increases in retired pay continue to exceed those in active-duty pay, and if corrective legislation, which has been introduced, is not passed. But if active-duty pay should rise at a rate close to the CPI raises in retired pay, the inversion problem could be reduced for future annuitants. A sufficiently large active-duty hike might even end the inversions.

But the uncertainties are many, and those eligible for retirement don't know what to do—depart now, next fall after the next active-duty raise, or later. And Air Force can't provide guidance—it doesn't know what's going to happen.

The uncertainties include a possible (1) "save-pay" law barring retired-pay loss because of additional active service; (2) suspension until mid-1976 of retired-pay increases, as the President has requested; (3) a sharp cut in the inflation rate; and (4) elimination of the one percent "add-on" to each retired raise.

Also in doubt is the size of next October's active-duty raise and the impact of current pay studies on future retired-pay determinations.

The Pentagon, meantime, for the third straight year is booming the Retirement Modernization Act. Congress ignored the plan the past two years, although a House Armed Services subcommittee did give it a brief look. It has promised more attention this year, but the final outcome is uncertain.

The RMA would make major changes in existing retirement rules, some popular, some not. In the former category is a new vesting system providing separation pay for as little as five years of service. Heartily disliked throughout the service community, however, are two major provisions which (1) phase down the present fifty percent retirement to thirty-five percent; and (2) lay on a Social Security offset—reduction—plan at sixty-five.

But these features will eventually save money, Defense says. In its recent round of presentations on the FY '76 budget and military posture, Pentagon officials again stressed that retirement costs have increased 400 percent during the last decade.

The RMA plan, they hold, "will ultimately decrease the cost of the military retirement program." And they note that the RMA's "save-pay features . . . guarantee a future retiree at least as much monthly retired pay" as all similar members who retired before him. (RMA, in effect, would end the pay inversion snafu.)

The revised program under RMA would still be one of the "most generous retirement programs in general use," the latest Defense Department statements to Congress declare.

While recomputation, pay inversion, and the RMA issues remain unresolved, the retired force is continuing its inexorable expansion. New official statistics show that Defense-wide the retiree population now exceeds 1,000,000. By June 30 it will hit 1,046,000, and by mid-1985 1,400,000. The retired population will vault to an estimated 1,800,000 by the turn of the century.

The new statistics also show that retirements for disability continue to plunge. Defense-wide, only about thirteen percent of the annuitants are in the disability category. Not many years ago, well before the services invoked tough disability exit standards, nearly twenty-five percent of the retired community drew disability retirement pay (and enjoyed the tax break that accompanies it).

The Administration's estimated retirement pay outlay for the current fiscal year is $6.3 billion (including $64 million in survivor benefits payments), and nearly $6.9 billion in FY '76. The latter figure will rise if Congress rejects the President's plea to suspend retired raises through mid-1976.

More and more, Pentagon officials are underscoring increased retired pay outlays in their presentations to the lawmakers. Other than the modest long-range cost-savings features of the RMA, they have not yet advanced any specific proposals to scale back projected expenditures. But some insiders suggest it's only a matter of time before such proposals surface.

The Air Force, meanwhile, is about to pass the Army as the service with the largest number of retirees. New figures show Army, as of last June 30, with 342,000 retired members, USAF with 336,000. But the projection calls for 357,000 Army, 365,000 Air Force by this coming June 30, with USAF pulling farther ahead the following year.

By September 30, 1976, according to the estimates, the Air Force retired rolls will contain nearly 400,000 names.

As the retired community continues its growth, it should be able to exercise more muscle, with a better chance of securing favorable resolution of the problems cited above. ■

The Bulletin Board

sity Law School graduate and one of twenty-three black USAF Judge Advocates. The nine-member board, which has a backlog of some 11,000 clemency applications, advises the President on disposition. The board and staff are expanding to tackle the large task the applications have presented.

Short Bursts

In trying to shake out the many **bugs in the new Officer Effectiveness Report system,** Hq. USAF has fired off a steady stream of OER messages, clarifications, fact sheets, etc., to the field. Program managers have had a rough time, but they think daylight lies ahead. And they're being spurred on by Chief of Staff Gen. David C. Jones and other high authorities who are determined to make the new set-up work.

Accepting a recommendation from last summer's USAF-wide Career Motivation Conference, Headquarters has directed that members leaving active duty will receive not one, but two briefings on why they should **join the Reserve or Air Guard.** The counselings will take place six months and one month before departure.

Taking a jogging break is AF Capt. Barry Robinson, named to the Presidential Clemency Board. He is a Bolling AFB, D. C., Judge Advocate.

Beginning September 27, most government personnel files, USAF's included, will be **open for personal review, copying, and correction.** That's when the new Privacy Act is effective. Procedures for examining records are due out soon.

The names of **USAF selection board** members are no longer secret; they'll be made public when lists of persons chosen for promotion, Regular commissions, service schools, etc., are released. This is a major policy change that adds visibility to the promotion program. For years, Air Force resisted pressure to disclose board members' names. But Defense recently convinced USAF to go along.

Regulations have been tightened to make sure that **bachelor officer and NCO quarters** are inspected as often as airmen dormitories. At some bases the former weren't inspected, according to IG teams. The crackdown could touch off new gripes from bachelors generally, *e.g.*, "Why should we be inspected when base family quarters are exempt?"

While authorities say that **PALACE FIRST,** the program designed to improve the image of the First Sergeant, "has been successful," USAF says it's still having trouble getting NCOs to volunteer for training into the skill. The result: Phase II of the project, under which the Military Personnel Center is contacting "highly qualified potential" members for retraining into the first-sergeant field. ■

Senior Staff Changes

PROMOTIONS: Nominated to be **Major General,** Air Force Reserve: Richard **Bodycombe;** Vincent S. **Haneman,** Jr.; Gilbert O. **Herman;** Edwin R. **Johnston;** David **Waxman.**

To be **Brigadier General,** Air Force Reserve: Charles E. **Corcilius;** Thomas A. **Diab;** Donald P. **Dressler;** Robert K. **Elliott;** Joseph W. **Kovarick;** Jack N. **Kraras;** John E. **Lacy;** Walter R. **Longanecker,** Jr.; John E. **Taylor,** Jr.; Justin L. **Townsley;** James L. **Wade;** Edwin D. **Woellner,** Jr.

RETIREMENTS: M/G Kenneth R. **Chapman;** B/G William F. **Georgi;** M/G John R. **Kern,** Jr.; M/G Homer I. **Lewis;** M/G Herbert A. **Lyon;** B/G Milton E. **Nelson.**

CHANGES: Col. (B/G selectee) Walter H. Baxter III, from V/C, Keesler TTC, ATC, Keesler AFB, Miss., to Cmdr., Thirteenth AF (ADVON), PACAF, Udorn Afld., Thailand . . . **B/G James R. Brickel,** Dep. Dir., SAF/OI, Hq. USAF, Washington, D. C., to Comdt., AFROTC, AU, Maxwell AFB, Ala. . . . **Col. (B/G selectee) Philip C. Gast,** from Cmdr., 38th Flying Tng. Wg., ATC, Moody AFB, Ga., to V/C, San Antonio ALC, AFLC, Kelly AFB, Tex., replacing B/G Willum H. Spillers, Jr. . . . **Col. (B/G selectee) Don M. Hartung,** from Asst. DCS/Acq. Log., AFLC, Wright-Patterson AFB, Ohio, to Cmdr., Air Force Eastern Test Range, AFSC, Patrick AFB, Fla.

B/G Robert T. Herres, from Dir., Comd. Control, DCS/O, SAC, Offutt AFB, Neb., to Dep. for Security Assistance Programs, ESD, AFSC, Hanscom AFB, Mass. . . . **B/G (M/G selectee) Lovic P. Hodnette, Jr.,** from Dir. of Recon. & Electronic Warfare, DCS/R&D, Hq. USAF, Washington, D. C., to Dir. of Opnl. Rqmts. & Dev. Plans, DCS/R&D, Hq. USAF, Washington, D. C., replacing M/G Alton D. Slay . . . **M/G Richard L. Lawson,** from Mil. Asst. to the President, the White House, Washington, D. C., to Dir. of Plans, DCS/P&O, Hq. USAF, Washington, D. C. . . . **Maj. Gen. William Lyon,** from Mob. Asst. to CinC, SAC, Offutt AFB, Neb., to Chief, AFRES, Hq. USAF, Washington, D. C., replacing retiring Maj. Gen. Homer I. Lewis . . . **M/G Billie J. McGarvey,** from Dir. of Civil Eng., DCS/P&R, Hq. USAF, Washington, D. C., to Asst. DCS/P&R, Hq. USAF, Washington, D. C., replacing retiring M/G John R. Kern, Jr. . . . **M/G Warner E. Newby,** from DCS/Log., MAC, Scott AFB, Ill., to Cmdr., SAMTEC, AFSC, Vandenberg AFB, Calif., replacing retiring M/G Herbert A. Lyon.

B/G Benton K. Partin, from Dep. Dir. of Dev. & Acq., DCS/R&D, Hq. USAF, Washington, D. C., to Dep. for Systems, ASD, AFSC, Wright-Patterson AFB, Ohio . . . **Col. (B/G selectee) John R. Paulk,** from Cmdr., 81st TFW, USAFE, RAF Bentwaters, England, to V/C, Ogden

New Trends in Systems and Logistics

A Symposium sponsored jointly by the Air Force Association and the National Security Industrial Association . . .

This special forum for industry executives will discuss and explain the Air Force's critical requirement for cost reduction, with special emphasis on Life Cycle Costs.

The Program will highlight an array of top Air Force leaders, including:

Dr. John L. McLucas
Secretary of the Air Force

General William V. McBride
Commander AFLC

General Samuel C. Phillips, Commander AFSC

9:00 a.m.—5:00 p.m.
Tuesday, June 24, 1975
Air Force Museum Auditorium
Wright-Patterson AFB, Dayton, Ohio

(This symposium was originated and is cohosted by the Ohio AFA and the Dayton Chapter, NSIA.)

ALC, AFLC, Hill AFB, Utah . . . **Col. (B/G selectee) Irving B. Reed,** from Cmdr., 93d Bomb Wing, SAC, Castle AFB, Calif., to Dir., Comd. Control, DCS/O, SAC, Offutt AFB, Neb., replacing B/G Robert T. Herres . . . **M/G Alton D. Slay,** from Dir. of Opnl. Rqmts. & Dev. Plans, DCS/R&D, Hq. USAF, Washington, D. C., to Asst. DCS/R&D, Hq. USAF, Washington, D. C., replacing retiring M/G Kenneth R. Chapman . . . **B/G William H. Spillers, Jr.,** from V/C, San Antonio ALC, AFLC, Kelly AFB, Tex., to DCS/Log., MAC, Scott AFB, Ill., replacing M/G Warner E. Newby.

B/G Mervin M. Taylor, from Asst. DCS/O for Combat Ops., J-3, NORAD/CONAD, and Asst. DCS/O for Combat Ops., ADC, Ent AFB, Colo., to Cmdr., 23d NORAD/CONAD Rgn., Duluth Intl. Apt., Minn. . . . **B/G (M/G selectee) Robert C. Thompson,** from Dep. Dir. of Civil Eng., DCS/P&R, to Dir. of Civil Eng., DCS/P&R, replacing M/G Billie J. McGarvey . . . **B/G John C. Toomay,** from Mil. Asst. to Dep. Dir. (Strat. & Space Sys.), ODDR&E, Washington, D. C., to Dep. Dir. of Dev. & Acq., DCS/R&D, Hq. USAF, Washington, D. C., replacing B/G Benton K. Partin . . . **B/G Howard R. Unger,** from Surg., USAFE, Ramstein AB, Germany, to Cmdr., Aerosp. Med. Div., AFSC, Brooks AFB, Tex. . . . **B/G Donald N. Vivian,** from Comd. Surg., AFLC, Wright-Patterson AFB, Ohio, to Surg., USAFE, Ramstein AB, Germany, replacing B/G Howard R. Unger . . . **Col. (B/G selectee) Ewell D. Wainwright, Jr.,** from Cmdr., AF Iceland, ADC, Keflavik Apt., Iceland, to Asst. DCS/O for Combat Ops., J-3, NORAD/CONAD, and Asst. DCS/O for Combat Ops., ADC, Ent AFB, Colo., replacing B/G Mervin M. Taylor.

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In July, AIR FORCE Magazine will once again present its annual "Electronic Air Force" issue.

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AIR FORCE MAGAZINE

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The Association provides an organization through which free men may unite to fulfill the responsibilities imposed by the impact of aerospace technology on modern society; to support armed strength adequate to maintain the security and peace of the United States and the free world; to educate themselves and the public at large in the development of adequate aerospace power for the betterment of all mankind; and to help develop friendly relations among free nations, based on respect for the principle of freedom and equal rights to all mankind.

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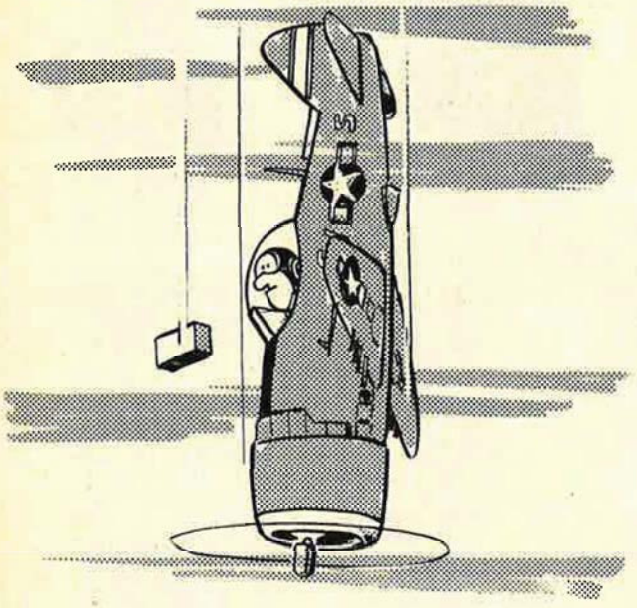
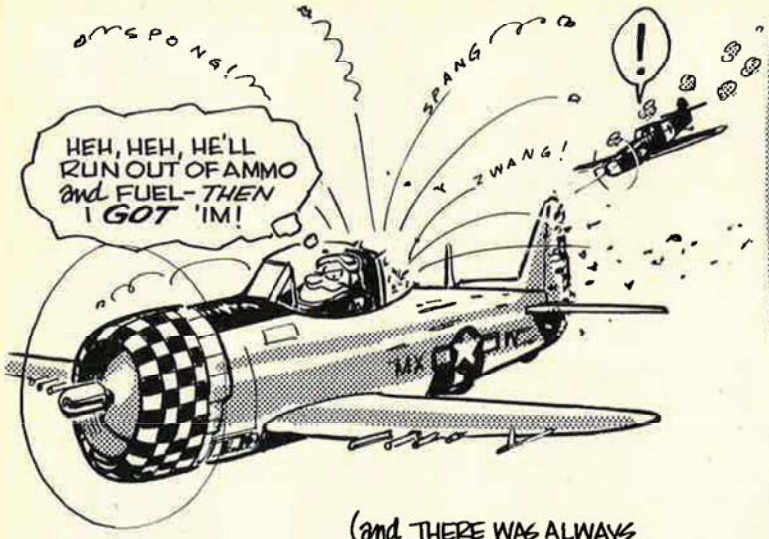
Bob Stevens'

"There I was..."

MAKING AN INSTRUMENT APPROACH CONSISTED OF TOSSING A BRICK OUT OVER THE RADIO CONE OF SILENCE and THEN FLYING FORMATION WITH IT—



IT WAS ALLEGED THAT THE HEAVILY ARMORED JUG's HIGH KILL RATIO WAS ACCOMPLISHED BY GETTING IN ***FRONT*** OF THE ENEMY and...

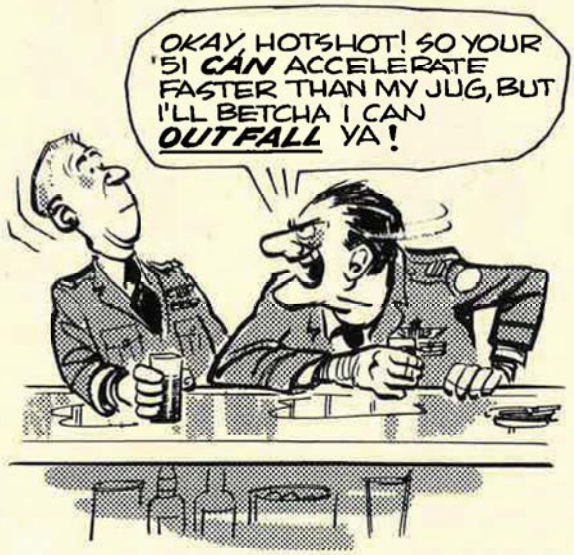


(and THERE WAS ALWAYS THE POSSIBILITY THE HUNTER MIGHT RUN INTO ONE OF HIS OWN RICOCHETS!, ED.)

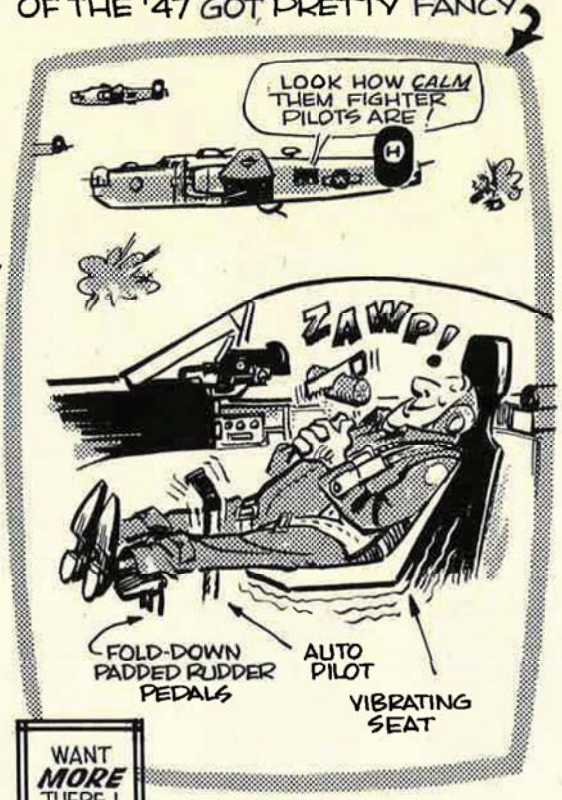
THANKS TO DON C. SMITH SAN DIEGO, CA.

FIGHTER JOCKS ARE A VOCAL LOT—ESPECIALLY WHEN IT COMES TO THE PROS and CONS OF THEIR PARTICULAR STEED OF THE MOMENT. THE "JUG", ALIAS P-47, HAD MANY DEVOTEES, BUT THERE WERE A FEW MALCONTENTS. ONE THING EVERYONE AGREED ON; IT WAS BIG and HEAVY.

OVERHEARD AT THE O'CLUB BAR—



LONG-RANGE ESCORT VERSIONS OF THE '47 GOT PRETTY FANCY



WANT ***MORE*** THERE I WAS...? See p. 161

Bob Stevens